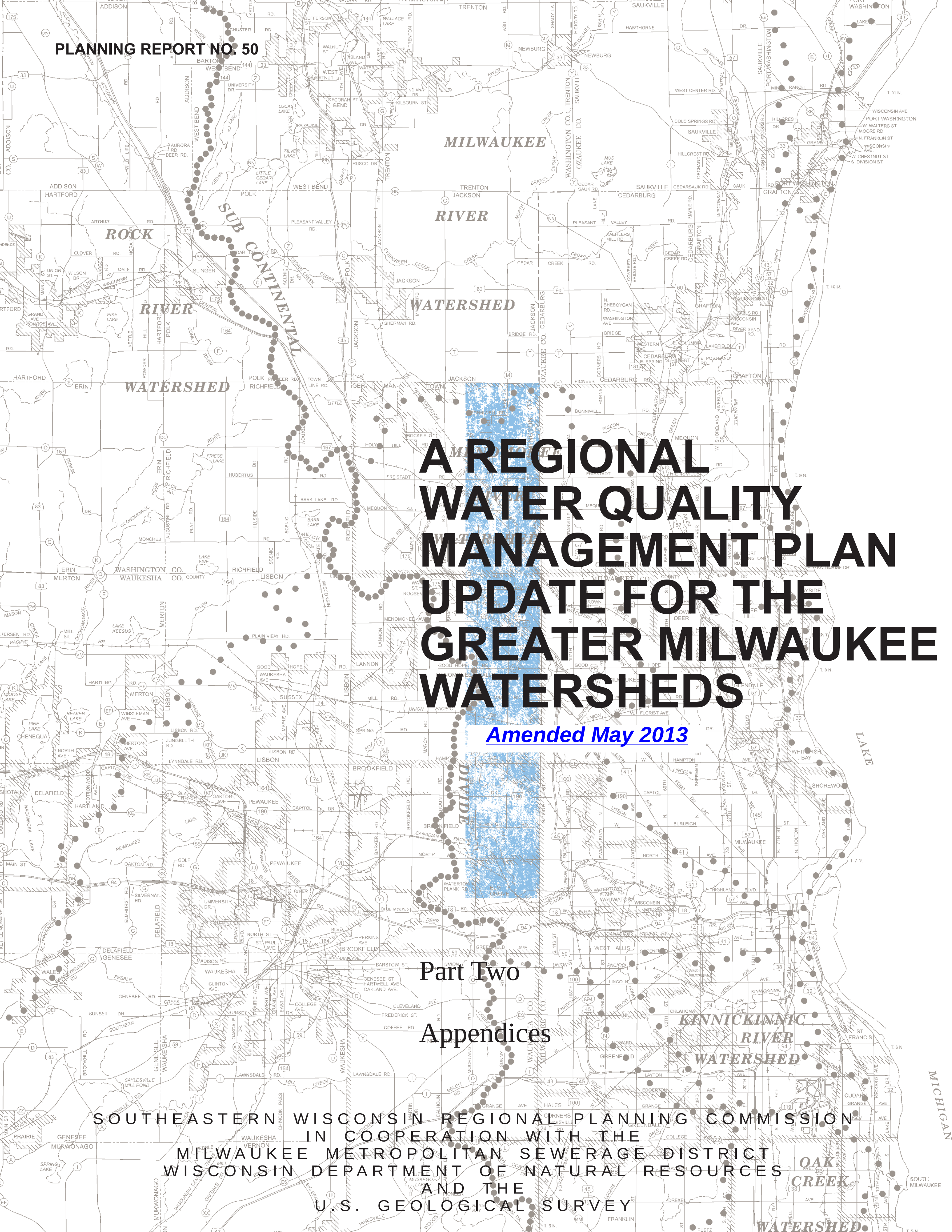
PLANNING REPORT NO. 50



A REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

Amended May 2013

Part Two

Appendices

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IN COOPERATION WITH THE
MILWAUKEE METROPOLITAN SEWERAGE DISTRICT
WISCONSIN DEPARTMENT OF NATURAL RESOURCES
AND THE
U.S. GEOLOGICAL SURVEY

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Special acknowledgement is due Mr. Martin A. Aquino, Environmental Manager, City of Milwaukee Department of Public Works; Mr. Mark Baran, former Interim District Conservationist for Ozaukee County; Ms. Marsha B. Burzynski, Program and Planning Analyst, Wisconsin Department of Natural Resources; Mr. David E. Carpenter, retired Director of Planning and Development for Dodge County; Ms. Diane M. Georgetta, former Coordinator, Town and Country Resource Conservation and Development, Inc.; Ms. Elizabeth L. Gillen, Acting District Conservationist for Ozaukee County; Ms. Shannon K. Haydin, former Director, Sheboygan County Department of Planning and Resources; Ms. Judy Jooss, Representative, Town and Country Resource Conservation and Development, Inc.; Mr. Charles J. Krohn, former Regional Water Leader for the Wisconsin Department of Natural Resources; Mr. David Lynch, retired Ozaukee County Conservationist; Mr. Gary A. Mick, retired Director Milwaukee County Environmental Services; Mr. Stephen Poloncsik, Senior Staff Engineer, U.S. Environmental Protection Agency; and Ms. Gretchen Sawtelle, Executive Director, USDA Farm Services Agency, all of whom served on the Committee during much of the planning process.

PLANNING REPORT NUMBER 50

A REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

Part Two of Two Parts
Appendices

Prepared by the

Southeastern Wisconsin Regional Planning Commission
In Cooperation with the
Milwaukee Metropolitan Sewerage District,
Wisconsin Department of Natural Resources,
and the
U.S. Geological Survey

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December 2007

Amended May, 2013

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Appendix A

PUBLIC INVOLVEMENT PROGRAM SUMMARY: REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

BACKGROUND AND INTRODUCTION

This document summarizes the public involvement efforts during the preparation of the Southeastern Wisconsin Regional Planning Commission (SEWRPC) regional water quality management plan update for the greater Milwaukee watersheds.

The water quality planning public involvement program and its activities were designed to be consistent with the SEWRPC Staff Memorandum entitled, "Public Participation Plan for Transportation Planning Conducted by the Southeastern Wisconsin Regional Planning Commission," 2004, and as amended in 2007. That memorandum serves as a general guide for Commission public participation programs. In this respect, policy statements from the memorandum regarding public notification and access, obtaining public input, incorporation of public input, evaluation of the public involvement process, engaging minority and low income populations, and compliance with the Americans with Disabilities Act are not repeated herein. However, they are considered to apply in like spirit as public involvement in water quality planning attempted to be open, ongoing, valued by participants, and valuable to the planning process.

The Commission's public involvement goal during the course of the study was to ensure early and continuous public notification about regional water quality planning activities, provide meaningful information concerning such work, and obtain participation in, and input to, regional water quality planning efforts. In short, public involvement was considered essential to the conduct of the plan update.

The public involvement activities, which were carried out in collaboration with the University of Wisconsin-Extension, were focused through the use of advisory committees, cooperative actions with other related ongoing public involvement, and complementary public involvement with respect to separate planning efforts and watershed educational programming. An important consideration was to carefully coordinate and integrate the public involvement activities for the regional water quality management plan update with similar activities that were undertaken as part of the Milwaukee Metropolitan Sewerage District (MMSD) facilities planning program and the Wisconsin Department of Natural Resources (WDNR) basin partnership ongoing programs.

MMSD and the Commission developed and conducted a joint public involvement program for a number of key purposes, including joint activity planning and public events, several shared committees, and preparation of informational and educational materials that both programs could utilize. Examples of the latter included "State of the Watershed" booklets and pictorial tour maps, as well as newsletters, produced by MMSD and maps for public display and informational purposes produced by SEWRPC, all under what became known as the Water Quality Initiative. Such materials were very well received and clearly benefited both planning programs in the interagency effort.

The roles of each agency in the cooperative watershed approach to water quality and facilities planning were described in a Memorandum of Understanding which supported the public involvement program. A methodology for coordinating the public involvement programs was initially set forth, largely in parallel fashion to the components described herein. Approaches were evaluated as the planning programs unfolded and public involvement activities were conducted, in an attempt to be responsive as the programs evolved.

ADVISORY COMMITTEE STRUCTURE

Broadly-based and representative advisory committees formed a fundamental type of public involvement. Three types of advisory bodies guided the regional water quality management plan update, one of a technical nature, one to provide intergovernmental coordination and policy advice and assistance, and one citizen-based. In addition, ongoing participation in an oversight committee for the coordinated regional water quality management update planning program and the MMSD facilities planning program—involving the WDNR, MMSD, SEWRPC, and the MMSD consultant project manager—as well as public involvement staff coordination and ad hoc committees for event planning were considered important adjuncts to public involvement activity. An example of the latter was the committee assembled to plan the annual "Clean Rivers, Clean Lakes" conferences described in a following section.

The MMSD also established an advisory body to help guide preparation of the 2020 Facilities Plan, known as the Technical Advisory Team. Commission staff frequently attended and regularly made presentations to this additional public body, as listed in Appendix A-1, along with many other presentations pertaining to the public involvement components described below.

Technical Advisory Committee

The SEWRPC Technical Advisory Committee (TAC) was an integral part of the organization of the study. The composition of this Committee included broad representation, including technical staffs, academia, business, agriculture, and community and environmental organizations, among others. The Committee was designed to represent the entire study area and functioned in a manner similar to the technical advisory committee which guided the preparation of the initial 1979 regional water quality management plan. Included in its purview was a review of the draft planning report preparation and related technical work at important milestones, as well as review of the draft technical report.[1] The Committee also was asked to review and provide advice on important technical matters and decisions. Included were review and updates at key junctures of public involvement program activities. It was important that the TAC had overlapping membership, as appropriate, with the concurrent MMSD Technical Advisory Team.

The TAC met continually during the course of the study, conducting a total of 21 meetings. The committee's membership is shown on the inside front cover of this report, and official minutes are kept on file at the Commission offices.

The TAC had a parallel modeling subcommittee constituted to review the scope of work for both the watercourse and the harbor and nearshore modeling project elements, as well as important model development and operational milestones. Due to the technical complexity and level of detail, this subcommittee focused on water resources modeling issues. The members of the modeling subcommittee are listed in Appendix A-2.

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[1]*SEWRPC Technical Report No. 39,* Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, *November 2007.*

Watershed Officials Forum
In addition to the Technical Advisory Committee, a Watershed Officials Forum was organized to be periodically briefed by Commission staff and to provide feedback and input from the units and agencies of government on a watershedwide basis. This forum was one of the shared advisory bodies utilized by both the Commission and MMSD. The invited membership included the chief elected official from every county, city, village, and town within the watershed area, plus their designees (often planning or engineering staff or an alternate official). Also included were County Board Chairs and County Administrators, where applicable.

The Watershed Officials Forum (WOF) was designed to be called together for briefings by the MMSD 2020 team regarding facilities planning or by SEWRPC regarding regional water quality planning, or for both purposes. As meetings were scheduled, the subject matter was described so that the invitees could effectively participate in their areas of concern and interest. Thus, meetings selectively focused on the MMSD service area, the entire watershed areas, selected watersheds, or a broad spectrum. This allowed the invitees to target their involvement if they so chose. The WOF began its involvement in the planning process with multiple meetings during June and September 2004. Selected materials pertaining to the recruitment of watershed officials, and the initial Forum meetings are shown in Appendix A-3.

During the initial WOF meetings, attendees expressed the concern that comprehensive, or "smart growth," planning efforts were beginning to tax the time of local officials, while recognizing that comprehensive plans needed to address issues germane to the interagency water quality planning. As a result, the officials requested that water quality planning input and updates occur in the context of county comprehensive plan meetings and correspondence and through coordination with local staff. Thereafter, the Commission provided periodic updates to local officials during county comprehensive plan meetings (see Appendix A-1). This coordination with "smart growth" planning had the additional advantage of becoming an opportunity for interested citizens and local officials to provide input on the regional water quality management plan update. It was seen to be mutually beneficial in relieving inadvertent competition for participant time in multiple meetings, when water quality management planning updates could be included on comprehensive planning committee agendas. In addition, targeted correspondence was sent to watershed officials, for example, during the development of plan objectives and to encourage attendance at major public events during the planning program.

Citizens Advisory Council
Another shared advisory body, the Citizens Advisory Council (CAC), was formed in cooperation with the MMSD 2020 facilities planning program to actively involve private citizens, businesses, special interest groups, and industry representatives in the development of the planning studies. The Council functioned as a representative body of concerned and diverse citizens. The members of the WOF were asked to help recruit the CAC members, including business and neighborhood or community representatives.

The CAC primarily met at the MMSD headquarters in Milwaukee. However, members were also invited to participate at other meeting locations, based upon watershed areas, particularly during the solicitation of ideas for development of plan objectives. During this process, members could choose to attend at one or more of the locations. Opportunities to discuss all of the watersheds (Kinnickinnic, Lake Michigan Direct Drainage Area, Milwaukee, Menomonee, Oak Creek, and Root) were provided in most meetings, and attendees freely commented on regional or watershedwide issues. However, even meetings designed to specifically elicit more localized watershed comments largely generated broader comments. The public involvement program iteratively adapted to this phenomenon in the formulation of planning objectives as described below.

The CAC met a total of 28 times during the study, with minutes and other records on file at MMSD headquarters. Commission staff presentations to the CAC are listed in Appendix A-1.

ADDITIONAL COOPERATIVE ACTIONS AND RELATED ONGOING PUBLIC INVOLVEMENT ACTIVITIES

As noted initially, and explained in regard to advisory committees, it was important to carefully coordinate the public involvement activities of the regional water quality management plan update with related activities of the MMSD facilities plan and the WDNR basin partnerships. The following subsections provide examples.

Supplemental Advisory Bodies

The MMSD provided regular updates to its Intergovernmental Cooperation Council (ICC) particularly with respect to facilities planning, but also on the regional water quality management plan update. This council is comprised of representatives from the District's member or contract communities. While updates were given by primarily MMSD staff, Commission staff also presented material in ICC meetings, as indicated in Appendix A-1.

Though not a formal part of the study's committee structure, input was also sought from the Milwaukee River Basin Partnership. Members of that Partnership serve on the Technical Advisory Committee, and Commission/UW-Extension staff periodically appeared on the agenda of Basin Partnership meetings to provide information and solicit input on the areawide plan.

At several junctures during the study, agricultural interests in the Greater Milwaukee Watersheds were convened, with the assistance of the WDNR staff, largely for technical purposes in plan preparation, but also as part of the public involvement program. Invited to an initial group meeting in June 2005 were county conservationists, NRCS District Conservationists, UW-Extension agricultural educators/agents, Farm Service Agency executive directors, county planning directors, and oversight agency staff, some of whom served on the TAC. Thereafter, smaller and specific county efforts continued. The effort was designed to share the status of the water quality plan update, discuss the availability of rural data, project a stage of implementation of agricultural nonpoint source management water quality standards (Chapter NR 151 of the *Wisconsin Administrative Code*) for modeling of future conditions, and to consult on plan recommendations related to agricultural interests. Attendees were also invited to relay any suggestions of persons having upstream rural interests who might participate in WOF or CAC meetings, with the intent of broadening involvement in the nonurban portion of the Greater Milwaukee Watersheds.

Development of Plan Objectives

The development of objectives provides a good example of coordination and cooperative actions to achieve multiple needs. The Citizens Advisory Council provided to the joint planning programs a list of many hundreds of comments, issues, actions and measures considered important to the future of water resources in the Region. The Commission then matched these items, and subsequent feedback, with the objectives developed in comprehensive watershed management and land use planning programs that had been reviewed by advisory committees in the past. In addition, WDNR watershed and basin planning objectives, as well as those from other relevant studies, were reviewed. Objectives were added based upon this process, then revised and refined based upon further review by the CAC, watershed officials, and the public. Meanwhile, MMSD used the common advisory bodies, meetings, and input, to prepare a parallel set of objectives which were complementary to the Commission's and which served the needs of that agency's facilities planning. The process of formulating objectives is described more fully in Chapter VII, and the principles, objectives, and standards that guided the planning process are set forth in Appendix G of this planning report.

KEY PUBLIC INVOLVEMENT ACTIVITIES AND EVENTS

Other major public involvement activities were developed and employed as the regional water quality management plan update proceeded.

Website

The Commission's website was augmented in 2004 to contain detailed information about the ongoing water quality management planning effort. That information included an overview and details regarding the planning effort, background information, orientation maps, a public involvement summary, plan chapters, TAC meeting materials, committee roster, notices of conferences and other public events, helpful links, and means of commenting/specific contacts. A link to MMSD's website and Water Quality Initiative (WQI) events and materials was quite important during the course of the study. There, additional background, watershed booklets, newsletters, Citizens Advisory Council materials, and conference presentations were maintained and made available. The Commission website's link to the District's thus became a key example of complementary rather than duplicative efforts. Excerpts from the SEWRPC website are shown in Appendix A-4.

Conferences

Major water quality planning conferences were conducted in 2004, 2005, 2006, and 2007 to meet multiple public involvement needs. Called "Clean Rivers, Clean Lakes," these events drew between 270 and 420 total participants each year, and they tracked plan progress from a major public "kick-off" through presentation of the recommended plan. As mentioned above, additional agency and organization sponsors were brought into the conference planning, and the event also helped fulfill a multi-regional, multi-state initiative called the Lake Michigan Watershed Academy sponsored by the U.S. Environmental Protection Agency during 2004 and 2006. Conference presentations were typically posted on the Water Quality Initiative page of the MMSD website, linked to the SEWRPC website. Registration brochures containing agendas for the four watershed planning conferences are shown in Appendix A-5.

Public Informational Meetings and Hearings

At three major junctures during the study, the public was invited to at multiple locations for informational meetings with comment opportunities. The first two series of public meetings were conducted in conjunction with MMSD under the Water Quality Initiative; and the third series of meetings, which was scheduled and held by the Commission, also contained a formal public hearing for the regional water quality management plan update for the greater Milwaukee watersheds. Staff representing MMSD and SEWRPC were present at each of the meetings. All of the meetings contained an open house component with display materials so that attendees could speak individually with staff, comment or have their questions answered individually, and come and go as convenient. Appendix A-6 outlines the meetings by series, date, and location.

The first series of public informational meetings was held in September 2004 to seek public input early in the planning process relative to initial inventory findings and draft goals and objectives. The meetings locations were Bayside Middle School in Bayside, the United Community Center and Washington Park Library in Milwaukee, and Longfellow Middle School in Wauwatosa.

The second series of meetings was held in March and April 2006 to get feedback on the preliminary alternative plans. The meeting locations were the Italian Community Center, United Community Center, and Mother Kathryn Daniels Conference Center, all in Milwaukee, Longfellow Middle School in Wauwatosa, and the North Shore Library in Glendale.

The third set of meetings, also containing a public hearing on the Commission's recommended plan, was held in October 2007. These meetings additionally contained a formal presentation related to the draft plan and an opportunity to dictate a comment to a court reporter. The meeting locations were Gateway Technical College in Racine, the Downtown Transit Center in Milwaukee, and Riveredge Nature Center near Newburg. Distribution of the notice of public informational meetings/hearings occurred to all chief elected officials and clerks in the 9 counties and 88 municipalities in the study area; the Wisconsin Farm Bureau Federation office in each respective county, the Milwaukee River Basin Partnership, and the Root-Pike Watershed Initiative Network; the MMSD Technical Advisory Team; the MMSD/SEWRPC Citizens Advisory Council; and the SEWRPC Technical Advisory Committee and Modeling Subcommittee. Appendix W contains the announcement of these meetings/hearings and provides further details and documentation of comments received. The meeting announcement was published in the following newspapers: El Conquistador (Milwaukee area), The Reporter (Fond du Lac), The Insider News (Racine area), the Milwaukee Courier, the Milwaukee Journal Sentinel, the News Graphic (Ozaukee County), The Journal Times (Racine), The Sheboygan Press, The Freeman (Waukesha), and the Daily News (West Bend).

Other Public Forums
Beyond the presentations and information exchanged in the aforementioned committee meetings, conferences, public informational meetings, and other events, other forums were utilized to ensure that all citizens had an opportunity to be informed about the water quality planning program, and to offer comments.

Testing the Waters Tours and Workshops
Testing the Waters is an inter-organizational consortium which is designed to educate high school students and their teachers about integrated water quality issues. Coordinated by the Riveredge Nature Center, which is located centrally in the Milwaukee River Watershed, and partially funded by MMSD and other grantors, the multi-year effort serves interested schools throughout the Milwaukee River basin. During a day-long workshop each September from 2004 through 2007, from 50 to more than 100 students and their teachers were provided with a bus tour by Commission/UW-Extension staff working cooperatively with the Washington County Land Conservation Department. The tour contained plan-related, developmental, environmental, and agricultural features in Washington and Ozaukee Counties, and included stops at two dairy farms of different sizes utilizing a variety of conservation practices designed to protect nearby waters. Two of the training years also included teacher workshops addressing the regional water quality management plan update for the greater Milwaukee watersheds.

Farm Technology Days Exhibit
In 2006, the Farm Technology Days exhibition provided a unique opportunity for the public involvement program to approach the agricultural community particularly in the northern part of the Greater Milwaukee Watersheds. The July 11-13 event represented the largest agricultural exhibition in the State. It was hosted in the Town of Lima, Sheboygan County, several miles east of the Milwaukee River watershed boundary, and occurred at a point in the study during which additional rural/agricultural involvement was being sought. An exhibit was thus placed in UW-Extension’s tent pavilion, and staffed during the course of the event. This offered an opportunity for thousands of attendees to view plan-related display materials, and for staff to discuss relevant issues with hundreds of interested parties.

Comprehensive Planning Meeting Updates
As indicated in Appendix A-1, comprehensive plan-related updates were provided during regular planning meetings in Ozaukee, Racine, Washington, and Waukesha Counties. Objectives of providing water quality plan updates in Ozaukee, Racine, and Washington Counties included obtaining greater public involvement in areas outside the MMSD planning area and to offer the opportunity for those from the out-of-Region counties (Dodge, Fond du Lac, and Sheboygan) to learn about the plan. The Racine County meeting was expanded to include invitations to local officials, organizations, and interested citizens. Presentations regarding key comprehensive planning meetings are included in Appendix A-1.

Updates for Additional Events and Organizations
During the course of the study, the Commission staff provided numerous brief updates and input opportunities, beyond the items specifically referenced above in this appendix. The events and organization meetings involved were typically occurring for broader purposes; nevertheless, the inclusion of the water quality planning topic and the effect of this additional outreach were collectively important.

Examples include meeting updates for the Southeast Area Land & Water Conservation Association, and notably a summer 2007 bus tour in Milwaukee and Ozaukee Counties held in conjunction with the Soil and Water Conservation Society – Wisconsin Chapter. Updates were also given as part of presentations to additional professional association programs, college and university classes, UW-Milwaukee’s Smart Growth Lecture Series, meetings of the Great Lakes Nonpoint Abatement Coalition, and the Public Policy Forum, among others. Meeting updates also pertained to environmental justice and the Commission’s efforts to engage minority and low-income populations. Though the content of meetings with such group representatives more often was related to transportation and land use, the ongoing water quality planning was also noted as appropriate. The prospect of cleaner water and enhanced recreational activities in, and near, Milwaukee’s central city, for instance, is a recognized asset by a number of organization leaders. The SEWRPC *Annual Report* in years corresponding to the regional water quality management plan update briefly identified the range of events and organizations potentially reached by these additional means.

Other Informational and Educational Products

A number of other informational and educational products were also utilized during the interagency planning process, some of which have been mentioned in general terms. Many of these were prepared under the Water Quality Initiative by MMSD and/or consultant staff, with contributions by, or information from, the Commission. All fit under the category of complementary use while avoiding duplicative efforts.

Nine issues of the WQI newsletter, *The Water Resource*, were published by MMSD during the study. These discussed the Commission's regional plan update as well as the District's 2020 facility plan, and included articles by Commission staff. That publication benefited the joint planning program, and, thus, general understanding of water quality issues by the public. In one case, an entire issue was dedicated to a SEWRPC-MMSD "Clean Rivers, Clean Lakes" conference.

Six watershed booklets were published by MMSD and made available at many of the public meetings described above. Separate booklets, using inventory information in part developed by the Commission, describe the resources, demographics, and water quality conditions existing within the Kinnickinnic River, Lake Michigan Direct Drainage Area, Menomonee River, Milwaukee River, Oak Creek, and Root River watersheds.

Periodic mass WQI e-mailings were distributed by MMSD. These included references to the joint planning which was taking place, notices of major events, and newly available publications, among other items.

A series of public informational documents was made available in coordination with the University of Wisconsin-Extension Service to inform and advise interested parties. For example, "Environmental Corridors – Lifelines of the Natural Resource Base," in the "Plan on It!" fact sheet series was revised and reprinted to help benefit the public involvement program. It was widely utilized in public informational meetings and posted with a direct link on the Commission's website. Also, the complementary "Yard Care and the Environment" fact sheets were made available through website link. That is a UW-Extension fact sheet series produced in part with assistance by the Commission to provide practical water quality advice through describing management alternatives for homeowners.

Appendix A-1

SEWRPC STAFF PRESENTATIONS ON THE REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

MMSD TECHNICAL ADVISORY TEAM MEETINGS[a]

Meeting Date	SEWRPC Staff Presentation
October 17, 2002	- -
December 12, 2002	- -
March 13, 2003	- -
June 19, 2003	- -
August 21, 2003	Regional Water Quality Management in the Greater Milwaukee Area: A Historical Perspective and the Next Steps
October 16, 2003	- -
October 31, 2003	- -
December 18, 2003	- -
January 15, 2004	- -
February 19, 2004	- -
March 25, 2004	- -
April 15, 2004	- -
April 29, 2004	- -
May 17, 2004	- -
June 17, 2004	- -
July 15, 2004	- -
August 26, 2004	- -
September 16, 2004	- -
October 26, 2004	- -
November 30, 2004	- -
December 16, 2004	- -
January 20, 2005	- -
February 17, 2005	- -
March 17, 2005	- -
April 21, 2005	- -
May 26, 2005	- -
June 16, 2005	- -
July 21, 2005	- -
August 24, 2005	- -
September 15, 2005	Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan: Representing NR 151 and MMSD Chapter 13 Requirements in the LSPC Models
October 20, 2005	2020 Population and Land Use Projections
November 10, 2005	Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan: Population and Land Use Considerations and Planning Strategy
December 15, 2005	- -

MMSD TECHNICAL ADVISORY TEAM MEETINGS[a] (continued)

Meeting Date	SEWRPC Staff Presentation
January 19, 2006	- -
February 16, 2006	- -
March 16, 2006	Revised Population/Land Use
April 20, 2006	- -
May 25, 2006	- -
June 15, 2006	- -
July 20, 2006	- -
August 15, 2006	- -
September 28, 2006	- -
October 19, 2006	Regional Water Quality Management Plan Update (208 Plan)
November 16, 2006	Regional Water Quality Management Plan Update Status Report
December 21, 2006	Regional Water Quality Management Plan Update Status Report
January 18, 2007	Regional Water Quality Management Plan Update Status Report
February 15, 2007	Regional Water Quality Management Plan Update (208 Plan)
March 22, 2007	Regional Water Quality Management Plan Update Status Report
April 19, 2007	Regional Water Quality Management Plan Update (208 Plan) Update on Recommended Plan and Introduction to Implementation Component
May 24, 2007	Regional Water Quality Management Plan Update Status Report
June 21, 2007	Regional Water Quality Management Plan Update Status Report
August 23, 2007	Regional Water Quality Management Plan Update Status Report
October 18, 2007	Regional Water Quality Management Plan Update Status Report
December 12, 2007	Regional Water Quality Management Plan Update Status Report

[a]*The MMSD 2020 Facilities Plan and/or the SEWRPC Regional Water Quality Management Plan Update were discussed at each of these meetings.*

Source: SEWRPC.

PRESENTATIONS TO OTHER ORGANIZATIONS

Presentation Date	Title	Audience
July 15, 2003	Water Quality Management in the Greater Milwaukee Area: A Historical Perspective and the Next Steps	USEPA, WDNR, MMSD
July 21, 2003	Regional Water Quality Management in the Greater Milwaukee Area: A Historical Perspective and the Next Steps	MMSD Water Quality Initiative Citizens Advisory Council
August 21, 2003	Regional Water Quality Management in the Greater Milwaukee Area: A Historical Perspective and the Next Steps	MMSD Water Quality Initiative Technical Advisory Team
November 6, 2003	Regional Water Quality Management in the Greater Milwaukee Watersheds: A Historical Perspective and the Next Steps	Milwaukee River Basin Partnership
November 13, 2003	Regional Water Quality Management in the Greater Milwaukee Watersheds: A Historical Perspective and the Next Steps	Midwest Natural Resources Group
January 21, 2004	Regional Water Quality Management Plan Update and MMSD 2020 Facilities Planning for the Greater Milwaukee Watersheds: Basic Study Area Characteristics, Land Use, and Pollution Sources	Citizens Advisory Council
February 10, 2004	A Once in a Generation Opportunity: Regional Water Quality Management Plan Update	Clean Rivers, Clean Lakes Watershed Planning Conference
June 8 and 14, 2004	Regional Water Quality Management Plan Update: Background and Preliminary Objectives	Watershed Officials Forum
June 10, 2004	Regional Water Quality Management Plan Update/MMSD 2020 Facilities Plan: Population and Land Use	MMSD Workshop
June 10, 2004	Regional Water Quality Management Plan Update/MMSD 2020 Facilities Plan: Water Use Objectives, Classification, and Standards	MMSD Workshop
June 10, 2004	Regional Water Quality Management Plan Update/MMSD 2020 Facilities Plan: Future Scenarios	MMSD Workshop
June 10, 2004	Regional Water Quality Management Plan Update/MMSD 2020 Facilities Plan: Water Use Objectives, Classification, and Standards	Citizens Advisory Council
June 10, 2004	Regional Water Quality Management Plan Update Preliminary Objectives	Citizens Advisory Council
July 12, 2004	Regional Water Quality Management Plan Update/MMSD 2020 Facilities Plan: Background and Changes in Water Quality Conditions: 1975-2000	MMSD Operations Committee
July 12 and 13, 2004	Regional Water Quality Management Plan/MMSD 2020 Facilities Plan: Water Use Objectives, Classification, and Standards	Citizens Advisory Council
September 2, 2004	Regional Water Quality Management Plan Update/MMSD 2020 Facilities Plan: Water Use Objectives, Designated Uses, and Criteria	MMSD Commissioners
September 2, 2004	Regional Water Quality Management Plan Update/MMSD 2020 Facilities Plan: Population and Land Use	MMSD Commissioners
September 13, 2004	Regional Water Quality Management Plan Update/MMSD 2020 Facilities Plan: Water Use Objectives, Designated Uses, and Criteria	Watershed Officials Forum
September 24, 2004	Regional Water Quality Management Plan: A Historical Perspective and the Next Steps for Selected Watershed Areas	Presentation for Reporting Critical Issues of Suburban and City Growth: A Seminar for Journalists
November 12, 2004	Regional Water Quality Management Plant Update and MMSD Facilities Planning Program: Cooperative Intergovernmental Watershed-Based Planning Program	Wisconsin Rural Leadership Program

PRESENTATIONS TO OTHER ORGANIZATIONS (continued)

Presentation Date	Title	Audience
January 19, 2005	Regional Water Quality Management Plan Update and MMSD 2020 Facilities Planning Program: Existing Conditions, Future Conditions and Scenarios, and Alternative Futures to be Evaluated	Citizens Advisory Council
February 23, 2005	Status of Regional Water Quality Management Plan Update: Cooperative Intergovernmental Watershed-Based Planning Program	Clean Rivers, Clean Lakes II, 2nd Annual Watershed Planning Conference
June 23, 2005	Regional Water Quality Management Planning For Discussion Purposes to Explore Potential Relationships to Comprehensive Planning	Waukesha County Comprehensive Development Plan Agricultural, Natural, and Cultural Resources Element Subcommittee
June 28, 2005	Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan	Representatives of Agricultural Interests
October 10, 2005	SEWRPC Technical Report 39, *Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds*: Chapter VI – Surface Water Quality Conditions and Sources of Pollution in the Menomonee River Watershed	Executive Council of the MMSD Intergovernmental Cooperation Council of Milwaukee County
October 25, 2005	SEWRPC Technical Report No. 39, *Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds*, Chapter V – Surface Water Quality Conditions and Sources of Pollution in the Kinnickinnic River Watershed	Citizens Advisory Council
January 10, 2006	Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan: Population and Land Use Considerations and Planning Strategy	MMSD Facilities Plan Policy Committee Meeting
March 2, 2006	SEWRPC Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan: Existing Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds	Clean Rivers, Clean Lakes III, 3rd Annual Watershed Planning Conference
April 11, 2006	Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan: Revised 2020 Population and Land Use Estimates	Citizens Advisory Council
May 3, 2006	Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan	Washington County Comprehensive Plan Advisory Committee
May 3, 2006	Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan	County Land Conservationists and WDNR
June 21, 2006	SEWRPC Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan: Existing Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds	USEPA Region V and WDNR
July 13, 2006	Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan	Racine County Comprehensive Plan Advisory Committee and RWQMPU/2020 Facilities Plan Watershed Officials Forum
October 9, 2006	Regional Water Quality Management Plan Update (208 Plan)	MMSD Commissioners
December 5, 2006	Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan	Ozaukee County Comprehensive Plan Citizen Advisory Committee
February 12, 2007	Regional Water Quality Management Plan Update (208 Plan)	Executive Council of the Intergovernmental Cooperation Council of Milwaukee County
February 12, 2007	Regional Water Quality Management Plan Update (208 Plan)	MMSD Commission
February 13, 2007	Regional Water Quality Management Plan Update (208 Plan)	Citizens Advisory Council
February 27, 2007	Regional Water Quality Management Plan Update (208 Plan)	MMSD Virtual Team

PRESENTATIONS TO OTHER ORGANIZATIONS (continued)

Presentation Date	Title	Audience
March 7, 2007	Regional Water Quality Management Plan Update (208 Plan)	Water Quality Initiative – Integrated Watershed Implementation Plan Analysis Workshop
April 18, 2007	Regional Water Quality Management Plan Update (208 Plan) Update on Recommended Plan and Introduction to Implementation Component	Citizen Advisory Council
April 24, 2007	SEWRPC Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds: The Unveiling – Water Quality Plans for Action, Recommended Plan	Clean Rivers, Clean Lakes IV, Fourth Annual Watershed Planning Conference
May 9, 2007	Overview of SEWRPC Regional Water Quality Management Plan Update – 2007	MMSD Service Area Public Officials
May 15, 2007	SEWRPC Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds: Recommended Plan	Ozaukee County Comprehensive Plan Citizen Advisory Committee – Agricultural and Natural Resources Work Group
June 27, 2007	SEWRPC Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds: Recommended Plan	Washington County Comprehensive Plan Advisory Committee
July 17, 2007	SEWRPC Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds: Recommended Plan	Ozaukee County Multi-Jurisdictional Comprehensive Planning Process, Regional Water Issues Program
October 15, 16, 23, 2007	SEWRPC Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds	Public Information Meetings/Public Hearings

Source: SEWRPC.

Appendix A-2

WATER QUALITY MODELING SUBCOMMITTEE

Marsha B. Burzynski .... Wisconsin Department of Natural Resources, Milwaukee
Steven R. Heinz .... Senior Project Manager, Milwaukee Metropolitan Sewerage District
Peter E. Hughes .... Assistant Center Director, Wisconsin Water Science Center, U.S. Geological Survey
Sandra L. McLellan .... Assistant Scientist, Great Lakes WATER Institute
Charles S. Melching .... Associate Professor, Civil & Environmental Engineering, Marquette University
Nancy U. Schultz .... Consultant, CH2M Hill
Peter G. Swenson .... Branch Chief, NPDES Programs Branch, U.S. Environmental Protection Agency
Xiaochun Zhang .... Wisconsin Department of Natural Resources, Madison

SELECTED MATERIALS PERTAINING TO THE RECRUITMENT OF WATERSHED OFFICIALS AND THE INITIAL FORUM MEETINGS

COPY

Water Quality INITIATIVE

February 20, 2004

Mr. Allen J. Buechel
Fond du Lac County Executive
Fond du Lac County Administration Center
160 S. Macy street
Fond du Lac, WI 54935

Dear Mr. Buechel:

The Southeastern Wisconsin Regional Planning Commission (SEWRPC) and the Milwaukee Metropolitan Sewerage District (MMSD) have embarked on a long-range planning process to examine how we can best meet the water quality needs for an important area, and we would very much appreciate your participation. The area involved includes all of the watersheds shown on the map attached hereto, namely, the Kinnickinnic River, Menomonee River, Milwaukee River, Root River, and Oak Creek watersheds; the Milwaukee Harbor estuary; and the adjacent nearshore Lake Michigan areas. We are using the U.S. Environmental Protection Agency (USEPA)'s recommended *watershed approach* to update the Regional Water Quality Management Plan and to develop the MMSD's 2020 Facilities Plan.

As part of this collaborative planning process, SEWRPC and MMSD are convening two groups to provide input and feedback on the plans as they are being developed. One of the groups is the Watershed Officials Forum. This Forum will provide a way for officials representing the various levels, units, and agencies of government to meet periodically to be briefed on project progress and to provide feedback and input on the planning program, including goals, alternatives, and the recommended plans. The membership of the Forum will include the chief elected officials or their designees from every county, city, village and town within the watershed area. The invitees to the Forum meetings will include the entire membership and each member may also designate a staff person to attend. The Watershed Officials Forum meetings are expected to be held about quarterly, beginning in April or May of this year, through 2006.

We are asking you to join the Watershed Officials Forum and help us to plan for improved water quality in our region.

Collaboration using the *watershed approach* will produce separate plans, but coordinated efforts. One planning program is the SEWRPC Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds and the other is the MMSD 2020 Facilities Plan. The *watershed approach* uses nature's boundaries instead of jurisdictional limits, it recommends decisions based on science and engineering and requires strong partnerships and public involvement with people, interest groups, and agencies.

mmsd
Preserving The Environment • Improving Water Quality
Milwaukee Metropolitan Sewerage District
260 W. Seeboth Street, Milwaukee, WI 53204-1446
414-272-5100 www.mmsd.com

Southeastern Wisconsin Regional Planning Commission
W239 N1812 Rockwood Drive
P.O. BOX 1607
WAUKESHA, WISCONSIN 53187-1607
PHONE: (262) 547-6721
FAX: (262) 547-1103
EMAIL: sewrpc@sewrpc.org

WQI 04-005

Please contact either Gary Korb at SEWRPC (262-547-6721, extension 234, gkorb@sewrpc.org) or Karen Sands at MMSD (414-225-2123, ksands@mmsd.com) if you would like to be part of the Forum or would like additional information. Prior to all Forum meetings we will send notices and agendas to the entire invited membership.

We are also asking that you contact us with any recommendations you may have for membership on the Citizens Advisory Council, or CAC. The CAC is the second group where we are engaging citizen, business, environmental, and community representatives with interests related to water quality planning to join us in this planning effort. This group has been meeting since June 2003, but we are expanding it and asking for additional members, particularly in the outer watershed areas. If you wish, please provide nominations to one of the above contacts, if possible by March 5, 2004.

Thank you for your interest in improving water quality in our area, the Greater Milwaukee Watersheds.

Sincerely,

Kevin L Shafer

Kevin L. Shafer, P.E.
Executive Director
Milwaukee Metropolitan Sewerage District

Philip C. Evenson

Philip C. Evenson, AICP
Executive Director
Southeastern Wisconsin Regional Planning Commission

KLS/PCE/pk
#91693 V1 - RWQMP UPDATE WQI LTR 1

Enclosure

Watershed Officials Forum

Region-Wide Upcoming Meeting

On June 8 and 14, the Watershed Officials Forum will consider draft watershed issues identified by the Citizens Advisory Council for the Greater Milwaukee Watersheds.

Please join us for this opportunity to discuss the future of water quality in the Greater Milwaukee Watersheds. The meetings will be held over two days to accommodate schedules; please attend just one meeting.

The meeting dates are:

June 8, 2004

Riveredge Nature Center, Newburg

5:30 - 7:15 p.m.

June 14, 2004

City of Greenfield Common Council Chambers

12:30 - 2:15 p.m.

Please RSVP meeting choice by May 25 to

Gary Korb *262-547-6721 or gkorb@sewrpc.org*

or

Karen Sands *414-225-2123 or ksands@mmsd.com*

Note: Light refreshments will be served.

Water Quality INITIATIVE

MMSD Preserving The Environment • Improving Water Quality

Southeastern Wisconsin Regional Planning Commission

WQI 04-018

Water Quality
INITIATIVE

May 28, 2004

TO: Watershed Officials Forum (WOF) Members

Thank you for your ongoing commitment to helping the Milwaukee Metropolitan Sewerage District (MMSD) and Southeastern Wisconsin Regional Planning Commission (SEWRPC) shape water resource plans for the Greater Milwaukee Watersheds.

This is a reminder that the first meeting for the WOF will be held on June 8 at Riveredge Nature Center in Newburg and June 14 at Greenfield City Hall in Greenfield. ***The intention is that you select one meeting, based on your availability and convenience.*** Meeting times and an agenda are provided on the enclosed reminder notice. There will be an opportunity following the meeting to discuss recent MMSD weather-related events, interest permitting. ***We will share SEWRPC's proposed preliminary objectives and MMSD's issues that will become goals and objectives for the respective studies of each agency, with the goal of seeking your advice and comment.***

Therefore, enclosed in this mailing are the following:

- SEWRPC summary of goals and objectives
- SEWRPC comment form
- MMSD summary of Citizens Advisory Council process and results
- MMSD comment form
- List of issues raised at the Citizens Advisory Council meeting that relates to both SEWRPC's and MMSD's summaries

These pieces can be used together to help evaluate the input received thus far, and the progress toward establishing goals and objectives that will affect important waters from southern Fond du Lac and Sheboygan Counties to Racine County for years to come. If you are unable to attend either meeting, your governmental unit is still welcome to comment using the enclosed forms which accompany the SEWRPC and MMSD summaries. The long list of Citizens Advisory Council ideas is provided merely for your reference.

It is still anticipated that watershed and regional goals and objectives will be refined throughout the upcoming months, culminating in public open house meetings in the fall.

Please feel free to contact Karen Sands at MMSD (414.225.2123) or Gary Korb at SEWRPC (262.547.6721) for additional information.

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WQI 04-005

Appendix A-4

EXCERPTS FROM THE SEWRPC WEBSITE

Regional Water Quality Management Plan Update

Overview

The Commission has embarked on a long-range planning process to examine how to best meet the water quality needs for an important area, working in concert with the Milwaukee Metropolitan Sewerage District (MMSD). The area involved includes all of the watersheds shown on Map 1, namely, the Kinnickinnic River, Menomonee River, Milwaukee River, Root River, and Oak Creek watersheds; the Milwaukee Harbor estuary; and the adjacent nearshore areas draining to Lake Michigan.

The interagency effort is using the U.S. Environmental Protection Agency's recommended watershed approach to update the Regional Water Quality Management Plan and to develop the MMSD's 2020 Facilities Plan for the study area, called the Greater Milwaukee Watersheds. The watershed approach uses nature's boundaries instead of jurisdictional limits, it recommends decisions based on science and engineering, and requires strong partnerships and public involvement with people, interest groups, and agencies. Also helping to coordinate the effort is the Wisconsin Department of Natural Resources (WDNR).

This may be regarded as a once-in-a-generation opportunity to examine and plan comprehensively for water quality on a multi-watershed basis. When completed, the plan will recommend the control of both point and nonpoint pollution sources, and provide the basis for decisions on community, industrial, and private waste disposal systems—all with ties to smart growth and sustained quality of life.

You are invited to:

- Learn more about this important regional planning effort
- Follow one of the links for obtaining related information and materials on water resource management
- View presentations given at the March 2, 2006, watershed planning conference "Clean Rivers, Clean Lakes III"
- Contact us with questions and comments
- Attend upcoming Water Quality Initiative Open Houses

Map 1

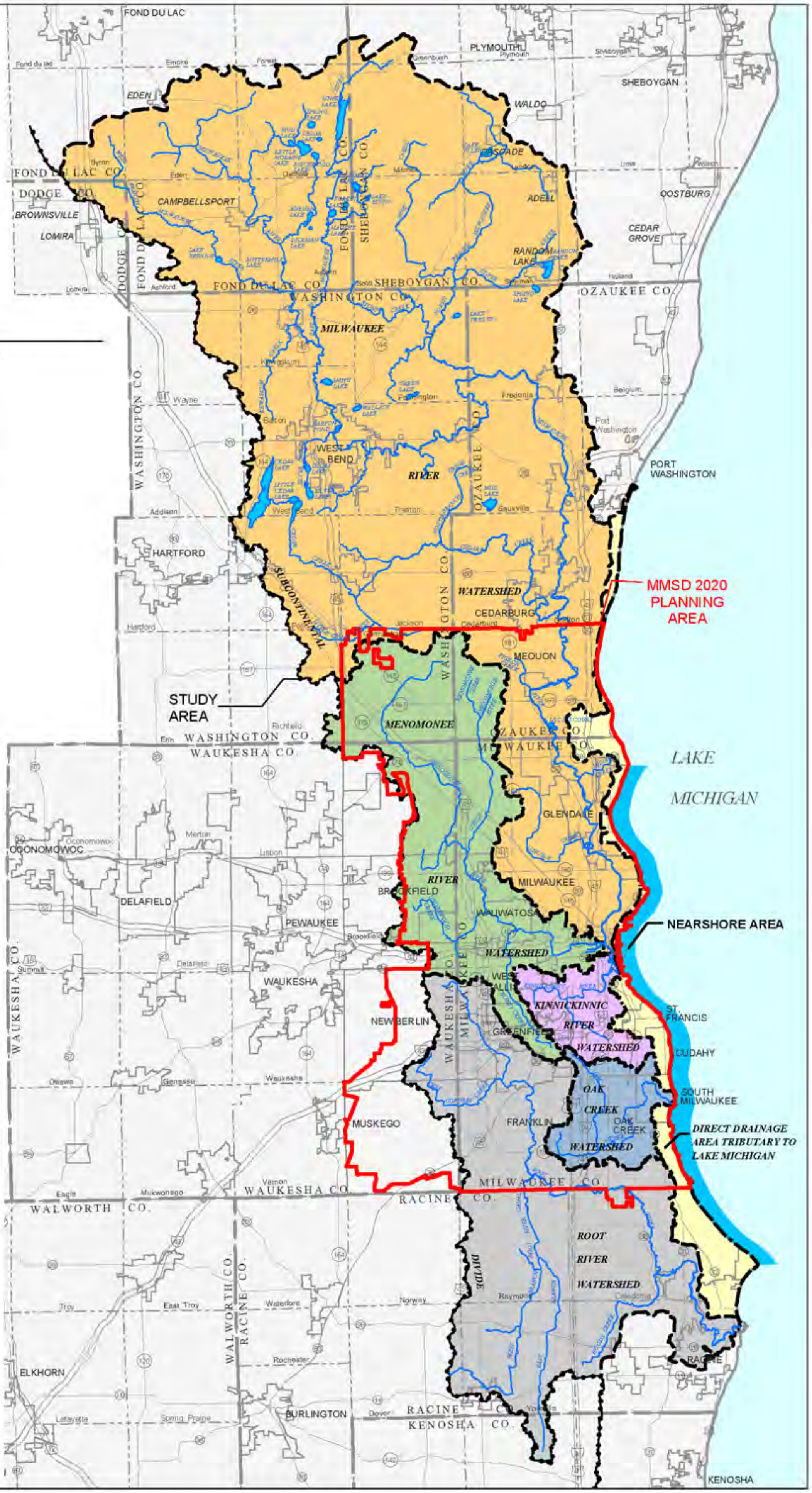
REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE STUDY AREA

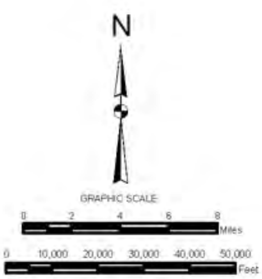
Watershed	Area (square miles)
Kinnickinnic River	24.7
Menomonee River	135.8
Milwaukee River	700.0
Oak Creek	28.2
Root River	197.6
Lake Michigan Direct Drainage Area	40.7
Total	1,127.0

Number of Counties	9
Number of Local Municipalities	88

MMSD PLANNING AREA

Number of Counties	5
Number of Local Municipalities	29
Total Area (square miles)	411





Source: SEWRPC.

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Regional Water Quality Management Plan Update

The Current Effort

During the last quarter of 2003, the Commission initiated work on an update of the regional water quality management plan for the Greater Milwaukee Watersheds. Map 2 illustrates the civil divisions within the study area, and the accompanying table outlines the areal extent of these communities, by respective county.

The effort is being coordinated with a parallel sewerage facilities planning program being carried out by the MMSD and has been designed to utilize the watershed approach consistent with evolving U.S. Environmental Protection Agency policies. Such an approach represents good public planning and administration, as well as being consistent with the requirements of Section 208 of the Federal Clean Water Act.

The approach to carrying out the regional water quality management plan update and the MMSD facilities planning program in a coordinated manner was developed cooperatively by the WDNR, MMSD, and SEWRPC, and has been conceptually formalized under a Memorandum of Understanding.

The regional water quality management plan update will result in the reevaluation and, as necessary, revision of the three major elements comprising the original plan—the land use element, the point source pollution abatement element, and the nonpoint source pollution abatement element. In addition, a groundwater element will be added based largely upon companion work programs.

- Get a brief historic context via the planning background
- Look ahead to see the schedule and planning process steps

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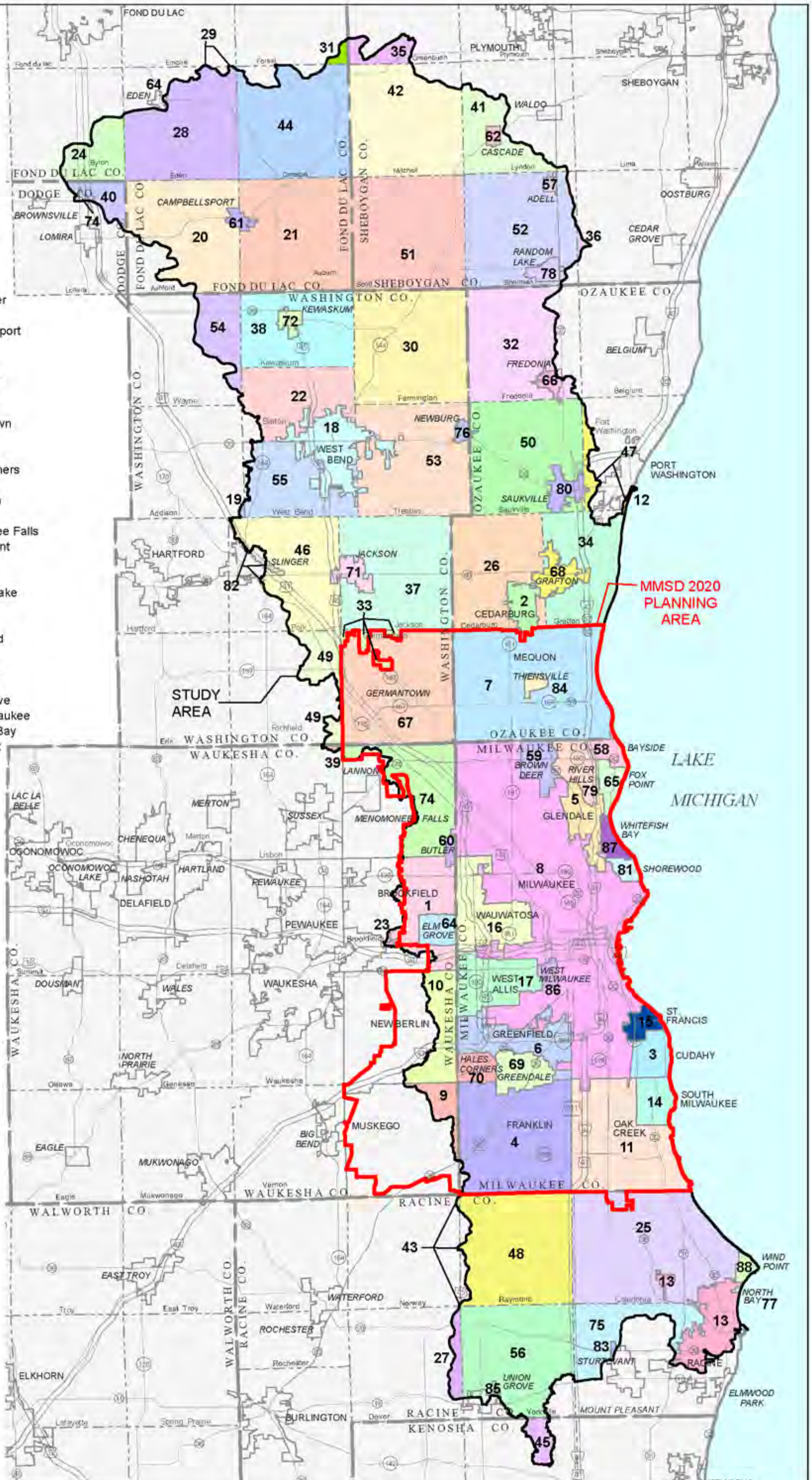
Map 2

CIVIL DIVISIONS WITHIN THE REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE STUDY AREA: 2000

1 City of Brookfield
2 City of Cedarburg
3 City of Cudahy
4 City of Franklin
5 City of Glendale
6 City of Greenfield
7 City of Mequon
8 City of Milwaukee
9 City of Muskego
10 City of New Berlin
11 City of Oak Creek
12 City of Port Washington
13 City of Racine
14 City of South Milwaukee
15 City of St. Francis
16 City of Wauwatosa
17 City of West Allis
18 City of West Bend
19 Town of Addison
20 Town of Ashford
21 Town of Auburn
22 Town of Barton
23 Town of Brookfield
24 Town of Byron
25 Town of Caledonia
26 Town of Cedarburg
27 Town of Dover
28 Town of Eden
29 Town of Empire
30 Town of Farmington
31 Town of Forest
32 Town of Fredonia
33 Town of Germantown
34 Town of Grafton
35 Town of Greenbush
36 Town of Holland
37 Town of Jackson
38 Town of Kewaskum
39 Town of Lisbon
40 Town of Lomira
41 Town of Lyndon
42 Town of Mitchell
43 Town of Norway
44 Town of Osceola
45 Town of Paris
46 Town of Polk
47 Town of Port Washington
48 Town of Raymond
49 Town of Richfield
50 Town of Saukville
51 Town of Scott
52 Town of Sherman
53 Town of Trenton
54 Town of Wayne
55 Town of West Bend
56 Town of Yorkville
57 Village of Adell
58 Village of Bayside
59 Village of Brown Deer
60 Village of Butler
61 Village of Campbellsport
62 Village of Cascade
63 Village of Eden
64 Village of Elm Grove
65 Village of Fox Point
66 Village of Fredonia
67 Village of Germantown
68 Village of Grafton
69 Village of Greendale
70 Village of Hales Corners
71 Village of Jackson
72 Village of Kewaskum
73 Village of Lomira
74 Village of Menomonee Falls
75 Village of Mt. Pleasant
76 Village of Newburg
77 Village of North Bay
78 Village of Random Lake
79 Village of River Hills
80 Village of Saukville
81 Village of Shorewood
82 Village of Slinger
83 Village of Sturtevant
84 Village of Thiensville
85 Village of Union Grove
86 Village of West Milwaukee
87 Village of Whitefish Bay
88 Village of Wind Point

NOTE: MAP REFLECTS YEAR 2000 CORPORATE LIMITS. THE TOWN OF MOUNT PLEASANT INCORPORATED TO A VILLAGE IN THE YEAR 2003.



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GRAPHIC SCALE

0 2 4 6 8 Miles

0 10,000 20,000 30,000 40,000 50,000 Feet

Source: SEWRPC.

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Regional Water Quality Management Plan Update

Planning Background

In 1979, the Commission completed and adopted a regional water quality management plan. The plan was designed, in part, to meet the Congressional mandate that the waters of the United States be made "fishable and swimmable" to the extent practical. It is set forth in SEWRPC Planning Report No. 30, *A Regional Water Quality Management Plan for Southeastern Wisconsin: 2000,* Volume One, *Inventory Findings*, September 1978; Volume Two, *Alternative Plans*, February 1979; and Volume Three, *Recommended Plan*, June 1979.

The regional water quality management plan, as well as the update currently under preparation, provides recommendations for the control of water pollution from such point sources as sewage treatment plants, points of separate and combined sewer overflow, and industrial waste outfalls. It also recommends controlling such nonpoint sources as urban and rural stormwater runoff. In addition to clear and concise recommendations for the control of water pollution, the plan provides the basis for:

- Continued eligibility of local units of government for Federal and State loans and grants in partial support of sewerage system development and redevelopment;
- Issuance of waste discharge permits by the Wisconsin Department of Natural Resources (WDNR);
- Review and approval of public sanitary sewer extensions by the WDNR; and
- Review and approval of private sanitary sewer extensions and large onsite sewage disposal systems and holding tanks by the Wisconsin Department of Commerce.

Subsequently, the Commission completed a report documenting the updated content and implementation status of the regional water quality management plan as amended over approximately its first 15 years: SEWRPC Memorandum Report No. 93, *A Regional Water Quality Management Plan for Southeastern Wisconsin: An Update and Status Report*, March 1995. This status report also documents the extent of progress which had been made toward meeting the water use objectives and supporting water quality standards set forth in the regional plan.

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In order to complete the regional plan updating in a time frame which is consistent with the Milwaukee Metropolitan Sewerage District commitments for the completion of a new facilities plan, the updating process is being accomplished primarily with existing data. This will allow the plan update to be largely completed in approximately 30 months, extending to the end of 2006. Selected elements may be completed earlier as required by the MMSD facilities planning schedule. Plan documentation, continuing public involvement, and ongoing support for the MMSD facilities planning will be carried out in early 2007.

- View interagency planning process steps, including joint public involvement, from the plan Introduction and Background
- Read the full regional plan chapters as they are posted throughout this study

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Plan Chapters

Planning Report No. 50

- List of Chapters
- Chapter I - Introduction and Background
- Chapter II - Description of the Study Area
- Chapter III - Existing and Historical Surface Water and Groundwater Conditions
- Chapter IV - Sources of Water Pollution
- Chapter V - Water Resource Simulation Models and Analytic Methods
- Chapter VI - Legal Structures Affecting the Regional Water Quality Management Plan Update
- Chapter VII - Planning Objectives, Principles, and Standards
- Chapter VIII - Future Situation: Anticipated Growth and Change
- Chapter IX - Development Of Alternative Plans: Description And Evaluation
- Chapter X - Recommended Water Quality Management Plan
- Chapter XI - Plan Implementation
- Chapter XII - Summary
- Appendix VII-1 - Objectives, Principles, and Standards - Preliminary Draft
- Appendix M - Water Quality Summary Statistics for the Recommended Plan - Preliminary Draft
- Appendix N - Criteria and Guidelines for Stream Crossings to Allow Fish Passage and Maintain Stream Stability within the Regional Water Quality Management Plan Update Study Area - Preliminary Draft
- Appendix O - Recommended Inland Lake Management Measures - Preliminary Draft
- Appendix Q - Public Sector Costs for Components of the Recommended Regional Water Quality Management Plan Update by Municipality, County, or Agency - Preliminary Draft

Technical Report No. 39

- Chapter I - Introduction - Preliminary Draft
- Chapter II - Water Quality Definitions and Issues - Preliminary Draft
- Chapter III - Data Sources and Methods of Analysis -

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Regional Water Quality Management Plan Update

Advisory Committee Structure

Advisory committees form a most fundamental type of public involvement, with strong prospects for the planning program contributions to be of a broad and representative nature. Three types of advisory bodies are guiding the regional water quality management plan update, one of a technical nature, one to provide intergovernmental coordination and policy advice and assistance, and one citizen based.

Technical Advisory Committee (TAC)

The technical advisory committee is an integral part of the organization of the study, created by action of the Regional Planning Commission. The composition of this committee includes broad technical representation, including technical staffs, academia, business, agriculture, community and environmental organization representation, among others. The committee is designed to represent the entire study area. Included in its purview is a review of the draft planning report preparation and related technical work at important milestones. The committee also will be asked to review and provide advice on all important technical matters and decisions. Follow these links for a listing of the TAC membership, and to find plan chapters reviewed and approved by the Committee.

Watershed Officials Forum

In addition to the technical committee, a Watershed Officials Forum has been organized to provide a basis for periodic briefings and to obtain feedback and input from the units and agencies of government on a watershedwide basis. This forum is one of the shared advisory bodies utilized by both the Commission and MMSD.

Citizens Advisory Council (CAC)

Another shared advisory body, the Citizens Advisory Council, has been formed in cooperation with the MMSD 2020 facilities planning program to actively involve private citizens, businesses, special interest groups, and industry representatives in the development of the planning studies. The Council functions as a representative body of concerned and diverse citizens. Materials pertaining to the CAC and interrelationships with other project committees can be viewed at the MMSD website.

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Regional Water Quality Management Plan Update

Public Involvement Approach

The Commission's public involvement goal is to ensure early and continuous public notification about regional water quality planning activities, provide meaningful information concerning such work, and obtain participation in and input to regional water quality planning efforts. In short, public involvement will be essential to the conduct of the regional water quality management plan update.

The public involvement activities are being focused through the use of advisory committees, cooperative actions with related ongoing public involvement efforts, and other public involvement and watershed education programming.

It should be noted that MMSD and the Commission have developed and initiated a joint public involvement program for a number of key purposes, including joint activity planning and public events, several shared committees, and deferring to one another as appropriate in the preparation of informational and educational materials that both programs can utilize. Examples of the latter are newsletters and "State of the Watershed" booklets and pictorial tour maps produced by MMSD under its Water Quality Initiative.

- View the full Public Involvement Program Summary for the regional water quality management plan update
- Consult other helpful links
- Contact us with questions and comments

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Southeastern Wisconsin Regional Planning Commission

Regional Water Quality Management Plan Update

Links

Helpful links for water quality planning, resource materials, and activities related to the regional water quality management plan update:

- Milwaukee Metropolitan Sewerage District's Water Quality Initiative
- Wisconsin Department of Natural Resources publications
- University of Wisconsin-Extension publications
- Milwaukee River Basin Partnership
- Root-Pike Watershed Initiative Network
- SEWRPC publication list

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Regional Water Quality Management Plan Update

Contact us

For further information, or to offer comments, you may contact the following individuals:

Michael G. Hahn, P.E., P.H.
Chief Environmental Engineer
Southeastern Wisconsin Regional Planning Commission
(262) 547-6721

Gary K. Korb
Regional Planning Educator
UW-Extension working with SEWRPC
(262) 547-6721

Commission staff may also be contacted through the following methods:

E-mail:	mhahn@sewrpc.org or gkorb@sewrpc.org
U.S. Mail:	Southeastern Wisconsin Regional Planning Commission P.O. Box 1607 Waukesha, WI 53187-1607
Fax:	(262) 547-1103

To request a hard copy of any documents available on this website:

E-mail:	pubrequest@sewrpc.org
Phone:	(262) 547-6721
Fax:	(262) 547-1103

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Appendix A-5

BROCHURES FOR CLEAN RIVERS/CLEAN LAKES WATERSHED PLANNING CONFERENCES

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Southeastern Wisconsin Regional Planning Commission
P.O. Box 1607
Waukesha, Wisconsin 53187-1607

CONFERENCE ANNOUNCEMENT

CLEAN RIVERS,

CLEAN LAKES

A watershed planning conference targeting the Greater Milwaukee Watersheds - from the Northern Kettle Moraine, south to Union Grove, and from the Subcontinental Divide east to Milwaukee and Racine, plus all points between, downstream toward Lake Michigan

February 10, 2004
Four Points Sheraton, Milwaukee North Hotel
STH 57 and Brown Deer Road
Brown Deer, Wisconsin

Sponsored by the
Southeastern Wisconsin Regional Planning Commission
and the
Milwaukee Metropolitan Sewerage District

In part, under a grant from the
U.S. Environmental Protection Agency

And in cooperation with the
Great Lakes Nonpoint Abatement Coalition
National Park Service
University of Wisconsin-Extension
and the
Wisconsin Department of Natural Resources

WATERSHED PLANNING CONFERENCE

Our Purpose

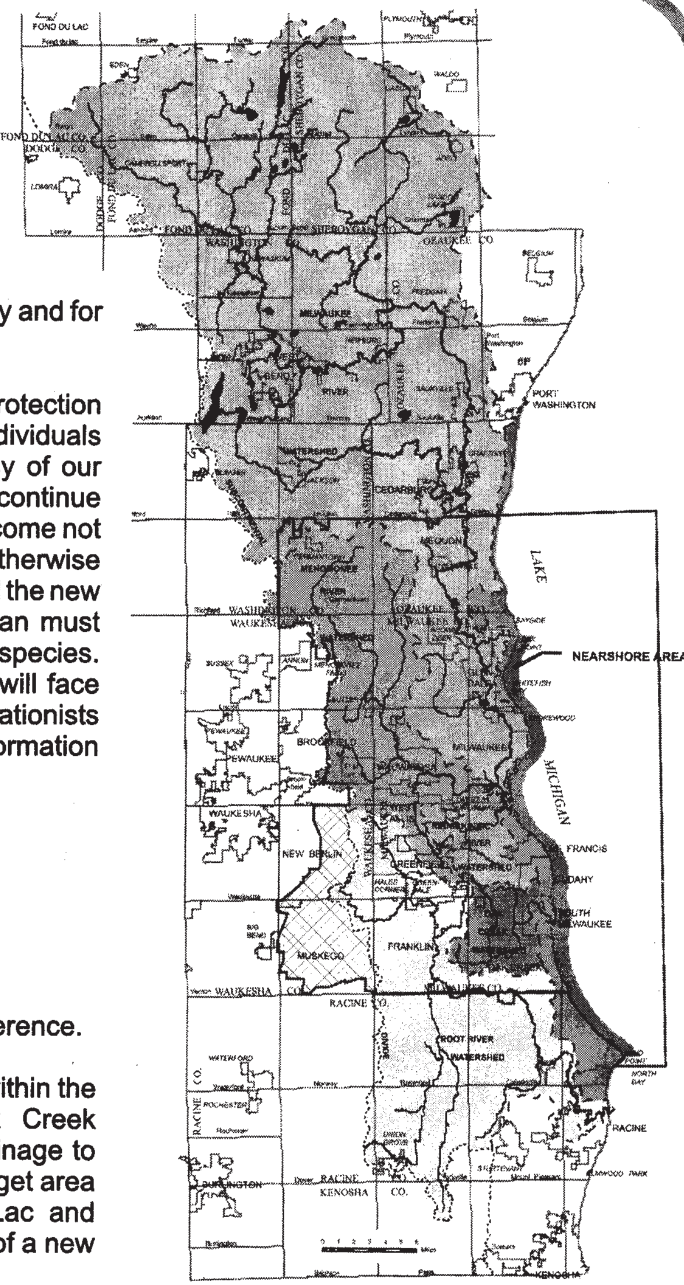
This day-long event will examine our actions within the Greater Milwaukee Watersheds and how they impact local streams, Lake Michigan, groundwater, and ultimately our drinking water. Learn about:

- Resource conditions
- Present needs
- Potential risks
- What you can do to help plan for quality waters both today and for future generations

Much has already been accomplished for water resource protection in Southeastern Wisconsin, and local communities and individuals can be credited for positive efforts. HOWEVER ..... many of our waters remain far from fishable and swimmable, as threats continue to be identified, or even grow. Some drinking water has become not only a quality concern, but also a quantity concern, in an otherwise "water rich" region. And while some areas are alarmed by all the new residents and associated land use changes, Lake Michigan must brace for both the associated runoff and the latest invasive species. Governmental units, businesses, and certain landowners will face increasing regulations and the ire of citizens and water recreationists because of such factors. Just keeping up with all of the information can be challenging.

For these reasons, we've invited:
- elected and appointed officials,
- water resource teams and councils,
- public and consulting agency staff,
- environmental groups,
- development industry representatives,
- and interested citizens to this important water quality conference.

The focus for the day will be on wise planning and actions within the Milwaukee, Menomonee, Kinnickinnic, Root, and Oak Creek watersheds, as well as small adjoining areas of direct drainage to Lake Michigan - all part of the Great Lakes system. Our target area of some 1,100 square miles, from southern Fond du Lac and Sheboygan Counties to Racine County, is also the subject of a new interagency planning effort which will be outlined.



Please Reserve February 10, 2004 for this important watershed planning conference

Registration will be from 8:00-8:30, with plenary sessions all day.

Registration Fee

Your $10 conference fee, due February 5th, includes morning coffee and rolls, breaks, and the luncheon. You may register by fax, e-mail, or regular mail with payment included. The latter is preferable for fast check-in at the registration table.

Additional Information

Questions about the program or the conference can be addressed to:
Gary Korb, UW-Extension Regional Planning Educator working with SEWRPC.
(262) 547-6721 ext. 234

WATERSHED PLANNING CONFERENCE

Agenda

8:00 Registration
Coffee, rolls, and conversation

8:30 Welcome and Introduction

Philip C. Evenson, Executive Director, Southeastern Wisconsin Regional Planning Commission (SEWRPC)

Kevin L. Shafer, Executive Director, Milwaukee Metropolitan Sewerage District (MMSD)

8:45 Early History Of Water Use and Abuse In the Region

John A. Gurda, Milwaukee Area Historian

- Questions and Answers

9:15 Lake Michigan and the Rivers That Run To It

Lake Michigan Basin Challenges and Opportunities

Judy Beck, Lake Michigan Team Manager, U.S. Environmental Protection Agency

The State of Our Watersheds - Progress in Wisconsin and its Southeastern Counties

Todd L. Ambs, Administrator, Division of Water, Wisconsin Department of Natural Resources (WDNR)

- Questions and Answers

Break

10:30 Water Quality Planning, Regulations, and Expectations

A Once-in-a-Generation Opportunity - Regional Water Quality Management Plan Update

Robert P. Biebel, Chief Environmental Engineer, SEWRPC

Major Upcoming Investments and the Involvement of Communities and Citizens - MMSD 2020 Facilities Plan

Karen L. Sands, Watershed Planning Manager, and Timothy R. Bate, Engineering Planning Manager, MMSD

Water Resource Regulations, Today and In the Future - Complementary State Efforts

Charles G. Burney, Special Assistant, Bureau of Watershed Management, WDNR

- Questions and Answers

12:00 Luncheon Program: Local Governments and a Clean Environment

David A. Ullrich, Director, Great Lakes Cities Initiative, Chicago

- Questions and Answers

1:15 Exploring Public Understanding and Acceptance

What the Public Knows / Feels about Water Quality Issues - And How Today's Conference Attendees Compare

Kevin L. Shafer, Executive Director, MMSD

Development Alternatives With an Eye Toward Watershed Friendly Design

Robert G. *Brownell, CEO, Bielinski Homes*

Upstream Successes - Local Benefits and Downstream Gains

Daniel W. Stoffel, Washington County Board Supervisor and Farmer, Town of Kewaskum

- Questions and Answers

Break

2:45 Difficult Remaining Issues - But Knowledge Brings Promise

The Continuing Problem of Public Beach Closures

Dr. Sandra McLellan, Assistant Scientist, UW-Milwaukee Great Lakes WATER Institute

Groundwater and Drinking Water Supplies - Facts and Concerns

Madeline B. Gotkowitz, Hydrogeologist/Assistant Professor, Wisconsin Geological and Natural History Survey

Everyone Taking Responsibility - Restoring Resource Quality and Hydrologic Integrity

Roger T. Bannerman, Non-point Source Monitoring Specialist, WDNR

- Questions and Answers

4:00 Parting Thoughts

Philip C. Evenson and Kevin L. Shafer

4:15 Adjournment and Social Hour

843

Milwaukee Metropolitan Sewerage District
260 W. Seeboth Street
Milwaukee, WI 53204

Water Quality INITIATIVE

Conference Announcement

Clean Rivers, Clean Lakes II

The 2nd Annual Watershed Planning Conference targeting the Greater Milwaukee Watersheds - from the Northern Kettle Moraine, south to Union Grove, and from the Subcontinental Divide east to Milwaukee and Racine, plus all points between, downstream toward Lake Michigan

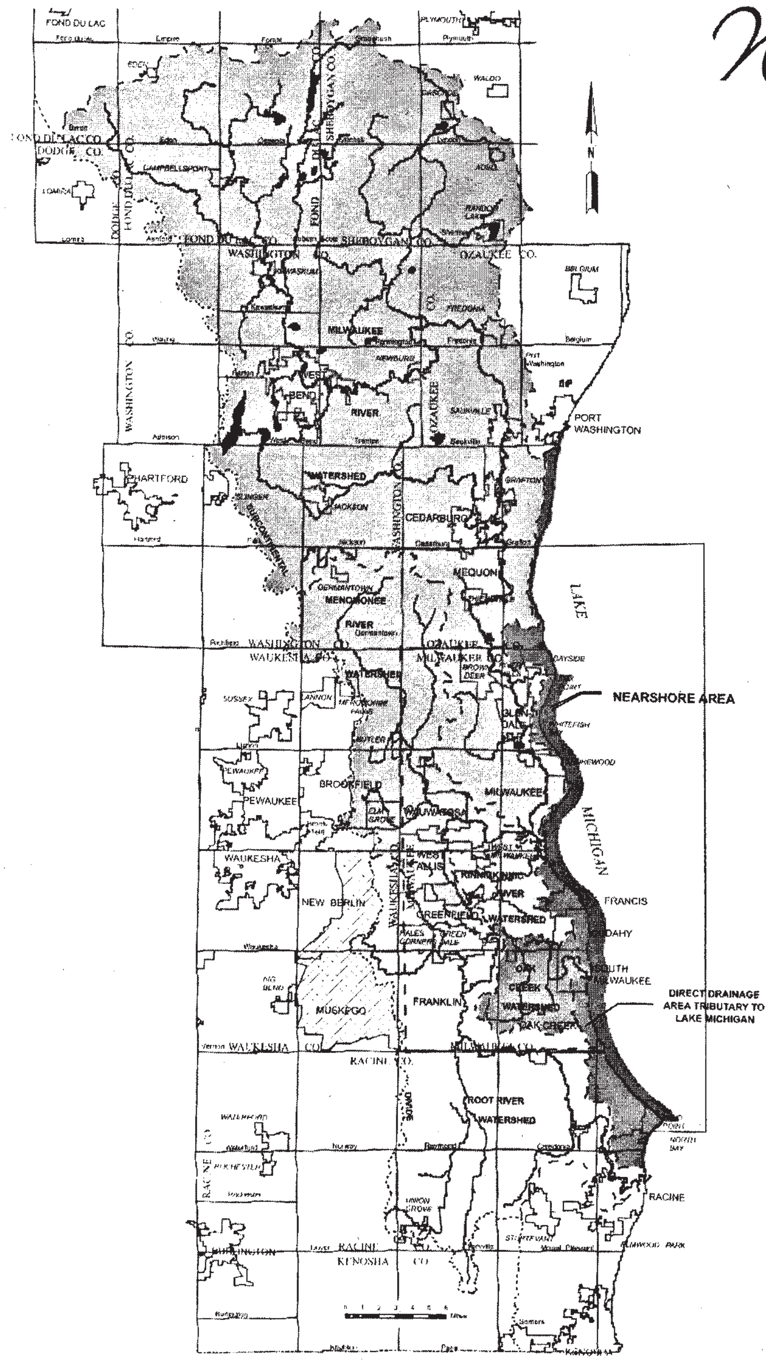
February 23, 2005
Four Points Sheraton, Airport Location
4747 S. Howell Avenue
Milwaukee, Wisconsin

Sponsored by:
Milwaukee Metropolitan Sewerage District
Southeastern Wisconsin Regional Planning Commission

Conference Planning Committee:
Milwaukee Metropolitan Sewerage District
National Park Service
Southeastern Wisconsin Regional Planning Commission
University of Wisconsin - Milwaukee
University of Wisconsin-Extension
Wisconsin Department of Natural Resources

In Collaboration with:
American Society of Civil Engineers (WI Section- Southeast Branch)
Greater Milwaukee Committee
Keep Greater Milwaukee Beautiful
Metropolitan Builders Association
Metropolitan Milwaukee Association of Commerce
Milwaukee River Basin Partnership
River Revitalization Foundation
Root-Pike WIN
Wisconsin Chapter, American Planning Association

Water Quality INITIATIVE
www.mmsd.com/wqi



The Water Quality Initiative presents the second annual

Watershed Planning conference

The rains of May in southeastern Wisconsin invigorated our on-going regional examination of water quality in our rivers, lakes and streams.

For the past two years, regional and local agencies, partnering with citizens and local community organizations, have been working on updating our plans for regional water quality and the facilities and policies needed to make those improvements. This second annual watershed planning conference will focus our attention on the concerns of water quality and what we as homeowners, businesses, appointed and elected municipal officials, and conservationists can do. This conference will include a look at what happens to water quality when it rains, the region's interconnected sewer systems, numerous local and regional policy issues, case studies from other areas, and discussions of what's being done (and can be done in the future) to manage rain water.

For these reasons, we've invited:

- elected and appointed officials,
- water resource teams and councils,
- public and consulting agency staff,
- environmental groups,
- development industry representatives,
- and interested citizens to this important water quality conference.

The focus for the day will be on wise planning and actions within the Milwaukee, Menomonee, Kinnickinnic, Root, and Oak Creek watersheds, as well as small adjoining areas of direct drainage to Lake Michigan - all part of the Great Lakes system. Our target area of some 1,100 square miles, from southern Fond du Lac and Sheboygan Counties to Racine County, is also the subject of on-going interagency planning efforts which will be outlined.

Please Reserve February 23, 2005
for this important watershed planning conference
Registration will be from 8:00-8:30, with sessions all day.

Registration Fee: Your $20 conference fee, due February 15th, includes morning coffee and rolls, breaks, and the luncheon. You may register by fax, e-mail, or regular mail with payment included. Pre-payment by mail will allow for faster check-in at the registration table.

Additional Information: Questions about the program or the conference can be addressed to:
Karen Sands, Watershed Planning Manager, MMSD
(414) 225-2123 or ksands@mmsd.com

The Water Quality Initiative presents the second annual

Watershed Planning conference

8:00 ***Registration, coffee, rolls and conversation***

8:30 ***Welcome***
Kevin Shafer, Executive Director, Milwaukee Metropolitan Sewerage District (MMSD)

8:45 ***Opening Remarks***
Tom Barrett, Mayor, City of Milwaukee
Mayor Barrett will welcome conference participants and address the importance of water resource planning and regional cooperation.

Gary Becker, Mayor, City of Racine
Mayor Becker will address the benefits and responsibilities of being a Great Lakes City and the importance of protecting our greatest natural resource.

9:15 ***Evolution of Stormwater Management***
Russ Rasmussen, Director - Bureau of Watershed Management, Wisconsin Department of Natural Resources (WDNR)
Mr. Rasmussen will address how the WDNR has come to recognize stormwater as a major source of pollution and the subsequent regulation and management of stormwater in southeast Wisconsin and statewide.

9:45 ***Planning Projects Underway***
Moderator – Dr. Nancy Frank, University of Wisconsin – Milwaukee (UWM)
The presenters will provide updates on the major watershed planning studies being led by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) and the MMSD
• *Status of the MMSD 2020 Facilities Plan* – Karen Sands, Watershed Planning Manager, MMSD and Timothy Bate, Engineering Planning Manager, MMSD
• *Status of the Regional Water Quality Management Update* – Robert Biebel, Chief Environmental Engineer, SEWRPC

Break

10:30 ***Water, Water Everywhere – Let's Manage It!***

SESSION A

• ***Infiltration and Inflow 101***
Moderator – Dr. Nancy Frank – UWM
The presenters will provide the audience with an understanding of the basics of the infiltration and inflow issues.
· ***Intro to I/I***
Timothy Bate, Engineering Planning Manager, MMSD
· ***DNR – Why We Care***
Jack Saltes, Wastewater Engineer, WDNR

SESSION B

• ***Infiltration and Inflow – the Role of Local Governments***
Moderator – Dr. Carol Diggelman, Milwaukee School of Engineering
The presenters will provide the audience with information from actual programs and studies completed regarding lateral replacement and infiltration/inflow issues.
· ***Local Government Case Study – Lateral Replacement Program in Brown Deer, WI***
Larry Neitzel, Superintendent of Public Works, Brown Deer, WI
· ***Legal Considerations Relating to Private Property I/I Programs***
Attorney Michael Simpson, Reinhart Boerner Van Deuren s.c.
· ***Overview of New Commerce Department Storm Codes***
Jim Zickert, Plumbing Consultant, Wisconsin Department of Commerce

SESSION C

• ***What's Happening in the Community? – Part 1***
Moderator – Angie Tornes, Rivers and Trails Program, National Park Service (NPS)
Preser. :s will offer information about stormwater projects in the community which are underway or built.
· ***Walnut Way and Environmental Stewardship***
Sharon Adams, Walnut Way Conservation Corp
· ***Miller Brewing Company Rain Garden and Bioretention Swale***
Willie Gonwa, Triad Engineering
· ***Tonawanda School Rain Garden***
Michele Trawicki, Instructional Resource Teacher, Tonawanda School, Elm Grove, WI

11:45 Lunch and Keynote Speaker
Paul Loeb – *The Impossible Will Take a Little While*: Acting for Change in a Time of Fear

1:15 ***Wet Weather Impacts to Lake Michigan***
Moderator – Kevin Shafer, MMSD
The presenter will share information from a research study on the fate and transport of bacteria into Lake Michigan and new research on storm pollution at Bradford Beach.
The Fate and Transport of Bacterial Contamination in our Rivers and Lake Michigan
Dr. Sandra McLellan, Assistant Scientist, UWM Great Lakes WATER Institute

2:15 ***Brief Descriptions of the Milwaukee River Basin Partnership*** (Steve Books, MRBP President) ***and Root/Pike WIN*** (Allison Werner, Executive Director)
River Basin Partnership Groups are working creatively to address the concerns of Lake Michigan and the rivers that flow into it.

Break

2:45 ***Taming the Raindrops***

SESSION A

• ***Wet Weather and the Bottom Line***
Moderator – Tim Sheehy, President, Metropolitan Milwaukee Association of Commerce
Presenters will discuss the impacts to businesses when spending on stormwater – related projects.
· ***Positive Aspects of Green Roofs and Related Technologies***
David Ciepluch, Office of Energy Options, We Energies
· ***The Benefits of Porous Pavement***
Steve Nikolas, President, Zabest Commercial Group
· ***Stormwater Benefits of Conservation Subdivisions***
John Siepmann, Sales Agent, Siepmann Realty

SESSION B

• ***What's Happening in the Community? – Part 2***
Moderator – Angie Tornes, NPS
Presenters will offer information about stormwater projects in the community which are underway or built.
· ***Sustainable Development – Building for the Future: Lessons from Utilizing Green Principles in Multi-Family Housing***
Rocky Marcoux, Commissioner, Department of City Development, Milwaukee
· ***Advancing Sustainable Development in Milwaukee's Menomonee River Valley***
Peter McAvoy, Director of Environmental Health, 16th Street Community Health Center
· ***The Importance of Ulao Creek***
Mike Grisar, President, Ulao Creek Partnership

SESSION C

• ***Resources Available to Local Governments***
Moderator – Gary Korb, Regional Planning Educator, SEWRPC/UW-Extension
Presenters will discuss various tools, techniques and resources that are available
· ***Outreach and Education Resources for Your Community***
Andy Yencha, River Basin Educator, UW-Extension
· ***Using Funding Resources to Create a Stormwater Management System at the Allis Chalmers Brownfield Site in West Allis***
Rob Montgomery, Principal, Montgomery and Associates
· ***A Cool Tool for LID***
Kevin Shafer, Executive Director, MMSD

SESSION D

• ***Sedimentation and Erosion***
Moderator – Chris Magruder, Community Environmental Liason, MMSD
Presenters will discuss information on the issues surrounding sedimentation and erosion of our rivers.
· ***West Branch of Sugar River: Case Study of a Successful Partnership for River Restoration***
Frank Fetter, Executive Director, Upper Sugar River Watershed Association
· ***Technical Report on Statewide Sedimentation Issues***
Dale Robertson – US Geological Service, WI

4:00 ***Call to Action***
Paul Loeb

4:15 ***Closing***
Phil Evenson, Executive Director, SEWRPC

Conference presentations will be posted to the project Web site at www.mmsd.com/wqi as they are available. Printouts of presentations will not be provided at the conference in order to preserve natural resources.

Keynote Speaker Paul Loeb

Based on thirty years examining the psychology of social involvement, Paul Loeb will explore how ordinary citizens can make their voices heard and actions count in a time when we're told neither matter. He'll look at how people get involved in larger community issues and what stops them from getting involved; how they burn out in exhaustion or maintain their commitment for the long haul; how involvement can give a sense of connection and purpose rare in purely personal life. He'll focus this conversation on our role as stewards of our local water system.

Clean Rivers, Clean Lakes III

The 3rd Annual Watershed Planning Conference targeting the Greater Milwaukee Watersheds - from the Northern Kettle Moraine, south to Union Grove, and from the Subcontinental Divide east to Milwaukee and Racine, plus all points between, downstream toward Lake Michigan

March 2, 2006
Italian Community Center
631 E. Chicago Street
Milwaukee, Wisconsin

Sponsored by:
Milwaukee Metropolitan Sewerage District
Southeastern Wisconsin Regional Planning Commission

Conference Planning Committee:
Milwaukee Metropolitan Sewerage District (MMSD)
National Park Service
Southeastern Wisconsin Regional Planning Commission (SEWRPC)
University of Wisconsin - Milwaukee (UWM)
University of Wisconsin - Extension
Wisconsin Department of Natural Resources (WDNR)

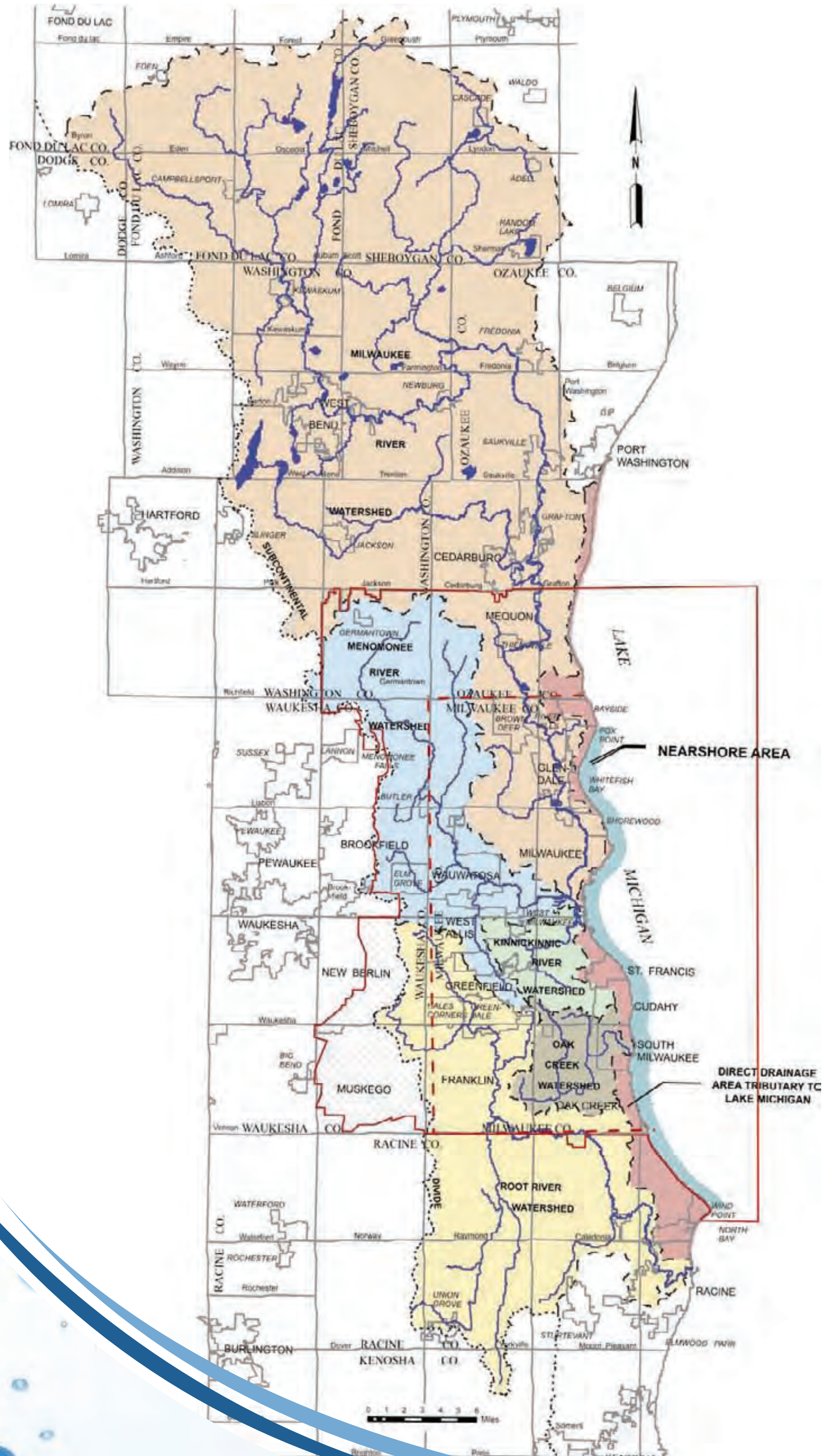
In Cooperation with:
Wisconsin Chapter, American Planning Association
Sierra Club
Root-Pike WIN
River Revitalization Foundation
Milwaukee River Basin Partnership
Metropolitan Milwaukee Association of Commerce
Keep Greater Milwaukee Beautiful
Greater Milwaukee Committee
Friends of Milwaukee's Rivers

Partially Funded by Grants from:
U.S. Environmental Protection Agency (USEPA) –
• *Lake Michigan Watershed Academy*
• *Great Lakes National Program Office*

Water Quality INITIATIVE
www.mmsd.com/wqi

WQI 05-005b_WEB

Greater Milwaukee Watersheds



MMSD & SEWRPC present the third annual

Watershed Planning conference

Examining water quality in the rivers, lakes and streams of Fond du Lac, Milwaukee, Ozaukee, Racine, Sheboygan, Washington & Waukesha Counties

For the past three years, MMSD and SEWRPC, partnering with WDNR, USEPA, local environmental organizations, and communities have worked on updating both the SEWRPC Regional Water Quality Management Plan for the Greater Milwaukee Watersheds and the MMSD 2020 Facilities Plan. This third conference will feature that planning process, including presentations on 1) existing water quality conditions and sources of pollution in the Kinnickinnic, Menomonee, Milwaukee, and Root River, and Oak Creek watersheds and 2) the preliminary alternative plans that have been developed by MMSD and SEWRPC with an early opportunity for you to comment. The conference will include a look at watershed modeling, what it is and how it is used; inventory findings of instream and riparian habitat; information about water quality and the origins of pollution in our waterways; the magnitude, challenges and shared solutions integral to abating pollution; the complexity of water quality-related issues; the costs of possible approaches to improve water quality; and, finally, the necessity of everyone working together to preserve the Greater Milwaukee Watersheds.

For these reasons, we've invited:
- Elected and appointed officials
- Water resource teams and councils
- Public and consulting agency staff
- Environmental groups
- Industry representatives
- Developers, and
- Citizens interested in improving and protecting our water resources

The focus of this year's conference will be on the planning and actions within the Greater Milwaukee Watersheds, as well as small adjoining areas of direct drainage to Lake Michigan – all part of the Great Lakes System.

March 2, 2006

Registration from 7:30-8:15, with sessions all day.

Registration Fee: Your $25 conference fee, due February 20, includes conference materials, morning coffee and rolls, breaks, and the luncheon. February 21 - March 1 conference fee will be $30. Day of the Conference fee will be $35. Pre-payment by mail will allow for faster check-in at the registration table.

For More Information About the Conference:
- Please contact Bernadette Berdes - (414) 225-2161 or conference@mmsd.com
- Visit www.mmsd.com/wqi
- Visit www.sewrpc.org/waterqualityplan

Watershed Planning conference

7:30 Registration
Coffee, rolls, and conversation

8:15 Welcome
Mayor Tom Barrett – City of Milwaukee (Invited)

- **Conference Overview**
  A Watershed Event in Joint Planning – From History to Public Comments on Alternatives
  Gary Korb, Regional Planning Educator, UW-Extension/SEWRPC

- **Historical Perspective on Water Quality**
  Where We've Come From . . . Reflections on Problems and Solutions
  John Gurda, Milwaukee Area Historian

- **The Big Picture**
  The Lake Michigan Basin and the Region's Important Niche
  Judy Beck, Lake Michigan Team Manager, USEPA

- **State of the Greater Milwaukee Watersheds**
  Basis of Plan Development
  Karen Sands, Watershed Planning Manager, MMSD

  Existing Water Quality Data and Pollution Sources
  Michael Hahn, Chief Environmental Engineer, SEWRPC

  Water Quality Modeling and How It Is Being Used
  Dr. Leslie Shoemaker, Vice President, Water Resources, Tetra Tech, Inc.

BREAK

11:00 Details on Watersheds: Status & Building Blocks of Alternative Plans
Concurrent Sessions - Participants Choose A, B, or C

Session A – Water Resource Science As Applied to the Current Planning
Moderator: Chris Magruder, Community and Environmental Liaison, MMSD

- Instream Habitat, Biological Conditions and Fishery Potential
  Dr. Thomas Slawski, Principal Planner, SEWRPC
- Wisconsin Buffer Initiative for Rural Water Quality Treatment
  Dr. Peter Nowak, Soil & Water Management Specialist, UW-Madison & UW-Extension
- Latest Studies on Bacteria in Stormwater
  Dr. Sandra McLellan, Assistant Scientist, UWM Great Lakes WATER Institute (Invited)

Session B – Technologies Being Considered in the Planning
Moderator: Shirley Krug, Project Manager, MMSD

- Village of Shorewood Wet Weather Flow Management Program
  Dr. Mustafa Emir, Water Group Leader, Bonestroo & Associates
- Applications of Stormwater BMPs in Southeastern Wisconsin
  David Kendziorski, President, Stormtech, Inc.
- Physical/Chemical Wastewater Treatment of Peak Wet Weather Flows: Pilot Study Results
  Richard Onderko, Senior Project Manager, MMSD

Session C –Programs, Policies, & Regulations Affecting Watershed Planning
Moderator: Angie Tornes, Rivers and Trails Program, U.S. National Park Service

- Milwaukee River North Branch Wildlife and Farming Heritage Area
  Dale Katsma, Wildlife Biologist, Wisconsin Department of Natural Resources (WDNR)
- Status of Separate Sewer Overflow Regulations
  Duane Schuettpelz, Section Chief, Wastewater Permits & Pretreatment, WDNR
- Permitting and Stormwater Requirements for Municipalities (NR 151 & NR 216)
  James Ritchie, Stormwater Specialist, WDNR

12:10 Lunch & Keynote Speaker
Clean Water, Healthy Future
Jeffrey Browne, President, Public Policy Forum (Invited)

1:20 Details of the MMSD's 2020 Facilities Planning Process
Water Quality Improvement for the Greater Milwaukee Watersheds
Kevin Shafer, Executive Director, MMSD

Alternatives to Improve Our Water Resources
- The Watershed Planning Perspective
  Charles Krohn, Regional Water Leader, WDNR
- Considering Our Options, Trade-Offs, Responsibilities, and Costs
  Dr. Nancy Frank, Chair, Department of Urban Planning, UWM
- Overview of Screening and Preliminary Alternatives
  William Krill, Senior Project Manager, HNTB Corporation

BREAK

2:45 More Details on Alternative Plans, or Other Planning Considerations
Concurrent Sessions - Participants Choose D or E

Session D – Alternative Plans Focusing on the MMSD Planning Area
Moderator: Timothy Bate, Engineering Planning Manager, MMSD

- Preliminary Alternatives from the MMSD 2020 Facilities Planning Project and SEWRPC's Regional Water Quality Management Plan Update
  William Krill, Senior Project Manager, HNTB Corporation
  Dr. Leslie Shoemaker, Vice President, Water Resources, TetraTech, Inc.
  David Bennett, Great Lakes Infrastructure Practice Lead, Brown & Caldwell

Continued on following page...

Session E – Other Watershed - Based Planning Considerations
Moderator: David Fowler, Project Manager, MMSD

- Estuary and Nearshore Lake Michigan Fishery
  Bradley Eggold, Supervisor, Southern Lake Michigan Fisheries Work Unit, WDNR
- Accelerated Conservation Reserve Enhancement Program for Streamside Buffers
  Andrew Holschbach, Director, Planning, Resources and Land Management Department, Ozaukee County
- Milwaukee Harbor Remedial Action Plan Status
  Marsha Burzynski, Water Resources Planner, WDNR

4:00 A Leadership Perspective on What Lies Ahead
Panel Discussion on What Was Heard Today and Prospects for the Future
Moderator: Philip Evenson, Executive Director, SEWRPC

- The Headwaters Perspective
  Daniel Schmidt, Administrator, Village of Kewaskum, SEWRPC Commissioner & Chair of the Regional Water Quality Management Plan Advisory Committee
- The Greater Milwaukee Watersheds Perspective
  Peter McAvoy, Director of Environmental Health, Sixteenth St. Community Health Center
- The Municipal Perspective
  Neil Palmer, President, Village of Elm Grove
- The MMSD & Green Team Perspective
  Preston Cole, MMSD Commissioner & City of Milwaukee Green Team Steering Committee Member

4:45 Summary & Adjornment

4:45 - 6:30 MMSD & SEWRPC Joint Open House
An opportunity for you to discuss what you heard today with technical staff, ask questions and comment on the preliminary alternatives presented during the conference.

conference "At a Glance"

8:15 Morning Plenary Sessions
Gain an historical perspective on water quality in the area, be updated about issues and changes in the Lake Michigan Basin, and hear new findings regarding the state of the Greater Milwaukee Watersheds.

11:00 Concurrent Sessions
Choose from among three sessions, all designed to examine different aspects of water quality status and the underpinnings for plan alternatives:

A: Water Resource Science...from rural streams to nearshore Lake Michigan, study applications for the fishery, farmland management, and human use.
B: Technologies Being Considered...results of urban demonstrations, neighborhood practices, and pilot projects integral to the planning.
C: Programs, Policies, and Regulations...major initiatives from voluntary to mandatory that affect future upstream heritage and present municipal operations.

1:20 Early Afternoon Plenary Session
Learn the framework for improvement in the Greater Milwaukee Watersheds, featuring the direction we are heading and preliminary plan alternatives for getting there. Perspectives, options, trade-offs, responsibilities, costs, and future scenarios will all be discussed.

2:45 Concurrent Sessions
Choose from two different sessions, both offering more detail:

D: Preliminary Plan Alternatives Focusing on the MMSD... hear information about the preliminary plans that include A - completing all committed MMSD projects, B - meeting regulations on overflows and nonpoint source pollution and C – meeting the publicly inspired goals, and all current in-stream water quality criteria, using the watershed approach.
E: Other Watershed-Based Planning... considerations that complement the joint agency planning, examining major efforts both upstream and downstream.

4:00 Closing Plenary Session
Hear viewpoints on the day's proceedings and prospects for the future from area leaders representing the public, and nonprofit sectors, as well as jurisdictions of various types in different portions of the Greater Milwaukee Watersheds.

4:45 Open House
Comment directly on the preliminary plans, discuss questions directly with staff, view displays, & do a bit of socializing until 6:30 p.m.

Printed on Recycled Paper

Water Quality INITIATIVE

Milwaukee Metropolitan Sewerage District
260 West Seeboth Street
Milwaukee, Wisconsin 53204

CLEAN RIVERS CLEAN LAKES IV

4th Annual Watershed Planning Conference

Tuesday, April 24th, 2007

Clarion Hotel & Conference Center
5311 South Howell Avenue
Milwaukee, Wisconsin

Water Quality INITIATIVE

Water Quality INITIATIVE

Clean Rivers, Clean Lakes IV

The 4th Annual Watershed Planning Conference targeting the Greater Milwaukee Watersheds – from the Northern Kettle Moraine, south to Union Grove, and from the Subcontinental Divide east to Lake Michigan, and points in between.

April 24, 2007
Clarion Hotel and Conference Center
5311 South Howell Avenue • Milwaukee, WI

Sponsored by:
Milwaukee Metropolitan Sewerage District
Southeastern Wisconsin Regional Planning Commission

Conference Planning Committee
Milwaukee Metropolitan Sewerage District
Southeastern Wisconsin Regional Planning Commission
University of Wisconsin – Extension
Wisconsin Department of Natural Resources
National Park Service

In 2002, the Milwaukee Metropolitan Sewerage District (MMSD), Wisconsin Department of Natural Resources (WDNR) and Southeastern Wisconsin Regional Planning Commission (SEWRPC) formed the Water Quality Initiative (WQI) partnership. This partnership was the basis for a joint planning effort that used scientific techniques and a watershed-based approach to holistically assess and chart improvements for water resources within the Greater Milwaukee Watersheds. Through an extensive public involvement program, local governments, environmental organizations, business and industry, and citizens joined the partnership.

MMSD and SEWRPC have completed four years of intensive study and planning, and are ready to present their respective findings and implementation plans necessary for water quality improvement. The conference will feature the recommended programs, policies and operational changes in the companion plans, roles and responsibilities for getting things done, projected regional and local costs, activities necessary to improve water quality in our region, good examples used here and elsewhere, strategies for improved water resources within the Greater Milwaukee Watersheds, and finally, the necessity of everyone working together in our region on shared, cost-effective solutions.

07-057

Fourth Annual Watershed Planning Conference

7:30 Registration Coffee, rolls, and conversation

8:15 Welcome
Mayor Tom Barrett, City of Milwaukee

Conference Overview

A Watershed Event- Finalizing the Plans and Moving to Implementation
Philip Evenson, Executive Director, SEWRPC

How the Region Fits into the Big Picture
Todd Ambs, Water Division Administrator, WDNR

The Unveiling- Water Quality Plans for Action
MMSD 2020 Facilities Plan
Tim Bate, Engineering Planning Manager, MMSD

SEWRPC Regional Water Quality Management Plan Update
Michael Hahn, Chief Environmental Engineer, SEWRPC

BREAK

10:45 Assembling the Building Blocks of Implementation
Concurrent Sessions – Participants choose Session A, B, or C

SESSION A
Treatment Technologies, Handling Stormwater, and Nonpoint Source Reduction
Moderator: Michael Hahn, Chief Environmental Engineer, SEWRPC

- **Racine - A Developed Community taking a Proactive Approach to Stormwater Pollution Control**
  Chuck Boehm, Earth Tech, Inc.
  Jaren Hiller, Water Resources Engineer, Earth Tech, Inc.
- **Emerging Technologies in the Recommended Plans**
  Troy Deibert, Project Engineer, HNTB Corp.
  Kevin Kratt, Director, Water Resources Group, Tetra Tech, Inc.

SESSION B
Local, Small-Scale Water Quality Improvement Projects
Moderator: Dave Fowler, Project Manager, MMSD

- **Every Drop Left Behind: Common Sense Landscaping for the 21st Century**
  Dennis Lukaszewski, Urban Agriculture Program Coordinator, UW- Extension, Milwaukee County Office
- **Examples of Successful Lake and Stream Restoration in Southeastern Wisconsin**
  Dr. Thomas Slawski, Principal Planner, SEWRPC

SESSION C
Conservation for Sustained Agricultural Profitability and Clean Water
Moderator: Sharon Gayan, Basin Supervisor, WDNR

- **Discovery Farms Programs: The Effects of Agriculture on the Environment**
  Dennis Frame and Dr. Fred Madison, Co-Directors, UW-Discovery Farms
- **Upstream Successes- Local Benefits and Downstream Gains**
  Daniel Stoffel, Washington County Board Supervisor and Farmer, Town of Kewaskum

12:00 Lunch and Keynote Speaker
Water Wise Gardening
Melinda Meyers, Nationally Known Gardening Expert

1:15 Afternoon Plenary Session
Moderator: Christopher Magruder, Community and Environmental Liaison, MMSD

- **Stormwater Impacts on Recreational Waters**
  Dr. Sandra McLellan, Assistant Scientist, Great Lakes WATER Institute – UW-Milwaukee
- **"A New Awakening" for Achieving Water Quality Improvements**
  Kevin Shafer, Executive Director, MMSD

BREAK

2:30 Plan Implementation Issues and Implications for the Region
Concurrent Sessions - Participants choose Session D, E, or F

SESSION D
Strategies for Improved Water Quality
Moderator: William Krill, Senior Project Manager, HNTB Corp.

- **Watershed Implementation Strategies: Emerging Policies and Programs in Use Across the Country**
  Panel Discussion:
  Paul Freedman, President, Limno-Tech, Inc.
  James Klang, Senior Project Engineer, Keiser & Assoc.
  Dr. Leslie Shoemaker, Vice President Water Resources, TetraTech, Inc.

SESSION E
Stormwater and Being a Better Neighbor
Moderator: Angie Tornes, Rivers and Trails Program, U.S. National Park Service

- **Linking Watersheds, Landscapes and Communities**
  Gail Epping Overholt, Milwaukee River Basin Educator, Wisconsin Basin Initiative, UW-Extension
- **Wet Basements- The Overlooked Source of Infiltration/Inflow**
  Michael Campbell, Senior Vice President and COO, Ruekert and Mielke, Inc.

SESSION F
Reducing Nutrients in Runoff – Some New Looks
Moderator: Andrew Holschbach, Director, Planning, Resources and Land Management Department, Ozaukee County

- **Dane County's Ordinance Banning Unnecessary Phosphorus in Lawn Fertilizer**
  Susan Jones, Watershed Management Coordinator, Dane County
- **Runoff Management Solutions for Agricultural Landscapes**
  Dennis Frame and Dr. Fred Madison, Co-Directors, UW-Discovery Farms

3:45 Regional Cooperation – Challenges and Opportunities
Moderator: Kevin Shafer, Executive Director, MMSD

Panel Discussion:

Ann Beier, Director, Office of Environmental Sustainability, City of Milwaukee

Philip Evenson, Executive Director, SEWRPC

Scott Hassett, Secretary, WDNR (invited)

Christine Nuernberg, Mayor, City of Mequon

4:30 Closing Remarks and Adjournment

Water Quality INITIATIVE

Registration Form
Watershed Planning Conference

April 24th, 2007
Registration from 7:30 a.m - 8:15 a.m.

Registration Fee: Your $30 conference fee includes conference materials, breakfast, mid-morning and afternoon refreshments, and the luncheon. Pre-payment by mail will allow for faster check-in at the registration table. Send complete registration form and check (payable to MMSD) to the address below.

For more information about the Conference:
- Visit www.mmsd.com/wqi
- Visit www.sewrpc.org/waterqualityplan

Please return before April 20th, 2007
Send complete registration form and check (payable to MMSD) to:

B. Berdes
Milwaukee Metro. Sewerage District
260 W. Seeboth Street
Milwaukee, WI 53204
Email: conference@mmsd.com
Phone: (414) 225-2161

Conference Fees $30
Day of Conference $40

Name(s): ______________________

Affiliation: ______________________

Address: ______________________

____

Phone No.: ______________________

Email Address: ______________________

Concurrent Sessions
(please circle one session that interests you most for each time slot)

10:45 a.m. .... A B C
2:30 p.m. .... A B C

Special Needs: (please circle necessary arrangements)

Vegetarian Meal   Access   Seating

(for office use only)
Date Rec'd: ____________   Multiple Registrants: Y N
Check included: Y N
Name on Check: ____________   Check No. ________
Initials of MMSD employee: ____________

Appendix A-6

PUBLIC INFORMATIONAL MEETINGS AND HEARINGS

September 2004 Public Informational Meetings on Water Quality Initiative Draft Goals and Objectives
Thursday, September 16, 4:00-8:00 p.m. Bayside Middle School 601 E. Ellsworth Lane Bayside
Tuesday, September 21, 7:00-10:00 a.m. United Community Center 1028 S. 9th Street Milwaukee
Wednesday, September 22, 4:30-8:30 p.m. Longfellow Middle School 7600 W. North Avenue Wauwatosa
Saturday, September 25, 9:30 a.m.-Noon Washington Park Library 2121 N. Sherman Boulevard Milwaukee
April 2006 Water Quality Initiative Open Houses on MMSD's 2020 Facility Planning and SEWRPC's Regional Water Quality Management Plan Alternatives
Thursday, March 2, 4:45-6:30 p.m. Italian Community Center 631 E. Chicago Street Milwaukee
Wednesday, April 5, 7:30-10:00 a.m. United Community Center 1028 S. 9th Street Milwaukee
Thursday, April 6, 5:30-8:00 p.m. Mother Kathryn Daniels Conference Center 3500 W. Mother Daniels Way Milwaukee
Monday, April 10, 5:30-8:00 p.m. Longfellow Middle School 7600 W. North Avenue Wauwatosa
Wednesday, April 12, 5:30-8:00 p.m. North Shore Library 6800 N. Port Washington Road Glendale
October 2007 Public Information Meetings and Hearings on the Regional Water Quality Management Plan Update Recommended Plan
Monday, October 15, 4:30-7:00 p.m. Gateway Technical College 901 Pershing Drive Racine
Tuesday, October 16, 4:30-7:00 p.m. Downtown Transit Center 909 E. Michigan Street Milwaukee
Tuesday, October 23, 4:30-7:00 p.m. Riveredge Nature Center 4458 W. Hawthorne Drive Newburg

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION
W239 N1812 ROCKWOOD DRIVE • PO BOX 1607 • WAUKESHA, WI 53187-1607•
TELEPHONE (262) 547-6721
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News Release

October 9, 2007
Release No. 07-05

FOR IMMEDIATE RELEASE

For more information,
contact Michael G. Hahn,
Chief Environmental Engineer,
at (262) 547-6721
e-mail: mhahn@sewrpc.org

SEWRPC HOLDS PUBLIC HEARINGS ON REGIONAL WATER QUALITY MANAGEMENT PLAN

Citizens are invited to public information meetings and hearings related to the protection and improvement of water quality in a major portion of southeastern Wisconsin. These sessions will provide opportunities to learn more about, and to comment on, the findings and recommendations documented in Southeastern Wisconsin Regional Planning Commission (SEWRPC) Planning Report No. 50, A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds. The plan includes recommendations related to land use, surface water quality, and groundwater quality in the Kinnickinnic, Menomonee, Milwaukee, and Root River watersheds; the Oak Creek watershed; and the direct drainage area to Lake Michigan. These watersheds are roughly comprised of areas draining toward Lake Michigan from extreme northeastern Dodge County, southeastern Fond du Lac County, southwestern Sheboygan County, eastern Washington County, all of Ozaukee County except the northeastern portion, extreme eastern Waukesha County, all of Milwaukee County, eastern Racine County, and a small portion of the Town of Paris in Kenosha County. The study area also includes the nearshore Lake Michigan area from the Village of Fox Point to the Village of Wind Point. Copies of the report chapters, including the recommended plan chapter, are now available for review on the SEWRPC web site at *http://www.sewrpc.org/waterqualityplan/chapters.asp*.

The plan was prepared by SEWRPC, in partnership with the Milwaukee Metropolitan Sewerage District (MMSD) under the "Water Quality Initiative," and in cooperation the Wisconsin Department of Natural

-more-

Resources (WDNR) and the U.S. Geological Survey (USGS). The plan was developed in close coordination with the MMSD 2020 Facilities Plan. Preparation of the plan was guided by a Technical Advisory Committee composed of representatives of county and municipal government, special-purpose units of government, MMSD, WDNR, USGS, the U.S. Environmental Protection Agency, academic institutions, and environmental and conservation organizations. In addition, the regional water quality management plan and MMSD Facilities Plan were presented and discussed at periodic meetings of a joint Citizens Advisory Council formed specifically to provide input on the two plans and at meetings of watershed officials, consisting of the elected and appointed representatives from the counties, cities, villages, and towns in the study area.

The following 4:30-7:00 p.m. sessions will be held during October 2007:

- October 15 at Gateway Technical College, Racine Campus, Racine Building, 901 Pershing Drive, Parking Lot D, Great Lakes, Room (#110)

- October 16 at the Downtown Transit Center, Harbor Lights Room (upper floor), 909 E. Michigan Street, Milwaukee

- October 23 at Riveredge Nature Center, 4458 W. Hawthorne Drive, Newburg, WI, 53060, located a mile north of STH 33 on CTH Y, northeast of Newburg

Each session will begin with a meeting in “open house” format from 4:30-5:30 p.m., which will provide an opportunity to meet one-on-one or in small groups with the Commission staff to receive information, ask questions, and provide comment. A presentation will be made by the Commission staff at 5:30 p.m., followed by a public hearing providing a forum for public comment in “town hall” format from approximately 6:00 p.m. to 7:00 p.m.

In addition to providing comments at the public meetings and hearings, written comments may also be submitted. Written comments should be received no later than Wednesday, October 24, 2007.

* * *

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Appendix B

COMPARISON OF AVERAGE ANNUAL POLLUTANT LOADS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS

Table B-1

AVERAGE ANNUAL POLLUTANT LOADS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: KINNICKINNIC RIVER WATERSHED

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Phosphorus (pounds)	Kinnickinnic River	Existing	220	880	490	1,590	2,790	20	2,810	4,400
		2020 Future (baseline)	220	1,130	320	1,670	2,440	20	2,460	4,130
		B1	220	70	230	520	2,440	20	2,460	2,980
		B2	220	430	90	740	2,440	20	2,460	3,200
		C1	220	1,350	230	1,800	2,270	20	2,290	4,090
		C2	220	1,350	230	1,800	2,270	20	2,290	4,090
	Wilson Park Creek	Existing	320	10	0	330	3,390	50	3,440	3,770
		2020 Future (baseline)	320	10	0	330	3,040	30	3,070	3,400
		B1	320	<10	0	320	3,040	30	3,070	3,390
		B2	320	<10	0	320	3,040	30	3,070	3,390
		C1	320	10	0	330	2,830	30	2,860	3,190
		C2	320	10	0	330	2,830	30	2,860	3,190
	Holmes Avenue Creek	Existing	440	0	0	440	1,000	<10	1,000	1,440
		2020 Future (baseline)	440	0	0	440	870	<10	870	1,310
		B1	440	0	0	440	870	<10	870	1,310
		B2	440	0	0	440	870	<10	870	1,310
		C1	440	0	0	440	810	<10	810	1,250
		C2	440	0	0	440	810	<10	810	1,250
	Villa Mann Creek	Existing	0	0	0	0	730	<10	730	730
		2020 Future (baseline)	0	0	0	0	630	<10	630	630
		B1	0	0	0	0	630	<10	630	630
		B2	0	0	0	0	630	<10	630	630
		C1	0	0	0	0	590	<10	590	590
		C2	0	0	0	0	590	<10	590	590
	Cherokee Park Creek	Existing	0	0	0	0	440	<10	440	440
		2020 Future (baseline)	0	0	0	0	390	<10	390	390
		B1	0	0	0	0	390	<10	390	390
		B2	0	0	0	0	390	<10	390	390
		C1	0	0	0	0	360	<10	360	360
		C2	0	0	0	0	360	<10	360	360
	Lyons Park Creek	Existing	0	<10	0	<10	620	<10	620	620
		2020 Future (baseline)	0	<10	0	<10	550	<10	550	550
		B1	0	<10	0	<10	550	<10	550	550
		B2	0	<10	0	<10	550	<10	550	550
		C1	0	<10	0	<10	510	<10	510	510
		C2	0	<10	0	<10	510	<10	510	510
	S. 43rd Street Ditch	Existing	460	<10	0	460	890	<10	890	1,350
		2020 Future (baseline)	460	<10	0	460	790	<10	790	1,250
		B1	460	<10	0	460	790	<10	790	1,250
		B2	460	<10	0	460	790	<10	790	1,250
		C1	460	<10	0	460	730	<10	730	1,190
		C2	460	<10	0	460	730	<10	730	1,190

Table B-1 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Phosphorus (pounds) (continued)	Watershed Total	Existing	1,440	890	490	2,820	9,860	70	9,930	12,750
		2020 Future (baseline)	1,440	1,140	320	2,900	8,710	50	8,760	11,660
		B1	1,440	70	230	1,740	8,710	50	8,760	10,500
		B2	1,440	430	90	1,960	8,710	50	8,760	10,720
		C1	1,440	1,360	230	3,030	8,100	50	8,150	11,180
		C2	1,440	1,360	230	3,030	8,100	50	8,150	11,180
Total Suspended Solids (pounds)	Kinnickinnic River	Existing	2,230	50,280	42,810	95,320	1,400,580	2,900	1,403,480	1,498,800
		2020 Future (baseline)	2,230	64,810	28,270	95,310	1,106,590	2,800	1,109,390	1,204,700
		B1	2,230	3,910	20,110	26,250	1,106,590	2,800	1,109,390	1,135,640
		B2	2,230	24,370	7,930	34,530	1,106,590	2,800	1,109,390	1,143,920
		C1	2,230	77,420	18,750	98,400	1,106,590	2,800	1,109,390	1,207,790
		C2	2,230	77,420	18,750	98,400	1,106,590	2,800	1,109,390	1,207,790
	Wilson Park Creek	Existing	6,300	850	0	7,150	1,681,280	24,830	1,706,110	1,713,260
		2020 Future (baseline)	6,300	380	0	6,680	1,365,030	3,070	1,368,100	1,374,780
		B1	6,300	40	0	6,340	1,365,030	3,070	1,368,100	1,374,440
		B2	6,300	220	0	6,520	1,365,030	3,070	1,368,100	1,374,620
		C1	6,300	390	0	6,690	1,365,030	3,070	1,368,100	1,374,790
		C2	6,300	390	0	6,690	1,365,030	3,070	1,368,100	1,374,790
	Holmes Avenue Creek	Existing	800	0	0	800	643,010	530	643,540	644,340
		2020 Future (baseline)	800	0	0	800	499,250	330	499,580	500,380
		B1	800	0	0	800	499,250	330	499,580	500,380
		B2	800	0	0	800	499,250	330	499,580	500,380
		C1	800	0	0	800	499,250	330	499,580	500,380
		C2	800	0	0	800	499,250	330	499,580	500,380
	Villa Mann Creek	Existing	0	0	0	0	380,220	220	380,440	380,440
		2020 Future (baseline)	0	0	0	0	289,850	120	289,970	289,970
		B1	0	0	0	0	289,850	120	289,970	289,970
		B2	0	0	0	0	289,850	120	289,970	289,970
		C1	0	0	0	0	289,850	120	289,970	289,970
		C2	0	0	0	0	289,850	120	289,970	289,970
	Cherokee Park Creek	Existing	0	0	0	0	216,410	600	217,010	217,010
		2020 Future (baseline)	0	0	0	0	170,560	490	171,050	171,050
		B1	0	0	0	0	170,560	490	171,050	171,050
		B2	0	0	0	0	170,560	490	171,050	171,050
		C1	0	0	0	0	170,560	490	171,050	171,050
		C2	0	0	0	0	170,560	490	171,050	171,050
	Lyons Park Creek	Existing	0	30	0	30	283,620	250	283,870	283,900
		2020 Future (baseline)	0	30	0	30	225,650	210	225,860	225,890
		B1	0	30	0	30	225,650	210	225,860	225,890
		B2	0	30	0	30	225,650	210	225,860	225,890
		C1	0	30	0	30	225,650	210	225,860	225,890
		C2	0	30	0	30	225,650	210	225,860	225,890
	S. 43rd Street Ditch	Existing	3,080	110	0	3,190	557,400	430	557,830	561,020
		2020 Future (baseline)	3,080	110	0	3,190	428,650	160	428,810	432,000
		B1	3,080	110	0	3,190	428,650	160	428,810	432,000
		B2	3,080	110	0	3,190	428,650	160	428,810	432,000
		C1	3,080	110	0	3,190	428,650	160	428,810	432,000
		C2	3,080	110	0	3,190	428,650	160	428,810	432,000

Table B-1 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Suspended Solids (pounds) (continued)	Watershed Total	Existing	12,410	51,270	42,810	106,490	5,162,520	29,760	5,192,280	5,298,770
		2020 Future (baseline)	12,410	65,330	28,270	106,010	4,085,580	7,180	4,092,760	4,198,770
		B1	12,410	4,090	20,110	36,610	4,085,580	7,180	4,092,760	4,129,370
		B2	12,410	24,730	7,930	45,070	4,085,580	7,180	4,092,760	4,137,830
		C1	12,410	77,950	18,750	109,110	4,085,580	7,180	4,092,760	4,201,870
		C2	12,410	77,950	18,750	109,110	4,085,580	7,180	4,092,760	4,201,870
Fecal Coliform Bacteria (trillions of cells)	Kinnickinnic River	Existing	0.00	959.33	554.79	1,514.12	1,031.94	0.06	1,032.00	2,546.12
		2020 Future (baseline)	0.00	1,236.62	366.38	1,603.00	861.35	0.06	861.41	2,464.41
		B1	0.00	74.68	260.57	335.25	861.35	0.06	861.41	1,196.66
		B2	0.00	465.04	102.75	567.79	861.35	0.06	861.41	1,429.20
		C1	0.00	1,477.12	303.71	1,780.83	745.26	0.06	745.32	2,526.15
		C2	0.00	1,477.12	303.71	1,780.83	745.26	0.06	745.32	2,526.15
	Wilson Park Creek	Existing	0.00	16.14	0.00	16.14	996.39	0.20	996.59	1,012.73
		2020 Future (baseline)	0.00	7.35	0.00	7.35	860.49	0.08	860.57	867.92
		B1	0.00	0.77	0.00	0.77	860.49	0.08	860.57	861.34
		B2	0.00	4.25	0.00	4.25	860.49	0.08	860.57	864.82
		C1	0.00	7.40	0.00	7.40	749.74	0.08	749.82	757.22
		C2	0.00	7.40	0.00	7.40	749.74	0.08	749.82	757.22
	Holmes Avenue Creek	Existing	0.00	0.00	0.00	0.00	361.85	0.01	361.86	361.86
		2020 Future (baseline)	0.00	0.00	0.00	0.00	298.64	0.01	298.65	298.65
		B1	0.00	0.00	0.00	0.00	298.64	0.01	298.65	298.65
		B2	0.00	0.00	0.00	0.00	298.64	0.01	298.65	298.65
		C1	0.00	0.00	0.00	0.00	251.50	0.01	251.51	251.51
		C2	0.00	0.00	0.00	0.00	251.50	0.01	251.51	251.51
	Villa Mann Creek	Existing	0.00	0.00	0.00	0.00	247.97	0.01	247.98	247.98
		2020 Future (baseline)	0.00	0.00	0.00	0.00	203.64	0.00	203.64	203.64
		B1	0.00	0.00	0.00	0.00	203.64	0.00	203.64	203.64
		B2	0.00	0.00	0.00	0.00	203.64	0.00	203.64	203.64
		C1	0.00	0.00	0.00	0.00	183.27	0.00	183.27	183.27
		C2	0.00	0.00	0.00	0.00	183.27	0.00	183.27	183.27
	Cherokee Park Creek	Existing	0.00	0.00	0.00	0.00	145.02	0.01	145.03	145.03
		2020 Future (baseline)	0.00	0.00	0.00	0.00	121.71	0.01	121.72	121.72
		B1	0.00	0.00	0.00	0.00	121.71	0.01	121.72	121.72
		B2	0.00	0.00	0.00	0.00	121.71	0.01	121.72	121.72
		C1	0.00	0.00	0.00	0.00	109.54	0.01	109.55	109.55
		C2	0.00	0.00	0.00	0.00	109.54	0.01	109.55	109.55
	Lyons Park Creek	Existing	0.00	0.52	0.00	0.52	247.09	0.01	247.10	247.62
		2020 Future (baseline)	0.00	0.52	0.00	0.52	208.42	0.00	208.42	208.94
		B1	0.00	0.52	0.00	0.52	208.42	0.00	208.42	208.94
		B2	0.00	0.52	0.00	0.52	208.42	0.00	208.42	208.94
		C1	0.00	0.52	0.00	0.52	187.58	0.00	187.58	188.10
		C2	0.00	0.52	0.00	0.52	187.58	0.00	187.58	188.10
	S. 43rd Street Ditch	Existing	0.00	2.07	0.00	2.07	327.94	0.01	327.95	330.02
		2020 Future (baseline)	0.00	2.07	0.00	2.07	277.19	0.00	277.19	279.26
		B1	0.00	2.07	0.00	2.07	277.19	0.00	277.19	279.26
		B2	0.00	2.07	0.00	2.07	277.19	0.00	277.19	279.26
		C1	0.00	2.07	0.00	2.07	219.60	0.00	219.60	221.67
		C2	0.00	2.07	0.00	2.07	219.60	0.00	219.60	221.67

Table B-1 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Watershed Total	Existing	0.00	978.06	554.79	1,532.85	3,358.20	0.31	3,358.51	4,891.36
		2020 Future (baseline)	0.00	1,246.56	366.38	1,612.94	2,831.44	0.16	2,831.60	4,444.54
		B1	0.00	78.04	260.57	338.61	2,831.44	0.16	2,831.60	3,170.21
		B2	0.00	471.88	102.75	574.63	2,831.44	0.16	2,831.60	3,406.23
		C1	0.00	1,487.11	303.71	1,790.82	2,446.49	0.16	2,446.65	4,237.47
		C2	0.00	1,487.11	303.71	1,790.82	2,446.49	0.16	2,446.65	4,237.47
Total Nitrogen (pounds)	Kinnickinnic River	Existing	3,800	1,840	2,290	7,930	17,730	220	17,950	25,880
		2020 Future (baseline)	3,800	2,370	1,510	7,680	15,880	210	16,090	23,770
		B1	3,800	140	1,080	5,020	15,880	210	16,090	21,110
		B2	3,800	890	420	5,110	15,880	210	16,090	21,200
		C1	3,800	2,830	1,120	7,750	15,370	210	15,580	23,330
		C2	3,800	2,830	1,120	7,750	15,370	210	15,580	23,330
	Wilson Park Creek	Existing	980	30	0	1,010	21,270	980	22,250	23,260
		2020 Future (baseline)	980	10	0	990	19,570	250	19,820	20,810
		B1	980	<10	0	980	19,570	250	19,820	20,800
		B2	980	10	0	990	19,570	250	19,820	20,810
		C1	980	10	0	990	18,950	250	19,200	20,190
		C2	980	10	0	990	18,950	250	19,200	20,190
	Holmes Avenue Creek	Existing	1,460	0	0	1,460	6,090	50	6,140	7,600
		2020 Future (baseline)	1,460	0	0	1,460	5,450	30	5,480	6,940
		B1	1,460	0	0	1,460	5,450	30	5,480	6,940
		B2	1,460	0	0	1,460	5,450	30	5,480	6,940
		C1	1,460	0	0	1,460	5,260	30	5,290	6,750
		C2	1,460	0	0	1,460	5,260	30	5,290	6,750
	Villa Mann Creek	Existing	0	0	0	0	4,480	20	4,500	4,500
		2020 Future (baseline)	0	0	0	0	3,980	10	3,990	3,990
		B1	0	0	0	0	3,980	10	3,990	3,990
		B2	0	0	0	0	3,980	10	3,990	3,990
		C1	0	0	0	0	3,850	10	3,860	3,860
		C2	0	0	0	0	3,850	10	3,860	3,860
	Cherokee Park Creek	Existing	0	0	0	0	2,750	50	2,800	2,800
		2020 Future (baseline)	0	0	0	0	2,490	40	2,530	2,530
		B1	0	0	0	0	2,490	40	2,530	2,530
		B2	0	0	0	0	2,490	40	2,530	2,530
		C1	0	0	0	0	2,420	40	2,460	2,460
		C2	0	0	0	0	2,420	40	2,460	2,460
	Lyons Park Creek	Existing	0	<10	0	<10	3,980	20	4,000	4,000
		2020 Future (baseline)	0	<10	0	<10	3,600	20	3,620	3,620
		B1	0	<10	0	<10	3,600	20	3,620	3,620
		B2	0	<10	0	<10	3,600	20	3,620	3,620
		C1	0	<10	0	<10	3,490	20	3,510	3,510
		C2	0	<10	0	<10	3,490	20	3,510	3,510
	S. 43rd Street Ditch	Existing	490	<10	0	490	5,570	30	5,600	6,090
		2020 Future (baseline)	490	<10	0	490	5,050	10	5,060	5,550
		B1	490	<10	0	490	5,050	10	5,060	5,550
		B2	490	<10	0	490	5,050	10	5,060	5,550
		C1	490	<10	0	490	4,880	10	4,890	5,380
		C2	490	<10	0	490	4,880	10	4,890	5,380

Table B-1 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	
Total Nitrogen (pounds) (continued)	Watershed Total	Existing	6,730	1,870	2,290	10,890	61,870	1,370	63,240	74,130
		2020 Future (baseline)	6,730	2,380	1,510	10,620	56,020	570	56,590	67,210
		B1	6,730	140	1,080	7,950	56,020	570	56,590	64,540
		B2	6,730	900	420	8,050	56,020	570	56,590	64,640
		C1	6,730	2,840	1,120	10,690	54,220	570	54,790	65,480
		C2	6,730	2,840	1,120	10,690	54,220	570	54,790	65,480
Biochemical Oxygen Demand (pounds)	Kinnickinnic River	Existing	3,680	12,370	6,880	22,930	80,050	740	80,790	103,720
		2020 Future (baseline)	3,680	15,950	4,540	24,170	67,460	710	68,170	92,340
		B1	3,680	960	3,230	7,870	67,460	710	68,170	76,040
		B2	3,680	6,000	1,270	10,950	67,460	710	68,170	79,120
		C1	3,680	19,050	3,210	25,940	67,460	710	68,170	94,110
		C2	3,680	19,050	3,210	25,940	67,460	710	68,170	94,110
	Wilson Park Creek	Existing	5,630	210	0	5,840	165,660	1,900	167,560	173,400
		2020 Future (baseline)	5,630	90	0	5,720	157,460	1,100	158,560	164,280
		B1	5,630	10	0	5,640	157,460	1,100	158,560	164,200
		B2	5,630	50	0	5,680	157,460	1,100	158,560	164,240
		C1	5,630	100	0	5,730	157,460	1,100	158,560	164,290
		C2	5,630	100	0	5,730	157,460	1,100	158,560	164,290
	Holmes Avenue Creek	Existing	1,120	0	0	1,120	44,320	160	44,480	45,600
		2020 Future (baseline)	1,120	0	0	1,120	39,590	90	39,680	40,800
		B1	1,120	0	0	1,120	39,590	90	39,680	40,800
		B2	1,120	0	0	1,120	39,590	90	39,680	40,800
		C1	1,120	0	0	1,120	39,590	90	39,680	40,800
		C2	1,120	0	0	1,120	39,590	90	39,680	40,800
	Villa Mann Creek	Existing	0	0	0	0	20,320	80	20,400	20,400
		2020 Future (baseline)	0	0	0	0	16,940	40	16,980	16,980
		B1	0	0	0	0	16,940	40	16,980	16,980
		B2	0	0	0	0	16,940	40	16,980	16,980
		C1	0	0	0	0	16,940	40	16,980	16,980
		C2	0	0	0	0	16,940	40	16,980	16,980
	Cherokee Park Creek	Existing	0	0	0	0	11,980	140	12,120	12,120
		2020 Future (baseline)	0	0	0	0	10,350	110	10,460	10,460
		B1	0	0	0	0	10,350	110	10,460	10,460
		B2	0	0	0	0	10,350	110	10,460	10,460
		C1	0	0	0	0	10,350	110	10,460	10,460
		C2	0	0	0	0	10,350	110	10,460	10,460
	Lyons Park Creek	Existing	0	10	0	10	16,880	60	16,940	16,950
		2020 Future (baseline)	0	10	0	10	14,340	50	14,390	14,400
		B1	0	10	0	10	14,340	50	14,390	14,400
		B2	0	10	0	10	14,340	50	14,390	14,400
		C1	0	10	0	10	14,340	50	14,390	14,400
		C2	0	10	0	10	14,340	50	14,390	14,400
	S. 43rd Street Ditch	Existing	5,420	30	0	5,450	30,730	130	30,860	36,310
		2020 Future (baseline)	5,420	30	0	5,450	26,040	50	26,090	31,540
		B1	5,420	30	0	5,450	26,040	50	26,090	31,540
		B2	5,420	30	0	5,450	26,040	50	26,090	31,540
		C1	5,420	30	0	5,450	26,040	50	26,090	31,540
		C2	5,420	30	0	5,450	26,040	50	26,090	31,540

Table B-1 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Biochemical Oxygen Demand (pounds) (continued)	Watershed Total	Existing	15,850	12,620	6,880	35,350	369,940	3,210	373,150	408,500
		2020 Future (baseline)	15,850	16,080	4,540	36,470	332,180	2,150	334,330	370,800
		B1	15,850	1,010	3,230	20,090	332,180	2,150	334,330	354,420
		B2	15,850	6,090	1,270	23,210	332,180	2,150	334,330	357,540
		C1	15,850	19,190	3,210	38,250	332,180	2,150	334,330	372,580
		C2	15,850	19,190	3,210	38,250	332,180	2,150	334,330	372,580
Copper (pounds)	Kinnickinnic River	Existing	7	8	15	30	146	<1	146	176
		2020 Future (baseline)	7	10	10	27	120	<1	120	147
		B1	7	1	7	15	120	<1	120	135
		B2	7	4	3	14	120	<1	120	134
		C1	7	12	7	26	120	<1	120	146
		C2	7	12	7	26	120	<1	120	146
	Wilson Park Creek	Existing	0	<1	0	<1	174	1	175	175
		2020 Future (baseline)	0	<1	0	<1	151	<1	151	151
		B1	0	<1	0	<1	151	<1	151	151
		B2	0	<1	0	<1	151	<1	151	151
		C1	0	<1	0	<1	151	<1	151	151
		C2	0	<1	0	<1	151	<1	151	151
	Holmes Avenue Creek	Existing	0	0	0	0	59	<1	59	59
		2020 Future (baseline)	0	0	0	0	49	<1	49	49
		B1	0	0	0	0	49	<1	49	49
		B2	0	0	0	0	49	<1	49	49
		C1	0	0	0	0	49	<1	49	49
		C2	0	0	0	0	49	<1	49	49
	Villa Mann Creek	Existing	0	0	0	0	37	<1	37	37
		2020 Future (baseline)	0	0	0	0	30	<1	30	30
		B1	0	0	0	0	30	<1	30	30
		B2	0	0	0	0	30	<1	30	30
		C1	0	0	0	0	30	<1	30	30
		C2	0	0	0	0	30	<1	30	30
	Cherokee Park Creek	Existing	0	0	0	0	22	<1	22	22
		2020 Future (baseline)	0	0	0	0	18	<1	18	18
		B1	0	0	0	0	18	<1	18	18
		B2	0	0	0	0	18	<1	18	18
		C1	0	0	0	0	18	<1	18	18
		C2	0	0	0	0	18	<1	18	18
	Lyons Park Creek	Existing	0	<1	0	<1	30	<1	30	30
		2020 Future (baseline)	0	<1	0	<1	25	<1	25	25
		B1	0	<1	0	<1	25	<1	25	25
		B2	0	<1	0	<1	25	<1	25	25
		C1	0	<1	0	<1	25	<1	25	25
		C2	0	<1	0	<1	25	<1	25	25
	S. 43rd Street Ditch	Existing	0	<1	0	<1	57	<1	57	57
		2020 Future (baseline)	0	<1	0	<1	47	<1	47	47
		B1	0	<1	0	<1	47	<1	47	47
		B2	0	<1	0	<1	47	<1	47	47
		C1	0	<1	0	<1	47	<1	47	47
		C2	0	<1	0	<1	47	<1	47	47

Table B-1 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Copper (pounds) (continued)	Watershed Total	Existing	7	8	15	30	525	1	526	556
		2020 Future (baseline)	7	10	10	27	440	<1	440	467
		B1	7	1	7	15	440	<1	440	455
		B2	7	4	3	14	440	<1	440	454
		C1	7	12	7	26	440	<1	440	466
		C2	7	12	7	26	440	<1	440	466

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint source subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table B-2

AVERAGE ANNUAL POLLUTANT LOADS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: MENOMONEE RIVER WATERSHED

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Phosphorus (pounds)	Butler Ditch	Existing	0	10	0	10	1,490	50	1,540	1,550
		2020 Future (baseline)	0	10	0	10	1,290	40	1,330	1,340
		B1	0	10	0	10	1,290	40	1,330	1,340
		B2	0	10	0	10	1,290	40	1,330	1,340
		C1	0	10	0	10	1,200	40	1,240	1,250
		C2	0	10	0	10	1,200	40	1,240	1,250
	Honey Creek	Existing	200	10	0	210	3,900	20	3,920	4,130
		2020 Future (baseline)	200	10	0	210	3,430	10	3,440	3,650
		B1	200	10	0	210	3,430	10	3,440	3,650
		B2	200	10	0	210	3,430	10	3,440	3,650
		C1	200	10	0	210	3,200	10	3,210	3,420
		C2	200	10	0	210	3,200	10	3,210	3,420
	Lily Creek	Existing	0	0	0	0	1,200	90	1,290	1,290
		2020 Future (baseline)	0	0	0	0	1,120	30	1,150	1,150
		B1	0	0	0	0	1,120	30	1,150	1,150
		B2	0	0	0	0	1,120	30	1,150	1,150
		C1	0	0	0	0	1,040	30	1,070	1,070
		C2	0	0	0	0	1,040	30	1,070	1,070
	Little Menomonee Creek	Existing	0	0	0	0	80	350	430	430
		2020 Future (baseline)	0	0	0	0	70	310	380	380
		B1	0	0	0	0	70	290	360	360
		B2	0	0	0	0	70	290	360	360
		C1	0	0	0	0	70	290	360	360
		C2	0	0	0	0	70	290	360	360
	Little Menomonee River	Existing	360	<10	0	360	3,300	840	4,140	4,500
		2020 Future (baseline)	360	<10	0	360	3,170	690	3,860	4,220
		B1	360	<10	0	360	3,170	670	3,840	4,200
		B2	360	<10	0	360	3,170	670	3,840	4,200
		C1	360	<10	0	360	2,950	660	3,610	3,970
		C2	360	<10	0	360	2,950	660	3,610	3,970
	Lower Menomonee River	Existing	15,650	550	1,880	18,080	7,180	70	7,250	25,330
		2020 Future (baseline)	3,910	470	1,350	5,730	6,290	60	6,350	12,080
		B1	3,910	60	990	4,960	6,290	60	6,350	11,310
		B2	3,910	440	250	4,600	6,290	60	6,350	10,950
		C1	3,910	750	1,030	5,690	5,850	60	5,910	11,600
		C2	3,910	750	1,030	5,690	5,850	60	5,910	11,600
	North Branch Menomonee River	Existing	0	0	0	0	50	220	270	270
		2020 Future (baseline)	0	0	0	0	50	220	270	270
		B1	0	0	0	0	50	200	250	250
		B2	0	0	0	0	50	200	250	250
		C1	0	0	0	0	50	210	260	260
		C2	0	0	0	0	50	210	260	260
	Nor-X-Way Channel	Existing	160	0	0	160	630	340	970	1,130
		2020 Future (baseline)	160	0	0	160	910	330	1,240	1,400
		B1	160	0	0	160	910	330	1,240	1,400
		B2	160	0	0	160	910	330	1,240	1,400
		C1	160	0	0	160	830	310	1,140	1,300
		C2	160	0	0	160	830	310	1,140	1,300

Table B-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Phosphorus (pounds) (continued)	Underwood Creek	Existing	30	10	0	40	6,350	270	6,620	6,660
		2020 Future (baseline)	30	10	0	40	5,480	220	5,700	5,740
		B1	30	10	0	40	5,480	220	5,700	5,740
		B2	30	10	0	40	5,480	220	5,700	5,740
		C1	30	10	0	40	5,100	220	5,320	5,360
		C2	30	10	0	40	5,100	220	5,320	5,360
	Upper Menomonee River	Existing	1,150	<10	0	1,150	4,170	1,150	5,320	6,470
		2020 Future (baseline)	1,150	<10	0	1,150	4,630	1,100	5,730	6,880
		B1	1,150	<10	0	1,150	4,630	1,080	5,710	6,860
		B2	1,150	<10	0	1,150	4,630	1,080	5,710	6,860
		C1	1,150	<10	0	1,150	4,190	1,030	5,220	6,370
		C2	1,150	<10	0	1,150	4,190	1,030	5,220	6,370
	West Branch Menomonee River	Existing	0	0	0	0	370	240	610	610
		2020 Future (baseline)	0	0	0	0	600	250	850	850
		B1	0	0	0	0	600	240	840	840
		B2	0	0	0	0	600	240	840	840
		C1	0	0	0	0	530	230	760	760
		C2	0	0	0	0	530	230	760	760
	Willow Creek	Existing	0	0	0	0	320	430	750	750
		2020 Future (baseline)	0	0	0	0	430	450	880	880
		B1	0	0	0	0	430	440	870	870
		B2	0	0	0	0	430	440	870	870
		C1	0	0	0	0	380	410	790	790
		C2	0	0	0	0	380	410	790	790
	Watershed Total	Existing	17,550	580	1,880	20,010	29,040	4,070	33,110	53,120
		2020 Future (baseline)	5,810	500	1,330	7,640	27,470	3,710	31,180	38,820
		B1	5,810	90	990	6,890	27,470	3,610	31,080	37,970
		B2	5,810	470	250	6,530	27,470	3,610	31,080	37,610
		C1	5,810	780	1,010	7,600	25,390	3,500	28,890	36,490
		C2	5,810	780	1,010	7,600	25,390	3,500	28,890	36,490
Total Suspended Solids (pounds)	Butler Ditch	Existing	0	320	0	320	689,190	8,000	697,190	697,510
		2020 Future (baseline)	0	320	0	320	506,400	2,540	508,940	509,260
		B1	0	320	0	320	506,400	2,540	508,940	509,260
		B2	0	320	0	320	506,400	2,540	508,940	509,260
		C1	0	320	0	320	506,390	2,540	508,930	509,250
		C2	0	320	0	320	506,390	2,540	508,930	509,250
	Honey Creek	Existing	800	470	0	1,270	1,874,860	2,400	1,877,260	1,878,530
		2020 Future (baseline)	800	450	0	1,250	1,453,590	1,790	1,455,380	1,456,630
		B1	800	420	0	1,220	1,453,590	1,790	1,455,380	1,456,600
		B2	800	450	0	1,250	1,453,590	1,790	1,455,380	1,456,630
		C1	800	450	0	1,250	1,453,600	1,780	1,455,380	1,456,630
		C2	800	450	0	1,250	1,453,600	1,780	1,455,380	1,456,630
	Lily Creek	Existing	0	0	0	0	666,000	53,720	719,720	719,720
		2020 Future (baseline)	0	0	0	0	498,090	2,820	500,910	500,910
		B1	0	0	0	0	498,090	2,820	500,910	500,910
		B2	0	0	0	0	498,090	2,820	500,910	500,910
		C1	0	0	0	0	498,090	2,820	500,910	500,910
		C2	0	0	0	0	498,090	2,820	500,910	500,910

Table B-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Suspended Solids (pounds) (continued)	Little Menomonee Creek	Existing	0	0	0	0	58,630	205,820	264,450	264,450
		2020 Future (baseline)	0	0	0	0	45,820	150,780	196,600	196,600
		B1	0	0	0	0	45,820	126,790	172,610	172,610
		B2	0	0	0	0	45,820	126,790	172,610	172,610
		C1	0	0	0	0	45,820	140,580	186,400	186,400
		C2	0	0	0	0	45,820	122,480	168,300	168,300
	Little Menomonee River	Existing	2,530	30	0	2,560	1,976,270	437,140	2,413,410	2,415,970
		2020 Future (baseline)	2,530	30	0	2,560	1,650,910	206,370	1,857,280	1,859,840
		B1	2,530	30	0	2,560	1,650,910	179,290	1,830,200	1,832,760
		B2	2,530	230	0	2,760	1,650,910	179,290	1,830,200	1,832,960
		C1	2,530	30	0	2,560	1,650,920	194,760	1,845,680	1,848,240
		C2	2,530	30	0	2,560	1,650,920	174,160	1,825,080	1,827,640
	Lower Menomonee River	Existing	51,660	31,670	182,960	266,290	4,001,330	10,180	4,011,510	4,277,800
		2020 Future (baseline)	30,880	26,930	129,150	186,960	3,109,190	9,930	3,119,120	3,306,080
		B1	30,880	3,290	96,430	130,600	3,109,190	9,930	3,119,120	3,249,720
		B2	30,880	25,100	22,820	78,800	3,109,190	9,930	3,119,120	3,197,920
		C1	30,880	43,140	90,450	164,470	3,099,310	9,910	3,109,220	3,273,690
		C2	30,880	43,140	90,450	164,470	3,099,310	9,910	3,109,220	3,273,690
	North Branch Menomonee River	Existing	0	0	0	0	27,660	117,390	145,050	145,050
		2020 Future (baseline)	0	0	0	0	29,120	102,450	131,570	131,570
		B1	0	0	0	0	29,120	86,280	115,400	115,400
		B2	0	0	0	0	29,120	86,280	115,400	115,400
		C1	0	0	0	0	26,630	94,700	121,330	121,330
		C2	0	0	0	0	26,630	82,000	108,630	108,630
	Nor-X-Way Channel	Existing	280	0	0	280	478,790	351,000	829,790	830,070
		2020 Future (baseline)	280	0	0	280	710,880	100,670	811,550	811,830
		B1	280	0	0	280	710,880	95,550	806,430	806,710
		B2	280	0	0	280	710,880	95,550	806,430	806,710
		C1	280	0	0	280	690,850	96,810	787,660	787,940
		C2	280	0	0	280	690,850	94,580	785,430	785,710
	Underwood Creek	Existing	90	860	0	950	3,031,420	46,540	3,077,960	3,078,910
		2020 Future (baseline)	90	740	0	830	2,241,900	15,560	2,257,460	2,258,290
		B1	90	740	0	830	2,241,900	15,560	2,257,460	2,258,290
		B2	90	740	0	830	2,241,900	15,560	2,257,460	2,258,290
		C1	90	740	0	830	2,241,900	15,520	2,257,420	2,258,250
		C2	90	740	0	830	2,241,900	15,440	2,257,340	2,258,170
	Upper Menomonee River	Existing	3,380	240	0	3,620	2,504,060	462,670	2,966,730	2,970,350
		2020 Future (baseline)	3,380	240	0	3,620	2,540,160	268,490	2,808,650	2,812,270
		B1	3,380	240	0	3,620	2,540,160	252,120	2,792,280	2,795,900
		B2	3,380	240	0	3,620	2,540,160	252,120	2,792,280	2,795,900
		C1	3,380	240	0	3,620	2,406,940	250,150	2,657,090	2,660,710
		C2	3,380	240	0	3,620	2,406,940	237,520	2,644,460	2,648,080
	West Branch Menomonee River	Existing	0	0	0	0	232,070	103,580	335,650	335,650
		2020 Future (baseline)	0	0	0	0	414,350	74,340	488,690	488,690
		B1	0	0	0	0	414,350	67,970	482,320	482,320
		B2	0	0	0	0	414,350	67,970	482,320	482,320
		C1	0	0	0	0	377,740	68,500	446,240	446,240
		C2	0	0	0	0	377,740	63,450	441,190	441,190

Table B-2 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Suspended Solids (pounds) (continued)	Willow Creek	Existing	0	0	0	0	197,990	151,790	349,780	349,780
		2020 Future (baseline)	0	0	0	0	259,850	121,870	381,720	381,720
		B1	0	0	0	0	259,850	111,530	371,380	371,380
		B2	0	0	0	0	259,850	111,530	371,380	371,380
		C1	0	0	0	0	238,480	112,460	350,940	350,940
		C2	0	0	0	0	238,480	106,710	345,190	345,190
	Watershed Total	Existing	58,740	33,590	182,960	275,290	15,738,270	1,950,230	17,688,500	17,963,790
		2020 Future (baseline)	37,960	28,710	127,230	193,900	13,460,260	1,057,610	14,517,870	14,711,770
		B1	37,960	5,040	96,430	139,430	13,460,260	952,170	14,412,430	14,551,860
		B2	37,960	27,080	22,820	87,860	13,460,260	952,170	14,412,430	14,500,290
		C1	37,960	44,920	89,180	172,060	13,236,670	990,530	14,227,200	14,399,260
		C2	37,960	44,920	89,180	172,060	13,236,670	913,390	14,150,060	14,322,120
Fecal Coliform Bacteria (trillions of cells)	Butler Ditch	Existing	0.00	6.07	0.00	6.07	223.75	0.46	224.21	230.28
		2020 Future (baseline)	0.00	6.07	0.00	6.07	188.25	0.17	188.42	194.49
		B1	0.00	6.07	0.00	6.07	188.25	0.17	188.42	194.49
		B2	0.00	6.07	0.00	6.07	188.25	0.17	188.42	194.49
		C1	0.00	6.07	0.00	6.07	169.43	0.17	169.60	175.67
		C2	0.00	6.07	0.00	6.07	169.43	0.17	169.60	175.67
	Honey Creek	Existing	0.00	9.01	0.00	9.01	2,342.61	0.14	2,342.75	2,351.76
		2020 Future (baseline)	0.00	8.54	0.00	8.54	1,964.37	0.11	1,964.48	1,973.02
		B1	0.00	8.00	0.00	8.00	1,964.37	0.10	1,964.47	1,972.47
		B2	0.00	8.53	0.00	8.53	1,964.37	0.10	1,964.47	1,973.00
		C1	0.00	8.57	0.00	8.57	1,613.14	0.10	1,613.24	1,621.81
		C2	0.00	8.57	0.00	8.57	1,613.14	0.10	1,613.24	1,621.81
	Lily Creek	Existing	0.00	0.00	0.00	0.00	199.31	1.25	200.56	200.56
		2020 Future (baseline)	0.00	0.00	0.00	0.00	185.33	0.18	185.51	185.51
		B1	0.00	0.00	0.00	0.00	185.33	0.18	185.51	185.51
		B2	0.00	0.00	0.00	0.00	185.33	0.18	185.51	185.51
		C1	0.00	0.00	0.00	0.00	166.80	0.18	166.98	166.98
		C2	0.00	0.00	0.00	0.00	166.80	0.18	166.98	166.98
	Little Menomonee Creek	Existing	0.00	0.00	0.00	0.00	65.43	84.91	150.34	150.34
		2020 Future (baseline)	0.00	0.00	0.00	0.00	58.34	72.51	130.85	130.85
		B1	0.00	0.00	0.00	0.00	58.34	71.17	129.51	129.51
		B2	0.00	0.00	0.00	0.00	58.34	71.17	129.51	129.51
		C1	0.00	0.00	0.00	0.00	52.51	64.20	116.71	116.71
		C2	0.00	0.00	0.00	0.00	52.51	64.03	116.54	116.54
	Little Menomonee River	Existing	0.00	0.52	0.00	0.52	2,097.81	105.28	2,203.09	2,203.61
		2020 Future (baseline)	0.00	0.52	0.00	0.52	1,855.49	104.67	1,960.16	1,960.68
		B1	0.00	0.52	0.00	0.52	1,855.49	102.67	1,958.16	1,958.68
		B2	0.00	4.32	0.00	4.32	1,855.49	102.67	1,958.16	1,962.48
		C1	0.00	0.52	0.00	0.52	1,669.94	92.66	1,762.60	1,763.12
		C2	0.00	0.52	0.00	0.52	1,669.94	92.42	1,762.36	1,762.88
	Lower Menomonee River	Existing	0.00	604.24	1,727.39	2,331.63	4,067.91	0.28	4,068.19	6,399.82
		2020 Future (baseline)	0.00	513.76	1,293.26	1,807.02	3,371.59	0.44	3,372.03	5,179.05
		B1	0.00	62.76	920.90	983.66	3,371.59	0.41	3,372.00	4,355.66
		B2	0.00	478.94	275.76	754.70	3,371.59	0.41	3,372.00	4,126.70
		C1	0.00	823.07	1,100.22	1,923.29	2,804.30	0.41	2,804.71	4,728.00
		C2	0.00	823.07	1,100.22	1,923.29	2,804.30	0.41	2,804.71	4,728.00

Table B-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	
Fecal Coliform Bacteria (trillions of cells) (continued)	North Branch Menomonee River	Existing	0.00	0.00	0.00	0.00	9.30	7.82	17.12	17.12
		2020 Future (baseline)	0.00	0.00	0.00	0.00	12.48	9.73	22.21	22.21
		B1	0.00	0.00	0.00	0.00	12.48	8.83	21.31	21.31
		B2	0.00	0.00	0.00	0.00	12.48	8.83	21.31	21.31
		C1	0.00	0.00	0.00	0.00	10.66	7.57	18.23	18.23
		C2	0.00	0.00	0.00	0.00	10.66	7.50	18.16	18.16
	Nor-X-Way Channel	Existing	0.00	0.00	0.00	0.00	256.06	48.78	304.84	304.84
		2020 Future (baseline)	0.00	0.00	0.00	0.00	316.87	85.76	402.63	402.63
		B1	0.00	0.00	0.00	0.00	316.87	85.45	402.32	402.32
		B2	0.00	0.00	0.00	0.00	316.87	85.45	402.32	402.32
		C1	0.00	0.00	0.00	0.00	279.42	75.34	354.76	354.76
		C2	0.00	0.00	0.00	0.00	279.42	75.31	354.73	354.73
	Underwood Creek	Existing	0.00	16.33	0.00	16.33	3,454.09	1.67	3,455.76	3,472.09
		2020 Future (baseline)	0.00	14.07	0.00	14.07	2,796.17	1.03	2,797.20	2,811.27
		B1	0.00	14.07	0.00	14.07	2,796.17	1.02	2,797.19	2,811.26
		B2	0.00	14.07	0.00	14.07	2,796.17	1.02	2,797.19	2,811.26
		C1	0.00	14.07	0.00	14.07	2,416.37	1.02	2,417.39	2,431.46
		C2	0.00	14.07	0.00	14.07	2,416.37	1.02	2,417.39	2,431.46
	Upper Menomonee River	Existing	0.00	4.65	0.00	4.65	1,274.47	79.98	1,354.45	1,359.10
		2020 Future (baseline)	0.00	4.65	0.00	4.65	1,344.32	102.94	1,447.26	1,451.91
		B1	0.00	4.65	0.00	4.65	1,344.32	100.99	1,445.31	1,449.96
		B2	0.00	4.65	0.00	4.65	1,344.32	100.99	1,445.31	1,449.96
		C1	0.00	4.65	0.00	4.65	1,169.12	85.62	1,254.74	1,259.39
		C2	0.00	4.65	0.00	4.65	1,169.12	85.43	1,254.55	1,259.20
	West Branch Menomonee River	Existing	0.00	0.00	0.00	0.00	62.41	16.80	79.21	79.21
		2020 Future (baseline)	0.00	0.00	0.00	0.00	99.56	22.71	122.27	122.27
		B1	0.00	0.00	0.00	0.00	99.56	22.37	121.93	121.93
		B2	0.00	0.00	0.00	0.00	99.56	22.37	121.93	121.93
		C1	0.00	0.00	0.00	0.00	84.39	18.81	103.20	103.20
		C2	0.00	0.00	0.00	0.00	84.39	18.79	103.18	103.18
	Willow Creek	Existing	0.00	0.00	0.00	0.00	58.69	45.74	104.43	104.43
		2020 Future (baseline)	0.00	0.00	0.00	0.00	89.91	50.22	140.13	140.13
		B1	0.00	0.00	0.00	0.00	89.91	49.78	139.69	139.69
		B2	0.00	0.00	0.00	0.00	89.91	49.78	139.69	139.69
		C1	0.00	0.00	0.00	0.00	76.91	41.92	118.83	118.83
		C2	0.00	0.00	0.00	0.00	76.91	41.89	118.80	118.80
	Watershed Total	Existing	0.00	640.82	1,727.39	2,368.21	14,111.84	393.11	14,504.95	16,873.16
		2020 Future (baseline)	0.00	547.61	1,268.37	1,815.98	12,282.68	450.47	12,733.15	14,549.13
		B1	0.00	96.07	920.90	1,016.97	12,282.68	443.14	12,725.82	13,742.79
		B2	0.00	516.58	275.76	792.34	12,282.68	443.14	12,725.82	13,518.16
		C1	0.00	856.95	1,079.64	1,936.59	10,512.99	388.00	10,900.99	12,837.58
		C2	0.00	856.95	1,079.64	1,936.59	10,512.99	387.25	10,900.24	12,836.83
Total Nitrogen (pounds)	Butler Ditch	Existing	0	10	0	10	10,890	570	11,460	11,470
		2020 Future (baseline)	0	10	0	10	9,750	220	9,970	9,980
		B1	0	10	0	10	9,750	220	9,970	9,980
		B2	0	10	0	10	9,750	220	9,970	9,980
		C1	0	10	0	10	9,480	220	9,700	9,710
		C2	0	10	0	10	9,480	220	9,700	9,710

Table B-2 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Nitrogen (pounds) (continued)	Honey Creek	Existing	640	20	0	660	27,300	220	27,520	28,180
		2020 Future (baseline)	640	20	0	660	24,740	150	24,890	25,550
		B1	640	20	0	660	24,740	150	24,890	25,550
		B2	640	20	0	660	24,740	150	24,890	25,550
		C1	640	20	0	660	24,010	150	24,160	24,820
		C2	640	20	0	660	24,010	150	24,160	24,820
	Lily Creek	Existing	0	0	0	0	9,530	2,920	12,450	12,450
		2020 Future (baseline)	0	0	0	0	9,190	270	9,460	9,460
		B1	0	0	0	0	9,190	270	9,460	9,460
		B2	0	0	0	0	9,190	270	9,460	9,460
		C1	0	0	0	0	8,950	270	9,220	9,220
		C2	0	0	0	0	8,950	270	9,220	9,220
	Little Menomonee Creek	Existing	0	0	0	0	530	9,610	10,140	10,140
		2020 Future (baseline)	0	0	0	0	530	7,870	8,400	8,400
		B1	0	0	0	0	530	7,600	8,130	8,130
		B2	0	0	0	0	530	7,600	8,130	8,130
		C1	0	0	0	0	510	7,790	8,300	8,300
		C2	0	0	0	0	510	6,820	7,330	7,330
	Little Menomonee River	Existing	1,350	<10	0	1,350	25,150	22,270	47,420	48,770
		2020 Future (baseline)	1,350	<10	0	1,350	23,930	12,480	36,410	37,760
		B1	1,350	<10	0	1,350	23,930	12,170	36,100	37,450
		B2	1,350	10	0	1,360	23,930	12,170	36,100	37,460
		C1	1,350	<10	0	1,350	23,220	12,360	35,580	36,930
		C2	1,350	<10	0	1,350	23,220	11,250	34,470	35,820
	Lower Menomonee River	Existing	52,730	1,160	11,610	65,500	49,520	730	50,250	115,750
		2020 Future (baseline)	20,850	980	7,990	29,820	44,550	650	45,200	75,020
		B1	20,850	120	6,090	27,060	44,550	650	45,200	72,260
		B2	20,850	920	1,280	23,050	44,550	650	45,200	68,250
		C1	20,850	1,570	6,300	28,720	43,160	650	43,810	72,530
		C2	20,850	1,570	6,300	28,720	43,160	650	43,810	72,530
	North Branch Menomonee River	Existing	0	0	0	0	310	13,000	13,310	13,310
		2020 Future (baseline)	0	0	0	0	340	12,050	12,390	12,390
		B1	0	0	0	0	340	11,720	12,060	12,060
		B2	0	0	0	0	340	11,720	12,060	12,060
		C1	0	0	0	0	310	11,920	12,230	12,230
		C2	0	0	0	0	310	10,150	10,460	10,460
	Nor-X-Way Channel	Existing	100	0	0	100	4,350	8,110	12,460	12,560
		2020 Future (baseline)	100	0	0	100	5,730	3,490	9,220	9,320
		B1	100	0	0	100	5,730	3,480	9,210	9,310
		B2	100	0	0	100	5,730	3,480	9,210	9,310
		C1	100	0	0	100	5,470	3,420	8,890	8,990
		C2	100	0	0	100	5,470	3,370	8,840	8,940
	Underwood Creek	Existing	20	30	0	50	45,090	2,810	47,900	47,950
		2020 Future (baseline)	20	30	0	50	40,210	1,580	41,790	41,840
		B1	20	30	0	50	40,210	1,580	41,790	41,840
		B2	20	30	0	50	40,210	1,580	41,790	41,840
		C1	20	30	0	50	39,060	1,580	40,640	40,690
		C2	20	30	0	50	39,060	1,570	40,630	40,680

Table B-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Nitrogen (pounds) (continued)	Upper Menomonee River	Existing	810	10	0	820	32,240	32,270	64,510	65,330
		2020 Future (baseline)	810	10	0	820	35,050	21,850	56,900	57,720
		B1	810	10	0	820	35,050	21,540	56,590	57,410
		B2	810	10	0	820	35,050	21,540	56,590	57,410
		C1	810	10	0	820	33,160	21,370	54,530	55,350
		C2	810	10	0	820	33,160	19,790	52,950	53,770
	West Branch Menomonee River	Existing	0	0	0	0	2,500	10,770	13,270	13,270
		2020 Future (baseline)	0	0	0	0	3,670	7,500	11,170	11,170
		B1	0	0	0	0	3,670	7,370	11,040	11,040
		B2	0	0	0	0	3,670	7,370	11,040	11,040
		C1	0	0	0	0	3,400	7,340	10,740	10,740
		C2	0	0	0	0	3,400	6,590	9,990	9,990
	Willow Creek	Existing	0	0	0	0	1,930	15,130	17,060	17,060
		2020 Future (baseline)	0	0	0	0	2,530	9,830	12,360	12,360
		B1	0	0	0	0	2,530	9,660	12,190	12,190
		B2	0	0	0	0	2,530	9,660	12,190	12,190
		C1	0	0	0	0	2,340	9,560	11,900	11,900
		C2	0	0	0	0	2,340	8,890	11,230	11,230
	Watershed Total	Existing	55,650	1,230	11,610	68,490	209,340	118,410	327,750	396,240
		2020 Future (baseline)	23,770	1,050	7,890	32,710	200,220	77,940	278,160	310,870
		B1	23,770	190	6,090	30,050	200,220	76,410	276,630	306,680
		B2	23,770	1,000	1,280	26,050	200,220	76,410	276,630	302,680
		C1	23,770	1,640	6,230	31,640	193,070	76,630	269,700	301,340
		C2	23,770	1,640	6,230	31,640	193,070	69,720	262,790	294,430
Biochemical Oxygen Demand (pounds)	Butler Ditch	Existing	0	80	0	80	44,260	1,680	45,940	46,020
		2020 Future (baseline)	0	80	0	80	36,520	1,180	37,700	37,780
		B1	0	80	0	80	36,520	1,180	37,700	37,780
		B2	0	80	0	80	36,520	1,180	37,700	37,780
		C1	0	80	0	80	36,520	1,180	37,700	37,780
		C2	0	80	0	80	36,520	1,180	37,700	37,780
	Honey Creek	Existing	970	120	0	1,090	119,400	720	120,120	121,210
		2020 Future (baseline)	970	110	0	1,080	100,700	510	101,210	102,290
		B1	970	100	0	1,070	100,700	510	101,210	102,280
		B2	970	110	0	1,080	100,700	510	101,210	102,290
		C1	970	110	0	1,080	100,700	510	101,210	102,290
		C2	970	110	0	1,080	100,700	510	101,210	102,290
	Lily Creek	Existing	0	0	0	0	42,390	4,250	46,640	46,640
		2020 Future (baseline)	0	0	0	0	38,020	1,030	39,050	39,050
		B1	0	0	0	0	38,020	1,030	39,050	39,050
		B2	0	0	0	0	38,020	1,030	39,050	39,050
		C1	0	0	0	0	38,020	1,030	39,050	39,050
		C2	0	0	0	0	38,020	1,030	39,050	39,050
	Little Menomonee Creek	Existing	0	0	0	0	3,570	13,290	16,860	16,860
		2020 Future (baseline)	0	0	0	0	3,380	12,930	16,310	16,310
		B1	0	0	0	0	3,380	12,810	16,190	16,190
		B2	0	0	0	0	3,380	12,810	16,190	16,190
		C1	0	0	0	0	3,380	12,530	15,910	15,910
		C2	0	0	0	0	3,380	11,700	15,080	15,080

Table B-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	
Biochemical Oxygen Demand (pounds) (continued)	Little Menomonee River	Existing	3,090	10	0	3,100	126,650	32,380	159,030	162,130
		2020 Future (baseline)	3,090	10	0	3,100	124,990	23,540	148,530	151,630
		B1	3,090	10	0	3,100	124,990	23,460	148,450	151,550
		B2	3,090	60	0	3,150	124,990	23,460	148,450	151,600
		C1	3,090	10	0	3,100	124,990	23,080	148,070	151,170
		C2	3,090	10	0	3,100	124,990	22,140	147,130	150,230
	Lower Menomonee River	Existing	104,920	7,790	58,680	171,390	236,620	2,440	239,060	410,450
		2020 Future (baseline)	61,040	6,620	38,060	105,720	199,350	2,160	201,510	307,230
		B1	61,040	810	30,450	92,300	199,350	2,160	201,510	293,810
		B2	61,040	6,180	4,580	71,800	199,350	2,160	201,510	273,310
		C1	61,040	10,610	29,620	101,270	198,950	2,160	201,110	302,380
		C2	61,040	10,610	29,620	101,270	198,950	2,160	201,110	302,380
	North Branch Menomonee River	Existing	0	0	0	0	2,200	16,120	18,320	18,320
		2020 Future (baseline)	0	0	0	0	2,390	15,810	18,200	18,200
		B1	0	0	0	0	2,390	15,810	18,200	18,200
		B2	0	0	0	0	2,390	15,810	18,200	18,200
		C1	0	0	0	0	2,250	15,150	17,400	17,400
		C2	0	0	0	0	2,250	14,010	16,260	16,260
	Nor-X-Way Channel	Existing	450	0	0	450	26,530	9,200	35,730	36,180
		2020 Future (baseline)	450	0	0	450	43,680	6,960	50,640	51,090
		B1	450	0	0	450	43,680	6,840	50,520	50,970
		B2	450	0	0	450	43,680	6,840	50,520	50,970
		C1	450	0	0	450	42,880	6,830	49,710	50,160
		C2	450	0	0	450	42,880	6,790	49,670	50,120
	Underwood Creek	Existing	200	210	0	410	194,480	9,490	203,970	204,380
		2020 Future (baseline)	200	180	0	380	159,880	6,400	166,280	166,660
		B1	200	180	0	380	159,880	6,400	166,280	166,660
		B2	200	180	0	380	159,880	6,400	166,280	166,660
		C1	200	180	0	380	159,880	6,400	166,280	166,660
		C2	200	180	0	380	159,880	6,390	166,270	166,650
	Upper Menomonee River	Existing	6,880	60	0	6,940	164,500	52,650	217,150	224,090
		2020 Future (baseline)	6,880	60	0	6,940	192,130	44,770	236,900	243,840
		B1	6,880	60	0	6,940	192,130	44,690	236,820	243,760
		B2	6,880	60	0	6,940	192,130	44,690	236,820	243,760
		C1	6,880	60	0	6,940	184,740	43,160	227,900	234,840
		C2	6,880	60	0	6,940	184,740	42,070	226,810	233,750
	West Branch Menomonee River	Existing	0	0	0	0	18,000	14,280	32,280	32,280
		2020 Future (baseline)	0	0	0	0	31,910	11,640	43,550	43,550
		B1	0	0	0	0	31,910	11,640	43,550	43,550
		B2	0	0	0	0	31,910	11,640	43,550	43,550
		C1	0	0	0	0	29,870	11,110	40,980	40,980
		C2	0	0	0	0	29,870	10,760	40,630	40,630
	Willow Creek	Existing	0	0	0	0	14,790	19,350	34,140	34,140
		2020 Future (baseline)	0	0	0	0	20,230	19,200	39,430	39,430
		B1	0	0	0	0	20,230	18,070	38,300	38,300
		B2	0	0	0	0	20,230	18,070	38,300	38,300
		C1	0	0	0	0	19,050	18,330	37,380	37,380
		C2	0	0	0	0	19,050	17,870	36,920	36,920

Table B-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Biochemical Oxygen Demand (pounds) (continued)	Watershed Total	Existing	116,510	8,270	58,680	183,460	993,390	175,840	1,169,230	1,352,690
		2020 Future (baseline)	72,630	7,060	37,750	117,440	953,180	146,130	1,099,310	1,216,750
		B1	72,630	1,240	30,450	104,320	953,180	144,600	1,097,780	1,202,100
		B2	72,630	6,670	4,580	83,880	953,180	144,600	1,097,780	1,181,660
		C1	72,630	11,050	29,400	113,080	941,230	141,470	1,082,700	1,195,780
		C2	72,630	11,050	29,400	113,080	941,230	136,610	1,077,840	1,190,920
Copper (pounds)	Butler Ditch	Existing	0	<1	0	<1	78	1	79	79
		2020 Future (baseline)	0	<1	0	<1	61	<1	61	61
		B1	0	<1	0	<1	61	<1	61	61
		B2	0	<1	0	<1	61	<1	61	61
		C1	0	<1	0	<1	61	<1	61	61
		C2	0	<1	0	<1	61	<1	61	61
	Honey Creek	Existing	1	<1	0	1	211	<1	211	212
		2020 Future (baseline)	1	<1	0	1	172	<1	172	173
		B1	1	<1	0	1	172	<1	172	173
		B2	1	<1	0	1	172	<1	172	173
		C1	1	<1	0	1	172	<1	172	173
		C2	1	<1	0	1	172	<1	172	173
	Lily Creek	Existing	0	0	0	0	73	1	74	74
		2020 Future (baseline)	0	0	0	0	61	<1	61	61
		B1	0	0	0	0	61	<1	61	61
		B2	0	0	0	0	61	<1	61	61
		C1	0	0	0	0	61	<1	61	61
		C2	0	0	0	0	61	<1	61	61
	Little Menomonee Creek	Existing	0	0	0	0	6	9	15	15
		2020 Future (baseline)	0	0	0	0	6	8	14	14
		B1	0	0	0	0	6	8	14	14
		B2	0	0	0	0	6	8	14	14
		C1	0	0	0	0	6	8	14	14
		C2	0	0	0	0	6	7	13	13
	Little Menomonee River	Existing	0	<1	0	<1	224	17	241	241
		2020 Future (baseline)	0	0	0	0	207	15	222	222
		B1	0	<1	0	<1	207	15	222	222
		B2	0	<1	0	<1	207	15	222	222
		C1	0	<1	0	<1	207	15	222	222
		C2	0	<1	0	<1	207	15	222	222
	Lower Menomonee River	Existing	3	5	48	56	428	1	429	485
		2020 Future (baseline)	3	4	36	43	349	1	350	393
		B1	3	1	25	29	349	1	350	379
		B2	3	4	8	15	349	1	350	365
		C1	3	7	25	35	348	1	349	384
		C2	3	7	25	35	348	1	349	384
	North Branch Menomonee River	Existing	0	0	0	0	4	6	10	10
		2020 Future (baseline)	0	0	0	0	4	7	11	11
		B1	0	0	0	0	4	7	11	11
		B2	0	0	0	0	4	7	11	11
		C1	0	0	0	0	4	6	10	10
		C2	0	0	0	0	4	6	10	10

Table B-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[a]	CSOs	Subtotal	Urban	Rural[b,c]	Subtotal	
Copper (pounds) (continued)	Nor-X-Way Channel	Existing	0	0	0	0	49	8	57	57
		2020 Future (baseline)	0	0	0	0	79	9	88	88
		B1	0	0	0	0	79	9	88	88
		B2	0	0	0	0	79	9	88	88
		C1	0	0	0	0	77	9	86	86
		C2	0	0	0	0	77	9	86	86
	Underwood Creek	Existing	0	<1	0	<1	340	3	343	343
		2020 Future (baseline)	0	<1	0	<1	268	2	270	270
		B1	0	<1	0	<1	268	2	270	270
		B2	0	<1	0	<1	268	2	270	270
		C1	0	<1	0	<1	268	2	270	270
		C2	0	<1	0	<1	268	2	270	270
	Upper Menomonee River	Existing	0	<1	0	<1	295	35	330	330
		2020 Future (baseline)	0	<1	0	<1	329	37	366	366
		B1	0	<1	0	<1	329	37	366	366
		B2	0	<1	0	<1	329	37	366	366
		C1	0	<1	0	<1	314	35	349	349
		C2	0	<1	0	<1	314	34	348	348
	West Branch Menomonee River	Existing	0	0	0	0	33	9	42	42
		2020 Future (baseline)	0	0	0	0	60	9	69	69
		B1	0	0	0	0	60	9	69	69
		B2	0	0	0	0	60	9	69	69
		C1	0	0	0	0	56	9	65	65
		C2	0	0	0	0	56	9	65	65
	Willow Creek	Existing	0	0	0	0	27	16	43	43
		2020 Future (baseline)	0	0	0	0	37	16	53	53
		B1	0	0	0	0	37	16	53	53
		B2	0	0	0	0	37	16	53	53
		C1	0	0	0	0	35	15	50	50
		C2	0	0	0	0	35	15	50	50
	Watershed Total	Existing	4	5	48	57	1,768	105	1,873	1,930
		2020 Future (baseline)	4	4	35	43	1,633	104	1,737	1,780
		B1	4	1	25	30	1,633	104	1,737	1,767
		B2	4	4	8	16	1,633	104	1,737	1,753
		C1	4	7	25	36	1,609	100	1,709	1,745
		C2	4	7	25	36	1,609	98	1,707	1,743

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint source subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table B-3

AVERAGE ANNUAL POLLUTANT LOADS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: MILWAUKEE RIVER WATERSHED

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Phosphorus (pounds)	Batavia Creek	Existing	0	0	0	0	0	120	480	600	600
		2020 Future (baseline)	0	0	0	0	0	120	460	580	580
		B1	0	0	0	0	0	110	400	510	510
		B2	0	0	0	0	0	110	400	510	510
		C1	0	0	0	0	0	120	440	560	560
		C2	0	0	0	0	0	110	430	540	540
	Cedar Creek	Existing	<10	0	0	7,400	7,400	3,310	15,390	18,700	26,100
		2020 Future (baseline)	<10	0	0	10,050	10,050	3,550	14,850	18,400	28,450
		B1	<10	0	0	10,050	10,050	3,270	12,760	16,030	26,080
		B2	<10	0	0	10,050	10,050	3,270	12,760	16,030	26,080
		C1	<10	0	0	10,050	10,050	3,220	13,980	17,200	27,250
		C2	<10	0	0	10,050	10,050	3,090	12,560	15,650	25,700
	Cedar Lake	Existing	0	0	0	0	0	390	2,250	2,640	2,640
		2020 Future (baseline)	0	0	0	0	0	380	2,200	2,580	2,580
		B1	0	0	0	0	0	350	1,980	2,330	2,330
		B2	0	0	0	0	0	350	1,980	2,330	2,330
		C1	0	0	0	0	0	350	2,070	2,420	2,420
		C2	0	0	0	0	0	340	1,940	2,280	2,280
	Chambers Creek	Existing	0	0	0	0	0	150	500	650	650
		2020 Future (baseline)	0	0	0	0	0	150	490	640	640
		B1	0	0	0	0	0	140	440	580	580
		B2	0	0	0	0	0	140	440	580	580
		C1	0	0	0	0	0	140	470	610	610
		C2	0	0	0	0	0	130	460	590	590
	East Branch Milwaukee River	Existing	0	0	0	0	0	460	2,140	2,600	2,600
		2020 Future (baseline)	0	0	0	0	0	470	2,130	2,600	2,600
		B1	0	0	0	0	0	430	1,960	2,390	2,390
		B2	0	0	0	0	0	430	1,960	2,390	2,390
		C1	0	0	0	0	0	430	2,080	2,510	2,510
		C2	0	0	0	0	0	410	1,990	2,400	2,400
	Kettle Moraine Lake	Existing	0	0	0	0	0	270	3,180	3,450	3,450
		2020 Future (baseline)	0	0	0	0	0	270	3,050	3,320	3,320
		B1	0	0	0	0	0	250	2,650	2,900	2,900
		B2	0	0	0	0	0	250	2,650	2,900	2,900
		C1	0	0	0	0	0	260	2,920	3,180	3,180
		C2	0	0	0	0	0	250	2,710	2,960	2,960
	Kewaskum Creek	Existing	0	0	0	0	0	370	1,870	2,240	2,240
		2020 Future (baseline)	0	0	0	0	0	380	1,800	2,180	2,180
		B1	0	0	0	0	0	350	1,560	1,910	1,910
		B2	0	0	0	0	0	350	1,560	1,910	1,910
		C1	0	0	0	0	0	350	1,690	2,040	2,040
		C2	0	0	0	0	0	340	1,540	1,880	1,880

Table B-3 (continued)

			Point Sources					Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[a]	CSOs	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Phosphorus (pounds) (continued)	Lake Fifteen Creek	Existing	0	0	0	0	0	220	1,200	1,420	1,420
		2020 Future (baseline)	0	0	0	0	0	220	1,180	1,400	1,400
		B1	0	0	0	0	0	210	1,080	1,290	1,290
		B2	0	0	0	0	0	210	1,080	1,290	1,290
		C1	0	0	0	0	0	210	1,150	1,360	1,360
		C2	0	0	0	0	0	200	1,100	1,300	1,300
	Lincoln Creek	Existing	4,260	200	80	0	4,540	7,870	70	7,940	12,480
		2020 Future (baseline)	4,260	180	10	0	4,450	6,940	80	7,020	11,470
		B1	4,260	180	<10	0	4,440	6,340	70	6,410	10,850
		B2	4,260	340	20	0	4,620	6,340	70	6,410	11,030
		C1	4,260	280	<10	0	4,540	5,420	40	5,460	10,000
		C2	4,260	280	<10	0	4,540	5,110	40	5,150	9,690
	Lower Cedar Creek	Existing	10	10	0	5,730	5,750	3,200	5,210	8,410	14,160
		2020 Future (baseline)	10	10	0	7,470	7,490	3,320	5,000	8,320	15,810
		B1	10	10	0	7,470	7,490	3,070	4,400	7,470	14,960
		B2	10	10	0	7,470	7,490	3,070	4,400	7,470	14,960
		C1	10	10	0	7,470	7,490	3,080	4,720	7,800	15,290
		C2	10	10	0	7,470	7,490	2,970	4,430	7,400	14,890
	Lower Milwaukee River	Existing	73,470	540	1,710	0	75,720	14,780	6,740	21,520	97,240
		2020 Future (baseline)	73,470	860	1,210	0	75,540	13,500	6,210	19,710	95,250
		B1	73,470	200	880	0	74,550	12,340	5,540	17,880	92,430
		B2	73,470	670	450	0	74,590	12,340	5,540	17,880	92,470
		C1	73,470	1,050	540	0	75,060	11,630	5,700	17,330	92,390
		C2	73,470	1,050	540	0	75,060	11,020	5,150	16,170	91,230
	Middle Milwaukee River	Existing	10	0	0	14,740	14,750	3,480	6,150	9,630	24,380
		2020 Future (baseline)	10	0	0	19,420	19,430	3,700	6,110	9,810	29,240
		B1	10	0	0	19,420	19,430	3,410	5,470	8,880	28,310
		B2	10	0	0	19,420	19,430	3,410	5,470	8,880	28,310
		C1	10	0	0	19,420	19,430	3,330	5,630	8,960	28,390
		C2	10	0	0	19,420	19,430	3,190	5,330	8,520	27,950
	Mink Creek	Existing	0	0	0	0	0	320	1,120	1,440	1,440
		2020 Future (baseline)	0	0	0	0	0	320	1,080	1,400	1,400
		B1	0	0	0	0	0	300	960	1,260	1,260
		B2	0	0	0	0	0	300	960	1,260	1,260
		C1	0	0	0	0	0	300	1,040	1,340	1,340
		C2	0	0	0	0	0	280	1,040	1,320	1,320
	North Branch Milwaukee River	Existing	15,870	<10	0	6,580	22,450	1,480	6,240	7,720	30,170
		2020 Future (baseline)	15,870	<10	0	6,830	22,700	1,490	6,070	7,560	30,260
		B1	15,870	<10	0	6,830	22,700	1,370	5,380	6,750	29,450
		B2	15,870	<10	0	6,830	22,700	1,370	5,380	6,750	29,450
		C1	15,870	<10	0	6,830	22,700	1,380	5,790	7,170	29,870
		C2	15,870	<10	0	6,830	22,700	1,310	5,530	6,840	29,540
	Silver Creek (Sheboygan County)	Existing	0	0	0	900	900	830	1,350	2,180	3,080
		2020 Future (baseline)	0	0	0	1,070	1,070	930	1,310	2,240	3,310
		B1	0	0	0	1,070	1,070	860	1,160	2,020	3,090
		B2	0	0	0	1,070	1,070	860	1,160	2,020	3,090
		C1	0	0	0	1,070	1,070	840	1,240	2,080	3,150
		C2	0	0	0	1,070	1,070	800	1,190	1,990	3,060

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Phosphorus (pounds) (continued)	Silver Creek (West Bend)	Existing	0	0	0	0	0	1,280	730	2,010	2,010
		2020 Future (baseline)	0	0	0	0	0	1,410	740	2,150	2,150
		B1	0	0	0	0	0	1,300	680	1,980	1,980
		B2	0	0	0	0	0	1,300	680	1,980	1,980
		C1	0	0	0	0	0	1,310	680	1,990	1,990
		C2	0	0	0	0	0	1,260	650	1,910	1,910
	Stony Creek	Existing	0	0	0	0	0	310	1,090	1,400	1,400
		2020 Future (baseline)	0	0	0	0	0	310	1,060	1,370	1,370
		B1	0	0	0	0	0	290	950	1,240	1,240
		B2	0	0	0	0	0	290	950	1,240	1,240
		C1	0	0	0	0	0	290	1,030	1,320	1,320
		C2	0	0	0	0	0	280	1,010	1,290	1,290
	Upper Lower Milwaukee River	Existing	140	30	0	12,850	13,020	3,480	5,120	8,600	21,620
		2020 Future (baseline)	140	30	0	17,370	17,540	3,790	4,850	8,640	26,180
		B1	140	30	0	17,370	17,540	3,500	4,290	7,790	25,330
		B2	140	30	0	17,370	17,540	3,500	4,290	7,790	25,330
		C1	140	30	0	17,370	17,540	3,500	4,520	8,020	25,560
		C2	140	30	0	17,370	17,540	3,270	4,170	7,440	24,980
	Upper Milwaukee River	Existing	80	0	0	3,540	3,620	1,400	8,830	10,230	13,850
		2020 Future (baseline)	80	0	0	4,620	4,700	1,480	8,430	9,910	14,610
		B1	80	0	0	4,620	4,700	1,370	7,210	8,580	13,280
		B2	80	0	0	4,620	4,700	1,370	7,210	8,580	13,280
		C1	80	0	0	4,620	4,700	1,380	8,010	9,390	14,090
		C2	80	0	0	4,620	4,700	1,330	7,340	8,670	13,370
	Watercress Creek	Existing	0	0	0	0	0	300	2,360	2,660	2,660
		2020 Future (baseline)	0	0	0	0	0	300	2,290	2,590	2,590
		B1	0	0	0	0	0	280	2,030	2,310	2,310
		B2	0	0	0	0	0	280	2,030	2,310	2,310
		C1	0	0	0	0	0	280	2,190	2,470	2,470
		C2	0	0	0	0	0	270	2,060	2,330	2,330
	West Branch Milwaukee River	Existing	0	0	0	0	0	1,270	9,040	10,310	10,310
		2020 Future (baseline)	0	0	0	0	0	1,260	8,620	9,880	9,880
		B1	0	0	0	0	0	1,170	7,400	8,570	8,570
		B2	0	0	0	0	0	1,170	7,400	8,570	8,570
		C1	0	0	0	0	0	1,180	8,210	9,390	9,390
		C2	0	0	0	0	0	1,150	7,520	8,670	8,670
	Watershed Total	Existing	93,840	780	1,790	51,740	148,150	45,290	81,060	126,350	274,500
		2020 Future (baseline)	93,840	1,080	1,220	66,830	162,970	44,290	78,010	122,300	285,270
		B1	93,840	420	880	66,830	161,970	40,710	68,370	109,080	271,050
		B2	93,840	1,050	470	66,830	162,190	40,710	68,370	109,080	271,270
		C1	93,840	1,370	540	66,830	162,580	39,000	73,600	112,600	275,180
		C2	93,840	1,370	540	66,830	162,580	37,110	68,190	105,300	267,880

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Suspended Solids (pounds)	Batavia Creek	Existing	0	0	0	0	0	40,000	186,000	226,000	226,000
		2020 Future (baseline)	0	0	0	0	0	40,000	180,000	220,000	220,000
		B1	0	0	0	0	0	36,000	150,000	186,000	186,000
		B2	0	0	0	0	0	36,000	150,000	186,000	186,000
		C1	0	0	0	0	0	36,000	170,000	206,000	206,000
		C2	0	0	0	0	0	34,000	170,000	204,000	204,000
	Cedar Creek	Existing	0	0	0	24,000	24,000	1,504,000	6,782,000	8,286,000	8,310,000
		2020 Future (baseline)	0	0	0	32,000	32,000	1,588,000	6,634,000	8,222,000	8,254,000
		B1	0	0	0	32,000	32,000	1,472,000	5,414,000	6,886,000	6,918,000
		B2	0	0	0	32,000	32,000	1,472,000	5,414,000	6,886,000	6,918,000
		C1	0	0	0	32,000	32,000	1,470,000	6,236,000	7,706,000	7,738,000
		C2	0	0	0	32,000	32,000	1,428,000	6,354,000	7,782,000	7,814,000
	Cedar Lake	Existing	0	0	0	0	0	186,000	1,070,000	1,256,000	1,256,000
		2020 Future (baseline)	0	0	0	0	0	178,000	1,048,000	1,226,000	1,226,000
		B1	0	0	0	0	0	164,000	922,000	1,086,000	1,086,000
		B2	0	0	0	0	0	164,000	922,000	1,086,000	1,086,000
		C1	0	0	0	0	0	166,000	988,000	1,154,000	1,154,000
		C2	0	0	0	0	0	162,000	1,002,000	1,164,000	1,164,000
	Chambers Creek	Existing	0	0	0	0	0	52,000	200,000	252,000	252,000
		2020 Future (baseline)	0	0	0	0	0	52,000	194,000	246,000	246,000
		B1	0	0	0	0	0	46,000	164,000	210,000	210,000
		B2	0	0	0	0	0	46,000	164,000	210,000	210,000
		C1	0	0	0	0	0	46,000	184,000	230,000	230,000
		C2	0	0	0	0	0	44,000	182,000	226,000	226,000
	East Branch Milwaukee River	Existing	0	0	0	0	0	150,000	860,000	1,010,000	1,010,000
		2020 Future (baseline)	0	0	0	0	0	150,000	852,000	1,002,000	1,002,000
		B1	0	0	0	0	0	126,000	744,000	870,000	870,000
		B2	0	0	0	0	0	126,000	744,000	870,000	870,000
		C1	0	0	0	0	0	128,000	820,000	948,000	948,000
		C2	0	0	0	0	0	122,000	806,000	928,000	928,000
	Kettle Moraine Lake	Existing	0	0	0	0	0	126,000	1,916,000	2,042,000	2,042,000
		2020 Future (baseline)	0	0	0	0	0	126,000	1,874,000	2,000,000	2,000,000
		B1	0	0	0	0	0	108,000	1,558,000	1,666,000	1,666,000
		B2	0	0	0	0	0	108,000	1,558,000	1,666,000	1,666,000
		C1	0	0	0	0	0	110,000	1,794,000	1,904,000	1,904,000
		C2	0	0	0	0	0	110,000	1,882,000	1,992,000	1,992,000
	Kewaskum Creek	Existing	0	0	0	0	0	162,000	878,000	1,040,000	1,040,000
		2020 Future (baseline)	0	0	0	0	0	160,000	840,000	1,000,000	1,000,000
		B1	0	0	0	0	0	140,000	714,000	854,000	854,000
		B2	0	0	0	0	0	140,000	714,000	854,000	854,000
		C1	0	0	0	0	0	140,000	784,000	924,000	924,000
		C2	0	0	0	0	0	138,000	862,000	1,000,000	1,000,000
	Lake Fifteen Creek	Existing	0	0	0	0	0	94,000	686,000	780,000	780,000
		2020 Future (baseline)	0	0	0	0	0	94,000	680,000	774,000	774,000
		B1	0	0	0	0	0	76,000	586,000	662,000	662,000
		B2	0	0	0	0	0	76,000	586,000	662,000	662,000
		C1	0	0	0	0	0	78,000	652,000	730,000	730,000
		C2	0	0	0	0	0	76,000	670,000	746,000	746,000

Table B-3 (continued)

			Point Sources					Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[a]	CSOs	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Suspended Solids (pounds) (continued)	Lincoln Creek	Existing	28,000	6,000	4,000	0	38,000	2,778,000	48,000	2,826,000	2,864,000
		2020 Future (baseline)	28,000	6,000	0	0	34,000	2,180,000	38,000	2,218,000	2,252,000
		B1	28,000	16,000	0	0	44,000	1,852,000	36,000	1,888,000	1,932,000
		B2	28,000	28,000	2,000	0	58,000	1,852,000	36,000	1,888,000	1,946,000
		C1	28,000	24,000	0	0	52,000	1,284,000	26,000	1,310,000	1,362,000
		C2	28,000	24,000	0	0	52,000	1,226,000	24,000	1,250,000	1,302,000
	Lower Cedar Creek	Existing	0	0	0	46,000	46,000	1,256,000	3,094,000	4,350,000	4,396,000
		2020 Future (baseline)	0	0	0	62,000	62,000	1,266,000	3,030,000	4,296,000	4,358,000
		B1	0	0	0	62,000	62,000	1,070,000	2,538,000	3,608,000	3,670,000
		B2	0	0	0	62,000	62,000	1,070,000	2,538,000	3,608,000	3,670,000
		C1	0	0	0	62,000	62,000	1,086,000	2,870,000	3,956,000	4,018,000
		C2	0	0	0	62,000	62,000	1,064,000	3,024,000	4,088,000	4,150,000
	Lower Milwaukee River	Existing	370,000	16,000	139,650	0	525,650	5,236,000	3,032,000	8,268,000	8,793,650
		2020 Future (baseline)	370,000	24,000	104,140	0	498,140	4,306,000	2,654,000	6,960,000	7,458,140
		B1	370,000	18,000	130,120	0	518,120	3,748,000	2,232,000	5,980,000	6,498,120
		B2	370,000	58,000	59,390	0	487,390	3,748,000	2,232,000	5,980,000	6,467,390
		C1	370,000	90,000	94,000	0	554,000	3,418,000	2,450,000	5,868,000	6,422,000
		C2	370,000	90,000	94,000	0	554,000	3,274,000	2,414,000	5,688,000	6,242,000
	Middle Milwaukee River	Existing	0	0	0	44,000	44,000	1,510,000	3,088,000	4,598,000	4,642,000
		2020 Future (baseline)	0	0	0	60,000	60,000	1,558,000	2,990,000	4,548,000	4,608,000
		B1	0	0	0	60,000	60,000	1,356,000	2,542,000	3,898,000	3,958,000
		B2	0	0	0	60,000	60,000	1,356,000	2,542,000	3,898,000	3,958,000
		C1	0	0	0	60,000	60,000	1,344,000	2,746,000	4,090,000	4,150,000
		C2	0	0	0	60,000	60,000	1,316,000	2,862,000	4,178,000	4,238,000
	Mink Creek	Existing	0	0	0	0	0	106,000	460,000	566,000	566,000
		2020 Future (baseline)	0	0	0	0	0	106,000	442,000	548,000	548,000
		B1	0	0	0	0	0	94,000	374,000	468,000	468,000
		B2	0	0	0	0	0	94,000	374,000	468,000	468,000
		C1	0	0	0	0	0	96,000	420,000	516,000	516,000
		C2	0	0	0	0	0	92,000	426,000	518,000	518,000
	North Branch Milwaukee River	Existing	54,000	0	0	8,000	62,000	532,000	2,666,000	3,198,000	3,260,000
		2020 Future (baseline)	54,000	0	0	22,280	76,280	530,000	2,582,000	3,112,000	3,188,280
		B1	54,000	0	0	22,280	76,280	466,000	2,170,000	2,636,000	2,712,280
		B2	54,000	0	0	22,280	76,280	466,000	2,170,000	2,636,000	2,712,280
		C1	54,000	0	0	22,280	76,280	474,000	2,434,000	2,908,000	2,984,280
		C2	54,000	0	0	22,280	76,280	454,000	2,450,000	2,904,000	2,980,280
	Silver Creek (Sheboygan County)	Existing	0	0	0	16,000	16,000	292,000	532,000	824,000	840,000
		2020 Future (baseline)	0	0	0	20,000	20,000	322,000	518,000	840,000	860,000
		B1	0	0	0	20,000	20,000	280,000	430,000	710,000	730,000
		B2	0	0	0	20,000	20,000	280,000	430,000	710,000	730,000
		C1	0	0	0	20,000	20,000	282,000	480,000	762,000	782,000
		C2	0	0	0	20,000	20,000	268,000	472,000	740,000	760,000
	Silver Creek (West Bend)	Existing	0	0	0	0	0	526,000	470,000	996,000	996,000
		2020 Future (baseline)	0	0	0	0	0	548,000	454,000	1,002,000	1,002,000
		B1	0	0	0	0	0	500,000	404,000	904,000	904,000
		B2	0	0	0	0	0	500,000	404,000	904,000	904,000
		C1	0	0	0	0	0	508,000	432,000	940,000	940,000
		C2	0	0	0	0	0	498,000	432,000	930,000	930,000

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Suspended Solids (pounds) (continued)	Stony Creek	Existing	0	0	0	0	0	100,000	434,000	534,000	534,000
		2020 Future (baseline)	0	0	0	0	0	100,000	426,000	526,000	526,000
		B1	0	0	0	0	0	82,000	362,000	444,000	444,000
		B2	0	0	0	0	0	82,000	362,000	444,000	444,000
		C1	0	0	0	0	0	84,000	404,000	488,000	488,000
		C2	0	0	0	0	0	80,000	404,000	484,000	484,000
	Upper Lower Milwaukee River	Existing	0	2,000	0	130,000	132,000	1,748,000	2,574,000	4,322,000	4,454,000
		2020 Future (baseline)	0	2,000	0	172,000	174,000	1,880,000	2,442,000	4,322,000	4,496,000
		B1	0	2,000	0	172,000	174,000	1,702,000	2,050,000	3,752,000	3,926,000
		B2	0	2,000	0	172,000	174,000	1,702,000	2,050,000	3,752,000	3,926,000
		C1	0	2,000	0	172,000	174,000	1,728,000	2,266,000	3,994,000	4,168,000
		C2	0	2,000	0	172,000	174,000	1,622,000	2,278,000	3,900,000	4,074,000
	Upper Milwaukee River	Existing	2,000	0	0	26,000	28,000	580,000	4,714,000	5,294,000	5,322,000
		2020 Future (baseline)	2,000	0	0	36,000	38,000	610,000	4,578,000	5,188,000	5,226,000
		B1	2,000	0	0	36,000	38,000	538,000	3,746,000	4,284,000	4,322,000
		B2	2,000	0	0	36,000	38,000	538,000	3,746,000	4,284,000	4,322,000
		C1	2,000	0	0	36,000	38,000	548,000	4,340,000	4,888,000	4,926,000
		C2	2,000	0	0	36,000	38,000	536,000	4,578,000	5,114,000	5,152,000
	Watercress Creek	Existing	0	0	0	0	0	134,000	1,388,000	1,522,000	1,522,000
		2020 Future (baseline)	0	0	0	0	0	134,000	1,358,000	1,492,000	1,492,000
		B1	0	0	0	0	0	112,000	1,138,000	1,250,000	1,250,000
		B2	0	0	0	0	0	112,000	1,138,000	1,250,000	1,250,000
		C1	0	0	0	0	0	114,000	1,290,000	1,404,000	1,404,000
		C2	0	0	0	0	0	112,000	1,372,000	1,484,000	1,484,000
	West Branch Milwaukee River	Existing	0	0	0	0	0	596,000	4,682,000	5,278,000	5,278,000
		2020 Future (baseline)	0	0	0	0	0	590,000	4,538,000	5,128,000	5,128,000
		B1	0	0	0	0	0	486,000	3,724,000	4,210,000	4,210,000
		B2	0	0	0	0	0	486,000	3,724,000	4,210,000	4,210,000
		C1	0	0	0	0	0	498,000	4,276,000	4,774,000	4,774,000
		C2	0	0	0	0	0	488,000	4,620,000	5,108,000	5,108,000
	Watershed Total	Existing	454,000	24,000	143,650	294,000	915,650	17,708,000	39,760,000	57,468,000	58,383,650
		2020 Future (baseline)	454,000	32,000	104,140	404,280	994,420	16,518,000	38,352,000	54,870,000	55,864,420
		B1	454,000	36,000	130,120	404,280	1,024,400	14,454,000	31,998,000	46,452,000	47,476,400
		B2	454,000	88,000	61,390	404,280	1,007,670	14,454,000	31,998,000	46,452,000	47,459,670
		C1	454,000	116,000	94,000	404,280	1,068,280	13,638,000	36,062,000	49,700,000	50,768,280
		C2	454,000	116,000	94,000	404,280	1,068,280	13,144,000	37,284,000	50,428,000	51,496,280
Fecal Coliform Bacteria (trillions of cells)	Batavia Creek	Existing	0.00	0.00	0.00	0.00	0.00	73.50	87.60	161.10	161.10
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	73.30	87.52	160.82	160.82
		B1	0.00	0.00	0.00	0.00	0.00	73.30	87.52	160.82	160.82
		B2	0.00	0.00	0.00	0.00	0.00	73.30	87.52	160.82	160.82
		C1	0.00	0.00	0.00	0.00	0.00	65.97	84.23	150.20	150.20
		C2	0.00	0.00	0.00	0.00	0.00	62.70	69.10	131.80	131.80
	Cedar Creek	Existing	0.01	0.00	0.00	0.20	0.21	1,664.36	1,878.04	3,542.40	3,542.61
		2020 Future (baseline)	0.01	0.00	0.00	0.27	0.28	852.04	1,201.78	2,053.82	2,054.10
		B1	0.01	0.00	0.00	0.27	0.28	852.04	1,201.78	2,053.82	2,054.10
		B2	0.01	0.00	0.00	0.27	0.28	852.04	1,201.78	2,053.82	2,054.10
		C1	0.01	0.00	0.00	0.27	0.28	697.47	1,018.90	1,716.37	1,716.65
		C2	0.01	0.00	0.00	0.27	0.28	658.79	869.91	1,528.70	1,528.98

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Cedar Lake	Existing	0.00	0.00	0.00	0.00	0.00	212.84	1,362.21	1,575.05	1,575.05
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	1.83	53.16	54.99	54.99
		B1	0.00	0.00	0.00	0.00	0.00	1.83	53.16	54.99	54.99
		B2	0.00	0.00	0.00	0.00	0.00	1.83	53.16	54.99	54.99
		C1	0.00	0.00	0.00	0.00	0.00	0.00	42.90	42.90	42.90
		C2	0.00	0.00	0.00	0.00	0.00	0.00	34.60	34.60	34.60
	Chambers Creek	Existing	0.00	0.00	0.00	0.00	0.00	82.08	105.88	187.96	187.96
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	81.86	105.74	187.60	187.60
		B1	0.00	0.00	0.00	0.00	0.00	81.86	105.74	187.60	187.60
		B2	0.00	0.00	0.00	0.00	0.00	81.86	105.74	187.60	187.60
		C1	0.00	0.00	0.00	0.00	0.00	73.67	100.33	174.00	174.00
		C2	0.00	0.00	0.00	0.00	0.00	69.92	85.18	155.10	155.10
	East Branch Milwaukee River	Existing	0.00	0.00	0.00	0.00	0.00	270.07	521.74	791.81	791.81
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	237.88	514.06	751.94	751.94
		B1	0.00	0.00	0.00	0.00	0.00	237.88	514.06	751.94	751.94
		B2	0.00	0.00	0.00	0.00	0.00	237.88	514.06	751.94	751.94
		C1	0.00	0.00	0.00	0.00	0.00	212.71	468.39	681.10	681.10
		C2	0.00	0.00	0.00	0.00	0.00	201.45	419.92	621.37	621.37
	Kettle Moraine Lake	Existing	0.00	0.00	0.00	0.00	0.00	157.94	540.89	698.83	698.83
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	157.85	540.66	698.51	698.51
		B1	0.00	0.00	0.00	0.00	0.00	157.85	540.66	698.51	698.51
		B2	0.00	0.00	0.00	0.00	0.00	157.85	540.66	698.51	698.51
		C1	0.00	0.00	0.00	0.00	0.00	142.15	498.55	640.70	640.70
		C2	0.00	0.00	0.00	0.00	0.00	134.52	447.38	581.90	581.90
	Kewaskum Creek	Existing	0.00	0.00	0.00	0.00	0.00	198.48	180.39	378.87	378.87
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	112.67	182.23	294.90	294.90
		B1	0.00	0.00	0.00	0.00	0.00	112.67	182.23	294.90	294.90
		B2	0.00	0.00	0.00	0.00	0.00	112.67	182.23	294.90	294.90
		C1	0.00	0.00	0.00	0.00	0.00	97.22	152.62	249.84	249.84
		C2	0.00	0.00	0.00	0.00	0.00	92.05	128.60	220.65	220.65
	Lake Fifteen Creek	Existing	0.00	0.00	0.00	0.00	0.00	114.69	340.61	455.30	455.30
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	114.49	340.01	454.50	454.50
		B1	0.00	0.00	0.00	0.00	0.00	114.49	340.01	454.50	454.50
		B2	0.00	0.00	0.00	0.00	0.00	114.49	340.01	454.50	454.50
		C1	0.00	0.00	0.00	0.00	0.00	103.01	310.69	413.70	413.70
		C2	0.00	0.00	0.00	0.00	0.00	97.44	283.86	381.30	381.30
	Lincoln Creek	Existing	0.79	111.29	57.96	0.00	170.04	4,178.24	0.28	4,178.52	4,348.56
		2020 Future (baseline)	0.79	99.03	6.59	0.00	106.41	3,456.43	19.12	3,475.55	3,581.96
		B1	0.79	95.63	0.60	0.00	97.02	3,456.43	19.12	3,475.55	3,572.57
		B2	0.79	182.93	12.77	0.00	196.49	3,456.43	19.12	3,475.55	3,672.04
		C1	0.79	151.19	0.57	0.00	152.55	2,449.00	0.10	2,449.10	2,601.65
		C2	0.79	151.19	0.57	0.00	152.55	2,272.10	0.10	2,272.20	2,424.75
	Lower Cedar Creek	Existing	0.00	2.78	0.00	1.67	4.45	1,637.71	851.03	2,488.74	2,493.19
		2020 Future (baseline)	0.00	2.78	0.00	2.17	4.95	446.29	798.65	1,244.94	1,249.89
		B1	0.00	2.78	0.00	2.17	4.95	446.29	798.65	1,244.94	1,249.89
		B2	0.00	2.78	0.00	2.17	4.95	446.29	798.65	1,244.94	1,249.89
		C1	0.00	2.78	0.00	2.17	4.95	384.91	662.98	1,047.89	1,052.84
		C2	0.00	2.78	0.00	2.17	4.95	364.14	591.24	955.38	960.33

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Lower Milwaukee River	Existing	9.84	296.62	1,820.95	0.00	2,127.41	7,522.97	973.60	8,496.57	10,623.98
		2020 Future (baseline)	9.84	471.65	1,343.69	0.00	1,825.18	5,901.79	828.16	6,729.95	8,555.13
		B1	9.84	108.66	992.60	0.00	1,111.10	5,901.79	828.16	6,729.95	7,841.05
		B2	9.84	364.32	597.99	0.00	972.15	5,901.79	828.16	6,729.95	7,702.10
		C1	9.84	573.70	407.82	0.00	991.36	4,721.23	599.01	5,320.24	6,311.60
		C2	9.84	573.70	407.82	0.00	991.36	4,428.45	540.60	4,969.05	5,960.41
	Middle Milwaukee River	Existing	0.02	0.00	0.00	27.70	27.72	1,909.21	1,396.42	3,305.63	3,333.35
		2020 Future (baseline)	0.02	0.00	0.00	37.73	37.75	408.44	1,084.69	1,493.13	1,530.88
		B1	0.02	0.00	0.00	37.73	37.75	408.44	1,084.69	1,493.13	1,530.88
		B2	0.02	0.00	0.00	37.73	37.75	408.44	1,084.69	1,493.13	1,530.88
		C1	0.02	0.00	0.00	37.73	37.75	313.67	782.61	1,096.28	1,134.03
		C2	0.02	0.00	0.00	37.73	37.75	296.47	701.84	998.31	1,036.06
	Mink Creek	Existing	0.00	0.00	0.00	0.00	0.00	183.01	263.94	446.95	446.95
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	182.53	263.62	446.15	446.15
		B1	0.00	0.00	0.00	0.00	0.00	182.53	263.62	446.15	446.15
		B2	0.00	0.00	0.00	0.00	0.00	182.53	263.62	446.15	446.15
		C1	0.00	0.00	0.00	0.00	0.00	164.41	251.69	416.10	416.10
		C2	0.00	0.00	0.00	0.00	0.00	156.07	212.03	368.10	368.10
	North Branch Milwaukee River	Existing	0.67	1.77	0.00	8.19	10.63	814.80	1,623.75	2,438.55	2,449.18
		2020 Future (baseline)	0.67	1.77	0.00	8.26	10.70	725.20	1,424.17	2,149.37	2,160.07
		B1	0.67	1.77	0.00	8.26	10.70	725.20	1,424.17	2,149.37	2,160.07
		B2	0.67	1.77	0.00	8.26	10.70	725.20	1,424.17	2,149.37	2,160.07
		C1	0.67	1.77	0.00	8.26	10.70	647.36	1,297.26	1,944.62	1,955.32
		C2	0.67	1.77	0.00	8.26	10.70	613.59	1,147.88	1,761.47	1,772.17
	Silver Creek (Sheboygan County)	Existing	0.05	0.00	0.00	0.82	0.87	599.28	295.74	895.02	895.89
		2020 Future (baseline)	0.05	0.00	0.00	0.97	1.02	192.17	303.95	496.12	497.14
		B1	0.05	0.00	0.00	0.97	1.02	192.17	303.95	496.12	497.14
		B2	0.05	0.00	0.00	0.97	1.02	192.17	303.95	496.12	497.14
		C1	0.05	0.00	0.00	0.97	1.02	163.42	255.18	418.60	419.62
		C2	0.05	0.00	0.00	0.97	1.02	155.29	221.39	376.68	377.70
	Silver Creek (West Bend)	Existing	0.00	0.00	0.00	0.00	0.00	722.20	210.56	932.76	932.76
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	311.75	224.37	536.12	536.12
		B1	0.00	0.00	0.00	0.00	0.00	311.75	224.37	536.12	536.12
		B2	0.00	0.00	0.00	0.00	0.00	311.75	224.37	536.12	536.12
		C1	0.00	0.00	0.00	0.00	0.00	273.63	170.01	443.64	443.64
		C2	0.00	0.00	0.00	0.00	0.00	257.19	157.57	414.76	414.76
	Stony Creek	Existing	0.00	0.00	0.00	0.00	0.00	188.85	271.65	460.50	460.50
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	188.35	271.24	459.59	459.59
		B1	0.00	0.00	0.00	0.00	0.00	188.35	271.24	459.59	459.59
		B2	0.00	0.00	0.00	0.00	0.00	188.35	271.24	459.59	459.59
		C1	0.00	0.00	0.00	0.00	0.00	169.44	255.56	425.00	425.00
		C2	0.00	0.00	0.00	0.00	0.00	160.75	220.45	381.20	381.20
	Upper Lower Milwaukee River	Existing	0.62	16.58	0.00	1.75	18.95	1,849.48	1,104.93	2,954.41	2,973.36
		2020 Future (baseline)	0.62	16.58	0.00	2.22	19.42	245.37	774.72	1,020.09	1,039.51
		B1	0.62	16.58	0.00	2.22	19.42	245.37	774.72	1,020.09	1,039.51
		B2	0.62	16.58	0.00	2.22	19.42	245.37	774.72	1,020.09	1,039.51
		C1	0.62	16.58	0.00	2.22	19.42	201.24	598.53	799.77	819.19
		C2	0.62	16.58	0.00	2.22	19.42	190.54	523.68	714.22	733.64

Table B-3 (continued)

			Point Sources					Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[a]	CSOs	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Upper Milwaukee River	Existing	0.11	0.00	0.00	1.21	1.32	820.18	809.09	1,629.27	1,630.59
		2020 Future (baseline)	0.11	0.00	0.00	1.45	1.56	438.94	692.87	1,131.81	1,133.37
		B1	0.11	0.00	0.00	1.45	1.56	438.94	692.87	1,131.81	1,133.37
		B2	0.11	0.00	0.00	1.45	1.56	438.94	692.87	1,131.81	1,133.37
		C1	0.11	0.00	0.00	1.45	1.56	389.61	632.83	1,022.44	1,024.00
		C2	0.11	0.00	0.00	1.45	1.56	370.02	525.15	895.17	896.73
	Watercress Creek	Existing	0.00	0.00	0.00	0.00	0.00	201.89	723.77	925.66	925.66
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	201.75	723.42	925.17	925.17
		B1	0.00	0.00	0.00	0.00	0.00	201.75	723.42	925.17	925.17
		B2	0.00	0.00	0.00	0.00	0.00	201.75	723.42	925.17	925.17
		C1	0.00	0.00	0.00	0.00	0.00	181.60	660.30	841.90	841.90
		C2	0.00	0.00	0.00	0.00	0.00	171.23	601.17	772.40	772.40
	West Branch Milwaukee River	Existing	0.00	0.00	0.00	0.00	0.00	697.12	824.04	1,521.16	1,521.16
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	605.04	794.74	1,399.78	1,399.78
		B1	0.00	0.00	0.00	0.00	0.00	605.04	794.74	1,399.78	1,399.78
		B2	0.00	0.00	0.00	0.00	0.00	605.04	794.74	1,399.78	1,399.78
		C1	0.00	0.00	0.00	0.00	0.00	544.13	760.05	1,304.18	1,304.18
		C2	0.00	0.00	0.00	0.00	0.00	515.36	628.62	1,143.98	1,143.98
	Watershed Total	Existing	12.11	429.04	1,878.91	41.54	2,361.60	24,098.90	14,366.16	38,465.06	40,826.66
		2020 Future (baseline)	12.11	591.81	1,350.28	53.07	2,007.27	14,935.97	11,228.88	26,164.85	28,172.12
		B1	12.11	225.42	993.20	53.07	1,283.80	14,935.97	11,228.88	26,164.85	27,448.65
		B2	12.11	568.38	610.76	53.07	1,244.32	14,935.97	11,228.88	26,164.85	27,409.17
		C1	12.11	746.02	408.39	53.07	1,219.59	11,995.85	9,602.72	21,598.57	22,818.16
		C2	12.11	746.02	408.39	53.07	1,219.59	11,268.07	8,410.27	19,678.34	20,887.93
Total Nitrogen (pounds)	Batavia Creek	Existing	0	0	0	0	0	560	18,950	19,510	19,510
		2020 Future (baseline)	0	0	0	0	0	560	18,800	19,360	19,360
		B1	0	0	0	0	0	530	18,380	18,910	18,910
		B2	0	0	0	0	0	530	18,380	18,910	18,910
		C1	0	0	0	0	0	540	18,710	19,250	19,250
		C2	0	0	0	0	0	520	15,190	15,710	15,710
	Cedar Creek	Existing	40	0	0	4,580	4,620	13,420	286,240	299,660	304,280
		2020 Future (baseline)	40	0	0	6,220	6,260	14,600	272,880	287,480	293,740
		B1	40	0	0	6,220	6,260	14,280	258,030	272,310	278,570
		B2	40	0	0	6,220	6,260	14,280	258,030	272,310	278,570
		C1	40	0	0	6,220	6,260	13,890	269,560	283,450	289,710
		C2	40	0	0	6,220	6,260	13,390	220,630	234,020	240,280
	Cedar Lake	Existing	0	0	0	0	0	1,610	24,990	26,600	26,600
		2020 Future (baseline)	0	0	0	0	0	1,600	24,560	26,160	26,160
		B1	0	0	0	0	0	1,560	23,550	25,110	25,110
		B2	0	0	0	0	0	1,560	23,550	25,110	25,110
		C1	0	0	0	0	0	1,560	24,300	25,860	25,860
		C2	0	0	0	0	0	1,500	20,700	22,200	22,200
	Chambers Creek	Existing	0	0	0	0	0	650	18,970	19,620	19,620
		2020 Future (baseline)	0	0	0	0	0	650	18,830	19,480	19,480
		B1	0	0	0	0	0	620	18,480	19,100	19,100
		B2	0	0	0	0	0	620	18,480	19,100	19,100
		C1	0	0	0	0	0	620	18,760	19,380	19,380
		C2	0	0	0	0	0	600	15,360	15,960	15,960

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Nitrogen (pounds) (continued)	East Branch Milwaukee River	Existing	0	0	0	0	0	2,080	41,270	43,350	43,350
		2020 Future (baseline)	0	0	0	0	0	2,090	40,690	42,780	42,780
		B1	0	0	0	0	0	1,950	39,930	41,880	41,880
		B2	0	0	0	0	0	1,950	39,930	41,880	41,880
		C1	0	0	0	0	0	1,960	40,520	42,480	42,480
		C2	0	0	0	0	0	1,880	34,630	36,510	36,510
	Kettle Moraine Lake	Existing	0	0	0	0	0	1,220	58,780	60,000	60,000
		2020 Future (baseline)	0	0	0	0	0	1,220	57,820	59,040	59,040
		B1	0	0	0	0	0	1,160	54,830	55,990	55,990
		B2	0	0	0	0	0	1,160	54,830	55,990	55,990
		C1	0	0	0	0	0	1,170	57,180	58,350	58,350
		C2	0	0	0	0	0	1,130	47,030	48,160	48,160
	Kewaskum Creek	Existing	0	0	0	0	0	1,780	42,100	43,880	43,880
		2020 Future (baseline)	0	0	0	0	0	1,870	39,920	41,790	41,790
		B1	0	0	0	0	0	1,800	38,600	40,400	40,400
		B2	0	0	0	0	0	1,800	38,600	40,400	40,400
		C1	0	0	0	0	0	1,780	39,440	41,220	41,220
		C2	0	0	0	0	0	1,730	32,310	34,040	34,040
	Lake Fifteen Creek	Existing	0	0	0	0	0	920	20,270	21,190	21,190
		2020 Future (baseline)	0	0	0	0	0	920	20,080	21,000	21,000
		B1	0	0	0	0	0	860	19,530	20,390	20,390
		B2	0	0	0	0	0	860	19,530	20,390	20,390
		C1	0	0	0	0	0	870	19,930	20,800	20,800
		C2	0	0	0	0	0	830	16,880	17,710	17,710
	Lincoln Creek	Existing	3,530	850	960	0	5,340	42,420	500	42,920	48,260
		2020 Future (baseline)	3,530	760	110	0	4,400	39,530	460	39,990	44,390
		B1	3,530	730	10	0	4,270	38,220	450	38,670	42,940
		B2	3,530	1,400	210	0	5,140	38,220	450	38,670	43,810
		C1	3,530	1,160	10	0	4,700	33,960	340	34,300	39,000
		C2	3,530	1,160	10	0	4,700	32,210	320	32,530	37,230
	Lower Cedar Creek	Existing	<10	20	0	950	970	16,910	95,100	112,010	112,980
		2020 Future (baseline)	<10	20	0	1,230	1,250	17,960	89,380	107,340	108,590
		B1	<10	20	0	1,230	1,250	17,240	85,190	102,430	103,680
		B2	<10	20	0	1,230	1,250	17,240	85,190	102,430	103,680
		C1	<10	20	0	1,230	1,250	17,200	88,270	105,470	106,720
		C2	<10	20	0	1,230	1,250	16,570	73,510	90,080	91,330
	Lower Milwaukee River	Existing	64,010	2,270	16,950	0	83,230	79,020	109,560	188,580	271,810
		2020 Future (baseline)	64,010	3,610	11,560	0	79,180	77,390	82,260	159,650	238,830
		B1	64,010	830	8,330	0	73,170	75,350	78,610	153,960	227,130
		B2	64,010	2,790	3,540	0	70,340	75,350	78,610	153,960	224,300
		C1	64,010	4,390	6,740	0	75,140	71,490	80,720	152,210	227,350
		C2	64,010	4,390	6,740	0	75,140	68,230	67,700	135,930	211,070
	Middle Milwaukee River	Existing	10	0	0	27,930	27,940	16,190	123,790	139,980	167,920
		2020 Future (baseline)	10	0	0	37,670	37,680	17,290	109,130	126,420	164,100
		B1	10	0	0	37,670	37,680	16,570	105,600	122,170	159,850
		B2	10	0	0	37,670	37,680	16,570	105,600	122,170	159,850
		C1	10	0	0	37,670	37,680	16,120	107,660	123,780	161,460
		C2	10	0	0	37,670	37,680	15,500	90,460	105,960	143,640

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Nitrogen (pounds) (continued)	Mink Creek	Existing	0	0	0	0	0	1,420	49,620	51,040	51,040
		2020 Future (baseline)	0	0	0	0	0	1,420	49,240	50,660	50,660
		B1	0	0	0	0	0	1,350	48,360	49,710	49,710
		B2	0	0	0	0	0	1,350	48,360	49,710	49,710
		C1	0	0	0	0	0	1,360	49,070	50,430	50,430
		C2	0	0	0	0	0	1,310	39,850	41,160	41,160
	North Branch Milwaukee River	Existing	7,560	10	0	9,530	17,100	6,410	171,210	177,620	194,720
		2020 Future (baseline)	7,560	10	0	9,780	17,350	6,440	167,870	174,310	191,660
		B1	7,560	10	0	9,780	17,350	6,150	163,440	169,590	186,940
		B2	7,560	10	0	9,780	17,350	6,150	163,440	169,590	186,940
		C1	7,560	10	0	9,780	17,350	6,150	166,850	173,000	190,350
		C2	7,560	10	0	9,780	17,350	5,920	136,890	142,810	160,160
	Silver Creek (Sheboygan County)	Existing	0	0	0	350	350	3,680	44,550	48,230	48,580
		2020 Future (baseline)	0	0	0	420	420	4,240	42,820	47,060	47,480
		B1	0	0	0	420	420	4,060	41,810	45,870	46,290
		B2	0	0	0	420	420	4,060	41,810	45,870	46,290
		C1	0	0	0	420	420	4,000	42,550	46,550	46,970
		C2	0	0	0	420	420	3,830	34,580	38,410	38,830
	Silver Creek (West Bend)	Existing	0	0	0	0	0	6,410	10,860	17,270	17,270
		2020 Future (baseline)	0	0	0	0	0	7,270	8,800	16,070	16,070
		B1	0	0	0	0	0	7,130	8,610	15,740	15,740
		B2	0	0	0	0	0	7,130	8,610	15,740	15,740
		C1	0	0	0	0	0	7,120	8,680	15,800	15,800
		C2	0	0	0	0	0	6,850	7,670	14,520	14,520
	Stony Creek	Existing	0	0	0	0	0	1,440	39,770	41,210	41,210
		2020 Future (baseline)	0	0	0	0	0	1,440	39,540	40,980	40,980
		B1	0	0	0	0	0	1,340	38,840	40,180	40,180
		B2	0	0	0	0	0	1,340	38,840	40,180	40,180
		C1	0	0	0	0	0	1,350	39,390	40,740	40,740
		C2	0	0	0	0	0	1,300	32,290	33,590	33,590
	Upper Lower Milwaukee River	Existing	350	130	0	77,920	78,400	17,730	123,670	141,400	219,800
		2020 Future (baseline)	350	130	0	99,960	100,440	19,460	114,200	133,660	234,100
		B1	350	130	0	99,960	100,440	18,970	110,490	129,460	229,900
		B2	350	130	0	99,960	100,440	18,970	110,490	129,460	229,900
		C1	350	130	0	99,960	100,440	18,890	113,060	131,950	232,390
		C2	350	130	0	99,960	100,440	17,910	92,210	110,120	210,560
	Upper Milwaukee River	Existing	30	0	0	1,950	1,980	6,740	194,190	200,930	202,910
		2020 Future (baseline)	30	0	0	2,300	2,330	7,130	188,890	196,020	198,350
		B1	30	0	0	2,300	2,330	6,850	179,540	186,390	188,720
		B2	30	0	0	2,300	2,330	6,850	179,540	186,390	188,720
		C1	30	0	0	2,300	2,330	6,860	186,810	193,670	196,000
		C2	30	0	0	2,300	2,330	6,640	152,570	159,210	161,540
	Watercress Creek	Existing	0	0	0	0	0	1,480	40,150	41,630	41,630
		2020 Future (baseline)	0	0	0	0	0	1,480	39,440	40,920	40,920
		B1	0	0	0	0	0	1,380	37,630	39,010	39,010
		B2	0	0	0	0	0	1,380	37,630	39,010	39,010
		C1	0	0	0	0	0	1,390	38,990	40,380	40,380
		C2	0	0	0	0	0	1,350	32,740	34,090	34,090

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources					Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[a]	CSOs	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	
Total Nitrogen (pounds) (continued)	West Branch Milwaukee River	Existing	0	0	0	0	0	5,390	219,160	224,550	224,550
		2020 Future (baseline)	0	0	0	0	0	5,360	214,960	220,320	220,320
		B1	0	0	0	0	0	4,980	205,790	210,770	210,770
		B2	0	0	0	0	0	4,980	205,790	210,770	210,770
		C1	0	0	0	0	0	5,030	212,680	217,710	217,710
		C2	0	0	0	0	0	4,880	173,000	177,880	177,880
	Watershed Total	Existing	75,530	3,280	17,910	123,210	219,930	227,480	1,733,700	1,961,180	2,181,110
		2020 Future (baseline)	75,530	4,530	11,670	157,580	249,310	229,920	1,640,570	1,870,490	2,119,800
		B1	75,530	1,720	8,340	157,580	243,170	222,350	1,575,690	1,798,040	2,041,210
		B2	75,530	4,350	3,750	157,580	241,210	222,350	1,575,690	1,798,040	2,039,250
		C1	75,530	5,710	6,750	157,580	245,570	213,310	1,623,470	1,836,780	2,082,350
		C2	75,530	5,710	6,750	157,580	245,570	204,080	1,336,520	1,540,600	1,786,170
Biochemical Oxygen Demand (pounds)	Batavia Creek	Existing	0	0	0	0	0	4,000	24,470	28,470	28,470
		2020 Future (baseline)	0	0	0	0	0	3,990	23,680	27,670	27,670
		B1	0	0	0	0	0	3,990	22,020	26,010	26,010
		B2	0	0	0	0	0	3,990	22,020	26,010	26,010
		C1	0	0	0	0	0	3,990	23,690	27,680	27,680
		C2	0	0	0	0	0	3,830	21,060	24,890	24,890
	Cedar Creek	Existing	60	0	0	10,370	10,430	105,650	632,050	737,700	748,130
		2020 Future (baseline)	60	0	0	14,080	14,140	114,540	604,280	718,820	732,960
		B1	60	0	0	14,080	14,140	114,540	540,010	654,550	668,690
		B2	60	0	0	14,080	14,140	114,540	540,010	654,550	668,690
		C1	60	0	0	14,080	14,140	111,020	602,100	713,120	727,260
		C2	60	0	0	14,080	14,140	106,570	506,280	612,850	626,990
	Cedar Lake	Existing	0	0	0	0	0	12,700	68,630	81,330	81,330
		2020 Future (baseline)	0	0	0	0	0	12,360	67,500	79,860	79,860
		B1	0	0	0	0	0	12,360	64,380	76,740	76,740
		B2	0	0	0	0	0	12,360	64,380	76,740	76,740
		C1	0	0	0	0	0	12,280	67,340	79,620	79,620
		C2	0	0	0	0	0	11,770	61,160	72,930	72,930
	Chambers Creek	Existing	0	0	0	0	0	5,140	23,440	28,580	28,580
		2020 Future (baseline)	0	0	0	0	0	5,130	22,900	28,030	28,030
		B1	0	0	0	0	0	5,130	21,730	26,860	26,860
		B2	0	0	0	0	0	5,130	21,730	26,860	26,860
		C1	0	0	0	0	0	5,130	22,910	28,040	28,040
		C2	0	0	0	0	0	4,920	20,820	25,740	25,740
	East Branch Milwaukee River	Existing	0	0	0	0	0	15,060	82,180	97,240	97,240
		2020 Future (baseline)	0	0	0	0	0	15,110	80,930	96,040	96,040
		B1	0	0	0	0	0	15,110	79,090	94,200	94,200
		B2	0	0	0	0	0	15,110	79,090	94,200	94,200
		C1	0	0	0	0	0	15,020	80,830	95,850	95,850
		C2	0	0	0	0	0	14,310	75,090	89,400	89,400
	Kettle Moraine Lake	Existing	0	0	0	0	0	8,880	120,250	129,130	129,130
		2020 Future (baseline)	0	0	0	0	0	8,880	115,640	124,520	124,520
		B1	0	0	0	0	0	8,880	105,450	114,330	114,330
		B2	0	0	0	0	0	8,880	105,450	114,330	114,330
		C1	0	0	0	0	0	8,880	115,690	124,570	124,570
		C2	0	0	0	0	0	8,690	101,610	110,300	110,300

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources					Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[a]	CSOs	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	
Biochemical Oxygen Demand (pounds) (continued)	Kewaskum Creek	Existing	0	0	0	0	0	11,340	81,960	93,300	93,300
		2020 Future (baseline)	0	0	0	0	0	11,350	76,760	88,110	88,110
		B1	0	0	0	0	0	11,350	72,120	83,470	83,470
		B2	0	0	0	0	0	11,350	72,120	83,470	83,470
		C1	0	0	0	0	0	11,150	76,360	87,510	87,510
		C2	0	0	0	0	0	10,870	65,570	76,440	76,440
	Lake Fifteen Creek	Existing	0	0	0	0	0	7,770	41,080	48,850	48,850
		2020 Future (baseline)	0	0	0	0	0	7,760	40,510	48,270	48,270
		B1	0	0	0	0	0	7,760	39,300	47,060	47,060
		B2	0	0	0	0	0	7,760	39,300	47,060	47,060
		C1	0	0	0	0	0	7,760	40,530	48,290	48,290
		C2	0	0	0	0	0	7,440	37,330	44,770	44,770
	Lincoln Creek	Existing	15,210	1,440	720	0	17,370	216,100	1,840	217,940	235,310
		2020 Future (baseline)	15,210	1,280	80	0	16,570	188,380	2,050	190,430	207,000
		B1	15,210	1,230	10	0	16,450	188,380	2,050	190,430	206,880
		B2	15,210	2,360	160	0	17,730	188,380	2,050	190,430	208,160
		C1	15,210	1,950	10	0	17,170	153,370	1,160	154,530	171,700
		C2	15,210	1,950	10	0	17,170	143,380	1,090	144,470	161,640
	Lower Cedar Creek	Existing	20	40	0	20,080	20,140	85,590	185,110	270,700	290,840
		2020 Future (baseline)	20	40	0	26,160	26,220	88,370	176,580	264,950	291,170
		B1	20	40	0	26,160	26,220	88,370	162,960	251,330	277,550
		B2	20	40	0	26,160	26,220	88,370	162,960	251,330	277,550
		C1	20	40	0	26,160	26,220	87,180	175,060	262,240	288,460
		C2	20	40	0	26,160	26,220	83,620	155,230	238,850	265,070
	Lower Milwaukee River	Existing	259,990	3,830	22,550	0	286,370	388,570	234,560	623,130	909,500
		2020 Future (baseline)	259,990	6,080	16,640	0	282,710	354,170	178,680	532,850	815,560
		B1	259,990	1,400	12,290	0	273,680	354,170	166,030	520,200	793,880
		B2	259,990	4,700	7,400	0	272,090	354,170	166,030	520,200	792,290
		C1	259,990	7,400	5,060	0	272,450	320,920	173,720	494,640	767,090
		C2	259,990	7,400	5,060	0	272,450	302,270	148,970	451,240	723,690
	Middle Milwaukee River	Existing	20	0	0	296,770	296,790	108,290	220,120	328,410	625,200
		2020 Future (baseline)	20	0	0	390,710	390,730	116,790	200,880	317,670	708,400
		B1	20	0	0	390,710	390,730	116,790	190,370	307,160	697,890
		B2	20	0	0	390,710	390,730	116,790	190,370	307,160	697,890
		C1	20	0	0	390,710	390,730	111,100	196,170	307,270	698,000
		C2	20	0	0	390,710	390,730	106,250	176,210	282,460	673,190
	Mink Creek	Existing	0	0	0	0	0	10,490	56,310	66,800	66,800
		2020 Future (baseline)	0	0	0	0	0	10,460	54,640	65,100	65,100
		B1	0	0	0	0	0	10,460	51,610	62,070	62,070
		B2	0	0	0	0	0	10,460	51,610	62,070	62,070
		C1	0	0	0	0	0	10,470	54,660	65,130	65,130
		C2	0	0	0	0	0	10,030	49,570	59,600	59,600
	North Branch Milwaukee River	Existing	7,020	20	0	6,080	13,120	50,380	267,240	317,620	330,740
		2020 Future (baseline)	7,020	20	0	6,700	13,740	50,410	256,550	306,960	320,700
		B1	7,020	20	0	6,700	13,740	50,410	240,080	290,490	304,230
		B2	7,020	20	0	6,700	13,740	50,410	240,080	290,490	304,230
		C1	7,020	20	0	6,700	13,740	50,120	256,040	306,160	319,900
		C2	7,020	20	0	6,700	13,740	47,990	228,790	276,780	290,520

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources					Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[a]	CSOs	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	
Biochemical Oxygen Demand (pounds) (continued)	Silver Creek (Sheboygan County)	Existing	4,330	0	0	2,990	7,320	26,810	63,180	89,990	97,310
		2020 Future (baseline)	4,330	0	0	3,560	7,890	30,340	60,620	90,960	98,850
		B1	4,330	0	0	3,560	7,890	30,340	56,530	86,870	94,760
		B2	4,330	0	0	3,560	7,890	30,340	56,530	86,870	94,760
		C1	4,330	0	0	3,560	7,890	29,370	59,990	89,360	97,250
		C2	4,330	0	0	3,560	7,890	27,920	53,160	81,080	88,970
	Silver Creek (West Bend)	Existing	0	0	0	0	0	36,060	23,710	59,770	59,770
		2020 Future (baseline)	0	0	0	0	0	40,570	21,980	62,550	62,550
		B1	0	0	0	0	0	40,570	21,540	62,110	62,110
		B2	0	0	0	0	0	40,570	21,540	62,110	62,110
		C1	0	0	0	0	0	40,230	21,260	61,490	61,490
		C2	0	0	0	0	0	38,400	19,650	58,050	58,050
	Stony Creek	Existing	0	0	0	0	0	10,240	51,490	61,730	61,730
		2020 Future (baseline)	0	0	0	0	0	10,220	50,450	60,670	60,670
		B1	0	0	0	0	0	10,220	48,060	58,280	58,280
		B2	0	0	0	0	0	10,220	48,060	58,280	58,280
		C1	0	0	0	0	0	10,220	50,470	60,690	60,690
		C2	0	0	0	0	0	9,770	45,840	55,610	55,610
	Upper Lower Milwaukee River	Existing	2,770	210	0	52,690	55,670	103,450	199,780	303,230	358,900
		2020 Future (baseline)	2,770	210	0	68,820	71,800	113,970	183,390	297,360	369,160
		B1	2,770	210	0	68,820	71,800	113,970	170,910	284,880	356,680
		B2	2,770	210	0	68,820	71,800	113,970	170,910	284,880	356,680
		C1	2,770	210	0	68,820	71,800	112,120	180,700	292,820	364,620
		C2	2,770	210	0	68,820	71,800	105,450	157,600	263,050	334,850
	Upper Milwaukee River	Existing	1,030	0	0	10,830	11,860	44,460	373,160	417,620	429,480
		2020 Future (baseline)	1,030	0	0	14,490	15,520	47,010	356,330	403,340	418,860
		B1	1,030	0	0	14,490	15,520	47,010	320,920	367,930	383,450
		B2	1,030	0	0	14,490	15,520	47,010	320,920	367,930	383,450
		C1	1,030	0	0	14,490	15,520	46,720	355,820	402,540	418,060
		C2	1,030	0	0	14,490	15,520	45,290	306,720	352,010	367,530
	Watercress Creek	Existing	0	0	0	0	0	10,130	86,840	96,970	96,970
		2020 Future (baseline)	0	0	0	0	0	10,130	83,890	94,020	94,020
		B1	0	0	0	0	0	10,130	78,510	88,640	88,640
		B2	0	0	0	0	0	10,130	78,510	88,640	88,640
		C1	0	0	0	0	0	10,130	83,930	94,060	94,060
		C2	0	0	0	0	0	9,830	75,420	85,250	85,250
	West Branch Milwaukee River	Existing	0	0	0	0	0	42,450	373,130	415,580	415,580
		2020 Future (baseline)	0	0	0	0	0	42,090	358,050	400,140	400,140
		B1	0	0	0	0	0	42,090	327,290	369,380	369,380
		B2	0	0	0	0	0	42,090	327,290	369,380	369,380
		C1	0	0	0	0	0	42,110	358,170	400,280	400,280
		C2	0	0	0	0	0	41,090	309,440	350,530	350,530
	Watershed Total	Existing	290,450	5,540	23,270	399,810	719,070	1,303,560	3,210,530	4,514,090	5,233,160
		2020 Future (baseline)	290,450	7,630	16,720	524,520	839,320	1,282,030	3,016,290	4,298,320	5,137,640
		B1	290,450	2,900	12,300	524,520	830,170	1,282,030	2,780,960	4,062,990	4,893,160
		B2	290,450	7,330	7,560	524,520	829,860	1,282,030	2,780,960	4,062,990	4,892,850
		C1	290,450	9,620	5,070	524,520	829,660	1,199,290	2,996,600	4,195,890	5,025,550
		C2	290,450	9,620	5,070	524,520	829,660	1,139,690	2,616,610	3,756,300	4,585,960

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Copper (pounds)	Batavia Creek	Existing	0	0	0	0	0	7	11	18	18
		2020 Future (baseline)	0	0	0	0	0	7	11	18	18
		B1	0	0	0	0	0	7	11	18	18
		B2	0	0	0	0	0	7	11	18	18
		C1	0	0	0	0	0	7	11	18	18
		C2	0	0	0	0	0	7	10	17	17
	Cedar Creek	Existing	0	0	0	46	46	190	187	377	423
		2020 Future (baseline)	0	0	0	63	63	206	189	395	458
		B1	0	0	0	63	63	206	189	395	458
		B2	0	0	0	63	63	206	189	395	458
		C1	0	0	0	63	63	200	186	386	449
		C2	0	0	0	63	63	189	177	366	429
	Cedar Lake	Existing	0	0	0	0	0	23	76	99	99
		2020 Future (baseline)	0	0	0	0	0	22	74	96	96
		B1	0	0	0	0	0	22	74	96	96
		B2	0	0	0	0	0	22	74	96	96
		C1	0	0	0	0	0	22	74	96	96
		C2	0	0	0	0	0	21	70	91	91
	Chambers Creek	Existing	0	0	0	0	0	9	13	22	22
		2020 Future (baseline)	0	0	0	0	0	9	13	22	22
		B1	0	0	0	0	0	9	13	22	22
		B2	0	0	0	0	0	9	13	22	22
		C1	0	0	0	0	0	9	13	22	22
		C2	0	0	0	0	0	9	12	21	21
	East Branch Milwaukee River	Existing	0	0	0	0	0	27	61	88	88
		2020 Future (baseline)	0	0	0	0	0	27	62	89	89
		B1	0	0	0	0	0	27	62	89	89
		B2	0	0	0	0	0	27	62	89	89
		C1	0	0	0	0	0	27	61	88	88
		C2	0	0	0	0	0	26	58	84	84
	Kettle Moraine Lake	Existing	0	0	0	0	0	16	47	63	63
		2020 Future (baseline)	0	0	0	0	0	16	47	63	63
		B1	0	0	0	0	0	16	47	63	63
		B2	0	0	0	0	0	16	47	63	63
		C1	0	0	0	0	0	16	47	63	63
		C2	0	0	0	0	0	15	45	60	60
	Kewaskum Creek	Existing	0	0	0	0	0	20	21	41	41
		2020 Future (baseline)	0	0	0	0	0	20	22	42	42
		B1	0	0	0	0	0	20	22	42	42
		B2	0	0	0	0	0	20	22	42	42
		C1	0	0	0	0	0	20	21	41	41
		C2	0	0	0	0	0	19	20	39	39
	Lake Fifteen Creek	Existing	0	0	0	0	0	14	30	44	44
		2020 Future (baseline)	0	0	0	0	0	14	30	44	44
		B1	0	0	0	0	0	14	30	44	44
		B2	0	0	0	0	0	14	30	44	44
		C1	0	0	0	0	0	14	30	44	44
		C2	0	0	0	0	0	14	28	42	42

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Copper (pounds) (continued)	Lincoln Creek	Existing	0	1	2	0	3	380	1	381	384
		2020 Future (baseline)	0	1	0	0	1	316	1	317	318
		B1	0	1	0	0	1	316	1	317	318
		B2	0	2	0	0	2	316	1	317	319
		C1	0	1	0	0	1	258	1	259	260
		C2	0	1	0	0	1	241	1	242	243
	Lower Cedar Creek	Existing	0	0	0	97	97	146	83	229	326
		2020 Future (baseline)	0	0	0	127	127	150	83	233	360
		B1	0	0	0	127	127	150	83	233	360
		B2	0	0	0	127	127	150	83	233	360
		C1	0	0	0	127	127	148	81	229	356
		C2	0	0	0	127	127	140	77	217	344
	Lower Milwaukee River	Existing	0	2	50	0	52	684	101	785	837
		2020 Future (baseline)	0	4	37	0	41	592	110	702	743
		B1	0	1	9	0	28	592	110	702	730
		B2	0	3	2	0	19	592	110	702	721
		C1	0	5	11	0	16	542	105	647	663
		C2	0	5	11	0	16	510	100	610	626
	Middle Milwaukee River	Existing	0	0	0	307	307	192	119	311	618
		2020 Future (baseline)	0	0	0	405	405	204	130	334	739
		B1	0	0	0	405	405	204	130	334	739
		B2	0	0	0	405	405	204	130	334	739
		C1	0	0	0	405	405	196	123	319	724
		C2	0	0	0	405	405	185	116	301	706
	Mink Creek	Existing	0	0	0	0	0	19	30	49	49
		2020 Future (baseline)	0	0	0	0	0	19	30	49	49
		B1	0	0	0	0	0	19	30	49	49
		B2	0	0	0	0	0	19	30	49	49
		C1	0	0	0	0	0	19	30	49	49
		C2	0	0	0	0	0	18	28	46	46
	North Branch Milwaukee River	Existing	0	0	0	18	18	93	144	237	255
		2020 Future (baseline)	0	0	0	18	18	93	145	238	256
		B1	0	0	0	18	18	93	145	238	256
		B2	0	0	0	18	18	93	145	238	256
		C1	0	0	0	18	18	92	144	236	254
		C2	0	0	0	18	18	87	137	224	242
	Silver Creek (Sheboygan County)	Existing	0	0	0	15	15	49	30	79	94
		2020 Future (baseline)	0	0	0	18	18	55	30	85	103
		B1	0	0	0	18	18	55	30	85	103
		B2	0	0	0	18	18	55	30	85	103
		C1	0	0	0	18	18	53	29	82	100
		C2	0	0	0	18	18	50	28	78	96
	Silver Creek (West Bend)	Existing	0	0	0	0	0	62	19	81	81
		2020 Future (baseline)	0	0	0	0	0	69	21	90	90
		B1	0	0	0	0	0	69	21	90	90
		B2	0	0	0	0	0	69	21	90	90
		C1	0	0	0	0	0	68	20	88	88
		C2	0	0	0	0	0	65	19	84	84

Table B-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Copper (pounds) (continued)	Stony Creek	Existing	0	0	0	0	0	18	30	48	48
		2020 Future (baseline)	0	0	0	0	0	18	30	48	48
		B1	0	0	0	0	0	18	30	48	48
		B2	0	0	0	0	0	18	30	48	48
		C1	0	0	0	0	0	18	30	48	48
		C2	0	0	0	0	0	17	29	46	46
	Upper Lower Milwaukee River	Existing	0	0	0	113	113	181	96	277	390
		2020 Future (baseline)	0	0	0	145	145	199	100	299	444
		B1	0	0	0	145	145	199	100	299	444
		B2	0	0	0	145	145	199	100	299	444
		C1	0	0	0	145	145	197	95	292	437
		C2	0	0	0	145	145	185	90	275	420
	Upper Milwaukee River	Existing	0	0	0	38	38	80	99	179	217
		2020 Future (baseline)	0	0	0	49	49	84	100	184	233
		B1	0	0	0	49	49	84	100	184	233
		B2	0	0	0	49	49	84	100	184	233
		C1	0	0	0	49	49	84	99	183	232
		C2	0	0	0	49	49	80	95	175	224
	Watercress Creek	Existing	0	0	0	0	0	18	55	73	73
		2020 Future (baseline)	0	0	0	0	0	18	55	73	73
		B1	0	0	0	0	0	18	55	73	73
		B2	0	0	0	0	0	18	55	73	73
		C1	0	0	0	0	0	18	55	73	73
		C2	0	0	0	0	0	17	53	70	70
	West Branch Milwaukee River	Existing	0	0	0	0	0	77	99	176	176
		2020 Future (baseline)	0	0	0	0	0	76	99	175	175
		B1	0	0	0	0	0	76	99	175	175
		B2	0	0	0	0	0	76	99	175	175
		C1	0	0	0	0	0	77	99	176	176
		C2	0	0	0	0	0	73	95	168	168
	Watershed Total	Existing	0	3	52	634	689	2,305	1,352	3,657	4,346
		2020 Future (baseline)	0	5	37	825	867	2,214	1,382	3,596	4,463
		B1	0	2	9	825	836	2,214	1,382	3,596	4,432
		B2	0	5	2	825	832	2,214	1,382	3,596	4,428
		C1	0	6	11	825	842	2,085	1,354	3,439	4,281
		C2	0	6	11	825	842	1,968	1,288	3,256	4,098

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint source subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table B-4

AVERAGE ANNUAL POLLUTANT LOADS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: OAK CREEK WATERSHED

			Point Sources			Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Phosphorus (pounds)	Lower Oak Creek	Existing	10	10	20	2,200	40	2,240	2,260
		2020 Future (baseline)	10	10	20	1,820	20	1,840	1,860
		B1	10	10	20	1,820	20	1,840	1,860
		B2	10	10	20	1,820	20	1,840	1,860
		C1	10	10	20	1,700	20	1,720	1,740
		C2	10	10	20	1,700	20	1,720	1,740
	Middle Oak Creek	Existing	0	0	0	1,310	980	2,290	2,290
		2020 Future (baseline)	0	0	0	1,250	1,030	2,280	2,280
		B1	0	0	0	1,250	1,030	2,280	2,280
		B2	0	0	0	1,250	1,030	2,280	2,280
		C1	0	0	0	1,160	970	2,130	2,130
		C2	0	0	0	1,160	970	2,130	2,130
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	980	410	1,390	1,390
		2020 Future (baseline)	<10	0	<10	980	330	1,310	1,310
		B1	<10	0	<10	980	330	1,310	1,310
		B2	<10	0	<10	980	330	1,310	1,310
		C1	<10	0	<10	910	310	1,220	1,220
		C2	<10	0	<10	910	310	1,220	1,220
	North Branch Oak Creek	Existing	0	0	0	2,650	510	3,160	3,160
		2020 Future (baseline)	0	0	0	2,400	500	2,900	2,900
		B1	0	0	0	2,400	500	2,900	2,900
		B2	0	0	0	2,400	500	2,900	2,900
		C1	0	0	0	2,230	470	2,700	2,700
		C2	0	0	0	2,230	470	2,700	2,700
	Upper Oak Creek	Existing	0	0	0	1,360	170	1,530	1,530
		2020 Future (baseline)	0	0	0	1,290	100	1,390	1,390
		B1	0	0	0	1,290	100	1,390	1,390
		B2	0	0	0	1,290	100	1,390	1,390
		C1	0	0	0	1,200	100	1,300	1,300
		C2	0	0	0	1,200	100	1,300	1,300
	Watershed Total	Existing	10	10	20	8,500	2,110	10,610	10,630
		2020 Future (baseline)	10	10	20	7,740	1,980	9,720	9,740
		B1	10	10	20	7,740	1,980	9,720	9,740
		B2	10	10	20	7,740	1,980	9,720	9,740
		C1	10	10	20	7,200	1,870	9,070	9,090
		C2	10	10	20	7,200	1,870	9,070	9,090
Total Suspended Solids (pounds)	Lower Oak Creek	Existing	1,930	500	2,430	974,250	23,560	997,810	1,000,240
		2020 Future (baseline)	1,930	500	2,430	691,950	3,890	695,840	698,270
		B1	1,930	500	2,430	691,950	3,890	695,840	698,270
		B2	1,930	500	2,430	691,950	3,890	695,840	698,270
		C1	1,930	500	2,430	691,950	3,890	695,840	698,270
		C2	1,930	500	2,430	691,950	3,890	695,840	698,270

Table B-4 (continued)

			Point Sources			Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Suspended Solids (pounds) (continued)	Middle Oak Creek	Existing	0	0	0	685,780	387,670	1,073,450	1,073,450
		2020 Future (baseline)	0	0	0	546,490	101,010	647,500	647,500
		B1	0	0	0	546,490	99,170	645,660	645,660
		B2	0	0	0	546,490	99,170	645,660	645,660
		C1	0	0	0	546,490	100,580	647,070	647,070
		C2	0	0	0	546,490	99,820	646,310	646,310
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	532,620	108,810	641,430	641,430
		2020 Future (baseline)	<10	0	<10	452,990	28,560	481,550	481,550
		B1	0	0	0	452,990	28,250	481,240	481,240
		B2	0	0	0	452,990	28,250	481,240	481,240
		C1	0	0	0	452,990	28,300	481,290	481,290
		C2	0	0	0	452,990	27,840	480,830	480,830
	North Branch Oak Creek	Existing	0	0	0	1,558,560	212,030	1,770,590	1,770,590
		2020 Future (baseline)	0	0	0	1,203,130	47,930	1,251,060	1,251,060
		B1	0	0	0	1,203,130	47,060	1,250,190	1,250,190
		B2	0	0	0	1,203,130	47,060	1,250,190	1,250,190
		C1	0	0	0	1,203,130	47,700	1,250,830	1,250,830
		C2	0	0	0	1,203,130	47,300	1,250,430	1,250,430
	Upper Oak Creek	Existing	0	0	0	663,060	156,240	819,300	819,300
		2020 Future (baseline)	0	0	0	540,110	9,580	549,690	549,690
		B1	0	0	0	540,110	9,390	549,500	549,500
		B2	0	0	0	540,110	9,390	549,500	549,500
		C1	0	0	0	540,110	9,500	549,610	549,610
		C2	0	0	0	540,110	9,360	549,470	549,470
	Watershed Total	Existing	1,930	500	2,430	4,414,270	888,310	5,302,580	5,305,010
		2020 Future (baseline)	1,930	500	2,430	3,434,670	190,970	3,625,640	3,628,070
		B1	1,930	500	2,430	3,434,670	187,760	3,622,430	3,624,860
		B2	1,930	500	2,430	3,434,670	187,760	3,622,430	3,624,860
		C1	1,930	500	2,430	3,434,670	189,970	3,624,640	3,627,070
		C2	1,930	500	2,430	3,434,670	188,210	3,622,880	3,625,310
Fecal Coliform Bacteria (trillions of cells)	Lower Oak Creek	Existing	0.00	9.55	9.55	612.67	0.33	613.00	622.55
		2020 Future (baseline)	0.00	9.55	9.55	493.23	0.10	493.33	502.88
		B1	0.00	9.55	9.55	493.23	0.10	493.33	502.88
		B2	0.00	9.55	9.55	493.23	0.10	493.33	502.88
		C1	0.00	9.55	9.55	493.23	0.10	493.33	502.88
		C2	0.00	9.55	9.55	430.69	0.10	430.79	440.34
	Middle Oak Creek	Existing	0.00	0.00	0.00	394.77	96.09	490.86	490.86
		2020 Future (baseline)	0.00	0.00	0.00	363.63	99.81	463.44	463.44
		B1	0.00	0.00	0.00	363.63	99.76	463.39	463.39
		B2	0.00	0.00	0.00	363.63	99.76	463.39	463.39
		C1	0.00	0.00	0.00	363.63	99.76	463.39	463.39
		C2	0.00	0.00	0.00	327.26	89.83	417.09	417.09
	Mitchell Field Drainage Ditch	Existing	0.00	0.00	0.00	505.12	36.28	541.40	541.40
		2020 Future (baseline)	0.00	0.00	0.00	548.78	27.74	576.52	576.52
		B1	0.00	0.00	0.00	548.78	27.68	576.46	576.46
		B2	0.00	0.00	0.00	548.78	27.68	576.46	576.46
		C1	0.00	0.00	0.00	548.78	27.68	576.46	576.46
		C2	0.00	0.00	0.00	485.90	24.72	510.62	510.62

Table B-4 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources			Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs	Subtotal	Urban	Rural[b,c]	Subtotal	
Fecal Coliform Bacteria (trillions of cells) (continued)	North Branch Oak Creek	Existing	0.00	0.00	0.00	735.48	39.60	775.08	775.08
		2020 Future (baseline)	0.00	0.00	0.00	656.52	46.20	702.72	702.72
		B1	0.00	0.00	0.00	656.52	46.18	702.70	702.70
		B2	0.00	0.00	0.00	656.52	46.18	702.70	702.70
		C1	0.00	0.00	0.00	656.52	46.18	702.70	702.70
		C2	0.00	0.00	0.00	578.02	41.59	619.61	619.61
	Upper Oak Creek	Existing	0.00	0.00	0.00	354.83	7.39	362.22	362.22
		2020 Future (baseline)	0.00	0.00	0.00	318.55	5.64	324.19	324.19
		B1	0.00	0.00	0.00	318.55	5.64	324.19	324.19
		B2	0.00	0.00	0.00	318.55	5.64	324.19	324.19
		C1	0.00	0.00	0.00	318.55	5.64	324.19	324.19
		C2	0.00	0.00	0.00	282.37	5.08	287.45	287.45
	Watershed Total	Existing	0.00	9.55	9.55	2,602.87	179.69	2,782.56	2,792.11
		2020 Future (baseline)	0.00	9.55	9.55	2,380.71	179.49	2,560.20	2,569.75
		B1	0.00	9.55	9.55	2,380.71	179.36	2,560.07	2,569.62
		B2	0.00	9.55	9.55	2,380.71	179.36	2,560.07	2,569.62
		C1	0.00	9.55	9.55	2,380.71	179.36	2,560.07	2,569.62
		C2	0.00	9.55	9.55	2,104.24	161.32	2,265.56	2,275.11
Total Nitrogen (pounds)	Lower Oak Creek	Existing	340	20	360	15,280	1,010	16,290	16,650
		2020 Future (baseline)	340	20	360	13,260	370	13,630	13,990
		B1	340	20	360	13,260	370	13,630	13,990
		B2	340	20	360	13,260	370	13,630	13,990
		C1	340	20	360	12,850	370	13,220	13,580
		C2	340	20	360	12,850	370	13,220	13,580
	Middle Oak Creek	Existing	0	0	0	9,240	13,810	23,050	23,050
		2020 Future (baseline)	0	0	0	9,000	8,160	17,160	17,160
		B1	0	0	0	9,000	8,150	17,150	17,150
		B2	0	0	0	9,000	8,150	17,150	17,150
		C1	0	0	0	8,700	7,980	16,680	16,680
		C2	0	0	0	8,700	7,960	16,660	16,660
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	9,360	7,580	16,940	16,940
		2020 Future (baseline)	<10	0	<10	9,190	4,410	13,600	13,600
		B1	<10	0	<10	9,190	4,410	13,600	13,600
		B2	<10	0	<10	9,190	4,410	13,600	13,600
		C1	<10	0	<10	8,870	4,290	13,160	13,160
		C2	<10	0	<10	8,870	4,260	13,130	13,130
	North Branch Oak Creek	Existing	0	0	0	17,590	8,790	26,380	26,380
		2020 Future (baseline)	0	0	0	16,550	4,310	20,860	20,860
		B1	0	0	0	16,550	4,310	20,860	20,860
		B2	0	0	0	16,550	4,310	20,860	20,860
		C1	0	0	0	16,000	4,220	20,220	20,220
		C2	0	0	0	16,000	4,210	20,210	20,210
	Upper Oak Creek	Existing	0	0	0	9,180	4,910	14,090	14,090
		2020 Future (baseline)	0	0	0	9,080	1,020	10,100	10,100
		B1	0	0	0	9,080	1,020	10,100	10,100
		B2	0	0	0	9,080	1,020	10,100	10,100
		C1	0	0	0	8,780	1,000	9,780	9,780
		C2	0	0	0	8,780	1,000	9,780	9,780

Table B-4 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Nitrogen (pounds) (continued)	Watershed Total	Existing	340	20	360	60,650	36,100	96,750	97,110
		2020 Future (baseline)	340	20	360	57,080	18,270	75,350	75,710
		B1	340	20	360	57,080	18,260	75,340	75,700
		B2	340	20	360	57,080	18,260	75,340	75,700
		C1	340	20	360	55,200	17,860	73,060	73,420
		C2	340	20	360	55,200	17,800	73,000	73,360
Biochemical Oxygen Demand (pounds)	Lower Oak Creek	Existing	3,440	120	3,560	56,390	1,970	58,360	61,920
		2020 Future (baseline)	3,440	120	3,560	45,680	1,180	46,860	50,420
		B1	3,440	120	3,560	45,680	1,180	46,860	50,420
		B2	3,440	120	3,560	45,680	1,180	46,860	50,420
		C1	3,440	120	3,560	45,680	1,180	46,860	50,420
		C2	3,440	120	3,560	45,680	1,180	46,860	50,420
	Middle Oak Creek	Existing	0	0	0	37,820	26,670	64,490	64,490
		2020 Future (baseline)	0	0	0	36,720	19,170	55,890	55,890
		B1	0	0	0	36,720	19,020	55,740	55,740
		B2	0	0	0	36,720	19,020	55,740	55,740
		C1	0	0	0	36,720	19,140	55,860	55,860
		C2	0	0	0	36,720	19,100	55,820	55,820
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	28,860	9,150	38,010	38,010
		2020 Future (baseline)	<10	0	<10	32,340	5,180	37,520	37,520
		B1	<10	0	<10	32,340	5,180	37,520	37,520
		B2	<10	0	<10	32,340	5,180	37,520	37,520
		C1	<10	0	<10	32,340	5,170	37,510	37,510
		C2	<10	0	<10	32,340	5,160	37,500	37,500
	North Branch Oak Creek	Existing	0	0	0	79,090	15,680	94,770	94,770
		2020 Future (baseline)	0	0	0	75,750	8,940	84,690	84,690
		B1	0	0	0	75,750	8,910	84,660	84,660
		B2	0	0	0	75,750	8,910	84,660	84,660
		C1	0	0	0	75,750	8,930	84,680	84,680
		C2	0	0	0	75,750	8,930	84,680	84,680
	Upper Oak Creek	Existing	0	0	0	35,580	7,690	43,270	43,270
		2020 Future (baseline)	0	0	0	38,330	2,210	40,540	40,540
		B1	0	0	0	38,330	2,210	40,540	40,540
		B2	0	0	0	38,330	2,210	40,540	40,540
		C1	0	0	0	38,330	2,210	40,540	40,540
		C2	0	0	0	38,330	2,210	40,540	40,540
	Watershed Total	Existing	3,440	120	3,560	237,740	61,160	298,900	302,460
		2020 Future (baseline)	3,440	120	3,560	228,820	36,680	265,500	269,060
		B1	3,440	120	3,560	228,820	36,500	265,320	268,880
		B2	3,440	120	3,560	228,820	36,500	265,320	268,880
		C1	3,440	120	3,560	228,820	36,630	265,450	269,010
		C2	3,440	120	3,560	228,820	36,580	265,400	268,960
Copper (pounds)	Lower Oak Creek	Existing	0	<1	<1	105	<1	105	105
		2020 Future (baseline)	0	<1	<1	80	<1	80	80
		B1	0	<1	<1	80	<1	80	80
		B2	0	<1	<1	80	<1	80	80
		C1	0	<1	<1	80	<1	80	80
		C2	0	<1	<1	80	<1	80	80

Table B-4 (continued)

			Point Sources			Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Copper (pounds) (continued)	Middle Oak Creek	Existing	0	0	0	70	25	95	95
		2020 Future (baseline)	0	0	0	63	24	87	87
		B1	0	0	0	63	24	87	87
		B2	0	0	0	63	24	87	87
		C1	0	0	0	63	24	87	87
		C2	0	0	0	63	24	87	87
	Mitchell Field Drainage Ditch	Existing	0	0	0	56	11	67	67
		2020 Future (baseline)	0	0	0	54	7	61	61
		B1	0	0	0	54	7	61	61
		B2	0	0	0	54	7	61	61
		C1	0	0	0	54	7	61	61
		C2	0	0	0	54	7	61	61
	North Branch Oak Creek	Existing	0	0	0	148	13	161	161
		2020 Future (baseline)	0	0	0	128	11	139	139
		B1	0	0	0	128	11	139	139
		B2	0	0	0	128	11	139	139
		C1	0	0	0	128	11	139	139
		C2	0	0	0	128	11	139	139
	Upper Oak Creek	Existing	0	0	0	66	3	69	69
		2020 Future (baseline)	0	0	0	63	2	65	65
		B1	0	0	0	63	2	65	65
		B2	0	0	0	63	2	65	65
		C1	0	0	0	63	2	65	65
		C2	0	0	0	63	2	65	65
	Watershed Total	Existing	0	<1	<1	445	52	497	497
		2020 Future (baseline)	0	<1	<1	388	44	432	432
		B1	0	<1	<1	388	44	432	432
		B2	0	<1	<1	388	44	432	432
		C1	0	<1	<1	388	44	432	432
		C2	0	<1	<1	388	44	432	432

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint source subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table B-5

AVERAGE ANNUAL POLLUTANT LOADS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: ROOT RIVER WATERSHED

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Alternative Plan	Industrial Point Sources	SSOs[a]	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Phosphorus (pounds)	Lower Root River	Existing	130	10	0	140	8,750	14,670	23,420	23,560
		2020 Future (baseline)	130	10	0	140	7,730	11,700	19,430	19,570
		B1	130	10	0	140	7,730	10,070	17,800	17,940
		B2	130	10	0	140	7,730	10,070	17,800	17,940
		C1	130	10	0	140	7,180	10,920	18,100	18,240
		C2	130	10	0	140	7,180	10,350	17,530	17,670
	Middle Root River	Existing	0	0	0	0	3,780	5,130	8,910	8,910
		2020 Future (baseline)	0	0	0	0	3,670	4,410	8,080	8,080
		B1	0	0	0	0	3,670	4,150	7,820	7,820
		B2	0	0	0	0	3,670	4,150	7,820	7,820
		C1	0	0	0	0	3,410	4,130	7,540	7,540
		C2	0	0	0	0	3,410	4,030	7,440	7,440
	Upper Root River	Existing	0	<10	0	<10	6,000	170	6,170	6,170
		2020 Future (baseline)	0	10	0	10	4,470	120	4,590	4,600
		B1	0	10	0	10	4,470	120	4,590	4,600
		B2	0	<10	0	<10	4,470	120	4,590	4,590
		C1	0	20	0	20	4,160	120	4,280	4,300
		C2	0	20	0	20	4,160	120	4,280	4,300
	Hoods Creek	Existing	0	0	940	940	1,020	5,610	6,630	7,570
		2020 Future (baseline)	0	0	1,350	1,350	990	4,420	5,410	6,760
		B1	0	0	1,350	1,350	990	3,730	4,720	6,070
		B2	0	0	1,350	1,350	990	3,730	4,720	6,070
		C1	0	0	1,350	1,350	920	4,120	5,040	6,390
		C2	0	0	1,350	1,350	920	3,900	4,820	6,170
	Root River Canal	Existing	0	0	0	0	180	4,720	4,900	4,900
		2020 Future (baseline)	0	0	0	0	170	4,260	4,430	4,430
		B1	0	0	0	0	170	3,970	4,140	4,140
		B2	0	0	0	0	170	3,970	4,140	4,140
		C1	0	0	0	0	160	3,940	4,100	4,100
		C2	0	0	0	0	160	3,620	3,780	3,780
	East Branch Root River Canal	Existing	0	0	220	220	430	6,880	7,310	7,530
		2020 Future (baseline)	0	0	220	220	500	6,010	6,510	6,730
		B1	0	0	220	220	500	5,560	6,060	6,280
		B2	0	0	220	220	500	5,560	6,060	6,280
		C1	0	0	220	220	440	5,560	6,000	6,220
		C2	0	0	220	220	440	5,020	5,460	5,680
	West Branch Root River Canal	Existing	<10	0	1,990	1,990	1,040	15,890	16,930	18,920
		2020 Future (baseline)	<10	0	2,620	2,620	1,050	13,940	14,990	17,610
		B1	<10	0	2,620	2,620	1,050	12,890	13,940	16,560
		B2	<10	0	2,620	2,620	1,050	12,890	13,940	16,560
		C1	<10	0	2,620	2,620	960	12,960	13,920	16,540
		C2	<10	0	2,620	2,620	960	11,700	12,660	15,280

Table B-5 (continued)

Water Quality Indicator	Subwatershed	Alternative Plan	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[a]	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	
Total Phosphorus (pounds) (continued)	East Branch Root River	Existing	0	0	0	0	1,660	180	1,840	1,840
		2020 Future (baseline)	0	10	0	10	1,470	50	1,520	1,530
		B1	0	10	0	10	1,470	50	1,520	1,530
		B2	0	20	0	20	1,470	50	1,520	1,540
		C1	0	30	0	30	1,370	50	1,420	1,450
		C2	0	30	0	30	1,370	50	1,420	1,450
	Whitnall Park Creek	Existing	0	<10	0	<10	3,650	1,010	4,660	4,660
		2020 Future (baseline)	0	<10	0	<10	3,000	720	3,720	3,720
		B1	0	<10	0	<10	3,000	720	3,720	3,720
		B2	0	<10	0	<10	3,000	720	3,720	3,720
		C1	0	<10	0	<10	2,790	680	3,470	3,470
		C2	0	<10	0	<10	2,790	680	3,470	3,470
	Watershed Total	Existing	130	10	3,150	3,290	26,510	54,260	80,770	84,060
		2020 Future (baseline)	130	30	4,190	4,350	23,050	45,630	68,680	73,030
		B1	130	30	4,190	4,350	23,050	41,260	64,310	68,660
		B2	130	30	4,190	4,350	23,050	41,260	64,310	68,660
		C1	130	60	4,190	4,380	21,390	42,480	63,870	68,250
		C2	130	60	4,190	4,380	21,390	39,470	60,860	65,240
Total Suspended Solids (pounds)	Lower Root River	Existing	480	710	0	1,190	2,781,990	18,169,680	20,951,670	20,952,860
		2020 Future (baseline)	480	710	0	1,190	2,084,320	11,913,280	13,997,600	13,998,790
		B1	480	710	0	1,190	2,084,320	7,217,930	9,302,250	9,303,440
		B2	480	710	0	1,190	2,084,320	7,217,930	9,302,250	9,303,440
		C1	480	710	0	1,190	2,069,730	10,770,520	12,840,250	12,841,440
		C2	480	710	0	1,190	2,069,730	8,743,240	10,812,970	10,814,160
	Middle Root River	Existing	0	0	0	0	1,290,740	5,439,900	6,730,640	6,730,640
		2020 Future (baseline)	0	0	0	0	1,093,100	2,217,110	3,310,210	3,310,210
		B1	0	0	0	0	1,093,100	1,427,010	2,520,110	2,520,110
		B2	0	0	0	0	1,093,100	1,427,010	2,520,110	2,520,110
		C1	0	0	0	0	1,087,730	2,017,560	3,105,290	3,105,290
		C2	0	0	0	0	1,087,730	1,666,010	2,753,740	2,753,740
	Upper Root River	Existing	0	80	0	80	1,918,200	18,970	1,937,170	1,937,250
		2020 Future (baseline)	0	380	0	380	1,304,810	7,980	1,312,790	1,313,170
		B1	0	520	0	520	1,304,810	7,980	1,312,790	1,313,310
		B2	0	80	0	80	1,304,810	7,980	1,312,790	1,312,870
		C1	0	860	0	860	1,304,790	7,980	1,312,770	1,313,630
		C2	0	860	0	860	1,304,790	7,980	1,312,770	1,313,630
	Hoods Creek	Existing	0	0	1,060	1,060	536,060	7,409,050	7,945,110	7,946,170
		2020 Future (baseline)	0	0	1,520	1,520	395,060	4,980,580	5,375,640	5,377,160
		B1	0	0	1,520	1,520	395,060	2,975,190	3,370,250	3,371,770
		B2	0	0	1,520	1,520	395,060	2,975,190	3,370,250	3,371,770
		C1	0	0	1,520	1,520	395,060	4,499,690	4,894,750	4,896,270
		C2	0	0	1,520	1,520	395,060	3,641,750	4,036,810	4,038,330
	Root River Canal	Existing	0	0	0	0	114,030	7,048,210	7,162,240	7,162,240
		2020 Future (baseline)	0	0	0	0	105,930	6,051,940	6,157,870	6,157,870
		B1	0	0	0	0	105,930	4,806,650	4,912,580	4,912,580
		B2	0	0	0	0	105,930	4,806,650	4,912,580	4,912,580
		C1	0	0	0	0	98,260	5,455,510	5,553,770	5,553,770
		C2	0	0	0	0	98,260	4,402,270	4,500,530	4,500,530

Table B-5 (continued)

Water Quality Indicator	Subwatershed	Alternative Plan	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Total Suspended Solids (pounds) (continued)	East Branch Root River Canal	Existing	0	0	450	450	271,250	10,618,210	10,889,460	10,889,910
		2020 Future (baseline)	0	0	450	450	296,030	9,004,670	9,300,700	9,301,150
		B1	0	0	450	450	296,030	7,149,360	7,445,390	7,445,840
		B2	0	0	450	450	296,030	7,149,360	7,445,390	7,445,840
		C1	0	0	450	450	274,700	8,114,680	8,389,380	8,389,830
		C2	0	0	450	450	274,700	6,539,280	6,813,980	6,814,430
	West Branch Root River Canal	Existing	0	0	8,890	8,890	468,430	25,202,610	25,671,040	25,679,930
		2020 Future (baseline)	0	0	11,730	11,730	415,390	21,557,740	21,973,130	21,984,860
		B1	0	0	11,730	11,730	415,390	17,105,200	17,520,590	17,532,320
		B2	0	0	11,730	11,730	415,390	17,105,200	17,520,590	17,532,320
		C1	0	0	11,730	11,730	400,200	19,435,120	19,835,320	19,847,050
		C2	0	0	11,730	11,730	400,200	15,663,370	16,063,570	16,075,300
	East Branch Root River	Existing	0	0	0	0	494,130	229,360	723,490	723,490
		2020 Future (baseline)	0	340	0	340	375,600	4,080	379,680	380,020
		B1	0	520	0	520	375,600	4,080	379,680	380,200
		B2	0	900	0	900	375,600	4,080	379,680	380,580
		C1	0	1,640	0	1,640	375,590	4,080	379,670	381,310
		C2	0	1,640	0	1,640	375,590	4,080	379,670	381,310
	Whitnall Park Creek	Existing	0	240	0	240	1,112,640	636,060	1,748,700	1,748,940
		2020 Future (baseline)	0	240	0	240	801,550	65,210	866,760	867,000
		B1	0	240	0	240	801,550	65,210	866,760	867,000
		B2	0	240	0	240	801,550	65,210	866,760	867,000
		C1	0	240	0	240	801,540	65,210	866,750	866,990
		C2	0	240	0	240	801,540	65,210	866,750	866,990
	Watershed Total	Existing	480	1,030	10,400	11,910	8,987,470	74,772,050	83,759,520	83,771,430
		2020 Future (baseline)	480	1,670	13,700	15,850	6,871,790	55,802,590	62,674,380	62,690,230
		B1	480	1,990	13,700	16,170	6,871,790	40,758,610	47,630,400	47,646,570
		B2	480	1,930	13,700	16,110	6,871,790	40,758,610	47,630,400	47,646,510
		C1	480	3,450	13,700	17,630	6,807,600	50,370,350	57,177,950	57,195,580
		C2	480	3,450	13,700	17,630	6,807,600	40,733,190	47,540,790	47,558,420
Fecal Coliform Bacteria (trillions of cells)	Lower Root River	Existing	0.00	13.58	0.00	13.58	2,641.12	853.13	3,494.25	3,507.83
		2020 Future (baseline)	0.00	13.58	0.00	13.58	2,156.05	735.14	2,891.19	2,904.77
		B1	0.00	13.58	0.00	13.58	2,156.05	735.14	2,891.19	2,904.77
		B2	0.00	13.58	0.00	13.58	2,156.05	735.14	2,891.19	2,904.77
		C1	0.00	13.58	0.00	13.58	1,932.99	618.84	2,551.83	2,565.41
		C2	0.00	13.58	0.00	13.58	1,932.99	610.98	2,543.97	2,557.55
	Middle Root River	Existing	0.00	0.00	0.00	0.00	1,323.10	317.14	1,640.24	1,640.24
		2020 Future (baseline)	0.00	0.00	0.00	0.00	1,266.52	336.20	1,602.72	1,602.72
		B1	0.00	0.00	0.00	0.00	1,266.52	336.20	1,602.72	1,602.72
		B2	0.00	0.00	0.00	0.00	1,266.52	336.20	1,602.72	1,602.72
		C1	0.00	0.00	0.00	0.00	1,137.49	294.20	1,431.69	1,431.69
		C2	0.00	0.00	0.00	0.00	1,137.49	292.94	1,430.43	1,430.43
	Upper Root River	Existing	0.00	1.55	0.00	1.55	2,202.96	0.75	2,203.71	2,205.26
		2020 Future (baseline)	0.00	7.24	0.00	7.24	1,664.81	0.28	1,665.09	1,672.33
		B1	0.00	9.92	0.00	9.92	1,664.81	0.28	1,665.09	1,675.01
		B2	0.00	1.55	0.00	1.55	1,664.81	0.28	1,665.09	1,666.64
		C1	0.00	16.46	0.00	16.46	1,500.66	0.28	1,500.94	1,517.40
		C2	0.00	16.46	0.00	16.46	1,500.66	0.28	1,500.94	1,517.40

Table B-5 (continued)

Water Quality Indicator	Subwatershed	Alternative Plan	Point Sources: Industrial Point Sources	Point Sources: SSOs[a]	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b,c]	Nonpoint Source[a]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Hoods Creek	Existing	0.00	0.00	0.30	0.30	418.83	276.59	695.42	695.72
		2020 Future (baseline)	0.00	0.00	0.43	0.43	361.82	243.26	605.08	605.51
		B1	0.00	0.00	0.43	0.43	361.82	243.26	605.08	605.51
		B2	0.00	0.00	0.43	0.43	361.82	243.26	605.08	605.51
		C1	0.00	0.00	0.43	0.43	325.64	206.22	531.86	532.29
		C2	0.00	0.00	0.43	0.43	325.64	203.57	529.21	529.64
	Root River Canal	Existing	0.00	0.00	0.00	0.00	96.48	180.79	277.27	277.27
		2020 Future (baseline)	0.00	0.00	0.00	0.00	91.50	181.29	272.79	272.79
		B1	0.00	0.00	0.00	0.00	91.50	181.29	272.79	272.79
		B2	0.00	0.00	0.00	0.00	91.50	181.29	272.79	272.79
		C1	0.00	0.00	0.00	0.00	77.80	139.33	217.13	217.13
		C2	0.00	0.00	0.00	0.00	77.80	135.77	213.57	213.57
	East Branch Root River Canal	Existing	0.00	0.00	0.14	0.14	215.12	251.23	466.35	466.49
		2020 Future (baseline)	0.00	0.00	0.14	0.14	228.91	237.03	465.94	466.08
		B1	0.00	0.00	0.14	0.14	228.91	237.03	465.94	466.08
		B2	0.00	0.00	0.14	0.14	228.91	237.03	465.94	466.08
		C1	0.00	0.00	0.14	0.14	194.86	178.65	373.51	373.65
		C2	0.00	0.00	0.14	0.14	194.86	173.04	367.90	368.04
	West Branch Root River Canal	Existing	0.00	0.00	2.85	2.85	451.94	560.80	1,012.74	1,015.59
		2020 Future (baseline)	0.00	0.00	3.76	3.76	423.71	529.13	952.84	956.60
		B1	0.00	0.00	3.76	3.76	423.71	529.13	952.84	956.60
		B2	0.00	0.00	3.76	3.76	423.71	529.13	952.84	956.60
		C1	0.00	0.00	3.76	3.76	371.22	405.76	776.98	780.74
		C2	0.00	0.00	3.76	3.76	371.22	392.79	764.01	767.77
	East Branch Root River	Existing	0.00	0.00	0.00	0.00	554.63	2.49	557.12	557.12
		2020 Future (baseline)	0.00	6.54	0.00	6.54	484.35	0.13	484.48	491.02
		B1	0.00	9.99	0.00	9.99	484.35	0.13	484.48	494.47
		B2	0.00	17.11	0.00	17.11	484.35	0.13	484.48	501.59
		C1	0.00	31.36	0.00	31.36	435.91	0.13	436.04	467.40
		C2	0.00	31.36	0.00	31.36	435.91	0.13	436.04	467.40
	Whitnall Park Creek	Existing	0.00	4.52	0.00	4.52	1,309.52	100.59	1,410.11	1,414.63
		2020 Future (baseline)	0.00	4.52	0.00	4.52	1,066.05	92.55	1,158.60	1,163.12
		B1	0.00	4.52	0.00	4.52	1,066.05	92.55	1,158.60	1,163.12
		B2	0.00	4.52	0.00	4.52	1,066.05	92.55	1,158.60	1,163.12
		C1	0.00	4.52	0.00	4.52	959.45	83.33	1,042.78	1,047.30
		C2	0.00	4.52	0.00	4.52	959.45	83.33	1,042.78	1,047.30
	Watershed Total	Existing	0.00	19.65	3.29	22.94	9,213.70	2,543.51	11,757.21	11,780.15
		2020 Future (baseline)	0.00	31.88	4.33	36.21	7,743.72	2,355.01	10,098.73	10,134.94
		B1	0.00	38.01	4.33	42.34	7,743.72	2,355.01	10,098.73	10,141.07
		B2	0.00	36.76	4.33	41.09	7,743.72	2,355.01	10,098.73	10,139.82
		C1	0.00	65.92	4.33	70.25	6,936.02	1,926.74	8,862.76	8,933.01
		C2	0.00	65.92	4.33	70.25	6,936.02	1,892.83	8,828.85	8,899.10
Total Nitrogen (pounds)	Lower Root River	Existing	540	30	0	570	48,810	232,290	281,100	281,670
		2020 Future (baseline)	540	30	0	570	44,820	170,470	215,290	215,860
		B1	540	30	0	570	44,820	148,340	193,160	193,730
		B2	540	30	0	570	44,820	148,340	193,160	193,730
		C1	540	30	0	570	43,180	166,420	209,600	210,170
		C2	540	30	0	570	43,180	143,330	186,510	187,080

Table B-5 (continued)

Water Quality Indicator	Subwatershed	Alternative Plan	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[a]	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	
Total Nitrogen (pounds) (continued)	Middle Root River	Existing	0	0	0	0	24,170	76,660	100,830	100,830
		2020 Future (baseline)	0	0	0	0	24,470	43,480	67,950	67,950
		B1	0	0	0	0	24,470	39,840	64,310	64,310
		B2	0	0	0	0	24,470	39,840	64,310	64,310
		C1	0	0	0	0	23,660	42,390	66,050	66,050
		C2	0	0	0	0	23,660	38,350	62,010	62,010
	Upper Root River	Existing	0	<10	0	<10	38,610	1,220	39,830	39,830
		2020 Future (baseline)	0	10	0	10	30,000	770	30,770	30,780
		B1	0	20	0	20	30,000	770	30,770	30,790
		B2	0	<10	0	<10	30,000	770	30,770	30,770
		C1	0	30	0	30	29,050	770	29,820	29,850
		C2	0	30	0	30	29,050	770	29,820	29,850
	Hoods Creek	Existing	0	0	3,980	3,980	6,060	97,320	103,380	107,360
		2020 Future (baseline)	0	0	5,690	5,690	5,940	72,550	78,490	84,180
		B1	0	0	5,690	5,690	5,940	62,940	68,880	74,570
		B2	0	0	5,690	5,690	5,940	62,940	68,880	74,570
		C1	0	0	5,690	5,690	5,710	70,930	76,640	82,330
		C2	0	0	5,690	5,690	5,710	60,530	66,240	71,930
	Root River Canal	Existing	0	0	0	0	1,180	89,940	91,120	91,120
		2020 Future (baseline)	0	0	0	0	1,150	80,550	81,700	81,700
		B1	0	0	0	0	1,150	76,650	77,800	77,800
		B2	0	0	0	0	1,150	76,650	77,800	77,800
		C1	0	0	0	0	1,070	78,580	79,650	79,650
		C2	0	0	0	0	1,070	65,970	67,040	67,040
	East Branch Root River Canal	Existing	0	0	1,820	1,820	2,600	132,080	134,680	136,500
		2020 Future (baseline)	0	0	1,820	1,820	2,960	116,320	119,280	121,100
		B1	0	0	1,820	1,820	2,960	110,380	113,340	115,160
		B2	0	0	1,820	1,820	2,960	110,380	113,340	115,160
		C1	0	0	1,820	1,820	2,760	113,410	116,170	117,990
		C2	0	0	1,820	1,820	2,760	94,560	97,320	99,140
	West Branch Root River Canal	Existing	<10	0	20,720	20,720	6,720	305,720	312,440	333,160
		2020 Future (baseline)	<10	0	27,340	27,340	6,800	271,210	278,010	305,350
		B1	<10	0	27,340	27,340	6,800	257,160	263,960	291,300
		B2	<10	0	27,340	27,340	6,800	257,160	263,960	291,300
		C1	<10	0	27,340	27,340	6,460	264,650	271,110	298,450
		C2	<10	0	27,340	27,340	6,460	220,570	227,030	254,370
	East Branch Root River	Existing	0	0	0	0	10,570	4,030	14,600	14,600
		2020 Future (baseline)	0	10	0	10	9,900	400	10,300	10,310
		B1	0	20	0	20	9,900	400	10,300	10,320
		B2	0	30	0	30	9,900	400	10,300	10,330
		C1	0	60	0	60	9,600	400	10,000	10,060
		C2	0	60	0	60	9,600	400	10,000	10,060
	Whitnall Park Creek	Existing	0	10	0	10	23,440	14,650	38,090	38,100
		2020 Future (baseline)	0	10	0	10	20,030	5,010	25,040	25,050
		B1	0	10	0	10	20,030	5,010	25,040	25,050
		B2	0	10	0	10	20,030	5,010	25,040	25,050
		C1	0	10	0	10	19,410	4,920	24,330	24,340
		C2	0	10	0	10	19,410	4,920	24,330	24,340

Table B-5 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Alternative Plan	Industrial Point Sources	SSOs[a]	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Nitrogen (pounds) (continued)	Watershed Total	Existing	540	40	26,520	27,100	162,160	953,910	1,116,070	1,143,170
		2020 Future (baseline)	540	60	34,850	35,450	146,070	760,760	906,830	942,280
		B1	540	80	34,850	35,470	146,070	701,490	847,560	883,030
		B2	540	70	34,850	35,460	146,070	701,490	847,560	883,020
		C1	540	130	34,850	35,520	140,900	742,470	883,370	918,890
		C2	540	130	34,850	35,520	140,900	629,400	770,300	805,820
Biochemical Oxygen Demand (pounds)	Lower Root River	Existing	820	180	0	1,000	215,660	577,910	793,570	794,570
		2020 Future (baseline)	820	180	0	1,000	197,370	525,540	722,910	723,910
		B1	820	180	0	1,000	197,370	413,360	610,730	611,730
		B2	820	180	0	1,000	197,370	413,360	610,730	611,730
		C1	820	180	0	1,000	196,580	494,090	690,670	691,670
		C2	820	180	0	1,000	196,580	430,210	626,790	627,790
	Middle Root River	Existing	0	0	0	0	105,600	186,700	292,300	292,300
		2020 Future (baseline)	0	0	0	0	113,860	125,680	239,540	239,540
		B1	0	0	0	0	113,860	107,740	221,600	221,600
		B2	0	0	0	0	113,860	107,740	221,600	221,600
		C1	0	0	0	0	113,580	120,090	233,670	233,670
		C2	0	0	0	0	113,580	109,020	222,600	222,600
	Upper Root River	Existing	0	20	0	20	169,850	6,380	176,230	176,250
		2020 Future (baseline)	0	90	0	90	126,890	4,570	131,460	131,550
		B1	0	130	0	130	126,890	4,570	131,460	131,590
		B2	0	20	0	20	126,890	4,570	131,460	131,480
		C1	0	210	0	210	126,890	4,570	131,460	131,670
		C2	0	210	0	210	126,890	4,570	131,460	131,670
	Hoods Creek	Existing	0	0	990	990	37,740	214,960	252,700	253,690
		2020 Future (baseline)	0	0	1,410	1,410	35,610	198,010	233,620	235,030
		B1	0	0	1,410	1,410	35,610	153,580	189,190	190,600
		B2	0	0	1,410	1,410	35,610	153,580	189,190	190,600
		C1	0	0	1,410	1,410	35,610	185,790	221,400	222,810
		C2	0	0	1,410	1,410	35,610	161,050	196,660	198,070
	Root River Canal	Existing	0	0	0	0	8,330	230,680	239,010	239,010
		2020 Future (baseline)	0	0	0	0	8,010	246,990	255,000	255,000
		B1	0	0	0	0	8,010	268,090	276,100	276,100
		B2	0	0	0	0	8,010	268,090	276,100	276,100
		C1	0	0	0	0	7,600	230,270	237,870	237,870
		C2	0	0	0	0	7,600	196,540	204,140	204,140
	East Branch Root River Canal	Existing	0	0	750	750	19,720	383,470	403,190	403,940
		2020 Future (baseline)	0	0	750	750	23,540	407,750	431,290	432,040
		B1	0	0	750	750	23,540	444,260	467,800	468,550
		B2	0	0	750	750	23,540	444,260	467,800	468,550
		C1	0	0	750	750	22,380	379,230	401,610	402,360
		C2	0	0	750	750	22,380	319,080	341,460	342,210
	West Branch Root River Canal	Existing	10	0	11,280	11,290	36,630	870,200	906,830	918,120
		2020 Future (baseline)	10	0	14,890	14,900	35,170	931,950	967,120	982,020
		B1	10	0	14,890	14,900	35,170	1,015,080	1,050,250	1,065,150
		B2	10	0	14,890	14,900	35,170	1,015,080	1,050,250	1,065,150
		C1	10	0	14,890	14,900	34,290	867,880	902,170	917,070
		C2	10	0	14,890	14,900	34,290	731,780	766,070	780,970

Table B-5 (continued)

Water Quality Indicator	Subwatershed	Alternative Plan	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[a]	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	
Biochemical Oxygen Demand (pounds) (continued)	East Branch Root River	Existing	0	0	0	0	42,060	8,260	50,320	50,320
		2020 Future (baseline)	0	80	0	80	37,340	1,990	39,330	39,410
		B1	0	130	0	130	37,340	1,990	39,330	39,460
		B2	0	220	0	220	37,340	1,990	39,330	39,550
		C1	0	400	0	400	37,340	1,990	39,330	39,730
		C2	0	400	0	400	37,340	1,990	39,330	39,730
	Whitnall Park Creek	Existing	0	60	0	60	99,220	31,140	130,360	130,420
		2020 Future (baseline)	0	60	0	60	83,330	14,280	97,610	97,670
		B1	0	60	0	60	83,330	14,280	97,610	97,670
		B2	0	60	0	60	83,330	14,280	97,610	97,670
		C1	0	60	0	60	83,330	14,280	97,610	97,670
		C2	0	60	0	60	83,330	14,280	97,610	97,670
	Watershed Total	Existing	830	260	13,020	14,110	734,810	2,509,700	3,244,510	3,258,620
		2020 Future (baseline)	830	410	17,050	18,290	661,120	2,456,760	3,117,880	3,136,170
		B1	830	500	17,050	18,380	661,120	2,422,950	3,084,070	3,102,450
		B2	830	480	17,050	18,360	661,120	2,422,950	3,084,070	3,102,430
		C1	830	850	17,050	18,730	657,600	2,298,190	2,955,790	2,974,520
		C2	830	850	17,050	18,730	657,600	1,968,520	2,626,120	2,644,850
Copper (pounds)	Lower Root River	Existing	3	<1	0	3	404	171	575	578
		2020 Future (baseline)	3	<1	0	3	340	145	485	488
		B1	3	<1	0	3	340	145	485	488
		B2	3	<1	0	3	340	145	485	488
		C1	3	<1	0	3	338	141	479	482
		C2	3	<1	0	3	338	141	479	482
	Middle Root River	Existing	0	0	0	0	194	70	264	264
		2020 Future (baseline)	0	0	0	0	189	71	260	260
		B1	0	0	0	0	189	71	260	260
		B2	0	0	0	0	189	71	260	260
		C1	0	0	0	0	188	70	258	258
		C2	0	0	0	0	188	70	258	258
	Upper Root River	Existing	0	<1	0	<1	305	2	307	307
		2020 Future (baseline)	0	<1	0	<1	218	1	219	219
		B1	0	<1	0	<1	218	1	219	219
		B2	0	<1	0	<1	218	1	219	219
		C1	0	<1	0	<1	218	1	219	219
		C2	0	<1	0	<1	218	1	219	219
	Hoods Creek	Existing	0	0	4	4	69	64	133	137
		2020 Future (baseline)	0	0	5	5	59	54	113	118
		B1	0	0	5	5	59	54	113	118
		B2	0	0	5	5	59	54	113	118
		C1	0	0	5	5	59	53	112	117
		C2	0	0	5	5	59	53	112	117
	Root River Canal	Existing	0	0	0	0	15	42	57	57
		2020 Future (baseline)	0	0	0	0	14	41	55	55
		B1	0	0	0	0	14	41	55	55
		B2	0	0	0	0	14	41	55	55
		C1	0	0	0	0	14	38	52	52
		C2	0	0	0	0	14	38	52	52

Table B-5 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Alternative Plan	Industrial Point Sources	SSOs[a]	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Copper (pounds) (continued)	East Branch Root River Canal	Existing	0	0	1	1	36	55	91	92
		2020 Future (baseline)	0	0	1	1	42	51	93	94
		B1	0	0	1	1	42	51	93	94
		B2	0	0	1	1	42	51	93	94
		C1	0	0	1	1	39	48	87	88
		C2	0	0	1	1	39	48	87	88
	West Branch Root River Canal	Existing	0	0	35	35	67	122	189	224
		2020 Future (baseline)	0	0	47	47	63	112	175	222
		B1	0	0	47	47	63	112	175	222
		B2	0	0	47	47	63	112	175	222
		C1	0	0	47	47	61	106	167	214
		C2	0	0	47	47	61	106	167	214
	East Branch Root River	Existing	0	0	0	0	77	2	79	79
		2020 Future (baseline)	0	<1	0	<1	63	1	64	64
		B1	0	<1	0	<1	63	1	64	64
		B2	0	<1	0	<1	63	1	64	64
		C1	0	<1	0	<1	63	1	64	64
		C2	0	<1	0	<1	63	1	64	64
	Whitnall Park Creek	Existing	0	<1	0	<1	181	20	201	201
		2020 Future (baseline)	0	<1	0	<1	142	16	158	158
		B1	0	<1	0	<1	142	16	158	158
		B2	0	<1	0	<1	142	16	158	158
		C1	0	<1	0	<1	142	16	158	158
		C2	0	<1	0	<1	142	16	158	158
	Watershed Total	Existing	3	<1	40	43	1,348	548	1,896	1,939
		2020 Future (baseline)	3	<1	53	56	1,130	492	1,622	1,678
		B1	3	<1	53	56	1,130	492	1,622	1,678
		B2	3	<1	53	56	1,130	492	1,622	1,678
		C1	3	<1	53	56	1,122	474	1,596	1,652
		C2	3	<1	53	56	1,122	474	1,596	1,652

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint source subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Tetra Tech, Inc., Brown and Caldwell, and SEWRPC.

Table B-6

AVERAGE ANNUAL POLLUTANT LOADS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: NEARSHORE LAKE MICHIGAN AREA

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Location	Screening Alternative	SSOs[a]	CSOs	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	Total
Total Phosphorus (pounds)	Ozaukee County	Existing	10	0	0	10	2,370	630	3,000	3,010
		2020 Future (baseline)	10	0	0	10	2,120	560	2,680	2,690
		B1	10	0	0	10	2,070	510	2,580	2,590
		B2	10	0	0	10	2,070	510	2,580	2,590
		C1	10	0	0	10	1,990	520	2,510	2,520
		C2	10	0	0	10	1,990	520	2,510	2,520
	Milwaukee County	Existing	30	160	316,550	316,740	5,930	720	6,650	323,390
		2020 Future (baseline)	10	120	371,700	371,830	5,180	700	5,880	377,710
		B1	0	70	371,700	371,770	5,040	600	5,640	377,410
		B2	<10	<10	371,700	371,700	5,040	600	5,640	377,340
		C1	10	110	371,700	371,820	4,870	610	5,480	377,300
		C2	10	110	371,700	371,820	4,870	610	5,480	377,300
	Racine County	Existing	<10	0	0	<10	4,880	890	5,770	5,770
		2020 Future (baseline)	<10	0	0	<10	4,290	530	4,820	4,820
		B1	<10	0	0	<10	3,770	550	4,320	4,320
		B2	<10	0	0	<10	3,770	550	4,320	4,320
		C1	<10	0	0	<10	3,880	620	4,500	4,500
		C2	<10	0	0	<10	3,880	610	4,490	4,490
	Nearshore Lake Michigan Area Total	Existing	40	160	316,550	316,750	13,180	2,240	15,420	332,170
		2020 Future (baseline)	20	120	371,700	371,840	11,590	1,790	13,380	385,220
		B1	10	70	371,700	371,780	10,880	1,660	12,540	384,320
		B2	10	<10	371,700	371,710	10,880	1,660	12,540	384,250
		C1	20	110	371,700	371,830	10,740	1,750	12,490	384,320
		C2	20	110	371,700	371,830	10,740	1,740	12,480	384,310
Total Suspended Solids (pounds)	Ozaukee County	Existing	310	0	0	310	838,280	397,340	1,235,620	1,235,930
		2020 Future (baseline)	430	0	0	430	659,900	361,640	1,021,540	1,021,970
		B1	620	0	0	620	652,640	227,240	879,880	880,500
		B2	570	0	0	570	652,640	227,240	879,880	880,450
		C1	360	0	0	360	676,650	317,730	994,380	994,740
		C2	360	0	0	360	676,650	270,590	947,240	947,600
	Milwaukee County	Existing	1,160	16,040	6,926,460	6,943,660	2,770,770	126,260	2,897,030	9,840,690
		2020 Future (baseline)	200	11,750	7,758,720	7,770,670	2,066,830	140,430	2,207,260	9,977,930
		B1	0	7,100	7,758,720	7,765,820	2,043,050	62,130	2,105,180	9,871,000
		B2	190	270	7,758,720	7,759,180	2,043,050	62,130	2,105,180	9,864,360
		C1	230	10,630	7,758,720	7,769,580	2,132,150	73,650	2,205,800	9,975,380
		C2	230	10,630	7,758,720	7,769,580	2,132,150	71,500	2,203,650	9,973,230
	Racine County	Existing	130	0	0	130	1,932,680	703,620	2,636,300	2,636,430
		2020 Future (baseline)	130	0	0	130	1,650,890	325,090	1,975,980	1,976,110
		B1	130	0	0	130	1,273,100	288,690	1,561,790	1,561,920
		B2	130	0	0	130	1,273,100	288,690	1,561,790	1,561,920
		C1	130	0	0	130	1,426,310	499,930	1,926,240	1,926,370
		C2	130	0	0	130	1,426,310	412,280	1,838,590	1,838,720

Table B-6 (continued)

Water Quality Indicator	Location	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			SSOs[a]	CSOs	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	
Total Suspended Solids (pounds) (continued)	Nearshore Lake Michigan Area Total	Existing	1,600	16,040	6,926,460	6,944,100	5,541,730	1,227,220	6,768,950	13,713,050
		2020 Future (baseline)	760	11,750	7,758,720	7,771,230	4,377,620	827,160	5,204,780	12,976,010
		B1	750	7,100	7,758,720	7,766,570	3,968,790	578,060	4,546,850	12,313,420
		B2	890	270	7,758,720	7,759,880	3,968,790	578,060	4,546,850	12,306,730
		C1	720	10,630	7,758,720	7,770,070	4,235,110	891,310	5,126,420	12,896,490
		C2	720	10,630	7,758,720	7,770,070	4,235,110	754,370	4,989,480	12,759,550
Fecal Coliform Bacteria (trillions of cells)	Ozaukee County	Existing	5.87	0.00	0.00	5.87	682.50	60.95	743.45	749.32
		2020 Future (baseline)	8.24	0.00	0.00	8.24	561.25	80.21	641.46	649.70
		B1	11.84	0.00	0.00	11.84	576.49	48.32	624.81	636.65
		B2	10.81	0.00	0.00	10.81	576.49	48.32	624.81	635.62
		C1	6.87	0.00	0.00	6.87	530.88	44.94	575.82	582.69
		C2	6.87	0.00	0.00	6.87	530.88	44.65	575.53	582.40
	Milwaukee County	Existing	25.07	132.23	2,043.01	2,200.31	1,971.96	43.48	2,015.44	4,215.75
		2020 Future (baseline)	4.22	96.91	2,345.05	2,446.18	1,615.25	114.57	1,729.82	4,176.00
		B1	0.00	58.58	2345.05	2403.63	1627.11	45.13	1672.24	4075.87
		B2	4.02	2.20	2345.05	2351.27	1627.11	45.13	1672.24	4023.51
		C1	4.87	87.64	2,345.05	2,437.56	1,512.08	44.71	1,556.79	3,994.35
		C2	4.87	87.64	2,345.05	2,437.56	1,512.08	44.70	1,556.78	3,994.34
	Racine County	Existing	2.88	0.00	0.00	2.88	1,252.98	50.70	1,303.68	1,306.56
		2020 Future (baseline)	2.88	0.00	0.00	2.88	1,002.16	70.11	1,072.27	1,075.15
		B1	2.88	0.00	0.00	2.88	923.33	34.48	957.81	960.69
		B2	2.88	0.00	0.00	2.88	923.33	34.48	957.81	960.69
		C1	2.88	0.00	0.00	2.88	929.05	34.25	963.30	966.18
		C2	2.88	0.00	0.00	2.88	929.05	33.92	962.97	965.85
	Nearshore Lake Michigan Area Total	Existing	33.82	132.23	2,043.01	2,209.06	3,907.44	155.13	4,062.57	6,271.63
		2020 Future (baseline)	15.34	96.91	2,345.05	2,457.30	3,178.66	264.89	3,443.55	5,900.85
		B1	14.72	58.58	2345.05	2418.35	3126.93	127.93	3254.86	5,673.21
		B2	18.74	2.20	2345.05	2365.99	3126.93	127.93	3254.86	5,620.85
		C1	14.62	87.64	2,345.05	2,447.31	2,972.01	123.90	3,095.91	5,543.22
		C2	14.62	87.64	2,345.05	2,447.31	2,972.01	123.27	3,095.28	5,542.59
Total Nitrogen (pounds)	Ozaukee County	Existing	10	0	0	10	15,310	9,910	25,220	25,230
		2020 Future (baseline)	20	0	0	20	14,700	8,810	23,510	23,530
		B1	20	0	0	20	13,880	8,880	22,760	22,780
		B2	20	0	0	20	13,880	8,880	22,760	22,780
		C1	10	0	0	10	13,730	9,240	22,970	22,980
		C2	10	0	0	10	13,730	8,310	22,040	22,050
	Milwaukee County	Existing	60	1,120	8,261,880	8,263,060	38,940	7,650	46,590	8,309,650
		2020 Future (baseline)	10	820	9,647,380	9,648,210	35,890	5,520	41,410	9,689,620
		B1	0	500	9,647,380	9,647,880	34,300	5,650	39,950	9,687,830
		B2	10	20	9,647,380	9,647,410	34,300	5,650	39,950	9,687,360
		C1	10	740	9,647,380	9,648,130	34,250	5,960	40,210	9,688,340
		C2	10	740	9,647,380	9,648,130	34,250	5,920	40,170	9,688,300
	Racine County	Existing	10	0	0	10	33,130	20,450	53,580	53,590
		2020 Future (baseline)	10	0	0	10	35,330	9,120	44,450	44,460
		B1	10	0	0	10	26,880	12,470	39,350	39,360
		B2	10	0	0	10	26,880	12,470	39,350	39,360
		C1	10	0	0	10	28,740	14,550	43,290	43,300
		C2	10	0	0	10	28,740	12,770	41,510	41,520

Table B-6 (continued)

Water Quality Indicator	Location	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			SSOs[a]	CSOs	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	
Total Nitrogen (pounds) (continued)	Nearshore Lake Michigan Area Total	Existing	80	1,120	8,261,880	8,263,080	87,380	38,010	125,390	8,388,470
		2020 Future (baseline)	40	820	9,647,380	9,648,240	85,920	23,450	109,370	9,757,610
		B1	30	500	9,647,380	9,647,910	75,060	27,000	102,060	9,749,970
		B2	40	20	9,647,380	9,647,440	75,060	27,000	102,060	9,749,500
		C1	30	740	9,647,380	9,648,150	76,720	29,750	106,470	9,754,620
		C2	30	740	9,647,380	9,648,150	76,720	27,000	103,720	9,751,870
Biochemical Oxygen Demand (pounds)	Ozaukee County	Existing	80	0	0	80	52,360	16,560	68,920	69,000
		2020 Future (baseline)	110	0	0	110	46,160	21,640	67,800	67,910
		B1	150	0	0	150	44,710	16,020	60,730	60,880
		B2	140	0	0	140	44,710	16,020	60,730	60,870
		C1	90	0	0	90	46,010	20,910	66,920	67,010
		C2	90	0	0	90	46,010	19,340	65,350	65,440
	Milwaukee County	Existing	320	2,980	7,380,790	7,384,090	162,330	15,420	177,750	7,561,840
		2020 Future (baseline)	50	2,190	8,395,960	8,398,200	136,190	15,080	151,270	8,549,470
		B1	0	1,320	8,395,960	8,397,280	133,540	11,510	145,050	8,542,330
		B2	50	50	8,395,960	8,396,060	133,540	11,510	145,050	8,541,110
		C1	60	1,980	8,395,960	8,398,000	138,690	12,430	151,120	8,549,120
		C2	60	1,980	8,395,960	8,398,000	138,690	12,360	151,050	8,549,050
	Racine County	Existing	40	0	0	40	119,170	31,920	151,090	151,130
		2020 Future (baseline)	40	0	0	40	113,800	20,060	133,860	133,900
		B1	40	0	0	40	86,800	21,640	108,440	108,480
		B2	40	0	0	40	86,800	21,640	108,440	108,480
		C1	40	0	0	40	96,820	34,930	131,750	131,790
		C2	40	0	0	40	96,820	31,140	127,960	128,000
	Nearshore Lake Michigan Area Total	Existing	440	2,980	7,380,790	7,384,210	333,860	63,900	397,760	7,781,970
		2020 Future (baseline)	200	2,190	8,395,960	8,398,350	296,150	56,780	352,930	8,751,280
		B1	190	1,320	8,395,960	8,397,470	265,050	49,170	314,220	8,711,690
		B2	230	50	8,395,960	8,396,240	265,050	49,170	314,220	8,710,460
		C1	190	1,980	8,395,960	8,398,130	281,520	68,270	349,790	8,747,920
		C2	190	1,980	8,395,960	8,398,130	281,520	62,840	344,360	8,742,490
Copper (pounds)	Ozaukee County	Existing	<1	0	0	<1	96	13	109	109
		2020 Future (baseline)	<1	0	0	<1	78	15	93	93
		B1	<1	0	0	<1	79	11	90	90
		B2	<1	0	0	<1	79	11	90	90
		C1	<1	0	0	<1	82	11	93	93
		C2	<1	0	0	<1	82	11	93	93
	Milwaukee County	Existing	<1	4	10,445	10,449	298	17	315	10,764
		2020 Future (baseline)	<1	3	11,843	11,846	234	24	258	12,104
		B1	0	2	11,843	11,845	234	13	247	12,092
		B2	<1	<1	11,843	11,843	234	13	247	12,090
		C1	<1	2	11,843	11,845	243	14	257	12,102
		C2	<1	2	11,843	11,845	243	14	257	12,102
	Racine County	Existing	<1	0	0	<1	228	18	246	246
		2020 Future (baseline)	<1	0	0	<1	175	15	190	190
		B1	<1	0	0	<1	160	12	172	172
		B2	<1	0	0	<1	160	12	172	172
		C1	<1	0	0	<1	177	13	190	190
		C2	<1	0	0	<1	177	13	190	190

Table B-6 (continued)

Water Quality Indicator	Location	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			SSOs[a]	CSOs	WWTPs	Subtotal	Urban	Rural[b,c]	Subtotal	
Copper (pounds) (continued)	Nearshore Lake Michigan Area Total	Existing	<1	4	10,445	10,449	622	48	670	11,119
		2020 Future (baseline)	<1	3	11,843	11,846	487	54	541	12,387
		B1	<1	2	11,843	11,845	473	36	509	12,354
		B2	<1	<1	11,843	11,843	473	36	509	12,352
		C1	<1	2	11,843	11,845	502	38	540	12,385
		C2	<1	2	11,843	11,845	502	38	540	12,385

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint source subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Brown and Caldwell; HydroQual, Inc.; and SEWRPC.

Appendix C

HYDROLOGIC CALIBRATION AND VALIDATION RESULTS

NOTE: Appendix C is on a CD located at the back of this report.

link to Appendix C

Appendix D

WATER QUALITY CALIBRATION AND VALIDATION RESULTS

NOTE: Appendix D is on a CD located at the back of this report.

link to Appendix D

Appendix E

ESTUARY HYDRODYNAMIC MODEL CALIBRATION/VALIDATION

NOTE: Appendix E is on a CD located at the back of this report.

link to Appendix E

Appendix F

ESTUARY WATER QUALITY MODEL CALIBRATION/VALIDATION

NOTE: Appendix F is on a CD located at the back of this report.

link to Appendix F

Appendix G

OBJECTIVES, PRINCIPLES, AND STANDARDS

Appendix G-1

LAND USE DEVELOPMENT OBJECTIVES, PRINCIPLES, AND STANDARDS FOR THE REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

(Note: The land use development standards to support the land use objectives were developed for the southeastern Wisconsin regional land use and comprehensive watershed planning programs. It is expected that these standards will form a framework and point of departure for subsequent county and local land use and comprehensive planning. For land use planning purposes in the Dodge, Fond du Lac, and Sheboygan areas, reliance will be placed upon local plans wherever available.)

OBJECTIVE NO. 1

A balanced allocation of space to the various land use categories which meets the social, physical, and economic needs of the study area population.

1. URBAN LAND USE

PRINCIPLE[a]

The planned supply of land set aside for any given use should approximate the known and anticipated demand for that use.

STANDARDS

A. For each additional 100 dwelling units to be accommodated within the study area at each residential density, the following amounts of residential and related land should be allocated:

Urban Residential Density Category[b]	Residential Area[c] (acres per 100 dwelling units)	Residential Area, Plus Supporting Land Uses[d] (acres per 100 dwelling units)
High-Density (7.0 or more dwelling units per net acre)[e]	Less than 15	Less than 20
Medium-Density (2.3 to 6.9 dwelling units per net acre)	15-44	20-59
Low-Density (0.7 to 2.2 dwelling units per net acre)	45-144	60-169

B. For each additional 1,000 persons to be accommodated within the study area, at least five acres of land should be set aside in major public parks of at least 250 acres in size, and at least nine acres should be set aside in other public parks.

C. For each additional 1,000 persons to be accommodated within the study area, approximately 12 acres of governmental and institutional land should be allocated.[f]

D. For each additional 100 industrial employees to be accommodated within the study area, approximately 12 acres of industrial land should be allocated.[f,g]

E. For each additional 100 commercial employees to be accommodated in retail and service settings within the study area, approximately six acres of retail and service land should be allocated.[f]

F. For each additional 100 commercial employees to be accommodated in office settings within the study area, approximately 2.5 acres of commercial office land should be allocated.[f,h]

2. SUBURBAN-DENSITY RESIDENTIAL DEVELOPMENT

Suburban density residential development—defined as a development at a density between 0.2 and 0.6 dwelling unit per acre, equivalent to between 1.5 and 4.9 acres per dwelling unit—is neither truly urban nor rural in character. Development at this density generally precludes the provision of centralized sanitary sewer and water supply facilities and other urban amenities. Development at this density can place excessive demands on streets and highways and public safety services in otherwise rural areas and result in a loss of rural character.

STANDARD

A. New suburban density residential development should be limited to that which is already committed in approved subdivision plats and certified surveys.

3. RURAL-DENSITY RESIDENTIAL DEVELOPMENT

PRINCIPLE

The demand for residential dwellings in an open space setting can best be accommodated at a density of no more than one dwelling unit per five acres. Development at this density can help minimize the impacts of such development on the natural resource base, on the demand for public facilities and services, and on the overall character of the rural environment.

STANDARD

A. Rural-density residential development—defined as development at a density of no more than one dwelling unit per five acres—should be accommodated on a limited basis, in response to market demands for residential development in an open space setting, where consistent with other land use objectives, as determined in county and local plans.

OBJECTIVE NO. 2

A geographic distribution of the various land uses which will result in the protection and wise use of the natural resources of the study area, including its soils; inland lakes and streams, including floodwater storage areas, groundwater, wetlands, woodlands, prairies, and wildlife habitats, natural floodwater storage areas, and natural areas and critical species habitat.

1. ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE AREAS[i]

PRINCIPLE

The preservation of environmental corridors and isolated natural resource in essentially natural, open use yields many benefits, including recharge and discharge of groundwater; maintenance of surface water and groundwater quality; attenuation of flood flows and flood stages; maintenance of base flows of streams and watercourses; reduction of soil erosion; abatement of air and noise pollution; provision of wildlife habitat; protection of plant and animal diversity; protection of rare and endangered species; maintenance of scenic beauty; and provision of opportunities for recreational, educational, and scientific pursuits. Conversely, since the environmental corridors and isolated natural resource areas are frequently poorly suited for urban development, their preservation can help avoid serious and costly development problems.[j]

STANDARDS

A. Primary environmental corridors should be preserved in essentially natural, open uses.

B. Secondary environmental corridors and isolated natural resource areas should be preserved in essentially natural, open uses to the extent practicable, as determined in county and local plans.

Uses considered to be compatible with the preservation of environmental corridors and isolated natural resource areas are indicated in Table G-1.

2. OTHER ENVIRONMENTALLY SENSITIVE AREAS

PRINCIPLE

Care in locating urban and rural development in relation to other environmentally sensitive areas can help to maintain the overall environmental quality of the study area and to avoid developmental problems.

STANDARDS

A. Small wetlands, woodlands, and prairies not identified as part of an environmental corridor or isolated natural resource area should be preserved to the extent practicable, as determined in county and local plans.[k]

B. All natural areas and critical species habitat sites as identified in the regional natural areas and critical species habitat protection and management plan should be preserved.[l]

C. One hundred-year recurrence interval floodlands should not be allocated to any development which would cause or be subject to flood damage; and no unauthorized structure should be allowed to encroach upon and obstruct the flow of water in perennial stream channels and floodways.

D. Urban and rural development should be directed away from areas which are covered by soils with severe limitations for the use concerned, to the extent practicable.

E. Potentially contaminating land uses should not be located in areas where the potential for groundwater contamination is the highest.

F. Land use development patterns and practices should be designed to preserve important groundwater recharge areas and should support maintaining the natural surface and groundwater hydrology to the extent practicable.[m]

3. RESTORATION/ENHANCEMENT OF NATURAL CONDITIONS

PRINCIPLE

The restoration of farmland and other open space land to more natural conditions, resulting in the reestablishment or enhancement of wetlands, woodlands, prairies, grasslands, and forest interiors, can increase biodiversity and contribute to the overall environmental quality of the study area by providing additional functional values as set forth in No. 1 above.

STANDARD

A. Carefully planned efforts to restore farmland and other open space land to more natural conditions should be encouraged.

OBJECTIVE NO. 3

A geographic distribution of the various land uses which is properly related to the supporting transportation, utility, and public facility systems, including stormwater management and sewerage, in order to provide these systems in as economical a manner as practical.

PRINCIPLE

The transportation and public utility facilities and the land use pattern which these facilities serve and support are mutually interdependent in that the land use pattern determines the demand for, and loadings upon, transportation and utility facilities; and these facilities, in turn, are essential to, and form a basic framework for, land use development.

STANDARDS

1. Urban development should be located and designed so as to maximize the use of existing transportation and utility systems.

2. The transportation system should be located and designed to serve not only all land presently devoted to urban development but to land planned to be used for such urban development.

3. The transportation system should be located and designed to minimize the penetration of existing and planned residential neighborhood units by through traffic.

4. Transportation terminal facilities, such as off-street parking, off-street truck loading, and public transit stops, should be located in proximity to the principal land uses to which they are accessory.

5. Land developed or planned to be developed for urban high-, medium-, and low-density residential use should be located in areas serviceable by an existing or planned public sanitary sewerage system and preferably within the gravity drainage area tributary to such a system.

6. Land developed or planned to be developed for urban high-, medium-, and low-density residential use should be located in areas serviceable by an existing or planned public water supply system.

7. Land developed or planned to be developed for urban high- and medium- density residential use should be located in areas serviceable by existing or planned public transit facilities.

8. Mixed use development should be encouraged to accommodate multi-purpose trips, including pedestrian trips, as a matter of convenience and efficiency.

9. In the absence of public sanitary sewer service, onsite sewage disposal systems should be utilized only in accordance with the following:

   A. Onsite soil absorption sewage disposal systems should be sited and designed in accordance with Chapter Comm 83 of the *Wisconsin Administrative Code*.

   B. The use of onsite sewage disposal systems should be limited to the following types of development:

      - Rural density residential development.

      - Suburban density residential development, limited, however, to areas already committed to such use through subdivision plats or certified surveys.

      - Urban land uses which may be required in unsewered areas such as transportation-related businesses, agriculture-related businesses, communication facilities, utility installations, and park and recreation sites.

   C. New urban development served by onsite sewage disposal systems in areas planned to receive sanitary sewer service should be discouraged. Where such development is permitted, it should be designed so that the public and private costs of conversion to public sanitary sewer service are minimized.

OBJECTIVE NO. 4

The preservation of land areas to provide for agriculture, provide a reserve or holding area for future urban and rural needs, and ensure the preservation of those rural areas which provide wildlife habitat and which are essential to shape and order urban development.

PRINCIPLE

The preservation of productive agricultural land is important for meeting future needs for food and fiber. Agricultural areas, in addition to providing food and fiber, can provide wildlife habitat and contribute to the maintenance of an ecological balance between plants and animals. Moreover, the preservation of agricultural areas also contributes immeasurably to the maintenance of the scenic beauty and cultural heritage of the study area. Maintaining agricultural lands near urban areas can facilitate desirable and efficient production-distribution relationships, including community-supported agriculture operations. The preservation of agricultural lands can maximize return on investments in agricultural soil and water conservation practices;

minimize conflicts between farming operations and urban land uses; and help maintain an important component of the economic base of the study area.

STANDARD

1. The most productive soils, those designated by the U.S. Natural Resources Conservation Service as comprising agricultural soil capability Classes I and II, should be preserved for agricultural use, to the extent practicable, recognizing that certain Class I and Class II farmland will have to be converted to urban use in order to accommodate the orderly expansion of urban service areas within the study area.

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[a]*These standards are intended to be applied at the regional level of planning. It is recognized that these standards may be refined for application in county and community planning efforts.*

[b]*For purposes of this plan, residential densities are intended to be applied on an overall neighborhood, rather than a parcel-by-parcel, basis. The density categories represent overall densities that may be achieved within developing and redeveloping areas through various combinations of lot sizes and housing structure types over entire neighborhoods. The density ranges are broadly defined so as to provide flexibility to local units of government as they prepare local land use plans and administer local land use regulations within the framework provided by the regional plan. It is incumbent upon each community to determine at which point within the recommended density range that it wants development to occur.*

[c]*Residential area is defined as the actual site area devoted to residential use, and consists of the ground floor site area occupied by housing units and accessory structures plus the required yards and site area, but excludes streets. This definition does not preclude communities from considering open space land to be preserved in the calculation of housing unit yields for development projects.*

[d]*Supporting land uses include streets and utilities, neighborhood parks and playgrounds, elementary schools, and neighborhood institutional and commercial uses.*

[e]*For purposes of this plan, the high-density category includes residential development at densities of 7.0 dwelling units per acre or greater. Communities may chose to accommodate residential neighborhoods at densities substantially greater than the minimum threshold for the high-density range, particularly in redevelopment situations. In order to provide flexibility in this respect, no maximum density—or upper bound—is specified for the high-density category.*

[f]*Commercial, industrial, and governmental and institutional area includes the area devoted to the given use, consisting of the ground floor site area occupied by any building, required yards and open space, and parking and loading areas.*

[g]*The industrial standard is intended to be representative of typical new single-story industrial development. It should be recognized that the number of industrial employees per acre can vary considerably from site-to-site, depending upon the nature of the manufacturing activity, the level of automation, the extent to which warehousing or office functions are located at the site, and other factors.*

[h]*The office standard is equivalent to a floor area ratio of 30 percent and a gross building area of about 325 square feet per employee. In situations where high-rise office buildings are common, such as in the Milwaukee central business district, the ratio of land area allocated for office use to the related office employment would be significantly lower—or, stated another way, the number of office employees per acre would be significantly higher.*

[i]*Environmental corridors are elongated areas in the landscape which contain concentrations of natural resource features (lakes, rivers, streams, and their associated shorelands and floodlands; wetlands; woodlands; prairies; wildlife habitat areas; wet, poorly drained, and organic soils; and rugged terrain and high-relief topography) and natural resource-related features (existing park and open space sites; potential park and open space sites; historic sites; scenic areas and vistas; and natural areas and critical species habitat sites). Primary environmental corridors include a variety of these features and are at least 400 acres in size, two miles long, and 200 feet in width. Secondary environmental corridors also contain a variety of these features and are at least 100 acres in size and one mile in length. Isolated natural resource areas are smaller concentrations of natural resource features that are physically separated from the environmental corridors by intensive urban or agricultural uses; by definition, such areas are at least five acres in size.*

[j]*As used herein, the term "preserve" generally means to retain existing conditions. In some cases—for example, when used in relation to environmental corridors or isolated natural resource areas—this term has been specifically defined to indicate certain types of uses that are able to be accommodated while maintaining the overall integrity of the existing resources. The objectives and standards presented in this table indicate that certain areas should be preserved; they do not indicate the*

measures—such as public interest ownership, conservation easements, or land use regulation—that may be used to help assure the desired preservation. Such measures are dealt with in the plan and plan implementation chapters of this report.

[k]*The following definitions are used throughout this report:*

> ***Wetlands** are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.*
>
> ***Woodlands** are upland areas having 17 or more deciduous trees per acre each measuring at least four inches in diameter at breast height and having at least a 50 percent canopy cover. In addition, coniferous tree plantations and reforestation projects are defined as woodlands. Lowland wooded areas, such as tamarack swamps, are defined as wetlands because the water table in such areas is located at, near, or above the land surface and because such areas are generally characterized by hydric soils which support hydrophytic trees and shrubs.*
>
> ***Prairies** are open, generally treeless areas which are dominated by native grasses. In southeastern Wisconsin, there are three types of prairies corresponding to soil moisture conditions: dry prairies, mesic prairies, and wet prairies. For purposes of this report, savannas, which are defined as areas dominated by native grasses but having between one and 17 trees per acre, are classified as prairies. In southeastern Wisconsin, there are two types of savannas: oak openings and cedar glades.*

[l]*Natural areas are tracts of land or water so little modified by human activity, or which have sufficiently recovered from the effects of such activity, that they contain intact native plant and animal communities believed to be representative of the pre-European-settlement landscape. Critical species habitat sites consist of areas, located outside natural areas, which support endangered, threatened, or rare plant or animal species. Most of the identified natural areas and critical species habitat sites are located within the environmental corridors and isolated natural resource areas of the study area.*

[m]*The regional water supply planning effort initiated in 2005 will identify important groundwater recharge areas and provide recommendations for their protection, as appropriate.*

Source: SEWRPC.

Table G-1

GUIDELINES FOR DEVELOPMENT CONSIDERED COMPATIBLE WITH ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE AREAS

Component Natural Resource and Related Features within Environmental Corridors[a]	Permitted Development																
	Transportation and Utility Facilities (see General Development Guidelines below)				Recreational Facilities (see General Development Guidelines below)												
	Streets and Highways	Utility Lines and Related Facilities	Engineered Stormwater Management Facilities	Engineered Flood Control Facilities[b]	Trails[c]	Picnic Areas	Family Camping[d]	Swimming Beaches	Boat Access	Ski Hills	Golf	Playfields	Hard-Surface Courts	Parking	Buildings	Rural-Density Residential Development (see General Development Guidelines below)	Other Development (see General Development Guidelines below)
Lakes, Rivers, and Streams	- -[e]	- -[f,g]	- -	- -[h]	- -[i]	- -	- -	X	X	- -	- -	- -	- -	- -	- -	- -	- -
Shoreland	X	X	X	X	X	X	- -	X	X	- -	X	- -	- -	X	X[j]	- -	- -
Floodplain	- -[k]	X	X	X	X	X	- -	X	X	- -	X	X	- -	X	X[l]	- -	- -
Wetland[m]	- -[k]	X	- -	- -	X[n]	- -	- -	- -	X	- -	- -[o]	- -	- -	- -	- -	- -	- -
Wet Soils	X	X	X	X	X	- -	- -	X	X	- -	X	- -	- -	X	- -	- -	- -
Woodland	X	X	X[p]	- -	X	X	X	- -	X	X	X	X	X	X	X[q]	X	X
Wildlife Habitat	X	X	X	- -	X	X	X	- -	X	X	X	X	X	X	X	X	X
Steep Slope	X	X	- -	- -	- -[r]	- -	- -	- -	- -	X[s]	X	- -	- -	- -	- -	- -	- -
Prairie	- -	- -[g]	- -	- -	- -[r]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Park	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	- -	- -
Historic Site	- -	- -[g]	- -	- -	- -[r]	- -	- -	- -	- -	- -	- -	- -	- -	X	- -	- -	- -
Scenic Viewpoint	X	X	- -	- -	X	X	X	- -	X	X	X	- -	- -	X	X	X	X
Natural Area or Critical Species Habitat Site	- -	- -	- -	- -	- -[q]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

NOTE: An "X" indicates that facility development is permitted within the specified natural resource feature. In those portions of the environmental corridors having more than one of the listed natural resource features, the natural resource feature with the most restrictive development limitation should take precedence.

APPLICABILITY

These guidelines indicate the types of development that can be accommodated within primary and secondary environmental corridors and isolated natural resource areas while maintaining the basic integrity of those areas. Throughout this table, the term "environmental corridors" refers to primary and secondary environmental corridors and isolated natural resource areas.

Under the plan:

- As regionally significant resource areas, primary environmental corridors should be preserved in essentially natural, open use—in accordance with the guidelines in this table.
- Secondary environmental corridors and isolated natural resource areas warrant consideration for preservation in essentially natural open use, as determined in county and local plans and in a manner consistent with State and Federal regulations. County and local units of government may choose to apply the guidelines in this table to secondary environmental corridors and isolated natural resource areas.

GENERAL DEVELOPMENT GUIDELINES

- Transportation and Utility Facilities: All transportation and utility facilities proposed to be located within the important natural resources should be evaluated on a case-by-case basis to consider alternative locations for such facilities. If it is determined that such facilities should be located within natural resources, development activities should be sensitive to, and minimize disturbance of, these resources, and, to the extent possible following construction, such resources should be restored to preconstruction conditions.

The above table presents development guidelines for major transportation and utility facilities. These guidelines may be extended to other similar facilities not specifically listed in the table.

- Recreational Facilities: In general, no more than 20 percent of the total environmental corridor area should be developed for recreational facilities. Furthermore, no more than 20 percent of the environmental corridor area consisting of upland wildlife habitat and woodlands should be developed for recreational facilities. It is recognized, however, that in certain cases these percentages may be exceeded in efforts to accommodate needed public recreational and game and fish management facilities within appropriate natural settings.

The above table presents development guidelines for major recreational facilities. These guidelines may be extended to other similar facilities not specifically listed in the table.

- Rural Density Residential Development: Rural density residential development may be accommodated in upland environmental corridors, provided that buildings are kept off steep slopes. The maximum number of housing units accommodated at a proposed development site within the environmental corridor should be limited to the number determined by dividing the total corridor acreage within the site, less the acreage covered by surface water and wetlands, by five. The permitted housing units may be in single-family or multi-family structures. When rural residential development is accommodated, conservation subdivision designs are strongly encouraged.
- Other Development: In lieu of recreational or rural density residential development, up to 10 percent of the upland corridor area in a parcel may be disturbed in order to accommodate urban residential, commercial, or other urban development under the following conditions: 1) the area to be disturbed is compact rather than scattered in nature; 2) the disturbance area is located on the edge of a corridor or on marginal resources within a corridor; 3) the development does not threaten the integrity of the remaining corridor; and 4) the development does not result in significant adverse water quality impacts; 5) development of the remaining corridor lands is prohibited by a conservation easement or deed restriction. Each such proposal must be reviewed on a site-by-site basis.

Table G-1 (continued)

Under this arrangement, while the developed area would no longer be part of the environmental corridor, the entirety of the remaining corridor would be permanently preserved from disturbance. From a resource protection point of view, preserving a minimum of 90 percent of the environmental corridor in this manner may be preferable to accommodating scattered homesites and attendant access roads at an overall density of one dwelling unit per five acres throughout the upland corridor areas.

- Pre-Existing Lots: Single-family development on existing lots of record should be permitted as provided for under county or local zoning at the time of adoption of the land use plan.
- All permitted development presumes that sound land and water management practices are utilized.

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[a] *The natural resource and related features are defined as follows:*

Lakes, Rivers, and Streams: Includes all lakes greater than five acres in area and all perennial and intermittent streams as shown on U. S. Geological Survey quadrangle maps.
Shoreland: Includes a band 50 feet in depth along both sides of intermittent streams; a band 75 feet in depth along both sides of perennial streams; a band 75 feet in depth around lakes; and a band 200 feet in depth along the Lake Michigan shoreline.
Floodplain: Includes areas, excluding stream channels and lakebeds, subject to inundation by the 100-year recurrence interval flood event.
Wetlands: Includes areas that are inundated or saturated by surface water or groundwater at a frequency, and with a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.
Wet Soils: Includes areas covered by wet, poorly drained, and organic soils.
Woodlands: Includes areas one acre or more in size having 17 or more deciduous trees per acre with at least a 50 percent canopy cover as well as coniferous tree plantations and reforestation projects; excludes lowland woodlands, such as tamarack swamps, which are classified as wetlands.
Wildlife Habitat: Includes areas devoted to natural open uses of a size and with a vegetative cover capable of supporting a balanced diversity of wildlife.
Steep Slope: Includes areas with land slopes of 12 percent or greater.
Prairies: Includes open, generally treeless areas which are dominated by native grasses; also includes savannas.
Park: Includes public and nonpublic park and open space sites.
Historic Site: Includes sites listed on the National Register of Historic Places. Most historic sites located within environmental corridors are archeological features such as American Indian settlements and effigy mounds and cultural features such as small, old cemeteries. On a limited basis, small historic buildings may also be encompassed within delineated corridors.
Scenic Viewpoint: Includes vantage points from which a diversity of natural features such as surface waters, wetlands, woodlands, and agricultural lands can be observed.
Natural Area and Critical Species Habitat Sites: Includes natural areas and critical species habitat sites as identified in the regional natural areas and critical species habitat protection and management plan.

[b] *Includes such improvements as stream channel modifications and such facilities as dams.*

[c] *Includes trails for such activities as hiking, bicycling, cross-country skiing, nature study, and horseback riding, and excludes all motorized trail activities. It should be recognized that trails for motorized activities such as snowmobiling that are located outside the environmental corridors may of necessity have to cross environmental corridor lands. Proposals for such crossings should be evaluated on a case-by-case basis, and if it is determined that they are necessary, such trail crossings should be designed to ensure minimum disturbance of the natural resources.*

[d] *Includes areas intended to accommodate camping in tents, trailers, or recreational vehicles which remain at the site for short periods of time, typically ranging from an overnight stay to a two-week stay.*

[e] *Certain transportation facilities such as bridges may be constructed over such resources.*

[f] *Utility facilities such as sanitary sewers may be located in or under such resources.*

[g] *Electric power transmission lines and similar lines may be suspended over such resources.*

[h] *Certain flood control facilities such as dams and channel modifications may need to be provided in such resources to reduce or eliminate flood damage to existing development.*

[i] *Bridges for trail facilities may be constructed over such resources.*

[j] *Consistent with Chapter NR 115 of the* Wisconsin Administrative Code.

[k] *Streets and highways may cross such resources. Where this occurs, there should be no net loss of flood storage capacity or wetlands. Guidelines for mitigation of impacts on wetlands by Wisconsin Department of Transportation facility projects are set forth in Chapter Trans 400 of the* Wisconsin Administrative Code.

[l] *Consistent with Chapter NR 116 of the* Wisconsin Administrative Code.

[m] *Any development affecting wetlands must adhere to the water quality standards for wetlands established under Chapter NR 103 of the* Wisconsin Administrative Code.

[n] *Only an appropriately designed boardwalk/trail should be permitted.*

[o] *Wetlands may be incorporated as part of a golf course, provided there is no disturbance of the wetlands.*

[p] *Generally excludes detention, retention, and infiltration basins. Such facilities should be permitted only if no reasonable alternative is available.*

[q] *Only if no alternative is available.*

[r] *Only appropriately designed and located hiking and cross-country ski trails should be permitted.*

[s] *Only an appropriately designed, vegetated, and maintained ski hill should be permitted.*

Source: SEWRPC.

Appendix G-2

WATER QUALITY MANAGEMENT OBJECTIVES, PRINCIPLES, AND STANDARDS FOR THE REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

OBJECTIVE NO. 1

The development of land management and water quality control facilities, programs, operational improvements, and policies, including land management and nonpoint pollution controls, sewerage and stormwater management systems—which will effectively serve the existing and planned future study area development pattern and meet wastewater disposal and stormwater runoff control needs.

PRINCIPLE

Sanitary sewerage and stormwater management systems are essential to the development and maintenance of a safe, healthy, and attractive urban environment. The extension of existing sanitary sewerage and stormwater management systems and the creation of new systems can be effectively used to guide and shape urban development both spatially and temporally.

STANDARDS

1. Sanitary sewer service should be provided to all existing areas of medium-[a] or high-density[b] urban development and to all areas proposed for such development in the appropriate adopted regional, county, and local land use plans.

2. Sanitary sewer service should be provided to all existing areas of low-density[c] urban development and to all areas proposed for such development in the appropriate adopted regional, county, and local land use plans where such areas are contiguous to areas of medium- or high-density urban development. Where noncontiguous low-density development already exists, the provision of sanitary sewer service should be contingent upon the inability of the underlying soil resource base to properly support onsite absorption waste disposal systems.

3. Engineered and partially engineered stormwater management facilities[d] should be provided to all existing areas of low-, medium, and high-density urban development and to all areas proposed for such development in the appropriate adopted regional, county, and local land use plans.

4. Where cognizant public health authorities declare that public health hazards exist because of the inability of the soil resource base to properly support onsite soil absorption waste disposal systems, sanitary sewer service should be provided.

5. Lands designated as primary environmental corridors, and certain secondary environmental corridors and isolated natural areas containing lands with steep slopes and/or wetlands, should not be served by sanitary sewers except in those cases where it is necessary to serve development incidental to the preservation and protection of the corridors and isolated natural areas, such as parks and related outdoor recreation areas, and existing clusters of urban development in such corridors and isolated natural areas. Engineering analyses relating to the sizing of sanitary sewerage and stormwater management facilities should assume the permanent preservation of all undeveloped primary environmental corridor lands, and certain portions of secondary corridors and isolated natural areas containing lands with steep slopes and wetlands, in natural open space uses.

6. Floodlands[e] should not be served by sanitary sewers except that development incidental to the preservation in open space uses of floodlands, such as parks and related outdoor recreation areas, and existing urban development in floodlands that is not recommended for eventual removal in comprehensive plans. Engineering analyses relating to the sizing of sanitary sewerage or stormwater management facilities should not assume ultimate development of floodlands for urban use.

7. The timing of the extension of sanitary sewerage facilities should, insofar as possible, seek to promote urban development in a series of complete neighborhood units. To achieve this, communities should encourage the provision of service to existing development and the development of new areas that have been included within the currently adopted sewer service area before adding new areas to a given municipal sewer service area.

8. The sizing of sanitary sewerage and stormwater management facility components should be based upon an assumption that future land use development will occur in general accordance with the appropriate adopted regional, county, and local land use plans.

9. To the extent feasible, industrial wastes except noncontact cooling waters, as well as the sanitary wastes generated at industrial plants, should be discharged to municipal sanitary sewerage systems for ultimate treatment and disposal. The necessity to provide pretreatment for industrial wastes should be determined on an individual case-by-case basis and should consider any regulations relating thereto.

10. Rural land management practices should be given priority in areas which are designated as prime agricultural lands to be preserved in long-term use for the production of food and fiber.

OBJECTIVE NO. 2

The development of land management and water quality control facilities, programs, operational improvements, and policies, so as to meet the recommended water use objectives and supporting water quality standards, as set forth on Maps 51 through 56 and in Table 70 in Chapter VII of this report.

PRINCIPLE

Rural and urban runoff, sewage treatment plant effluent, and industrial wastewater discharges are major contributors of pollutants to the streams and lakes of the study area; the location, design, construction, operation, and maintenance of stormwater management facilities, sewage treatment plants, and industrial wastewater outfalls, and the quality and quantity of the discharges from such facilities and of untreated runoff has a major effect on stream and lake water and sediment quality and on the ability of streams and lakes to support the established water uses. Urban stormwater runoff degrades surface water and sediment quality through the additions of conventional and potentially toxic pollutants. Urban stormwater runoff degrades surface water and sediment quality through the additions of conventional and potentially toxic pollutants. Urban stormwater runoff can degrade instream habitat quality by increasing channel scour, erosion, and sedimentation through increases in both the peak rate and the total volume of runoff.

STANDARDS

1. The level of treatment to be provided at each sewage treatment plant and industrial wastewater outfall should be determined by water quality analyses directly related to the established water use objectives for the receiving surface waterbody. These analyses should demonstrate that the proposed treatment level will aid in achieving the water quality standards supporting each major water use objective, as set forth on Maps 51 through 56 and in Table 70 in Chapter VII of this report, as well as the related standards and criteria set forth in Chapter VI.

2. The type and extent of stormwater treatment or associated preventive land management practices to be applied within a hydrologic unit should be determined by water quality analyses directly related to the established water use objectives for the receiving surface waterbody. These analyses should demonstrate that the proposed treatment level or land management practices will aid in achieving the water quality standards and criteria supporting each major water use objective or classification, as set forth on Maps 51 through 56 and in Table 70 in Chapter VII of this report.

3. Domestic livestock should be fenced out, or otherwise excluded from, all lakes, perennial streams, and wetlands, and direct stormwater runoff from the associated feeding areas to the lakes, perennial streams, and wetlands should be avoided so as to contribute to the achievement of the established water use objectives and standards.

4. The discharge of sewage treatment plant effluent directly to inland lakes should be avoided and sewage treatment plant discharges to streams flowing into inland lakes should be located and treated so as to contribute to the achievement of the established water use objectives and standards for those lakes.

5. Interim sewage treatment plants deemed necessary to be constructed prior to implementation of the long-range plan should provide levels of treatment determined by water quality analyses directly related to the established water use objectives and standards for the receiving surface waterbody.

6. Bypassing of sanitary sewage to storm sewer systems, open channel drainage courses, and streams should be avoided.

7. Bypassing of combined sewage to the surface waters should be minimized to the extent needed to meet the established plan objectives.

8. Sewage treatment plants should be designed to perform their intended function and to provide their specified level of treatment under adverse conditions of inflow, should have sufficient standby capacity to allow maintenance to be performed without bypassing influent sewage, and should not be designed to bypass any flow delivered by the inflowing sewers, but may

incorporate an emergency bypass facility sufficient to protect sewage treatment equipment in cases of unforeseen equipment failure or the unforeseen occurrence of flows in excess of the design hydraulic capacity of the plant.

9. No pollutants should be discharged by sanitary or industrial sewage treatment plants in amounts which would preclude the achievement of the recommended water use objectives or the supporting standards.

10. The orderly transition of lands from open space, agricultural, or other rural uses to urban uses through excavation, landscaping, and construction should be planned, designed, and conducted so as to contribute to the achievement of the established water use objectives and standards.

OBJECTIVE NO. 3

The development of land management and water quality control facilities, programs, operational improvements, and policies, which enhance the overall quality of the natural and man-made environments.

PRINCIPLE

The improper design, installation, application, or maintenance of land management practices, sanitary sewerage system components, and stormwater management components can adversely affect the natural and man-made environments; therefore, every effort should be made in such actions to properly relate to these environments and minimize any disruption or harm thereto.

STANDARDS

1. New and replacement sewage treatment plants, as well as additions to existing plants, should, wherever possible, be located on sites lying outside of the 1 percent probability floodplain. When it is necessary to use floodplain lands for sewage treatment plants, the facilities should be located outside of the floodway so as to not increase the 1 percent probability flood stage, and should be floodproofed to a flood protection elevation of two feet above the 1 percent probability flood stage so as to assure adequate protection against flood damage and avoid disruption of treatment and consequent bypassing of sewage during flood periods.

2. Existing sewage treatment plants located in the 1 percent probability floodplain should be floodproofed to a flood protection elevation of two feet above the 1 percent probability flood stage so as to assure adequate protection against flood damage and avoid disruption of treatment and consequent bypassing of sewage during flood periods.

3. The location of new and replacement of old sewage treatment plants or stormwater storage and treatment facilities should be properly related to the existing and proposed future urban development pattern as reflected in the appropriate adopted regional, county, and local land use plans and to any related community or neighborhood unit development plans.

4. New and replacement sewage treatment plants, as well as additions to existing plants, should be located on sites large enough to provide for adequate open space between the plant and existing or planned future urban land uses; should provide adequate area for expansion to ultimate capacity and should be located, oriented, and architecturally designed so as to complement their environs and to present an attractive appearance consistent with their status as public works.

5. The disposal of sludge from sewage treatment plants should be accomplished in the most efficient manner possible, consistent, however, with any adopted rules and regulations pertaining to air quality control and solid waste disposal.

6. Devices used for long-term or short-term storage of pollutants which are collected through treatment of wastewater or through the application of land management practices should, wherever possible, be located on sites lying outside of the 1 percent probability floodplain. When it is necessary to use floodplain lands for such facilities, such devices should be located outside of the floodway so as not to increase the 1 percent probability flood stage, and should be floodproofed to a flood protection elevation of two feet above the 1 percent probability flood stage so as to assure adequate protection against flood damage and to avoid redispersal of the pollutants into natural waters during flood periods.

7. There should be no known wastewater or stormwater discharges of heavy metals, chlorinated hydrocarbons, industrial chemicals, or other substances at levels known to be bioaccumulative, acutely or chronically toxic or hazardous to fish or other aquatic life, human health, wildlife, and domestic animals.

8. Water quality; sediment quality; and wildlife, fish, and aquatic life habitat should not be degraded beyond existing levels except where compelling economic hardship or social need is demonstrated and there are no technically and environmentally sound alternatives.

OBJECTIVE NO. 4

The attainment of soil and water conservation and urban stormwater management practices which reduce stormwater runoff and control nonpoint source pollution in the form of soil erosion, nutrient enrichment, stream and lake sedimentation, other pollution, and resulting eutrophication.

PRINCIPLE

Soil erosion and stream sedimentation, resulting from inadequate soil conservation and management practices for rural land and developing urban land, are significant problems within certain subwatersheds within the study area. Soil erosion reduces agricultural productivity through the loss of fertile topsoil and it also impairs or destroys aquatic habitat through the excessive deposition of sediment in wetlands and on streambeds.

STANDARDS

1. The soil erosion rate on individual cropland fields should not exceed the T-value;[f] nor should sediment delivery to waterbodies exceed one ton per acre per year (as determined by the Natural Resources Conservation Service Revised Universal Soil Loss Equation).

2. Land disturbing activities associated with urban development and redevelopment and utility construction should include provisions to minimize the loss of sediment from the site so as to contribute to the achievement of the surface water use objectives.

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[a]*Medium-density development is defined as that development having an average dwelling unit density of 4.4 dwelling units per net residential acre, and a net lot area per dwelling unit ranging from 6,231 to 18,980 square feet.*

[b]*High-density development is defined as that development having an average dwelling unit density of 12.0 dwelling units per net residential acre, and a net lot area per dwelling unit ranging from 2,430 to 6,230 square feet.*

[c]*Low-density development is defined as that development having an average dwelling unit density of 1.2 dwelling units per net residential acre, and a net lot area per dwelling unit ranging from 18,981 to 62,680 square feet.*

[d]*Engineered stormwater management facilities are defined herein as the systems or subsystems of stormwater catchment, conveyance, storage, and treatment facilities comprised of structural and nonstructural controls including natural and man-made surface drains, subsurface piped drains, or combinations thereof, and of pumping stations, surface or subsurface storage or wet and dry detention basins, infiltration systems, and other appurtenances associated therewith, and sized to accommodate estimated flows or quantities from the tributary drainage area as a result of a specified meteorologic or hydrologic event.*

[e]*Floodlands are defined as those lands, including floodplains, floodways, and channels, subject to inundation by the flood event with a 1 percent probability flood or where such data are not available, the maximum flood of record.*

[f]*"T-value" is the tolerable soil loss rate—the maximum level of soil erosion that will permit a high level of crop productivity to be sustained economically and indefinitely, as determined by the U.S. Natural Resource Conservation Service. "Excessive" cropland erosion refers to erosion in excess of the tolerable rate, or T-value.*

Source: SEWRPC.

Appendix G-3

OUTDOOR RECREATION AND OPEN SPACE PRESERVATION OBJECTIVES, PRINCIPLES, AND STANDARDS FOR THE REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

(Note: The outdoor recreation and open space preservation objectives, principles, and standards were developed for use in park and open space planning in the Southeastern Wisconsin Region. It is expected that these objectives, principles, and standards will form a framework and point of departure for subsequent county and local comprehensive plans. For planning purposes in Dodge, Fond du Lac, and Sheboygan Counties, reliance will be placed upon local plans wherever available.)

OBJECTIVE NO. 1

The provision of an integrated system of public general-use outdoor recreation sites and related open space areas which will allow the resident population of the watersheds involved adequate opportunity to participate in a wide range of outdoor recreation activities.

PRINCIPLE

Open space is the fundamental element required for the preservation and wise use of such natural resources as soil, water, woodlands, wetlands, native vegetation, and wildlife; it provides the opportunity to add to the physical, intellectual, and spiritual growth of the population; it enhances the economic and aesthetic value of certain types of development; and it is essential to outdoor recreational pursuits.

STANDARDS

1. Attainment of the standards pertaining to the preservation of environmentally significant lands under Land Use Development Objective No. 2 and the preservation of agricultural lands under Land Use Development Objective No. 4, would ensure the maintenance of an integrated system of open space lands within the study area. In addition, the following standards should be met:

   A. Major park and recreation sites providing opportunities for a variety of resource-oriented outdoor recreational activities should be provided within a 10-mile service radius of every dwelling unit in the study area, and should have a minimum gross site area of 250 acres.

   B. Other park and recreation sites should be provided within a maximum service radius of one mile of every dwelling unit in an urban area, and should have a minimum gross site area of five acres.

   C. Areas having unique scientific, cultural, scenic, or educational value should not be allocated to any urban or agricultural land uses; adjacent surrounding areas should be retained in open space use, such as agricultural or limited recreational uses.

OBJECTIVE NO. 2

The preservation of sufficient high-quality open-space lands for protection of the underlying and sustaining natural resource base to give form to and sustainability to urban development and to enhance the social and economic well-being and environmental quality of the watersheds involved.

PRINCIPLE

Ecological balance and natural beauty within the study area are primary determinants of the ability to provide a pleasant and habitable environment for all forms of life and to maintain the social and economic well being of the study area. Preservation of the most significant aspects of the natural resource base, that is, primary environmental corridors and prime agricultural lands, contributes to the maintenance of ecological balance, natural beauty, and economic well being of the study area.

STANDARDS

1. Attainment of the standards pertaining to the preservation of environmentally significant lands under Land Use Development Objective No. 2 and the preservation of agricultural lands under Land Use Development Objective No. 4, would ensure the preservation of sufficient, high-quality open space uses achieve this objective.

Source: SEWRPC.

Appendix G-4

WATER CONTROL FACILITY DEVELOPMENT OBJECTIVES, PRINCIPLES, AND STANDARDS FOR THE REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

(Note: The water control facility development objective and standards set forth herein are largely related to floodland management planning. The focus of the regional water quality management plan update is water quality management, including stormwater management. However, because of the interrelationship of floodland management and stormwater management, as well as land use, the floodland management water control facility objective, principles, and standards are presented as background and supporting information.)

OBJECTIVE NO. 1

The development of an integrated system of stormwater management and flood control facilities, programs, operational improvements, and policies, which will efficiently and cost-effectively reduce flood damage and stormwater damage problems under the existing and future land use patterns and promote the implementation of the land use and comprehensive plans in the watersheds involved.

PRINCIPLE

Reliable local municipal stormwater management facilities cannot be properly planned, designed, or constructed except as integral parts of an areawide system of floodwater conveyance and storage facilities centered on major waterways and designed so that the hydraulic capacity of each waterway opening and channel reach abets the common aim of providing for the storage, as well as the movement, of floodwaters. Not only does the land use pattern of the tributary drainage area affect the required hydraulic capacity of the drainage and flood control facilities, but the effectiveness of the floodwater conveyance and storage facilities affects the uses to which land within the tributary watershed, and particularly within the riverine areas of the watershed, may properly be put.

STANDARDS

1. All new and replacement bridges and culverts over waterways shall be designed so as to accommodate, according to the categories listed below, the designated flood events without overtopping of the related roadway or railway track and resultant disruption of traffic by floodwaters.

    A. Minor and collector streets used or intended to be used primarily for access to abutting properties: a 10 percent probability of occurrence flood discharge.

    B. Arterial streets and highways, other than freeways and expressways, used or intended to be used primarily to carry heavy volumes of fast, through traffic: a 2 percent probability of occurrence flood discharge.

    C. Freeways and expressways: a 1 percent probability of occurrence flood discharge.

    D. Railways: a 1 percent probability of occurrence flood discharge.

2. All new and replacement bridges and culverts over waterways, including pedestrian and other minor bridges, in addition to meeting the applicable requirements of paragraph number 1 above, shall be designed so as to accommodate the 1 percent probability flood event with a 1 percent probability of occurrence, without raising the peak stage, either upstream or downstream, 0.01 foot or more above the peak stage for the 1 percent probability of occurrence flood Larger permissible flood stage increases may be acceptable for reaches having topographic or land use conditions which could accommodate the increased stage without creating additional flood damage potential upstream or downstream of the proposed structure, and if appropriate legal arrangements are made with all affected local units of government and property owners.

3. The waterway opening of all new and replacement bridges shall be designed so as to readily facilitate the passage of ice floes and other floating debris, and thereby avoid blockages often associated with bridge failure and with unpredictable backwater effects and flood damages. In this respect, it should be recognized that clear spans and rectangular openings are more efficient than interrupted spans and curvilinear openings in allowing the passage of ice floes and other floating debris.

4. Certain new or replacement bridges and culverts over waterways, including pedestrian and other minor bridges, so located with respect to the stream system that the accumulation of floating ice or other debris may cause significant backwater effects with attendant danger to life, public health, or safety, or attendant serious damage to homes, industrial and commercial

buildings, and important public utilities, shall be designed so as to pass the 1 percent probability flood with at least 2.0 feet of freeboard between the peak stage and the low concrete or steel in the bridge span.

5. Standards 1, 3, and 4 shall also be used as the criteria for assessing the adequacy of the hydraulic capacity and structural safety of existing bridges or culverts over waterways and thereby serve as the basis for crossing modification or replacement recommendations designed to alleviate flooding and other problems.

6. All new and replacement bridges and culverts over waterways shall be designed so as not to inhibit fish passage in areas that are supporting, or which are capable of supporting, valuable recreational sport and forage fish species.

7. Channel modifications, dikes, and floodwalls should be restricted to the minimum number and extent necessary for the protection of existing and proposed land use development, consistent with the land use and water quality management elements of the regional water quality management plan update. The upstream and downstream effect of such structural works on flood discharges and stages shall be determined, and any such structural works which may significantly increase upstream or downstream peak flood discharges should be used only in conjunction with complementary facilities for the storage and/or conveyance of the incremental floodwaters through the watershed stream system. Channel modifications, dikes, or floodwalls shall not increase the height of the 1 percent probability flood 0.01 foot or more in any unprotected upstream or downstream stream reaches. Increases in flood stages that are equal to or greater than 0.01 foot resulting from any channel, dike, or floodwall construction shall be contained within the upstream or downstream extent of the channel, dike, or floodwall, except where topographic or land use conditions could accommodate the increased stage without creating additional flood damage potential and where appropriate legal arrangements are made with all affected local units of government and property owners.

8. In cases where a dike or floodwall is intended to protect human life, the minimum dike or floodwall top elevation shall be determined using whichever of the following produces the highest profile.

   A. The 1 percent probability flood profile plan, plus three feet of freeboard, increasing to four feet at bridges, or

   B. The 0.2 percent probability flood profile.

The height of low dikes or floodwalls that are not intended to protect human life shall be based on the high-water surface profiles for the 1 percent probability flood, and shall be capable of passing the 1 percent probability flood with a freeboard of at least 2.0 feet.

9. The construction of channel modifications, dikes, or floodwalls shall be deemed to change the limits and extent of the associated floodways and floodplains.[a] However, no such change in the extent of the associated floodways and floodplains shall become effective for the purposes of land use regulation until such time as the channel modifications, dikes, or floodwalls are actually constructed and operative. Any development in a former floodway or floodplain located to the landward side of any dike or floodwall shall be provided with adequate drainage so as to avoid ponding and associated damages.

10. Reduced regulatory flood protection elevations and accompanying reduced floodway or floodplain areas resulting from any proposed dams or diversion channels shall not become effective for the purposes of land use regulation until the reservoirs or channels are actually constructed and operative.

11. All water control facilities should be compatible with existing local stormwater management plans and as flexible as practical to accommodate future local stormwater management planning.

PRINCIPLE

Floodlands that are unoccupied by, and not committed to, urban development should be retained in an essentially natural open space condition supplemented with the development of selected areas for public recreational uses or other open space uses. Maintaining floodlands in open uses will serve to protect downstream riverine communities from the adverse effects of the actions of upstream riverine communities by discouraging floodland development that would significantly aggravate existing flood problems or create new flood problems; will preserve natural floodwater conveyance and storage capacities; will avoid increased peak flood discharges and stages; will contribute to the preservation of wetland, woodland, fish and aquatic life, and wildlife habitat as part of a continuous linear system of open space will protect and enhance water and sediment quality; and will enhance the quality of life for both the urban and rural population by preserving and protecting the recreational, aesthetic, ecological, and cultural values of riverine and floodland areas.

STANDARDS

1. All public land acquisitions, easements, floodland use regulations, and other measures intended to eliminate the need for water control facilities shall, in all areas not already in intensive urban use or committed to such use, encompass at least all of the riverine areas lying within the 1 percent probability flood inundation line under planned land use conditions.

2. Where hydraulic floodways are to be delineated, they shall to the maximum extent feasible accommodate existing and committed floodplain land uses.

3. In the determination of a hydraulic floodway, the hydraulic effect of potential floodplain encroachment shall be limited so that the peak stage of the 1 percent probability flood is not raised by 0.01 foot or more. Larger stage increases may be acceptable if appropriate legal arrangements are made with all affected local units of government and property owners.

4. The placement of fill within the limits of the 1 percent probability of occurrence floodplain shall be compensated for through the provision of an equal amount of floodwater storage volume within the floodplain. The compensatory storage volume shall be provided in close proximity to the area filled and the compensatory storage zone shall drain freely to the adjacent stream, enabling the volume to be available during successive floods. Where practical, the compensatory storage volume should be provided such that its elevation-volume relationship approximates the relationship existing for the area to be filled. That will ensure that the placement of fill will not result in increases in peak flood flows for floods which would occur more frequently than a 1 percent probability flood.

5. Floodlands should not be modified through alteration of existing stream channels for the sole purpose of accommodating planned urban land uses.

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[a]*Chapter NR 116 of the* Wisconsin Administrative Code *sets forth the conditions under which lands protected by dikes or floodwalls may be removed from the floodplain. Those conditions include: 1) the dike or floodwall meets the freeboard requirements given in Standard No. 8; 2) the dike or floodwall meets U.S. Army Corps of Engineers (USCOE) standards for design and construction; 3) interior drainage shall be provided in accordance with USCOE standards (see Standard No. 9); 4) an emergency action plan shall be in effect for the area protected by the dike or floodwall; 5) all persons receiving construction permits in the protected area shall be notified that their property would be located in the 1 percent probability of occurrence floodplain if the levee or dike were not in place; and 6) the levee or floodwall should be annually inspected by a professional engineer registered in the State of Wisconsin.*

Source: SEWRPC.

Appendix G-5

PLAN STRUCTURE AND MONITORING OBJECTIVES, PRINCIPLES, AND STANDARDS FOR THE REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

OBJECTIVE NO. 1

The development of land management and water quality control facilities, programs, operational improvements, and policies, that are both economical and efficient, meeting all other objectives at the lowest practical cost, considering both long-term capital and operation and maintenance costs.

PRINCIPLE

The total resources of the study area are limited and any undue investment in water pollution control systems must occur at the expense of other public and private investment; total pollution abatement costs, therefore, should be minimized while meeting and achieving all water quality standards and objectives.

STANDARDS

1. The sum of sanitary sewerage system operating and capital investment costs should be minimized.

2. The sum of stormwater control facility and related land management practice operating and capital investment costs should be minimized through proper stormwater management planning and design.

3. The total number of sanitary sewerage systems and sewage treatment facilities should be minimized in order to effect economies of scale and concentrate responsibility for water quality management. Where physical consolidation of sanitary sewer systems is uneconomical, administrative and operational consolidation should be considered in order to obtain economy in manpower utilization and to minimize duplication of administrative, laboratory, storage, and other necessary services, facilities, and equipment. The total number of diffuse pollution control facilities should be minimized in order to concentrate the responsibility for water quality management.

4. Maximum feasible use should be made of all existing and committed pollution control facilities, which should be supplemented with additional facilities only as necessary to serve the anticipated wastewater and stormwater management needs generated by substantial implementation of the appropriate adopted regional, county, and local land use plans, while meeting pertinent water quality use objectives and standards.

5. The use of new or improved materials and management practices should be allowed and encouraged if such materials and practices offer economies in materials or construction costs or by their superior performance lead to the achievement of water quality objectives at a lesser cost.

6. Sanitary sewerage systems, sewage treatment plants, and stormwater management facilities should be designed for staged or incremental construction where feasible and economical so as to limit total investment in such facilities and to permit maximum flexibility to accommodate changes in the rate of population growth and the rate of economic activity growth, changes in water use objectives and standards, or changes in the technology for wastewater management.

7. When technically feasible and otherwise acceptable, alignments for new sewer construction should coincide with existing public rights-of-way in order to minimize land acquisition or easement costs and disruption to the natural resource base.

8. Clearwater infiltration and inflows to the sanitary sewerage system should be reduced to the cost-effective level.

9. Sanitary sewerage systems and stormwater management systems should be designed and developed concurrently to effect engineering and construction economies as well as to assure the separate function and integrity of each of the two systems; to immediately achieve the pollution abatement and drainage benefits of the integrated design; and to minimize disruption of the natural resource base and existing urban development.

OBJECTIVE NO. 2

The development or use of land management and water quality management institutions—inclusive of the governmental units and their responsibilities, authorities, policies, procedures, and resources—and supporting revenue-raising mechanisms which are effective and locally acceptable, allowing the flexibility to provide a sound basis for plan implementation.

PRINCIPLE

The activities necessary for the achievement of the established water use objectives and supporting standards are expensive; technically, administratively, and legally complex; and important to the economic and social well being of the residents of the study area. Such activities require a continuing, long-term commitment and attention from public and private entities. The conduct of such activities requires that the groups designated as responsible for plan implementation have sufficient financial and technical capabilities, legal authorities, and general public support to accomplish the specific tasks identified.

STANDARDS

1. Each designated management agency should develop and establish a system of user charges and industrial cost recovery to maintain accounts to support the necessary operation, maintenance, and replacement expenditures.

2. Maximum utilization should be made of existing institutional structures in order to minimize the number of agencies designated to implement the recommended water quality control measures, and the creation of new institutions should be recommended only where necessary.

3. To the greatest extent possible, the responsibility for water pollution control and abatement should be assigned to the most immediate local public agency or to the most directly involved private entity.

4. Each designated management group should have legal authority, financial resources, technical capability, and practical autonomy sufficient to assure the timely accomplishment of its responsibilities in the achievement of the plan objectives.

OBJECTIVE NO. 3

The development of land management and water quality control facilities, programs, operational improvements, and policies which are consistent with the expected study area economic development and attendant job creation.

PRINCIPLE

The study area economy and its related employment is dependent upon the maintenance, growth, and development of business and industry which rely upon the provision of public facilities and infrastructure providing predictable opportunities that sustain and facilitate the economy

STANDARDS

1. Recommend efficient water quality management plan components of an infrastructure system designed to serve the projected economy of the study area with flexibility to accommodate unanticipated economic development and job-creation opportunities.

2. Support the selection of plan components and facility construction which are accessible to local employers to the extent practicable.

3. Evaluate the potential economic development and workforce impacts of major water quality protection and improvement projects from the standpoints of both of costs or hardships borne and of opportunities stemming from quality of life improvements and relative competitiveness of the study area as a place to reside or site business.

OBJECTIVE NO. 4

The development of land management and water quality facilities, programs, operational improvements, and policies which are flexible, adaptive, and robust in response to changing conditions.

PRINCIPLE

As human understanding of the factors affecting water quality improves, the activities necessary for the achievement of the established water use objectives and supporting standards may require modification for responding to varying short- and long-term changes in conditions and emerging challenges. The conduct of such activities requires that the adopted plan and the designated management agencies have sufficient operational flexibility to respond to changing conditions.

STANDARDS

1. The recommended plan components should be adaptable to change in scope, capacity, and effectiveness to the extent practical.

2. The recommended regional water quality management plan update should be periodically reviewed and each designated management agency should develop and establish mechanisms for reviewing the land management and water quality plan components and their associated responsibilities, both in support of the achievement of the recommended plan objectives and supporting standards and in the light of changing conditions.

3. The plan components should be designed for staged or incremental construction to the extent practical, so as to permit maximum flexibility to accommodate changes in expected future conditions.

OBJECTIVE NO. 5

Improvement of the abilities to assess the state of water resources, to detect changes in these states, to evaluate the overall environmental and economic impacts of these changes, and to prescribe remedies for improving undesirable states.

PRINCIPLE

Managerial practice should reflect changes in scientific understanding and technological capabilities which continue to improve human abilities to characterize the state of water resources and develop and implement remedies for undesirable states.

STANDARDS

1. To the extent practicable, assessment of the state of water resources, the broader environmental context, and remedies prescribed for improving undesirable states should reflect the current level scientific understanding and practice.

2. As plan implementation and monitoring proceeds, the designated management agencies should be continually involved in evaluating and refining the plan components to reflect new state-of-the-art techniques directed toward efficiency and improved performance.

3. The designated management agencies should either collaboratively, or within their given mission, seek to identify and resolve discrete knowledge gaps relating to water quality and this plan, then share findings within the professional/scientific community.

OBJECTIVE NO. 6

The development of mechanisms for fostering cooperation and collaboration among governmental units, organizations, the public, and other parties concerned with the quality of the land and water resources in the study area, in support of the other objectives.

PRINCIPLE

The challenges posed in maintaining the quality of land and water resources and the activities necessary for the achievement of the established water use objectives and supporting standards often extend beyond the boundaries of any single political division and affect a variety of stakeholders, requiring the involvement and cooperation of multiple governmental units and agencies, private organizations, and members of the public.

STANDARDS

1. Each designated management agency should develop and maintain linkages to other agencies and interested parties to encourage communication and coordination among institutions responsible for management, promote conservation of agency resources, and promote community involvement in the achievement of the recommended water use objectives and supporting standards.

2. Include integrated plan components, recognizing that citizens, as well as State, county, and local agencies; nongovernmental groups; agriculture; and other members of the business community to all serve a vital role in plan implementation.

3. As appropriate, and given staffing resources, designated management agencies should encourage and be supportive of water resource partnership groups, coalitions of governmental units or their officials, and professional associations designed to further dialogue and collectively act on behalf of water quality.

Source: SEWRPC.

Appendix G-6

EDUCATIONAL AND INFORMATIONAL PROGRAMMING OBJECTIVES, PRINCIPLES, AND STANDARDS FOR THE REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

OBJECTIVE NO. 1

The development of informational and educational mechanisms which will inform and educate the public and decision makers on water quality problems, needs, policies, and corrective actions, in support of the objectives above.

PRINCIPLE

Since certain behaviors by study area residents and businesses may be linked to water quality problems, successful achievement of the plan objectives and supporting standards will require the awareness, understanding, and involvement of informed decision makers and an informed public.

STANDARDS

1. The public should be provided with opportunities to use the water resources and to monitor the water quality conditions of the study area in ways that enhance understanding and appreciation of water quality.

2. Selected appropriate designated management agencies should develop and establish mechanisms to promote public awareness and involvement in the achievement of the recommended water use objectives and supporting standards.

3. The designated management agencies, working as appropriate with educational institutions, should regularly seek to measure the level of public awareness, understanding, and willingness to act for water quality protection, using such instruments as surveys, focus groups, or alternative means of assessment.

Source: SEWRPC.

Appendix H

COMPARISON OF AVERAGE ANNUAL POLLUTANT LOADS FOR SCREENING ALTERNATIVES

Table H-1

AVERAGE ANNUAL POLLUTANT LOADS FOR SCREENING ALTERNATIVES: KINNICKINNIC RIVER WATERSHED

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Phosphorus (pounds)	Kinnickinnic River	Existing	220	880	490	1,590	2,790	20	2,810	4,400
		2020 Future (baseline)	220	1,130	320	1,670	2,440	20	2,460	4,130
		1A	220	0	0	220	2,750	20	2,770	2,990
		1B	220	0	0	220	2,440	20	2,460	2,680
		1C	220	0	570	790	2,440	20	2,460	3,250
		1D	220	0	570	790	2,440	20	2,460	3,250
		2	220	1,350	230	1,800	2,270	20	2,290	4,090
	Wilson Park Creek	Existing	320	10	0	330	3,390	50	3,440	3,770
		2020 Future (baseline)	320	10	0	330	3,040	30	3,070	3,400
		1A	320	0	0	320	3,040	30	3,070	3,390
		1B	320	0	0	320	3,040	30	3,070	3,390
		1C	320	0	0	320	3,040	30	3,070	3,390
		1D	320	0	0	320	3,040	30	3,070	3,390
		2	320	10	0	330	2,830	30	2,860	3,190
	Holmes Avenue Creek	Existing	440	0	0	440	1,000	<10	1,000	1,440
		2020 Future (baseline)	440	0	0	440	870	<10	870	1,310
		1A	440	0	0	440	870	<10	870	1,310
		1B	440	0	0	440	870	<10	870	1,310
		1C	440	0	0	440	870	<10	870	1,310
		1D	440	0	0	440	870	<10	870	1,310
		2	440	0	0	440	810	<10	810	1,250
	Villa Mann Creek	Existing	0	0	0	0	730	<10	730	730
		2020 Future (baseline)	0	0	0	0	630	<10	630	630
		1A	0	0	0	0	630	<10	630	630
		1B	0	0	0	0	630	<10	630	630
		1C	0	0	0	0	630	<10	630	630
		1D	0	0	0	0	630	<10	630	630
		2	0	0	0	0	590	<10	590	590
	Cherokee Park Creek	Existing	0	0	0	0	440	<10	440	440
		2020 Future (baseline)	0	0	0	0	390	<10	390	390
		1A	0	0	0	0	390	<10	390	390
		1B	0	0	0	0	390	<10	390	390
		1C	0	0	0	0	390	<10	390	390
		1D	0	0	0	0	390	<10	390	390
		2	0	0	0	0	360	<10	360	360
	Lyons Park Creek	Existing	0	<10	0	<10	620	<10	620	620
		2020 Future (baseline)	0	<10	0	<10	550	<10	550	550
		1A	0	0	0	0	550	<10	550	550
		1B	0	0	0	0	550	<10	550	550
		1C	0	0	0	0	550	<10	550	550
		1D	0	0	0	0	550	<10	550	550
		2	0	<10	0	<10	510	<10	510	510

Table H-1 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Total Phosphorus (pounds) (continued)	S. 43rd Street Ditch	Existing	460	<10	0	460	890	<10	890	1,350
		2020 Future (baseline)	460	<10	0	460	790	<10	790	1,250
		1A	460	0	0	460	790	<10	790	1,250
		1B	460	0	0	460	790	<10	790	1,250
		1C	460	0	0	460	790	<10	790	1,250
		1D	460	0	0	460	790	<10	790	1,250
		2	460	<10	0	460	730	<10	730	1,190
	Watershed Total	Existing	1,440	890	490	2,820	9,860	70	9,930	12,750
		2020 Future (baseline)	1,440	1,140	320	2,900	8,710	50	8,760	11,660
		1A	1,440	0	0	1,440	9,020	50	9,070	10,510
		1B	1,440	0	0	1,440	8,710	50	8,760	10,200
		1C	1,440	0	570	2,010	8,710	50	8,760	10,770
		1D	1,440	0	570	2,010	8,710	50	8,760	10,770
		2	1,440	1,360	230	3,030	8,100	50	8,150	11,180
Total Suspended Solids (pounds)	Kinnickinnic River	Existing	2,230	50,280	42,810	95,320	1,400,580	2,900	1,403,480	1,498,800
		2020 Future (baseline)	2,230	64,810	28,270	95,310	1,106,590	2,800	1,109,390	1,204,700
		1A	2,230	0	0	2,230	1,246,370	2,800	1,249,170	1,251,400
		1B	2,230	0	0	2,230	1,106,590	2,800	1,109,390	1,111,620
		1C	2,230	0	49,860	52,090	1,106,590	2,800	1,109,390	1,161,480
		1D	2,230	0	49,860	52,090	1,106,590	2,800	1,109,390	1,161,480
		2	2,230	77,420	18,750	98,400	1,106,590	2,800	1,109,390	1,207,790
	Wilson Park Creek	Existing	6,300	850	0	7,150	1,681,280	24,830	1,706,110	1,713,260
		2020 Future (baseline)	6,300	380	0	6,680	1,365,030	3,070	1,368,100	1,374,780
		1A	6,300	0	0	6,300	1,365,030	3,070	1,368,100	1,374,400
		1B	6,300	0	0	6,300	1,365,030	3,070	1,368,100	1,374,400
		1C	6,300	0	0	6,300	1,365,030	3,070	1,368,100	1,374,400
		1D	6,300	0	0	6,300	1,365,030	3,070	1,368,100	1,374,400
		2	6,300	390	0	6,690	1,365,030	3,070	1,368,100	1,374,790
	Holmes Avenue Creek	Existing	800	0	0	800	643,010	530	643,540	644,340
		2020 Future (baseline)	800	0	0	800	499,250	330	499,580	500,380
		1A	800	0	0	800	499,250	330	499,580	500,380
		1B	800	0	0	800	499,250	330	499,580	500,380
		1C	800	0	0	800	499,250	330	499,580	500,380
		1D	800	0	0	800	499,250	330	499,580	500,380
		2	800	0	0	800	499,250	330	499,580	500,380
	Villa Mann Creek	Existing	0	0	0	0	380,220	220	380,440	380,440
		2020 Future (baseline)	0	0	0	0	289,850	120	289,970	289,970
		1A	0	0	0	0	289,850	120	289,970	289,970
		1B	0	0	0	0	289,850	120	289,970	289,970
		1C	0	0	0	0	289,850	120	289,970	289,970
		1D	0	0	0	0	289,850	120	289,970	289,970
		2	0	0	0	0	289,850	120	289,970	289,970

Table H-1 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Suspended Solids (pounds) (continued)	Cherokee Park Creek	Existing	0	0	0	0	216,410	600	217,010	217,010
		2020 Future (baseline)	0	0	0	0	170,560	490	171,050	171,050
		1A	0	0	0	0	170,560	490	171,050	171,050
		1B	0	0	0	0	170,560	490	171,050	171,050
		1C	0	0	0	0	170,560	490	171,050	171,050
		1D	0	0	0	0	170,560	490	171,050	171,050
		2	0	0	0	0	170,560	490	171,050	171,050
	Lyons Park Creek	Existing	0	30	0	30	283,620	250	283,870	283,900
		2020 Future (baseline)	0	30	0	30	225,650	210	225,860	225,890
		1A	0	0	0	0	225,650	210	225,860	225,860
		1B	0	0	0	0	225,650	210	225,860	225,860
		1C	0	0	0	0	225,650	210	225,860	225,860
		1D	0	0	0	0	225,650	210	225,860	225,860
		2	0	30	0	30	225,650	210	225,860	225,890
	S. 43rd Street Ditch	Existing	3,080	110	0	3,190	557,400	430	557,830	561,020
		2020 Future (baseline)	3,080	110	0	3,190	428,650	160	428,810	432,000
		1A	3,080	0	0	3,080	428,650	160	428,810	431,890
		1B	3,080	0	0	3,080	428,650	160	428,810	431,890
		1C	3,080	0	0	3,080	428,650	160	428,810	431,890
		1D	3,080	0	0	3,080	428,650	160	428,810	431,890
		2	3,080	110	0	3,190	428,650	160	428,810	432,000
	Watershed Total	Existing	12,410	51,270	42,810	106,490	5,162,520	29,760	5,192,280	5,298,770
		2020 Future (baseline)	12,410	65,330	28,270	106,010	4,085,580	7,180	4,092,760	4,198,770
		1A	12,410	0	0	12,410	4,225,360	7,180	4,232,540	4,244,950
		1B	12,410	0	0	12,410	4,085,580	7,180	4,092,760	4,105,170
		1C	12,410	0	49,860	62,270	4,085,580	7,180	4,092,760	4,155,030
		1D	12,410	0	49,860	62,270	4,085,580	7,180	4,092,760	4,155,030
		2	12,410	77,950	18,750	109,110	4,085,580	7,180	4,092,760	4,201,870
Fecal Coliform Bacteria (trillions of cells)	Kinnickinnic River	Existing	0.00	959.33	554.79	1,514.12	1,031.94	0.06	1,032.00	2,546.12
		2020 Future (baseline)	0.00	1,236.62	366.38	1,603.00	861.35	0.06	861.41	2,464.41
		1A	0.00	0.00	0.00	0.00	966.48	0.06	966.54	966.54
		1B	0.00	0.00	0.00	0.00	861.35	0.06	861.41	861.41
		1C	0.00	0.00	646.18	646.18	861.35	0.06	861.41	1,507.59
		1D	0.00	0.00	646.18	646.18	861.35	0.06	861.41	1,507.59
		2	0.00	1,477.12	303.71	1,780.83	775.21	0.06	775.27	2,556.10
	Wilson Park Creek	Existing	0.00	16.14	0.00	16.14	996.39	0.20	996.59	1,012.73
		2020 Future (baseline)	0.00	7.35	0.00	7.35	860.49	0.08	860.57	867.92
		1A	0.00	0.00	0.00	0.00	860.49	0.08	860.57	860.57
		1B	0.00	0.00	0.00	0.00	860.49	0.08	860.57	860.57
		1C	0.00	0.00	0.00	0.00	860.49	0.08	860.57	860.57
		1D	0.00	0.00	0.00	0.00	860.49	0.08	860.57	860.57
		2	0.00	7.40	0.00	7.40	774.44	0.08	774.52	781.92

Table H-1 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Holmes Avenue Creek	Existing	0.00	0.00	0.00	0.00	361.85	0.01	361.86	361.86
		2020 Future (baseline)	0.00	0.00	0.00	0.00	298.64	0.01	298.65	298.65
		1A	0.00	0.00	0.00	0.00	298.64	0.01	298.65	298.65
		1B	0.00	0.00	0.00	0.00	298.64	0.01	298.65	298.65
		1C	0.00	0.00	0.00	0.00	298.64	0.01	298.65	298.65
		1D	0.00	0.00	0.00	0.00	298.64	0.01	298.65	298.65
		2	0.00	0.00	0.00	0.00	268.78	0.01	268.79	268.79
	Villa Mann Creek	Existing	0.00	0.00	0.00	0.00	247.97	0.01	247.98	247.98
		2020 Future (baseline)	0.00	0.00	0.00	0.00	203.64	0.00	203.64	203.64
		1A	0.00	0.00	0.00	0.00	203.64	0.00	203.64	203.64
		1B	0.00	0.00	0.00	0.00	203.64	0.00	203.64	203.64
		1C	0.00	0.00	0.00	0.00	203.64	0.00	203.64	203.64
		1D	0.00	0.00	0.00	0.00	203.64	0.00	203.64	203.64
		2	0.00	0.00	0.00	0.00	183.27	0.00	183.27	183.27
	Cherokee Park Creek	Existing	0.00	0.00	0.00	0.00	145.02	0.01	145.03	145.03
		2020 Future (baseline)	0.00	0.00	0.00	0.00	121.71	0.01	121.72	121.72
		1A	0.00	0.00	0.00	0.00	121.71	0.01	121.72	121.72
		1B	0.00	0.00	0.00	0.00	121.71	0.01	121.72	121.72
		1C	0.00	0.00	0.00	0.00	121.71	0.01	121.72	121.72
		1D	0.00	0.00	0.00	0.00	121.71	0.01	121.72	121.72
		2	0.00	0.00	0.00	0.00	109.54	0.01	109.55	109.55
	Lyons Park Creek	Existing	0.00	0.52	0.00	0.52	247.09	0.01	247.10	247.62
		2020 Future (baseline)	0.00	0.52	0.00	0.52	208.42	0.00	208.42	208.94
		1A	0.00	0.00	0.00	0.00	208.42	0.00	208.42	208.42
		1B	0.00	0.00	0.00	0.00	208.42	0.00	208.42	208.42
		1C	0.00	0.00	0.00	0.00	208.42	0.00	208.42	208.42
		1D	0.00	0.00	0.00	0.00	208.42	0.00	208.42	208.42
		2	0.00	0.52	0.00	0.52	187.58	0.00	187.58	188.10
	S. 43rd Street Ditch	Existing	0.00	2.07	0.00	2.07	327.94	0.01	327.95	330.02
		2020 Future (baseline)	0.00	2.07	0.00	2.07	277.19	0.00	277.19	279.26
		1A	0.00	0.00	0.00	0.00	277.19	0.00	277.19	277.19
		1B	0.00	0.00	0.00	0.00	277.19	0.00	277.19	277.19
		1C	0.00	0.00	0.00	0.00	277.19	0.00	277.19	277.19
		1D	0.00	0.00	0.00	0.00	277.19	0.00	277.19	277.19
		2	0.00	2.07	0.00	2.07	249.47	0.00	249.47	251.54
	Watershed Total	Existing	0.00	978.06	554.79	1,532.85	3,358.20	0.31	3,358.51	4,891.36
		2020 Future (baseline)	0.00	1,246.56	366.38	1,612.94	2,831.44	0.16	2,831.60	4,444.54
		1A	0.00	0.00	0.00	0.00	2,936.57	0.16	2,936.73	2,936.73
		1B	0.00	0.00	0.00	0.00	2,831.44	0.16	2,831.60	2,831.60
		1C	0.00	0.00	646.18	646.18	2,831.44	0.16	2,831.60	3,477.78
		1D	0.00	0.00	646.18	646.18	2,831.44	0.16	2,831.60	3,477.78
		2	0.00	1,487.11	303.71	1,790.82	2,548.29	0.16	2,548.45	4,339.27

Table H-1 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Nitrogen (pounds)	Kinnickinnic River	Existing	3,800	1,840	2,290	7,930	17,730	220	17,950	25,880
		2020 Future (baseline)	3,800	2,370	1,510	7,680	15,880	210	16,090	23,770
		1A	3,800	0	0	3,800	17,480	210	17,690	21,490
		1B	3,800	0	0	3,800	15,880	210	16,090	19,890
		1C	3,800	0	2,670	6,470	15,880	210	16,090	22,560
		1D	3,800	0	2,670	6,470	15,880	210	16,090	22,560
		2	3,800	2,830	1,120	7,750	15,370	210	15,580	23,330
	Wilson Park Creek	Existing	980	30	0	1,010	21,270	980	22,250	23,260
		2020 Future (baseline)	980	10	0	990	19,570	250	19,820	20,810
		1A	980	0	0	980	19,570	250	19,820	20,800
		1B	980	0	0	980	19,570	250	19,820	20,800
		1C	980	0	0	980	19,570	250	19,820	20,800
		1D	980	0	0	980	19,570	250	19,820	20,800
		2	980	10	0	990	18,950	250	19,200	20,190
	Holmes Avenue Creek	Existing	1,460	0	0	1,460	6,090	50	6,140	7,600
		2020 Future (baseline)	1,460	0	0	1,460	5,450	30	5,480	6,940
		1A	1,460	0	0	1,460	5,450	30	5,480	6,940
		1B	1,460	0	0	1,460	5,450	30	5,480	6,940
		1C	1,460	0	0	1,460	5,450	30	5,480	6,940
		1D	1,460	0	0	1,460	5,450	30	5,480	6,940
		2	1,460	0	0	1,460	5,260	30	5,290	6,750
	Villa Mann Creek	Existing	0	0	0	0	4,480	20	4,500	4,500
		2020 Future (baseline)	0	0	0	0	3,980	10	3,990	3,990
		1A	0	0	0	0	3,980	10	3,990	3,990
		1B	0	0	0	0	3,980	10	3,990	3,990
		1C	0	0	0	0	3,980	10	3,990	3,990
		1D	0	0	0	0	3,980	10	3,990	3,990
		2	0	0	0	0	3,850	10	3,860	3,860
	Cherokee Park Creek	Existing	0	0	0	0	2,750	50	2,800	2,800
		2020 Future (baseline)	0	0	0	0	2,490	40	2,530	2,530
		1A	0	0	0	0	2,490	40	2,530	2,530
		1B	0	0	0	0	2,490	40	2,530	2,530
		1C	0	0	0	0	2,490	40	2,530	2,530
		1D	0	0	0	0	2,490	40	2,530	2,530
		2	0	0	0	0	2,420	40	2,460	2,460
	Lyons Park Creek	Existing	0	<10	0	<10	3,980	20	4,000	4,000
		2020 Future (baseline)	0	<10	0	<10	3,600	20	3,620	3,620
		1A	0	0	0	0	3,600	20	3,620	3,620
		1B	0	0	0	0	3,600	20	3,620	3,620
		1C	0	0	0	0	3,600	20	3,620	3,620
		1D	0	0	0	0	3,600	20	3,620	3,620
		2	0	0	0	0	3,490	20	3,510	3,510

Table H-1 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Nitrogen (pounds) (continued)	S. 43rd Street Ditch	Existing	490	<10	0	490	5,570	30	5,600	6,090
		2020 Future (baseline)	490	<10	0	490	5,050	10	5,060	5,550
		1A	490	0	0	490	5,050	10	5,060	5,550
		1B	490	0	0	490	5,050	10	5,060	5,550
		1C	490	0	0	490	5,050	10	5,060	5,550
		1D	490	0	0	490	5,050	10	5,060	5,550
		2	490	0	0	490	4,880	10	4,890	5,380
	Watershed Total	Existing	6,730	1,870	2,290	10,890	61,870	1,370	63,240	74,130
		2020 Future (baseline)	6,730	2,380	1,510	10,620	56,020	570	56,590	67,210
		1A	6,730	0	0	6,730	57,620	570	58,190	64,920
		1B	6,730	0	0	6,730	56,020	570	56,590	63,320
		1C	6,730	0	2,670	9,400	56,020	570	56,590	65,990
		1D	6,730	0	2,670	9,400	56,020	570	56,590	65,990
		2	6,730	2,840	1,120	10,690	54,220	570	54,790	65,480
Biochemical Oxygen Demand (pounds)	Kinnickinnic River	Existing	3,680	12,370	6,880	22,930	80,050	740	80,790	103,720
		2020 Future (baseline)	3,680	15,950	4,540	24,170	67,460	710	68,170	92,340
		1A	3,680	0	0	3,680	75,590	710	76,300	79,980
		1B	3,680	0	0	3,680	67,460	710	68,170	71,850
		1C	3,680	0	8,010	11,690	67,460	710	68,170	79,860
		1D	3,680	0	8,010	11,690	67,460	710	68,170	79,860
		2	3,680	19,050	3,210	25,940	67,460	710	68,170	94,110
	Wilson Park Creek	Existing	5,630	210	0	5,840	165,660	1,900	167,560	173,400
		2020 Future (baseline)	5,630	90	0	5,720	157,460	1,100	158,560	164,280
		1A	5,630	0	0	5,630	157,460	1,100	158,560	164,190
		1B	5,630	0	0	5,630	157,460	1,100	158,560	164,190
		1C	5,630	0	0	5,630	157,460	1,100	158,560	164,190
		1D	5,630	0	0	5,630	157,460	1,100	158,560	164,190
		2	5,630	100	0	5,730	157,460	1,100	158,560	164,290
	Holmes Avenue Creek	Existing	1,120	0	0	1,120	44,320	160	44,480	45,600
		2020 Future (baseline)	1,120	0	0	1,120	39,590	90	39,680	40,800
		1A	1,120	0	0	1,120	39,590	90	39,680	40,800
		1B	1,120	0	0	1,120	39,590	90	39,680	40,800
		1C	1,120	0	0	1,120	39,590	90	39,680	40,800
		1D	1,120	0	0	1,120	39,590	90	39,680	40,800
		2	1,120	0	0	1,120	39,590	90	39,680	40,800
	Villa Mann Creek	Existing	0	0	0	0	20,320	80	20,400	20,400
		2020 Future (baseline)	0	0	0	0	16,940	40	16,980	16,980
		1A	0	0	0	0	16,940	40	16,980	16,980
		1B	0	0	0	0	16,940	40	16,980	16,980
		1C	0	0	0	0	16,940	40	16,980	16,980
		1D	0	0	0	0	16,940	40	16,980	16,980
		2	0	0	0	0	16,940	40	16,980	16,980

Table H-1 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Biochemical Oxygen Demand (pounds) (continued)	Cherokee Park Creek	Existing	0	0	0	0	11,980	140	12,120	12,120
		2020 Future (baseline)	0	0	0	0	10,350	110	10,460	10,460
		1A	0	0	0	0	10,350	110	10,460	10,460
		1B	0	0	0	0	10,350	110	10,460	10,460
		1C	0	0	0	0	10,350	110	10,460	10,460
		1D	0	0	0	0	10,350	110	10,460	10,460
		2	0	0	0	0	10,350	110	10,460	10,460
	Lyons Park Creek	Existing	0	10	0	10	16,880	60	16,940	16,950
		2020 Future (baseline)	0	10	0	10	14,340	50	14,390	14,400
		1A	0	0	0	0	14,340	50	14,390	14,390
		1B	0	0	0	0	14,340	50	14,390	14,390
		1C	0	0	0	0	14,340	50	14,390	14,390
		1D	0	0	0	0	14,340	50	14,390	14,390
		2	0	10	0	10	14,340	50	14,390	14,400
	S. 43rd Street Ditch	Existing	5,420	30	0	5,450	30,730	130	30,860	36,310
		2020 Future (baseline)	5,420	30	0	5,450	26,040	50	26,090	31,540
		1A	5,420	0	0	5,420	26,040	50	26,090	31,510
		1B	5,420	0	0	5,420	26,040	50	26,090	31,510
		1C	5,420	0	0	5,420	26,040	50	26,090	31,510
		1D	5,420	0	0	5,420	26,040	50	26,090	31,510
		2	5,420	30	0	5,450	26,040	50	26,090	31,540
	Watershed Total	Existing	15,850	12,620	6,880	35,350	369,940	3,210	373,150	408,500
		2020 Future (baseline)	15,850	16,080	4,540	36,470	332,180	2,150	334,330	370,800
		1A	15,850	0	0	15,850	340,310	2,150	342,460	358,310
		1B	15,850	0	0	15,850	332,180	2,150	334,330	350,180
		1C	15,850	0	8,010	23,860	332,180	2,150	334,330	358,190
		1D	15,850	0	8,010	23,860	332,180	2,150	334,330	358,190
		2	15,850	19,190	3,210	38,250	332,180	2,150	334,330	372,580
Copper (pounds)	Kinnickinnic River	Existing	7	8	15	30	146	<1	146	176
		2020 Future (baseline)	7	10	10	27	120	<1	120	147
		1A	7	0	0	7	136	<1	136	143
		1B	7	0	0	7	120	<1	120	127
		1C	7	0	18	25	120	<1	120	145
		1D	7	0	18	25	120	<1	120	145
		2	7	12	7	26	120	<1	120	146
	Wilson Park Creek	Existing	0	<1	0	<1	174	1	175	175
		2020 Future (baseline)	0	<1	0	<1	151	<1	151	151
		1A	0	0	0	0	151	<1	151	151
		1B	0	0	0	0	151	<1	151	151
		1C	0	0	0	0	151	<1	151	151
		1D	0	0	0	0	151	<1	151	151
		2	0	<1	0	<1	151	<1	151	151
	Holmes Avenue Creek	Existing	0	0	0	0	59	<1	59	59
		2020 Future (baseline)	0	0	0	0	49	<1	49	49
		1A	0	0	0	0	49	<1	49	49
		1B	0	0	0	0	49	<1	49	49
		1C	0	0	0	0	49	<1	49	49
		1D	0	0	0	0	49	<1	49	49
		2	0	0	0	0	49	<1	49	49

Table H-1 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Copper (pounds) (continued)	Villa Mann Creek	Existing	0	0	0	0	37	<1	37	37
		2020 Future (baseline)	0	0	0	0	30	<1	30	30
		1A	0	0	0	0	30	<1	30	30
		1B	0	0	0	0	30	<1	30	30
		1C	0	0	0	0	30	<1	30	30
		1D	0	0	0	0	30	<1	30	30
		2	0	0	0	0	30	<1	30	30
	Cherokee Park Creek	Existing	0	0	0	0	22	<1	22	22
		2020 Future (baseline)	0	0	0	0	18	<1	18	18
		1A	0	0	0	0	18	<1	18	18
		1B	0	0	0	0	18	<1	18	18
		1C	0	0	0	0	18	<1	18	18
		1D	0	0	0	0	18	<1	18	18
		2	0	0	0	0	18	<1	18	18
	Lyons Park Creek	Existing	0	<1	0	<1	30	<1	30	30
		2020 Future (baseline)	0	<1	0	<1	25	<1	25	25
		1A	0	0	0	0	25	<1	25	25
		1B	0	0	0	0	25	<1	25	25
		1C	0	0	0	0	25	<1	25	25
		1D	0	0	0	0	25	<1	25	25
		2	0	<1	0	<1	25	<1	25	25
	S. 43rd Street Ditch	Existing	0	<1	0	<1	57	<1	57	57
		2020 Future (baseline)	0	<1	0	<1	47	<1	47	47
		1A	0	0	0	0	47	<1	47	47
		1B	0	0	0	0	47	<1	47	47
		1C	0	0	0	0	47	<1	47	47
		1D	0	0	0	0	47	<1	47	47
		2	0	<1	0	<1	47	<1	47	47
	Watershed Total	Existing	7	8	15	30	525	1	526	556
		2020 Future (baseline)	7	10	10	27	440	<1	440	467
		1A	7	0	0	7	456	<1	456	463
		1B	7	0	0	7	440	<1	440	447
		1C	7	0	18	25	440	0	440	465
		1D	7	0	18	25	440	0	440	465
		2	7	12	7	26	440	0	440	466

[a] *Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b] *Loads presented in this table for the 2020 future (baseline) condition reflect refinements that were made to the MMSD conveyance system model after the screening alternatives were evaluated. This results in certain anomalies in the load comparisons presented herein, particularly regarding SSO loads with Screening Alternative 2.*

[c] *For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table H-2

AVERAGE ANNUAL POLLUTANT LOADS FOR SCREENING ALTERNATIVES: MENOMONEE RIVER WATERSHED

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Phosphorus (pounds)	Butler Ditch	Existing	0	10	0	10	1,490	50	1,540	1,550
		2020 Future (baseline)	0	10	0	10	1,290	40	1,330	1,340
		1A	0	0	0	0	1,290	40	1,330	1,330
		1B	0	0	0	0	1,290	40	1,330	1,330
		1C	0	0	0	0	1,290	40	1,330	1,330
		1D	0	0	0	0	1,290	40	1,330	1,330
		2	0	10	0	10	1,200	40	1,240	1,250
	Honey Creek	Existing	200	10	0	210	3,900	20	3,920	4,130
		2020 Future (baseline)	200	10	0	210	3,430	10	3,440	3,650
		1A	200	0	0	200	3,430	10	3,440	3,640
		1B	200	0	0	200	3,430	10	3,440	3,640
		1C	200	0	0	200	3,430	10	3,440	3,640
		1D	200	0	0	200	3,430	10	3,440	3,640
		2	200	10	0	210	3,200	10	3,210	3,420
	Lily Creek	Existing	0	0	0	0	1,200	90	1,290	1,290
		2020 Future (baseline)	0	0	0	0	1,120	30	1,150	1,150
		1A	0	0	0	0	1,120	30	1,150	1,150
		1B	0	0	0	0	1,120	30	1,150	1,150
		1C	0	0	0	0	1,120	30	1,150	1,150
		1D	0	0	0	0	1,120	30	1,150	1,150
		2	0	0	0	0	1,040	30	1,070	1,070
	Little Menomonee Creek	Existing	0	0	0	0	80	350	430	430
		2020 Future (baseline)	0	0	0	0	70	310	380	380
		1A	0	0	0	0	70	310	380	380
		1B	0	0	0	0	70	310	380	380
		1C	0	0	0	0	70	310	380	380
		1D	0	0	0	0	70	310	380	380
		2	0	0	0	0	70	290	360	360
	Little Menomonee River	Existing	360	<10	0	360	3,300	840	4,140	4,500
		2020 Future (baseline)	360	<10	0	360	3,170	690	3,860	4,220
		1A	360	0	0	360	3,170	690	3,860	4,220
		1B	360	0	0	360	3,170	690	3,860	4,220
		1C	360	0	0	360	3,170	690	3,860	4,220
		1D	360	0	0	360	3,170	690	3,860	4,220
		2	360	0	0	360	2,950	660	3,610	3,970
	Lower Menomonee River	Existing	15,650	550	1,880	18,080	7,180	70	7,250	25,330
		2020 Future (baseline)	3,910	470	1,350	5,730	6,290	60	6,350	12,080
		1A	3,910	0	0	3,910	7,400	60	7,460	11,370
		1B	3,910	0	0	3,910	6,290	60	6,350	10,260
		1C	3,910	0	1,810	5,720	6,290	60	6,350	12,070
		1D	3,910	0	1,810	5,720	6,290	60	6,350	12,070
		2	3,910	750	1,030	5,690	5,850	60	5,910	11,600

Table H-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Total Phosphorus (pounds) (continued)	North Branch Menomonee River	Existing	0	0	0	0	50	220	270	270
		2020 Future (baseline)	0	0	0	0	50	220	270	270
		1A	0	0	0	0	50	220	270	270
		1B	0	0	0	0	50	220	270	270
		1C	0	0	0	0	50	220	270	270
		1D	0	0	0	0	50	220	270	270
		2	0	0	0	0	50	210	260	260
	Nor-X-Way Channel	Existing	160	0	0	160	630	340	970	1,130
		2020 Future (baseline)	160	0	0	160	910	330	1,240	1,400
		1A	160	0	0	160	910	330	1,240	1,400
		1B	160	0	0	160	910	330	1,240	1,400
		1C	160	0	0	160	910	330	1,240	1,400
		1D	160	0	0	160	910	330	1,240	1,400
		2	160	0	0	160	830	310	1,140	1,300
	Underwood Creek	Existing	30	10	0	40	6,350	270	6,620	6,660
		2020 Future (baseline)	30	10	0	40	5,480	220	5,700	5,740
		1A	30	0	0	30	5,480	220	5,700	5,730
		1B	30	0	0	30	5,480	220	5,700	5,730
		1C	30	0	0	30	5,480	220	5,700	5,730
		1D	30	0	0	30	5,480	220	5,700	5,730
		2	30	10	0	40	5,100	220	5,320	5,360
	Upper Menomonee River	Existing	1,150	<10	0	1,150	4,170	1,150	5,320	6,470
		2020 Future (baseline)	1,150	<10	0	1,150	4,630	1,100	5,730	6,880
		1A	1,150	0	0	1,150	4,630	1,100	5,730	6,880
		1B	1,150	0	0	1,150	4,630	1,100	5,730	6,880
		1C	1,150	0	0	1,150	4,630	1,100	5,730	6,880
		1D	1,150	0	0	1,150	4,630	1,100	5,730	6,880
		2	1,150	<10	0	1,150	4,190	1,030	5,220	6,370
	West Branch Menomonee River	Existing	0	0	0	0	370	240	610	610
		2020 Future (baseline)	0	0	0	0	600	250	850	850
		1A	0	0	0	0	600	250	850	850
		1B	0	0	0	0	600	250	850	850
		1C	0	0	0	0	600	250	850	850
		1D	0	0	0	0	600	250	850	850
		2	0	0	0	0	530	230	760	760
	Willow Creek	Existing	0	0	0	0	320	430	750	750
		2020 Future (baseline)	0	0	0	0	430	450	880	880
		1A	0	0	0	0	430	450	880	880
		1B	0	0	0	0	430	450	880	880
		1C	0	0	0	0	430	450	880	880
		1D	0	0	0	0	430	450	880	880
		2	0	0	0	0	380	410	790	790
	Watershed Total	Existing	17,550	580	1,880	20,010	29,040	4,070	33,110	53,120
		2020 Future (baseline)	5,810	500	1,330	7,640	27,470	3,710	31,180	38,820
		1A	5,810	0	0	5,810	28,580	3,710	32,290	38,100
		1B	5,810	0	0	5,810	27,470	3,710	31,180	36,990
		1C	5,810	0	1,810	7,620	27,470	3,710	31,180	38,800
		1D	5,810	0	1,810	7,620	27,470	3,710	31,180	38,800
		2	5,810	780	1,010	7,600	25,390	3,500	28,890	36,490

Table H-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Total Suspended Solids (pounds)	Butler Ditch	Existing	0	320	0	320	689,190	8,000	697,190	697,510
		2020 Future (baseline)	0	320	0	320	506,400	2,540	508,940	509,260
		1A	0	0	0	0	506,400	2,540	508,940	508,940
		1B	0	0	0	0	506,400	2,540	508,940	508,940
		1C	0	0	0	0	506,400	2,540	508,940	508,940
		1D	0	0	0	0	506,400	2,540	508,940	508,940
		2	0	320	0	320	506,390	2,540	508,930	509,250
	Honey Creek	Existing	800	470	0	1,270	1,874,860	2,400	1,877,260	1,878,530
		2020 Future (baseline)	800	450	0	1,250	1,453,590	1,790	1,455,380	1,456,630
		1A	800	0	0	800	1,453,590	1,790	1,455,380	1,456,180
		1B	800	0	0	800	1,453,590	1,790	1,455,380	1,456,180
		1C	800	0	0	800	1,453,590	1,790	1,455,380	1,456,180
		1D	800	0	0	800	1,453,590	1,790	1,455,380	1,456,180
		2	800	450	0	1,250	1,453,600	1,780	1,455,380	1,456,630
	Lily Creek	Existing	0	0	0	0	666,000	53,720	719,720	719,720
		2020 Future (baseline)	0	0	0	0	498,090	2,820	500,910	500,910
		1A	0	0	0	0	498,090	2,820	500,910	500,910
		1B	0	0	0	0	498,090	2,820	500,910	500,910
		1C	0	0	0	0	498,090	2,820	500,910	500,910
		1D	0	0	0	0	498,090	2,820	500,910	500,910
		2	0	0	0	0	498,090	2,820	500,910	500,910
	Little Menomonee Creek	Existing	0	0	0	0	58,630	205,820	264,450	264,450
		2020 Future (baseline)	0	0	0	0	45,820	150,780	196,600	196,600
		1A	0	0	0	0	45,820	150,780	196,600	196,600
		1B	0	0	0	0	45,820	150,780	196,600	196,600
		1C	0	0	0	0	45,820	150,780	196,600	196,600
		1D	0	0	0	0	45,820	150,780	196,600	196,600
		2	0	0	0	0	45,820	140,580	186,400	186,400
	Little Menomonee River	Existing	2,530	30	0	2,560	1,976,270	437,140	2,413,410	2,415,970
		2020 Future (baseline)	2,530	30	0	2,560	1,650,910	206,370	1,857,280	1,859,840
		1A	2,530	0	0	2,530	1,650,910	206,370	1,857,280	1,859,810
		1B	2,530	0	0	2,530	1,650,910	206,370	1,857,280	1,859,810
		1C	2,530	0	0	2,530	1,650,910	206,370	1,857,280	1,859,810
		1D	2,530	0	0	2,530	1,650,910	206,370	1,857,280	1,859,810
		2	2,530	30	0	2,560	1,650,920	194,760	1,845,680	1,848,240
	Lower Menomonee River	Existing	51,660	31,670	182,960	266,290	4,001,330	10,180	4,011,510	4,277,800
		2020 Future (baseline)	30,880	26,930	129,150	186,960	3,109,190	9,930	3,119,120	3,306,080
		1A	30,880	0	0	30,880	3,635,740	9,930	3,645,670	3,676,550
		1B	30,880	0	0	30,880	3,109,190	9,930	3,119,120	3,150,000
		1C	30,880	0	177,380	208,260	3,109,190	9,930	3,119,120	3,327,380
		1D	30,880	0	177,380	208,260	3,109,190	9,930	3,119,120	3,327,380
		2	30,880	43,140	90,450	164,470	3,099,310	9,910	3,109,220	3,273,690
	North Branch Menomonee River	Existing	0	0	0	0	27,660	117,390	145,050	145,050
		2020 Future (baseline)	0	0	0	0	29,120	102,450	131,570	131,570
		1A	0	0	0	0	29,120	102,450	131,570	131,570
		1B	0	0	0	0	29,120	102,450	131,570	131,570
		1C	0	0	0	0	29,120	102,450	131,570	131,570
		1D	0	0	0	0	29,120	102,450	131,570	131,570
		2	0	0	0	0	26,630	94,700	121,330	121,330

Table H-2 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Suspended Solids (pounds) (continued)	Nor-X-Way Channel	Existing	280	0	0	280	478,790	351,000	829,790	830,070
		2020 Future (baseline)	280	0	0	280	710,880	100,670	811,550	811,830
		1A	280	0	0	280	710,880	100,670	811,550	811,830
		1B	280	0	0	280	710,880	100,670	811,550	811,830
		1C	280	0	0	280	710,880	100,670	811,550	811,830
		1D	280	0	0	280	710,880	100,670	811,550	811,830
		2	280	0	0	280	690,850	96,810	787,660	787,940
	Underwood Creek	Existing	90	860	0	950	3,031,420	46,540	3,077,960	3,078,910
		2020 Future (baseline)	90	740	0	830	2,241,900	15,560	2,257,460	2,258,290
		1A	90	0	0	90	2,241,900	15,560	2,257,460	2,257,550
		1B	90	0	0	90	2,241,900	15,560	2,257,460	2,257,550
		1C	90	0	0	90	2,241,900	15,560	2,257,460	2,257,550
		1D	90	0	0	90	2,241,900	15,560	2,257,460	2,257,550
		2	90	740	0	830	2,241,900	15,520	2,257,420	2,258,250
	Upper Menomonee River	Existing	3,380	240	0	3,620	2,504,060	462,670	2,966,730	2,970,350
		2020 Future (baseline)	3,380	240	0	3,620	2,540,160	268,490	2,808,650	2,812,270
		1A	3,380	0	0	3,380	2,540,160	268,490	2,808,650	2,812,030
		1B	3,380	0	0	3,380	2,540,160	268,490	2,808,650	2,812,030
		1C	3,380	0	0	3,380	2,540,160	268,490	2,808,650	2,812,030
		1D	3,380	0	0	3,380	2,540,160	268,490	2,808,650	2,812,030
		2	3,380	240	0	3,620	2,406,940	250,150	2,657,090	2,660,710
	West Branch Menomonee River	Existing	0	0	0	0	232,070	103,580	335,650	335,650
		2020 Future (baseline)	0	0	0	0	414,350	74,340	488,690	488,690
		1A	0	0	0	0	414,350	74,340	488,690	488,690
		1B	0	0	0	0	414,350	74,340	488,690	488,690
		1C	0	0	0	0	414,350	74,340	488,690	488,690
		1D	0	0	0	0	414,350	74,340	488,690	488,690
		2	0	0	0	0	377,740	68,500	446,240	446,240
	Willow Creek	Existing	0	0	0	0	197,990	151,790	349,780	349,780
		2020 Future (baseline)	0	0	0	0	259,850	121,870	381,720	381,720
		1A	0	0	0	0	259,850	121,870	381,720	381,720
		1B	0	0	0	0	259,850	121,870	381,720	381,720
		1C	0	0	0	0	259,850	121,870	381,720	381,720
		1D	0	0	0	0	259,850	121,870	381,720	381,720
		2	0	0	0	0	238,480	112,460	350,940	350,940
	Watershed Total	Existing	58,740	33,590	182,960	275,290	15,738,270	1,950,230	17,688,500	17,963,790
		2020 Future (baseline)	37,960	28,710	127,230	193,900	13,460,260	1,057,610	14,517,870	14,711,770
		1A	37,960	0	0	37,960	13,986,810	1,057,610	15,044,420	15,082,380
		1B	37,960	0	0	37,960	13,460,260	1,057,610	14,517,870	14,555,830
		1C	37,960	0	177,380	215,340	13,460,260	1,057,610	14,517,870	14,733,210
		1D	37,960	0	177,380	215,340	13,460,260	1,057,610	14,517,870	14,733,210
		2	37,960	44,920	89,180	172,060	13,236,670	990,530	14,227,200	14,399,260
Fecal Coliform Bacteria (trillions of cells)	Butler Ditch	Existing	0.00	6.07	0.00	6.07	223.75	0.46	224.21	230.28
		2020 Future (baseline)	0.00	6.07	0.00	6.07	188.25	0.17	188.42	194.49
		1A	0.00	0.00	0.00	0.00	188.25	0.17	188.42	188.42
		1B	0.00	0.00	0.00	0.00	188.25	0.17	188.42	188.42
		1C	0.00	0.00	0.00	0.00	188.25	0.17	188.42	188.42
		1D	0.00	0.00	0.00	0.00	188.25	0.17	188.42	188.42
		2	0.00	6.07	0.00	6.07	169.43	0.17	169.60	175.67

Table H-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Fecal Coliform Bacteria (trillions of cells) (continued)	Honey Creek	Existing	0.00	9.01	0.00	9.01	2,342.61	0.14	2,342.75	2,351.76
		2020 Future (baseline)	0.00	8.54	0.00	8.54	1,964.37	0.11	1,964.48	1,973.02
		1A	0.00	0.00	0.00	0.00	1,964.37	0.11	1,964.48	1,964.48
		1B	0.00	0.00	0.00	0.00	1,964.37	0.11	1,964.48	1,964.48
		1C	0.00	0.00	0.00	0.00	1,964.37	0.11	1,964.48	1,964.48
		1D	0.00	0.00	0.00	0.00	1,964.37	0.11	1,964.48	1,964.48
		2	0.00	8.57	0.00	8.57	1,767.93	0.10	1,768.03	1,776.60
	Lily Creek	Existing	0.00	0.00	0.00	0.00	199.31	1.25	200.56	200.56
		2020 Future (baseline)	0.00	0.00	0.00	0.00	185.33	0.18	185.51	185.51
		1A	0.00	0.00	0.00	0.00	185.33	0.18	185.51	185.51
		1B	0.00	0.00	0.00	0.00	185.33	0.18	185.51	185.51
		1C	0.00	0.00	0.00	0.00	185.33	0.18	185.51	185.51
		1D	0.00	0.00	0.00	0.00	185.33	0.18	185.51	185.51
		2	0.00	0.00	0.00	0.00	166.80	0.18	166.98	166.98
	Little Menomonee Creek	Existing	0.00	0.00	0.00	0.00	65.43	84.91	150.34	150.34
		2020 Future (baseline)	0.00	0.00	0.00	0.00	58.34	72.51	130.85	130.85
		1A	0.00	0.00	0.00	0.00	58.34	72.51	130.85	130.85
		1B	0.00	0.00	0.00	0.00	58.34	72.51	130.85	130.85
		1C	0.00	0.00	0.00	0.00	58.34	72.51	130.85	130.85
		1D	0.00	0.00	0.00	0.00	58.34	72.51	130.85	130.85
		2	0.00	0.00	0.00	0.00	52.51	64.20	116.71	116.71
	Little Menomonee River	Existing	0.00	0.52	0.00	0.52	2,097.81	105.28	2,203.09	2,203.61
		2020 Future (baseline)	0.00	0.52	0.00	0.52	1,855.49	104.67	1,960.16	1,960.68
		1A	0.00	0.00	0.00	0.00	1,855.49	104.67	1,960.16	1,960.16
		1B	0.00	0.00	0.00	0.00	1,855.49	104.67	1,960.16	1,960.16
		1C	0.00	0.00	0.00	0.00	1,855.49	104.67	1,960.16	1,960.16
		1D	0.00	0.00	0.00	0.00	1,855.49	104.67	1,960.16	1,960.16
		2	0.00	0.52	0.00	0.52	1,669.94	92.66	1,762.60	1,763.12
	Lower Menomonee River	Existing	0.00	604.24	1,727.39	2,331.63	4,067.91	0.28	4,068.19	6,399.82
		2020 Future (baseline)	0.00	513.76	1,293.26	1,807.02	3,371.59	0.44	3,372.03	5,179.05
		1A	0.00	0.00	0.00	0.00	3,991.13	0.44	3,991.57	3,991.57
		1B	0.00	0.00	0.00	0.00	3,371.59	0.44	3,372.03	3,372.03
		1C	0.00	0.00	1,646.83	1,646.83	3,371.59	0.44	3,372.03	5,018.86
		1D	0.00	0.00	1,646.83	1,646.83	3,371.59	0.44	3,372.03	5,018.86
		2	0.00	823.07	1,100.22	1,923.29	3,030.84	0.41	3,031.25	4,954.54
	North Branch Menomonee River	Existing	0.00	0.00	0.00	0.00	9.30	7.82	17.12	17.12
		2020 Future (baseline)	0.00	0.00	0.00	0.00	12.48	9.73	22.21	22.21
		1A	0.00	0.00	0.00	0.00	12.48	9.73	22.21	22.21
		1B	0.00	0.00	0.00	0.00	12.48	9.73	22.21	22.21
		1C	0.00	0.00	0.00	0.00	12.48	9.73	22.21	22.21
		1D	0.00	0.00	0.00	0.00	12.48	9.73	22.21	22.21
		2	0.00	0.00	0.00	0.00	10.66	7.57	18.23	18.23
	Nor-X-Way Channel	Existing	0.00	0.00	0.00	0.00	256.06	48.78	304.84	304.84
		2020 Future (baseline)	0.00	0.00	0.00	0.00	316.87	85.76	402.63	402.63
		1A	0.00	0.00	0.00	0.00	316.87	85.76	402.63	402.63
		1B	0.00	0.00	0.00	0.00	316.87	85.76	402.63	402.63
		1C	0.00	0.00	0.00	0.00	316.87	85.76	402.63	402.63
		1D	0.00	0.00	0.00	0.00	316.87	85.76	402.63	402.63
		2	0.00	0.00	0.00	0.00	279.42	75.34	354.76	354.76

Table H-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Underwood Creek	Existing	0.00	16.33	0.00	16.33	3,454.09	1.67	3,455.76	3,472.09
		2020 Future (baseline)	0.00	14.07	0.00	14.07	2,796.17	1.03	2,797.20	2,811.27
		1A	0.00	0.00	0.00	0.00	2,796.17	1.03	2,797.20	2,797.20
		1B	0.00	0.00	0.00	0.00	2,796.17	1.03	2,797.20	2,797.20
		1C	0.00	0.00	0.00	0.00	2,796.17	1.03	2,797.20	2,797.20
		1D	0.00	0.00	0.00	0.00	2,796.17	1.03	2,797.20	2,797.20
		2	0.00	14.07	0.00	14.07	2,516.55	1.02	2,517.57	2,531.64
	Upper Menomonee River	Existing	0.00	4.65	0.00	4.65	1,274.47	79.98	1,354.45	1,359.10
		2020 Future (baseline)	0.00	4.65	0.00	4.65	1,344.32	102.94	1,447.26	1,451.91
		1A	0.00	0.00	0.00	0.00	1,344.32	102.94	1,447.26	1,447.26
		1B	0.00	0.00	0.00	0.00	1,344.32	102.94	1,447.26	1,447.26
		1C	0.00	0.00	0.00	0.00	1,344.32	102.94	1,447.26	1,447.26
		1D	0.00	0.00	0.00	0.00	1,344.32	102.94	1,447.26	1,447.26
		2	0.00	4.65	0.00	4.65	1,169.12	85.62	1,254.74	1,259.39
	West Branch Menomonee River	Existing	0.00	0.00	0.00	0.00	62.41	16.80	79.21	79.21
		2020 Future (baseline)	0.00	0.00	0.00	0.00	99.56	22.71	122.27	122.27
		1A	0.00	0.00	0.00	0.00	99.56	22.71	122.27	122.27
		1B	0.00	0.00	0.00	0.00	99.56	22.71	122.27	122.27
		1C	0.00	0.00	0.00	0.00	99.56	22.71	122.27	122.27
		1D	0.00	0.00	0.00	0.00	99.56	22.71	122.27	122.27
		2	0.00	0.00	0.00	0.00	84.39	18.81	103.20	103.20
	Willow Creek	Existing	0.00	0.00	0.00	0.00	58.69	45.74	104.43	104.43
		2020 Future (baseline)	0.00	0.00	0.00	0.00	89.91	50.22	140.13	140.13
		1A	0.00	0.00	0.00	0.00	89.91	50.22	140.13	140.13
		1B	0.00	0.00	0.00	0.00	89.91	50.22	140.13	140.13
		1C	0.00	0.00	0.00	0.00	89.91	50.22	140.13	140.13
		1D	0.00	0.00	0.00	0.00	89.91	50.22	140.13	140.13
		2	0.00	0.00	0.00	0.00	76.91	41.92	118.83	118.83
	Watershed Total	Existing	0.00	640.82	1,727.39	2,368.21	14,111.84	393.11	14,504.95	16,873.16
		2020 Future (baseline)	0.00	547.61	1,268.37	1,815.98	12,282.68	450.47	12,733.15	14,549.13
		1A	0.00	0.00	0.00	0.00	12,902.22	450.47	13,352.69	13,352.69
		1B	0.00	0.00	0.00	0.00	12,282.68	450.47	12,733.15	12,733.15
		1C	0.00	0.00	1,646.83	1,646.83	12,282.68	450.47	12,733.15	14,379.98
		1D	0.00	0.00	1,646.83	1,646.83	12,282.68	450.47	12,733.15	14,379.98
		2	0.00	856.95	1,079.64	1,936.59	10,994.50	388.00	11,382.50	13,319.09
Total Nitrogen (pounds)	Butler Ditch	Existing	0	10	0	10	10,890	570	11,460	11,470
		2020 Future (baseline)	0	10	0	10	9,750	220	9,970	9,980
		1A	0	0	0	0	9,750	220	9,970	9,970
		1B	0	0	0	0	9,750	220	9,970	9,970
		1C	0	0	0	0	9,750	220	9,970	9,970
		1D	0	0	0	0	9,750	220	9,970	9,970
		2	0	10	0	10	9,480	220	9,700	9,710
	Honey Creek	Existing	640	20	0	660	27,300	220	27,520	28,180
		2020 Future (baseline)	640	20	0	660	24,740	150	24,890	25,550
		1A	640	0	0	640	24,740	150	24,890	25,530
		1B	640	0	0	640	24,740	150	24,890	25,530
		1C	640	0	0	640	24,740	150	24,890	25,530
		1D	640	0	0	640	24,740	150	24,890	25,530
		2	640	20	0	660	24,010	150	24,160	24,820

Table H-2 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Nitrogen (pounds) (continued)	Lily Creek	Existing	0	0	0	0	9,530	2,920	12,450	12,450
		2020 Future (baseline)	0	0	0	0	9,190	270	9,460	9,460
		1A	0	0	0	0	9,190	270	9,460	9,460
		1B	0	0	0	0	9,190	270	9,460	9,460
		1C	0	0	0	0	9,190	270	9,460	9,460
		1D	0	0	0	0	9,190	270	9,460	9,460
		2	0	0	0	0	8,950	270	9,220	9,220
	Little Menomonee Creek	Existing	0	0	0	0	530	9,610	10,140	10,140
		2020 Future (baseline)	0	0	0	0	530	7,870	8,400	8,400
		1A	0	0	0	0	530	7,870	8,400	8,400
		1B	0	0	0	0	530	7,870	8,400	8,400
		1C	0	0	0	0	530	7,870	8,400	8,400
		1D	0	0	0	0	530	7,870	8,400	8,400
		2	0	0	0	0	510	7,790	8,300	8,300
	Little Menomonee River	Existing	1,350	<10	0	1,350	25,150	22,270	47,420	48,770
		2020 Future (baseline)	1,350	<10	0	1,350	23,930	12,480	36,410	37,760
		1A	1,350	0	0	1,350	23,930	12,480	36,410	37,760
		1B	1,350	0	0	1,350	23,930	12,480	36,410	37,760
		1C	1,350	0	0	1,350	23,930	12,480	36,410	37,760
		1D	1,350	0	0	1,350	23,930	12,480	36,410	37,760
		2	1,350	<10	0	1,350	23,220	12,360	35,580	36,930
	Lower Menomonee River	Existing	52,730	1,160	11,610	65,500	49,520	730	50,250	115,750
		2020 Future (baseline)	20,850	980	7,990	29,820	44,550	650	45,200	75,020
		1A	20,850	0	0	20,850	50,620	650	51,270	72,120
		1B	20,850	0	0	20,850	44,550	650	45,200	66,050
		1C	20,850	0	11,330	32,180	44,550	650	45,200	77,380
		1D	20,850	0	11,330	32,180	44,550	650	45,200	77,380
		2	20,850	1,570	6,300	28,720	43,160	650	43,810	72,530
	North Branch Menomonee River	Existing	0	0	0	0	310	13,000	13,310	13,310
		2020 Future (baseline)	0	0	0	0	340	12,050	12,390	12,390
		1A	0	0	0	0	340	12,050	12,390	12,390
		1B	0	0	0	0	340	12,050	12,390	12,390
		1C	0	0	0	0	340	12,050	12,390	12,390
		1D	0	0	0	0	340	12,050	12,390	12,390
		2	0	0	0	0	310	11,920	12,230	12,230
	Nor-X-Way Channel	Existing	100	0	0	100	4,350	8,110	12,460	12,560
		2020 Future (baseline)	100	0	0	100	5,730	3,490	9,220	9,320
		1A	100	0	0	100	5,730	3,490	9,220	9,320
		1B	100	0	0	100	5,730	3,490	9,220	9,320
		1C	100	0	0	100	5,730	3,490	9,220	9,320
		1D	100	0	0	100	5,730	3,490	9,220	9,320
		2	100	0	0	100	5,470	3,420	8,890	8,990
	Underwood Creek	Existing	20	30	0	50	45,090	2,810	47,900	47,950
		2020 Future (baseline)	20	30	0	50	40,210	1,580	41,790	41,840
		1A	20	0	0	20	40,210	1,580	41,790	41,810
		1B	20	0	0	20	40,210	1,580	41,790	41,810
		1C	20	0	0	20	40,210	1,580	41,790	41,810
		1D	20	0	0	20	40,210	1,580	41,790	41,810
		2	20	30	0	50	39,060	1,580	40,640	40,690

Table H-2 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Nitrogen (pounds) (continued)	Upper Menomonee River	Existing	810	10	0	820	32,240	32,270	64,510	65,330
		2020 Future (baseline)	810	10	0	820	35,050	21,850	56,900	57,720
		1A	810	0	0	810	35,050	21,850	56,900	57,710
		1B	810	0	0	810	35,050	21,850	56,900	57,710
		1C	810	0	0	810	35,050	21,850	56,900	57,710
		1D	810	0	0	810	35,050	21,850	56,900	57,710
		2	810	10	0	820	33,160	21,370	54,530	55,350
	West Branch Menomonee River	Existing	0	0	0	0	2,500	10,770	13,270	13,270
		2020 Future (baseline)	0	0	0	0	3,670	7,500	11,170	11,170
		1A	0	0	0	0	3,670	7,500	11,170	11,170
		1B	0	0	0	0	3,670	7,500	11,170	11,170
		1C	0	0	0	0	3,670	7,500	11,170	11,170
		1D	0	0	0	0	3,670	7,500	11,170	11,170
		2	0	0	0	0	3,400	7,340	10,740	10,740
	Willow Creek	Existing	0	0	0	0	1,930	15,130	17,060	17,060
		2020 Future (baseline)	0	0	0	0	2,530	9,830	12,360	12,360
		1A	0	0	0	0	2,530	9,830	12,360	12,360
		1B	0	0	0	0	2,530	9,830	12,360	12,360
		1C	0	0	0	0	2,530	9,830	12,360	12,360
		1D	0	0	0	0	2,530	9,830	12,360	12,360
		2	0	0	0	0	2,340	9,560	11,900	11,900
	Watershed Total	Existing	55,650	1,230	11,610	68,490	209,340	118,410	327,750	396,240
		2020 Future (baseline)	23,770	1,050	7,890	32,710	200,220	77,940	278,160	310,870
		1A	23,770	0	0	23,770	206,290	77,940	284,230	308,000
		1B	23,770	0	0	23,770	200,220	77,940	278,160	301,930
		1C	23,770	0	11,330	35,100	200,220	77,940	278,160	313,260
		1D	23,770	0	11,330	35,100	200,220	77,940	278,160	313,260
		2	23,770	1,640	6,230	31,640	193,070	76,630	269,700	301,340
Biochemical Oxygen Demand (pounds)	Butler Ditch	Existing	0	80	0	80	44,260	1,680	45,940	46,020
		2020 Future (baseline)	0	80	0	80	36,520	1,180	37,700	37,780
		1A	0	0	0	0	36,520	1,180	37,700	37,700
		1B	0	0	0	0	36,520	1,180	37,700	37,700
		1C	0	0	0	0	36,520	1,180	37,700	37,700
		1D	0	0	0	0	36,520	1,180	37,700	37,700
		2	0	80	0	80	36,520	1,180	37,700	37,780
	Honey Creek	Existing	970	120	0	1,090	119,400	720	120,120	121,210
		2020 Future (baseline)	970	110	0	1,080	100,700	510	101,210	102,290
		1A	970	0	0	970	100,700	510	101,210	102,180
		1B	970	0	0	970	100,700	510	101,210	102,180
		1C	970	0	0	970	100,700	510	101,210	102,180
		1D	970	0	0	970	100,700	510	101,210	102,180
		2	970	110	0	1,080	100,700	510	101,210	102,290
	Lily Creek	Existing	0	0	0	0	42,390	4,250	46,640	46,640
		2020 Future (baseline)	0	0	0	0	38,020	1,030	39,050	39,050
		1A	0	0	0	0	38,020	1,030	39,050	39,050
		1B	0	0	0	0	38,020	1,030	39,050	39,050
		1C	0	0	0	0	38,020	1,030	39,050	39,050
		1D	0	0	0	0	38,020	1,030	39,050	39,050
		2	0	0	0	0	38,020	1,030	39,050	39,050

Table H-2 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Biochemical Oxygen Demand (pounds) (continued)	Little Menomonee Creek	Existing	0	0	0	0	3,570	13,290	16,860	16,860
		2020 Future (baseline)	0	0	0	0	3,380	12,930	16,310	16,310
		1A	0	0	0	0	3,380	12,930	16,310	16,310
		1B	0	0	0	0	3,380	12,930	16,310	16,310
		1C	0	0	0	0	3,380	12,930	16,310	16,310
		1D	0	0	0	0	3,380	12,930	16,310	16,310
		2	0	0	0	0	3,380	12,530	15,910	15,910
	Little Menomonee River	Existing	3,090	10	0	3,100	126,650	32,380	159,030	162,130
		2020 Future (baseline)	3,090	10	0	3,100	124,990	23,540	148,530	151,630
		1A	3,090	0	0	3,090	124,990	23,540	148,530	151,620
		1B	3,090	0	0	3,090	124,990	23,540	148,530	151,620
		1C	3,090	0	0	3,090	124,990	23,540	148,530	151,620
		1D	3,090	0	0	3,090	124,990	23,540	148,530	151,620
		2	3,090	10	0	3,100	124,990	23,080	148,070	151,170
	Lower Menomonee River	Existing	104,920	7,790	58,680	171,390	236,620	2,440	239,060	410,450
		2020 Future (baseline)	61,040	6,620	38,060	105,720	199,350	2,160	201,510	307,230
		1A	61,040	0	0	61,040	230,730	2,160	232,890	293,930
		1B	61,040	0	0	61,040	199,350	2,160	201,510	262,550
		1C	61,040	0	58,150	119,190	199,350	2,160	201,510	320,700
		1D	61,040	0	58,150	119,190	199,350	2,160	201,510	320,700
		2	61,040	10,610	29,620	101,270	198,950	2,160	201,110	302,380
	North Branch Menomonee River	Existing	0	0	0	0	2,200	16,120	18,320	18,320
		2020 Future (baseline)	0	0	0	0	2,390	15,810	18,200	18,200
		1A	0	0	0	0	2,390	15,810	18,200	18,200
		1B	0	0	0	0	2,390	15,810	18,200	18,200
		1C	0	0	0	0	2,390	15,810	18,200	18,200
		1D	0	0	0	0	2,390	15,810	18,200	18,200
		2	0	0	0	0	2,250	15,150	17,400	17,400
	Nor-X-Way Channel	Existing	450	0	0	450	26,530	9,200	35,730	36,180
		2020 Future (baseline)	450	0	0	450	43,680	6,960	50,640	51,090
		1A	450	0	0	450	43,680	6,960	50,640	51,090
		1B	450	0	0	450	43,680	6,960	50,640	51,090
		1C	450	0	0	450	43,680	6,960	50,640	51,090
		1D	450	0	0	450	43,680	6,960	50,640	51,090
		2	450	0	0	450	42,880	6,830	49,710	50,160
	Underwood Creek	Existing	200	210	0	410	194,480	9,490	203,970	204,380
		2020 Future (baseline)	200	180	0	380	159,880	6,400	166,280	166,660
		1A	200	0	0	200	159,880	6,400	166,280	166,480
		1B	200	0	0	200	159,880	6,400	166,280	166,480
		1C	200	0	0	200	159,880	6,400	166,280	166,480
		1D	200	0	0	200	159,880	6,400	166,280	166,480
		2	200	180	0	380	159,880	6,400	166,280	166,660
	Upper Menomonee River	Existing	6,880	60	0	6,940	164,500	52,650	217,150	224,090
		2020 Future (baseline)	6,880	60	0	6,940	192,130	44,770	236,900	243,840
		1A	6,880	0	0	6,880	192,130	44,770	236,900	243,780
		1B	6,880	0	0	6,880	192,130	44,770	236,900	243,780
		1C	6,880	0	0	6,880	192,130	44,770	236,900	243,780
		1D	6,880	0	0	6,880	192,130	44,770	236,900	243,780
		2	6,880	60	0	6,940	184,740	43,160	227,900	234,840

Table H-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Biochemical Oxygen Demand (pounds) (continued)	West Branch Menomonee River	Existing	0	0	0	0	18,000	14,280	32,280	32,280
		2020 Future (baseline)	0	0	0	0	31,910	11,640	43,550	43,550
		1A	0	0	0	0	31,910	11,640	43,550	43,550
		1B	0	0	0	0	31,910	11,640	43,550	43,550
		1C	0	0	0	0	31,910	11,640	43,550	43,550
		1D	0	0	0	0	31,910	11,640	43,550	43,550
		2	0	0	0	0	29,870	11,110	40,980	40,980
	Willow Creek	Existing	0	0	0	0	14,790	19,350	34,140	34,140
		2020 Future (baseline)	0	0	0	0	20,230	19,200	39,430	39,430
		1A	0	0	0	0	20,230	19,200	39,430	39,430
		1B	0	0	0	0	20,230	19,200	39,430	39,430
		1C	0	0	0	0	20,230	19,200	39,430	39,430
		1D	0	0	0	0	20,230	19,200	39,430	39,430
		2	0	0	0	0	19,050	18,330	37,380	37,380
	Watershed Total	Existing	116,510	8,270	58,680	183,460	993,390	175,840	1,169,230	1,352,690
		2020 Future (baseline)	72,630	7,060	37,750	117,440	953,180	146,130	1,099,310	1,216,750
		1A	72,630	0	0	72,630	984,560	146,130	1,130,690	1,203,320
		1B	72,630	0	0	72,630	953,180	146,130	1,099,310	1,171,940
		1C	72,630	0	58,150	130,780	953,180	146,130	1,099,310	1,230,090
		1D	72,630	0	58,150	130,780	953,180	146,130	1,099,310	1,230,090
		2	72,630	11,050	29,400	113,080	941,230	141,470	1,082,700	1,195,780
Copper (pounds)	Butler Ditch	Existing	0	<1	0	<1	78	1	79	79
		2020 Future (baseline)	0	<1	0	<1	61	<1	61	61
		1A	0	0	0	0	61	<1	61	61
		1B	0	0	0	0	61	<1	61	61
		1C	0	0	0	0	61	<1	61	61
		1D	0	0	0	0	61	<1	61	61
		2	0	<1	0	<1	61	<1	61	61
	Honey Creek	Existing	1	<1	0	1	211	<1	211	212
		2020 Future (baseline)	1	<1	0	1	172	<1	172	173
		1A	1	0	0	1	172	<1	172	173
		1B	1	0	0	1	172	<1	172	173
		1C	1	0	0	1	172	<1	172	173
		1D	1	0	0	1	172	<1	172	173
		2	1	<1	0	1	172	<1	172	173
	Lily Creek	Existing	0	0	0	0	73	1	74	74
		2020 Future (baseline)	0	0	0	0	61	<1	61	61
		1A	0	0	0	0	61	<1	61	61
		1B	0	0	0	0	61	<1	61	61
		1C	0	0	0	0	61	<1	61	61
		1D	0	0	0	0	61	<1	61	61
		2	0	0	0	0	61	<1	61	61
	Little Menomonee Creek	Existing	0	0	0	0	6	9	15	15
		2020 Future (baseline)	0	0	0	0	6	8	14	14
		1A	0	0	0	0	6	8	14	14
		1B	0	0	0	0	6	8	14	14
		1C	0	0	0	0	6	8	14	14
		1D	0	0	0	0	6	8	14	14
		2	0	0	0	0	6	8	14	14

Table H-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[b]	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Copper (pounds) (continued)	Little Menomonee River	Existing	0	<1	0	<1	224	17	241	241
		2020 Future (baseline)	0	0	0	0	207	15	222	222
		1A	0	0	0	0	207	15	222	222
		1B	0	0	0	0	207	15	222	222
		1C	0	0	0	0	207	15	222	222
		1D	0	0	0	0	207	15	222	222
		2	0	<1	0	<1	207	15	222	222
	Lower Menomonee River	Existing	3	5	48	56	428	1	429	485
		2020 Future (baseline)	3	4	36	43	349	1	350	393
		1A	3	0	0	3	407	1	408	411
		1B	3	0	0	3	349	1	350	353
		1C	3	0	45	48	349	1	350	398
		1D	3	0	45	48	349	1	350	398
		2	3	7	25	35	348	1	349	384
	North Branch Menomonee River	Existing	0	0	0	0	4	6	10	10
		2020 Future (baseline)	0	0	0	0	4	7	11	11
		1A	0	0	0	0	4	7	11	11
		1B	0	0	0	0	4	7	11	11
		1C	0	0	0	0	4	7	11	11
		1D	0	0	0	0	4	7	11	11
		2	0	0	0	0	4	6	10	10
	Nor-X-Way Channel	Existing	0	0	0	0	49	8	57	57
		2020 Future (baseline)	0	0	0	0	79	9	88	88
		1A	0	0	0	0	79	9	88	88
		1B	0	0	0	0	79	9	88	88
		1C	0	0	0	0	79	9	88	88
		1D	0	0	0	0	79	9	88	88
		2	0	0	0	0	77	9	86	86
	Underwood Creek	Existing	0	<1	0	<1	340	3	343	343
		2020 Future (baseline)	0	<1	0	<1	268	2	270	270
		1A	0	0	0	0	268	2	270	270
		1B	0	0	0	0	268	2	270	270
		1C	0	0	0	0	268	2	270	270
		1D	0	0	0	0	268	2	270	270
		2	0	<1	0	0	268	2	270	270
	Upper Menomonee River	Existing	0	<1	0	<1	295	35	330	330
		2020 Future (baseline)	0	<1	0	<1	329	37	366	366
		1A	0	0	0	0	329	37	366	366
		1B	0	0	0	0	329	37	366	366
		1C	0	0	0	0	329	37	366	366
		1D	0	0	0	0	329	37	366	366
		2	0	<1	0	<1	314	35	349	349
	West Branch Menomonee River	Existing	0	0	0	0	33	9	42	42
		2020 Future (baseline)	0	0	0	0	60	9	69	69
		1A	0	0	0	0	60	9	69	69
		1B	0	0	0	0	60	9	69	69
		1C	0	0	0	0	60	9	69	69
		1D	0	0	0	0	60	9	69	69
		2	0	0	0	0	56	9	65	65

Table H-2 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Copper (pounds) (continued)	Willow Creek	Existing	0	0	0	0	27	16	43	43
		2020 Future (baseline)	0	0	0	0	37	16	53	53
		1A	0	0	0	0	37	16	53	53
		1B	0	0	0	0	37	16	53	53
		1C	0	0	0	0	37	16	53	53
		1D	0	0	0	0	37	16	53	53
		2	0	0	0	0	35	15	50	50
	Watershed Total	Existing	4	5	48	57	1,768	105	1,873	1,930
		2020 Future (baseline)	4	4	35	43	1,633	104	1,737	1,780
		1A	4	0	0	4	1,691	104	1,795	1,799
		1B	4	0	0	4	1,633	104	1,737	1,741
		1C	4	0	45	49	1,633	104	1,737	1,786
		1D	4	0	45	49	1,633	104	1,737	1,786
		2	4	7	25	36	1,609	100	1,709	1,745

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*Loads presented in this table for the 2020 future (baseline) condition reflect refinements that were made to the MMSD conveyance system model after the screening alternatives were evaluated. This results in certain anomalies in the load comparisons presented herein, particularly regarding SSO loads with Screening Alternative 2.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table H-3

AVERAGE ANNUAL POLLUTANT LOADS FOR SCREENING ALTERNATIVES: MILWAUKEE RIVER WATERSHED

			Point Sources					Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Phosphorus (pounds)	Batavia Creek	Existing	0	0	0	0	0	120	480	600	600
		2020 Future (baseline)	0	0	0	0	0	120	460	580	580
		1A	0	0	0	0	0	120	460	580	580
		1B	0	0	0	0	0	120	460	580	580
		1C	0	0	0	0	0	120	460	580	580
		1D	0	0	0	0	0	120	460	580	580
		2	0	0	0	0	0	120	440	560	560
	Cedar Creek	Existing	<10	0	0	7,400	7,400	3,310	15,390	18,700	26,100
		2020 Future (baseline)	<10	0	0	10,050	10,050	3,550	14,850	18,400	28,450
		1A	<10	0	0	10,050	10,050	3,550	14,850	18,400	28,450
		1B	<10	0	0	10,050	10,050	3,550	14,850	18,400	28,450
		1C	<10	0	0	10,050	10,050	3,550	14,850	18,400	28,450
		1D	<10	0	0	10,050	10,050	3,550	14,850	18,400	28,450
		2	<10	0	0	10,050	10,050	3,320	14,080	17,400	27,450
	Cedar Lake	Existing	0	0	0	0	0	390	2,250	2,640	2,640
		2020 Future (baseline)	0	0	0	0	0	380	2,200	2,580	2,580
		1A	0	0	0	0	0	380	2,200	2,580	2,580
		1B	0	0	0	0	0	380	2,200	2,580	2,580
		1C	0	0	0	0	0	380	2,200	2,580	2,580
		1D	0	0	0	0	0	380	2,200	2,580	2,580
		2	0	0	0	0	0	360	2,080	2,440	2,440
	Chambers Creek	Existing	0	0	0	0	0	150	500	650	650
		2020 Future (baseline)	0	0	0	0	0	150	490	640	640
		1A	0	0	0	0	0	150	490	640	640
		1B	0	0	0	0	0	150	490	640	640
		1C	0	0	0	0	0	150	490	640	640
		1D	0	0	0	0	0	150	490	640	640
		2	0	0	0	0	0	140	470	610	610
	East Branch Milwaukee River	Existing	0	0	0	0	0	460	2,140	2,600	2,600
		2020 Future (baseline)	0	0	0	0	0	470	2,130	2,600	2,600
		1A	0	0	0	0	0	470	2,130	2,600	2,600
		1B	0	0	0	0	0	470	2,130	2,600	2,600
		1C	0	0	0	0	0	470	2,130	2,600	2,600
		1D	0	0	0	0	0	470	2,130	2,600	2,600
		2	0	0	0	0	0	440	2,080	2,520	2,520
	Kettle Moraine Lake	Existing	0	0	0	0	0	270	3,180	3,450	3,450
		2020 Future (baseline)	0	0	0	0	0	270	3,050	3,320	3,320
		1A	0	0	0	0	0	270	3,050	3,320	3,320
		1B	0	0	0	0	0	270	3,050	3,320	3,320
		1C	0	0	0	0	0	270	3,050	3,320	3,320
		1D	0	0	0	0	0	270	3,050	3,320	3,320
		2	0	0	0	0	0	260	2,920	3,180	3,180

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources					Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Total Phosphorus (pounds) (continued)	Kewaskum Creek	Existing	0	0	0	0	0	370	1,870	2,240	2,240
		2020 Future (baseline)	0	0	0	0	0	380	1,800	2,180	2,180
		1A	0	0	0	0	0	380	1,800	2,180	2,180
		1B	0	0	0	0	0	380	1,800	2,180	2,180
		1C	0	0	0	0	0	380	1,800	2,180	2,180
		1D	0	0	0	0	0	380	1,800	2,180	2,180
		2	0	0	0	0	0	360	1,700	2,060	2,060
	Lake Fifteen Creek	Existing	0	0	0	0	0	220	1,200	1,420	1,420
		2020 Future (baseline)	0	0	0	0	0	220	1,180	1,400	1,400
		1A	0	0	0	0	0	220	1,180	1,400	1,400
		1B	0	0	0	0	0	220	1,180	1,400	1,400
		1C	0	0	0	0	0	220	1,180	1,400	1,400
		1D	0	0	0	0	0	220	1,180	1,400	1,400
		2	0	0	0	0	0	210	1,150	1,360	1,360
	Lincoln Creek	Existing	4,260	200	80	0	4,540	7,870	70	7,940	12,480
		2020 Future (baseline)	4,260	180	10	0	4,450	6,940	80	7,020	11,470
		1A	4,260	0	0	0	4,260	6,940	80	7,020	11,280
		1B	4,260	0	0	0	4,260	6,940	80	7,020	11,280
		1C	4,260	0	120	0	4,380	6,940	80	7,020	11,400
		1D	4,260	0	120	0	4,380	6,940	80	7,020	11,400
		2	4,260	280	<10	0	4,540	6,440	80	6,520	11,060
	Lower Cedar Creek	Existing	10	10	0	5,730	5,750	3,200	5,210	8,410	14,160
		2020 Future (baseline)	10	10	0	7,470	7,490	3,320	5,000	8,320	15,810
		1A	10	0	0	7,470	7,480	3,320	5,000	8,320	15,800
		1B	10	0	0	7,470	7,480	3,320	5,000	8,320	15,800
		1C	10	0	0	7,470	7,480	3,320	5,000	8,320	15,800
		1D	10	0	0	7,470	7,480	3,320	5,000	8,320	15,800
		2	10	10	0	7,470	7,490	3,110	4,790	7,900	15,390
	Lower Milwaukee River	Existing	73,470	540	1,710	0	75,720	14,780	6,740	21,520	97,240
		2020 Future (baseline)	73,470	860	1,210	0	75,540	13,500	6,210	19,710	95,250
		1A	73,470	0	0	0	73,470	14,700	6,210	20,910	94,380
		1B	73,470	0	0	0	73,470	13,500	6,210	19,710	93,180
		1C	73,470	0	1,490	0	74,960	13,500	6,210	19,710	94,670
		1D	73,470	0	1,490	0	74,960	13,500	6,210	19,710	94,670
		2	73,470	1,050	1,010	0	75,530	12,540	5,890	18,430	93,960
	Middle Milwaukee River	Existing	10	0	0	14,740	14,750	3,480	6,150	9,630	24,380
		2020 Future (baseline)	10	0	0	19,420	19,430	3,700	6,110	9,810	29,240
		1A	10	0	0	19,420	19,430	3,700	6,110	9,810	29,240
		1B	10	0	0	19,420	19,430	3,700	6,110	9,810	29,240
		1C	10	0	0	19,420	19,430	3,700	6,110	9,810	29,240
		1D	10	0	0	19,420	19,430	3,700	6,110	9,810	29,240
		2	10	0	0	19,420	19,430	3,460	5,810	9,270	28,700
	Mink Creek	Existing	0	0	0	0	0	320	1,120	1,440	1,440
		2020 Future (baseline)	0	0	0	0	0	320	1,080	1,400	1,400
		1A	0	0	0	0	0	320	1,080	1,400	1,400
		1B	0	0	0	0	0	320	1,080	1,400	1,400
		1C	0	0	0	0	0	320	1,080	1,400	1,400
		1D	0	0	0	0	0	320	1,080	1,400	1,400
		2	0	0	0	0	0	300	1,040	1,340	1,340

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Total Phosphorus (pounds) (continued)	North Branch Milwaukee River	Existing	15,870	<10	0	6,580	22,450	1,480	6,240	7,720	30,170
		2020 Future (baseline)	15,870	0	0	6,830	22,700	1,490	6,070	7,560	30,260
		1A	15,870	0	0	6,830	22,700	1,490	6,070	7,560	30,260
		1B	15,870	0	0	6,830	22,700	1,490	6,070	7,560	30,260
		1C	15,870	0	0	6,830	22,700	1,490	6,070	7,560	30,260
		1D	15,870	0	0	6,830	22,700	1,490	6,070	7,560	30,260
		2	15,870	<10	0	6,830	22,700	1,390	5,820	7,210	29,910
	Silver Creek (Sheboygan County)	Existing	0	0	0	900	900	830	1,350	2,180	3,080
		2020 Future (baseline)	0	0	0	1,070	1,070	930	1,310	2,240	3,310
		1A	0	0	0	1,070	1,070	930	1,310	2,240	3,310
		1B	0	0	0	1,070	1,070	930	1,310	2,240	3,310
		1C	0	0	0	1,070	1,070	930	1,310	2,240	3,310
		1D	0	0	0	1,070	1,070	930	1,310	2,240	3,310
		2	0	0	0	1,070	1,070	870	1,260	2,130	3,200
	Silver Creek (West Bend)	Existing	0	0	0	0	0	1,280	730	2,010	2,010
		2020 Future (baseline)	0	0	0	0	0	1,410	740	2,150	2,150
		1A	0	0	0	0	0	1,410	740	2,150	2,150
		1B	0	0	0	0	0	1,410	740	2,150	2,150
		1C	0	0	0	0	0	1,410	740	2,150	2,150
		1D	0	0	0	0	0	1,410	740	2,150	2,150
		2	0	0	0	0	0	1,320	710	2,030	2,030
	Stony Creek	Existing	0	0	0	0	0	310	1,090	1,400	1,400
		2020 Future (baseline)	0	0	0	0	0	310	1,060	1,370	1,370
		1A	0	0	0	0	0	310	1,060	1,370	1,370
		1B	0	0	0	0	0	310	1,060	1,370	1,370
		1C	0	0	0	0	0	310	1,060	1,370	1,370
		1D	0	0	0	0	0	310	1,060	1,370	1,370
		2	0	0	0	0	0	290	1,030	1,320	1,320
	Upper Lower Milwaukee River	Existing	140	30	0	12,850	13,020	3,480	5,120	8,600	21,620
		2020 Future (baseline)	140	30	0	17,370	17,540	3,790	4,850	8,640	26,180
		1A	140	0	0	17,370	17,510	3,790	4,850	8,640	26,150
		1B	140	0	0	17,370	17,510	3,790	4,850	8,640	26,150
		1C	140	0	0	17,370	17,510	3,790	4,850	8,640	26,150
		1D	140	0	0	17,370	17,510	3,790	4,850	8,640	26,150
		2	140	30	0	17,370	17,540	3,550	4,620	8,170	25,710
	Upper Milwaukee River	Existing	80	0	0	3,540	3,620	1,400	8,830	10,230	13,850
		2020 Future (baseline)	80	0	0	4,620	4,700	1,480	8,430	9,910	14,610
		1A	80	0	0	4,620	4,700	1,480	8,430	9,910	14,610
		1B	80	0	0	4,620	4,700	1,480	8,430	9,910	14,610
		1C	80	0	0	4,620	4,700	1,480	8,430	9,910	14,610
		1D	80	0	0	4,620	4,700	1,480	8,430	9,910	14,610
		2	80	0	0	4,620	4,700	1,380	8,030	9,410	14,110
	Watercress Creek	Existing	0	0	0	0	0	300	2,360	2,660	2,660
		2020 Future (baseline)	0	0	0	0	0	300	2,290	2,590	2,590
		1A	0	0	0	0	0	300	2,290	2,590	2,590
		1B	0	0	0	0	0	300	2,290	2,590	2,590
		1C	0	0	0	0	0	300	2,290	2,590	2,590
		1D	0	0	0	0	0	300	2,290	2,590	2,590
		2	0	0	0	0	0	280	2,190	2,470	2,470

Table H-3 (continued)

			Point Sources					Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Phosphorus (pounds) (continued)	West Branch Milwaukee River	Existing	0	0	0	0	0	1,270	9,040	10,310	10,310
		2020 Future (baseline)	0	0	0	0	0	1,260	8,620	9,880	9,880
		1A	0	0	0	0	0	1,260	8,620	9,880	9,880
		1B	0	0	0	0	0	1,260	8,620	9,880	9,880
		1C	0	0	0	0	0	1,260	8,620	9,880	9,880
		1D	0	0	0	0	0	1,260	8,620	9,880	9,880
		2	0	0	0	0	0	1,180	8,210	9,390	9,390
	Watershed Total	Existing	93,840	780	1,790	51,740	148,150	45,290	81,060	126,350	274,500
		2020 Future (baseline)	93,840	1,080	1,220	66,830	162,970	44,290	78,010	122,300	285,270
		1A	93,840	0	0	66,830	160,670	45,480	78,010	123,490	284,160
		1B	93,840	0	0	66,830	160,670	44,290	78,010	122,300	282,970
		1C	93,840	0	1,610	66,830	162,280	44,290	78,010	122,300	284,580
		1D	93,840	0	1,610	66,830	162,280	44,290	78,010	122,300	284,580
		2	93,840	1,370	1,010	66,830	163,050	41,320	74,400	115,720	278,770
Total Suspended Solids (pounds)	Batavia Creek	Existing	0	0	0	0	0	40,000	186,000	226,000	226,000
		2020 Future (baseline)	0	0	0	0	0	40,000	180,000	220,000	220,000
		1A	0	0	0	0	0	40,000	180,000	220,000	220,000
		1B	0	0	0	0	0	40,000	180,000	220,000	220,000
		1C	0	0	0	0	0	40,000	180,000	220,000	220,000
		1D	0	0	0	0	0	40,000	180,000	220,000	220,000
		2	0	0	0	0	0	36,000	170,000	206,000	206,000
	Cedar Creek	Existing	0	0	0	24,000	24,000	1,504,000	6,782,000	8,286,000	8,310,000
		2020 Future (baseline)	0	0	0	32,000	32,000	1,588,000	6,634,000	8,222,000	8,254,000
		1A	0	0	0	32,000	32,000	1,588,000	6,634,000	8,222,000	8,254,000
		1B	0	0	0	32,000	32,000	1,588,000	6,634,000	8,222,000	8,254,000
		1C	0	0	0	32,000	32,000	1,588,000	6,634,000	8,222,000	8,254,000
		1D	0	0	0	32,000	32,000	1,588,000	6,634,000	8,222,000	8,254,000
		2	0	0	0	32,000	32,000	1,506,000	6,272,000	7,778,000	7,810,000
	Cedar Lake	Existing	0	0	0	0	0	186,000	1,070,000	1,256,000	1,256,000
		2020 Future (baseline)	0	0	0	0	0	178,000	1,048,000	1,226,000	1,226,000
		1A	0	0	0	0	0	178,000	1,048,000	1,226,000	1,226,000
		1B	0	0	0	0	0	178,000	1,048,000	1,226,000	1,226,000
		1C	0	0	0	0	0	178,000	1,048,000	1,226,000	1,226,000
		1D	0	0	0	0	0	178,000	1,048,000	1,226,000	1,226,000
		2	0	0	0	0	0	168,000	996,000	1,164,000	1,164,000
	Chambers Creek	Existing	0	0	0	0	0	52,000	200,000	252,000	252,000
		2020 Future (baseline)	0	0	0	0	0	52,000	194,000	246,000	246,000
		1A	0	0	0	0	0	52,000	194,000	246,000	246,000
		1B	0	0	0	0	0	52,000	194,000	246,000	246,000
		1C	0	0	0	0	0	52,000	194,000	246,000	246,000
		1D	0	0	0	0	0	52,000	194,000	246,000	246,000
		2	0	0	0	0	0	46,000	184,000	230,000	230,000
	East Branch Milwaukee River	Existing	0	0	0	0	0	150,000	860,000	1,010,000	1,010,000
		2020 Future (baseline)	0	0	0	0	0	150,000	852,000	1,002,000	1,002,000
		1A	0	0	0	0	0	150,000	852,000	1,002,000	1,002,000
		1B	0	0	0	0	0	150,000	852,000	1,002,000	1,002,000
		1C	0	0	0	0	0	150,000	852,000	1,002,000	1,002,000
		1D	0	0	0	0	0	150,000	852,000	1,002,000	1,002,000
		2	0	0	0	0	0	130,000	820,000	950,000	950,000

Table H-3 (continued)

			Point Sources					Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Suspended Solids (pounds) (continued)	Kettle Moraine Lake	Existing	0	0	0	0	0	126,000	1,916,000	2,042,000	2,042,000
		2020 Future (baseline)	0	0	0	0	0	126,000	1,874,000	2,000,000	2,000,000
		1A	0	0	0	0	0	126,000	1,874,000	2,000,000	2,000,000
		1B	0	0	0	0	0	126,000	1,874,000	2,000,000	2,000,000
		1C	0	0	0	0	0	126,000	1,874,000	2,000,000	2,000,000
		1D	0	0	0	0	0	126,000	1,874,000	2,000,000	2,000,000
		2	0	0	0	0	0	110,000	1,794,000	1,904,000	1,904,000
	Kewaskum Creek	Existing	0	0	0	0	0	162,000	878,000	1,040,000	1,040,000
		2020 Future (baseline)	0	0	0	0	0	160,000	840,000	1,000,000	1,000,000
		1A	0	0	0	0	0	160,000	840,000	1,000,000	1,000,000
		1B	0	0	0	0	0	160,000	840,000	1,000,000	1,000,000
		1C	0	0	0	0	0	160,000	840,000	1,000,000	1,000,000
		1D	0	0	0	0	0	160,000	840,000	1,000,000	1,000,000
		2	0	0	0	0	0	144,000	790,000	934,000	934,000
	Lake Fifteen Creek	Existing	0	0	0	0	0	94,000	686,000	780,000	780,000
		2020 Future (baseline)	0	0	0	0	0	94,000	680,000	774,000	774,000
		1A	0	0	0	0	0	94,000	680,000	774,000	774,000
		1B	0	0	0	0	0	94,000	680,000	774,000	774,000
		1C	0	0	0	0	0	94,000	680,000	774,000	774,000
		1D	0	0	0	0	0	94,000	680,000	774,000	774,000
		2	0	0	0	0	0	78,000	652,000	730,000	730,000
	Lincoln Creek	Existing	28,000	6,000	4,000	0	38,000	2,778,000	48,000	2,826,000	2,864,000
		2020 Future (baseline)	28,000	6,000	0	0	34,000	2,180,000	38,000	2,218,000	2,252,000
		1A	28,000	0	0	0	28,000	2,180,000	38,000	2,218,000	2,246,000
		1B	28,000	0	0	0	28,000	2,180,000	38,000	2,218,000	2,246,000
		1C	28,000	0	20,000	0	48,000	2,180,000	38,000	2,218,000	2,266,000
		1D	28,000	0	20,000	0	48,000	2,180,000	38,000	2,218,000	2,266,000
		2	28,000	24,000	0	0	52,000	1,906,000	40,000	1,946,000	1,998,000
	Lower Cedar Creek	Existing	0	0	0	46,000	46,000	1,256,000	3,094,000	4,350,000	4,396,000
		2020 Future (baseline)	0	0	0	62,000	62,000	1,266,000	3,030,000	4,296,000	4,358,000
		1A	0	0	0	62,000	62,000	1,266,000	3,030,000	4,296,000	4,358,000
		1B	0	0	0	62,000	62,000	1,266,000	3,030,000	4,296,000	4,358,000
		1C	0	0	0	62,000	62,000	1,266,000	3,030,000	4,296,000	4,358,000
		1D	0	0	0	62,000	62,000	1,266,000	3,030,000	4,296,000	4,358,000
		2	0	0	0	62,000	62,000	1,096,000	2,894,000	3,990,000	4,052,000
	Lower Milwaukee River	Existing	370,000	16,000	139,650	0	525,650	5,236,000	3,032,000	8,268,000	8,793,650
		2020 Future (baseline)	370,000	24,000	104,140	0	498,140	4,306,000	2,654,000	6,960,000	7,458,140
		1A	370,000	0	0	0	370,000	4,732,000	2,654,000	7,386,000	7,756,000
		1B	370,000	0	0	0	370,000	4,306,000	2,654,000	6,960,000	7,330,000
		1C	370,000	0	220,820	0	590,820	4,306,000	2,654,000	6,960,000	7,550,820
		1D	370,000	0	220,820	0	590,820	4,306,000	2,654,000	6,960,000	7,550,820
		2	370,000	90,000	148,540	0	608,540	3,856,000	2,506,000	6,362,000	6,970,540
	Middle Milwaukee River	Existing	0	0	0	44,000	44,000	1,510,000	3,088,000	4,598,000	4,642,000
		2020 Future (baseline)	0	0	0	60,000	60,000	1,558,000	2,990,000	4,548,000	4,608,000
		1A	0	0	0	60,000	60,000	1,558,000	2,990,000	4,548,000	4,608,000
		1B	0	0	0	60,000	60,000	1,558,000	2,990,000	4,548,000	4,608,000
		1C	0	0	0	60,000	60,000	1,558,000	2,990,000	4,548,000	4,608,000
		1D	0	0	0	60,000	60,000	1,558,000	2,990,000	4,548,000	4,608,000
		2	0	0	0	60,000	60,000	1,388,000	2,816,000	4,204,000	4,264,000

Table H-3 (continued)

			Point Sources					Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Suspended Solids (pounds) (continued)	Mink Creek	Existing	0	0	0	0	0	106,000	460,000	566,000	566,000
		2020 Future (baseline)	0	0	0	0	0	106,000	442,000	548,000	548,000
		1A	0	0	0	0	0	106,000	442,000	548,000	548,000
		1B	0	0	0	0	0	106,000	442,000	548,000	548,000
		1C	0	0	0	0	0	106,000	442,000	548,000	548,000
		1D	0	0	0	0	0	106,000	442,000	548,000	548,000
		2	0	0	0	0	0	96,000	420,000	516,000	516,000
	North Branch Milwaukee River	Existing	54,000	0	0	8,000	62,000	532,000	2,666,000	3,198,000	3,260,000
		2020 Future (baseline)	54,000	0	0	22,280	76,280	530,000	2,582,000	3,112,000	3,188,280
		1A	54,000	0	0	22,280	76,280	530,000	2,582,000	3,112,000	3,188,280
		1B	54,000	0	0	22,280	76,280	530,000	2,582,000	3,112,000	3,188,280
		1C	54,000	0	0	22,280	76,280	530,000	2,582,000	3,112,000	3,188,280
		1D	54,000	0	0	22,280	76,280	530,000	2,582,000	3,112,000	3,188,280
		2	54,000	0	0	22,280	76,280	478,000	2,444,000	2,922,000	2,998,280
	Silver Creek (Sheboygan County)	Existing	0	0	0	16,000	16,000	292,000	532,000	824,000	840,000
		2020 Future (baseline)	0	0	0	20,000	20,000	322,000	518,000	840,000	860,000
		1A	0	0	0	20,000	20,000	322,000	518,000	840,000	860,000
		1B	0	0	0	20,000	20,000	322,000	518,000	840,000	860,000
		1C	0	0	0	20,000	20,000	322,000	518,000	840,000	860,000
		1D	0	0	0	20,000	20,000	322,000	518,000	840,000	860,000
		2	0	0	0	20,000	20,000	286,000	486,000	772,000	792,000
	Silver Creek (West Bend)	Existing	0	0	0	0	0	526,000	470,000	996,000	996,000
		2020 Future (baseline)	0	0	0	0	0	548,000	454,000	1,002,000	1,002,000
		1A	0	0	0	0	0	548,000	454,000	1,002,000	1,002,000
		1B	0	0	0	0	0	548,000	454,000	1,002,000	1,002,000
		1C	0	0	0	0	0	548,000	454,000	1,002,000	1,002,000
		1D	0	0	0	0	0	548,000	454,000	1,002,000	1,002,000
		2	0	0	0	0	0	512,000	444,000	956,000	956,000
	Stony Creek	Existing	0	0	0	0	0	100,000	434,000	534,000	534,000
		2020 Future (baseline)	0	0	0	0	0	100,000	426,000	526,000	526,000
		1A	0	0	0	0	0	100,000	426,000	526,000	526,000
		1B	0	0	0	0	0	100,000	426,000	526,000	526,000
		1C	0	0	0	0	0	100,000	426,000	526,000	526,000
		1D	0	0	0	0	0	100,000	426,000	526,000	526,000
		2	0	0	0	0	0	84,000	404,000	488,000	488,000
	Upper Lower Milwaukee River	Existing	0	2,000	0	130,000	132,000	1,748,000	2,574,000	4,322,000	4,454,000
		2020 Future (baseline)	0	2,000	0	172,000	174,000	1,880,000	2,442,000	4,322,000	4,496,000
		1A	0	0	0	172,000	172,000	1,880,000	2,442,000	4,322,000	4,494,000
		1B	0	0	0	172,000	172,000	1,880,000	2,442,000	4,322,000	4,494,000
		1C	0	0	0	172,000	172,000	1,880,000	2,442,000	4,322,000	4,494,000
		1D	0	0	0	172,000	172,000	1,880,000	2,442,000	4,322,000	4,494,000
		2	0	2,000	0	172,000	174,000	1,740,000	2,306,000	4,046,000	4,220,000
	Upper Milwaukee River	Existing	2,000	0	0	26,000	28,000	580,000	4,714,000	5,294,000	5,322,000
		2020 Future (baseline)	2,000	0	0	36,000	38,000	610,000	4,578,000	5,188,000	5,226,000
		1A	2,000	0	0	36,000	38,000	610,000	4,578,000	5,188,000	5,226,000
		1B	2,000	0	0	36,000	38,000	610,000	4,578,000	5,188,000	5,226,000
		1C	2,000	0	0	36,000	38,000	610,000	4,578,000	5,188,000	5,226,000
		1D	2,000	0	0	36,000	38,000	610,000	4,578,000	5,188,000	5,226,000
		2	2,000	0	0	36,000	38,000	550,000	4,346,000	4,896,000	4,934,000

Table H-3 (continued)

			Point Sources					Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Suspended Solids (pounds) (continued)	Watercress Creek	Existing	0	0	0	0	0	134,000	1,388,000	1,522,000	1,522,000
		2020 Future (baseline)	0	0	0	0	0	134,000	1,358,000	1,492,000	1,492,000
		1A	0	0	0	0	0	134,000	1,358,000	1,492,000	1,492,000
		1B	0	0	0	0	0	134,000	1,358,000	1,492,000	1,492,000
		1C	0	0	0	0	0	134,000	1,358,000	1,492,000	1,492,000
		1D	0	0	0	0	0	134,000	1,358,000	1,492,000	1,492,000
		2	0	0	0	0	0	114,000	1,290,000	1,404,000	1,404,000
	West Branch Milwaukee River	Existing	0	0	0	0	0	596,000	4,682,000	5,278,000	5,278,000
		2020 Future (baseline)	0	0	0	0	0	590,000	4,538,000	5,128,000	5,128,000
		1A	0	0	0	0	0	590,000	4,538,000	5,128,000	5,128,000
		1B	0	0	0	0	0	590,000	4,538,000	5,128,000	5,128,000
		1C	0	0	0	0	0	590,000	4,538,000	5,128,000	5,128,000
		1D	0	0	0	0	0	590,000	4,538,000	5,128,000	5,128,000
		2	0	0	0	0	0	498,000	4,274,000	4,772,000	4,772,000
	Watershed Total	Existing	454,000	24,000	143,650	294,000	915,650	17,708,000	39,760,000	57,468,000	58,383,650
		2020 Future (baseline)	454,000	32,000	104,140	404,280	994,420	16,518,000	38,352,000	54,870,000	55,864,420
		1A	454,000	0	0	404,280	858,280	16,946,000	38,352,000	55,298,000	56,156,280
		1B	454,000	0	0	404,280	858,280	16,518,000	38,352,000	54,870,000	55,728,280
		1C	454,000	0	240,820	404,280	1,099,100	16,518,000	38,352,000	54,870,000	55,969,100
		1D	454,000	0	240,820	404,280	1,099,100	16,518,000	38,352,000	54,870,000	55,969,100
		2	454,000	116,000	148,540	404,280	1,122,820	14,822,000	36,348,000	51,170,000	52,292,820
Fecal Coliform Bacteria (trillions of cells)	Batavia Creek	Existing	0.00	0.00	0.00	0.00	0.00	73.50	87.60	161.10	161.10
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	73.30	87.52	160.82	160.82
		1A	0.00	0.00	0.00	0.00	0.00	73.30	87.52	160.82	160.82
		1B	0.00	0.00	0.00	0.00	0.00	73.30	87.52	160.83	160.83
		1C	0.00	0.00	0.00	0.00	0.00	73.30	87.52	160.82	160.82
		1D	0.00	0.00	0.00	0.00	0.00	73.30	87.52	160.82	160.82
		2	0.00	0.00	0.00	0.00	0.00	65.95	84.21	150.16	150.16
	Cedar Creek	Existing	0.01	0.00	0.00	0.20	0.21	1,664.36	1,878.04	3,542.40	3,542.61
		2020 Future (baseline)	0.01	0.00	0.00	0.27	0.28	852.04	1,201.78	2,053.82	2,054.10
		1A	0.01	0.00	0.00	0.27	0.28	852.04	1,201.78	2,053.82	2,054.10
		1B	0.01	0.00	0.00	0.27	0.28	852.04	1,201.78	2,053.82	2,054.10
		1C	0.01	0.00	0.00	0.27	0.28	852.04	1,201.78	2,053.82	2,054.10
		1D	0.01	0.00	0.00	0.27	0.28	852.04	1,201.78	2,053.82	2,054.10
		2	0.01	0.00	0.00	0.27	0.28	763.73	1,131.15	1,894.88	1,895.44
	Cedar Lake	Existing	0.00	0.00	0.00	0.00	0.00	212.84	1,362.21	1,575.05	1,575.05
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	1.83	53.16	54.99	54.99
		1A	0.00	0.00	0.00	0.00	0.00	1.83	53.16	54.99	54.99
		1B	0.00	0.00	0.00	0.00	0.00	1.83	53.16	54.99	54.99
		1C	0.00	0.00	0.00	0.00	0.00	1.83	53.16	54.99	54.99
		1D	0.00	0.00	0.00	0.00	0.00	1.83	53.16	54.99	54.99
		2	0.00	0.00	0.00	0.00	0.00	1.68	51.44	53.12	53.12
	Chambers Creek	Existing	0.00	0.00	0.00	0.00	0.00	82.08	105.88	187.96	187.96
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	81.86	105.74	187.60	187.60
		1A	0.00	0.00	0.00	0.00	0.00	81.86	105.74	187.60	187.60
		1B	0.00	0.00	0.00	0.00	0.00	81.86	105.74	187.60	187.60
		1C	0.00	0.00	0.00	0.00	0.00	81.86	105.74	187.60	187.60
		1D	0.00	0.00	0.00	0.00	0.00	81.86	105.74	187.60	187.60
		2	0.00	0.00	0.00	0.00	0.00	73.65	100.31	173.96	173.96

Table H-3 (continued)

			Point Sources					Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	East Branch Milwaukee River	Existing	0.00	0.00	0.00	0.00	0.00	270.07	521.74	791.81	791.81
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	237.88	514.06	751.94	751.94
		1A	0.00	0.00	0.00	0.00	0.00	237.88	514.06	751.94	751.94
		1B	0.00	0.00	0.00	0.00	0.00	237.88	514.06	751.94	751.94
		1C	0.00	0.00	0.00	0.00	0.00	237.88	514.06	751.94	751.94
		1D	0.00	0.00	0.00	0.00	0.00	237.88	514.06	751.94	751.94
		2	0.00	0.00	0.00	0.00	0.00	214.20	474.15	688.35	688.35
	Kettle Moraine Lake	Existing	0.00	0.00	0.00	0.00	0.00	157.94	540.89	698.83	698.83
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	157.85	540.66	698.51	698.51
		1A	0.00	0.00	0.00	0.00	0.00	157.85	540.66	698.51	698.51
		1B	0.00	0.00	0.00	0.00	0.00	157.85	540.66	698.51	698.51
		1C	0.00	0.00	0.00	0.00	0.00	157.85	540.66	698.51	698.51
		1D	0.00	0.00	0.00	0.00	0.00	157.85	540.66	698.51	698.51
		2	0.00	0.00	0.00	0.00	0.00	142.06	498.27	640.33	640.33
	Kewaskum Creek	Existing	0.00	0.00	0.00	0.00	0.00	198.48	180.39	378.87	378.87
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	112.67	182.23	294.90	294.90
		1A	0.00	0.00	0.00	0.00	0.00	112.67	182.23	294.90	294.90
		1B	0.00	0.00	0.00	0.00	0.00	112.67	182.23	294.90	294.90
		1C	0.00	0.00	0.00	0.00	0.00	112.67	182.23	294.90	294.90
		1D	0.00	0.00	0.00	0.00	0.00	112.67	182.23	294.90	294.90
		2	0.00	0.00	0.00	0.00	0.00	100.50	169.52	270.02	270.02
	Lake Fifteen Creek	Existing	0.00	0.00	0.00	0.00	0.00	114.69	340.61	455.30	455.30
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	114.49	340.01	454.50	454.50
		1A	0.00	0.00	0.00	0.00	0.00	114.49	340.01	454.50	454.50
		1B	0.00	0.00	0.00	0.00	0.00	114.49	340.01	454.50	454.50
		1C	0.00	0.00	0.00	0.00	0.00	114.49	340.01	454.50	454.50
		1D	0.00	0.00	0.00	0.00	0.00	114.49	340.01	454.50	454.50
		2	0.00	0.00	0.00	0.00	0.00	103.02	310.94	413.96	413.96
	Lincoln Creek	Existing	0.79	111.29	57.96	0.00	170.04	4,178.24	0.28	4,178.52	4,348.56
		2020 Future (baseline)	0.79	99.03	6.59	0.00	106.41	3,456.43	19.12	3,475.55	3,581.96
		1A	0.79	0.00	0.00	0.00	0.79	3,456.43	19.12	3,475.55	3,476.34
		1B	0.79	0.00	0.00	0.00	0.79	3,456.43	19.12	3,475.55	3,476.34
		1C	0.79	0.00	86.69	0.00	87.48	3,456.43	19.12	3,475.55	3,563.03
		1D	0.79	0.00	86.69	0.00	87.48	3,456.43	19.12	3,475.55	3,563.03
		2	0.79	151.19	0.57	0.00	152.55	3,031.94	16.66	3,048.60	3,201.15
	Lower Cedar Creek	Existing	0.00	2.78	0.00	1.67	4.45	1,637.71	851.03	2,488.74	2,493.19
		2020 Future (baseline)	0.00	2.78	0.00	2.17	4.95	446.29	798.65	1,244.94	1,249.89
		1A	0.00	0.00	0.00	2.17	2.17	446.29	798.65	1,244.94	1,247.11
		1B	0.00	0.00	0.00	2.17	2.17	446.29	798.65	1,244.94	1,247.11
		1C	0.00	0.00	0.00	2.17	2.17	446.29	798.65	1,244.94	1,247.11
		1D	0.00	0.00	0.00	2.17	2.17	446.29	798.65	1,244.94	1,247.11
		2	0.00	2.78	0.00	2.17	4.95	400.06	734.17	1,134.23	1,139.18
	Lower Milwaukee River	Existing	9.84	296.62	1,820.95	0.00	2,127.41	7,522.97	973.60	8,496.57	10,623.98
		2020 Future (baseline)	9.84	471.65	1,343.69	0.00	1,825.18	5,901.79	828.16	6,729.95	8,555.13
		1A	9.84	0.00	0.00	0.00	9.84	6,029.44	828.16	6,857.60	6,867.44
		1B	9.84	0.00	0.00	0.00	9.84	5,901.79	828.16	6,729.95	6,739.79
		1C	9.84	0.00	1,636.00	0.00	1,645.84	5,901.79	828.16	6,729.95	8,375.79
		1D	9.84	0.00	1,636.00	0.00	1,645.84	5,901.79	828.16	6,729.95	8,375.79
		2	9.84	573.70	1,116.08	0.00	1,699.62	5,165.32	747.37	5,912.69	7,612.31

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Middle Milwaukee River	Existing	0.02	0.00	0.00	27.70	27.72	1,909.21	1,396.42	3,305.63	3,333.35
		2020 Future (baseline)	0.02	0.00	0.00	37.73	37.75	408.44	1,084.69	1,493.13	1,530.88
		1A	0.02	0.00	0.00	37.73	37.75	408.44	1,084.69	1,493.13	1,530.88
		1B	0.02	0.00	0.00	37.73	37.75	408.44	1,084.69	1,493.13	1,530.88
		1C	0.02	0.00	0.00	37.73	37.75	408.44	1,084.69	1,493.13	1,530.88
		1D	0.02	0.00	0.00	37.73	37.75	408.44	1,084.69	1,493.13	1,530.88
		2	0.02	0.00	0.00	37.73	37.79	366.44	993.87	1,360.31	1,398.10
	Mink Creek	Existing	0.00	0.00	0.00	0.00	0.00	183.01	263.94	446.95	446.95
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	182.53	263.62	446.15	446.15
		1A	0.00	0.00	0.00	0.00	0.00	182.53	263.62	446.15	446.15
		1B	0.00	0.00	0.00	0.00	0.00	182.53	263.62	446.15	446.15
		1C	0.00	0.00	0.00	0.00	0.00	182.53	263.62	446.15	446.15
		1D	0.00	0.00	0.00	0.00	0.00	182.53	263.62	446.15	446.15
		2	0.00	0.00	0.00	0.00	0.00	164.23	251.32	415.55	415.55
	North Branch Milwaukee River	Existing	0.67	1.77	0.00	8.19	10.63	814.80	1,623.75	2,438.55	2,449.18
		2020 Future (baseline)	0.67	1.77	0.00	8.26	10.70	725.20	1,424.17	2,149.37	2,160.07
		1A	0.67	0.00	0.00	8.26	8.93	725.20	1,424.17	2,149.37	2,158.30
		1B	0.67	0.00	0.00	8.26	8.93	725.20	1,424.17	2,149.37	2,158.30
		1C	0.67	0.00	0.00	8.26	8.93	725.20	1,424.17	2,149.37	2,158.30
		1D	0.67	0.00	0.00	8.26	8.93	725.20	1,424.17	2,149.37	2,158.30
		2	0.67	1.77	0.00	8.26	10.70	652.45	1,324.38	1,976.83	1,987.53
	Silver Creek (Sheboygan County)	Existing	0.05	0.00	0.00	0.82	0.87	599.28	295.74	895.02	895.89
		2020 Future (baseline)	0.05	0.00	0.00	0.97	1.02	192.17	303.95	496.12	497.14
		1A	0.05	0.00	0.00	0.97	1.02	192.17	303.95	496.12	497.14
		1B	0.05	0.00	0.00	0.97	1.02	192.17	303.95	496.12	497.14
		1C	0.05	0.00	0.00	0.97	1.02	192.17	303.95	496.12	497.14
		1D	0.05	0.00	0.00	0.97	1.02	192.17	303.95	496.12	497.14
		2	0.05	0.00	0.00	0.97	1.02	172.71	283.99	456.70	457.72
	Silver Creek (West Bend)	Existing	0.00	0.00	0.00	0.00	0.00	722.20	210.56	932.76	932.76
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	311.75	224.37	536.12	536.12
		1A	0.00	0.00	0.00	0.00	0.00	311.75	224.37	536.12	536.12
		1B	0.00	0.00	0.00	0.00	0.00	311.75	224.37	536.12	536.12
		1C	0.00	0.00	0.00	0.00	0.00	311.75	224.37	536.12	536.12
		1D	0.00	0.00	0.00	0.00	0.00	311.75	224.37	536.12	536.12
		2	0.00	0.00	0.00	0.00	0.00	279.36	202.49	481.85	481.85
	Stony Creek	Existing	0.00	0.00	0.00	0.00	0.00	188.85	271.65	460.50	460.50
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	188.35	271.24	459.59	459.59
		1A	0.00	0.00	0.00	0.00	0.00	188.35	271.24	459.59	459.59
		1B	0.00	0.00	0.00	0.00	0.00	188.35	271.24	459.59	459.59
		1C	0.00	0.00	0.00	0.00	0.00	188.35	271.24	459.59	459.59
		1D	0.00	0.00	0.00	0.00	0.00	188.35	271.24	459.59	459.59
		2	0.00	0.00	0.00	0.00	0.00	169.46	255.66	425.12	425.12
	Upper Lower Milwaukee River	Existing	0.62	16.58	0.00	1.75	18.95	1,849.48	1,104.93	2,954.41	2,973.36
		2020 Future (baseline)	0.62	16.58	0.00	2.22	19.42	245.37	774.72	1,020.09	1,039.51
		1A	0.62	0.00	0.00	2.22	2.84	245.37	774.72	1,020.09	1,022.93
		1B	0.62	0.00	0.00	2.22	2.84	245.37	774.72	1,020.09	1,022.93
		1C	0.62	0.00	0.00	2.22	2.84	245.37	774.72	1,020.09	1,022.93
		1D	0.62	0.00	0.00	2.22	2.84	245.37	774.72	1,020.09	1,022.93
		2	0.62	16.58	0.00	2.22	19.42	219.84	715.49	935.33	954.75

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Upper Milwaukee River	Existing	0.11	0.00	0.00	1.21	1.32	820.18	809.09	1,629.27	1,630.59
		2020 Future (baseline)	0.11	0.00	0.00	1.45	1.56	438.94	692.87	1,131.81	1,133.37
		1A	0.11	0.00	0.00	1.45	1.56	438.94	692.87	1,131.81	1,133.37
		1B	0.11	0.00	0.00	1.45	1.56	438.94	692.87	1,131.81	1,133.37
		1C	0.11	0.00	0.00	1.45	1.56	438.94	692.87	1,131.81	1,133.37
		1D	0.11	0.00	0.00	1.45	1.56	438.94	692.87	1,131.81	1,133.37
		2	0.11	0.00	0.00	1.45	1.56	394.89	662.16	1,057.05	1,058.61
	Watercress Creek	Existing	0.00	0.00	0.00	0.00	0.00	201.89	723.77	925.66	925.66
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	201.75	723.42	925.17	925.17
		1A	0.00	0.00	0.00	0.00	0.00	201.75	723.42	925.17	925.17
		1B	0.00	0.00	0.00	0.00	0.00	201.75	723.42	925.17	925.17
		1C	0.00	0.00	0.00	0.00	0.00	201.75	723.42	925.17	925.17
		1D	0.00	0.00	0.00	0.00	0.00	201.75	723.42	925.17	925.17
		2	0.00	0.00	0.00	0.00	0.00	181.56	660.13	841.69	841.69
	West Branch Milwaukee River	Existing	0.00	0.00	0.00	0.00	0.00	697.12	824.04	1,521.16	1,521.16
		2020 Future (baseline)	0.00	0.00	0.00	0.00	0.00	605.04	794.74	1,399.78	1,399.78
		1A	0.00	0.00	0.00	0.00	0.00	605.04	794.74	1,399.78	1,399.78
		1B	0.00	0.00	0.00	0.00	0.00	605.04	794.74	1,399.78	1,399.78
		1C	0.00	0.00	0.00	0.00	0.00	605.04	794.74	1,399.78	1,399.78
		1D	0.00	0.00	0.00	0.00	0.00	605.04	794.74	1,399.78	1,399.78
		2	0.00	0.00	0.00	0.00	0.00	543.84	761.43	1,305.27	1,305.27
	Watershed Total	Existing	12.11	429.04	1,878.91	41.54	2,361.60	24,098.90	14,366.16	38,465.06	40,826.66
		2020 Future (baseline)	12.11	591.81	1,350.28	53.07	2,007.27	14,935.97	11,228.88	26,164.85	28,172.12
		1A	12.11	0.00	0.00	53.07	65.18	15,065.01	11,228.88	26,293.89	26,359.07
		1B	12.11	0.00	0.00	53.07	65.18	14,935.97	11,228.88	26,164.85	26,230.03
		1C	12.11	0.00	1,722.69	53.07	1,787.87	14,935.97	11,228.88	26,164.85	27,952.72
		1D	12.11	0.00	1,722.69	53.07	1,787.87	14,935.97	11,228.88	26,164.85	27,952.72
		2	12.11	746.02	1,116.65	53.07	927.85	13,206.89	10,429.11	23,636.00	24,563.85
Total Nitrogen (pounds)	Batavia Creek	Existing	0	0	0	0	0	560	18,950	19,510	19,510
		2020 Future (baseline)	0	0	0	0	0	560	18,800	19,360	19,360
		1A	0	0	0	0	0	560	18,800	19,360	19,360
		1B	0	0	0	0	0	560	18,800	19,360	19,360
		1C	0	0	0	0	0	560	18,800	19,360	19,360
		1D	0	0	0	0	0	560	18,800	19,360	19,360
		2	0	0	0	0	0	540	18,710	19,250	19,250
	Cedar Creek	Existing	40	0	0	4,580	4,620	13,420	286,240	299,660	304,280
		2020 Future (baseline)	40	0	0	6,220	6,260	14,600	272,880	287,480	293,740
		1A	40	0	0	6,220	6,260	14,600	272,880	287,480	293,740
		1B	40	0	0	6,220	6,260	14,600	272,880	287,480	293,740
		1C	40	0	0	6,220	6,260	14,600	272,880	287,480	293,740
		1D	40	0	0	6,220	6,260	14,600	272,880	287,480	293,740
		2	40	0	0	6,220	6,260	14,400	269,710	284,110	290,370
	Cedar Lake	Existing	0	0	0	0	0	1,610	24,990	26,600	26,600
		2020 Future (baseline)	0	0	0	0	0	1,600	24,560	26,160	26,160
		1A	0	0	0	0	0	1,600	24,560	26,160	26,160
		1B	0	0	0	0	0	1,600	24,560	26,160	26,160
		1C	0	0	0	0	0	1,600	24,560	26,160	26,160
		1D	0	0	0	0	0	1,600	24,560	26,160	26,160
		2	0	0	0	0	0	1,570	24,310	25,880	25,880

Table H-3 (continued)

			Point Sources					Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Nitrogen (pounds) (continued)	Chambers Creek	Existing	0	0	0	0	0	650	18,970	19,620	19,620
		2020 Future (baseline)	0	0	0	0	0	650	18,830	19,480	19,480
		1A	0	0	0	0	0	650	18,830	19,480	19,480
		1B	0	0	0	0	0	650	18,830	19,480	19,480
		1C	0	0	0	0	0	650	18,830	19,480	19,480
		1D	0	0	0	0	0	650	18,830	19,480	19,480
		2	0	0	0	0	0	620	18,750	19,370	19,370
	East Branch Milwaukee River	Existing	0	0	0	0	0	2,080	41,270	43,350	43,350
		2020 Future (baseline)	0	0	0	0	0	2,090	40,690	42,780	42,780
		1A	0	0	0	0	0	2,090	40,690	42,780	42,780
		1B	0	0	0	0	0	2,090	40,690	42,780	42,780
		1C	0	0	0	0	0	2,090	40,690	42,780	42,780
		1D	0	0	0	0	0	2,090	40,690	42,780	42,780
		2	0	0	0	0	0	1,970	40,520	42,490	42,490
	Kettle Moraine Lake	Existing	0	0	0	0	0	1,220	58,780	60,000	60,000
		2020 Future (baseline)	0	0	0	0	0	1,220	57,820	59,040	59,040
		1A	0	0	0	0	0	1,220	57,820	59,040	59,040
		1B	0	0	0	0	0	1,220	57,820	59,040	59,040
		1C	0	0	0	0	0	1,220	57,820	59,040	59,040
		1D	0	0	0	0	0	1,220	57,820	59,040	59,040
		2	0	0	0	0	0	1,170	57,150	58,320	58,320
	Kewaskum Creek	Existing	0	0	0	0	0	1,780	42,100	43,880	43,880
		2020 Future (baseline)	0	0	0	0	0	1,870	39,920	41,790	41,790
		1A	0	0	0	0	0	1,870	39,920	41,790	41,790
		1B	0	0	0	0	0	1,870	39,920	41,790	41,790
		1C	0	0	0	0	0	1,870	39,920	41,790	41,790
		1D	0	0	0	0	0	1,870	39,920	41,790	41,790
		2	0	0	0	0	0	1,810	39,460	41,270	41,270
	Lake Fifteen Creek	Existing	0	0	0	0	0	920	20,270	21,190	21,190
		2020 Future (baseline)	0	0	0	0	0	920	20,080	21,000	21,000
		1A	0	0	0	0	0	920	20,080	21,000	21,000
		1B	0	0	0	0	0	920	20,080	21,000	21,000
		1C	0	0	0	0	0	920	20,080	21,000	21,000
		1D	0	0	0	0	0	920	20,080	21,000	21,000
		2	0	0	0	0	0	870	19,920	20,790	20,790
	Lincoln Creek	Existing	3,530	850	960	0	5,340	42,420	500	42,920	48,260
		2020 Future (baseline)	3,530	760	110	0	4,400	39,530	460	39,990	44,390
		1A	3,530	0	0	0	3,530	39,530	460	39,990	43,520
		1B	3,530	0	0	0	3,530	39,530	460	39,990	43,520
		1C	3,530	0	1,430	0	4,960	39,530	460	39,990	44,950
		1D	3,530	0	1,430	0	4,960	39,530	460	39,990	44,950
		2	3,530	1,160	10	0	4,700	38,450	460	38,910	43,610
	Lower Cedar Creek	Existing	<10	20	0	950	970	16,910	95,100	112,010	112,980
		2020 Future (baseline)	<10	20	0	1,230	1,250	17,960	89,380	107,340	108,590
		1A	<10	0	0	1,230	1,230	17,960	89,380	107,340	108,570
		1B	<10	0	0	1,230	1,230	17,960	89,380	107,340	108,570
		1C	<10	0	0	1,230	1,230	17,960	89,380	107,340	108,570
		1D	<10	0	0	1,230	1,230	17,960	89,380	107,340	108,570
		2	<10	20	0	1,230	1,250	17,330	88,390	105,720	106,970

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources					Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Total Nitrogen (pounds) (continued)	Lower Milwaukee River	Existing	64,010	2,270	16,950	0	83,230	79,020	109,560	188,580	271,810
		2020 Future (baseline)	64,010	3,610	11,560	0	79,180	77,390	82,260	159,650	238,830
		1A	64,010	0	0	0	64,010	83,960	82,260	166,220	230,230
		1B	64,010	0	0	0	64,010	77,390	82,260	159,650	223,660
		1C	64,010	0	14,350	0	78,360	77,390	82,260	159,650	238,010
		1D	64,010	0	14,350	0	78,360	77,390	82,260	159,650	238,010
		2	64,010	4,390	9,660	0	78,060	75,770	81,270	157,040	235,100
	Middle Milwaukee River	Existing	10	0	0	27,930	27,940	16,190	123,790	139,980	167,920
		2020 Future (baseline)	10	0	0	37,670	37,680	17,290	109,130	126,420	164,100
		1A	10	0	0	37,670	37,680	17,290	109,130	126,420	164,100
		1B	10	0	0	37,670	37,680	17,290	109,130	126,420	164,100
		1C	10	0	0	37,670	37,680	17,290	109,130	126,420	164,100
		1D	10	0	0	37,670	37,680	17,290	109,130	126,420	164,100
		2	10	0	0	37,670	37,680	16,690	108,080	124,770	162,450
	Mink Creek	Existing	0	0	0	0	0	1,420	49,620	51,040	51,040
		2020 Future (baseline)	0	0	0	0	0	1,420	49,240	50,660	50,660
		1A	0	0	0	0	0	1,420	49,240	50,660	50,660
		1B	0	0	0	0	0	1,420	49,240	50,660	50,660
		1C	0	0	0	0	0	1,420	49,240	50,660	50,660
		1D	0	0	0	0	0	1,420	49,240	50,660	50,660
		2	0	0	0	0	0	1,360	49,050	50,410	50,410
	North Branch Milwaukee River	Existing	7,560	10	0	9,530	17,100	6,410	171,210	177,620	194,720
		2020 Future (baseline)	7,560	10	0	9,780	17,350	6,440	167,870	174,310	191,660
		1A	7,560	0	0	9,780	17,340	6,440	167,870	174,310	191,660
		1B	7,560	0	0	9,780	17,340	6,440	167,870	174,310	191,660
		1C	7,560	0	0	9,780	17,340	6,440	167,870	174,310	191,660
		1D	7,560	0	0	9,780	17,340	6,440	167,870	174,310	191,660
		2	7,560	10	0	9,780	17,350	6,200	166,840	173,040	190,390
	Silver Creek (Sheboygan County)	Existing	0	0	0	350	350	3,680	44,550	48,230	48,580
		2020 Future (baseline)	0	0	0	420	420	4,240	42,820	47,060	47,480
		1A	0	0	0	420	420	4,240	42,820	47,060	47,480
		1B	0	0	0	420	420	4,240	42,820	47,060	47,480
		1C	0	0	0	420	420	4,240	42,820	47,060	47,480
		1D	0	0	0	420	420	4,240	42,820	47,060	47,480
		2	0	0	0	420	420	4,080	42,580	46,660	47,080
	Silver Creek (West Bend)	Existing	0	0	0	0	0	6,410	10,860	17,270	17,270
		2020 Future (baseline)	0	0	0	0	0	7,270	8,800	16,070	16,070
		1A	0	0	0	0	0	7,270	8,800	16,070	16,070
		1B	0	0	0	0	0	7,270	8,800	16,070	16,070
		1C	0	0	0	0	0	7,270	8,800	16,070	16,070
		1D	0	0	0	0	0	7,270	8,800	16,070	16,070
		2	0	0	0	0	0	7,170	8,750	15,920	15,920
	Stony Creek	Existing	0	0	0	0	0	1,440	39,770	41,210	41,210
		2020 Future (baseline)	0	0	0	0	0	1,440	39,540	40,980	40,980
		1A	0	0	0	0	0	1,440	39,540	40,980	40,980
		1B	0	0	0	0	0	1,440	39,540	40,980	40,980
		1C	0	0	0	0	0	1,440	39,540	40,980	40,980
		1D	0	0	0	0	0	1,440	39,540	40,980	40,980
		2	0	0	0	0	0	1,350	39,380	40,730	40,730

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources					Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Total Nitrogen (pounds) (continued)	Upper Lower Milwaukee River	Existing	350	130	0	77,920	78,400	17,730	123,670	141,400	219,800
		2020 Future (baseline)	350	130	0	99,960	100,440	19,460	114,200	133,660	234,100
		1A	350	0	0	99,960	100,310	19,460	114,200	133,660	234,100
		1B	350	0	0	99,960	100,310	19,460	114,200	133,660	234,100
		1C	350	0	0	99,960	100,310	19,460	114,200	133,660	234,100
		1D	350	0	0	99,960	100,310	19,460	114,200	133,660	234,100
		2	350	130	0	99,960	100,440	19,070	113,260	132,330	232,770
	Upper Milwaukee River	Existing	30	0	0	1,950	1,980	6,740	194,190	200,930	202,910
		2020 Future (baseline)	30	0	0	2,300	2,330	7,130	188,890	196,020	198,350
		1A	30	0	0	2,300	2,330	7,130	188,890	196,020	198,350
		1B	30	0	0	2,300	2,330	7,130	188,890	196,020	198,350
		1C	30	0	0	2,300	2,330	7,130	188,890	196,020	198,350
		1D	30	0	0	2,300	2,330	7,130	188,890	196,020	198,350
		2	30	0	0	2,300	2,330	6,890	186,790	193,680	196,010
	Watercress Creek	Existing	0	0	0	0	0	1,480	40,150	41,630	41,630
		2020 Future (baseline)	0	0	0	0	0	1,480	39,440	40,920	40,920
		1A	0	0	0	0	0	1,480	39,440	40,920	40,920
		1B	0	0	0	0	0	1,480	39,440	40,920	40,920
		1C	0	0	0	0	0	1,480	39,440	40,920	40,920
		1D	0	0	0	0	0	1,480	39,440	40,920	40,920
		2	0	0	0	0	0	1,390	38,980	40,370	40,370
	West Branch Milwaukee River	Existing	0	0	0	0	0	5,390	219,160	224,550	224,550
		2020 Future (baseline)	0	0	0	0	0	5,360	214,960	220,320	220,320
		1A	0	0	0	0	0	5,360	214,960	220,320	220,320
		1B	0	0	0	0	0	5,360	214,960	220,320	220,320
		1C	0	0	0	0	0	5,360	214,960	220,320	220,320
		1D	0	0	0	0	0	5,360	214,960	220,320	220,320
		2	0	0	0	0	0	5,030	212,600	217,630	217,630
	Watershed Total	Existing	75,530	3,280	17,910	123,210	219,930	227,480	1,733,700	1,961,180	2,181,110
		2020 Future (baseline)	75,530	4,530	11,670	157,580	249,310	229,920	1,640,570	1,870,490	2,119,800
		1A	75,530	0	0	157,580	233,110	236,500	1,640,570	1,877,070	2,110,180
		1B	75,530	0	0	157,580	233,110	229,920	1,640,570	1,870,490	2,103,600
		1C	75,530	0	15,780	157,580	248,890	229,920	1,640,570	1,870,490	2,119,380
		1D	75,530	0	15,780	157,580	248,890	229,920	1,640,570	1,870,490	2,119,380
		2	75,530	5,710	9,670	157,580	248,490	223,730	1,624,960	1,848,690	2,097,180
Biochemical Oxygen Demand (pounds)	Batavia Creek	Existing	0	0	0	0	0	4,000	24,470	28,470	28,470
		2020 Future (baseline)	0	0	0	0	0	3,990	23,680	27,670	27,670
		1A	0	0	0	0	0	3,990	23,680	27,670	27,670
		1B	0	0	0	0	0	3,990	23,680	27,670	27,670
		1C	0	0	0	0	0	3,990	23,680	27,670	27,670
		1D	0	0	0	0	0	3,990	23,680	27,670	27,670
		2	0	0	0	0	0	3,990	23,680	27,670	27,670
	Cedar Creek	Existing	60	0	0	10,370	10,430	105,650	632,050	737,700	748,130
		2020 Future (baseline)	60	0	0	14,080	14,140	114,540	604,280	718,820	732,960
		1A	60	0	0	14,080	14,140	114,540	604,280	718,820	732,960
		1B	60	0	0	14,080	14,140	114,540	604,280	718,820	732,960
		1C	60	0	0	14,080	14,140	114,540	604,280	718,820	732,960
		1D	60	0	0	14,080	14,140	114,540	604,280	718,820	732,960
		2	60	0	0	14,080	14,140	114,540	604,280	718,820	732,960

Table H-3 (continued)

			Point Sources					Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Biochemical Oxygen Demand (pounds) (continued)	Cedar Lake	Existing	0	0	0	0	0	12,700	68,630	81,330	81,330
		2020 Future (baseline)	0	0	0	0	0	12,360	67,500	79,860	79,860
		1A	0	0	0	0	0	12,360	67,500	79,860	79,860
		1B	0	0	0	0	0	12,360	67,500	79,860	79,860
		1C	0	0	0	0	0	12,360	67,500	79,860	79,860
		1D	0	0	0	0	0	12,360	67,500	79,860	79,860
		2	0	0	0	0	0	12,360	67,500	79,860	79,860
	Chambers Creek	Existing	0	0	0	0	0	5,140	23,440	28,580	28,580
		2020 Future (baseline)	0	0	0	0	0	5,130	22,900	28,030	28,030
		1A	0	0	0	0	0	5,130	22,900	28,030	28,030
		1B	0	0	0	0	0	5,130	22,900	28,030	28,030
		1C	0	0	0	0	0	5,130	22,900	28,030	28,030
		1D	0	0	0	0	0	5,130	22,900	28,030	28,030
		2	0	0	0	0	0	5,130	22,900	28,030	28,030
	East Branch Milwaukee River	Existing	0	0	0	0	0	15,060	82,180	97,240	97,240
		2020 Future (baseline)	0	0	0	0	0	15,110	80,930	96,040	96,040
		1A	0	0	0	0	0	15,110	80,930	96,040	96,040
		1B	0	0	0	0	0	15,110	80,930	96,040	96,040
		1C	0	0	0	0	0	15,110	80,930	96,040	96,040
		1D	0	0	0	0	0	15,110	80,930	96,040	96,040
		2	0	0	0	0	0	15,110	80,930	96,040	96,040
	Kettle Moraine Lake	Existing	0	0	0	0	0	8,880	120,250	129,130	129,130
		2020 Future (baseline)	0	0	0	0	0	8,880	115,640	124,520	124,520
		1A	0	0	0	0	0	8,880	115,640	124,520	124,520
		1B	0	0	0	0	0	8,880	115,640	124,520	124,520
		1C	0	0	0	0	0	8,880	115,640	124,520	124,520
		1D	0	0	0	0	0	8,880	115,640	124,520	124,520
		2	0	0	0	0	0	8,880	115,640	124,520	124,520
	Kewaskum Creek	Existing	0	0	0	0	0	11,340	81,960	93,300	93,300
		2020 Future (baseline)	0	0	0	0	0	11,350	76,760	88,110	88,110
		1A	0	0	0	0	0	11,350	76,760	88,110	88,110
		1B	0	0	0	0	0	11,350	76,760	88,110	88,110
		1C	0	0	0	0	0	11,350	76,760	88,110	88,110
		1D	0	0	0	0	0	11,350	76,760	88,110	88,110
		2	0	0	0	0	0	11,350	76,760	88,110	88,110
	Lake Fifteen Creek	Existing	0	0	0	0	0	7,770	41,080	48,850	48,850
		2020 Future (baseline)	0	0	0	0	0	7,760	40,510	48,270	48,270
		1A	0	0	0	0	0	7,760	40,510	48,270	48,270
		1B	0	0	0	0	0	7,760	40,510	48,270	48,270
		1C	0	0	0	0	0	7,760	40,510	48,270	48,270
		1D	0	0	0	0	0	7,760	40,510	48,270	48,270
		2	0	0	0	0	0	7,760	40,510	48,270	48,270
	Lincoln Creek	Existing	15,210	1,440	720	0	17,370	216,100	1,840	217,940	235,310
		2020 Future (baseline)	15,210	1,280	80	0	16,570	188,380	2,050	190,430	207,000
		1A	15,210	0	0	0	15,210	188,380	2,050	190,430	205,640
		1B	15,210	0	0	0	15,210	188,380	2,050	190,430	205,640
		1C	15,210	0	1,080	0	16,290	188,380	2,050	190,430	206,720
		1D	15,210	0	1,080	0	16,290	188,380	2,050	190,430	206,720
		2	15,210	1,950	10	0	17,170	188,380	2,050	190,430	207,600

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources					Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Biochemical Oxygen Demand (pounds) (continued)	Lower Cedar Creek	Existing	20	40	0	20,080	20,140	85,590	185,110	270,700	290,840
		2020 Future (baseline)	20	40	0	26,160	26,220	88,370	176,580	264,950	291,170
		1A	20	0	0	26,160	26,180	88,370	176,580	264,950	291,130
		1B	20	0	0	26,160	26,180	88,370	176,580	264,950	291,130
		1C	20	0	0	26,160	26,180	88,370	176,580	264,950	291,130
		1D	20	0	0	26,160	26,180	88,370	176,580	264,950	291,130
		2	20	40	0	26,160	26,220	88,370	176,580	264,950	291,170
	Lower Milwaukee River	Existing	259,990	3,830	22,550	0	286,370	388,570	234,560	623,130	909,500
		2020 Future (baseline)	259,990	6,080	16,640	0	282,710	354,170	178,680	532,850	815,560
		1A	259,990	0	0	0	259,990	364,770	178,680	543,450	803,440
		1B	259,990	0	0	0	259,990	354,170	178,680	532,850	792,840
		1C	259,990	0	20,260	0	280,250	354,170	178,680	532,850	813,100
		1D	259,990	0	20,260	0	280,250	354,170	178,680	532,850	813,100
		2	259,990	7,400	13,820	0	281,210	354,170	178,680	532,850	814,060
	Middle Milwaukee River	Existing	20	0	0	296,770	296,790	108,290	220,120	328,410	625,200
		2020 Future (baseline)	20	0	0	390,710	390,730	116,790	200,880	317,670	708,400
		1A	20	0	0	390,710	390,730	116,790	200,880	317,670	708,400
		1B	20	0	0	390,710	390,730	116,790	200,880	317,670	708,400
		1C	20	0	0	390,710	390,730	116,790	200,880	317,670	708,400
		1D	20	0	0	390,710	390,730	116,790	200,880	317,670	708,400
		2	20	0	0	390,710	390,730	116,790	200,880	317,670	708,400
	Mink Creek	Existing	0	0	0	0	0	10,490	56,310	66,800	66,800
		2020 Future (baseline)	0	0	0	0	0	10,460	54,640	65,100	65,100
		1A	0	0	0	0	0	10,460	54,640	65,100	65,100
		1B	0	0	0	0	0	10,460	54,640	65,100	65,100
		1C	0	0	0	0	0	10,460	54,640	65,100	65,100
		1D	0	0	0	0	0	10,460	54,640	65,100	65,100
		2	0	0	0	0	0	10,460	54,640	65,100	65,100
	North Branch Milwaukee River	Existing	7,020	20	0	6,080	13,120	50,380	267,240	317,620	330,740
		2020 Future (baseline)	7,020	20	0	6,700	13,740	50,410	256,550	306,960	320,700
		1A	7,020	0	0	6,700	13,720	50,410	256,550	306,960	320,680
		1B	7,020	0	0	6,700	13,720	50,410	256,550	306,960	320,680
		1C	7,020	0	0	6,700	13,720	50,410	256,550	306,960	320,680
		1D	7,020	0	0	6,700	13,720	50,410	256,550	306,960	320,680
		2	7,020	20	0	6,700	13,740	50,410	256,550	306,960	320,700
	Silver Creek (Sheboygan County)	Existing	4,330	0	0	2,990	7,320	26,810	63,180	89,990	97,310
		2020 Future (baseline)	4,330	0	0	3,560	7,890	30,340	60,620	90,960	98,850
		1A	4,330	0	0	3,560	7,890	30,340	60,620	90,960	98,850
		1B	4,330	0	0	3,560	7,890	30,340	60,620	90,960	98,850
		1C	4,330	0	0	3,560	7,890	30,340	60,620	90,960	98,850
		1D	4,330	0	0	3,560	7,890	30,340	60,620	90,960	98,850
		2	4,330	0	0	3,560	7,890	30,340	60,620	90,960	98,850
	Silver Creek (West Bend)	Existing	0	0	0	0	0	36,060	23,710	59,770	59,770
		2020 Future (baseline)	0	0	0	0	0	40,570	21,980	62,550	62,550
		1A	0	0	0	0	0	40,570	21,990	62,560	62,560
		1B	0	0	0	0	0	40,570	21,990	62,560	62,560
		1C	0	0	0	0	0	40,570	21,990	62,560	62,560
		1D	0	0	0	0	0	40,570	21,990	62,560	62,560
		2	0	0	0	0	0	40,570	21,990	62,560	62,560

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources					Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Biochemical Oxygen Demand (pounds) (continued)	Stony Creek	Existing	0	0	0	0	0	10,240	51,490	61,730	61,730
		2020 Future (baseline)	0	0	0	0	0	10,220	50,450	60,670	60,670
		1A	0	0	0	0	0	10,220	50,450	60,670	60,670
		1B	0	0	0	0	0	10,220	50,450	60,670	60,670
		1C	0	0	0	0	0	10,220	50,450	60,670	60,670
		1D	0	0	0	0	0	10,220	50,450	60,670	60,670
		2	0	0	0	0	0	10,220	50,450	60,670	60,670
	Upper Lower Milwaukee River	Existing	2,770	210	0	52,690	55,670	103,450	199,780	303,230	358,900
		2020 Future (baseline)	2,770	210	0	68,820	71,800	113,970	183,390	297,360	369,160
		1A	2,770	0	0	68,820	71,590	113,970	183,390	297,360	368,950
		1B	2,770	0	0	68,820	71,590	113,970	183,390	297,360	368,950
		1C	2,770	0	0	68,820	71,590	113,970	183,390	297,360	368,950
		1D	2,770	0	0	68,820	71,590	113,970	183,390	297,360	368,950
		2	2,770	210	0	68,820	71,800	113,970	183,390	297,360	369,160
	Upper Milwaukee River	Existing	1,030	0	0	10,830	11,860	44,460	373,160	417,620	429,480
		2020 Future (baseline)	1,030	0	0	14,490	15,520	47,010	356,330	403,340	418,860
		1A	1,030	0	0	14,490	15,520	47,010	356,330	403,340	418,860
		1B	1,030	0	0	14,490	15,520	47,010	356,330	403,340	418,860
		1C	1,030	0	0	14,490	15,520	47,010	356,330	403,340	418,860
		1D	1,030	0	0	14,490	15,520	47,010	356,330	403,340	418,860
		2	1,030	0	0	14,490	15,520	47,010	356,330	403,340	418,860
	Watercress Creek	Existing	0	0	0	0	0	10,130	86,840	96,970	96,970
		2020 Future (baseline)	0	0	0	0	0	10,130	83,890	94,020	94,020
		1A	0	0	0	0	0	10,130	83,890	94,020	94,020
		1B	0	0	0	0	0	10,130	83,890	94,020	94,020
		1C	0	0	0	0	0	10,130	83,890	94,020	94,020
		1D	0	0	0	0	0	10,130	83,890	94,020	94,020
		2	0	0	0	0	0	10,130	83,890	94,020	94,020
	West Branch Milwaukee River	Existing	0	0	0	0	0	42,450	373,130	415,580	415,580
		2020 Future (baseline)	0	0	0	0	0	42,090	358,050	400,140	400,140
		1A	0	0	0	0	0	42,090	358,050	400,140	400,140
		1B	0	0	0	0	0	42,090	358,050	400,140	400,140
		1C	0	0	0	0	0	42,090	358,050	400,140	400,140
		1D	0	0	0	0	0	42,090	358,050	400,140	400,140
		2	0	0	0	0	0	42,090	358,050	400,140	400,140
	Watershed Total	Existing	290,450	5,540	23,270	399,810	719,070	1,303,560	3,210,530	4,514,090	5,233,160
		2020 Future (baseline)	290,450	7,630	16,720	524,520	839,320	1,282,030	3,016,290	4,298,320	5,137,640
		1A	290,450	0	0	524,520	814,970	1,292,700	3,016,290	4,308,990	5,123,960
		1B	290,450	0	0	524,520	814,970	1,282,030	3,016,290	4,298,320	5,113,290
		1C	290,450	0	21,340	524,520	836,310	1,282,030	3,016,290	4,298,320	5,134,630
		1D	290,450	0	21,340	524,520	836,310	1,282,030	3,016,290	4,298,320	5,134,630
		2	290,450	9,620	13,830	524,520	838,420	1,282,030	3,016,290	4,298,320	5,136,740
Copper (pounds)	Batavia Creek	Existing	0	0	0	0	0	7	11	18	18
		2020 Future (baseline)	0	0	0	0	0	7	11	18	18
		1A	0	0	0	0	0	7	11	18	18
		1B	0	0	0	0	0	7	11	18	18
		1C	0	0	0	0	0	7	11	18	18
		1D	0	0	0	0	0	7	11	18	18
		2	0	0	0	0	0	7	11	18	18

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources					Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Copper (pounds) (continued)	Cedar Creek	Existing	0	0	0	46	46	190	187	377	423
		2020 Future (baseline)	0	0	0	63	63	206	189	395	458
		1A	0	0	0	63	63	206	190	396	459
		1B	0	0	0	63	63	206	190	396	459
		1C	0	0	0	63	63	206	190	396	459
		1D	0	0	0	63	63	206	190	396	459
		2	0	0	0	63	63	206	190	396	459
	Cedar Lake	Existing	0	0	0	0	0	23	76	99	99
		2020 Future (baseline)	0	0	0	0	0	22	74	96	96
		1A	0	0	0	0	0	22	74	96	96
		1B	0	0	0	0	0	22	74	96	96
		1C	0	0	0	0	0	22	74	96	96
		1D	0	0	0	0	0	22	74	96	96
		2	0	0	0	0	0	22	74	96	96
	Chambers Creek	Existing	0	0	0	0	0	9	13	22	22
		2020 Future (baseline)	0	0	0	0	0	9	13	22	22
		1A	0	0	0	0	0	9	13	22	22
		1B	0	0	0	0	0	9	13	22	22
		1C	0	0	0	0	0	9	13	22	22
		1D	0	0	0	0	0	9	13	22	22
		2	0	0	0	0	0	9	13	22	22
	East Branch Milwaukee River	Existing	0	0	0	0	0	27	61	88	88
		2020 Future (baseline)	0	0	0	0	0	27	62	89	89
		1A	0	0	0	0	0	27	62	89	89
		1B	0	0	0	0	0	27	62	89	89
		1C	0	0	0	0	0	27	62	89	89
		1D	0	0	0	0	0	27	62	89	89
		2	0	0	0	0	0	27	62	89	89
	Kettle Moraine Lake	Existing	0	0	0	0	0	16	47	63	63
		2020 Future (baseline)	0	0	0	0	0	16	47	63	63
		1A	0	0	0	0	0	16	47	63	63
		1B	0	0	0	0	0	16	47	63	63
		1C	0	0	0	0	0	16	47	63	63
		1D	0	0	0	0	0	16	47	63	63
		2	0	0	0	0	0	16	47	63	63
	Kewaskum Creek	Existing	0	0	0	0	0	20	21	41	41
		2020 Future (baseline)	0	0	0	0	0	20	22	42	42
		1A	0	0	0	0	0	20	21	41	41
		1B	0	0	0	0	0	20	21	41	41
		1C	0	0	0	0	0	20	21	41	41
		1D	0	0	0	0	0	20	21	41	41
		2	0	0	0	0	0	20	21	41	41
	Lake Fifteen Creek	Existing	0	0	0	0	0	14	30	44	44
		2020 Future (baseline)	0	0	0	0	0	14	30	44	44
		1A	0	0	0	0	0	14	30	44	44
		1B	0	0	0	0	0	14	30	44	44
		1C	0	0	0	0	0	14	30	44	44
		1D	0	0	0	0	0	14	30	44	44
		2	0	0	0	0	0	14	30	44	44

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Copper (pounds) (continued)	Lincoln Creek	Existing	0	1	2	0	3	380	1	381	384
		2020 Future (baseline)	0	1	0	0	1	316	1	317	318
		1A	0	0	0	0	0	316	1	317	317
		1B	0	0	0	0	0	316	1	317	317
		1C	0	0	2	0	2	316	1	317	319
		1D	0	0	2	0	2	316	1	317	319
		2	0	1	0	0	1	316	1	317	318
	Lower Cedar Creek	Existing	0	0	0	97	97	146	83	229	326
		2020 Future (baseline)	0	0	0	127	127	150	83	233	360
		1A	0	0	0	127	127	150	83	233	360
		1B	0	0	0	127	127	150	83	233	360
		1C	0	0	0	127	127	150	83	233	360
		1D	0	0	0	127	127	150	83	233	360
		2	0	0	0	127	127	150	83	233	360
	Lower Milwaukee River	Existing	0	2	50	0	52	684	101	785	837
		2020 Future (baseline)	0	4	37	0	41	592	110	702	743
		1A	0	0	0	0	0	653	110	763	763
		1B	0	0	0	0	0	592	110	702	702
		1C	0	0	45	0	45	592	110	702	747
		1D	0	0	45	0	45	592	110	702	747
		2	0	5	30	0	35	592	110	702	737
	Middle Milwaukee River	Existing	0	0	0	307	307	192	119	311	618
		2020 Future (baseline)	0	0	0	405	405	204	130	334	739
		1A	0	0	0	405	405	204	130	334	739
		1B	0	0	0	405	405	204	130	334	739
		1C	0	0	0	405	405	204	130	334	739
		1D	0	0	0	405	405	204	130	334	739
		2	0	0	0	405	405	204	130	334	739
	Mink Creek	Existing	0	0	0	0	0	19	30	49	49
		2020 Future (baseline)	0	0	0	0	0	19	30	49	49
		1A	0	0	0	0	0	19	30	49	49
		1B	0	0	0	0	0	19	30	49	49
		1C	0	0	0	0	0	19	30	49	49
		1D	0	0	0	0	0	19	30	49	49
		2	0	0	0	0	0	19	30	49	49
	North Branch Milwaukee River	Existing	0	0	0	18	18	93	144	237	255
		2020 Future (baseline)	0	0	0	18	18	93	145	238	256
		1A	0	0	0	18	18	93	145	238	256
		1B	0	0	0	18	18	93	145	238	256
		1C	0	0	0	18	18	93	145	238	256
		1D	0	0	0	18	18	93	145	238	256
		2	0	0	0	18	18	93	145	238	256
	Silver Creek (Sheboygan County)	Existing	0	0	0	15	15	49	30	79	94
		2020 Future (baseline)	0	0	0	18	18	55	30	85	103
		1A	0	0	0	18	18	55	30	85	103
		1B	0	0	0	18	18	55	30	85	103
		1C	0	0	0	18	18	55	30	85	103
		1D	0	0	0	18	18	55	30	85	103
		2	0	0	0	18	18	55	30	85	103

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Copper (pounds) (continued)	Silver Creek (West Bend)	Existing	0	0	0	0	0	62	19	81	81
		2020 Future (baseline)	0	0	0	0	0	69	21	90	90
		1A	0	0	0	0	0	69	21	90	90
		1B	0	0	0	0	0	69	21	90	90
		1C	0	0	0	0	0	69	21	90	90
		1D	0	0	0	0	0	69	21	90	90
		2	0	0	0	0	0	69	21	90	90
	Stony Creek	Existing	0	0	0	0	0	18	30	48	48
		2020 Future (baseline)	0	0	0	0	0	18	30	48	48
		1A	0	0	0	0	0	18	30	48	48
		1B	0	0	0	0	0	18	30	48	48
		1C	0	0	0	0	0	18	30	48	48
		1D	0	0	0	0	0	18	30	48	48
		2	0	0	0	0	0	18	30	48	48
	Upper Lower Milwaukee River	Existing	0	0	0	113	113	181	96	277	390
		2020 Future (baseline)	0	0	0	145	145	199	100	299	444
		1A	0	0	0	145	145	199	99	298	443
		1B	0	0	0	145	145	199	99	298	443
		1C	0	0	0	145	145	199	99	298	443
		1D	0	0	0	145	145	199	99	298	443
		2	0	0	0	145	145	199	99	298	443
	Upper Milwaukee River	Existing	0	0	0	38	38	80	99	179	217
		2020 Future (baseline)	0	0	0	49	49	84	100	184	233
		1A	0	0	0	49	49	84	100	184	233
		1B	0	0	0	49	49	84	100	184	233
		1C	0	0	0	49	49	84	100	184	233
		1D	0	0	0	49	49	84	100	184	233
		2	0	0	0	49	49	84	100	184	233
	Watercress Creek	Existing	0	0	0	0	0	18	55	73	73
		2020 Future (baseline)	0	0	0	0	0	18	55	73	73
		1A	0	0	0	0	0	18	55	73	73
		1B	0	0	0	0	0	18	55	73	73
		1C	0	0	0	0	0	18	55	73	73
		1D	0	0	0	0	0	18	55	73	73
		2	0	0	0	0	0	18	55	73	73
	West Branch Milwaukee River	Existing	0	0	0	0	0	77	99	176	176
		2020 Future (baseline)	0	0	0	0	0	76	99	175	175
		1A	0	0	0	0	0	76	99	175	175
		1B	0	0	0	0	0	76	99	175	175
		1C	0	0	0	0	0	76	99	175	175
		1D	0	0	0	0	0	76	99	175	175
		2	0	0	0	0	0	76	99	175	175

Table H-3 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Copper (pounds) (continued)	Watershed Total	Existing	0	3	52	634	689	2,305	1,352	3,657	4,346
		2020 Future (baseline)	0	5	37	825	867	2,214	1,382	3,596	4,463
		1A	0	0	0	825	825	2,275	1,381	3,656	4,481
		1B	0	0	0	825	825	2,214	1,381	3,595	4,420
		1C	0	0	47	825	872	2,214	1,381	3,595	4,467
		1D	0	0	47	825	872	2,214	1,381	3,595	4,467
		2	0	6	30	825	861	2,214	1,381	3,595	4,456

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*Loads presented in this table for the 2020 future (baseline) condition reflect refinements that were made to the MMSD conveyance system model after the screening alternatives were evaluated. This results in certain anomalies in the load comparisons presented herein, particularly regarding SSO loads with Screening Alternative 2.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table H-4

AVERAGE ANNUAL POLLUTANT LOADS FOR SCREENING ALTERNATIVES: OAK CREEK WATERSHED

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources			Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs	Subtotal	Urban	Rural[b]	Subtotal	
Total Phosphorus (pounds)	Lower Oak Creek	Existing	10	10	20	2,200	40	2,240	2,260
		2020 Future (baseline)	10	10	20	1,820	20	1,840	1,860
		1A	10	0	10	1,820	20	1,840	1,850
		1B	10	0	10	1,820	20	1,840	1,850
		1C	10	0	10	1,820	20	1,840	1,850
		1D	10	0	10	1,820	20	1,840	1,850
		2	10	10	20	1,700	20	1,720	1,740
	Middle Oak Creek	Existing	0	0	0	1,310	980	2,290	2,290
		2020 Future (baseline)	0	0	0	1,250	1,030	2,280	2,280
		1A	0	0	0	1,250	1,030	2,280	2,280
		1B	0	0	0	1,250	1,030	2,280	2,280
		1C	0	0	0	1,250	1,030	2,280	2,280
		1D	0	0	0	1,250	1,030	2,280	2,280
		2	0	0	0	1,160	970	2,130	2,130
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	980	410	1,390	1,390
		2020 Future (baseline)	<10	0	<10	980	330	1,310	1,310
		1A	<10	0	<10	980	330	1,310	1,310
		1B	<10	0	<10	980	330	1,310	1,310
		1C	<10	0	<10	980	330	1,310	1,310
		1D	<10	0	<10	980	330	1,310	1,310
		2	<10	0	<10	910	310	1,220	1,220
	North Branch Oak Creek	Existing	0	0	0	2,650	510	3,160	3,160
		2020 Future (baseline)	0	0	0	2,400	500	2,900	2,900
		1A	0	0	0	2,400	500	2,900	2,900
		1B	0	0	0	2,400	500	2,900	2,900
		1C	0	0	0	2,400	500	2,900	2,900
		1D	0	0	0	2,400	500	2,900	2,900
		2	0	0	0	2,230	470	2,700	2,700
	Upper Oak Creek	Existing	0	0	0	1,360	170	1,530	1,530
		2020 Future (baseline)	0	0	0	1,290	100	1,390	1,390
		1A	0	0	0	1,290	100	1,390	1,390
		1B	0	0	0	1,290	100	1,390	1,390
		1C	0	0	0	1,290	100	1,390	1,390
		1D	0	0	0	1,290	100	1,390	1,390
		2	0	0	0	1,200	100	1,300	1,300
	Watershed Total	Existing	10	10	20	8,500	2,110	10,610	10,630
		2020 Future (baseline)	10	10	20	7,740	1,980	9,720	9,740
		1A	10	0	10	7,740	1,980	9,720	9,730
		1B	10	0	10	7,740	1,980	9,720	9,730
		1C	10	0	10	7,740	1,980	9,720	9,730
		1D	10	0	10	7,740	1,980	9,720	9,730
		2	10	10	20	7,200	1,870	9,070	9,090

Table H-4 (continued)

			Point Sources			Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs	Subtotal	Urban	Rural[b]	Subtotal	Total
Total Suspended Solids (pounds)	Lower Oak Creek	Existing	1,930	500	2,430	974,250	23,560	997,810	1,000,240
		2020 Future (baseline)	1,930	500	2,430	691,950	3,890	695,840	698,270
		1A	1,930	0	1,930	691,950	3,890	695,840	697,770
		1B	1,930	0	1,930	691,950	3,890	695,840	697,770
		1C	1,930	0	1,930	691,950	3,890	695,840	697,770
		1D	1,930	0	1,930	691,950	3,890	695,840	697,770
		2	1,930	500	2,430	691,950	3,890	695,840	698,270
	Middle Oak Creek	Existing	0	0	0	685,780	387,670	1,073,450	1,073,450
		2020 Future (baseline)	0	0	0	546,490	101,010	647,500	647,500
		1A	0	0	0	546,490	101,010	647,500	647,500
		1B	0	0	0	546,490	101,010	647,500	647,500
		1C	0	0	0	546,490	101,010	647,500	647,500
		1D	0	0	0	546,490	101,010	647,500	647,500
		2	0	0	0	546,490	100,580	647,070	647,070
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	532,620	108,810	641,430	641,430
		2020 Future (baseline)	<10	0	<10	452,990	28,560	481,550	481,550
		1A	<10	0	<10	452,990	28,560	481,550	481,550
		1B	<10	0	<10	452,990	28,560	481,550	481,550
		1C	<10	0	<10	452,990	28,560	481,550	481,550
		1D	<10	0	<10	452,990	28,560	481,550	481,550
		2	<10	0	<10	452,990	28,300	481,290	481,290
	North Branch Oak Creek	Existing	0	0	0	1,558,560	212,030	1,770,590	1,770,590
		2020 Future (baseline)	0	0	0	1,203,130	47,930	1,251,060	1,251,060
		1A	0	0	0	1,203,130	47,930	1,251,060	1,251,060
		1B	0	0	0	1,203,130	47,930	1,251,060	1,251,060
		1C	0	0	0	1,203,130	47,930	1,251,060	1,251,060
		1D	0	0	0	1,203,130	47,930	1,251,060	1,251,060
		2	0	0	0	1,203,130	47,700	1,250,830	1,250,830
	Upper Oak Creek	Existing	0	0	0	663,060	156,240	819,300	819,300
		2020 Future (baseline)	0	0	0	540,110	9,580	549,690	549,690
		1A	0	0	0	540,110	9,580	549,690	549,690
		1B	0	0	0	540,110	9,580	549,690	549,690
		1C	0	0	0	540,110	9,580	549,690	549,690
		1D	0	0	0	540,110	9,580	549,690	549,690
		2	0	0	0	540,110	9,500	549,610	549,610
	Watershed Total	Existing	1,930	500	2,430	4,414,270	888,310	5,302,580	5,305,010
		2020 Future (baseline)	1,930	500	2,430	3,434,670	190,970	3,625,640	3,628,070
		1A	1,930	0	1,930	3,434,670	190,970	3,625,640	3,627,570
		1B	1,930	0	1,930	3,434,670	190,970	3,625,640	3,627,570
		1C	1,930	0	1,930	3,434,670	190,970	3,625,640	3,627,570
		1D	1,930	0	1,930	3,434,670	190,970	3,625,640	3,627,570
		2	1,930	500	2,430	3,434,670	189,970	3,624,640	3,627,070

Table H-4 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[b]	Nonpoint Source[a]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells)	Lower Oak Creek	Existing	0.00	9.55	9.55	612.67	0.33	613.00	622.55
		2020 Future (baseline)	0.00	9.55	9.55	493.23	0.10	493.33	502.88
		1A	0.00	0.00	0.00	493.23	0.10	493.33	493.33
		1B	0.00	0.00	0.00	493.23	0.10	493.33	493.33
		1C	0.00	0.00	0.00	493.23	0.10	493.33	493.33
		1D	0.00	0.00	0.00	493.23	0.10	493.33	493.33
		2	0.00	9.55	9.55	443.90	0.10	444.00	453.55
	Middle Oak Creek	Existing	0.00	0.00	0.00	394.77	96.09	490.86	490.86
		2020 Future (baseline)	0.00	0.00	0.00	363.63	99.81	463.44	463.44
		1A	0.00	0.00	0.00	363.63	99.81	463.44	463.44
		1B	0.00	0.00	0.00	363.63	99.81	463.44	463.44
		1C	0.00	0.00	0.00	363.63	99.81	463.44	463.44
		1D	0.00	0.00	0.00	363.63	99.81	463.44	463.44
		2	0.00	0.00	0.00	327.26	89.84	417.10	417.10
	Mitchell Field Drainage Ditch	Existing	0.00	0.00	0.00	505.12	36.28	541.40	541.40
		2020 Future (baseline)	0.00	0.00	0.00	548.78	27.74	576.52	576.52
		1A	0.00	0.00	0.00	548.78	27.74	576.52	576.52
		1B	0.00	0.00	0.00	548.78	27.74	576.52	576.52
		1C	0.00	0.00	0.00	548.78	27.74	576.52	576.52
		1D	0.00	0.00	0.00	548.78	27.74	576.52	576.52
		2	0.00	0.00	0.00	493.90	24.98	518.88	518.88
	North Branch Oak Creek	Existing	0.00	0.00	0.00	735.48	39.60	775.08	775.08
		2020 Future (baseline)	0.00	0.00	0.00	656.52	46.20	702.72	702.72
		1A	0.00	0.00	0.00	656.52	46.20	702.72	702.72
		1B	0.00	0.00	0.00	656.52	46.20	702.72	702.72
		1C	0.00	0.00	0.00	656.52	46.20	702.72	702.72
		1D	0.00	0.00	0.00	656.52	46.20	702.72	702.72
		2	0.00	0.00	0.00	590.86	41.59	632.45	632.45
	Upper Oak Creek	Existing	0.00	0.00	0.00	354.83	7.39	362.22	362.22
		2020 Future (baseline)	0.00	0.00	0.00	318.55	5.64	324.19	324.19
		1A	0.00	0.00	0.00	318.55	5.64	324.19	324.19
		1B	0.00	0.00	0.00	318.55	5.64	324.19	324.19
		1C	0.00	0.00	0.00	318.55	5.64	324.19	324.19
		1D	0.00	0.00	0.00	318.55	5.64	324.19	324.19
		2	0.00	0.00	0.00	286.69	5.08	291.77	291.77
	Watershed Total	Existing	0.00	9.55	9.55	2,602.87	179.69	2,782.56	2,792.11
		2020 Future (baseline)	0.00	9.55	9.55	2,380.71	179.49	2,560.20	2,569.75
		1A	0.00	0.00	0.00	2,380.71	179.49	2,560.20	2,560.20
		1B	0.00	0.00	0.00	2,380.71	179.49	2,560.20	2,560.20
		1C	0.00	0.00	0.00	2,380.71	179.49	2,560.20	2,560.20
		1D	0.00	0.00	0.00	2,380.71	179.49	2,560.20	2,560.20
		2	0.00	9.55	9.55	2,142.61	161.59	2,304.20	2,313.75

Table H-4 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources			Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs	Subtotal	Urban	Rural[b]	Subtotal	
Total Nitrogen (pounds)	Lower Oak Creek	Existing	340	20	360	15,280	1,010	16,290	16,650
		2020 Future (baseline)	340	20	360	13,260	370	13,630	13,990
		1A	340	0	340	13,260	370	13,630	13,970
		1B	340	0	340	13,260	370	13,630	13,970
		1C	340	0	340	13,260	370	13,630	13,970
		1D	340	0	340	13,260	370	13,630	13,970
		2	340	20	360	12,850	370	13,220	13,580
	Middle Oak Creek	Existing	0	0	0	9,240	13,810	23,050	23,050
		2020 Future (baseline)	0	0	0	9,000	8,160	17,160	17,160
		1A	0	0	0	9,000	8,160	17,160	17,160
		1B	0	0	0	9,000	8,160	17,160	17,160
		1C	0	0	0	9,000	8,160	17,160	17,160
		1D	0	0	0	9,000	8,160	17,160	17,160
		2	0	0	0	8,700	7,980	16,680	16,680
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	9,360	7,580	16,940	16,940
		2020 Future (baseline)	<10	0	<10	9,190	4,410	13,600	13,600
		1A	<10	0	<10	9,190	4,410	13,600	13,600
		1B	<10	0	<10	9,190	4,410	13,600	13,600
		1C	<10	0	<10	9,190	4,410	13,600	13,600
		1D	<10	0	<10	9,190	4,410	13,600	13,600
		2	<10	0	<10	8,870	4,290	13,160	13,160
	North Branch Oak Creek	Existing	0	0	0	17,590	8,790	26,380	26,380
		2020 Future (baseline)	0	0	0	16,550	4,310	20,860	20,860
		1A	0	0	0	16,550	4,310	20,860	20,860
		1B	0	0	0	16,550	4,310	20,860	20,860
		1C	0	0	0	16,550	4,310	20,860	20,860
		1D	0	0	0	16,550	4,310	20,860	20,860
		2	0	0	0	16,000	4,220	20,220	20,220
	Upper Oak Creek	Existing	0	0	0	9,180	4,910	14,090	14,090
		2020 Future (baseline)	0	0	0	9,080	1,020	10,100	10,100
		1A	0	0	0	9,080	1,020	10,100	10,100
		1B	0	0	0	9,080	1,020	10,100	10,100
		1C	0	0	0	9,080	1,020	10,100	10,100
		1D	0	0	0	9,080	1,020	10,100	10,100
		2	0	0	0	8,780	1,000	9,780	9,780
	Watershed Total	Existing	340	20	360	60,650	36,100	96,750	97,110
		2020 Future (baseline)	340	20	360	57,080	18,270	75,350	75,710
		1A	340	0	340	57,080	18,270	75,350	75,690
		1B	340	0	340	57,080	18,270	75,350	75,690
		1C	340	0	340	57,080	18,270	75,350	75,690
		1D	340	0	340	57,080	18,270	75,350	75,690
		2	340	20	360	55,200	17,860	73,060	73,420

Table H-4 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources			Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs	Subtotal	Urban	Rural[b]	Subtotal	
Biochemical Oxygen Demand (pounds)	Lower Oak Creek	Existing	3,440	120	3,560	56,390	1,970	58,360	61,920
		2020 Future (baseline)	3,440	120	3,560	45,680	1,180	46,860	50,420
		1A	3,440	0	3,440	45,680	1,180	46,860	50,300
		1B	3,440	0	3,440	45,680	1,180	46,860	50,300
		1C	3,440	0	3,440	45,680	1,180	46,860	50,300
		1D	3,440	0	3,440	45,680	1,180	46,860	50,300
		2	3,440	120	3,560	45,680	1,180	46,860	50,420
	Middle Oak Creek	Existing	0	0	0	37,820	26,670	64,490	64,490
		2020 Future (baseline)	0	0	0	36,720	19,170	55,890	55,890
		1A	0	0	0	36,720	19,170	55,890	55,890
		1B	0	0	0	36,720	19,170	55,890	55,890
		1C	0	0	0	36,720	19,170	55,890	55,890
		1D	0	0	0	36,720	19,170	55,890	55,890
		2	0	0	0	36,720	19,140	55,860	55,860
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	28,860	9,150	38,010	38,010
		2020 Future (baseline)	<10	0	<10	32,340	5,180	37,520	37,520
		1A	<10	0	<10	32,340	5,180	37,520	37,520
		1B	<10	0	<10	32,340	5,180	37,520	37,520
		1C	<10	0	<10	32,340	5,180	37,520	37,520
		1D	<10	0	<10	32,340	5,180	37,520	37,520
		2	<10	0	<10	32,340	5,170	37,510	37,510
	North Branch Oak Creek	Existing	0	0	0	79,090	15,680	94,770	94,770
		2020 Future (baseline)	0	0	0	75,750	8,940	84,690	84,690
		1A	0	0	0	75,750	8,940	84,690	84,690
		1B	0	0	0	75,750	8,940	84,690	84,690
		1C	0	0	0	75,750	8,940	84,690	84,690
		1D	0	0	0	75,750	8,940	84,690	84,690
		2	0	0	0	75,750	8,930	84,680	84,680
	Upper Oak Creek	Existing	0	0	0	35,580	7,690	43,270	43,270
		2020 Future (baseline)	0	0	0	38,330	2,210	40,540	40,540
		1A	0	0	0	38,330	2,210	40,540	40,540
		1B	0	0	0	38,330	2,210	40,540	40,540
		1C	0	0	0	38,330	2,210	40,540	40,540
		1D	0	0	0	38,330	2,210	40,540	40,540
		2	0	0	0	38,330	2,210	40,540	40,540
	Watershed Total	Existing	3,440	120	3,560	237,740	61,160	298,900	302,460
		2020 Future (baseline)	3,440	120	3,560	228,820	36,680	265,500	269,060
		1A	3,440	0	3,440	228,820	36,680	265,500	268,940
		1B	3,440	0	3,440	228,820	36,680	265,500	268,940
		1C	3,440	0	3,440	228,820	36,680	265,500	268,940
		1D	3,440	0	3,440	228,820	36,680	265,500	268,940
		2	3,440	120	3,560	228,820	36,630	265,450	269,010

Table H-4 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources			Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs	Subtotal	Urban	Rural[b]	Subtotal	
Copper (pounds)	Lower Oak Creek	Existing	0	<1	<1	105	<1	105	105
		2020 Future (baseline)	0	<1	<1	80	<1	80	80
		1A	0	0	0	80	<1	80	80
		1B	0	0	0	80	<1	80	80
		1C	0	0	0	80	<1	80	80
		1D	0	0	0	80	<1	80	80
		2	0	<1	<1	80	<1	80	80
	Middle Oak Creek	Existing	0	0	0	70	25	95	95
		2020 Future (baseline)	0	0	0	63	24	87	87
		1A	0	0	0	63	24	87	87
		1B	0	0	0	63	24	87	87
		1C	0	0	0	63	24	87	87
		1D	0	0	0	63	24	87	87
		2	0	0	0	63	24	87	87
	Mitchell Field Drainage Ditch	Existing	0	0	0	56	11	67	67
		2020 Future (baseline)	0	0	0	54	7	61	61
		1A	0	0	0	54	7	61	61
		1B	0	0	0	54	7	61	61
		1C	0	0	0	54	7	61	61
		1D	0	0	0	54	7	61	61
		2	0	0	0	54	7	61	61
	North Branch Oak Creek	Existing	0	0	0	148	13	161	161
		2020 Future (baseline)	0	0	0	128	11	139	139
		1A	0	0	0	128	11	139	139
		1B	0	0	0	128	11	139	139
		1C	0	0	0	128	11	139	139
		1D	0	0	0	128	11	139	139
		2	0	0	0	128	11	139	139
	Upper Oak Creek	Existing	0	0	0	66	3	69	69
		2020 Future (baseline)	0	0	0	63	2	65	65
		1A	0	0	0	63	2	65	65
		1B	0	0	0	63	2	65	65
		1C	0	0	0	63	2	65	65
		1D	0	0	0	63	2	65	65
		2	0	0	0	63	2	65	65
	Watershed Total	Existing	0	<1	<1	445	52	497	497
		2020 Future (baseline)	0	<1	<1	388	44	432	432
		1A	0	0	0	388	44	432	432
		1B	0	0	0	388	44	432	432
		1C	0	0	0	388	44	432	432
		1D	0	0	0	388	44	432	432
		2	0	<1	<1	388	44	432	432

[a] *Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b] *For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table H-5

AVERAGE ANNUAL POLLUTANT LOADS FOR SCREENING ALTERNATIVES: ROOT RIVER WATERSHED

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Total Phosphorus (pounds)	Lower Root River	Existing	130	10	0	140	8,750	14,670	23,420	23,560
		2020 Future (baseline)	130	10	0	140	7,730	11,700	19,430	19,570
		1A	130	0	0	140	7,730	11,700	19,430	19,570
		1B	130	0	0	130	7,730	11,700	19,430	19,560
		1C	130	0	0	140	7,730	11,700	19,430	19,570
		1D	130	0	0	140	7,730	11,700	19,430	19,570
		2	130	10	0	140	7,180	10,920	18,100	18,240
	Middle Root River	Existing	0	0	0	0	3,780	5,130	8,910	8,910
		2020 Future (baseline)	0	0	0	0	3,670	4,410	8,080	8,080
		1A	0	0	0	0	3,670	4,410	8,080	8,080
		1B	0	0	0	0	3,670	4,410	8,080	8,080
		1C	0	0	0	0	3,670	4,410	8,080	8,080
		1D	0	0	0	0	3,670	4,410	8,080	8,080
		2	0	0	0	0	3,410	4,130	7,540	7,540
	Upper Root River	Existing	0	<10	0	<10	6,000	170	6,170	6,170
		2020 Future (baseline)	0	10	0	10	4,470	120	4,590	4,600
		1A	0	0	0	0	4,470	120	4,590	4,590
		1B	0	0	0	0	4,470	120	4,590	4,590
		1C	0	0	0	0	4,470	120	4,590	4,590
		1D	0	0	0	0	4,470	120	4,590	4,590
		2	0	20	0	20	4,160	120	4,280	4,300
	Hoods Creek	Existing	0	0	940	940	1,020	5,610	6,630	7,570
		2020 Future (baseline)	0	0	1,350	1,350	990	4,420	5,410	6,760
		1A	0	0	1,350	1,350	990	4,420	5,410	6,760
		1B	0	0	1,350	1,350	990	4,420	5,410	6,760
		1C	0	0	1,350	1,350	990	4,420	5,410	6,760
		1D	0	0	1,350	1,350	990	4,420	5,410	6,760
		2	0	0	1,350	1,350	920	4,120	5,040	6,390
	Root River Canal	Existing	0	0	0	0	180	4,720	4,900	4,900
		2020 Future (baseline)	0	0	0	0	170	4,260	4,430	4,430
		1A	0	0	0	0	170	4,260	4,430	4,430
		1B	0	0	0	0	170	4,260	4,430	4,430
		1C	0	0	0	0	170	4,260	4,430	4,430
		1D	0	0	0	0	170	4,260	4,430	4,430
		2	0	0	0	0	160	3,940	4,100	4,100
	East Branch Root River Canal	Existing	0	0	220	220	430	6,880	7,310	7,530
		2020 Future (baseline)	0	0	220	220	500	6,010	6,510	6,730
		1A	0	0	220	220	500	6,010	6,510	6,730
		1B	0	0	220	220	500	6,010	6,510	6,730
		1C	0	0	220	220	500	6,010	6,510	6,730
		1D	0	0	220	220	500	6,010	6,510	6,730
		2	0	0	220	220	440	5,560	6,000	6,220

Table H-5 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Total Phosphorus (pounds) (continued)	West Branch Root River Canal	Existing	<10	0	1,990	1,990	1,040	15,890	16,930	18,920
		2020 Future (baseline)	<10	0	2,620	2,620	1,050	13,940	14,990	17,610
		1A	<10	0	2,620	2,620	1,050	13,940	14,990	17,610
		1B	<10	0	2,620	2,620	1,050	13,940	14,990	17,610
		1C	<10	0	2,620	2,620	1,050	13,940	14,990	17,610
		1D	<10	0	2,620	2,620	1,050	13,940	14,990	17,610
		2	<10	0	2,620	2,620	960	12,960	13,920	16,540
	East Branch Root River	Existing	0	0	0	0	1,660	180	1,840	1,840
		2020 Future (baseline)	0	10	0	10	1,470	50	1,520	1,530
		1A	0	0	0	0	1,470	50	1,520	1,520
		1B	0	0	0	0	1,470	50	1,520	1,520
		1C	0	0	0	0	1,470	50	1,520	1,520
		1D	0	0	0	0	1,470	50	1,520	1,520
		2	0	30	0	30	1,370	50	1,420	1,450
	Whitnall Park Creek	Existing	0	<10	0	<10	3,650	1,010	4,660	4,660
		2020 Future (baseline)	0	<10	0	<10	3,000	720	3,720	3,720
		1A	0	0	0	0	3,000	720	3,720	3,720
		1B	0	0	0	0	3,000	720	3,720	3,720
		1C	0	0	0	0	3,000	720	3,720	3,720
		1D	0	0	0	0	3,000	720	3,720	3,720
		2	0	<10	0	<10	2,790	680	3,470	3,470
	Watershed Total	Existing	130	10	3,150	3,290	26,510	54,260	80,770	84,060
		2020 Future (baseline)	130	30	4,190	4,350	23,050	45,630	68,680	73,030
		1A	130	0	4,190	4,320	23,050	45,630	68,680	73,000
		1B	130	0	4,190	4,320	23,050	45,630	68,680	73,000
		1C	130	0	4,190	4,320	23,050	45,630	68,680	73,000
		1D	130	0	4,190	4,320	23,050	45,630	68,680	73,000
		2	130	60	4,190	4,380	21,390	42,480	63,870	68,250
Total Suspended Solids (pounds)	Lower Root River	Existing	480	710	0	1,190	2,781,990	18,169,680	20,951,670	20,952,860
		2020 Future (baseline)	480	710	0	1,190	2,084,320	11,913,280	13,997,600	13,998,790
		1A	480	0	0	480	2,084,320	11,913,280	13,997,600	13,998,080
		1B	480	0	0	480	2,084,320	11,913,280	13,997,600	13,998,080
		1C	480	0	0	480	2,084,320	11,913,280	13,997,600	13,998,080
		1D	480	0	0	480	2,084,320	11,913,280	13,997,600	13,998,080
		2	480	710	0	1,190	2,069,730	10,770,520	12,840,250	12,841,440
	Middle Root River	Existing	0	0	0	0	1,290,740	5,439,900	6,730,640	6,730,640
		2020 Future (baseline)	0	0	0	0	1,093,100	2,217,110	3,310,210	3,310,210
		1A	0	0	0	0	1,093,100	2,217,110	3,310,210	3,310,210
		1B	0	0	0	0	1,093,100	2,217,110	3,310,210	3,310,210
		1C	0	0	0	0	1,093,100	2,217,110	3,310,210	3,310,210
		1D	0	0	0	0	1,093,100	2,217,110	3,310,210	3,310,210
		2	0	0	0	0	1,087,730	2,017,560	3,105,290	3,105,290
	Upper Root River	Existing	0	80	0	80	1,918,200	18,970	1,937,170	1,937,250
		2020 Future (baseline)	0	380	0	380	1,304,810	7,980	1,312,790	1,313,170
		1A	0	0	0	0	1,304,810	7,980	1,312,790	1,312,790
		1B	0	0	0	0	1,304,810	7,980	1,312,790	1,312,790
		1C	0	0	0	0	1,304,810	7,980	1,312,790	1,312,790
		1D	0	0	0	0	1,304,810	7,980	1,312,790	1,312,790
		2	0	860	0	860	1,304,790	7,980	1,312,770	1,313,630

Table H-5 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Total Suspended Solids (pounds) (continued)	Hoods Creek	Existing	0	0	1,060	1,060	536,060	7,409,050	7,945,110	7,946,170
		2020 Future (baseline)	0	0	1,520	1,520	395,060	4,980,580	5,375,640	5,377,160
		1A	0	0	1,520	1,520	395,060	4,980,580	5,375,640	5,377,160
		1B	0	0	1,520	1,520	395,060	4,980,580	5,375,640	5,377,160
		1C	0	0	1,520	1,520	395,060	4,980,580	5,375,640	5,377,160
		1D	0	0	1,520	1,520	395,060	4,980,580	5,375,640	5,377,160
		2	0	0	1,520	1,520	395,060	4,499,690	4,894,750	4,896,270
	Root River Canal	Existing	0	0	0	0	114,030	7,048,210	7,162,240	7,162,240
		2020 Future (baseline)	0	0	0	0	105,930	6,051,940	6,157,870	6,157,870
		1A	0	0	0	0	105,930	6,051,940	6,157,870	6,157,870
		1B	0	0	0	0	105,930	6,051,940	6,157,870	6,157,870
		1C	0	0	0	0	105,930	6,051,940	6,157,870	6,157,870
		1D	0	0	0	0	105,930	6,051,940	6,157,870	6,157,870
		2	0	0	0	0	98,260	5,455,510	5,553,770	5,553,770
	East Branch Root River Canal	Existing	0	0	450	450	271,250	10,618,210	10,889,460	10,889,910
		2020 Future (baseline)	0	0	450	450	296,030	9,004,670	9,300,700	9,301,150
		1A	0	0	450	450	296,030	9,004,670	9,300,700	9,301,150
		1B	0	0	450	450	296,030	9,004,670	9,300,700	9,301,150
		1C	0	0	450	450	296,030	9,004,670	9,300,700	9,301,150
		1D	0	0	450	450	296,030	9,004,670	9,300,700	9,301,150
		2	0	0	450	450	274,700	8,114,680	8,389,380	8,389,830
	West Branch Root River Canal	Existing	0	0	8,890	8,890	468,430	25,202,610	25,671,040	25,679,930
		2020 Future (baseline)	0	0	11,730	11,730	415,390	21,557,740	21,973,130	21,984,860
		1A	0	0	11,730	11,730	415,390	21,557,740	21,973,130	21,984,860
		1B	0	0	11,730	11,730	415,390	21,557,740	21,973,130	21,984,860
		1C	0	0	11,730	11,730	415,390	21,557,740	21,973,130	21,984,860
		1D	0	0	11,730	11,730	415,390	21,557,740	21,973,130	21,984,860
		2	0	0	11,730	11,730	400,200	19,435,120	19,835,320	19,847,050
	East Branch Root River	Existing	0	0	0	0	494,130	229,360	723,490	723,490
		2020 Future (baseline)	0	340	0	340	375,600	4,080	379,680	380,020
		1A	0	0	0	0	375,600	4,080	379,680	379,680
		1B	0	0	0	0	375,600	4,080	379,680	379,680
		1C	0	0	0	0	375,600	4,080	379,680	379,680
		1D	0	0	0	0	375,600	4,080	379,680	379,680
		2	0	1,640	0	1,640	375,590	4,080	379,670	381,310
	Whitnall Park Creek	Existing	0	240	0	240	1,112,640	636,060	1,748,700	1,748,940
		2020 Future (baseline)	0	240	0	240	801,550	65,210	866,760	867,000
		1A	0	0	0	0	801,550	65,210	866,760	866,760
		1B	0	0	0	0	801,550	65,210	866,760	866,760
		1C	0	0	0	0	801,550	65,210	866,760	866,760
		1D	0	0	0	0	801,550	65,210	866,760	866,760
		2	0	240	0	240	801,540	65,210	866,750	866,990
	Watershed Total	Existing	480	1,030	10,400	11,910	8,987,470	74,772,050	83,759,520	83,771,430
		2020 Future (baseline)	480	1,670	13,700	15,850	6,871,790	55,802,590	62,674,380	62,690,230
		1A	480	0	13,700	14,180	6,871,790	55,802,590	62,674,380	62,688,560
		1B	480	0	13,700	14,180	6,871,790	55,802,590	62,674,380	62,688,560
		1C	480	0	13,700	14,180	6,871,790	55,802,590	62,674,380	62,688,560
		1D	480	0	13,700	14,180	6,871,790	55,802,590	62,674,380	62,688,560
		2	480	3,450	13,700	17,630	6,807,600	50,370,350	57,177,950	57,195,580

Table H-5 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Fecal Coliform Bacteria (trillions of cells)	Lower Root River	Existing	0.00	13.58	0.00	13.58	2,641.12	853.13	3,494.25	3,507.83
		2020 Future (baseline)	0.00	13.58	0.00	13.58	2,156.05	735.14	2,891.19	2,904.77
		1A	0.00	0.00	0.00	0.00	2,156.05	735.14	2,891.19	2,891.19
		1B	0.00	0.00	0.00	0.00	2,156.05	735.14	2,891.19	2,891.19
		1C	0.00	0.00	0.00	0.00	2,156.05	735.14	2,891.19	2,891.19
		1D	0.00	0.00	0.00	0.00	2,156.05	735.14	2,891.19	2,891.19
		2	0.00	13.58	0.00	13.58	1,932.99	618.84	2,551.83	2,565.41
	Middle Root River	Existing	0.00	0.00	0.00	0.00	1,323.10	317.14	1,640.24	1,640.24
		2020 Future (baseline)	0.00	0.00	0.00	0.00	1,266.52	336.20	1,602.72	1,602.72
		1A	0.00	0.00	0.00	0.00	1,266.52	336.20	1,602.72	1,602.72
		1B	0.00	0.00	0.00	0.00	1,266.52	336.20	1,602.72	1,602.72
		1C	0.00	0.00	0.00	0.00	1,266.52	336.20	1,602.72	1,602.72
		1D	0.00	0.00	0.00	0.00	1,266.52	336.20	1,602.72	1,602.72
		2	0.00	0.00	0.00	0.00	1,137.49	294.20	1,431.69	1,431.69
	Upper Root River	Existing	0.00	1.55	0.00	1.55	2,202.96	0.75	2,203.71	2,205.26
		2020 Future (baseline)	0.00	7.24	0.00	7.24	1,664.81	0.28	1,665.09	1,672.33
		1A	0.00	0.00	0.00	0.00	1,664.81	0.28	1,665.09	1,665.09
		1B	0.00	0.00	0.00	0.00	1,664.81	0.28	1,665.09	1,665.09
		1C	0.00	0.00	0.00	0.00	1,664.81	0.28	1,665.09	1,665.09
		1D	0.00	0.00	0.00	0.00	1,664.81	0.28	1,665.09	1,665.09
		2	0.00	16.46	0.00	16.46	1,498.33	0.28	1,498.61	1,515.07
	Hoods Creek	Existing	0.00	0.00	0.30	0.30	418.83	276.59	695.42	695.72
		2020 Future (baseline)	0.00	0.00	0.43	0.43	361.82	243.26	605.08	605.51
		1A	0.00	0.00	0.43	0.43	361.82	243.26	605.08	605.51
		1B	0.00	0.00	0.43	0.43	361.82	243.26	605.08	605.51
		1C	0.00	0.00	0.43	0.43	361.82	243.26	605.08	605.51
		1D	0.00	0.00	0.43	0.43	361.82	243.26	605.08	605.51
		2	0.00	0.00	0.43	0.43	325.64	206.22	531.86	532.29
	Root River Canal	Existing	0.00	0.00	0.00	0.00	96.48	180.79	277.27	277.27
		2020 Future (baseline)	0.00	0.00	0.00	0.00	91.50	181.29	272.79	272.79
		1A	0.00	0.00	0.00	0.00	91.50	181.29	272.79	272.79
		1B	0.00	0.00	0.00	0.00	91.50	181.29	272.79	272.79
		1C	0.00	0.00	0.00	0.00	91.50	181.29	272.79	272.79
		1D	0.00	0.00	0.00	0.00	91.50	181.29	272.79	272.79
		2	0.00	0.00	0.00	0.00	77.80	139.33	217.13	217.13
	East Branch Root River Canal	Existing	0.00	0.00	0.14	0.14	215.12	251.23	466.35	466.49
		2020 Future (baseline)	0.00	0.00	0.14	0.14	228.91	237.03	465.94	466.08
		1A	0.00	0.00	0.14	0.14	228.91	237.03	465.94	466.08
		1B	0.00	0.00	0.14	0.14	228.91	237.03	465.94	466.08
		1C	0.00	0.00	0.14	0.14	228.91	237.03	465.94	466.08
		1D	0.00	0.00	0.14	0.14	228.91	237.03	465.94	466.08
		2	0.00	0.00	0.14	0.14	194.86	178.65	373.51	373.65
	West Branch Root River Canal	Existing	0.00	0.00	2.85	2.85	451.94	560.80	1,012.74	1,015.59
		2020 Future (baseline)	0.00	0.00	3.76	3.76	423.71	529.13	952.84	956.60
		1A	0.00	0.00	3.76	3.76	423.71	529.13	952.84	956.60
		1B	0.00	0.00	3.76	3.76	423.71	529.13	952.84	956.60
		1C	0.00	0.00	3.76	3.76	423.71	529.13	952.84	956.60
		1D	0.00	0.00	3.76	3.76	423.71	529.13	952.84	956.60
		2	0.00	0.00	3.76	3.76	371.22	405.76	776.98	780.74

Table H-5 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			Industrial Point Sources	SSOs[b]	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Fecal Coliform Bacteria (trillions of cells) (continued)	East Branch Root River	Existing	0.00	0.00	0.00	0.00	554.63	2.49	557.12	557.12
		2020 Future (baseline)	0.00	6.54	0.00	6.54	484.35	0.13	484.48	491.02
		1A	0.00	0.00	0.00	0.00	484.35	0.13	484.48	484.48
		1B	0.00	0.00	0.00	0.00	484.35	0.13	484.48	484.48
		1C	0.00	0.00	0.00	0.00	484.35	0.13	484.48	484.48
		1D	0.00	0.00	0.00	0.00	484.35	0.13	484.48	484.48
		2	0.00	31.36	0.00	31.36	435.91	0.13	436.04	467.40
	Whitnall Park Creek	Existing	0.00	4.52	0.00	4.52	1,309.52	100.59	1,410.11	1,414.63
		2020 Future (baseline)	0.00	4.52	0.00	4.52	1,066.05	92.55	1,158.60	1,163.12
		1A	0.00	0.00	0.00	0.00	1,066.05	92.55	1,158.60	1,158.60
		1B	0.00	0.00	0.00	0.00	1,066.05	92.55	1,158.60	1,158.60
		1C	0.00	0.00	0.00	0.00	1,066.05	92.55	1,158.60	1,158.60
		1D	0.00	0.00	0.00	0.00	1,066.05	92.55	1,158.60	1,158.60
		2	0.00	4.52	0.00	4.52	959.45	83.33	1,042.78	1,047.30
	Watershed Total	Existing	0.00	19.65	3.29	22.94	9,213.70	2,543.51	11,757.21	11,780.15
		2020 Future (baseline)	0.00	31.88	4.33	36.21	7,743.72	2,355.01	10,098.73	10,134.94
		1A	0.00	0.00	4.33	4.33	7,743.72	2,355.01	10,098.73	10,103.06
		1B	0.00	0.00	4.33	4.33	7,743.72	2,355.01	10,098.73	10,103.06
		1C	0.00	0.00	4.33	4.33	7,743.72	2,355.01	10,098.73	10,103.06
		1D	0.00	0.00	4.33	4.33	7,743.72	2,355.01	10,098.73	10,103.06
		2	0.00	65.92	4.33	70.25	6,933.69	1,926.74	8,860.43	8,930.68
Total Nitrogen (pounds)	Lower Root River	Existing	540	30	0	570	48,810	232,290	281,100	281,670
		2020 Future (baseline)	540	30	0	570	44,820	170,470	215,290	215,860
		1A	540	0	0	540	44,820	170,470	215,290	215,830
		1B	540	0	0	540	44,820	170,470	215,290	215,830
		1C	540	0	0	540	44,820	170,470	215,290	215,830
		1D	540	0	0	540	44,820	170,470	215,290	215,830
		2	540	30	0	570	43,180	166,420	209,600	210,170
	Middle Root River	Existing	0	0	0	0	24,170	76,660	100,830	100,830
		2020 Future (baseline)	0	0	0	0	24,470	43,480	67,950	67,950
		1A	0	0	0	0	24,470	43,480	67,950	67,950
		1B	0	0	0	0	24,470	43,480	67,950	67,950
		1C	0	0	0	0	24,470	43,480	67,950	67,950
		1D	0	0	0	0	24,470	43,480	67,950	67,950
		2	0	0	0	0	23,660	42,390	66,050	66,050
	Upper Root River	Existing	0	<10	0	<10	38,610	1,220	39,830	39,830
		2020 Future (baseline)	0	10	0	10	30,000	770	30,770	30,780
		1A	0	0	0	0	30,000	770	30,770	30,770
		1B	0	0	0	0	30,000	770	30,770	30,770
		1C	0	0	0	0	30,000	770	30,770	30,770
		1D	0	0	0	0	30,000	770	30,770	30,770
		2	0	30	0	30	29,050	770	29,820	29,850
	Hoods Creek	Existing	0	0	3,980	3,980	6,060	97,320	103,380	107,360
		2020 Future (baseline)	0	0	5,690	5,690	5,940	72,550	78,490	84,180
		1A	0	0	5,690	5,690	5,940	72,550	78,490	84,180
		1B	0	0	5,690	5,690	5,940	72,550	78,490	84,180
		1C	0	0	5,690	5,690	5,940	72,550	78,490	84,180
		1D	0	0	5,690	5,690	5,940	72,550	78,490	84,180
		2	0	0	5,690	5,690	5,710	70,930	76,640	82,330

Table H-5 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Nitrogen (pounds) (continued)	Root River Canal	Existing	0	0	0	0	1,180	89,940	91,120	91,120
		2020 Future (baseline)	0	0	0	0	1,150	80,550	81,700	81,700
		1A	0	0	0	0	1,150	80,550	81,700	81,700
		1B	0	0	0	0	1,150	80,550	81,700	81,700
		1C	0	0	0	0	1,150	80,550	81,700	81,700
		1D	0	0	0	0	1,150	80,550	81,700	81,700
		2	0	0	0	0	1,070	78,580	79,650	79,650
	East Branch Root River Canal	Existing	0	0	1,820	1,820	2,600	132,080	134,680	136,500
		2020 Future (baseline)	0	0	1,820	1,820	2,960	116,320	119,280	121,100
		1A	0	0	1,820	1,820	2,960	116,320	119,280	121,100
		1B	0	0	1,820	1,820	2,960	116,320	119,280	121,100
		1C	0	0	1,820	1,820	2,960	116,320	119,280	121,100
		1D	0	0	1,820	1,820	2,960	116,320	119,280	121,100
		2	0	0	1,820	1,820	2,760	113,410	116,170	117,990
	West Branch Root River Canal	Existing	<10	0	20,720	20,720	6,720	305,720	312,440	333,160
		2020 Future (baseline)	<10	0	27,340	27,340	6,800	271,210	278,010	305,350
		1A	<10	0	27,340	27,340	6,800	271,210	278,010	305,350
		1B	<10	0	27,340	27,340	6,800	271,210	278,010	305,350
		1C	<10	0	27,340	27,340	6,800	271,210	278,010	305,350
		1D	<10	0	27,340	27,340	6,800	271,210	278,010	305,350
		2	<10	0	27,340	27,340	6,460	264,650	271,110	298,450
	East Branch Root River	Existing	0	0	0	0	10,570	4,030	14,600	14,600
		2020 Future (baseline)	0	10	0	10	9,900	400	10,300	10,310
		1A	0	0	0	0	9,900	400	10,300	10,300
		1B	0	0	0	0	9,900	400	10,300	10,300
		1C	0	0	0	0	9,900	400	10,300	10,300
		1D	0	0	0	0	9,900	400	10,300	10,300
		2	0	60	0	60	9,600	400	10,000	10,060
	Whitnall Park Creek	Existing	0	10	0	10	23,440	14,650	38,090	38,100
		2020 Future (baseline)	0	10	0	10	20,030	5,010	25,040	25,050
		1A	0	0	0	0	20,030	5,010	25,040	25,040
		1B	0	0	0	0	20,030	5,010	25,040	25,040
		1C	0	0	0	0	20,030	5,010	25,040	25,040
		1D	0	0	0	0	20,030	5,010	25,040	25,040
		2	0	10	0	10	19,410	4,920	24,330	24,340
	Watershed Total	Existing	540	40	26,520	27,100	162,160	953,910	1,116,070	1,143,170
		2020 Future (baseline)	540	60	34,850	35,450	146,070	760,760	906,830	942,280
		1A	540	0	34,850	35,390	146,070	760,760	906,830	942,220
		1B	540	0	34,850	35,390	146,070	760,760	906,830	942,220
		1C	540	0	34,850	35,390	146,070	760,760	906,830	942,220
		1D	540	0	34,850	35,390	146,070	760,760	906,830	942,220
		2	540	130	34,850	35,520	140,900	742,470	883,370	918,890
Biochemical Oxygen Demand (pounds)	Lower Root River	Existing	820	180	0	1,000	215,660	577,910	793,570	794,570
		2020 Future (baseline)	820	180	0	1,000	197,370	525,540	722,910	723,910
		1A	820	0	0	820	197,370	525,540	722,910	723,730
		1B	820	0	0	820	197,370	525,540	722,910	723,730
		1C	820	0	0	820	197,370	525,540	722,910	723,730
		1D	820	0	0	820	197,370	525,540	722,910	723,730
		2	820	180	0	1,000	196,580	494,090	690,670	691,670

Table H-5 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Subwatershed	Screening Alternative	Industrial Point Sources	SSOs[b]	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Biochemical Oxygen Demand (pounds) (continued)	Middle Root River	Existing	0	0	0	0	105,600	186,700	292,300	292,300
		2020 Future (baseline)	0	0	0	0	113,860	125,680	239,540	239,540
		1A	0	0	0	0	113,860	125,680	239,540	239,540
		1B	0	0	0	0	113,860	125,680	239,540	239,540
		1C	0	0	0	0	113,860	125,680	239,540	239,540
		1D	0	0	0	0	113,860	125,680	239,540	239,540
		2	0	0	0	0	113,580	120,090	233,670	233,670
	Upper Root River	Existing	0	20	0	20	169,850	6,380	176,230	176,250
		2020 Future (baseline)	0	90	0	90	126,890	4,570	131,460	131,550
		1A	0	0	0	0	126,890	4,570	131,460	131,460
		1B	0	0	0	0	126,890	4,570	131,460	131,460
		1C	0	0	0	0	126,890	4,570	131,460	131,460
		1D	0	0	0	0	126,890	4,570	131,460	131,460
		2	0	210	0	210	126,890	4,570	131,460	131,670
	Hoods Creek	Existing	0	0	990	990	37,740	214,960	252,700	253,690
		2020 Future (baseline)	0	0	1,410	1,410	35,610	198,010	233,620	235,030
		1A	0	0	1,410	1,410	35,610	198,010	233,620	235,030
		1B	0	0	1,410	1,410	35,610	198,010	233,620	235,030
		1C	0	0	1,410	1,410	35,610	198,010	233,620	235,030
		1D	0	0	1,410	1,410	35,610	198,010	233,620	235,030
		2	0	0	1,410	1,410	35,610	185,790	221,400	222,810
	Root River Canal	Existing	0	0	0	0	8,330	230,680	239,010	239,010
		2020 Future (baseline)	0	0	0	0	8,010	246,990	255,000	255,000
		1A	0	0	0	0	8,010	246,990	255,000	255,000
		1B	0	0	0	0	8,010	246,990	255,000	255,000
		1C	0	0	0	0	8,010	246,990	255,000	255,000
		1D	0	0	0	0	8,010	246,990	255,000	255,000
		2	0	0	0	0	7,600	230,270	237,870	237,870
	East Branch Root River Canal	Existing	0	0	750	750	19,720	383,470	403,190	403,940
		2020 Future (baseline)	0	0	750	750	23,540	407,750	431,290	432,040
		1A	0	0	750	750	23,540	407,750	431,290	432,040
		1B	0	0	750	750	23,540	407,750	431,290	432,040
		1C	0	0	750	750	23,540	407,750	431,290	432,040
		1D	0	0	750	750	23,540	407,750	431,290	432,040
		2	0	0	750	750	22,380	379,230	401,610	402,360
	West Branch Root River Canal	Existing	10	0	11,280	11,290	36,630	870,200	906,830	918,120
		2020 Future (baseline)	10	0	14,890	14,900	35,170	931,950	967,120	982,020
		1A	10	0	14,890	14,900	35,170	931,950	967,120	982,020
		1B	10	0	14,890	14,900	35,170	931,950	967,120	982,020
		1C	10	0	14,890	14,900	35,170	931,950	967,120	982,020
		1D	10	0	14,890	14,900	35,170	931,950	967,120	982,020
		2	10	0	14,890	14,900	34,290	867,880	902,170	917,070
	East Branch Root River	Existing	0	0	0	0	42,060	8,260	50,320	50,320
		2020 Future (baseline)	0	80	0	80	37,340	1,990	39,330	39,410
		1A	0	0	0	0	37,340	1,990	39,330	39,330
		1B	0	0	0	0	37,340	1,990	39,330	39,330
		1C	0	0	0	0	37,340	1,990	39,330	39,330
		1D	0	0	0	0	37,340	1,990	39,330	39,330
		2	0	400	0	400	37,340	1,990	39,330	39,730

Table H-5 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Biochemical Oxygen Demand (pounds) (continued)	Whitnall Park Creek	Existing	0	60	0	60	99,220	31,140	130,360	130,420
		2020 Future (baseline)	0	60	0	60	83,330	14,280	97,610	97,670
		1A	0	0	0	0	83,330	14,280	97,610	97,610
		1B	0	0	0	0	83,330	14,280	97,610	97,610
		1C	0	0	0	0	83,330	14,280	97,610	97,610
		1D	0	0	0	0	83,330	14,280	97,610	97,610
		2	0	60	0	60	83,330	14,280	97,610	97,670
	Watershed Total	Existing	830	260	13,020	14,110	734,810	2,509,700	3,244,510	3,258,620
		2020 Future (baseline)	830	410	17,050	18,290	661,120	2,456,760	3,117,880	3,136,170
		1A	830	0	17,050	17,880	661,120	2,456,760	3,117,880	3,135,760
		1B	830	0	17,050	17,880	661,120	2,456,760	3,117,880	3,135,760
		1C	830	0	17,050	17,880	661,120	2,456,760	3,117,880	3,135,760
		1D	830	0	17,050	17,880	661,120	2,456,760	3,117,880	3,135,760
		2	830	850	17,050	18,730	657,600	2,298,190	2,955,790	2,974,520
Copper (pounds)	Lower Root River	Existing	3	<1	0	3	404	171	575	578
		2020 Future (baseline)	3	<1	0	3	340	145	485	488
		1A	3	0	0	3	340	145	485	488
		1B	3	0	0	3	340	145	485	488
		1C	3	0	0	3	340	145	485	488
		1D	3	0	0	3	340	145	485	488
		2	3	<1	0	3	338	141	479	482
	Middle Root River	Existing	0	0	0	0	194	70	264	264
		2020 Future (baseline)	0	0	0	0	189	71	260	260
		1A	0	0	0	0	189	71	260	260
		1B	0	0	0	0	189	71	260	260
		1C	0	0	0	0	189	71	260	260
		1D	0	0	0	0	189	71	260	260
		2	0	0	0	0	188	70	258	258
	Upper Root River	Existing	0	<1	0	<1	305	2	307	307
		2020 Future (baseline)	0	<1	0	<1	218	1	219	219
		1A	0	0	0	0	218	1	219	219
		1B	0	0	0	0	218	1	219	219
		1C	0	0	0	0	218	1	219	219
		1D	0	0	0	0	218	1	219	219
		2	0	<1	0	<1	218	1	219	219
	Hoods Creek	Existing	0	0	4	4	69	64	133	137
		2020 Future (baseline)	0	0	5	5	59	54	113	118
		1A	0	0	5	5	59	54	113	118
		1B	0	0	5	5	59	54	113	118
		1C	0	0	5	5	59	54	113	118
		1D	0	0	5	5	59	54	113	118
		2	0	0	5	5	59	53	112	117
	Root River Canal	Existing	0	0	0	0	15	42	57	57
		2020 Future (baseline)	0	0	0	0	14	41	55	55
		1A	0	0	0	0	14	41	55	55
		1B	0	0	0	0	14	41	55	55
		1C	0	0	0	0	14	41	55	55
		1D	0	0	0	0	14	41	55	55
		2	0	0	0	0	14	38	52	52

Table H-5 (continued)

Water Quality Indicator	Subwatershed	Screening Alternative	Point Sources: Industrial Point Sources	Point Sources: SSOs[b]	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Copper (pounds) (continued)	East Branch Root River Canal	Existing	0	0	1	1	36	55	91	92
		2020 Future (baseline)	0	0	1	1	42	51	93	94
		1A	0	0	1	1	42	51	93	94
		1B	0	0	1	1	42	51	93	94
		1C	0	0	1	1	42	51	93	94
		1D	0	0	1	1	42	51	93	94
		2	0	0	1	1	39	48	87	88
	West Branch Root River Canal	Existing	0	0	35	35	67	122	189	224
		2020 Future (baseline)	0	0	47	47	63	112	175	222
		1A	0	0	47	47	63	112	175	222
		1B	0	0	47	47	63	112	175	222
		1C	0	0	47	47	63	112	175	222
		1D	0	0	47	47	63	112	175	222
		2	0	0	47	47	61	106	167	214
	East Branch Root River	Existing	0	0	0	0	77	2	79	79
		2020 Future (baseline)	0	<1	0	<1	63	1	64	64
		1A	0	0	0	0	63	1	64	64
		1B	0	0	0	0	63	1	64	64
		1C	0	0	0	0	63	1	64	64
		1D	0	0	0	0	63	1	64	64
		2	0	<1	0	<1	63	1	64	64
	Whitnall Park Creek	Existing	0	<1	0	<1	181	20	201	201
		2020 Future (baseline)	0	<1	0	<1	142	16	158	158
		1A	0	0	0	0	142	16	158	158
		1B	0	0	0	0	142	16	158	158
		1C	0	0	0	0	142	16	158	158
		1D	0	0	0	0	142	16	158	158
		2	0	<1	0	<1	142	16	158	158
	Watershed Total	Existing	3	<1	40	43	1,348	548	1,896	1,939
		2020 Future (baseline)	3	<1	53	56	1,130	492	1,622	1,678
		1A	3	0	53	56	1,130	492	1,622	1,678
		1B	3	0	53	56	1,130	492	1,622	1,678
		1C	3	0	53	56	1,130	492	1,622	1,678
		1D	3	0	53	56	1,130	492	1,622	1,678
		2	3	<1	53	56	1,122	474	1,596	1,652

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*Loads presented in this table for the 2020 future (baseline) condition reflect refinements that were made to the MMSD conveyance system model after the screening alternatives were evaluated. This results in certain anomalies in the load comparisons presented herein, particularly regarding SSO loads with Screening Alternative 2.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table H-6

AVERAGE ANNUAL POLLUTANT LOADS FOR SCREENING ALTERNATIVES: NEARSHORE LAKE MICHIGAN AREA

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Location	Screening Alternative	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Phosphorus (pounds)	Ozaukee County	Existing	10	0	0	10	2,370	630	3,000	3,010
		2020 Future (baseline)	10	0	0	10	2,120	560	2,680	2,690
		1A	0	0	0	0	2,120	560	2,680	2,680
		1B	0	0	0	0	2,120	560	2,680	2,680
		1C	0	0	0	0	2,120	560	2,680	2,680
		1D	0	0	0	0	2,120	560	2,680	2,680
		2	10	0	0	10	1,990	520	2,510	2,520
	Milwaukee County	Existing	30	160	316,550	316,740	5,930	720	6,650	323,390
		2020 Future (baseline)	10	120	371,700	371,830	5,180	700	5,880	377,710
		1A	0	0	371,700	371,700	5,180	700	5,880	377,580
		1B	0	0	371,700	371,700	5,180	700	5,880	377,580
		1C	0	0	371,700	371,700	5,180	700	5,880	377,580
		1D	0	0	371,700	371,700	5,180	700	5,880	377,580
		2	10	110	371,700	371,820	4,870	610	5,480	377,300
	Racine County	Existing	<10	0	0	<10	4,880	890	5,770	5,770
		2020 Future (baseline)	<10	0	0	<10	4,290	530	4,820	4,820
		1A	0	0	0	0	4,290	530	4,820	4,820
		1B	0	0	0	0	4,290	530	4,820	4,820
		1C	0	0	0	0	4,290	530	4,820	4,820
		1D	0	0	0	0	4,290	530	4,820	4,820
		2	<10	0	0	<10	3,880	620	4,500	4,500
	Nearshore Lake Michigan Area Total	Existing	40	160	316,550	316,750	13,180	2,240	15,420	332,170
		2020 Future (baseline)	20	120	371,700	371,840	11,590	1,790	13,380	385,220
		1A	0	0	371,700	371,700	11,590	1,790	13,380	385,080
		1B	0	0	371,700	371,700	11,590	1,790	13,380	385,080
		1C	0	0	371,700	371,700	11,590	1,790	13,380	385,080
		1D	0	0	371,700	371,700	11,590	1,790	13,380	385,080
		2	20	110	371,700	371,830	10,740	1,750	12,490	384,320
Total Suspended Solids (pounds)	Ozaukee County	Existing	310	0	0	310	838,280	397,340	1,235,620	1,235,930
		2020 Future (baseline)	430	0	0	430	659,900	361,640	1,021,540	1,021,970
		1A	0	0	0	0	659,900	361,640	1,021,540	1,021,540
		1B	0	0	0	0	659,900	361,640	1,021,540	1,021,540
		1C	0	0	0	0	659,900	361,640	1,021,540	1,021,540
		1D	0	0	0	0	659,900	361,640	1,021,540	1,021,540
		2	360	0	0	360	676,650	317,730	994,380	994,740
	Milwaukee County	Existing	1,160	16,040	6,926,460	6,943,660	2,770,770	126,260	2,897,030	9,840,690
		2020 Future (baseline)	200	11,750	7,758,720	7,770,670	2,066,830	140,430	2,207,260	9,977,930
		1A	0	0	7,758,720	7,758,720	2,066,830	140,430	2,207,260	9,965,980
		1B	0	0	7,758,720	7,758,720	2,066,830	140,430	2,207,260	9,965,980
		1C	0	0	7,758,720	7,758,720	2,066,830	140,430	2,207,260	9,965,980
		1D	0	0	7,758,720	7,758,720	2,066,830	140,430	2,207,260	9,965,980
		2	230	10,630	7,758,720	7,769,580	2,132,150	73,650	2,205,800	9,975,380

Table H-6 (continued)

Water Quality Indicator	Location	Screening Alternative	Point Sources				Nonpoint Source[a]			Total
			SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Total Suspended Solids (pounds) (continued)	Racine County	Existing	130	0	0	130	1,932,680	703,620	2,636,300	2,636,430
		2020 Future (baseline)	130	0	0	130	1,650,890	325,090	1,975,980	1,976,110
		1A	0	0	0	0	1,650,890	325,090	1,975,980	1,975,980
		1B	0	0	0	0	1,650,890	325,090	1,975,980	1,975,980
		1C	0	0	0	0	1,650,890	325,090	1,975,980	1,975,980
		1D	0	0	0	0	1,650,890	325,090	1,975,980	1,975,980
		2	130	0	0	130	1,426,310	499,930	1,926,240	1,926,370
	Nearshore Lake Michigan Area Total	Existing	1,600	16,040	6,926,460	6,944,100	5,541,730	1,227,220	6,768,950	13,713,050
		2020 Future (baseline)	760	11,750	7,758,720	7,771,230	4,377,620	827,160	5,204,780	12,976,010
		1A	0	0	7,758,720	7,758,720	4,377,620	827,160	5,204,780	12,963,500
		1B	0	0	7,758,720	7,758,720	4,377,620	827,160	5,204,780	12,963,500
		1C	0	0	7,758,720	7,758,720	4,377,620	827,160	5,204,780	12,963,500
		1D	0	0	7,758,720	7,758,720	4,377,620	827,160	5,204,780	12,963,500
		2	720	10,630	7,758,720	7,770,070	4,235,110	891,310	5,126,420	12,896,490
Fecal Coliform Bacteria (trillions of cells)	Ozaukee County	Existing	5.87	0.00	0.00	5.87	682.50	60.95	743.45	749.32
		2020 Future (baseline)	8.24	0.00	0.00	8.24	561.25	80.21	641.46	649.70
		1A	0.00	0.00	0.00	0.00	561.25	80.21	641.46	641.46
		1B	0.00	0.00	0.00	0.00	561.25	80.21	641.46	641.46
		1C	0.00	0.00	0.00	0.00	561.25	80.21	641.46	641.46
		1D	0.00	0.00	0.00	0.00	561.25	80.21	641.46	641.46
		2	6.87	0.00	0.00	6.87	530.88	44.94	575.82	582.69
	Milwaukee County	Existing	25.07	132.23	2,043.01	2,200.31	1,971.96	43.48	2,015.44	4,215.75
		2020 Future (baseline)	4.22	96.91	2,345.05	2,446.18	1,615.25	114.57	1,729.82	4,176.00
		1A	0.00	0.00	2,345.05	2,345.05	1,615.25	114.57	1,729.82	4,074.87
		1B	0.00	0.00	2,345.05	2,345.05	1,615.25	114.57	1,729.82	4,074.87
		1C	0.00	0.00	2,345.05	2,345.05	1,615.25	114.57	1,729.82	4,074.87
		1D	0.00	0.00	2,345.05	2,345.05	1,615.25	114.57	1,729.82	4,074.87
		2	4.87	87.64	2,345.05	2,437.56	1,512.08	44.71	1,556.79	3,994.35
	Racine County	Existing	2.88	0.00	0.00	2.88	1,252.98	50.70	1,303.68	1,306.56
		2020 Future (baseline)	2.88	0.00	0.00	2.88	1,002.16	70.11	1,072.27	1,075.15
		1A	0.00	0.00	0.00	0.00	1,002.16	70.11	1,072.27	1,072.27
		1B	0.00	0.00	0.00	0.00	1,002.16	70.11	1,072.27	1,072.27
		1C	0.00	0.00	0.00	0.00	1,002.16	70.11	1,072.27	1,072.27
		1D	0.00	0.00	0.00	0.00	1,002.16	70.11	1,072.27	1,072.27
		2	2.88	0.00	0.00	2.88	929.05	34.25	963.30	966.18
	Nearshore Lake Michigan Area Total	Existing	33.82	132.23	2,043.01	2,209.06	3,907.44	155.13	4,062.57	6,271.63
		2020 Future (baseline)	15.34	96.91	2,345.05	2,457.30	3,178.66	264.89	3,443.55	5,900.85
		1A	0.00	0.00	2,345.05	2,345.05	3,178.66	264.89	3,443.55	5,788.60
		1B	0.00	0.00	2,345.05	2,345.05	3,178.66	264.89	3,443.55	5,788.60
		1C	0.00	0.00	2,345.05	2,345.05	3,178.66	264.89	3,443.55	5,788.60
		1D	0.00	0.00	2,345.05	2,345.05	3,178.66	264.89	3,443.55	5,788.60
		2	14.62	87.64	2,345.05	2,447.31	2,972.01	123.90	3,095.91	5,543.22
Total Nitrogen (pounds)	Ozaukee County	Existing	10	0	0	10	15,310	9,910	25,220	25,230
		2020 Future (baseline)	20	0	0	20	14,700	8,810	23,510	23,530
		1A	0	0	0	0	14,700	8,810	23,510	23,510
		1B	0	0	0	0	14,700	8,810	23,510	23,510
		1C	0	0	0	0	14,700	8,810	23,510	23,510
		1D	0	0	0	0	14,700	8,810	23,510	23,510
		2	10	0	0	10	13,730	9,240	22,970	22,980

Table H-6 (continued)

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Location	Screening Alternative	SSOs[b]	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Nitrogen (pounds) (continued)	Milwaukee County	Existing	60	1,120	8,261,880	8,263,060	38,940	7,650	46,590	8,309,650
		2020 Future (baseline)	10	820	9,647,380	9,648,210	35,890	5,520	41,410	9,689,620
		1A	0	0	9,647,380	9,647,380	35,890	5,520	41,410	9,688,790
		1B	0	0	9,647,380	9,647,380	35,890	5,520	41,410	9,688,790
		1C	0	0	9,647,380	9,647,380	35,890	5,520	41,410	9,688,790
		1D	0	0	9,647,380	9,647,380	35,890	5,520	41,410	9,688,790
		2	10	740	9,647,380	9,648,130	34,250	5,960	40,210	9,688,340
	Racine County	Existing	10	0	0	10	33,130	20,450	53,580	53,590
		2020 Future (baseline)	10	0	0	10	35,330	9,120	44,450	44,460
		1A	0	0	0	0	35,330	9,120	44,450	44,450
		1B	0	0	0	0	35,330	9,120	44,450	44,450
		1C	0	0	0	0	35,330	9,120	44,450	44,450
		1D	0	0	0	0	35,330	9,120	44,450	44,450
		2	10	0	0	10	28,740	14,550	43,290	43,300
	Nearshore Lake Michigan Area Total	Existing	80	1,120	8,261,880	8,263,080	87,380	38,010	125,390	8,388,470
		2020 Future (baseline)	40	820	9,647,380	9,648,240	85,920	23,450	109,370	9,757,610
		1A	0	0	9,647,380	9,647,380	85,920	23,450	109,370	9,756,750
		1B	0	0	9,647,380	9,647,380	85,920	23,450	109,370	9,756,750
		1C	0	0	9,647,380	9,647,380	85,920	23,450	109,370	9,756,750
		1D	0	0	9,647,380	9,647,380	85,920	23,450	109,370	9,756,750
		2	30	740	9,647,380	9,648,150	76,720	29,750	106,470	9,754,620
Biochemical Oxygen Demand (pounds)	Ozaukee County	Existing	80	0	0	80	52,360	16,560	68,920	69,000
		2020 Future (baseline)	110	0	0	110	46,160	21,640	67,800	67,910
		1A	0	0	0	0	46,160	21,640	67,800	67,800
		1B	0	0	0	0	46,160	21,640	67,800	67,800
		1C	0	0	0	0	46,160	21,640	67,800	67,800
		1D	0	0	0	0	46,160	21,640	67,800	67,800
		2	90	0	0	90	46,010	20,910	66,920	67,010
	Milwaukee County	Existing	320	2,980	7,380,790	7,384,090	162,330	15,420	177,750	7,561,840
		2020 Future (baseline)	50	2,190	8,395,960	8,398,200	136,190	15,080	151,270	8,549,470
		1A	0	0	8,395,960	8,395,960	136,190	15,080	151,270	8,547,230
		1B	0	0	8,395,960	8,395,960	136,190	15,080	151,270	8,547,230
		1C	0	0	8,395,960	8,395,960	136,190	15,080	151,270	8,547,230
		1D	0	0	8,395,960	8,395,960	136,190	15,080	151,270	8,547,230
		2	60	1,980	8,395,960	8,398,000	138,690	12,430	151,120	8,549,120
	Racine County	Existing	40	0	0	40	119,170	31,920	151,090	151,130
		2020 Future (baseline)	40	0	0	40	113,800	20,060	133,860	133,900
		1A	0	0	0	0	113,800	20,060	133,860	133,860
		1B	0	0	0	0	113,800	20,060	133,860	133,860
		1C	0	0	0	0	113,800	20,060	133,860	133,860
		1D	0	0	0	0	113,800	20,060	133,860	133,860
		2	40	0	0	40	96,820	34,930	131,750	131,790
	Nearshore Lake Michigan Area Total	Existing	440	2,980	7,380,790	7,384,210	333,860	63,900	397,760	7,781,970
		2020 Future (baseline)	200	2,190	8,395,960	8,398,350	296,150	56,780	352,930	8,751,280
		1A	0	0	8,395,960	8,395,960	296,150	56,780	352,930	8,748,890
		1B	0	0	8,395,960	8,395,960	296,150	56,780	352,930	8,748,890
		1C	0	0	8,395,960	8,395,960	296,150	56,780	352,930	8,748,890
		1D	0	0	8,395,960	8,395,960	296,150	56,780	352,930	8,748,890
		2	190	1,980	8,395,960	8,398,130	281,520	68,270	349,790	8,747,920

Table H-6 (continued)

Water Quality Indicator	Location	Screening Alternative	Point Sources: SSOs[b]	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a]: Urban	Nonpoint Source[a]: Rural[c]	Nonpoint Source[a]: Subtotal	Total
Copper (pounds)	Ozaukee County	Existing	<1	0	0	<1	96	13	109	109
		2020 Future (baseline)	<1	0	0	<1	78	15	93	93
		1A	0	0	0	0	78	15	93	93
		1B	0	0	0	0	78	15	93	93
		1C	0	0	0	0	78	15	93	93
		1D	0	0	0	0	78	15	93	93
		2	<1	0	0	<1	82	11	93	93
	Milwaukee County	Existing	<1	4	10,445	10,449	298	17	315	10,764
		2020 Future (baseline)	<1	3	11,843	11,846	234	24	258	12,104
		1A	0	0	11,843	11,843	234	24	258	12,101
		1B	0	0	11,843	11,843	234	24	258	12,101
		1C	0	0	11,843	11,843	234	24	258	12,101
		1D	0	0	11,843	11,843	234	24	258	12,101
		2	<1	2	11,843	11,845	243	14	257	12,102
	Racine County	Existing	<1	0	0	<1	228	18	246	246
		2020 Future (baseline)	<1	0	0	<1	175	15	190	190
		1A	0	0	0	0	175	15	190	190
		1B	0	0	0	0	175	15	190	190
		1C	0	0	0	0	175	15	190	190
		1D	0	0	0	0	175	15	190	190
		2	<1	0	0	<1	177	13	190	190
	Nearshore Lake Michigan Area Total	Existing	<1	4	10,445	10,449	622	48	670	11,119
		2020 Future (baseline)	<1	3	11,843	11,846	487	54	541	12,387
		1A	0	0	11,843	11,843	487	54	541	12,384
		1B	0	0	11,843	11,843	487	54	541	12,384
		1C	0	0	11,843	11,843	487	54	541	12,384
		1D	0	0	11,843	11,843	487	54	541	12,384
		2	<1	2	11,843	11,845	502	38	540	12,385

[a] *Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b] *Loads presented in this table for the 2020 future (baseline) condition reflect refinements that were made to the MMSD conveyance system model after the screening alternatives were evaluated. This results in certain anomalies in the load comparisons presented herein, particularly regarding SSO loads with Screening Alternative 2.*

[c] *For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominantly urban setting.*

Source: Brown and Caldwell; HydroQual, Inc.; and SEWRPC.

Appendix I

COMPARISON OF WATER QUALITY SUMMARY STATISTICS FOR SCREENING ALTERNATIVES

Table I-1

WATER QUALITY SUMMARY STATISTICS FOR SCREENING ALTERNATIVES: KINNICKINNIC RIVER WATERSHED

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
KK-9 Kinnickinnic River Downstream of Wilson Park Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,785	4,899	4,484	4,481	4,508	4,508	4,512
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	74	75	75	75	75	75	75
		Geometric mean (cells per 100 ml)	654	563	557	557	559	559	507
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	254	265	265	265	265	265	272
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,360	3,004	2,314	2,311	2,363	2,363	2,983
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	87	86	86	86	86	86	87
		Geometric mean (cells per 100 ml)	343	295	290	290	292	292	267
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	146	148	148	148	148	148	150
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.4	11.4	11.4	11.4	11.4	11.4	11.4
		Percent compliance with dissolved oxygen standard (>2 mg/l)[a]	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.206	0.199	0.197	0.197	0.197	0.197	0.196
		Median (mg/l)	0.171	0.164	0.164	0.164	0.164	0.164	0.161
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	24	24	24	25	24	24	25
	Total Nitrogen	Mean (mg/l)	1.39	1.3	1.29	1.29	1.29	1.29	1.29
		Median (mg/l)	1.22	1.13	1.12	1.12	1.12	1.12	1.12
	Total Suspended Solids	Mean (mg/l)	14.5	11.5	11.4	11.4	11.4	11.4	11.5
		Median (mg/l)	4.8	3.8	3.8	3.8	3.8	3.8	3.8
	Copper	Mean (mg/l)	0.0047	0.0018	0.0041	0.0041	0.0041	0.0041	0.0041
		Median (mg/l)	0.0019	0.0041	0.0018	0.0018	0.0018	0.0018	0.0018

Table I-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
KK-10 Kinnickinnic River near Upstream Limit of Estuary	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,859	4,909	4,493	4,487	4,549	4,549	4,499
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	74	75	75	75	75	75	75
		Geometric mean (cells per 100 ml)	842	703	678	681	687	687	635
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	229	250	256	256	255	255	258
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,401	3,000	2,297	2,288	2,404	2,404	2,934
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	86	86	86	86	86	86	87
		Geometric mean (cells per 100 ml)	498	415	391	391	398	398	378
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	131	140	146	146	145	145	141
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.5	11.5	11.5	11.5	11.5	11.5	11.5
		Percent compliance with dissolved oxygen standard (>2 mg/l)[a]	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.196	0.189	0.187	0.187	0.187	0.187	0.186
		Median (mg/l)	0.165	0.158	0.157	0.157	0.157	0.157	0.155
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	27	27	27	27	27	27	28
	Total Nitrogen	Mean (mg/l)	1.36	1.26	1.26	1.26	1.26	1.26	1.25
		Median (mg/l)	1.21	1.12	1.11	1.11	1.11	1.11	1.11
	Total Suspended Solids	Mean (mg/l)	13.2	10.5	10.4	10.4	10.4	10.4	10.5
		Median (mg/l)	4.7	3.8	3.8	3.8	3.8	3.8	3.8
	Copper	Mean (mg/l)	0.0048	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041
		Median (mg/l)	0.0019	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017

[a]*Variance Standard in Chapter NR 104 of the* Wisconsin Administrative Code.

Source: Tetra Tech, Inc., and SEWRPC.

Table I-2

WATER QUALITY SUMMARY STATISTICS FOR SCREENING ALTERNATIVES: MENOMONEE RIVER WATERSHED

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
MN-5 Menomonee River at Washington-Waukesha County Line	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,417	1,605	1,604	1,604	1,604	1,604	1,354
		Percent compliance with single sample standard (<400 cells per 100 ml)	68	65	65	65	65	65	66
		Geometric mean (cells per 100 ml)	205	234	233	233	233	233	187
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	202	184	184	184	184	184	210
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	890	982	980	980	980	980	831
		Percent compliance with single sample standard (<400 cells per 100 ml)	82	79	79	79	79	79	80
		Geometric mean (cells per 100 ml)	105	118	117	117	117	117	93
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	82	114	114	114	114	114	129
	Dissolved Oxygen	Mean (mg/l)	10.5	10.5	10.5	10.5	10.5	10.5	10.5
		Median (mg/l)	10.7	10.7	10.7	10.7	10.7	10.7	10.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.097	0.105	0.105	0.105	0.105	0.105	0.1
		Median (mg/l)	0.063	0.066	0.066	0.066	0.066	0.066	0.064
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	70	68	68	68	68	68	69
	Total Nitrogen	Mean (mg/l)	1.21	1.07	1.07	1.07	1.07	1.07	1.04
		Median (mg/l)	1.08	0.97	0.97	0.97	0.97	0.97	0.95
	Total Suspended Solids	Mean (mg/l)	10.2	10.2	10.2	10.2	10.2	10.2	9.4
		Median (mg/l)	6	5.8	5.8	5.8	5.8	5.8	5.5
	Copper	Mean (mg/l)	0.0041	0.0047	0.0047	0.0047	0.0047	0.0047	0.0043
		Median (mg/l)	0.0016	0.0017	0.0017	0.0017	0.0017	0.0017	0.0016

Table I-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
MN-9 Menomonee River Down-stream of Butler Ditch	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,828	2,728	2,726	2,726	2,726	2,726	2,387
		Percent compliance with single sample standard (<400 cells per 100 ml)	57	56	56	56	56	56	57
		Geometric mean (cells per 100 ml)	489	489	487	487	487	487	420
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	72	78	79	79	79	79	105
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,571	1,438	1,433	1,433	1,433	1,433	1,265
		Percent compliance with single sample standard (<400 cells per 100 ml)	76	74	74	74	74	74	75
		Geometric mean (cells per 100 ml)	229	216	214	214	214	214	186
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	51	57	58	58	58	58	77
	Dissolved Oxygen	Mean (mg/l)	10.8	10.8	10.8	10.8	10.8	10.8	10.8
		Median (mg/l)	11	11	11	11	11	11	11
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.101	0.102	0.102	0.102	0.102	0.102	0.097
		Median (mg/l)	0.061	0.065	0.065	0.065	0.065	0.065	0.063
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	69	66	66	66	66	66	68
	Total Nitrogen	Mean (mg/l)	1.08	0.92	0.92	0.92	0.92	0.92	0.89
		Median (mg/l)	1	0.86	0.86	0.86	0.86	0.86	0.84
	Total Suspended Solids	Mean (mg/l)	15.7	13.3	13.3	13.3	13.3	13.3	12.8
		Median (mg/l)	6	5.2	5.2	5.2	5.2	5.2	5
	Copper	Mean (mg/l)	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.005
		Median (mg/l)	0.0019	0.002	0.002	0.002	0.002	0.002	0.0018

Table I-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
MN-12 Menomonee River Down-stream of Little Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,366	3,913	3,911	3,911	3,911	3,911	3,476
		Percent compliance with single sample standard (<400 cells per 100 ml)	50	49	49	49	49	49	50
		Geometric mean (cells per 100 ml)	795	746	744	744	744	744	651
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	31	38	39	39	39	39	49
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,175	1,895	1,891	1,891	1,891	1,891	1,689
		Percent compliance with single sample standard (<400 cells per 100 ml)	69	68	68	68	68	68	69
		Geometric mean (cells per 100 ml)	348	314	312	312	312	312	274
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	21	26	26	26	26	26	34
	Dissolved Oxygen	Mean (mg/l)	10.7	10.7	10.7	10.7	10.7	10.7	10.7
		Median (mg/l)	10.9	10.9	10.9	10.9	10.9	10.9	10.9
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.1	0.1	0.1	0.1	0.1	0.1	0.095
		Median (mg/l)	0.061	0.064	0.064	0.064	0.064	0.064	0.062
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	69	68	68	68	68	68	69
	Total Nitrogen	Mean (mg/l)	1.07	0.9	0.9	0.9	0.9	0.9	0.88
		Median (mg/l)	1.01	0.86	0.86	0.86	0.86	0.86	0.84
	Total Suspended Solids	Mean (mg/l)	13.4	11.2	11.2	11.2	11.2	11.2	10.8
		Median (mg/l)	5.2	4.4	4.4	4.4	4.4	4.4	4.2
	Copper	Mean (mg/l)	0.0054	0.0052	0.0052	0.0052	0.0052	0.0052	0.005
		Median (mg/l)	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021

Table I-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
MN-17 Menomonee River Down-stream of Honey Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,926	5,878	5,771	5,763	5,825	5,825	5,263
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	63	63	63	63	63	63	64
		Geometric mean (cells per 100 ml)	1,124	1,000	990	987	993	993	883
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	196	205	206	206	206	206	215
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,622	3,051	2,843	2,828	2,952	2,952	2,732
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	81	81	81	81	81	81	82
		Geometric mean (cells per 100 ml)	496	423	416	413	419	419	374
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	130	137	137	138	137	137	140
	Dissolved Oxygen	Mean (mg/l)	11.1	10.9	10.9	10.9	10.9	10.9	10.9
		Median (mg/l)	11.1	11	11	11	11	11	11
		Percent compliance with dissolved oxygen standard (>2 mg/l)[a]	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.111	0.108	0.107	0.107	0.107	0.107	0.103
		Median (mg/l)	0.074	0.077	0.077	0.077	0.077	0.077	0.075
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	66	65	65	65	65	65	67
	Total Nitrogen	Mean (mg/l)	1.13	0.97	0.97	0.97	0.97	0.97	0.95
		Median (mg/l)	1.07	0.93	0.93	0.93	0.93	0.93	0.91
	Total Suspended Solids	Mean (mg/l)	16.3	13.3	13.4	13.3	13.3	13.3	13.1
		Median (mg/l)	6	4.9	4.9	4.9	4.9	4.9	4.8
	Copper	Mean (mg/l)	0.0057	0.0052	0.0052	0.0052	0.0052	0.0052	0.0051
		Median (mg/l)	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0023

Table I-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
MN-18 Menomonee River near Upstream Limit of Estuary	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,889	5,922	5,819	5,816	5,867	5,867	5,305
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	64	63	63	63	63	63	64
		Geometric mean (cells per 100 ml)	1,081	972	963	960	965	965	859
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	200	207	207	207	207	207	217
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,557	3,062	2,865	2,859	2,957	2,957	2,745
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	81	81	82	82	82	82	82
		Geometric mean (cells per 100 ml)	468	407	400	397	402	402	360
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	133	137	138	138	138	138	140
	Dissolved Oxygen	Mean (mg/l)	11	10.9	10.9	10.9	10.9	10.9	10.9
		Median (mg/l)	11	10.9	10.9	10.9	10.9	10.9	10.9
		Percent compliance with dissolved oxygen standard (>2 mg/l)[a]	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.133	0.13	0.13	0.13	0.13	0.13	0.126
		Median (mg/l)	0.104	0.106	0.105	0.105	0.105	0.105	0.103
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	52	50	51	51	51	51	52
	Total Nitrogen	Mean (mg/l)	1.25	1.1	1.1	1.1	1.1	1.1	1.08
		Median (mg/l)	1.2	1.07	1.06	1.06	1.07	1.07	1.04
	Total Suspended Solids	Mean (mg/l)	16	13.3	13.3	13.3	13.3	13.3	13
		Median (mg/l)	5.5	4.8	4.8	4.8	4.8	4.8	4.7
	Copper	Mean (mg/l)	0.0056	0.0051	0.0051	0.0051	0.0051	0.0051	0.005
		Median (mg/l)	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0022

[a]*Variance Standard in Chapter NR 104 of the* Wisconsin Administrative Code.

Source: Tetra Tech, Inc., and SEWRPC.

Table I-3

WATER QUALITY SUMMARY STATISTICS FOR SCREENING ALTERNATIVES: MILWAUKEE RIVER WATERSHED

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
ML-29 Milwaukee River at the Milwaukee-Ozaukee County Line	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,107	618	620	617	617	617	573
		Percent compliance with single sample standard (<400 cells per 100 ml)	42	54	54	54	54	54	55
		Geometric mean (cells per 100 ml)	385	222	223	222	222	222	212
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	127	155	155	155	155	155	157
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	358	157	156	156	156	156	145
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	90	90	90	90	90	91
		Geometric mean (cells per 100 ml)	112	63	99	63	63	63	60
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	103	117	129	117	117	117	118
	Dissolved Oxygen	Mean (mg/l)	11	11	11	11	11	11	11
		Median (mg/l)	11.1	11.1	11	11.1	11.1	11.1	11.1
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.132	0.142	0.142	0.142	0.142	0.142	0.139
		Median (mg/l)	0.119	0.131	0.131	0.131	0.131	0.131	0.128
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	41	35	35	35	35	35	36
	Total Nitrogen	Mean (mg/l)	1.69	1.62	1.62	1.62	1.62	1.62	1.61
		Median (mg/l)	1.62	1.56	1.56	1.56	1.56	1.56	1.55
	Total Suspended Solids	Mean (mg/l)	17.8	17.5	17.5	17.5	17.5	17.5	16.3
		Median (mg/l)	13.9	13.7	13.7	13.7	13.7	13.7	12.8
	Copper	Mean (mg/l)	0.0049	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
		Median (mg/l)	0.0048	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052

Table I-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
ML-30 Milwaukee River Downstream of Beaver Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,359	1,022	1,020	1,019	1,019	1,019	918
		Percent compliance with single sample standard (<400 cells per 100 ml)	42	47	47	47	47	47	48
		Geometric mean (cells per 100 ml)	442	321	321	321	321	321	298
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	120	145	145	145	145	145	149
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	543	460	455	454	454	454	409
		Percent compliance with single sample standard (<400 cells per 100 ml)	73	77	77	77	77	77	78
		Geometric mean (cells per 100 ml)	143	106	168	105	105	105	99
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	94	110	122	110	110	110	113
	Dissolved Oxygen	Mean (mg/l)	11	10.9	10.9	10.9	10.9	10.9	10.9
		Median (mg/l)	11	11	11	11	11	11	11
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.134	0.143	0.143	0.143	0.143	0.143	0.138
		Median (mg/l)	0.122	0.132	0.132	0.132	0.132	0.132	0.128
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	39	34	34	34	34	34	35
	Total Nitrogen	Mean (mg/l)	1.67	1.58	1.58	1.58	1.58	1.58	1.57
		Median (mg/l)	1.6	1.52	1.52	1.52	1.52	1.52	1.51
	Total Suspended Solids	Mean (mg/l)	20.7	19.9	19.9	19.9	19.9	19.9	18.5
		Median (mg/l)	16.1	15.7	15.7	15.7	15.7	15.7	14.7
	Copper	Mean (mg/l)	0.0049	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052
		Median (mg/l)	0.0048	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051

Table I-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
ML-33 Milwaukee River at Lincoln/ Estabrook Parks	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,559	1,328	1,309	1,308	1,311	1,311	1,193
		Percent compliance with single sample standard (<400 cells per 100 ml)	43	46	46	46	46	46	47
		Geometric mean (cells per 100 ml)	354	273	271	270	271	271	249
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	140	152	153	153	152	152	154
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	596	598	562	561	567	567	552
		Percent compliance with single sample standard (<400 cells per 100 ml)	73	76	76	76	76	76	77
		Geometric mean (cells per 100 ml)	84	64	96	63	63	63	59
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	107	114	127	115	115	115	116
	Dissolved Oxygen	Mean (mg/l)	10.8	10.8	10.8	10.8	10.8	10.8	10.8
		Median (mg/l)	10.9	10.9	10.9	10.9	10.9	10.9	10.9
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.139	0.145	0.145	0.145	0.145	0.145	0.141
		Median (mg/l)	0.128	0.135	0.135	0.135	0.135	0.135	0.131
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	35	32	32	32	32	32	33
	Total Nitrogen	Mean (mg/l)	1.63	1.54	1.54	1.54	1.54	1.54	1.53
		Median (mg/l)	1.57	1.49	1.49	1.49	1.49	1.49	1.48
	Total Suspended Solids	Mean (mg/l)	24.2	22.4	22.4	22.4	22.4	22.4	20.7
		Median (mg/l)	18.7	17.7	17.7	17.7	17.7	17.7	16.4
	Copper	Mean (mg/l)	0.0052	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
		Median (mg/l)	0.0051	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053

Table I-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
ML-34 Milwaukee River at the Former North Avenue Dam	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,380	1,155	1,114	1,106	1,139	1,139	1,025
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	79	79	80	79	79	82
		Geometric mean (cells per 100 ml)	311	245	244	240	243	243	223
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	236	255	255	256	255	255	265
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	515	502	422	410	477	477	443
		Percent compliance with single sample standard (<400 cells per 100 ml)	92	93	93	94	93	93	94
		Geometric mean (cells per 100 ml)	73	58	84	55	57	57	53
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	145	149	165	149	149	149	150
	Dissolved Oxygen	Mean (mg/l)	10.6	10.6	10.6	10.6	10.6	10.6	10.6
		Median (mg/l)	10.6	10.6	10.6	10.6	10.6	10.6	10.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.169	0.174	0.173	0.173	0.173	0.173	0.169
		Median (mg/l)	0.16	0.166	0.165	0.165	0.166	0.166	0.161
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	24	22	22	22	22	22	24
	Total Nitrogen	Mean (mg/l)	1.6	1.52	1.52	1.52	1.52	1.52	1.5
		Median (mg/l)	1.53	1.46	1.46	1.46	1.46	1.46	1.45
	Total Suspended Solids	Mean (mg/l)	24.8	22.6	22.6	22.6	22.6	22.6	20.9
		Median (mg/l)	19.3	17.8	17.9	17.8	17.8	17.8	16.6
	Copper	Mean (mg/l)	0.0051	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052
		Median (mg/l)	0.005	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051

Source: Tetra Tech, Inc., and SEWRPC.

Table I-4

WATER QUALITY SUMMARY STATISTICS FOR SCREENING ALTERNATIVES: OAK CREEK WATERSHED

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
OK-1 Upper Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,905	3,928	3,928	3,928	3,928	3,928	3,536
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	64	64	64	64	64	65
		Geometric mean (cells per 100 ml)	541	504	504	504	504	504	456
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	65	67	67	67	67	67	80
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,012	1,666	1,666	1,666	1,666	1,666	1,500
		Percent compliance with single sample standard (<400 cells per 100 ml)	84	82	82	82	82	82	82
		Geometric mean (cells per 100 ml)	256	260	260	260	260	260	236
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	47	47	47	47	47	47	55
	Dissolved Oxygen	Mean (mg/l)	8.4	8.2	8.2	8.2	8.2	8.2	8.2
		Median (mg/l)	8.7	8.6	8.6	8.6	8.6	8.6	8.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	77	72	72	72	72	72	72
	Total Phosphorus	Mean (mg/l)	0.075	0.066	0.066	0.066	0.066	0.066	0.063
		Median (mg/l)	0.031	0.025	0.025	0.025	0.025	0.025	0.025
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	83	82	82	82	82	82	83
	Total Nitrogen	Mean (mg/l)	1.51	0.89	0.89	0.89	0.89	0.89	0.88
		Median (mg/l)	1.38	0.84	0.84	0.84	0.84	0.84	0.83
	Total Suspended Solids	Mean (mg/l)	13.7	7.2	7.2	7.2	7.2	7.2	7.2
		Median (mg/l)	7.8	4.4	4.4	4.4	4.4	4.4	4.4
	Copper	Mean (mg/l)	0.0038	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031
		Median (mg/l)	0.0012	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007

Table I-4 (continued)

					Screening Alternative				
Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	1A	1B	1C	1D	2
OK-3 Oak Creek Downstream of North Branch of Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	10,233	8,236	8,236	8,236	8,236	8,236	7,414
		Percent compliance with single sample standard (<400 cells per 100 ml)	55	55	55	55	55	55	55
		Geometric mean (cells per 100 ml)	1,191	1,060	1,060	1,060	1,060	1,060	960
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	17	20	20	20	20	20	22
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,750	3,735	3,735	3,735	3,735	3,735	3,363
		Percent compliance with single sample standard (<400 cells per 100 ml)	72	72	72	72	72	72	73
		Geometric mean (cells per 100 ml)	555	508	508	508	508	508	462
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	15	17	17	17	17	17	19
	Dissolved Oxygen	Mean (mg/l)	10	9.7	9.7	9.7	9.7	9.7	9.7
		Median (mg/l)	10.5	10.3	10.3	10.3	10.3	10.3	10.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	83	80	80	80	80	80	80
	Total Phosphorus	Mean (mg/l)	0.086	0.076	0.076	0.076	0.076	0.076	0.073
		Median (mg/l)	0.032	0.029	0.029	0.029	0.029	0.029	0.029
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	79	79	79	79	79	79	80
	Total Nitrogen	Mean (mg/l)	1.37	0.89	0.89	0.89	0.89	0.89	0.88
		Median (mg/l)	1.24	0.81	0.81	0.81	0.81	0.81	0.80
	Total Suspended Solids	Mean (mg/l)	20.9	12.9	12.9	12.9	12.9	12.9	12.9
		Median (mg/l)	8.5	5.7	5.7	5.7	5.7	5.7	5.7
	Copper	Mean (mg/l)	0.0049	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038
		Median (mg/l)	0.0013	0.001	0.001	0.001	0.001	0.001	0.001

Table I-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
OK-4 Middle Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,953	6,806	6,806	6,806	6,806	6,806	6,126
		Percent compliance with single sample standard (<400 cells per 100 ml)	51	52	52	52	52	52	53
		Geometric mean (cells per 100 ml)	1,041	946	946	946	946	946	857
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	20	22	22	22	22	22	26
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,103	2,731	2,731	2,731	2,731	2,731	2,459
		Percent compliance with single sample standard (<400 cells per 100 ml)	69	70	70	70	70	70	71
		Geometric mean (cells per 100 ml)	463	445	445	445	445	445	404
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	17	18	18	18	18	18	21
	Dissolved Oxygen	Mean (mg/l)	9.4	9.2	9.2	9.2	9.2	9.2	9.2
		Median (mg/l)	9.6	9.4	9.4	9.4	9.4	9.4	9.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	85	82	82	82	82	82	82
	Total Phosphorus	Mean (mg/l)	0.081	0.073	0.073	0.073	0.073	0.073	0.07
		Median (mg/l)	0.032	0.03	0.03	0.03	0.03	0.03	0.029
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	79	80	80	80	80	80	81
	Total Nitrogen	Mean (mg/l)	1.33	0.86	0.86	0.86	0.86	0.86	0.85
		Median (mg/l)	1.17	0.76	0.76	0.76	0.76	0.76	0.75
	Total Suspended Solids	Mean (mg/l)	14.9	9.4	9.4	9.4	9.4	9.4	9.4
		Median (mg/l)	7.9	5.2	5.2	5.2	5.2	5.2	5.2
	Copper	Mean (mg/l)	0.0049	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039
		Median (mg/l)	0.0013	0.001	0.001	0.001	0.001	0.001	0.001

Table I-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
OK-7 Oak Creek Downstream of Mitchell Field Drainage Ditch	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,729	6,753	6,753	6,753	6,753	6,753	6,078
		Percent compliance with single sample standard (<400 cells per 100 ml)	49	51	51	51	51	51	53
		Geometric mean (cells per 100 ml)	1,190	1,035	1,035	1,035	1,035	1,035	935
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	13	18	18	18	18	18	21
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,136	2,788	2,788	2,788	2,788	2,788	2,510
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	69	69	69	69	69	71
		Geometric mean (cells per 100 ml)	543	476	476	476	476	476	430
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	11	16	16	16	16	16	18
	Dissolved Oxygen	Mean (mg/l)	9.3	9.1	9.1	9.1	9.1	9.1	9.1
		Median (mg/l)	9.2	9.3	9.3	9.3	9.3	9.3	9.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	81	79	79	79	79	79	80
	Total Phosphorus	Mean (mg/l)	0.091	0.091	0.091	0.091	0.091	0.091	0.087
		Median (mg/l)	0.056	0.06	0.06	0.06	0.06	0.06	0.058
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	76	73	73	73	73	73	75
	Total Nitrogen	Mean (mg/l)	1.37	0.99	0.99	0.99	0.99	0.99	0.97
		Median (mg/l)	1.24	0.92	0.92	0.92	0.92	0.92	0.9
	Total Suspended Solids	Mean (mg/l)	14.9	9.5	9.5	9.5	9.5	9.5	9.5
		Median (mg/l)	7.3	4.6	4.6	4.6	4.6	4.6	4.6
	Copper	Mean (mg/l)	0.0051	0.004	0.004	0.004	0.004	0.004	0.004
		Median (mg/l)	0.0013	0.001	0.001	0.001	0.001	0.001	0.001

Table I-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
OK-8 Lower Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	15,506	13,474	13,469	13,469	13,469	13,469	12,129
		Percent compliance with single sample standard (<400 cells per 100 ml)	17	23	23	23	23	23	28
		Geometric mean (cells per 100 ml)	2,700	2,360	2,358	2,358	2,358	2,358	2,129
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	6	11	11	11	11	11	12
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	6,370	5,564	5,555	5,555	5,555	5,555	5,010
		Percent compliance with single sample standard (<400 cells per 100 ml)	31	41	41	41	41	41	46
		Geometric mean (cells per 100 ml)	1,079	909	908	908	908	908	821
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	6	11	11	11	11	11	11
	Dissolved Oxygen	Mean (mg/l)	10.2	10.2	10.2	10.2	10.2	10.2	10.2
		Median (mg/l)	10	10.1	10.1	10.1	10.1	10.1	10.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	93	92	92	92	92	92	92
	Total Phosphorus	Mean (mg/l)	0.091	0.091	0.091	0.091	0.091	0.091	0.087
		Median (mg/l)	0.058	0.063	0.063	0.063	0.063	0.063	0.06
	Total Phosphorus	Percent compliance with recommended phosphorus standard (0.1 mg/l)	76	73	73	73	73	73	75
	Total Nitrogen	Mean (mg/l)	1.27	0.94	0.94	0.94	0.94	0.94	0.92
		Median (mg/l)	1.15	0.88	0.88	0.88	0.88	0.88	0.86
	Total Suspended Solids	Mean (mg/l)	15.9	10.2	10.2	10.2	10.2	10.2	10.2
		Median (mg/l)	7.3	4.6	4.6	4.6	4.6	4.6	4.6
	Copper	Mean (mg/l)	0.0052	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041
		Median (mg/l)	0.0014	0.001	0.001	0.001	0.001	0.001	0.001

Table I-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
OK-9 Lower Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,401	6,376	6,374	6,374	6,374	6,374	5,739
		Percent compliance with single sample standard (<400 cells per 100 ml)	51	54	54	54	54	54	54
		Geometric mean (cells per 100 ml)	993	783	783	783	783	783	708
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	26	40	40	40	40	40	45
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,061	2,633	2,629	2,629	2,629	2,629	2,371
		Percent compliance with single sample standard (<400 cells per 100 ml)	71	73	73	73	73	73	74
		Geometric mean (cells per 100 ml)	388	283	282	282	282	282	256
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	21	32	32	32	32	32	35
	Dissolved Oxygen	Mean (mg/l)	10.5	10.5	10.5	10.5	10.5	10.5	10.6
		Median (mg/l)	10.3	10.3	10.3	10.3	10.3	10.3	10.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	96	96	96	96	96	96
	Total Phosphorus	Mean (mg/l)	0.092	0.087	0.087	0.087	0.087	0.087	0.084
		Median (mg/l)	0.062	0.065	0.065	0.065	0.065	0.065	0.063
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	75	74	74	74	74	74	76
	Total Nitrogen	Mean (mg/l)	1.24	0.93	0.93	0.93	0.93	0.93	0.91
		Median (mg/l)	1.12	0.89	0.89	0.89	0.89	0.89	0.88
	Total Suspended Solids	Mean (mg/l)	16	10.3	10.3	10.3	10.3	10.3	10.3
		Median (mg/l)	6.7	4.3	4.3	4.3	4.3	4.3	4.3
	Copper	Mean (mg/l)	0.0052	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041
		Median (mg/l)	0.0013	0.001	0.001	0.001	0.001	0.001	0.001

Table I-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
OK-10 Lower Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,643	5,738	5,735	5,735	5,735	5,735	5,165
		Percent compliance with single sample standard (<400 cells per 100 ml)	48	48	48	48	48	48	49
		Geometric mean (cells per 100 ml)	752	604	604	604	604	604	547
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	70	86	86	86	86	86	93
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,504	2,171	2,167	2,167	2,167	2,167	1,955
		Percent compliance with single sample standard (<400 cells per 100 ml)	71	71	71	71	71	71	71
		Geometric mean (cells per 100 ml)	179	132	132	132	132	132	120
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	59	70	70	70	70	70	75
	Dissolved Oxygen	Mean (mg/l)	11.2	11.2	11.2	11.2	11.2	11.2	11.2
		Median (mg/l)	11.2	11.2	11.2	11.2	11.2	11.2	11.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.078	0.072	0.072	0.072	0.072	0.072	0.069
		Median (mg/l)	0.046	0.045	0.045	0.045	0.045	0.045	0.043
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	79	79	79	79	79	80
	Total Nitrogen	Mean (mg/l)	1	0.75	0.75	0.75	0.75	0.75	0.74
		Median (mg/l)	0.9	0.65	0.65	0.65	0.65	0.65	0.64
	Total Suspended Solids	Mean (mg/l)	19.6	12.5	12.5	12.5	12.5	12.5	12.5
		Median (mg/l)	7.4	5	5	5	5	5	5
	Copper	Mean (mg/l)	0.006	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048
		Median (mg/l)	0.0025	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022

Source: Tetra Tech, Inc., and SEWRPC.

Table I-5

WATER QUALITY SUMMARY STATISTICS FOR SCREENING ALTERNATIVES: ROOT RIVER WATERSHED

					Screening Alternative				
Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	1A	1B	1C	1D	2
RT-1 Root River Upstream of Hale Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,644	4,648	4,648	4,648	4,648	4,648	4,184
		Percent compliance with single sample standard (<400 cells per 100 ml)	70	71	71	71	71	71	71
		Geometric mean (cells per 100 ml)	525	409	409	409	409	409	369
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	33	61	61	61	61	61	74
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,385	2,781	2,781	2,781	2,781	2,781	2,503
		Percent compliance with single sample standard (<400 cells per 100 ml)	80	81	81	81	81	81	82
		Geometric mean (cells per 100 ml)	393	303	303	303	303	303	274
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	13	27	27	27	27	27	34
	Dissolved Oxygen	Mean (mg/l)	10.8	10.8	10.8	10.8	10.8	10.8	10.8
		Median (mg/l)	10.8	10.8	10.8	10.8	10.8	10.8	10.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	96	96	96	96	96	96
	Total Phosphorus	Mean (mg/l)	0.062	0.053	0.053	0.053	0.053	0.053	0.051
		Median (mg/l)	0.025	0.021	0.021	0.021	0.021	0.021	0.021
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	87	88	88	88	88	88	88
	Total Nitrogen	Mean (mg/l)	0.98	0.84	0.84	0.84	0.84	0.84	0.84
		Median (mg/l)	1.01	0.87	0.87	0.87	0.87	0.87	0.86
	Total Suspended Solids	Mean (mg/l)	6.9	5	5	5	5	5	5
		Median (mg/l)	4.8	3.3	3.3	3.3	3.3	3.3	3.3
	Copper	Mean (mg/l)	0.0033	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026
		Median (mg/l)	0.0013	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009

Table I-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
RT-2 Root River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,040	5,869	5,862	5,862	5,862	5,862	5,283
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	66	66	66	66	66	67
		Geometric mean (cells per 100 ml)	630	501	501	501	501	501	452
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	27	46	47	47	47	47	57
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,968	3,412	3,397	3,397	3,397	3,397	3,073
		Percent compliance with single sample standard (<400 cells per 100 ml)	77	76	77	77	77	77	77
		Geometric mean (cells per 100 ml)	464	371	370	370	370	370	335
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	10	18	19	19	19	19	24
	Dissolved Oxygen	Mean (mg/l)	8.4	8.4	8.4	8.4	8.4	8.4	8.4
		Median (mg/l)	8.4	8.4	8.4	8.4	8.4	8.4	8.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	96	96	96	96	96	96
	Total Phosphorus	Mean (mg/l)	0.079	0.067	0.067	0.067	0.067	0.067	0.064
		Median (mg/l)	0.025	0.02	0.02	0.02	0.02	0.02	0.02
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	82	83	83	83	83	83	84
	Total Nitrogen	Mean (mg/l)	1.13	0.96	0.96	0.96	0.96	0.96	0.95
		Median (mg/l)	1.06	0.91	0.91	0.91	0.91	0.91	0.91
	Total Suspended Solids	Mean (mg/l)	6.3	4.6	4.6	4.6	4.6	4.6	4.6
		Median (mg/l)	4.9	3.3	3.3	3.3	3.3	3.3	3.3
	Copper	Mean (mg/l)	0.0047	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036
		Median (mg/l)	0.0013	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009

Table I-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
RT-3 Root River at Wildcat Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,328	6,066	6,061	6,061	6,061	6,061	5,465
		Percent compliance with single sample standard (<400 cells per 100 ml)	64	64	64	64	64	64	65
		Geometric mean (cells per 100 ml)	645	518	517	517	517	517	467
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	27	43	44	44	44	44	53
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,228	3,537	3,526	3,526	3,526	3,526	3,194
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	74	74	74	74	74	75
		Geometric mean (cells per 100 ml)	477	383	382	382	382	382	346
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	10	17	17	17	17	17	22
	Dissolved Oxygen	Mean (mg/l)	8.9	8.9	8.9	8.9	8.9	8.9	8.9
		Median (mg/l)	8.7	8.7	8.7	8.7	8.7	8.7	8.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	87	88	88	88	88	88	88
	Total Phosphorus	Mean (mg/l)	0.078	0.066	0.066	0.066	0.066	0.066	0.063
		Median (mg/l)	0.022	0.018	0.018	0.018	0.018	0.018	0.018
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	81	82	82	82	82	82	83
	Total Nitrogen	Mean (mg/l)	1.07	0.92	0.92	0.92	0.92	0.92	0.91
		Median (mg/l)	0.97	0.83	0.83	0.83	0.83	0.83	0.82
	Total Suspended Solids	Mean (mg/l)	9.2	6.7	6.7	6.7	6.7	6.7	6.7
		Median (mg/l)	4.8	3.3	3.3	3.3	3.3	3.3	3.2
	Copper	Mean (mg/l)	0.0049	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038
		Median (mg/l)	0.0013	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009

Table I-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
RT-4 Root River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,101	5,914	5,910	5,910	5,910	5,910	5,325
		Percent compliance with single sample standard (<400 cells per 100 ml)	56	58	58	58	58	58	59
		Geometric mean (cells per 100 ml)	865	697	696	696	696	696	629
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	19	29	29	29	29	29	35
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,018	3,370	3,363	3,363	3,363	3,363	3,038
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	68	68	68	68	68	68
		Geometric mean (cells per 100 ml)	603	491	489	489	489	489	443
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	7	11	11	11	11	11	15
	Dissolved Oxygen	Mean (mg/l)	9.6	9.5	9.5	9.5	9.5	9.5	9.5
		Median (mg/l)	9.4	9.3	9.3	9.3	9.3	9.3	9.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	95	95	95	95	95	95	95
	Total Phosphorus	Mean (mg/l)	0.08	0.068	0.068	0.068	0.068	0.068	0.065
		Median (mg/l)	0.022	0.019	0.019	0.019	0.019	0.019	0.018
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	80	80	80	80	80	81
	Total Nitrogen	Mean (mg/l)	1.1	0.87	0.87	0.87	0.87	0.87	0.86
		Median (mg/l)	0.98	0.75	0.75	0.75	0.75	0.75	0.74
	Total Suspended Solids	Mean (mg/l)	10.3	7.2	7.2	7.2	7.2	7.2	7.2
		Median (mg/l)	4.7	3.2	3.2	3.2	3.2	3.2	3.2
	Copper	Mean (mg/l)	0.0054	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043
		Median (mg/l)	0.0014	0.001	0.001	0.001	0.001	0.001	0.001

Table I-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
RT-10 Root River Upstream of Ryan Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,995	5,966	5,964	5,964	5,964	5,964	5,374
		Percent compliance with single sample standard (<400 cells per 100 ml)	48	51	51	51	51	51	52
		Geometric mean (cells per 100 ml)	1,189	985	984	984	984	984	888
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	9	18	18	18	18	18	21
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,768	3,213	3,210	3,210	3,210	3,210	2,901
		Percent compliance with single sample standard (<400 cells per 100 ml)	59	62	62	62	62	62	64
		Geometric mean (cells per 100 ml)	717	593	591	591	591	591	535
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	4	9	9	9	9	9	13
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.6	11.6	11.6	11.6	11.6	11.6	11.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.087	0.077	0.077	0.077	0.077	0.077	0.073
		Median (mg/l)	0.057	0.052	0.052	0.052	0.052	0.052	0.05
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	73	76	76	76	76	76	77
	Total Nitrogen	Mean (mg/l)	1.12	0.88	0.88	0.88	0.88	0.88	0.87
		Median (mg/l)	1.1	0.87	0.87	0.87	0.87	0.87	0.85
	Total Suspended Solids	Mean (mg/l)	12.9	8.6	8.6	8.6	8.6	8.6	8.6
		Median (mg/l)	4.8	3.2	3.2	3.2	3.2	3.2	3.2
	Copper	Mean (mg/l)	0.002	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017
		Median (mg/l)	0.0006	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005

Table I-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
RT-17 Root River at Upstream Crossing of Milwaukee-Racine County Line and Downstream of Root River Canal	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,656	4,048	4,047	4,047	4,047	4,047	3,613
		Percent compliance with single sample standard (<400 cells per 100 ml)	43	45	45	45	45	45	48
		Geometric mean (cells per 100 ml)	1,123	1,012	1,011	1,011	1,011	1,011	882
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	7	9	9	9	9	9	10
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,994	2,536	2,535	2,535	2,535	2,535	2,265
		Percent compliance with single sample standard (<400 cells per 100 ml)	55	57	57	57	57	57	59
		Geometric mean (cells per 100 ml)	720	642	641	641	641	641	564
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	4	4	4	4	4	4	6
	Dissolved Oxygen	Mean (mg/l)	11.5	11.5	11.5	11.5	11.5	11.5	11.5
		Median (mg/l)	11.7	11.7	11.7	11.7	11.7	11.7	11.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.104	0.094	0.096	0.096	0.096	0.096	0.091
		Median (mg/l)	0.071	0.067	0.067	0.067	0.067	0.067	0.065
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	71	73	73	73	73	73	75
	Total Nitrogen	Mean (mg/l)	1.66	1.45	1.47	1.47	1.47	1.47	1.44
		Median (mg/l)	1.37	1.2	1.2	1.2	1.2	1.2	1.19
	Total Suspended Solids	Mean (mg/l)	20.6	16.2	16.2	16.2	16.2	16.2	15.2
		Median (mg/l)	4.6	3.8	3.8	3.8	3.8	3.8	3.8
	Copper	Mean (mg/l)	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
		Median (mg/l)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Table I-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
RT-22 Mouth of Root River at Lake Michigan	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,924	4,132	4,125	4,125	4,125	4,125	3,703
		Percent compliance with single sample standard (<400 cells per 100 ml)	47	48	48	48	48	48	49
		Geometric mean (cells per 100 ml)	869	763	762	762	762	762	668
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	28	34	34	34	34	34	44
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,327	2,710	2,696	2,696	2,696	2,696	2,434
		Percent compliance with single sample standard (<400 cells per 100 ml)	62	62	62	62	62	62	64
		Geometric mean (cells per 100 ml)	440	383	382	382	382	382	338
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	22	28	28	28	28	28	36
	Dissolved Oxygen	Mean (mg/l)	11.1	11.1	11.1	11.1	11.1	11.1	11.1
		Median (mg/l)	11.3	11.3	11.3	11.3	11.3	11.3	11.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.115	0.102	0.104	0.104	0.104	0.104	0.099
		Median (mg/l)	0.079	0.074	0.074	0.074	0.074	0.074	0.072
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	65	68	68	68	68	68	70
	Total Nitrogen	Mean (mg/l)	1.49	1.29	1.30	1.30	1.30	1.30	1.28
		Median (mg/l)	1.17	1.03	1.03	1.03	1.03	1.03	1.02
	Total Suspended Solids	Mean (mg/l)	38.5	28.8	28.8	28.8	28.8	28.8	27.1
		Median (mg/l)	9.4	8.0	8.0	8.0	8.0	8.0	7.7
	Copper	Mean (mg/l)	0.0015	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
		Median (mg/l)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

Source: Tetra Tech, Inc., and SEWRPC.

Table I-6

WATER QUALITY SUMMARY STATISTICS FOR SCREENING ALTERNATIVES: NEARSHORE LAKE MICHIGAN AREA

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
LM-1 Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,101	788	708	708	776	776	691
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	79	87	89	89	87	87	91
		Geometric mean (cells per 100 ml)	175	123	113	113	195	195	109
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	254	291	292	292	289	289	303
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	457	332	183	183	295	295	278
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	95	97	99	99	97	97	98
		Geometric mean (cells per 100 ml)	26	17	15	15	43	43	15
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	147	152	152	152	151	151	152
	Dissolved Oxygen	Mean (mg/l)	9.96	9.94	9.94	9.94	9.94	9.94	9.99
		Median (mg/l)	10.85	10.84	10.84	10.84	10.84	10.84	10.86
		Percent compliance with dissolved oxygen standard (>2 mg/l)[a]	99	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.0657	0.0653	0.065	0.065	0.0651	0.0651	0.0636
		Median (mg/l)	0.0550	0.0554	0.0552	0.0552	0.0553	0.0553	0.0536
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	79	79	79	79	79	79
	Total Nitrogen	Mean (mg/l)	1.69	1.62	1.63	1.63	1.63	1.63	1.61
		Median (mg/l)	1.48	1.43	1.43	1.43	1.44	1.44	1.42
	Total Suspended Solids	Mean (mg/l)	22.46	20.72	20.85	20.85	20.89	20.89	19.31
		Median (mg/l)	13.09	12.41	12.51	12.51	12.53	12.53	11.81
	Copper	Mean (mg/l)	0.00454	0.00460	0.00465	0.00465	0.00463	0.00463	0.00462
		Median (mg/l)	0.00442	0.00445	0.0045	0.0045	0.00448	0.00448	0.00448

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
LM-2 Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,466	3,187	2,125	2,125	2,281	2,281	2,037
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	58	59	67	67	66	66	69
		Geometric mean (cells per 100 ml)	595	538	293	293	348	348	277
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	208	212	237	237	234	234	242
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,250	1,119	676	676	894	894	831
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	84	85	90	90	88	88	90
		Geometric mean (cells per 100 ml)	135	118	58	58	77	77	57
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	139	142	150	150	150	150	151
	Dissolved Oxygen	Mean (mg/l)	9.26	9.44	9.48	9.48	9.44	9.44	9.49
		Median (mg/l)	9.71	9.94	9.97	9.97	9.95	9.95	9.98
		Percent compliance with dissolved oxygen standard (>2 mg/l)[a]	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0704	0.0701	0.0693	0.0693	0.0703	0.0703	0.0672
		Median (mg/l)	0.0645	0.0664	0.0653	0.0653	0.0664	0.0664	0.0637
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	86	88	89	89	87	87	90
	Total Nitrogen	Mean (mg/l)	1.53	1.33	1.31	1.31	1.32	1.32	1.29
		Median (mg/l)	1.51	1.31	1.29	1.29	1.3	1.3	1.27
	Total Suspended Solids	Mean (mg/l)	20.09	18.13	18.15	18.15	18.27	18.27	17.57
		Median (mg/l)	11.64	11.26	11.26	11.26	11.36	11.36	10.81
	Copper	Mean (mg/l)	0.01867	0.01866	0.01872	0.01872	0.01875	0.01875	0.01853
		Median (mg/l)	0.01413	0.01372	0.01376	0.01376	0.01377	0.01377	0.01377

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
LM-3 Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	931	813	576	576	637	637	585
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	86	88	92	92	91	91	93
		Geometric mean (cells per 100 ml)	141	120	86	86	96	96	81
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	308	324	344	344	343	343	351
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	494	446	261	261	354	354	348
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	94	94	97	97	95	95	96
		Geometric mean (cells per 100 ml)	40	33	21	21	25	25	21
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	150	151	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	9.12	9.27	9.3	9.3	9.27	9.27	9.32
		Median (mg/l)	9.74	9.92	9.95	9.95	9.94	9.94	9.96
		Percent compliance with dissolved oxygen standard (>2 mg/l)[a]	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0620	0.0621	0.0613	0.0613	0.062	0.062	0.0596
		Median (mg/l)	0.0589	0.0601	0.0591	0.0591	0.0597	0.0597	0.0576
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	93	94	94	94	94	94	95
	Total Nitrogen	Mean (mg/l)	1.53	1.40	1.37	1.37	1.38	1.38	1.36
		Median (mg/l)	1.44	1.31	1.28	1.28	1.29	1.29	1.27
	Total Suspended Solids	Mean (mg/l)	19.00	17.59	17.64	17.64	17.73	17.73	16.84
		Median (mg/l)	12.24	11.70	11.72	11.72	11.8	11.8	11.2
	Copper	Mean (mg/l)	0.00561	0.00540	0.00543	0.00543	0.00543	0.00543	0.00537
		Median (mg/l)	0.00509	0.00485	0.00488	0.00488	0.00488	0.00488	0.00484

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
LM-4 Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	850	693	556	556	611	611	551
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	85	90	94	94	92	92	94
		Geometric mean (cells per 100 ml)	147	121	97	97	111	111	92
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	298	316	327	327	324	324	339
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	399	341	200	200	287	287	273
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	95	96	98	98	96	96	97
		Geometric mean (cells per 100 ml)	37	29	21	21	26	26	20
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	150	152	153	153	152	152	152
	Dissolved Oxygen	Mean (mg/l)	9.51	9.62	9.65	9.65	9.63	9.63	9.67
		Median (mg/l)	10.13	10.32	10.35	10.35	10.34	10.34	10.36
		Percent compliance with dissolved oxygen standard (>2 mg/l)[a]	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0591	0.0596	0.0589	0.0589	0.0593	0.0593	0.0574
		Median (mg/l)	0.0545	0.0550	0.0541	0.0541	0.0545	0.0545	0.0526
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	92	91	92	92	91	91	91
	Total Nitrogen	Mean (mg/l)	1.58	1.49	1.46	1.46	1.47	1.47	1.45
		Median (mg/l)	1.42	1.34	1.31	1.31	1.31	1.31	1.29
	Total Suspended Solids	Mean (mg/l)	19.03	17.90	17.99	17.99	18.05	18.05	16.94
		Median (mg/l)	12.06	11.76	11.82	11.82	11.88	11.88	11.19
	Copper	Mean (mg/l)	0.00543	0.00527	0.00531	0.00531	0.0053	0.0053	0.00527
		Median (mg/l)	0.00515	0.00500	0.00505	0.00505	0.00503	0.00503	0.00499

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
LM-5 Kinnickinnic River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	352	368	190	190	235	235	345
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	98	98	99	99	98	98	99
		Geometric mean (cells per 100 ml)	52	46	40	40	43	43	39
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	363	363	364	364	364	364	363
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	255	320	71	71	142	142	300
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	98	99	100	100	99	99	99
		Geometric mean (cells per 100 ml)	17	15	12	12	13	13	12
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	152	152	153	153	153	153	152
	Dissolved Oxygen	Mean (mg/l)	8.09	8.24	8.37	8.37	8.33	8.33	8.34
		Median (mg/l)	8.58	8.73	8.86	8.86	8.83	8.83	8.83
		Percent compliance with dissolved oxygen standard (>2 mg/l)[a]	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0490	0.0484	0.0457	0.0457	0.0462	0.0462	0.046
		Median (mg/l)	0.0436	0.0431	0.0419	0.0419	0.0421	0.0421	0.0406
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	97	97	98	98	98	98	98
	Total Nitrogen	Mean (mg/l)	1.39	1.32	1.22	1.22	1.22	1.22	1.21
		Median (mg/l)	1.30	1.24	1.14	1.14	1.15	1.15	1.13
	Total Suspended Solids	Mean (mg/l)	12.16	11.30	11.22	11.22	11.29	11.29	10.78
		Median (mg/l)	7.83	7.46	7.47	7.47	7.5	7.5	7.12
	Copper	Mean (mg/l)	0.00694	0.00662	0.00665	0.00665	0.00665	0.00665	0.00662
		Median (mg/l)	0.00698	0.00662	0.00666	0.00666	0.00665	0.00665	0.00662

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
LM-6 Mouth of Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	445	379	294	294	332	332	311
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	95	97	98	98	97	97	98
		Geometric mean (cells per 100 ml)	78	69	59	59	63	63	57
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	352	360	364	364	364	364	363
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	229	202	107	107	166	166	170
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[a]	98	98	100	100	98	98	99
		Geometric mean (cells per 100 ml)	26	22	18	18	20	20	18
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[a]	152	152	153	153	153	153	152
	Dissolved Oxygen	Mean (mg/l)	9.46	9.54	9.64	9.64	9.62	9.62	9.65
		Median (mg/l)	9.97	10.09	10.18	10.18	10.17	10.17	10.17
		Percent compliance with dissolved oxygen standard (>2 mg/l)[a]	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0471	0.0475	0.0453	0.0453	0.0457	0.0457	0.0445
		Median (mg/l)	0.0424	0.0430	0.0406	0.0406	0.0408	0.0408	0.0395
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	97	97	97	97	97	97	97
	Total Nitrogen	Mean (mg/l)	1.51	1.45	1.24	1.24	1.24	1.24	1.23
		Median (mg/l)	1.44	1.39	1.14	1.14	1.15	1.15	1.13
	Total Suspended Solids	Mean (mg/l)	13.28	12.66	12.65	12.65	12.7	12.7	11.99
		Median (mg/l)	8.48	8.30	8.3	8.3	8.34	8.34	7.95
	Copper	Mean (mg/l)	0.00722	0.00698	0.00701	0.00701	0.007	0.007	0.00698
		Median (mg/l)	0.00727	0.00697	0.007	0.007	0.00699	0.00699	0.00697

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
LM-7 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	91	82	57	57	70	70	71
		Percent compliance with single sample standard (<400 cells per 100 ml)	96	97	98	98	97	97	98
		Geometric mean (cells per 100 ml)	21	20	17	17	18	18	17
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	360	362	365	365	365	365	363
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	81	74	37	37	60	60	66
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	99	99	98	98	98
		Geometric mean (cells per 100 ml)	13	12	10	10	11	11	11
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	152	152	153	153	153	153	152
	Dissolved Oxygen	Mean (mg/l)	10.34	10.36	10.49	10.49	10.48	10.48	10.49
		Median (mg/l)	10.69	10.73	10.88	10.88	10.87	10.87	10.87
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0274	0.0278	0.0250	0.0250	0.0251	0.0251	0.0248
		Median (mg/l)	0.0242	0.0248	0.0218	0.0218	0.0219	0.0219	0.0216
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	99	99	99	99	99	99	99
	Total Nitrogen	Mean (mg/l)	1.15	1.13	0.83	0.83	0.83	0.83	0.82
		Median (mg/l)	1.09	1.08	0.76	0.76	0.76	0.76	0.76
	Total Suspended Solids	Mean (mg/l)	6.45	6.24	6.18	6.18	6.2	6.2	5.95
		Median (mg/l)	4.01	4.05	4.00	4.00	4.01	4.01	3.9
	Copper	Mean (mg/l)	0.00940	0.00931	0.00932	0.00932	0.00932	0.00932	0.00931
		Median (mg/l)	0.00959	0.00952	0.00952	0.00952	0.00952	0.00952	0.00951

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
LM-8 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	66	60	39	39	49	49	53
		Percent compliance with single sample standard (<400 cells per 100 ml)	98	98	99	99	98	98	98
		Geometric mean (cells per 100 ml)	15	14	12	12	13	13	13
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	363	363	365	365	364	364	363
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	65	59	30	30	48	48	53
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	99	99	98	98	98
		Geometric mean (cells per 100 ml)	11	10	8	8	9	9	9
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	152	152	153	153	152	152	152
	Dissolved Oxygen	Mean (mg/l)	10.51	10.52	10.63	10.63	10.63	10.63	10.63
		Median (mg/l)	10.80	10.83	10.99	10.99	10.98	10.98	10.98
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0236	0.0239	0.0217	0.0217	0.0218	0.0218	0.0215
		Median (mg/l)	0.0195	0.0201	0.0183	0.0183	0.0184	0.0184	0.0182
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	99	99	100	100	99	99	100
	Total Nitrogen	Mean (mg/l)	1.04	1.02	0.78	0.78	0.78	0.78	0.78
		Median (mg/l)	0.98	0.97	0.71	0.71	0.71	0.71	0.71
	Total Suspended Solids	Mean (mg/l)	5.74	5.57	5.51	5.51	5.53	5.53	5.33
		Median (mg/l)	3.51	3.55	3.51	3.51	3.52	3.52	3.43
	Copper	Mean (mg/l)	0.00950	0.00943	0.00943	0.00943	0.00943	0.00943	0.00943
		Median (mg/l)	0.00970	0.00964	0.00965	0.00965	0.00965	0.00965	0.00964

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
LM-9 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	47	42	32	32	36	36	36
		Percent compliance with single sample standard (<400 cells per 100 ml)	99	99	100	100	100	100	99
		Geometric mean (cells per 100 ml)	11	10	9	9	10	10	9
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	26	24	12	12	19	19	22
		Percent compliance with single sample standard (<400 cells per 100 ml)	98	99	99	99	99	99	99
		Geometric mean (cells per 100 ml)	6	6	4	4	5	5	5
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	10.68	10.70	10.8	10.8	10.79	10.79	10.8
		Median (mg/l)	10.94	10.97	11.12	11.12	11.12	11.12	11.12
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0205	0.0206	0.0187	0.0187	0.0187	0.0187	0.0185
		Median (mg/l)	0.0179	0.0183	0.0163	0.0163	0.0164	0.0164	0.0162
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.95	0.94	0.70	0.70	0.70	0.70	0.70
		Median (mg/l)	0.84	0.83	0.64	0.64	0.64	0.64	0.64
	Total Suspended Solids	Mean (mg/l)	4.64	4.51	4.46	4.46	4.47	4.47	4.33
		Median (mg/l)	3.19	3.21	3.16	3.16	3.16	3.16	3.1
	Copper	Mean (mg/l)	0.00969	0.00964	0.00964	0.00964	0.00964	0.00964	0.00964
		Median (mg/l)	0.00987	0.00982	0.00982	0.00982	0.00982	0.00982	0.00982

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
LM-10 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	66	59	42	42	51	51	53
		Percent compliance with single sample standard (<400 cells per 100 ml)	98	98	99	99	99	99	99
		Geometric mean (cells per 100 ml)	17	16	13	13	15	15	14
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	362	363	363	363	363	363	363
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	50	46	25	25	38	38	41
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	99	99	98	98	99
		Geometric mean (cells per 100 ml)	11	10	9	9	10	10	9
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	152	152	153	153	152	152	152
	Dissolved Oxygen	Mean (mg/l)	10.37	10.38	10.53	10.53	10.52	10.52	10.53
		Median (mg/l)	10.75	10.77	10.93	10.93	10.93	10.93	10.93
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0262	0.0264	0.0233	0.0233	0.0234	0.0234	0.0231
		Median (mg/l)	0.0233	0.0238	0.0204	0.0204	0.0204	0.0204	0.0202
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	99	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	1.14	1.13	0.81	0.81	0.81	0.81	0.81
		Median (mg/l)	1.08	1.07	0.75	0.75	0.75	0.75	0.75
	Total Suspended Solids	Mean (mg/l)	5.64	5.47	5.39	5.39	5.41	5.41	5.21
		Median (mg/l)	3.68	3.73	3.64	3.64	3.64	3.64	3.56
	Copper	Mean (mg/l)	0.00965	0.00957	0.00957	0.00957	0.00957	0.00957	0.00957
		Median (mg/l)	0.00968	0.00963	0.00963	0.00963	0.00963	0.00963	0.00963

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
LM-11 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	11	10	7	7	9	9	9
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	3	3	5	5	4
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	6	5	3	3	5	5	5
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	2	2	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.21	11.21	11.24	11.24	11.24	11.24	11.24
		Median (mg/l)	11.49	11.50	11.54	11.54	11.54	11.54	11.54
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0095	0.0095	0.0094	0.0094	0.0091	0.0091	0.009
		Median (mg/l)	0.0076	0.0077	0.0072	0.0072	0.0073	0.0073	0.0072
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.62	0.62	0.55	0.55	0.55	0.55	0.55
		Median (mg/l)	0.55	0.55	0.52	0.52	0.52	0.52	0.52
	Total Suspended Solids	Mean (mg/l)	2.64	2.61	2.59	2.59	2.6	2.6	2.57
		Median (mg/l)	2.34	2.34	2.33	2.33	2.33	2.33	2.32
	Copper	Mean (mg/l)	0.00989	0.00990	0.00990	0.00990	0.00990	0.00990	0.00990
		Median (mg/l)	0.00999	0.00999	0.00999	0.00999	0.00999	0.00999	0.00999

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
LM-12 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	12	11	8	8	10	10	10
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	4	4	5	5	5
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	6	6	3	3	5	5	5
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	4	3	2	2	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.18	11.19	11.21	11.21	11.21	11.21	11.21
		Median (mg/l)	11.46	11.47	11.52	11.52	11.52	11.52	11.52
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0099	0.0099	0.0094	0.0094	0.0094	0.0094	0.0093
		Median (mg/l)	0.0080	0.0081	0.0076	0.0076	0.0076	0.0076	0.0076
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.63	0.63	0.55	0.55	0.55	0.55	0.55
		Median (mg/l)	0.56	0.56	0.53	0.53	0.53	0.53	0.53
	Total Suspended Solids	Mean (mg/l)	2.71	2.68	2.66	2.66	2.66	2.66	2.63
		Median (mg/l)	2.39	2.38	2.37	2.37	2.37	2.37	2.37
	Copper	Mean (mg/l)	0.00989	0.00988	0.00988	0.00988	0.00988	0.00988	0.00988
		Median (mg/l)	0.00999	0.00999	0.00999	0.00999	0.00999	0.00999	0.00999

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
LM-13 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	69	59	14	14	57	57	53
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	100	100	98	98	99
		Geometric mean (cells per 100 ml)	16	15	5	5	14	14	13
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	363	364	365	365	364	364	364
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	58	49	7	7	47	47	45
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	100	100	98	98	99
		Geometric mean (cells per 100 ml)	10	9	3	3	9	9	8
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	10.87	10.89	10.97	10.97	10.97	10.97	10.97
		Median (mg/l)	11.14	11.16	11.28	11.28	11.28	11.28	11.28
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0195	0.0195	0.0183	0.0183	0.0184	0.0184	0.0182
		Median (mg/l)	0.0162	0.0164	0.0154	0.0154	0.0155	0.0155	0.0153
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.86	0.85	0.68	0.68	0.68	0.68	0.68
		Median (mg/l)	0.78	0.77	0.63	0.63	0.63	0.63	0.63
	Total Suspended Solids	Mean (mg/l)	4.24	4.04	4	4	4.01	4.01	3.92
		Median (mg/l)	2.84	2.83	2.79	2.79	2.79	2.79	2.75
	Copper	Mean (mg/l)	0.00984	0.00998	0.00998	0.00998	0.00998	0.00998	0.00989
		Median (mg/l)	0.00991	0.00988	0.00988	0.00988	0.00988	0.00988	0.00988

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
LM-14 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3	3	3	3	3	3	3
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2	2	2	2	2	2	2
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.36	11.36	11.37	11.37	11.37	11.37	11.37
		Median (mg/l)	11.64	11.66	11.66	11.66	11.66	11.66	11.66
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0068	0.0068	0.0067	0.0067	0.0067	0.0067	0.0067
		Median (mg/l)	0.0049	0.0049	0.0048	0.0048	0.0048	0.0048	0.0048
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.54	0.54	0.53	0.53	0.53	0.53	0.53
		Median (mg/l)	0.53	0.53	0.52	0.52	0.52	0.52	0.52
	Total Suspended Solids	Mean (mg/l)	2.39	2.38	2.37	2.37	2.37	2.37	2.36
		Median (mg/l)	2.33	2.32	2.32	2.32	2.32	2.32	2.32
	Copper	Mean (mg/l)	0.00993	0.00992	0.00992	0.00992	0.00992	0.00992	0.00992
		Median (mg/l)	0.01000	0.01000	0.01000	0.01000	0.01000	0.01000	0.01000

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
LM-15 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5	5	3	3	4	4	4
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	3	3	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	8	7	4	4	6	6	6
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	3	3	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.31	11.31	11.33	11.33	11.33	11.33	11.33
		Median (mg/l)	11.59	11.59	11.62	11.62	11.62	11.62	11.62
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0086	0.0086	0.0084	0.0084	0.0084	0.0084	0.0084
		Median (mg/l)	0.0064	0.0065	0.0064	0.0064	0.0064	0.0064	0.0064
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.58	0.57	0.55	0.55	0.55	0.55	0.55
		Median (mg/l)	0.55	0.55	0.53	0.53	0.53	0.53	0.53
	Total Suspended Solids	Mean (mg/l)	2.67	2.63	2.63	2.63	2.63	2.63	2.6
		Median (mg/l)	2.31	2.31	2.3	2.3	2.31	2.31	2.3
	Copper	Mean (mg/l)	0.00989	0.00988	0.00988	0.00988	0.00989	0.00989	0.00988
		Median (mg/l)	0.00999	0.00998	0.00998	0.00998	0.00999	0.00999	0.00998

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
LM-16 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	9	9	6	6	8	8	8
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	4	4	4	4	4
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	5	4	3	3	4	4	4
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	2	2	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.26	11.27	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.56	11.57	11.61	11.61	11.61	11.61	11.61
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0118	0.0118	0.0119	0.0119	0.0119	0.0119	0.0118
		Median (mg/l)	0.0101	0.0101	0.0100	0.0100	0.0100	0.0100	0.0099
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.65	0.65	0.60	0.60	0.60	0.60	0.60
		Median (mg/l)	0.62	0.62	0.57	0.57	0.57	0.57	0.57
	Total Suspended Solids	Mean (mg/l)	2.57	2.53	2.51	2.51	2.51	2.51	2.49
		Median (mg/l)	2.30	2.29	2.28	2.28	2.28	2.28	2.27
	Copper	Mean (mg/l)	0.00994	0.00998	0.00998	0.00998	0.00998	0.00998	0.00995
		Median (mg/l)	0.00999	0.00998	0.00998	0.00998	0.00998	0.00998	0.00998

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative				
					1A	1B	1C	1D	2
LM-17 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	21	20	19	19	20	20	19
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	8	7	7	7	7	7	7
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	364	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	9	9	8	8	9	9	9
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	4	4	5	5	5
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.19	11.19	11.26	11.26	11.26	11.26	11.26
		Median (mg/l)	11.39	11.40	11.49	11.49	11.49	11.49	11.48
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0196	0.0193	0.0227	0.0227	0.0227	0.0227	0.0227
		Median (mg/l)	0.0161	0.0158	0.0187	0.0187	0.0187	0.0187	0.188
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.97	0.96	0.94	0.94	0.94	0.94	0.94
		Median (mg/l)	0.88	0.88	0.85	0.85	0.85	0.85	0.85
	Total Suspended Solids	Mean (mg/l)	2.52	2.47	2.4	2.4	2.4	2.4	2.39
		Median (mg/l)	2.31	2.30	2.26	2.26	2.26	2.26	2.25
	Copper	Mean (mg/l)	0.01017	0.01015	0.01015	0.01015	0.01015	0.01015	0.01015
		Median (mg/l)	0.01006	0.01005	0.01005	0.01005	0.01005	0.01005	0.01005

Table I-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Screening Alternative 1A	1B	1C	1D	2
LM-18 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3	3	3	3	3	3	3
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2	2	2	2	2	2	2
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.37	11.37	11.38	11.38	11.38	11.38	11.38
		Median (mg/l)	11.63	11.63	11.64	11.64	11.64	11.64	11.64
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0080	0.0079	0.0081	0.0081	0.0081	0.0081	0.0081
		Median (mg/l)	0.0062	0.0062	0.0064	0.0064	0.0064	0.0064	0.0063
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.57	0.57	0.56	0.56	0.56	0.56	0.56
		Median (mg/l)	0.56	0.56	0.55	0.55	0.55	0.55	0.55
	Total Suspended Solids	Mean (mg/l)	2.20	2.19	2.19	2.19	2.19	2.19	2.19
		Median (mg/l)	2.18	2.17	2.17	2.17	2.17	2.17	2.17
	Copper	Mean (mg/l)	0.00993	0.00993	0.00993	0.00993	0.00993	0.00993	0.00993
		Median (mg/l)	0.00999	0.00999	0.00999	0.00999	0.00999	0.00999	0.00999

[a]*Variance Standard in Chapter NR 104 of the* Wisconsin Administrative Code.

Source: HydroQual, Inc., and SEWRPC.

Appendix J (revised)

COMPARISON OF WATER QUALITY SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS

Table J-1

WATER QUALITY SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: KINNICKINNIC RIVER WATERSHED

					Alternative[a]			
Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	B1	B2	C1	C2
KK-3 Kinnickinnic River Upstream of Confluence with Wilson Park Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,373	4,533	4,522	4,522	3,960	3,960
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	79	80	80	80	80	80
		Geometric mean (cells per 100 ml)	371	318	318	318	282	282
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	305	317	317	317	322	322
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,747	2,375	2,348	2,348	1,831	1,831
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	89	89	89	89	90	90
		Geometric mean (cells per 100 ml)	260	228	227	227	196	196
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	152	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	9.4	9.4	9.4	9.4	9.4	9.4
		Median (mg/l)	8.8	8.8	8.8	8.8	8.8	8.8
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.222	0.214	0.214	0.214	0.211	0.211
		Median (mg/l)	0.206	0.199	0.199	0.199	0.197	0.197
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	13	14	14	14	14	14
	Total Nitrogen	Mean (mg/l)	1.39	1.30	1.30	1.30	1.29	1.29
		Median (mg/l)	1.36	1.28	1.28	1.28	1.27	1.27
	Total Suspended Solids	Mean (mg/l)	10.6	8.5	8.5	8.5	8.5	8.5
		Median (mg/l)	4.2	3.5	3.5	3.5	3.5	3.5
	Copper	Mean (mg/l)	0.0037	0.0030	0.0030	0.0030	0.0030	0.0030
		Median (mg/l)	0.0010	0.0008	0.0008	0.0008	0.0008	0.0008

Indicates Revision from May 2013 Plan Amendment

Table J-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
KK-4 Wilson Creek Upstream of Holmes Avenue Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,897	3,244	3,240	3,240	2,812	2,812
		Percent compliance with single sample standard (<400 cells per 100 ml)	52	52	52	52	56	56
		Geometric mean (cells per 100 ml)	609	520	520	520	422	422
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	54	72	72	72	101	101
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,179	1,764	1,755	1,755	1,329	1,329
		Percent compliance with single sample standard (<400 cells per 100 ml)	67	68	68	68	76	76
		Geometric mean (cells per 100 ml)	313	257	257	257	181	181
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	36	47	47	47	69	69
	Dissolved Oxygen	Mean (mg/l)	7.5	7.6	7.6	7.6	7.6	7.6
		Median (mg/l)	7.3	7.3	7.3	7.3	7.3	7.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.222	0.220	0.220	0.220	0.217	0.217
		Median (mg/l)	0.123	0.122	0.122	0.122	0.121	0.121
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	35	33	33	33	34	34
	Total Nitrogen	Mean (mg/l)	1.65	1.57	1.57	1.57	1.56	1.56
		Median (mg/l)	0.99	0.89	0.89	0.89	0.88	0.88
	Total Suspended Solids	Mean (mg/l)	20.1	15.2	15.2	15.2	15.2	15.2
		Median (mg/l)	6.5	5.4	5.4	5.4	5.4	5.4
	Copper	Mean (mg/l)	0.0041	0.0036	0.0036	0.0036	0.0036	0.0036
		Median (mg/l)	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019

Indicates Revision from May 2013 Plan Amendment

Table J-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
KK-8 Wilson Park Creek, USGS Gauge	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,124	4,244	4,243	4,243	3,679	3,679
		Percent compliance with single sample standard (<400 cells per 100 ml)	56	57	57	57	60	60
		Geometric mean (cells per 100 ml)	697	598	598	598	497	497
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	35	49	49	49	69	69
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,552	2,119	2,118	2,118	1,571	1,571
		Percent compliance with single sample standard (<400 cells per 100 ml)	73	73	73	73	78	78
		Geometric mean (cells per 100 ml)	357	304	304	304	226	226
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	26	34	34	34	48	48
	Dissolved Oxygen	Mean (mg/l)	10.9	10.9	10.9	10.9	10.9	10.9
		Median (mg/l)	11.2	11.2	11.2	11.2	11.2	11.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.200	0.194	0.194	0.194	0.191	0.191
		Median (mg/l)	0.142	0.139	0.139	0.139	0.137	0.137
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	33	33	33	33	33	33
	Total Nitrogen	Mean (mg/l)	1.48	1.38	1.38	1.38	1.37	1.37
		Median (mg/l)	1.16	1.06	1.06	1.06	1.05	1.05
	Total Suspended Solids	Mean (mg/l)	14.1	10.9	10.9	10.9	10.9	10.9
		Median (mg/l)	4.8	3.7	3.7	3.7	3.7	3.7
	Copper	Mean (mg/l)	0.0044	0.0038	0.0038	0.0038	0.0038	0.0038
		Median (mg/l)	0.0018	0.0016	0.0016	0.0016	0.0016	0.0016

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Table J-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
KK-9 Kinnickinnic River Downstream of Wilson Park Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,785	4,899	4,517	4,616	4,362	4,362
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	74	75	75	75	76	76
		Geometric mean (cells per 100 ml)	654	563	558	561	473	473
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	254	265	265	265	274	274
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,360	3,004	2,394	2,579	2,625	2,625
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	87	86	86	86	88	88
		Geometric mean (cells per 100 ml)	343	295	291	294	227	227
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	146	148	148	148	151	151
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.4	11.4	11.4	11.4	11.4	11.4
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.206	0.199	0.197	0.197	0.196	0.196
		Median (mg/l)	0.171	0.164	0.164	0.164	0.161	0.161
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	24	24	24	24	25	25
	Total Nitrogen	Mean (mg/l)	1.40	1.30	1.30	1.30	1.29	1.29
		Median (mg/l)	1.22	1.13	1.13	1.13	1.12	1.12
	Total Suspended Solids	Mean (mg/l)	14.5	11.5	11.4	11.4	11.5	11.5
		Median (mg/l)	4.8	3.8	3.8	3.8	3.8	3.8
	Copper	Mean (mg/l)	0.0047	0.0041	0.0041	0.0041	0.0041	0.0041
		Median (mg/l)	0.0019	0.0018	0.0018	0.0018	0.0018	0.0018

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Table J-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
KK-10 Kinnickinnic River near Upstream Limit of Estuary	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,859	4,909	4,541	4,625	4,293	4,293
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	74	75	75	75	76	76
		Geometric mean (cells per 100 ml)	842	703	684	689	590	590
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	229	250	256	254	262	262
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,401	3,000	2,406	2,564	2,444	2,444
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	86	86	86	86	88	88
		Geometric mean (cells per 100 ml)	498	415	395	401	317	317
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	131	140	145	144	146	146
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.5	11.5	11.5	11.5	11.5	11.5
		Percent compliance with dissolved oxygen standard (>2 mg/l)[a]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.196	0.189	0.187	0.188	0.186	0.186
		Median (mg/l)	0.165	0.158	0.157	0.158	0.155	0.155
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	27	27	27	27	28	28
	Total Nitrogen	Mean (mg/l)	1.36	1.27	1.27	1.27	1.26	1.26
		Median (mg/l)	1.22	1.12	1.12	1.12	1.12	1.12
	Total Suspended Solids	Mean (mg/l)	13.2	10.5	10.4	10.4	10.5	10.5
		Median (mg/l)	4.7	3.8	3.8	3.8	3.8	3.8
	Copper	Mean (mg/l)	0.0048	0.0041	0.0041	0.0041	0.0041	0.0041
		Median (mg/l)	0.0019	0.0017	0.0017	0.0017	0.0017	0.0017

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[a]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

[b]*Variance Standard in Chapter NR 104 of the* Wisconsin Administrative Code.

Source: Tetra Tech, Inc., and SEWRPC.

Table J-2

WATER QUALITY SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: MENOMONEE RIVER WATERSHED

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
MN-2 Upper Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	797	983	975	975	824	834
		Percent compliance with single sample standard (<400 cells per 100 ml)	75	71	72	72	73	73
		Geometric mean (cells per 100 ml)	124	150	131	131	114	117
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	262	240	249	249	262	260
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	602	698	692	692	588	598
		Percent compliance with single sample standard (<400 cells per 100 ml)	86	83	83	83	83	83
		Geometric mean (cells per 100 ml)	79	92	77	77	68	69
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	144	137	140	140	143	143
	Dissolved Oxygen	Mean (mg/l)	9.3	9.4	9.4	9.4	9.4	9.4
		Median (mg/l)	9.1	9.2	9.2	9.2	9.2	9.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	96	100
	Total Phosphorus	Mean (mg/l)	0.143	0.146	0.145	0.145	0.143	0.145
		Median (mg/l)	0.111	0.112	0.112	0.112	0.110	0.112
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	46	45	46	46	46	46
	Total Nitrogen	Mean (mg/l)	1.47	1.36	1.35	1.35	1.34	1.24
		Median (mg/l)	1.35	1.26	1.26	1.26	1.25	1.17
	Total Suspended Solids	Mean (mg/l)	7.9	7.9	7.8	7.8	7.5	7.4
		Median (mg/l)	5.7	5.7	5.6	5.6	5.5	5.4
	Copper	Mean (mg/l)	0.0024	0.0026	0.0026	0.0026	0.0024	0.0023
		Median (mg/l)	0.0012	0.0011	0.0011	0.0011	0.0011	0.0010

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Table J-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
MN-5 Menomonee River at Washington-Waukesha County Line	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,417	1,605	1,601	1,601	1,354	1,361
		Percent compliance with single sample standard (<400 cells per 100 ml)	68	65	65	65	66	66
		Geometric mean (cells per 100 ml)	205	234	220	220	187	190
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	202	184	190	190	210	209
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	890	982	979	979	831	837
		Percent compliance with single sample standard (<400 cells per 100 ml)	82	79	79	79	80	80
		Geometric mean (cells per 100 ml)	105	118	109	109	93	94
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	125	114	118	118	129	129
	Dissolved Oxygen	Mean (mg/l)	10.5	10.5	10.5	10.5	10.5	10.5
		Median (mg/l)	10.7	10.7	10.7	10.7	10.7	10.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.097	0.105	0.105	0.105	0.100	0.101
		Median (mg/l)	0.063	0.066	0.066	0.066	0.064	0.065
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	70	68	68	68	69	69
	Total Nitrogen	Mean (mg/l)	1.23	1.09	1.09	1.09	1.06	1.00
		Median (mg/l)	1.11	0.99	0.99	0.99	0.96	0.91
	Total Suspended Solids	Mean (mg/l)	10.2	10.2	10.1	10.1	9.4	9.4
		Median (mg/l)	6.0	5.8	5.8	5.8	5.5	5.5
	Copper	Mean (mg/l)	0.0041	0.0047	0.0047	0.0047	0.0043	0.0043
		Median (mg/l)	0.0016	0.0017	0.0017	0.0017	0.0016	0.0015

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Table J-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
MN-9 Menomonee River Downstream of Butler Ditch	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,828	2,728	2,726	2,726	2,387	2,374
		Percent compliance with single sample standard (<400 cells per 100 ml)	57	56	56	56	57	57
		Geometric mean (cells per 100 ml)	489	489	482	482	420	421
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	72	78	81	81	105	104
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,571	1,438	1,437	1,437	1,265	1,232
		Percent compliance with single sample standard (<400 cells per 100 ml)	76	74	74	74	75	75
		Geometric mean (cells per 100 ml)	229	216	212	212	186	186
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	51	57	59	59	77	77
	Dissolved Oxygen	Mean (mg/l)	10.8	10.8	10.8	10.8	10.8	10.8
		Median (mg/l)	11.0	11.0	11.0	11.0	11.0	11.0
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.101	0.102	0.102	0.102	0.097	0.098
		Median (mg/l)	0.061	0.065	0.065	0.065	0.063	0.064
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	69	66	66	66	68	68
	Total Nitrogen	Mean (mg/l)	1.10	0.94	0.93	0.93	0.91	0.88
		Median (mg/l)	1.01	0.87	0.87	0.87	0.85	0.82
	Total Suspended Solids	Mean (mg/l)	15.7	13.3	13.3	13.3	12.8	12.8
		Median (mg/l)	6.0	5.2	5.2	5.2	5.0	4.9
	Copper	Mean (mg/l)	0.0052	0.0052	0.0052	0.0052	0.0050	0.0050
		Median (mg/l)	0.0019	0.0020	0.0020	0.0020	0.0018	0.0018

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Table J-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
MN-11 Little Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,777	6,389	6,390	6,390	5,750	5,777
		Percent compliance with single sample standard (<400 cells per 100 ml)	53	53	53	53	54	54
		Geometric mean (cells per 100 ml)	700	589	559	559	509	512
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	68	84	88	88	97	96
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,477	3,591	3,589	3,589	3,232	3,254
		Percent compliance with single sample standard (<400 cells per 100 ml)	70	70	70	70	71	71
		Geometric mean (cells per 100 ml)	261	213	197	197	180	181
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	48	60	63	63	69	69
	Dissolved Oxygen	Mean (mg/l)	10.4	10.4	10.4	10.4	10.4	10.3
		Median (mg/l)	10.5	10.5	10.5	10.5	10.5	10.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.111	0.105	0.105	0.105	0.102	0.103
		Median (mg/l)	0.072	0.070	0.070	0.070	0.069	0.070
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	68	69	69	69	70	69
	Total Nitrogen	Mean (mg/l)	1.24	1.01	1.01	1.01	1.00	0.97
		Median (mg/l)	1.15	0.93	0.93	0.93	0.92	0.90
	Total Suspended Solids	Mean (mg/l)	13.2	9.8	9.7	9.7	9.8	9.7
		Median (mg/l)	4.6	3.4	3.4	3.4	3.4	3.4
	Copper	Mean (mg/l)	0.0050	0.0042	0.0042	0.0042	0.0042	0.0042
		Median (mg/l)	0.0017	0.0015	0.0015	0.0015	0.0015	0.0014

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Table J-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
MN-12 Menomonee River Downstream of Little Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,366	3,913	3,912	3,913	3,476	3,481
		Percent compliance with single sample standard (<400 cells per 100 ml)	50	49	49	49	50	50
		Geometric mean (cells per 100 ml)	795	746	737	737	651	654
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	31	38	39	39	49	49
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,175	1,895	1,894	1,896	1,689	1,682
		Percent compliance with single sample standard (<400 cells per 100 ml)	69	68	68	68	69	69
		Geometric mean (cells per 100 ml)	348	314	309	309	274	275
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	21	26	27	27	34	34
	Dissolved Oxygen	Mean (mg/l)	10.7	10.7	10.7	10.7	10.7	10.7
		Median (mg/l)	10.9	10.9	10.9	10.9	10.9	10.9
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.100	0.100	0.100	0.100	0.095	0.096
		Median (mg/l)	0.061	0.064	0.064	0.064	0.062	0.063
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	69	68	68	68	69	69
	Total Nitrogen	Mean (mg/l)	1.09	0.91	0.91	0.91	0.89	0.87
		Median (mg/l)	1.02	0.87	0.87	0.87	0.85	0.82
	Total Suspended Solids	Mean (mg/l)	13.4	11.2	11.1	11.1	10.8	10.8
		Median (mg/l)	5.2	4.4	4.3	4.3	4.2	4.2
	Copper	Mean (mg/l)	0.0054	0.0052	0.0052	0.0052	0.0050	0.0050
		Median (mg/l)	0.0021	0.0021	0.0021	0.0021	0.0021	0.0020

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Table J-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
MN-14 Underwood Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	8,133	6,589	6,589	6,589	5,823	5,793
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	71	71	71	71	72	72
		Geometric mean (cells per 100 ml)	691	552	552	552	493	494
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	247	261	261	261	267	267
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,964	2,459	2,459	2,459	1,956	1,956
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	86	86	86	86	87	87
		Geometric mean (cells per 100 ml)	351	278	278	278	246	246
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	147	151	151	151	152	152
	Dissolved Oxygen	Mean (mg/l)	11.0	11.1	11.1	11.1	11.1	11.1
		Median (mg/l)	11.1	11.2	11.2	11.2	11.2	11.2
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.096	0.084	0.084	0.084	0.080	0.080
		Median (mg/l)	0.061	0.055	0.055	0.055	0.054	0.054
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	77	80	80	80	81	81
	Total Nitrogen	Mean (mg/l)	1.17	1.00	1.00	1.00	0.99	0.99
		Median (mg/l)	1.11	0.95	0.95	0.95	0.94	0.94
	Total Suspended Solids	Mean (mg/l)	16.8	12.4	12.4	12.4	12.4	12.4
		Median (mg/l)	7.9	5.7	5.7	5.7	5.7	5.7
	Copper	Mean (mg/l)	0.0048	0.0037	0.0037	0.0037	0.0037	0.0037
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010	0.0010

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Table J-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
MN-16 Honey Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	9,286	7,750	7,750	7,750	6,730	6,609
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	72	73	73	73	74	74
		Geometric mean (cells per 100 ml)	612	511	511	511	449	446
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	259	270	270	270	277	278
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,073	3,404	3,404	3,404	2,478	2,478
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	86	86	86	86	88	88
		Geometric mean (cells per 100 ml)	325	272	272	272	230	230
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	148	152	152	152	153	153
	Dissolved Oxygen	Mean (mg/l)	11.0	11.0	11.0	11.0	11.0	11.0
		Median (mg/l)	10.7	10.6	10.6	10.6	10.6	10.6
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	97	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.118	0.110	0.110	0.110	0.107	0.107
		Median (mg/l)	0.084	0.080	0.080	0.080	0.079	0.079
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	64	67	67	67	68	68
	Total Nitrogen	Mean (mg/l)	1.28	1.17	1.17	1.17	1.16	1.16
		Median (mg/l)	1.22	1.12	1.12	1.12	1.10	1.10
	Total Suspended Solids	Mean (mg/l)	14.4	11.1	11.1	11.1	11.1	11.1
		Median (mg/l)	7.2	5.6	5.6	5.6	5.6	5.6
	Copper	Mean (mg/l)	0.0046	0.0038	0.0038	0.0038	0.0038	0.0038
		Median (mg/l)	0.0016	0.0014	0.0014	0.0014	0.0014	0.0014

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Table J-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
MN-17 Menomonee River Downstream of Honey Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,926	5,878	5,810	5,804	5,109	5,071
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	63	63	63	63	64	64
		Geometric mean (cells per 100 ml)	1,124	1,000	989	989	867	867
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	196	205	206	206	217	217
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,622	3,051	2,920	2,908	2,366	2,367
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	81	81	81	81	82	82
		Geometric mean (cells per 100 ml)	496	423	416	417	358	360
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	130	137	138	138	142	142
	Dissolved Oxygen	Mean (mg/l)	11.1	10.9	10.9	10.9	10.9	10.9
		Median (mg/l)	11.1	11.0	11.0	11.0	11.0	11.0
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.111	0.108	0.107	0.107	0.103	0.104
		Median (mg/l)	0.074	0.077	0.077	0.077	0.075	0.075
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	66	65	65	65	67	66
	Total Nitrogen	Mean (mg/l)	1.14	0.98	0.98	0.98	0.96	0.95
		Median (mg/l)	1.08	0.94	0.94	0.94	0.92	0.91
	Total Suspended Solids	Mean (mg/l)	16.3	13.3	13.3	13.3	13.1	13.0
		Median (mg/l)	6.0	4.9	4.9	4.9	4.8	4.8
	Copper	Mean (mg/l)	0.0057	0.0052	0.0052	0.0052	0.0051	0.0051
		Median (mg/l)	0.0024	0.0024	0.0024	0.0024	0.0023	0.0023

Indicates Revision from May 2013 Plan Amendment

Table J-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
MN-18 Menomonee River near Upstream Limit of Estuary	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,889	5,922	5,858	5,849	5,128	5,089
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	64	63	63	63	64	65
		Geometric mean (cells per 100 ml)	1,081	972	961	961	842	841
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	200	207	208	208	218	218
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,557	3,062	2,939	2,924	2,322	2,323
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	81	81	81	81	82	82
		Geometric mean (cells per 100 ml)	468	407	400	401	343	344
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	133	137	138	138	141	141
	Dissolved Oxygen	Mean (mg/l)	11.0	10.9	10.9	10.9	10.9	10.9
		Median (mg/l)	11.0	10.9	10.9	10.9	10.9	10.9
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.133	0.130	0.130	0.130	0.126	0.126
		Median (mg/l)	0.104	0.106	0.105	0.105	0.103	0.104
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	52	50	51	51	52	51
	Total Nitrogen	Mean (mg/l)	1.26	1.11	1.11	1.11	1.09	1.08
		Median (mg/l)	1.20	1.07	1.07	1.07	1.05	1.04
	Total Suspended Solids	Mean (mg/l)	16.0	13.3	13.2	13.3	13.0	13.0
		Median (mg/l)	5.5	4.8	4.8	4.8	4.7	4.7
	Copper	Mean (mg/l)	0.0056	0.0051	0.0051	0.0051	0.0050	0.0050
		Median (mg/l)	0.0023	0.0023	0.0023	0.0023	0.0022	0.0022

Indicates Revision from May 2013 Plan Amendment

[a]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

[b]*Variance Standard in Chapter NR 104 of the* Wisconsin Administrative Code.

Source: Tetra Tech, Inc., and SEWRPC.

Table J-3

WATER QUALITY SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: MILWAUKEE RIVER WATERSHED

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
ML-4 West Branch of the Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,808	3,201	3,201	3,201	2,971	2,883
		Percent compliance with single sample standard (<400 cells per 100 ml)	1	1	1	1	1	2
		Geometric mean (cells per 100 ml)	1,770	1,942	1,942	1,942	1,867	1,697
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	0	0	0
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,003	2,362	2,362	2,362	2,215	2,140
		Percent compliance with single sample standard (<400 cells per 100 ml)	3	3	3	3	3	4
		Geometric mean (cells per 100 ml)	1,302	1,444	1,444	1,444	1,404	1,266
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	0	0	0
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.5	11.5	11.5	11.5	11.5	11.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.060	0.058	0.053	0.053	0.055	0.055
		Median (mg/l)	0.024	0.023	0.022	0.022	0.022	0.023
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	82	82	84	84	83	83
	Total Nitrogen	Mean (mg/l)	2.59	2.57	2.54	2.54	2.56	2.27
		Median (mg/l)	2.53	2.52	2.51	2.51	2.52	2.24
	Total Suspended Solids	Mean (mg/l)	17.70	17.33	15.11	15.11	16.01	15.58
		Median (mg/l)	8.40	8.30	7.95	7.95	8.12	7.91
	Copper	Mean (mg/l)	0.0030	0.0030	0.0030	0.0030	0.0030	0.0031
		Median (mg/l)	0.0020	0.0020	0.0020	0.0020	0.0020	0.002

Table J-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
ML-5 Kewaskum, USGS Sampling Location (4086149)	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,761	1,875	1,875	1,875	1,738	1,674
		Percent compliance with single sample standard (<400 cells per 100 ml)	11	10	10	10	10	15
		Geometric mean (cells per 100 ml)	1,116	1,182	1,182	1,182	1,128	1,029
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	3	3	3	3	3	3
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,088	1,192	1,192	1,192	1,117	1,067
		Percent compliance with single sample standard (<400 cells per 100 ml)	24	21	21	21	22	29
		Geometric mean (cells per 100 ml)	702	759	759	759	734	658
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	3	3	3	3	3	3
	Dissolved Oxygen	Mean (mg/l)	11.2	11.2	11.2	11.2	11.2	11.2
		Median (mg/l)	11.2	11.2	11.2	11.2	11.2	11.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.068	0.068	0.061	0.061	0.065	0.064
		Median (mg/l)	0.047	0.047	0.044	0.044	0.045	0.046
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	84	84	87	87	86	86
	Total Nitrogen	Mean (mg/l)	2.33	2.31	2.28	2.28	2.30	2.02
		Median (mg/l)	2.29	2.27	2.25	2.25	2.27	2.00
	Total Suspended Solids	Mean (mg/l)	14.10	13.96	12.13	12.13	12.90	12.76
		Median (mg/l)	8.50	8.50	7.76	7.76	8.05	8.03
	Copper	Mean (mg/l)	0.0032	0.0032	0.0032	0.0032	0.0032	0.0033
		Median (mg/l)	0.0027	0.0028	0.0028	0.0028	0.0028	0.0028

Table J-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
ML-10 East Branch Milwaukee River, USGS Sampling Location (4086200)	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	948	1,025	1,025	1,025	932	934
		Percent compliance with single sample standard (<400 cells per 100 ml)	48	47	47	47	50	52
		Geometric mean (cells per 100 ml)	472	488	488	488	454	435
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	45	43	43	43	47	55
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	667	769	769	769	703	708
		Percent compliance with single sample standard (<400 cells per 100 ml)	80	79	79	79	81	82
		Geometric mean (cells per 100 ml)	268	278	278	278	264	246
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	41	39	39	39	43	50
	Dissolved Oxygen	Mean (mg/l)	11.5	11.5	11.5	11.5	11.5	11.5
		Median (mg/l)	11.6	11.6	11.6	11.6	11.6	11.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.084	0.083	0.076	0.076	0.080	0.080
		Median (mg/l)	0.079	0.078	0.071	0.071	0.075	0.075
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	82	83	88	88	86	86
	Total Nitrogen	Mean (mg/l)	1.37	1.35	1.30	1.30	1.32	1.17
		Median (mg/l)	1.36	1.35	1.29	1.29	1.32	1.16
	Total Suspended Solids	Mean (mg/l)	3.5	3.4	3.0	3.0	3.2	3.2
		Median (mg/l)	2.2	2.1	1.9	1.9	2.0	2.0
	Copper	Mean (mg/l)	0.0032	0.0032	0.0032	0.0032	0.0032	0.0033
		Median (mg/l)	0.0030	0.0030	0.0030	0.0030	0.0030	0.0031

Table J-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
ML-13 Newburg, USGS Sampling Location (4086265)	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,822	915	915	915	839	813
		Percent compliance with single sample standard (<400 cells per 100 ml)	40	43	44	44	44	46
		Geometric mean (cells per 100 ml)	659	452	452	452	425	395
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	68	95	95	95	99	108
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	808	383	383	383	351	341
		Percent compliance with single sample standard (<400 cells per 100 ml)	73	76	76	76	77	78
		Geometric mean (cells per 100 ml)	257	184	184	184	176	159
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	62	84	84	84	87	94
	Dissolved Oxygen	Mean (mg/l)	11.5	11.5	11.5	11.5	11.5	11.5
		Median (mg/l)	11.6	11.6	11.6	11.6	11.6	11.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.118	0.129	0.123	0.123	0.126	0.129
		Median (mg/l)	0.103	0.115	0.111	0.111	0.113	0.116
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	51	45	49	49	47	45
	Total Nitrogen	Mean (mg/l)	1.70	1.60	1.57	1.57	1.59	1.39
		Median (mg/l)	1.64	1.55	1.52	1.52	1.54	1.34
	Total Suspended Solids	Mean (mg/l)	9.3	9.1	8.0	8.0	8.4	8.5
		Median (mg/l)	5.2	5.2	4.7	4.7	4.8	4.8
	Copper	Mean (mg/l)	0.0056	0.0061	0.0061	0.0061	0.0061	0.0063
		Median (mg/l)	0.0053	0.0058	0.0058	0.0058	0.0058	0.0060

Table J-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
ML-23 North Branch of the Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,707	2,848	2,847	2,847	2,634	2,567
		Percent compliance with single sample standard (<400 cells per 100 ml)	7	7	7	7	7	10
		Geometric mean (cells per 100 ml)	1,447	1,476	1,476	1,476	1,421	1,296
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	3	3	3	3	3	4
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,718	1,877	1,877	1,877	1,743	1,695
		Percent compliance with single sample standard (<400 cells per 100 ml)	16	16	16	16	16	22
		Geometric mean (cells per 100 ml)	892	914	914	914	886	795
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	3	3	3	3	3	4
	Dissolved Oxygen	Mean (mg/l)	11.6	11.6	11.6	11.6	11.6	11.6
		Median (mg/l)	11.7	11.7	11.7	11.7	11.7	11.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.206	0.212	0.207	0.207	0.209	0.221
		Median (mg/l)	0.185	0.190	0.187	0.187	0.188	0.201
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	40	39	40	40	39	37
	Total Nitrogen	Mean (mg/l)	1.77	1.76	1.73	1.73	1.75	1.54
		Median (mg/l)	1.73	1.72	1.71	1.71	1.72	1.51
	Total Suspended Solids	Mean (mg/l)	7.9	7.9	7.1	7.1	7.4	7.4
		Median (mg/l)	4.6	4.6	4.5	4.5	4.5	4.5
	Copper	Mean (mg/l)	0.0036	0.0035	0.0035	0.0035	0.0035	0.0036
		Median (mg/l)	0.0027	0.0026	0.0026	0.0026	0.0026	0.0026

Table J-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
ML-24 Fredonia, USGS Sampling Location (4086360)	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,678	1,394	1,394	1,394	1,302	1,262
		Percent compliance with single sample standard (<400 cells per 100 ml)	32	33	33	33	33	36
		Geometric mean (cells per 100 ml)	777	682	682	682	660	605
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	52	54	54	54	55	62
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	673	637	637	637	590	565
		Percent compliance with single sample standard (<400 cells per 100 ml)	63	64	64	64	65	70
		Geometric mean (cells per 100 ml)	311	289	289	289	278	246
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	49	51	51	51	52	58
	Dissolved Oxygen	Mean (mg/l)	11.5	11.5	11.5	11.5	11.5	11.5
		Median (mg/l)	11.6	11.6	11.6	11.6	11.6	11.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.129	0.136	0.130	0.130	0.132	0.138
		Median (mg/l)	0.112	0.121	0.116	0.116	0.118	0.124
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	49	45	48	48	47	45
	Total Nitrogen	Mean (mg/l)	1.73	1.67	1.64	1.64	1.66	1.45
		Median (mg/l)	1.67	1.62	1.60	1.60	1.61	1.41
	Total Suspended Solids	Mean (mg/l)	11.9	11.7	10.4	10.4	10.9	11.0
		Median (mg/l)	7.5	7.4	6.8	6.8	7.0	7.1
	Copper	Mean (mg/l)	0.0048	0.0051	0.0051	0.0051	0.0051	0.0053
		Median (mg/l)	0.0045	0.0048	0.0048	0.0048	0.0048	0.0050

Table J-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
ML-28 Lower Cedar Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,093	460	460	460	421	406
		Percent compliance with single sample standard (<400 cells per 100 ml)	48	61	61	61	63	64
		Geometric mean (cells per 100 ml)	268	144	144	144	136	127
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	149	181	181	181	183	187
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	381	381	138	138	126	121
		Percent compliance with single sample standard (<400 cells per 100 ml)	78	89	89	89	90	91
		Geometric mean (cells per 100 ml)	63	37	37	37	35	32
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	118	129	129	129	131	132
	Dissolved Oxygen	Mean (mg/l)	10.6	10.6	10.6	10.6	10.6	10.5
		Median (mg/l)	10.7	10.6	10.7	10.7	10.7	10.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	95	96	96	96	94
	Total Phosphorus	Mean (mg/l)	0.131	0.141	0.133	0.133	0.137	0.140
		Median (mg/l)	0.119	0.131	0.124	0.124	0.127	0.131
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	42	36	39	39	38	36
	Total Nitrogen	Mean (mg/l)	1.53	1.43	1.39	1.39	1.42	1.25
		Median (mg/l)	1.45	1.36	1.33	1.33	1.35	1.19
	Total Suspended Solids	Mean (mg/l)	19.4	19.0	16.9	16.9	17.8	17.9
		Median (mg/l)	16.8	16.5	14.8	14.8	15.5	15.6
	Copper	Mean (mg/l)	0.0051	0.0055	0.0055	0.0055	0.0055	0.0056
		Median (mg/l)	0.0051	0.0054	0.0054	0.0054	0.0054	0.0055

Table J-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
ML-29 Milwaukee River at the Milwaukee-Ozaukee County Line	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,107	618	618	618	573	549
		Percent compliance with single sample standard (<400 cells per 100 ml)	42	54	54	54	55	57
		Geometric mean (cells per 100 ml)	385	222	222	222	212	195
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	127	155	155	155	157	161
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	358	157	157	157	145	136
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	90	90	90	91	91
		Geometric mean (cells per 100 ml)	112	63	63	63	60	54
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	103	117	117	117	118	120
	Dissolved Oxygen	Mean (mg/l)	11.0	11.0	11.0	11.0	11.0	10.9
		Median (mg/l)	11.1	11.1	11.1	11.1	11.1	11.0
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.132	0.142	0.135	0.135	0.139	0.143
		Median (mg/l)	0.119	0.131	0.125	0.125	0.128	0.133
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	41	35	37	37	36	34
	Total Nitrogen	Mean (mg/l)	1.69	1.62	1.58	1.58	1.61	1.42
		Median (mg/l)	1.62	1.56	1.53	1.53	1.55	1.37
	Total Suspended Solids	Mean (mg/l)	17.8	17.5	15.6	15.6	16.3	16.6
		Median (mg/l)	13.9	13.7	12.4	12.4	12.8	13.1
	Copper	Mean (mg/l)	0.0049	0.0053	0.0053	0.0053	0.0053	0.0054
		Median (mg/l)	0.0048	0.0052	0.0052	0.0052	0.0052	0.0053

Table J-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
ML-30 Milwaukee River Downstream of Beaver Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,359	1,022	1,021	1,022	917	903
		Percent compliance with single sample standard (<400 cells per 100 ml)	42	47	47	47	48	49
		Geometric mean (cells per 100 ml)	442	321	313	321	298	281
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	120	145	145	145	149	154
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	543	460	460	460	408	405
		Percent compliance with single sample standard (<400 cells per 100 ml)	73	77	77	77	78	79
		Geometric mean (cells per 100 ml)	143	106	100	106	99	92
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	94	110	110	110	113	116
	Dissolved Oxygen	Mean (mg/l)	11.0	10.9	10.9	10.9	10.9	10.9
		Median (mg/l)	11.0	11.0	11.0	11.0	11.0	10.9
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	99	99	99	99	98
	Total Phosphorus	Mean (mg/l)	0.134	0.143	0.135	0.135	0.138	0.142
		Median (mg/l)	0.122	0.132	0.126	0.126	0.128	0.133
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	39	34	36	36	35	33
	Total Nitrogen	Mean (mg/l)	1.67	1.58	1.54	1.54	1.57	1.39
		Median (mg/l)	1.60	1.52	1.50	1.50	1.51	1.34
	Total Suspended Solids	Mean (mg/l)	20.7	19.9	17.7	17.7	18.5	18.8
		Median (mg/l)	16.1	15.7	14.1	14.1	14.6	14.8
	Copper	Mean (mg/l)	0.0049	0.0052	0.0052	0.0052	0.0052	0.0053
		Median (mg/l)	0.0048	0.0051	0.0051	0.0051	0.0051	0.0052

Table J-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
ML-33 Milwaukee River at Lincoln/ Estabrook Parks	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,559	1,328	1,316	1,329	1,191	1,182
		Percent compliance with single sample standard (<400 cells per 100 ml)	43	46	46	46	47	48
		Geometric mean (cells per 100 ml)	354	273	264	272	249	236
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	140	152	153	152	154	157
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	596	598	579	604	548	547
		Percent compliance with single sample standard (<400 cells per 100 ml)	73	76	76	76	77	77
		Geometric mean (cells per 100 ml)	84	64	60	64	59	54
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	107	114	115	114	116	117
	Dissolved Oxygen	Mean (mg/l)	10.8	10.8	10.8	10.8	10.8	10.8
		Median (mg/l)	10.9	10.9	10.9	10.9	10.9	10.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.139	0.145	0.137	0.137	0.141	0.144
		Median (mg/l)	0.128	0.135	0.129	0.129	0.131	0.136
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	35	32	34	34	33	31
	Total Nitrogen	Mean (mg/l)	1.63	1.54	1.51	1.51	1.53	1.36
		Median (mg/l)	1.57	1.49	1.46	1.46	1.48	1.32
	Total Suspended Solids	Mean (mg/l)	24.2	22.4	19.9	19.9	20.8	21.1
		Median (mg/l)	18.7	17.7	15.9	15.9	16.4	16.7
	Copper	Mean (mg/l)	0.0052	0.0053	0.0053	0.0053	0.0053	0.0054
		Median (mg/l)	0.0051	0.0053	0.0053	0.0053	0.0053	0.0054

Table J-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
ML-34 Milwaukee River at the Former North Avenue Dam	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,380	1,155	1,126	1,128	1,024	1,015
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	79	79	79	82	82
		Geometric mean (cells per 100 ml)	311	244	201	243	222	214
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	236	255	256	256	266	269
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	515	502	454	455	439	438
		Percent compliance with single sample standard (<400 cells per 100 ml)	92	93	93	93	94	94
		Geometric mean (cells per 100 ml)	73	58	39	57	53	50
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	145	149	149	149	150	151
	Dissolved Oxygen	Mean (mg/l)	10.6	10.6	10.6	10.6	10.6	10.5
		Median (mg/l)	10.6	10.6	10.7	10.7	10.7	10.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.169	0.174	0.165	0.165	0.169	0.173
		Median (mg/l)	0.160	0.166	0.159	0.159	0.161	0.167
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	24	22	24	24	24	21
	Total Nitrogen	Mean (mg/l)	1.60	1.52	1.48	1.48	1.50	1.34
		Median (mg/l)	1.53	1.46	1.43	1.43	1.45	1.30
	Total Suspended Solids	Mean (mg/l)	24.8	22.6	20.0	20.0	20.9	21.2
		Median (mg/l)	19.3	17.8	16.0	16.0	16.6	16.9
	Copper	Mean (mg/l)	0.0051	0.0052	0.0052	0.0052	0.0052	0.0052
		Median (mg/l)	0.0050	0.0051	0.0051	0.0051	0.0051	0.0052

[a]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

Source: Tetra Tech, Inc., and SEWRPC.

Table J-4

WATER QUALITY SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: OAK CREEK WATERSHED

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
OK-1 Upper Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,905	3,928	3,928	3,928	3,491	3,487
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	64	64	64	65	65
		Geometric mean (cells per 100 ml)	541	504	503	503	452	453
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	65	67	67	67	81	81
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,012	1,666	1,666	1,666	1,393	1,394
		Percent compliance with single sample standard (<400 cells per 100 ml)	84	82	82	82	83	82
		Geometric mean (cells per 100 ml)	256	260	259	259	231	232
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	47	47	47	47	56	56
	Dissolved Oxygen	Mean (mg/l)	8.4	8.2	8.2	8.2	8.2	8.2
		Median (mg/l)	8.7	8.6	8.6	8.6	8.6	8.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	77	72	72	72	72	72
	Total Phosphorus	Mean (mg/l)	0.075	0.066	0.066	0.066	0.063	0.063
		Median (mg/l)	0.031	0.025	0.025	0.025	0.025	0.025
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	83	82	82	82	83	83
	Total Nitrogen	Mean (mg/l)	1.52	0.89	0.89	0.89	0.88	0.88
		Median (mg/l)	1.38	0.84	0.84	0.84	0.84	0.83
	Total Suspended Solids	Mean (mg/l)	13.7	7.2	7.2	7.2	7.2	7.2
		Median (mg/l)	7.8	4.4	4.4	4.4	4.4	4.4
	Copper	Mean (mg/l)	0.0038	0.0031	0.0031	0.0031	0.0031	0.0031
		Median (mg/l)	0.0012	0.0007	0.0007	0.0007	0.0007	0.0007

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Table J-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
OK-2 North Branch of Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,987	4,136	4,136	4,136	3,643	3,640
		Percent compliance with single sample standard (<400 cells per 100 ml)	57	56	56	56	57	57
		Geometric mean (cells per 100 ml)	611	563	562	562	505	505
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	60	64	64	64	74	74
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,561	2,054	2,054	2,054	1,657	1,658
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	73	73	73	74	74
		Geometric mean (cells per 100 ml)	289	277	276	276	245	246
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	44	45	45	45	52	51
	Dissolved Oxygen	Mean (mg/l)	8.8	8.5	8.5	8.5	8.5	8.5
		Median (mg/l)	8.6	8.3	8.3	8.3	8.3	8.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	82	80	80	80	80	80
	Total Phosphorus	Mean (mg/l)	0.084	0.074	0.074	0.074	0.071	0.071
		Median (mg/l)	0.032	0.030	0.030	0.030	0.030	0.030
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	79	79	79	80	80
	Total Nitrogen	Mean (mg/l)	1.32	0.91	0.91	0.91	0.89	0.89
		Median (mg/l)	1.18	0.81	0.81	0.81	0.81	0.80
	Total Suspended Solids	Mean (mg/l)	22.9	14.9	14.9	14.9	14.9	14.9
		Median (mg/l)	9.0	6.2	6.2	6.2	6.2	6.2
	Copper	Mean (mg/l)	0.0052	0.0040	0.0040	0.0040	0.0040	0.0040
		Median (mg/l)	0.0014	0.0010	0.0010	0.0010	0.0010	0.0010

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Table J-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
OK-3 Oak Creek Downstream of North Branch of Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	10,233	8,236	8,236	8,236	7,299	7,276
		Percent compliance with single sample standard (<400 cells per 100 ml)	55	55	55	55	55	55
		Geometric mean (cells per 100 ml)	1,191	1,060	1,058	1,058	953	952
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	17	20	20	20	23	23
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,750	3,735	3,735	3,735	3,089	3,064
		Percent compliance with single sample standard (<400 cells per 100 ml)	72	72	72	72	73	73
		Geometric mean (cells per 100 ml)	555	508	507	507	454	452
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	15	17	17	17	19	19
	Dissolved Oxygen	Mean (mg/l)	10.0	9.7	9.7	9.7	9.7	9.7
		Median (mg/l)	10.5	10.3	10.3	10.3	10.3	10.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	83	80	80	80	80	80
	Total Phosphorus	Mean (mg/l)	0.086	0.076	0.076	0.076	0.073	0.073
		Median (mg/l)	0.032	0.029	0.029	0.029	0.029	0.029
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	79	79	79	79	80	80
	Total Nitrogen	Mean (mg/l)	1.37	0.89	0.89	0.89	0.88	0.87
		Median (mg/l)	1.24	0.81	0.81	0.81	0.80	0.80
	Total Suspended Solids	Mean (mg/l)	20.9	12.9	12.9	12.9	12.9	12.9
		Median (mg/l)	8.5	5.7	5.7	5.7	5.7	5.7
	Copper	Mean (mg/l)	0.0049	0.0038	0.0038	0.0038	0.0038	0.0038
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010	0.0010

Table J-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
OK-4 Middle Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,953	6,806	6,806	6,806	6,055	6,044
		Percent compliance with single sample standard (<400 cells per 100 ml)	51	52	52	52	53	53
		Geometric mean (cells per 100 ml)	1,041	946	945	945	851	850
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	20	22	22	22	26	26
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,103	2,731	2,730	2,730	2,289	2,274
		Percent compliance with single sample standard (<400 cells per 100 ml)	69	70	70	70	72	71
		Geometric mean (cells per 100 ml)	463	445	444	444	397	396
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	17	18	18	18	22	22
	Dissolved Oxygen	Mean (mg/l)	9.4	9.2	9.2	9.2	9.2	9.2
		Median (mg/l)	9.6	9.4	9.4	9.4	9.4	9.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	85	82	82	82	82	82
	Total Phosphorus	Mean (mg/l)	0.081	0.073	0.073	0.073	0.070	0.070
		Median (mg/l)	0.032	0.030	0.030	0.030	0.029	0.029
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	79	80	80	80	81	81
	Total Nitrogen	Mean (mg/l)	1.34	0.87	0.87	0.87	0.85	0.85
		Median (mg/l)	1.17	0.76	0.76	0.76	0.76	0.76
	Total Suspended Solids	Mean (mg/l)	14.9	9.4	9.4	9.4	9.4	9.4
		Median (mg/l)	7.9	5.2	5.2	5.2	5.2	5.2
	Copper	Mean (mg/l)	0.0049	0.0039	0.0039	0.0039	0.0039	0.0039
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010	0.0010

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Table J-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
OK-6 Mitchell Field Drainage Ditch	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,917	6,358	6,349	6,349	5,616	5,556
		Percent compliance with single sample standard (<400 cells per 100 ml)	31	57	57	57	58	58
		Geometric mean (cells per 100 ml)	1,442	1,182	1,145	1,145	1,039	1,038
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	2	2	2	3	3
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,906	2,788	2,771	2,771	2,256	2,260
		Percent compliance with single sample standard (<400 cells per 100 ml)	27	75	75	75	76	76
		Geometric mean (cells per 100 ml)	806	641	605	605	547	548
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	0	0	0
	Dissolved Oxygen	Mean (mg/l)	9.0	8.9	8.9	8.9	8.9	8.9
		Median (mg/l)	8.7	8.5	8.5	8.5	8.5	8.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	81	79	79	79	79	79
	Total Phosphorus	Mean (mg/l)	0.076	0.073	0.073	0.073	0.070	0.071
		Median (mg/l)	0.046	0.048	0.048	0.048	0.046	0.047
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	84	80	80	80	81	81
	Total Nitrogen	Mean (mg/l)	1.57	1.08	1.08	1.08	1.06	1.05
		Median (mg/l)	1.41	1.01	1.01	1.01	0.99	0.98
	Total Suspended Solids	Mean (mg/l)	11.0	6.8	6.8	6.8	6.8	6.8
		Median (mg/l)	7.0	4.2	4.2	4.2	4.2	4.1
	Copper	Mean (mg/l)	0.0041	0.0032	0.0032	0.0032	0.0032	0.0032
		Median (mg/l)	0.0012	0.0008	0.0008	0.0008	0.0008	0.0008

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Table J-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
OK-7 Oak Creek Downstream of Mitchell Field Drainage Ditch	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,729	6,753	6,752	6,752	5,986	5,965
		Percent compliance with single sample standard (<400 cells per 100 ml)	49	51	51	51	53	53
		Geometric mean (cells per 100 ml)	1,190	1,035	1,030	1,030	926	924
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	13	18	19	19	21	21
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,136	2,788	2,787	2,787	2,290	2,279
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	69	69	69	71	71
		Geometric mean (cells per 100 ml)	543	476	472	472	420	419
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	11	16	16	16	18	18
	Dissolved Oxygen	Mean (mg/l)	9.3	9.1	9.1	9.1	9.1	9.1
		Median (mg/l)	9.2	9.3	9.3	9.3	9.3	9.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	81	79	79	79	80	80
	Total Phosphorus	Mean (mg/l)	0.091	0.091	0.091	0.091	0.087	0.087
		Median (mg/l)	0.056	0.060	0.060	0.060	0.058	0.058
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	76	73	73	73	75	75
	Total Nitrogen	Mean (mg/l)	1.38	1.00	1.00	1.00	0.98	0.98
		Median (mg/l)	1.25	0.93	0.93	0.93	0.91	0.91
	Total Suspended Solids	Mean (mg/l)	14.9	9.5	9.5	9.5	9.5	9.5
		Median (mg/l)	7.3	4.6	4.6	4.6	4.6	4.6
	Copper	Mean (mg/l)	0.0051	0.0040	0.0040	0.0040	0.0040	0.0040
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010	0.0010

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Table J-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
OK-8 Lower Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	15,506	13,474	13,473	13,473	11,978	11,949
		Percent compliance with single sample standard (<400 cells per 100 ml)	17	23	24	24	28	28
		Geometric mean (cells per 100 ml)	2,700	2,360	2,353	2,353	2,105	2,101
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	6	11	11	11	12	12
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	6,370	5,564	5,563	5,563	4,650	4,631
		Percent compliance with single sample standard (<400 cells per 100 ml)	31	41	41	41	47	46
		Geometric mean (cells per 100 ml)	1,079	909	904	904	799	796
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	6	11	11	11	11	11
	Dissolved Oxygen	Mean (mg/l)	10.2	10.1	10.1	10.1	10.2	10.2
		Median (mg/l)	10.0	10.1	10.1	10.1	10.2	10.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	93	92	92	92	92	92
	Total Phosphorus	Mean (mg/l)	0.091	0.091	0.091	0.091	0.087	0.087
		Median (mg/l)	0.058	0.063	0.063	0.063	0.060	0.060
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	76	73	73	73	75	75
	Total Nitrogen	Mean (mg/l)	1.30	0.97	0.97	0.97	0.95	0.95
		Median (mg/l)	1.18	0.90	0.90	0.90	0.89	0.89
	Total Suspended Solids	Mean (mg/l)	15.9	10.2	10.2	10.2	10.2	10.2
		Median (mg/l)	7.3	4.6	4.6	4.6	4.6	4.6
	Copper	Mean (mg/l)	0.0052	0.0041	0.0041	0.0041	0.0041	0.0041
		Median (mg/l)	0.0014	0.0010	0.0010	0.0010	0.0010	0.0010

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Table J-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
OK-9 Lower Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,401	6,376	6,376	6,376	5,596	5,569
		Percent compliance with single sample standard (<400 cells per 100 ml)	51	54	54	54	55	54
		Geometric mean (cells per 100 ml)	993	783	781	781	694	692
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	26	40	41	41	46	46
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,061	2,633	2,633	2,633	2,027	2,020
		Percent compliance with single sample standard (<400 cells per 100 ml)	71	73	73	73	74	74
		Geometric mean (cells per 100 ml)	388	283	281	281	244	243
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	21	32	32	32	35	36
	Dissolved Oxygen	Mean (mg/l)	10.5	10.5	10.5	10.5	10.6	10.6
		Median (mg/l)	10.3	10.3	10.3	10.3	10.4	10.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	96	96	96	96	96
	Total Phosphorus	Mean (mg/l)	0.092	0.087	0.087	0.087	0.084	0.084
		Median (mg/l)	0.062	0.065	0.065	0.065	0.063	0.063
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	75	74	74	74	76	76
	Total Nitrogen	Mean (mg/l)	1.26	0.96	0.96	0.96	0.94	0.94
		Median (mg/l)	1.14	0.93	0.93	0.93	0.91	0.91
	Total Suspended Solids	Mean (mg/l)	16.0	10.3	10.3	10.3	10.3	10.3
		Median (mg/l)	6.7	4.3	4.3	4.3	4.3	4.2
	Copper	Mean (mg/l)	0.0052	0.0041	0.0041	0.0041	0.0041	0.0041
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010	0.0010

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Table J-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
OK-10 Lower Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,643	5,738	5,738	5,738	5,070	5,061
		Percent compliance with single sample standard (<400 cells per 100 ml)	48	48	49	49	49	49
		Geometric mean (cells per 100 ml)	752	604	603	603	538	537
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	70	86	87	87	97	97
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,504	2,171	2,171	2,171	1,730	1,726
		Percent compliance with single sample standard (<400 cells per 100 ml)	71	71	71	71	72	71
		Geometric mean (cells per 100 ml)	179	132	132	132	115	115
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	59	70	70	70	79	79
	Dissolved Oxygen	Mean (mg/l)	11.2	11.2	11.2	11.2	11.2	11.2
		Median (mg/l)	11.2	11.2	11.2	11.2	11.2	11.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.078	0.072	0.072	0.072	0.069	0.069
		Median (mg/l)	0.046	0.045	0.045	0.045	0.043	0.043
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	79	79	79	80	80
	Total Nitrogen	Mean (mg/l)	1.07	0.81	0.81	0.81	0.80	0.80
		Median (mg/l)	0.98	0.71	0.71	0.71	0.70	0.70
	Total Suspended Solids	Mean (mg/l)	19.6	12.5	12.5	12.5	12.5	12.5
		Median (mg/l)	7.4	5.0	5.0	5.0	5.0	5.0
	Copper	Mean (mg/l)	0.006	0.0048	0.0048	0.0048	0.0048	0.0048
		Median (mg/l)	0.0025	0.0022	0.0022	0.0022	0.0022	0.0022

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[a]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

Source: Tetra Tech, Inc., and SEWRPC.

Table J-5

WATER QUALITY SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: ROOT RIVER WATERSHED

					Alternative[a]			
Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	B1	B2	C1	C2
RT-1 Root River Upstream of Hale Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,644	4,648	4,647	4,647	4,184	4,184
		Percent compliance with single sample standard (<400 cells per 100 ml)	70	71	71	71	71	71
		Geometric mean (cells per 100 ml)	525	409	405	405	369	369
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	33	61	62	62	74	74
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,385	2,781	2,780	2,780	2,503	2,503
		Percent compliance with single sample standard (<400 cells per 100 ml)	80	81	81	81	82	82
		Geometric mean (cells per 100 ml)	393	303	301	301	274	274
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	13	27	28	28	34	34
	Dissolved Oxygen	Mean (mg/l)	10.8	10.8	10.8	10.8	10.8	10.8
		Median (mg/l)	10.8	10.8	10.8	10.8	10.8	10.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	96	96	96	96	96
	Total Phosphorus	Mean (mg/l)	0.062	0.053	0.053	0.053	0.051	0.051
		Median (mg/l)	0.025	0.021	0.021	0.021	0.021	0.021
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	87	88	88	88	88	88
	Total Nitrogen	Mean (mg/l)	0.98	0.85	0.85	0.85	0.84	0.84
		Median (mg/l)	1.01	0.87	0.87	0.87	0.86	0.86
	Total Suspended Solids	Mean (mg/l)	6.9	5.0	5.0	5.0	5.0	5.0
		Median (mg/l)	4.8	3.3	3.3	3.3	3.3	3.3
	Copper	Mean (mg/l)	0.0033	0.0026	0.0026	0.0026	0.0026	0.0026
		Median (mg/l)	0.0013	0.0009	0.0009	0.0009	0.0009	0.0009

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Table J-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
RT-2 Root River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,040	5,869	5,868	5,868	4,879	4,877
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	66	66	66	68	68
		Geometric mean (cells per 100 ml)	630	501	497	497	424	424
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	27	46	47	47	63	63
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,968	3,412	3,411	3,411	2,108	2,108
		Percent compliance with single sample standard (<400 cells per 100 ml)	77	76	76	76	80	80
		Geometric mean (cells per 100 ml)	464	371	369	369	287	287
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	10	18	19	19	29	29
	Dissolved Oxygen	Mean (mg/l)	8.4	8.4	8.4	8.4	8.4	8.4
		Median (mg/l)	8.4	8.4	8.4	8.4	8.4	8.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	96	96	96	96	96
	Total Phosphorus	Mean (mg/l)	0.079	0.067	0.067	0.067	0.064	0.064
		Median (mg/l)	0.025	0.020	0.020	0.020	0.020	0.020
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	82	83	83	83	84	84
	Total Nitrogen	Mean (mg/l)	1.13	0.97	0.97	0.97	0.96	0.96
		Median (mg/l)	1.07	0.91	0.91	0.91	0.91	0.91
	Total Suspended Solids	Mean (mg/l)	6.3	4.6	4.6	4.6	4.6	4.6
		Median (mg/l)	4.9	3.3	3.3	3.3	3.3	3.3
	Copper	Mean (mg/l)	0.0047	0.0036	0.0036	0.0036	0.0036	0.0036
		Median (mg/l)	0.0013	0.0009	0.0009	0.0009	0.0009	0.0009

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Table J-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
RT-3 Root River at Wildcat Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,328	6,066	6,068	6,064	5,305	5,309
		Percent compliance with single sample standard (<400 cells per 100 ml)	64	64	64	64	65	65
		Geometric mean (cells per 100 ml)	645	518	513	513	456	457
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	27	43	44	44	55	55
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,228	3,537	3,543	3,534	2,812	2,812
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	74	74	74	76	76
		Geometric mean (cells per 100 ml)	477	383	381	381	327	327
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	10	17	17	17	24	24
	Dissolved Oxygen	Mean (mg/l)	8.9	8.9	8.9	8.9	8.9	8.9
		Median (mg/l)	8.7	8.7	8.7	8.7	8.7	8.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	87	88	88	88	88	88
	Total Phosphorus	Mean (mg/l)	0.078	0.066	0.066	0.066	0.063	0.063
		Median (mg/l)	0.022	0.018	0.018	0.018	0.018	0.018
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	81	82	82	82	83	83
	Total Nitrogen	Mean (mg/l)	1.08	0.92	0.92	0.92	0.91	0.91
		Median (mg/l)	0.98	0.83	0.83	0.83	0.83	0.83
	Total Suspended Solids	Mean (mg/l)	9.2	6.7	6.7	6.7	6.7	6.7
		Median (mg/l)	4.8	3.3	3.3	3.3	3.2	3.2
	Copper	Mean (mg/l)	0.0049	0.0038	0.0038	0.0038	0.0038	0.0038
		Median (mg/l)	0.0013	0.0009	0.0009	0.0009	0.0009	0.0009

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Table J-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
RT-4 Root River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,101	5,914	5,914	5,913	5,182	5,168
		Percent compliance with single sample standard (<400 cells per 100 ml)	56	58	58	58	59	59
		Geometric mean (cells per 100 ml)	865	697	691	691	616	616
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	19	29	30	30	37	37
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,018	3,370	3,372	3,368	2,696	2,696
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	68	68	68	69	69
		Geometric mean (cells per 100 ml)	603	491	489	488	421	421
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	7	11	11	11	16	16
	Dissolved Oxygen	Mean (mg/l)	9.6	9.5	9.5	9.5	9.5	9.5
		Median (mg/l)	9.4	9.3	9.3	9.3	9.3	9.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	95	95	95	95	95	95
	Total Phosphorus	Mean (mg/l)	0.080	0.068	0.068	0.068	0.065	0.065
		Median (mg/l)	0.022	0.019	0.019	0.019	0.018	0.018
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	80	80	80	81	81
	Total Nitrogen	Mean (mg/l)	1.12	0.89	0.89	0.89	0.88	0.88
		Median (mg/l)	1.00	0.77	0.77	0.77	0.76	0.76
	Total Suspended Solids	Mean (mg/l)	10.3	7.2	7.2	7.2	7.2	7.2
		Median (mg/l)	4.7	3.2	3.2	3.2	3.2	3.2
	Copper	Mean (mg/l)	0.0054	0.0043	0.0043	0.0043	0.0043	0.0043
		Median (mg/l)	0.0014	0.0010	0.0010	0.0010	0.0010	0.0010

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Table J-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
RT-10 Root River Upstream of Ryan Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,995	5,966	5,965	5,964	5,294	5,289
		Percent compliance with single sample standard (<400 cells per 100 ml)	48	51	51	51	52	52
		Geometric mean (cells per 100 ml)	1,189	985	979	979	874	874
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	9	18	18	18	22	22
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,768	3,213	3,214	3,212	2,711	2,711
		Percent compliance with single sample standard (<400 cells per 100 ml)	59	62	62	62	64	64
		Geometric mean (cells per 100 ml)	717	593	590	589	514	514
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	4	9	10	10	13	13
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.6	11.6	11.6	11.6	11.6	11.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.087	0.077	0.077	0.077	0.073	0.073
		Median (mg/l)	0.057	0.052	0.052	0.052	0.050	0.050
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	73	76	76	76	77	77
	Total Nitrogen	Mean (mg/l)	1.15	0.90	0.90	0.90	0.89	0.89
		Median (mg/l)	1.13	0.88	0.88	0.88	0.87	0.87
	Total Suspended Solids	Mean (mg/l)	12.9	8.6	8.6	8.6	8.6	8.6
		Median (mg/l)	4.8	3.2	3.2	3.2	3.2	3.2
	Copper	Mean (mg/l)	0.0020	0.0017	0.0017	0.0017	0.0017	0.0017
		Median (mg/l)	0.0006	0.0005	0.0005	0.0005	0.0005	0.0005

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Table J-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
RT-13 West Branch Root River Canal	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,372	2,234	2,266	2,266	1,944	1,958
		Percent compliance with single sample standard (<400 cells per 100 ml)	64	65	65	65	67	68
		Geometric mean (cells per 100 ml)	412	396	390	390	319	318
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	59	61	64	64	93	93
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,099	1,968	1,981	1,981	1,714	1,697
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	74	74	74	74	77
		Geometric mean (cells per 100 ml)	256	252	248	248	203	204
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	41	42	44	44	61	61
	Dissolved Oxygen	Mean (mg/l)	11.8	11.8	11.8	11.8	11.8	11.8
		Median (mg/l)	12.3	12.2	12.2	12.2	12.2	12.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.164	0.151	0.151	0.151	0.147	0.141
		Median (mg/l)	0.076	0.069	0.070	0.070	0.068	0.068
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	63	66	65	65	66	67
	Total Nitrogen	Mean (mg/l)	2.75	2.61	2.59	2.59	2.58	2.30
		Median (mg/l)	2.00	1.95	1.94	1.94	1.94	1.67
	Total Suspended Solids	Mean (mg/l)	28.1	25.3	21.1	21.1	23.2	19.6
		Median (mg/l)	4.0	4.0	4.0	4.0	3.9	3.9
	Copper	Mean (mg/l)	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005
		Median (mg/l)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

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Table J-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
RT-15 East Branch Root River Canal	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,272	3,025	3,022	3,022	2,546	2,525
		Percent compliance with single sample standard (<400 cells per 100 ml)	71	71	71	71	72	72
		Geometric mean (cells per 100 ml)	288	280	276	276	208	214
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	121	127	131	131	192	186
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,853	2,572	2,568	2,568	2,172	2,145
		Percent compliance with single sample standard (<400 cells per 100 ml)	80	80	80	80	81	81
		Geometric mean (cells per 100 ml)	213	207	205	205	155	160
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	64	67	69	69	102	99
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.5	11.5	11.5	11.5	11.5	11.5
		Percent compliance with dissolved oxygen standard (>3 mg/l)[b]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.143	0.141	0.140	0.140	0.135	0.129
		Median (mg/l)	0.065	0.066	0.067	0.067	0.064	0.063
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	72	71	71	71	72	73
	Total Nitrogen	Mean (mg/l)	2.64	2.58	2.56	2.56	2.54	2.23
		Median (mg/l)	2.05	2.02	2.02	2.02	2.00	1.74
	Total Suspended Solids	Mean (mg/l)	57.2	50.2	41.5	41.5	45.6	38.1
		Median (mg/l)	5.0	4.9	4.9	4.9	4.8	4.8
	Copper	Mean (mg/l)	0.0034	0.0034	0.0034	0.0034	0.0032	0.0030
		Median (mg/l)	0.0014	0.0014	0.0014	0.0014	0.0013	0.0012

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Table J-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
RT-17 Root River at Upstream Crossing of Milwaukee-Racine County Line and Downstream of Root River Canal	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,656	4,048	4,067	4,066	3,571	3,585
		Percent compliance with single sample standard (<400 cells per 100 ml)	43	45	46	46	48	48
		Geometric mean (cells per 100 ml)	1,123	1,012	1,001	1,001	872	869
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	7	9	9	9	11	11
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,994	2,536	2,542	2,541	2,164	2,164
		Percent compliance with single sample standard (<400 cells per 100 ml)	55	57	57	57	60	60
		Geometric mean (cells per 100 ml)	720	642	635	635	549	547
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	4	4	5	5	6	6
	Dissolved Oxygen	Mean (mg/l)	11.5	11.5	11.5	11.5	11.5	11.5
		Median (mg/l)	11.7	11.7	11.7	11.7	11.7	11.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.104	0.094	0.095	0.095	0.091	0.089
		Median (mg/l)	0.071	0.067	0.068	0.068	0.065	0.065
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	71	73	73	73	75	75
	Total Nitrogen	Mean (mg/l)	1.68	1.48	1.47	1.47	1.46	1.33
		Median (mg/l)	1.39	1.22	1.22	1.22	1.20	1.13
	Total Suspended Solids	Mean (mg/l)	20.6	16.2	14.1	14.1	15.2	13.5
		Median (mg/l)	4.6	3.8	3.7	3.7	3.8	3.7
	Copper	Mean (mg/l)	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
		Median (mg/l)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

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Table J-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
RT-18 Root River Upstream of Hoods Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,253	3,654	3,669	3,669	3,230	3,243
		Percent compliance with single sample standard (<400 cells per 100 ml)	46	47	48	48	49	49
		Geometric mean (cells per 100 ml)	983	865	855	855	744	743
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	11	16	17	17	23	23
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,687	2,232	2,235	2,235	1,928	1,930
		Percent compliance with single sample standard (<400 cells per 100 ml)	60	61	61	61	62	62
		Geometric mean (cells per 100 ml)	556	484	479	479	413	413
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	9	12	13	13	18	18
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.6	11.7	11.7	11.7	11.6	11.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.102	0.094	0.093	0.093	0.090	0.088
		Median (mg/l)	0.068	0.065	0.066	0.066	0.063	0.064
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	73	75	74	74	77	76
	Total Nitrogen	Mean (mg/l)	1.64	1.45	1.42	1.42	1.42	1.29
		Median (mg/l)	1.32	1.16	1.16	1.16	1.15	1.07
	Total Suspended Solids	Mean (mg/l)	31	23.7	18.7	18.7	22.0	19.2
		Median (mg/l)	5.2	4.4	4.2	4.3	4.3	4.2
	Copper	Mean (mg/l)	0.0013	0.0012	0.0012	0.0012	0.0012	0.0012
		Median (mg/l)	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003

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Table J-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
RT-20 Hoods Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,039	3,218	3,211	3,211	2,879	2,890
		Percent compliance with single sample standard (<400 cells per 100 ml)	69	68	68	68	69	69
		Geometric mean (cells per 100 ml)	286	277	275	275	209	213
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	148	149	151	151	194	190
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,354	2,601	2,597	2,597	2,329	2,359
		Percent compliance with single sample standard (<400 cells per 100 ml)	81	79	79	79	79	79
		Geometric mean (cells per 100 ml)	158	161	160	160	113	115
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	84	83	84	84	109	106
	Dissolved Oxygen	Mean (mg/l)	11.0	11.0	11.0	11.0	11.0	11.0
		Median (mg/l)	11.7	11.8	11.8	11.8	11.8	11.8
		Percent compliance with dissolved oxygen standard (>3 mg/l)[b]	98	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.381	0.337	0.334	0.334	0.334	0.355
		Median (mg/l)	0.131	0.113	0.112	0.112	0.110	0.112
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	43	49	49	49	50	49
	Total Nitrogen	Mean (mg/l)	3.20	2.84	2.81	2.81	2.83	2.73
		Median (mg/l)	2.39	2.05	2.03	2.03	2.04	1.89
	Total Suspended Solids	Mean (mg/l)	33.5	23.4	16.8	16.8	21.8	18.8
		Median (mg/l)	4.9	4.5	4.5	4.5	4.5	4.4
	Copper	Mean (mg/l)	0.0048	0.0040	0.0040	0.0040	0.0040	0.0040
		Median (mg/l)	0.0022	0.0020	0.0020	0.0020	0.0019	0.0019

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Table J-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
RT-21 Root River at the City of Racine, USGS Sampling Location (4087240)	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,547	3,908	3,921	3,921	3,465	3,477
		Percent compliance with single sample standard (<400 cells per 100 ml)	48	49	49	49	50	50
		Geometric mean (cells per 100 ml)	853	761	754	754	657	658
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	17	23	24	24	34	34
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,041	2,552	2,554	2,554	2,211	2,216
		Percent compliance with single sample standard (<400 cells per 100 ml)	62	63	63	63	64	64
		Geometric mean (cells per 100 ml)	479	422	418	418	361	362
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	13	18	18	18	26	26
	Dissolved Oxygen	Mean (mg/l)	11	11.1	11.1	11.1	11.1	11.1
		Median (mg/l)	11.3	11.4	11.4	11.4	11.3	11.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.109	0.099	0.098	0.098	0.095	0.093
		Median (mg/l)	0.075	0.071	0.072	0.072	0.068	0.069
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	67	71	70	70	73	72
	Total Nitrogen	Mean (mg/l)	1.58	1.38	1.35	1.35	1.36	1.23
		Median (mg/l)	1.24	1.09	1.09	1.09	1.08	1.01
	Total Suspended Solids	Mean (mg/l)	35.9	26.5	21.1	21.1	24.7	21.8
		Median (mg/l)	7.0	5.8	5.3	5.3	5.6	5.3
	Copper	Mean (mg/l)	0.0008	0.0006	0.0006	0.0006	0.0006	0.0006
		Median (mg/l)	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001

Indicates Revision from May 2013 Plan Amendment

Table J-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
RT-22 Mouth of Root River at Lake Michigan	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,924	4,132	4,144	4,143	3,679	3,690
		Percent compliance with single sample standard (<400 cells per 100 ml)	47	48	48	48	49	49
		Geometric mean (cells per 100 ml)	869	763	755	755	661	661
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	28	34	35	35	45	45
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,327	2,710	2,712	2,711	2,377	2,382
		Percent compliance with single sample standard (<400 cells per 100 ml)	62	62	62	62	64	64
		Geometric mean (cells per 100 ml)	440	383	379	379	329	330
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	22	28	28	28	36	36
	Dissolved Oxygen	Mean (mg/l)	11.1	11.1	11.1	11.1	11.1	11.2
		Median (mg/l)	11.3	11.3	11.4	11.4	11.4	11.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.115	0.104	0.103	0.103	0.099	0.098
		Median (mg/l)	0.079	0.074	0.075	0.075	0.072	0.072
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	65	68	67	67	70	70
	Total Nitrogen	Mean (mg/l)	1.56	1.36	1.33	1.33	1.33	1.22
		Median (mg/l)	1.23	1.08	1.09	1.09	1.07	1.00
	Total Suspended Solids	Mean (mg/l)	38.5	28.8	23.7	23.7	27.1	24.3
		Median (mg/l)	4.4	8.0	7.4	7.4	7.7	7.4
	Copper	Mean (mg/l)	0.0015	0.0011	0.0011	0.0011	0.0011	0.0011
		Median (mg/l)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

Indicates Revision from May 2013 Plan Amendment

[a]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

[b]*Under Chapter NR 104 of the* Wisconsin Administrative Code*, this assessment point is in a stream reach classified as capable of supporting limited forage fish.*

Source: Tetra Tech, Inc., and SEWRPC.

Table J-6

WATER QUALITY SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: NEARSHORE LAKE MICHIGAN AREA

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
LM-1 Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,101	788	674	646	691	682
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	79	87	91	91	91	91
		Geometric mean (cells per 100 ml)	175	123	89	106	109	105
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	254	291	304	304	303	306
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	457	332	254	196	277	273
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	95	97	99	99	98	98
		Geometric mean (cells per 100 ml)	26	17	10	14	15	14
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	147	152	152	152	152	152
	Dissolved Oxygen	Mean (mg/l)	10.0	9.9	10.0	10.0	10.0	9.9
		Median (mg/l)	10.8	10.8	10.9	10.9	10.9	10.8
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	99	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.066	0.065	0.064	0.064	0.064	0.062
		Median (mg/l)	0.055	0.055	0.054	0.054	0.054	0.053
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	79	79	79	79	81
	Total Nitrogen	Mean (mg/l)	1.69	1.62	1.61	1.61	1.61	1.46
		Median (mg/l)	1.48	1.43	1.42	1.42	1.42	1.30
	Total Suspended Solids	Mean (mg/l)	22.5	20.7	19.3	19.3	19.3	19.6
		Median (mg/l)	13.1	12.4	11.8	11.8	11.8	11.9
	Copper	Mean (mg/l)	0.0045	0.0046	0.0046	0.0046	0.0046	0.0047
		Median (mg/l)	0.0044	0.0045	0.0045	0.0045	0.0045	0.0045

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
LM-2 Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,466	3,187	2,182	2,152	1,976	1,975
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	58	59	67	67	70	70
		Geometric mean (cells per 100 ml)	595	538	294	292	261	260
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	208	212	239	239	242	242
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,250	1,119	793	743	687	688
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	84	85	89	89	92	92
		Geometric mean (cells per 100 ml)	135	118	60	59	50	50
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	139	142	150	150	151	151
	Dissolved Oxygen	Mean (mg/l)	9.3	9.4	9.5	9.5	9.5	9.5
		Median (mg/l)	9.7	9.9	10.0	10.0	10.0	9.9
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.070	0.070	0.069	0.069	0.068	0.067
		Median (mg/l)	0.065	0.066	0.066	0.065	0.064	0.064
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	86	88	88	89	90	90
	Total Nitrogen	Mean (mg/l)	1.53	1.33	1.31	1.30	1.29	1.24
		Median (mg/l)	1.51	1.31	1.29	1.28	1.27	1.23
	Total Suspended Solids	Mean (mg/l)	20.1	18.1	17.7	17.7	17.6	17.7
		Median (mg/l)	11.6	11.3	10.9	10.9	10.8	10.9
	Copper	Mean (mg/l)	0.0187	0.0187	0.0187	0.0187	0.0185	0.0187
		Median (mg/l)	0.0141	0.0137	0.0137	0.0137	0.0136	0.0136

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
LM-3 Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	931	813	592	582	564	562
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	86	88	92	92	93	93
		Geometric mean (cells per 100 ml)	141	120	83	83	77	76
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	308	324	347	346	351	351
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	494	446	317	301	299	298
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	94	94	96	96	97	97
		Geometric mean (cells per 100 ml)	40	33	21	21	19	18
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	150	151	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	9.1	9.3	9.3	9.3	9.3	9.3
		Median (mg/l)	9.7	9.9	10.0	10.0	10.0	9.9
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.062	0.062	0.061	0.061	0.060	0.059
		Median (mg/l)	0.059	0.060	0.059	0.059	0.058	0.057
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	93	94	94	94	95	95
	Total Nitrogen	Mean (mg/l)	1.53	1.40	1.37	1.37	1.36	1.28
		Median (mg/l)	1.44	1.31	1.28	1.28	1.27	1.21
	Total Suspended Solids	Mean (mg/l)	19.0	17.6	16.9	16.9	16.8	17.0
		Median (mg/l)	12.2	11.7	11.3	11.2	11.2	11.3
	Copper	Mean (mg/l)	0.0056	0.0054	0.0054	0.0054	0.0054	0.0054
		Median (mg/l)	0.0051	0.0049	0.0049	0.0049	0.0048	0.0049

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
LM-4 Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	850	693	546	540	539	534
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	85	90	94	94	95	95
		Geometric mean (cells per 100 ml)	147	121	92	93	89	87
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	298	316	336	336	339	341
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	399	341	247	239	245	243
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	95	96	98	98	98	98
		Geometric mean (cells per 100 ml)	37	29	20	21	19	18
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	150	152	153	153	152	153
	Dissolved Oxygen	Mean (mg/l)	9.5	9.6	9.7	9.7	9.7	9.6
		Median (mg/l)	10.1	10.3	10.4	10.4	10.4	10.3
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.059	0.060	0.058	0.058	0.058	0.057
		Median (mg/l)	0.055	0.055	0.053	0.053	0.053	0.052
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	92	91	92	92	92	93
	Total Nitrogen	Mean (mg/l)	1.58	1.49	1.46	1.46	1.45	1.34
		Median (mg/l)	1.42	1.34	1.30	1.30	1.29	1.22
	Total Suspended Solids	Mean (mg/l)	19.0	17.9	17.0	17.0	16.9	17.1
		Median (mg/l)	12.1	11.8	11.2	11.2	11.2	11.2
	Copper	Mean (mg/l)	0.0054	0.0053	0.0053	0.0053	0.0053	0.0053
		Median (mg/l)	0.0051	0.0050	0.0050	0.0050	0.0050	0.0051

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
LM-5 Kinnickinnic River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	352	368	221	243	340	339
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	98	98	99	99	99	99
		Geometric mean (cells per 100 ml)	52	46	40	40	37	37
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	363	363	364	364	363	363
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	255	320	143	176	290	289
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	98	99	99	99	99	99
		Geometric mean (cells per 100 ml)	17	15	12	12	11	11
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	152	152	153	153	152	152
	Dissolved Oxygen	Mean (mg/l)	8.1	8.2	8.4	8.4	8.3	8.3
		Median (mg/l)	8.6	8.7	8.9	8.8	8.8	8.8
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.049	0.048	0.045	0.046	0.046	0.046
		Median (mg/l)	0.044	0.043	0.041	0.041	0.041	0.040
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	97	97	98	98	98	98
	Total Nitrogen	Mean (mg/l)	1.39	1.32	1.21	1.21	1.21	1.14
		Median (mg/l)	1.30	1.24	1.14	1.14	1.13	1.07
	Total Suspended Solids	Mean (mg/l)	12.2	11.3	10.7	10.7	10.8	10.9
		Median (mg/l)	7.8	7.5	7.1	7.1	7.1	7.1
	Copper	Mean (mg/l)	0.0069	0.0066	0.0066	0.0066	0.0066	0.0067
		Median (mg/l)	0.0070	0.0066	0.0066	0.0066	0.0066	0.0067

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
LM-6 Mouth of Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	445	379	297	296	306	302
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	95	97	98	98	98	98
		Geometric mean (cells per 100 ml)	78	69	57	57	55	54
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	352	360	364	364	363	363
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	229	202	143	144	158	156
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[b]	98	98	99	99	99	99
		Geometric mean (cells per 100 ml)	26	22	18	18	17	16
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[b]	152	152	153	153	152	152
	Dissolved Oxygen	Mean (mg/l)	9.5	9.5	9.7	9.7	9.6	9.6
		Median (mg/l)	10.0	10.1	10.2	10.2	10.2	10.2
		Percent compliance with dissolved oxygen standard (>2 mg/l)[b]	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.047	0.048	0.045	0.045	0.045	0.044
		Median (mg/l)	0.042	0.043	0.040	0.040	0.040	0.039
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	97	97	97	97	97	98
	Total Nitrogen	Mean (mg/l)	1.51	1.45	1.23	1.23	1.23	1.15
		Median (mg/l)	1.44	1.39	1.14	1.14	1.13	1.07
	Total Suspended Solids	Mean (mg/l)	13.3	12.7	12.0	12.0	12.0	12.1
		Median (mg/l)	8.5	8.3	8.0	8.0	8.0	7.9
	Copper	Mean (mg/l)	0.0072	0.0070	0.0070	0.0070	0.0070	0.0070
		Median (mg/l)	0.0073	0.0070	0.0070	0.0070	0.0070	0.0070

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
LM-7 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	91	82	63	64	70	69
		Percent compliance with single sample standard (<400 cells per 100 ml)	96	97	98	98	98	98
		Geometric mean (cells per 100 ml)	21	20	17	17	17	17
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	360	362	365	364	363	364
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	81	74	54	56	63	62
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	98	98	98	98
		Geometric mean (cells per 100 ml)	13	12	11	11	10	10
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	152	152	153	152	152	152
	Dissolved Oxygen	Mean (mg/l)	10.3	10.4	10.5	10.5	10.5	10.5
		Median (mg/l)	10.7	10.7	10.9	10.9	10.9	10.9
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.027	0.028	0.025	0.025	0.025	0.025
		Median (mg/l)	0.024	0.025	0.022	0.022	0.022	0.021
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	99	99	99	99	99	99
	Total Nitrogen	Mean (mg/l)	1.15	1.13	0.82	0.82	0.82	0.80
		Median (mg/l)	1.09	1.08	0.76	0.76	0.76	0.74
	Total Suspended Solids	Mean (mg/l)	6.4	6.2	5.9	5.9	5.9	6.0
		Median (mg/l)	4.0	4.1	3.9	3.9	3.9	3.9
	Copper	Mean (mg/l)	0.0094	0.0093	0.0093	0.0093	0.0093	0.0093
		Median (mg/l)	0.0096	0.0095	0.0095	0.0095	0.0095	0.0095

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
LM-8 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	66	60	44	46	52	52
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	98	99	98	98
		Geometric mean (cells per 100 ml)	15	14	13	13	12	12
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	363	363	365	363	363	363
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	65	59	43	45	50	50
		Percent compliance with single sample standard (<400 cells per 100 ml)	98	98	99	99	98	98
		Geometric mean (cells per 100 ml)	11	10	9	9	9	9
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	152	152	153	152	152	152
	Dissolved Oxygen	Mean (mg/l)	10.5	10.5	10.6	10.6	10.6	10.6
		Median (mg/l)	10.8	10.8	11.0	11.0	11.0	11.0
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.024	0.024	0.022	0.022	0.022	0.021
		Median (mg/l)	0.020	0.020	0.018	0.018	0.018	0.018
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	99	99	100	100	100	100
	Total Nitrogen	Mean (mg/l)	1.04	1.02	0.78	0.78	0.78	0.76
		Median (mg/l)	0.98	0.97	0.71	0.71	0.71	0.70
	Total Suspended Solids	Mean (mg/l)	5.7	5.6	5.3	5.3	5.3	5.4
		Median (mg/l)	3.5	3.6	3.4	3.4	3.4	3.4
	Copper	Mean (mg/l)	0.0095	0.0094	0.0094	0.0094	0.0094	0.0094
		Median (mg/l)	0.0097	0.0096	0.0096	0.0096	0.0096	0.0096

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
LM-9 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	47	42	33	34	35	35
		Percent compliance with single sample standard (<400 cells per 100 ml)	98	99	99	99	99	99
		Geometric mean (cells per 100 ml)	11	10	9	9	9	9
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	26	24	18	19	21	21
		Percent compliance with single sample standard (<400 cells per 100 ml)	99	99	100	99	99	99
		Geometric mean (cells per 100 ml)	6	6	5	5	5	5
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	10.7	10.7	10.8	10.8	10.8	10.8
		Median (mg/l)	10.9	11.0	11.1	11.1	11.1	11.1
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.021	0.021	0.019	0.019	0.019	0.018
		Median (mg/l)	0.018	0.018	0.016	0.016	0.016	0.016
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.95	0.94	0.70	0.70	0.70	0.68
		Median (mg/l)	0.84	0.83	0.64	0.64	0.64	0.63
	Total Suspended Solids	Mean (mg/l)	4.6	4.5	4.3	4.3	4.3	4.4
		Median (mg/l)	3.2	3.2	3.1	3.1	3.1	3.1
	Copper	Mean (mg/l)	0.0097	0.0096	0.0096	0.0096	0.0096	0.0096
		Median (mg/l)	0.0099	0.0098	0.0098	0.0098	0.0098	0.0098

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
LM-10 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	66	59	46	47	52	52
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	99	99	99	99
		Geometric mean (cells per 100 ml)	17	16	14	14	14	14
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	362	363	363	363	363	363
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	50	46	34	35	39	38
		Percent compliance with single sample standard (<400 cells per 100 ml)	98	98	99	99	99	99
		Geometric mean (cells per 100 ml)	11	10	9	9	9	9
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	152	152	152	152	152	152
	Dissolved Oxygen	Mean (mg/l)	10.4	10.4	10.5	10.5	10.5	10.5
		Median (mg/l)	10.7	10.8	10.9	10.9	10.9	10.9
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.026	0.026	0.023	0.023	0.023	0.023
		Median (mg/l)	0.023	0.024	0.020	0.020	0.020	0.020
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	99	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	1.14	1.13	0.81	0.81	0.81	0.79
		Median (mg/l)	1.08	1.07	0.75	0.75	0.75	0.74
	Total Suspended Solids	Mean (mg/l)	5.6	5.5	5.2	5.2	5.2	5.2
		Median (mg/l)	3.7	3.7	3.6	3.6	3.6	3.6
	Copper	Mean (mg/l)	0.0096	0.0096	0.0096	0.0096	0.0096	0.0096
		Median (mg/l)	0.0097	0.0096	0.0096	0.0096	0.0096	0.0096

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
LM-11 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	11	10	9	9	9	9
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	4	4	4	4
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	6	5	5	5	5	5
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	3	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.2	11.2	11.2	11.2	11.2	11.2
		Median (mg/l)	11.5	11.5	11.5	11.5	11.5	11.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.010	0.010	0.009	0.009	0.009	0.009
		Median (mg/l)	0.008	0.008	0.007	0.007	0.007	0.007
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.62	0.62	0.55	0.55	0.55	0.54
		Median (mg/l)	0.55	0.55	0.52	0.52	0.52	0.52
	Total Suspended Solids	Mean (mg/l)	2.6	2.6	2.6	2.6	2.6	2.6
		Median (mg/l)	2.3	2.3	2.3	2.3	2.3	2.3
	Copper	Mean (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099	0.0099
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
LM-12 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	12	11	10	10	10	10
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	5	5	5	5
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	6	6	5	5	5	5
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	4	3	3	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.2	11.2	11.2	11.2	11.2	11.2
		Median (mg/l)	11.5	11.5	11.5	11.5	11.5	11.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.010	0.010	0.009	0.009	0.009	0.009
		Median (mg/l)	0.008	0.008	0.008	0.008	0.008	0.008
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.63	0.63	0.55	0.55	0.55	0.55
		Median (mg/l)	0.56	0.56	0.53	0.53	0.53	0.53
	Total Suspended Solids	Mean (mg/l)	2.7	2.7	2.6	2.6	2.6	2.6
		Median (mg/l)	2.4	2.4	2.4	2.4	2.4	2.4
	Copper	Mean (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099	0.0099
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
LM-13 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	69	59	55	54	53	53
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	99	99	99	99
		Geometric mean (cells per 100 ml)	16	15	14	14	13	13
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	363	364	365	365	364	364
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	58	49	46	44	44	44
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	99	99	99	99
		Geometric mean (cells per 100 ml)	10	9	9	9	8	8
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	10.9	10.9	11.0	11.0	11.0	11.0
		Median (mg/l)	11.1	11.2	11.3	11.3	11.3	11.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.020	0.020	0.018	0.018	0.018	0.018
		Median (mg/l)	0.016	0.016	0.015	0.015	0.015	0.015
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.86	0.85	0.68	0.68	0.68	0.67
		Median (mg/l)	0.78	0.77	0.63	0.63	0.63	0.62
	Total Suspended Solids	Mean (mg/l)	4.2	4.0	3.9	3.9	3.9	3.9
		Median (mg/l)	2.8	2.8	2.8	2.8	2.8	2.8
	Copper	Mean (mg/l)	0.0098	0.0100	0.0100	0.0100	0.0099	0.0099
		Median (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099	0.0099

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
LM-14 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3	3	3	3	3	3
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2	2	2	2	2	2
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.6	11.7	11.7	11.7	11.7	11.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.007	0.007	0.007	0.007	0.007	0.007
		Median (mg/l)	0.005	0.005	0.005	0.005	0.005	0.005
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.54	0.54	0.53	0.53	0.53	0.52
		Median (mg/l)	0.53	0.53	0.52	0.52	0.52	0.51
	Total Suspended Solids	Mean (mg/l)	2.4	2.4	2.4	2.4	2.4	2.4
		Median (mg/l)	2.3	2.3	2.3	2.3	2.3	2.3
	Copper	Mean (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099	0.0099
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
LM-15 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5	5	4	4	4	4
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	3	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	8	7	5	6	6	6
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	3	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.6	11.6	11.6	11.6	11.6	11.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.009	0.009	0.008	0.008	0.008	0.008
		Median (mg/l)	0.006	0.007	0.006	0.006	0.006	0.006
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.58	0.57	0.55	0.55	0.55	0.55
		Median (mg/l)	0.55	0.55	0.53	0.53	0.53	0.53
	Total Suspended Solids	Mean (mg/l)	2.7	2.6	2.6	2.6	2.6	2.6
		Median (mg/l)	2.3	2.3	2.3	2.3	2.3	2.3
	Copper	Mean (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099	0.0099
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a]			
					B1	B2	C1	C2
LM-16 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	9	9	8	8	8	8
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	4	4	4	4
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	5	4	4	4	4	4
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	3	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.6	11.6	11.6	11.6	11.6	11.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.012	0.012	0.012	0.012	0.012	0.012
		Median (mg/l)	0.010	0.010	0.010	0.010	0.010	0.010
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.65	0.65	0.60	0.60	0.60	0.60
		Median (mg/l)	0.62	0.62	0.57	0.57	0.57	0.57
	Total Suspended Solids	Mean (mg/l)	2.6	2.5	2.5	2.5	2.5	2.5
		Median (mg/l)	2.3	2.3	2.3	2.3	2.3	2.3
	Copper	Mean (mg/l)	0.0099	0.0100	0.0100	0.0100	0.0100	0.0100
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
LM-17 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	21	20	20	20	19	19
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	8	7	7	7	7	7
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	364	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	9	9	9	9	8	8
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	5	5	5	5
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.2	11.2	11.3	11.3	11.3	11.3
		Median (mg/l)	11.4	11.4	11.5	11.5	11.5	11.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.020	0.019	0.023	0.023	0.023	0.023
		Median (mg/l)	0.016	0.016	0.019	0.019	0.019	0.019
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.97	0.96	0.94	0.94	0.94	0.94
		Median (mg/l)	0.88	0.88	0.85	0.85	0.85	0.85
	Total Suspended Solids	Mean (mg/l)	2.5	2.5	2.4	2.4	2.4	2.4
		Median (mg/l)	2.3	2.3	2.2	2.2	2.2	2.2
	Copper	Mean (mg/l)	0.0102	0.0101	0.0101	0.0101	0.0101	0.0102
		Median (mg/l)	0.0101	0.0100	0.0100	0.0100	0.0100	0.0100

Table J-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Existing	Original 2020 Baseline	Alternative[a] B1	B2	C1	C2
LM-18 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3	3	3	3	3	3
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2	2	2	2	2	2
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.6	11.6	11.6	11.6	11.6	11.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.008	0.008	0.008	0.008	0.008	0.008
		Median (mg/l)	0.006	0.006	0.006	0.006	0.006	0.006
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.57	0.57	0.56	0.56	0.56	0.55
		Median (mg/l)	0.56	0.56	0.55	0.55	0.55	0.55
	Total Suspended Solids	Mean (mg/l)	2.2	2.2	2.2	2.2	2.2	2.2
		Median (mg/l)	2.2	2.2	2.2	2.2	2.2	2.2
	Copper	Mean (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099	0.0099
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100

[a]*Alternatives B1 and B2 assume full implementation of measures aimed at addressing agricultural runoff as set forth in* Wisconsin Administrative Code *Chapter NR 151. Alternatives C1 and C2 only assume a level of control that would be expected based on current levels of cost-share funding for such measures. As a result, nonpoint source loads under Alternatives C1 and C2 may, in some cases, be higher than under Alternatives B1 and B2.*

Source: HydroQual, Inc., and SEWRPC.

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Appendix K (revised)

WATER QUALITY STANDARD COMPLIANCE SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS

Table K-1

WATER QUALITY STANDARD COMPLIANCE SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: KINNICKINNIC RIVER WATERSHED

Water Quality Parameter	Water Quality Indicator	Statistic[a]	Alternative				
			A Original 2020 Baseline	B1	B2	C1	C2
Fecal Coliform Bacteria (annual)	Percent compliance with applicable single sample standard	Mean	68	68	68	70	70
		Median	75	75	75	76	76
		Minimum	52	52	52	56	56
		Maximum	80	80	80	80	80
	Days of compliance with applicable geometric mean standard (365 maximum)	Mean	191	192	191	206	206
		Median	250	256	254	262	262
		Minimum	49	49	49	69	69
		Maximum	317	317	317	322	322
Fecal Coliform Bacteria (May-September: 153 days total)	Percent compliance with applicable single sample standard	Mean	80	80	80	84	84
		Median	86	86	86	88	88
		Minimum	68	68	68	76	76
		Maximum	89	89	89	90	90
	Days of compliance with applicable geometric mean standard (153 maximum)	Mean	104	105	105	113	113
		Median	140	145	144	146	146
		Minimum	34	34	34	48	48
		Maximum	153	153	153	153	153
Dissolved Oxygen	Percent compliance with applicable dissolved oxygen standard	Mean	100	100	100	100	100
		Median	100	100	100	100	100
		Minimum	100	100	100	100	100
		Maximum	100	100	100	100	100
Total Phosphorus	Percent compliance with recommended phosphorus standard	Mean	26	26	26	27	27
		Median	24	24	24	28	28
		Minimum	14	14	14	14	14
		Maximum	33	33	33	34	34

Indicates Revision from May 2013 Plan Amendment

[a]*Based on estimates of compliance at five individual assessment points as presented in Appendix J (revised).*

Source: Tetra Tech, Inc., and SEWRPC.

Table K-2

WATER QUALITY STANDARD COMPLIANCE SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: MENOMONEE RIVER WATERSHED

			Alternative				
Water Quality Parameter	Water Quality Indicator	Statistic[a]	A Original 2020 Baseline	B1	B2	C1	C2
Fecal Coliform Bacteria (annual)	Percent compliance with applicable single sample standard	Mean	63	63	63	64	64
		Median	63	63	63	64	65
		Minimum	49	49	49	50	50
		Maximum	73	73	73	74	74
	Days of compliance with applicable geometric mean standard (365 maximum)	Mean	174	177	177	189	189
		Median	205	206	206	217	217
		Minimum	38	39	39	49	49
		Maximum	270	270	270	277	278
Fecal Coliform Bacteria (May-September: 153 days total)	Percent compliance with applicable single sample standard	Mean	79	79	79	80	80
		Median	81	81	81	82	82
		Minimum	68	68	68	69	69
		Maximum	86	86	86	88	88
	Days of compliance with applicable geometric mean standard (153 maximum)	Mean	108	110	110	116	116
		Median	137	138	138	141	141
		Minimum	26	27	27	34	34
		Maximum	152	152	152	153	153
Dissolved Oxygen	Percent compliance with applicable dissolved oxygen standard	Mean	99	99	99	99	99
		Median	99	99	99	99	99
		Minimum	98	98	98	96	98
		Maximum	100	100	100	100	100
Total Phosphorus	Percent compliance with recommended phosphorus standard	Mean	64	64	64	66	65
		Median	67	67	67	68	68
		Minimum	45	46	46	46	46
		Maximum	80	80	80	81	81

Indicates Revision from May 2013 Plan Amendment

[a]*Based upon estimates of compliance at nine individual assessment points as presented in Appendix J (revised).*

Source: Tetra Tech, Inc., and SEWRPC.

Table K-3

WATER QUALITY STANDARD COMPLIANCE SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: MILWAUKEE RIVER WATERSHED

Water Quality Parameter	Water Quality Indicator	Statistic[a]	Alternative				
			A Original 2020 Baseline	B1	B2	C1	C2
Fecal Coliform Bacteria (annual)	Percent compliance with applicable single sample standard	Mean	39	39	39	40	42
		Median	46	46	46	47	48
		Minimum	1	1	1	1	2
		Maximum	79	79	79	82	82
	Days of compliance with applicable geometric mean standard (365 maximum)	Mean	99	99	99	101	105
		Median	95	95	95	99	108
		Minimum	0	0	0	0	0
		Maximum	255	256	256	266	269
Fecal Coliform Bacteria (May-September: 153 days total)	Percent compliance with applicable single sample standard	Mean	62	62	62	63	65
		Median	76	76	76	77	78
		Minimum	3	3	3	3	4
		Maximum	93	93	93	94	94
	Days of compliance with applicable geometric mean standard (153 maximum)	Mean	73	73	73	74	77
		Median	84	84	84	87	94
		Minimum	0	0	0	0	0
		Maximum	149	149	149	150	151
Dissolved Oxygen	Percent compliance with applicable dissolved oxygen standard	Mean	99	99	99	99	99
		Median	100	100	100	100	100
		Minimum	95	96	96	96	94
		Maximum	100	100	100	100	100
Total Phosphorus	Percent compliance with recommended phosphorus standard	Mean	49	51	51	50	49
		Median	39	40	40	39	37
		Minimum	22	24	24	24	21
		Maximum	84	88	88	86	86

[a]*Based on estimates of compliance at 11 individual assessment points as presented in Appendix J (revised).*

Source: Tetra Tech, Inc., and SEWRPC.

Table K-4

WATER QUALITY STANDARD COMPLIANCE SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: OAK CREEK WATERSHED

Water Quality Parameter	Water Quality Indicator	Statistic[a]	Alternative				
			A Original 2020 Baseline	B1	B2	C1	C2
Fecal Coliform Bacteria (annual)	Percent compliance with applicable single sample standard	Mean	51	51	51	53	52
		Median	54	54	54	55	54
		Minimum	23	24	24	28	28
		Maximum	64	64	64	65	65
	Days of compliance with applicable geometric mean standard (365 maximum)	Mean	37	37	37	43	43
		Median	22	22	22	26	26
		Minimum	2	2	2	3	3
		Maximum	86	87	87	97	97
Fecal Coliform Bacteria (May-September: 153 days total)	Percent compliance with applicable single sample standard	Mean	70	70	70	71	71
		Median	72	72	72	73	73
		Minimum	41	41	41	47	46
		Maximum	82	82	82	83	82
	Days of compliance with applicable geometric mean standard (153 maximum)	Mean	28	28	28	32	32
		Median	18	18	18	22	22
		Minimum	0	0	0	0	0
		Maximum	70	70	70	79	79
Dissolved Oxygen	Percent compliance with applicable dissolved oxygen standard	Mean	84	84	84	85	85
		Median	80	80	80	80	80
		Minimum	72	72	72	72	72
		Maximum	100	100	100	100	100
Total Phosphorus	Percent compliance with recommended phosphorus standard	Mean	78	78	78	79	79
		Median	79	79	79	80	80
		Minimum	73	73	73	75	75
		Maximum	82	82	82	83	83

Indicates Revision from May 2013 Plan Amendment

[a] *Based on estimates of compliance at nine individual assessment points as presented in Appendix J (revised).*

Source: Tetra Tech, Inc. and SEWRPC.

Table K-5

WATER QUALITY STANDARD COMPLIANCE SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: ROOT RIVER WATERSHED

Water Quality Parameter	Water Quality Indicator	Statistic[a]	Alternative: A Original 2020 Baseline	B1	B2	C1	C2
Fecal Coliform Bacteria (annual)	Percent compliance with applicable single sample standard	Mean	59	59	59	60	60
		Median	61	61	61	62	62
		Minimum	45	46	46	48	48
		Maximum	71	71	71	72	72
	Days of compliance with applicable geometric mean standard (365 maximum)	Mean	51	53	53	70	69
		Median	39	40	40	50	50
		Minimum	9	9	9	11	11
		Maximum	149	151	151	194	190
Fecal Coliform Bacteria (May-September: 153 days total)	Percent compliance with applicable single sample standard	Mean	70	70	70	71	72
		Median	71	71	71	72	73
		Minimum	57	57	57	60	60
		Maximum	81	81	81	82	82
	Days of compliance with applicable geometric mean standard (153 maximum)	Mean	28	29	29	40	40
		Median	18	19	19	28	28
		Minimum	4	5	5	6	6
		Maximum	83	84	84	109	106
Dissolved Oxygen	Percent compliance with applicable dissolved oxygen standard	Mean	97	97	97	97	97
		Median	99	99	99	99	99
		Minimum	88	88	88	88	88
		Maximum	100	100	100	100	100
Total Phosphorus	Percent compliance with recommended phosphorus standard	Mean	74	73	73	75	75
		Median	72	74	74	76	76
		Minimum	49	49	49	50	49
		Maximum	88	88	88	88	88

Indicates Revision from May 2013 Plan Amendment

[a]*Based on estimates of compliance at 12 different assessment points as presented in Appendix J (revised).*

Source: Tetra Tech, Inc. and SEWRPC.

Table K-6

WATER QUALITY STANDARD COMPLIANCE SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: NEARSHORE LAKE MICHIGAN AREA

Water Quality Parameter	Water Quality Indicator	Statistic[a]	Alternative				
			A Original 2020 Baseline	B1	B2	C1	C2
Fecal Coliform Bacteria (annual)	Percent compliance with applicable single sample standard	Mean	95	96	96	97	97
		Median	98	99	99	99	99
		Minimum	59	67	67	70	70
		Maximum	100	100	100	100	100
	Days of compliance with applicable geometric mean standard (365 maximum)	Mean	347	352	352	352	352
		Median	364	365	365	364	364
		Minimum	212	239	239	242	242
		Maximum	365	365	365	365	365
Fecal Coliform Bacteria (May-September: 153 days total)	Percent compliance with applicable single sample standard	Mean	98	99	99	99	99
		Median	99	99	99	99	99
		Minimum	85	89	89	92	92
		Maximum	100	100	100	100	100
	Days of compliance with applicable geometric mean standard (153 maximum)	Mean	152	153	153	153	153
		Median	153	153	153	153	153
		Minimum	142	150	150	151	151
		Maximum	153	153	153	153	153
Dissolved Oxygen	Percent compliance with applicable dissolved oxygen standard	Mean	100	100	100	100	100
		Median	100	100	100	100	100
		Minimum	99	99	99	99	99
		Maximum	100	100	100	100	100
Total Phosphorus	Percent compliance with recommended phosphorus standard	Mean	97	97	97	97	97
		Median	100	100	100	100	100
		Minimum	79	79	79	79	81
		Maximum	100	100	100	100	100

[a]*Based on estimates of compliance at 18 individual assessment points as presented in Appendix J (revised).*

Source: Brown and Caldwell, Inc.; HydroQual, Inc.; and SEWRPC.

Table K-7

WATER QUALITY STANDARD COMPLIANCE SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS: OVERALL

Water Quality Parameter	Water Quality Indicator	Statistic[a]	Alternative				
			A Original 2020 Baseline	B1	B2	C1	C2
Fecal Coliform Bacteria (annual)	Percent compliance with applicable single sample standard	Mean	66	66	66	67	67
		Median	64	64	64	65	65
		Minimum	1	1	1	1	2
		Maximum	100	100	100	100	100
	Days of compliance with applicable geometric mean standard (365 maximum)	Mean	169	171	171	178	179
		Median	147	148	148	156	159
		Minimum	0	0	0	0	0
		Maximum	365	365	365	365	365
Fecal Coliform Bacteria (May-September: 153 days total)	Percent compliance with applicable single sample standard	Mean	78	79	79	80	80
		Median	80	80	80	81	82
		Minimum	3	3	3	3	4
		Maximum	100	100	100	100	100
	Days of compliance with applicable geometric mean standard (153 maximum)	Mean	88	89	88	93	93
		Median	97	97	97	111	111
		Minimum	0	0	0	0	0
		Maximum	153	153	153	153	153
Dissolved Oxygen	Percent compliance with applicable dissolved oxygen standard	Mean	97	97	97	97	97
		Median	100	100	100	100	100
		Minimum	72	72	72	72	72
		Maximum	100	100	100	100	100
Total Phosphorus	Percent compliance with recommended phosphorus standard	Mean	71	727	72	72	72
		Median	78	78	78	8378	78
		Minimum	14	14	14	2414	14
		Maximum	100	100	100	100	100

Indicates Revision from May 2013 Plan Amendment

[a]*Based upon estimates of compliance at 64 individual assessment points as presented in Appendix J (revised).*

Source: Brown and Caldwell; HydroQual, Inc.; Tetra Tech, Inc.; and SEWRPC.

Appendix L

COST ANALYSIS FOR CITY OF SOUTH MILWAUKEE WASTEWATER TREATMENT PLANT ALTERNATIVES

Table L-1

COST COMPARISON FOR SOUTH MILWAUKEE WASTEWATER TREATMENT ALTERNATIVES 20-YEAR COST ANALYSIS

Alternative Number	Description	Capital Cost ($)	Annual Operation and Maintenance Cost ($)	Present Worth Total Cost ($)	Equivalent Annual Cost ($)	Difference in Equivalent Annual Cost Relative to Alternative No. 1 (percent)
1	Upgrade the existing South Milwaukee WWTP	4,298,000	1,600,000	22,341,000	1,948,000	- -
2	Connect the South Milwaukee WWTP to the MMSD South Shore WWTP using PCT with ballasted flocculation at South Shore and not utilizing existing storage at the South Milwaukee plant	39,289,000	459,000	41,415,000	3,611,000	85
3	Connect the South Milwaukee WWTP to the MMSD South Shore WWTP using PCT with chemical flocculation at South Shore and not utilizing existing storage at the South Milwaukee plant	29,289,000	395,000	31,332,000	2,732,000	40
4	Connect the South Milwaukee WWTP to the MMSD South Shore WWTP using PCT with ballasted flocculation at South Shore and utilizing existing storage at the South Milwaukee plant	25,866,000	314,000	27,231,000	2,374,000	22
5	Connect the South Milwaukee WWTP to the MMSD South Shore WWTP using PCT with chemical flocculation at South Shore and utilizing existing storage at the South Milwaukee plant	19,866,000	278,000	21,249,000	1,853,000	-5

NOTES: Capital and O&M costs obtained from HNTB Corporation.

10-year replacement costs and 20-year salvage values estimated by SEWRPC.

Capital costs reflect a 25 percent allowance for contingencies and a 35 percent allowance for engineering and administration costs, consistent with MMSD 2020 Facilities Plan.

Present worth and equivalent annual cost estimates based on 20-year economic life and 6 percent interest rate.

[a]*This alternative is dependent on a determination that the MMSD South Shore plant has adequate existing peak wet-weather capacity to treat wastewater flows from the South Milwaukee sewerage system.*

Source: HNTB and SEWRPC.

Table L-2

COST ANALYSIS FOR ALTERNATIVE NO. 1: UPGRADE SOUTH MILWAUKEE WASTEWATER TREATMENT PLANT 50-YEAR COST ANALYSIS

Component	Assumed Component Life (years)	Capital Cost ($)					Year 50 Salvage Value ($)	Annual Operation and Maintenance Cost ($)	Present Worth O&M ($)	Present Worth Total Cost ($)	Equivalent Annual Cost ($)
		Year 1	Year 10	Year 20	Year 30	Year 40					
Screening System Modifications	10 (screen) 20 (mechanicals) 50 (other)	428,000	223,000	335,000	223,000	335,000	56,000	0	0	725,000	46,000
Influent Flow Measuring and Sampling	N/A	5,000	0	0	0	0	0	0	0	5,000	300
Raw Sewage Pumping Station Addition	20 (mechanicals) 50 (other)	781,000	0	426,000	0	426,000	213,000	0	0	944,000	59,900
Aeration Basins - Space Planning	N/A	0		0		0	0	0	0	0	0
Aeration System - New Blower Building	20 (mechanicals) 50 (other)	589,000	0	82,500	0	82,500	41,250	0	0	621,000	39,400
Final Clarifiers - Two New Clarifiers, RAS Pump Station	20 (mechanicals) 50 (other)	1,750,000	0	385,600	0	385,600	192,800	0	0	1,897,000	120,400
Disinfection Facilities - Replace UV Equipment	20	590,000	0	590,000	0	590,000	295,000	0	0	815,000	51,700
Anaerobic Digestion - Space Planning	N/A	0	0	0	0	0	0	0	0	0	0
Digester Gas System - Install Gas Safety Flair	N/A	155,000	0	0	0	0	0	0	0	155,000	9,800
Sludge Thickening and Storage - Space Planning	N/A	0	0	0	0	0	0	0	0	0	0
New Lab and Administration - Space Planning	N/A	0	0	0	0	0	0	0	0	0	0
WWTP O&M Costs	N/A	0	0	0	0	0	0	1,600,000	25,219,000	25,219,000	1,600,000
Total Cost	- -	4,298,000						1,600,000	25,219,000	30,381,000	1,927,500

NOTES: Capital costs obtained from May 2006 City of South Milwaukee Wastewater Treatment Facility Site Study by Applied Technologies.

10-, 20- and 40-year replacement costs and 50-year salvage values estimated by SEWRPC.

Capital costs from Applied Technologies report have been adjusted to reflect a 25 percent allowance for contingencies and a 35 percent allowance for engineering and administration costs, consistent with MMSD 2020 Facilities Plan.

Applied Technologies report had used a 25 percent allowance for contingencies and a 15 percent allowance for engineering and administration.

Annual O&M cost from Andy Bacalarski (South Milwaukee) in personal communication with Jim Ibach (MMSD), per HNTB 11/30/06 cost estimate table for South Milwaukee.

Present worth and equivalent annual cost estimates based on 50-year economic life and 6 percent interest rate.

Source: Applied Technologies, HNTB, and SEWRPC.

Table L-3

COST ESTIMATE FOR SOUTH MILWAUKEE CONNECTION TO MMSD SYSTEM ALTERNATIVE NO. 2: CONNECT THE SOUTH MILWAUKEE WWTP TO THE MMSD SOUTH SHORE WWTP USING PCT WITH BALLASTED FLOCCULATION AT SOUTH SHORE AND NOT UTILIZING EXISTING STORAGE AT THE SOUTH MILWAUKEE PLANT 50-YEAR COST ANALYSIS

Component	Assumed Component Life (years)	Capital Cost ($)			Year 50 Salvage Value ($)	Annual Operation and Maintenance Cost ($)	Present Worth O&M ($)	Present Worth Total Cost ($)	Equivalent Annual Cost ($)
		Year 1	Year 20	Year 40					
30 MGD Additional Treatment Capacity at South Shore WWTP	20 (mechanicals) 50 (other)	25,000,000	17,557,000	17,557,000	8,778,500	334,000	5,265,000	36,969,000	2,345,000
30 MGD Lift Station	20 (mechanicals) (60% of total) 50 (other)	8,256,000	4,954,000	4,954,000	2,477,000	125,000[a]	1,970,000	12,118,000	769,000
New Force Main	50	6,033,000	0	0	0	0	0	6,033,000	383,000
Total Cost	- -	39,289,000				459,000	7,235,000	55,120,000	3,497,000

NOTES: Capital and O&M costs obtained from HNTB Corporation.

20- and 40-year replacement costs and 50-year salvage values estimated by SEWRPC.

Capital costs reflect a 25 percent allowance for contingencies and a 35 percent allowance for engineering and administration costs, consistent with MMSD 2020 Facilities Plan.

Present worth and equivalent annual cost estimates based on 50-year economic life and 6 percent interest rate.

[a] *Includes force main operation and maintenance cost.*

Source: HNTB and SEWRPC.

Table L-4

**COST ESTIMATE FOR SOUTH MILWAUKEE CONNECTION TO MMSD SYSTEM
ALTERNATIVE NO. 3: CONNECT THE SOUTH MILWAUKEE WWTP TO THE MMSD SOUTH SHORE WWTP USING PCT WITH CHEMICAL FLOCCULATION AT SOUTH SHORE AND NOT UTILIZING EXISTING STORAGE AT THE SOUTH MILWAUKEE PLANT
50-YEAR COST ANALYSIS**

Component	Assumed Component Life (years)	Capital Cost ($)			Year 50 Salvage Value ($)	Annual Operation and Maintenance Cost ($)	Present Worth O&M ($)	Present Worth Total Cost ($)	Equivalent Annual Cost ($)
		Year 1	Year 20	Year 40					
30 MGD Additional Treatment Capacity at South Shore WWTP	20 (mechanicals) 50 (other)	15,000,000	11,036,000	11,036,000	5,518,000	270,000	4,256,000	23,470,000	1,489,000
30 MGD Lift Station	20 (mechanicals) (60% of total) 50 (other)	8,256,000	4,954,000	4,954,000	2,477,000	125,000[a]	1,970,000	12,118,000	769,000
New Force Main	50	6,033,000	0	0	0	0	0	6,033,000	383,000
Total Cost	- -	29,289,000				395,000	6,226,000	41,621,000	2,641,000

NOTES: Capital and O&M costs obtained from HNTB Corporation.

20- and 40-year replacement costs and 50-year salvage values estimated by SEWRPC.

Capital costs reflect a 25 percent allowance for contingencies and a 35 percent allowance for engineering and administration costs, consistent with MMSD 2020 Facilities Plan.

Present worth and equivalent annual cost estimates based on 50-year economic life and 6 percent interest rate.

[a] *Includes force main operation and maintenance cost.*

Source: HNTB and SEWRPC.

Table L-5

**COST ESTIMATE FOR SOUTH MILWAUKEE CONNECTION TO MMSD SYSTEM
ALTERNATIVE NO. 4: CONNECT THE SOUTH MILWAUKEE WWTP TO THE MMSD SOUTH SHORE WWTP USING PCT WITH BALLASTED FLOCCULATION AT SOUTH SHORE AND UTILIZING EXISTING STORAGE AT THE SOUTH MILWAUKEE PLANT
50-YEAR PROJECT LIFE**

Component	Assumed Component Life (years)	Capital Cost ($)			Year 50 Salvage Value ($)	Annual Operation and Maintenance Cost ($)	Present Worth O&M ($)	Present Worth Total Cost ($)	Equivalent Annual Cost ($)
		Year 1	Year 20	Year 40					
17 MGD Additional Treatment Capacity at South Shore WWTP	20 (mechanicals) 50 (other)	14,000,000	9,950,000	9,950,000	4,975,000	189,000	2,979,000	20,778,000	1,318,000
17 MGD Lift Station	20 (mechanicals) (60% of total) 50 (other)	6,598,000	3,959,000	3,959,000	1,979,500	125,000[a]	1,970,000	10,080,000	640,000
New Force Main	50	5,268,000	0	0	0	0	0	5,268,000	334,000
Total Cost	- -	25,866,000				314,000	4,949,000	36,126,000	2,292,000

NOTES: Capital and O&M costs obtained from HNTB Corporation.

20- and 40-year replacement costs and 50-year salvage values estimated by SEWRPC.

Capital costs reflect a 25 percent allowance for contingencies and a 35 percent allowance for engineering and administration costs, consistent with MMSD 2020 Facilities Plan.

O&M cost of $125,000 is for both the lift station and force main.

Present worth and equivalent annual cost estimates based on 50-year economic life and 6 percent interest rate.

[a]*Includes force main operation and maintenance cost.*

Source: HNTB and SEWRPC.

Table L-6

COST ESTIMATE FOR SOUTH MILWAUKEE CONNECTION TO MMSD SYSTEM
ALTERNATIVE NO. 5: CONNECT THE SOUTH MILWAUKEE WWTP TO THE MMSD SOUTH SHORE WWTP USING PCT WITH CHEMICAL FLOCCULATION AT SOUTH SHORE AND UTILIZING EXISTING STORAGE AT THE SOUTH MILWAUKEE PLANT
50-YEAR PROJECT LIFE

Component	Assumed Component Life (years)	Capital Cost ($)			Year 50 Salvage Value ($)	Annual Operation and Maintenance Cost ($)	Present Worth O&M ($)	Present Worth Total Cost ($)	Equivalent Annual Cost ($)
		Year 1	Year 20	Year 40					
17 MGD Additional Treatment Capacity at South Shore WWTP	20 (mechanicals) 50 (other)	8,000,000	6,254,000	6,254,000	3,127,000	153,000	2,412,000	12,800,000	812,000
17 MGD Lift Station	20 (mechanicals) (60% of total) 50 (other)	6,598,000	3,959,000	3,959,000	1,979,500	125,000[a]	1,970,000	10,080,000	640,000
New Force Main	50	5,268,000	0	0	0	0	0	5,268,000	334,000
Total Cost	- -	19,866,000				278,000	4,382,000	28,148,000	1,786,000

NOTES: Capital and O&M costs obtained from HNTB Corporation.

20- and 40-year replacement costs and 50-year salvage values estimated by SEWRPC.

Capital costs reflect a 25 percent allowance for contingencies and a 35 percent allowance for engineering and administration costs, consistent with MMSD 2020 Facilities Plan.

O&M cost of $125,000 is for both the lift station and force main.

Present worth and equivalent annual cost estimates based on 50-year economic life and 6 percent interest rate.

[a] *Includes force main operation and maintenance cost.*

Source: HNTB and SEWRPC.

Table L-7

COST ANALYSIS FOR ALTERNATIVE NO. 1: UPGRADE SOUTH MILWAUKEE WASTEWATER TREATMENT PLANT 20-YEAR COST ANALYSIS

Component	Assumed Component Life (years)	Capital Cost ($)		Year 20 Salvage Value ($)	Annual Operation and Maintenance Cost ($)	Present Worth O&M ($)	Present Worth Total Cost ($)	Equivalent Annual Cost ($)
		Year 1	Year 10					
Screening System Modifications	10 (screen) 20 (mechanicals) 50 (other)	428,000	223,000	55,800	0	0	535,000	46,700
Influent Flow Measuring and Sampling	N/A	5,000	0	0	0	0	5,000	400
Raw Sewage Pumping Station Addition	20 (mechanicals) 50 (other)	781,000	0	213,000	0	0	715,000	62,300
Aeration Basins - Space Planning	N/A	0		0	0	0	0	0
Aeration System - New Blower Building	20 (mechanicals) 50 (other)	589,000	0	303,900	0	0	494,000	43,100
Final Clarifiers - Two New Clarifiers, RAS Pump Station	20 (mechanicals) 50 (other)	1,750,000	0	818,640	0	0	1,495,000	130,300
Disinfection Facilities - Replace UV Equipment	20	590,000	0	0	0	0	590,000	51,400
Anaerobic Digestion - Space Planning	N/A	0	0	0	0	0	0	0
Digester Gas System - Install Gas Safety Flair	N/A	155,000	0	0	0	0	155,000	13,500
Sludge Thickening and Storage - Space Planning	N/A	0	0	0	0	0	0	0
New Lab and Administration - Space Planning	N/A	0	0	0	0	0	0	0
WWTP O&M Costs	N/A	0	0	0	1,600,000	18,352,000	18,352,000	1,600,000
Total Cost	- -	4,298,000			1,600,000	18,352,000	22,341,000	1,947,700

NOTES: Capital costs obtained from May 2006 City of South Milwaukee Wastewater Treatment Facility Site Study by Applied Technologies.

10- and 20-year replacement costs and salvage values estimated by SEWRPC.

Capital costs from Applied Technologies report have been adjusted to reflect a 25 percent allowance for contingencies and a 35 percent allowance for engineering & administration costs, consistent with MMSD 2020 Facilities Plan.

Applied Technologies report had used a 25 percent allowance for contingencies and a 15 percent allowance for engineering and administration.

Annual O&M cost from Andy Bacalarski (South Milwaukee) in personal communication with Jim Ibach (MMSD), per HNTB 11/30/06 cost estimate table for South Milwaukee.

Present worth and equivalent annual cost estimates based on 20-year economic life and 6 percent interest rate.

Source: Applied Technologies, HNTB, and SEWRPC.

Table L-8

**COST ESTIMATE FOR SOUTH MILWAUKEE CONNECTION TO MMSD SYSTEM
ALTERNATIVE NO. 2: CONNECT THE SOUTH MILWAUKEE WWTP TO THE MMSD SOUTH SHORE WWTP USING PCT WITH BALLASTED FLOCCULATION AT SOUTH SHORE AND NOT UTILIZING EXISTING STORAGE AT THE SOUTH MILWAUKEE PLANT
20-YEAR COST ANALYSIS**

Component	Assumed Component Life (years)	Capital Cost ($) Year 1	Year 20 Salvage Value ($)	Annual Operation and Maintenance Cost ($)	Present Worth O&M ($)	Present Worth Total Cost ($)	Equivalent Annual Cost ($)
30 MGD Additional Treatment Capacity at South Shore WWTP	20 (mechanicals) 50 (other)	25,000,000	4,465,800	334,000	3,831,000	27,439,000	2,392,000
30 MGD Lift Station	20 (mechanicals) (60% of total) 50 (other)	8,256,000	1,981,200	125,000[a]	1,434,000	9,072,000	791,000
New Force Main	50	6,033,000	3,619,800	0	0	4,904,000	428,000
Total Cost	- -	39,289,000		459,000	5,265,000	41,415,000	3,611,000

NOTES: Capital and O&M costs obtained from HNTB Corporation.

20-year salvage values estimated by SEWRPC.

Capital costs reflect a 25 percent allowance for contingencies and a 35 percent allowance for engineering and administration costs, consistent with MMSD 2020 Facilities Plan.

Present worth and equivalent annual cost estimates based on 20-year economic life and 6 percent interest rate.

[a]*Includes force main operation and maintenance cost.*

Source: HNTB and SEWRPC.

Table L-9

**COST ESTIMATE FOR SOUTH MILWAUKEE CONNECTION TO MMSD SYSTEM
ALTERNATIVE NO. 3: CONNECT THE SOUTH MILWAUKEE WWTP TO THE MMSD SOUTH SHORE WWTP USING PCT WITH CHEMICAL FLOCCULATION AT SOUTH SHORE AND NOT UTILIZING EXISTING STORAGE AT THE SOUTH MILWAUKEE PLANT
20-YEAR COST ANALYSIS**

Component	Assumed Component Life (years)	Capital Cost ($) Year 1	Year 20 Salvage Value ($)	Annual Operation and Maintenance Cost ($)	Present Worth O&M ($)	Present Worth Total Cost ($)	Equivalent Annual Cost ($)
30 MGD Additional Treatment Capacity at South Shore WWTP	20 (mechanicals) 50 (other)	15,000,000	2,378,400	270,000	3,097,000	17,355,000	1,513,000
30 MGD Lift Station	20 (mechanicals) (60% of total) 50 (other)	8,256,000	1,981,200	125,000[a]	1,434,000	9,072,000	791,000
New Force Main	50	6,033,000	3,619,800	0	0	4,905,000	428,000
Total Cost	- -	29,289,000		395,000	4,531,000	31,332,000	2,732,000

NOTES: Capital and O&M costs obtained from HNTB Corporation.
20-year salvage values estimated by SEWRPC.

Capital costs reflect a 25 percent allowance for contingencies and a 35 percent allowance for engineering and administration costs, consistent with MMSD 2020 Facilities Plan.

Present worth and equivalent annual cost estimates based on 20-year economic life and 6 percent interest rate.

[a]*Includes force main operation and maintenance cost.*

Source: HNTB and SEWRPC.

Table L-10

**COST ESTIMATE FOR SOUTH MILWAUKEE CONNECTION TO MMSD SYSTEM
ALTERNATIVE NO. 4: CONNECT THE SOUTH MILWAUKEE WWTP TO THE MMSD SOUTH SHORE WWTP USING PCT WITH BALLASTED FLOCCULATION AT SOUTH SHORE AND UTILIZING EXISTING STORAGE AT THE SOUTH MILWAUKEE PLANT
20-YEAR COST ANALYSIS**

Component	Assumed Component Life (years)	Capital Cost ($) Year 1	Year 20 Salvage Value ($)	Annual Operation and Maintenance Cost ($)	Present Worth O&M ($)	Present Worth Total Cost ($)	Equivalent Annual Cost ($)
17 MGD Additional Treatment Capacity at South Shore WWTP	20 (mechanicals) 50 (other)	14,000,000	2,430,000	189,000	2,168,000	15,410,000	1,344,000
17 MGD Lift Station	20 (mechanicals) (60% of total) 50 (other)	6,598,000	1,583,400	125,000[a]	1,434,000	7,538,000	657,000
New Force Main	50	5,268,000	3,160,800	0	0	4,283,000	373,000
Total Cost	- -	25,866,000		314,000	3,602,000	27,231,000	2,374,000

NOTES: Capital and O&M costs obtained from HNTB Corporation.

20-year salvage values estimated by SEWRPC.

Capital costs reflect a 25 percent allowance for contingencies and a 35 percent allowance for engineering and administration costs, consistent with MMSD 2020 Facilities Plan.

Present worth and equivalent annual cost estimates based on 20-year economic life and 6 percent interest rate.

[a]*Includes force main operation and maintenance cost.*

Source: HNTB and SEWRPC.

Table L-11

COST ESTIMATE FOR SOUTH MILWAUKEE CONNECTION TO MMSD SYSTEM
ALTERNATIVE NO. 5: CONNECT THE SOUTH MILWAUKEE WWTP TO THE MMSD SOUTH SHORE WWTP USING PCT WITH CHEMICAL FLOCCULATION AT SOUTH SHORE AND UTILIZING EXISTING STORAGE AT THE SOUTH MILWAUKEE PLANT
20-YEAR COST ANALYSIS

Component	Assumed Component Life (years)	Capital Cost ($) Year 1	Year 20 Salvage Value ($)	Annual Operation and Maintenance Cost ($)	Present Worth O&M ($)	Present Worth Total Cost ($)	Equivalent Annual Cost ($)
17 MGD Additional Treatment Capacity at South Shore WWTP	20 (mechanicals) 50 (other)	8,000,000	1,047,600	153,000	1,755,000	9,428,000	822,000
17 MGD Lift Station	20 (mechanicals) (60% of total) 50 (other)	6,598,000	1,583,400	125,000[a]	1,434,000	7,538,000	657,000
New Force Main	50	5,268,000	3,160,800	0	0	4,283,000	374,000
Total Cost	- -	19,866,000		278,000	3,189,000	21,249,000	1,853,000

NOTES: Capital and O&M costs obtained from HNTB Corporation.

20-year salvage values estimated by SEWRPC.

Capital costs reflect a 25 percent allowance for contingencies and a 35 percent allowance for engineering and administration costs, consistent with MMSD 2020 Facilities Plan.

Present worth and equivalent annual cost estimates based on 20-year economic life and 6 percent interest rate.

[a]*Includes force main operation and maintenance cost.*

Source: HNTB and SEWRPC.

Appendix M

AVERAGE ANNUAL POLLUTANT LOADS FOR RECOMMENDED PLAN AND EXTREME MEASURES CONDITION

Table M-1

AVERAGE ANNUAL POLLUTANT LOADS FOR RECOMMENDED PLAN AND EXTREME MEASURES CONDITION: KINNICKINNIC RIVER WATERSHED

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Total Phosphorus (pounds)	Kinnickinnic River	Existing	220	880	490	1,590	2,790	20	2,810	4,400
		Revised 2020 Baseline	220	900	320	1,440	2,430	20	2,450	3,890
		Revised 2020 Baseline with Five-Year LOP	220	130	290	640	2,430	20	2,450	3,090
		Recommended Plan[d]	220	130	290	640	2,310	20	2,330	2,970
		Extreme Measures Condition[d]	<10	130	290	420	1,850	20	1,870	2,290
	Wilson Park Creek	Existing	320	10	0	330	3,390	50	3,440	3,770
		Revised 2020 Baseline	320	10	0	330	3,020	30	3,050	3,380
		Revised 2020 Baseline with Five-Year LOP	320	<10	0	320	3,020	30	3,050	3,370
		Recommended Plan[d]	320	<10	0	320	2,860	30	2,890	3,210
		Extreme Measures Condition[d]	0	<10	0	0	2,240	30	2,270	2,270
	Holmes Avenue Creek	Existing	440	0	0	440	1,000	<10	1,000	1,440
		Revised 2020 Baseline	440	0	0	440	870	<10	870	1,310
		Revised 2020 Baseline with Five-Year LOP	440	0	0	440	870	<10	870	1,310
		Recommended Plan[d]	440	0	0	440	840	<10	840	1,280
		Extreme Measures Condition[d]	290	0	0	290	710	<10	710	1,000
	Villa Mann Creek	Existing	0	0	0	0	730	<10	730	730
		Revised 2020 Baseline	0	0	0	0	640	<10	640	640
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	640	<10	640	640
		Recommended Plan[d]	0	0	0	0	610	<10	610	610
		Extreme Measures Condition[d]	0	0	0	0	490	<10	490	490
	Cherokee Park Creek	Existing	0	0	0	0	440	<10	440	440
		Revised 2020 Baseline	0	0	0	0	390	<10	390	390
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	390	<10	390	390
		Recommended Plan[d]	0	0	0	0	370	<10	370	370
		Extreme Measures Condition[d]	0	0	0	0	290	<10	290	290
	Lyons Park Creek	Existing	0	<10	0	<10	620	<10	620	620
		Revised 2020 Baseline	0	<10	0	<10	550	<10	550	550
		Revised 2020 Baseline with Five-Year LOP	0	<10	0	<10	550	<10	550	550
		Recommended Plan[d]	0	<10	0	<10	520	<10	520	520
		Extreme Measures Condition[d]	0	<10	0	<10	420	<10	420	420

Table M-1 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Total Phosphorus (pounds) (continued)	S. 43rd Street Ditch	Existing	460	<10	0	460	890	<10	890	1,350
		Revised 2020 Baseline	460	<10	0	460	780	<10	780	1,240
		Revised 2020 Baseline with Five-Year LOP	460	<10	0	460	780	<10	780	1,240
		Recommended Plan[d]	460	<10	0	460	750	<10	750	1,210
		Extreme Measures Condition[d]	0	<10	0	<10	630	<10	630	630
	Watershed Total	Existing	1,440	890	490	2,820	9,860	70	9,930	12,750
		Revised 2020 Baseline	1,440	910	320	2,670	8,680	50	8,730	11,400
		Revised 2020 Baseline with Five-Year LOP	1,440	130	290	1,860	8,680	50	8,730	10,590
		Recommended Plan[d]	1,440	130	290	1,860	8,260	50	8,310	10,170
		Extreme Measures Condition[d]	290	130	290	710	6,630	50	6,680	7,390
Total Suspended Solids (pounds)	Kinnickinnic River	Existing	2,230	50,280	42,810	95,320	1,400,580	2,900	1,403,480	1,498,800
		Revised 2020 Baseline	2,230	51,800	28,200	82,230	1,086,960	2,920	1,089,880	1,172,110
		Revised 2020 Baseline with Five-Year LOP	2,230	7,230	25,370	34,830	1,086,960	2,920	1,089,880	1,124,710
		Recommended Plan[d]	2,230	7,230	25,370	34,830	1,082,780	2,920	1,085,700	1,120,530
		Extreme Measures Condition[d]	2,230	7,230	25,370	34,830	1,082,780	2,920	1,085,700	1,120,530
	Wilson Park Creek	Existing	6,300	850	0	7,150	1,681,280	24,830	1,706,110	1,713,260
		Revised 2020 Baseline	6,300	350	0	6,650	1,339,190	3,460	1,342,650	1,349,300
		Revised 2020 Baseline with Five-Year LOP	6,300	180	0	6,480	1,339,190	3,460	1,342,650	1,349,130
		Recommended Plan[d]	6,300	180	0	6,480	1,352,780	3,460	1,356,240	1,362,720
		Extreme Measures Condition[d]	6,300	180	0	6,480	1,352,780	3,460	1,356,240	1,362,720
	Holmes Avenue Creek	Existing	800	0	0	800	643,010	530	643,540	644,340
		Revised 2020 Baseline	800	0	0	800	495,420	410	495,830	496,630
		Revised 2020 Baseline with Five-Year LOP	800	0	0	800	495,420	410	495,830	496,630
		Recommended Plan[d]	800	0	0	800	496,540	410	496,950	497,750
		Extreme Measures Condition[d]	800	0	0	800	496,540	410	496,950	497,750
	Villa Mann Creek	Existing	0	0	0	0	380,220	220	380,440	380,440
		Revised 2020 Baseline	0	0	0	0	291,250	120	291,370	291,370
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	291,250	120	291,370	291,370
		Recommended Plan[d]	0	0	0	0	291,520	120	291,640	291,640
		Extreme Measures Condition[d]	0	0	0	0	291,520	120	291,640	291,640
	Cherokee Park Creek	Existing	0	0	0	0	216,410	600	217,010	217,010
		Revised 2020 Baseline	0	0	0	0	170,250	490	170,740	170,740
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	170,250	490	170,740	170,740
		Recommended Plan[d]	0	0	0	0	171,160	490	171,650	171,650
		Extreme Measures Condition[d]	0	0	0	0	171,160	490	171,650	171,650

Table M-1 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Total Suspended Solids (pounds) (continued)	Lyons Park Creek	Existing	0	30	0	30	283,620	250	283,870	283,900
		Revised 2020 Baseline	0	30	0	30	225,780	210	225,990	226,020
		Revised 2020 Baseline with Five-Year LOP	0	30	0	30	225,780	210	225,990	226,020
		Recommended Plan[d]	0	30	0	30	224,790	210	225,000	225,030
		Extreme Measures Condition[d]	0	30	0	30	224,790	210	225,000	225,030
	S. 43rd Street Ditch	Existing	3,080	110	0	3,190	557,400	430	557,830	561,020
		Revised 2020 Baseline	3,080	110	0	3,190	418,760	250	419,010	422,200
		Revised 2020 Baseline with Five-Year LOP	3,080	110	0	3,190	418,760	250	419,010	422,200
		Recommended Plan[d]	3,080	110	0	3,190	422,420	250	422,670	425,860
		Extreme Measures Condition[d]	3,080	110	0	3,190	422,420	250	422,670	425,860
	Watershed Total	Existing	12,410	51,270	42,810	106,490	5,162,520	29,760	5,192,280	5,298,770
		Revised 2020 Baseline	12,410	52,290	28,200	92,900	4,027,610	7,860	4,035,470	4,128,370
		Revised 2020 Baseline with Five-Year LOP	12,410	7,550	25,370	45,330	4,027,610	7,860	4,035,470	4,080,800
		Recommended Plan[d]	12,410	7,550	25,370	45,330	4,041,990	7,860	4,049,850	4,095,180
		Extreme Measures Condition[d]	12,410	7,550	25,370	45,330	4,041,990	7,860	4,049,850	4,095,180
Fecal Coliform Bacteria (trillions of cells)	Kinnickinnic River	Existing	0.00	959.33	554.79	1,514.12	1,031.94	0.06	1,032.00	2,546.12
		Revised 2020 Baseline	0.00	988.40	365.50	1,353.90	856.53	0.06	856.59	2,210.49
		Revised 2020 Baseline with Five-Year LOP	0.00	138.01	328.84	466.85	856.53	0.06	856.59	1,323.44
		Recommended Plan[d]	0.00	138.01	328.84	466.85	567.22	0.06	567.28	1,034.13
		Extreme Measures Condition[d]	0.00	138.01	328.84	466.85	287.84	0.06	287.90	754.75
	Wilson Park Creek	Existing	0.00	16.14	0.00	16.14	996.39	0.20	996.59	1,012.73
		Revised 2020 Baseline	0.00	6.60	0.00	6.60	852.08	0.09	852.17	858.77
		Revised 2020 Baseline with Five-Year LOP	0.00	3.51	0.00	3.51	852.08	0.09	852.17	855.68
		Recommended Plan[d]	0.00	3.51	0.00	3.51	550.22	0.09	550.31	553.82
		Extreme Measures Condition[d]	0.00	3.51	0.00	3.51	279.21	0.09	279.30	282.81
	Holmes Avenue Creek	Existing	0.00	0.00	0.00	0.00	361.85	0.01	361.86	361.86
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	297.53	0.01	297.54	297.54
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	297.53	0.01	297.54	297.54
		Recommended Plan[d]	0.00	0.00	0.00	0.00	198.53	0.01	198.54	198.54
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	100.75	0.01	100.76	100.76
	Villa Mann Creek	Existing	0.00	0.00	0.00	0.00	247.97	0.01	247.98	247.98
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	204.49	0.00	204.49	204.49
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	204.49	0.00	204.49	204.49
		Recommended Plan[d]	0.00	0.00	0.00	0.00	135.92	0.00	135.92	135.92
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	68.97	0.00	68.97	68.97

Table M-1 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Cherokee Park Creek	Existing	0.00	0.00	0.00	0.00	145.02	0.01	145.03	145.03
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	121.72	0.01	121.73	121.73
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	121.72	0.01	121.73	121.73
		Recommended Plan[d]	0.00	0.00	0.00	0.00	81.03	0.01	81.04	81.04
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	41.12	0.01	41.13	41.13
	Lyons Park Creek	Existing	0.00	0.52	0.00	0.52	247.09	0.01	247.10	247.62
		Revised 2020 Baseline	0.00	0.52	0.00	0.52	208.53	0.00	208.53	209.05
		Revised 2020 Baseline with Five-Year LOP	0.00	0.52	0.00	0.52	208.53	0.00	208.53	209.05
		Recommended Plan[d]	0.00	0.52	0.00	0.52	137.88	0.00	137.88	138.40
		Extreme Measures Condition[d]	0.00	0.52	0.00	0.52	69.97	0.00	69.97	70.49
	S. 43rd Street Ditch	Existing	0.00	2.07	0.00	2.07	327.94	0.01	327.95	330.02
		Revised 2020 Baseline	0.00	2.07	0.00	2.07	270.38	0.01	270.39	272.46
		Revised 2020 Baseline with Five-Year LOP	0.00	2.07	0.00	2.07	270.38	0.01	270.39	272.46
		Recommended Plan[d]	0.00	2.07	0.00	2.07	180.06	0.01	180.07	182.14
		Extreme Measures Condition[d]	0.00	2.07	0.00	2.07	91.38	0.01	91.39	93.46
	Watershed Total	Existing	0.00	978.06	554.79	1,532.85	3,358.20	0.31	3,358.51	4,891.36
		Revised 2020 Baseline	0.00	997.59	365.50	1,363.09	2,811.26	0.18	2,811.44	4,174.53
		Revised 2020 Baseline with Five-Year LOP	0.00	144.11	328.84	472.95	2,811.26	0.18	2,811.44	3,284.39
		Recommended Plan[d]	0.00	144.11	328.84	472.95	1,850.86	0.18	1,851.04	2,323.99
		Extreme Measures Condition[d]	0.00	144.11	328.84	472.95	939.24	0.18	939.42	1,412.37
Total Nitrogen (pounds)	Kinnickinnic River	Existing	3,800	1,840	2,290	7,930	17,730	220	17,950	25,880
		Revised 2020 Baseline	3,800	1,890	1,510	7,200	15,830	220	16,050	23,250
		Revised 2020 Baseline with Five-Year LOP	3,800	260	1,360	5,420	15,830	220	16,050	21,470
		Recommended Plan[d]	3,800	260	1,360	5,420	15,850	220	16,070	21,490
		Extreme Measures Condition[d]	3,800	260	1,360	5,420	15,850	220	16,070	21,490
	Wilson Park Creek	Existing	980	30	0	1,010	21,270	980	22,250	23,260
		Revised 2020 Baseline	980	10	0	990	19,500	290	19,790	20,780
		Revised 2020 Baseline with Five-Year LOP	980	10	0	990	19,500	290	19,790	20,780
		Recommended Plan[d]	980	10	0	990	19,490	290	19,780	20,770
		Extreme Measures Condition[d]	980	10	0	990	19,490	290	19,780	20,770
	Holmes Avenue Creek	Existing	1,460	0	0	1,460	6,090	50	6,140	7,600
		Revised 2020 Baseline	1,460	0	0	1,460	5,440	40	5,480	6,940
		Revised 2020 Baseline with Five-Year LOP	1,460	0	0	1,460	5,440	40	5,480	6,940
		Recommended Plan[d]	1,460	0	0	1,460	5,440	40	5,480	6,940
		Extreme Measures Condition[d]	1,460	0	0	1,460	5,440	40	5,480	6,940

Table M-1 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Total Nitrogen (pounds) (continued)	Villa Mann Creek	Existing	0	0	0	0	4,480	20	4,500	4,500
		Revised 2020 Baseline	0	0	0	0	4,000	10	4,010	4,010
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	4,000	10	4,010	4,010
		Recommended Plan[d]	0	0	0	0	4,000	10	4,010	4,010
		Extreme Measures Condition[d]	0	0	0	0	4,000	10	4,010	4,010
	Cherokee Park Creek	Existing	0	0	0	0	2,750	50	2,800	2,800
		Revised 2020 Baseline	0	0	0	0	2,490	40	2,530	2,530
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	2,490	40	2,530	2,530
		Recommended Plan[d]	0	0	0	0	2,490	40	2,530	2,530
		Extreme Measures Condition[d]	0	0	0	0	2,490	40	2,530	2,530
	Lyons Park Creek	Existing	0	<10	0	<10	3,980	20	4,000	4,000
		Revised 2020 Baseline	0	<10	0	<10	3,600	20	3,620	3,620
		Revised 2020 Baseline with Five-Year LOP	0	<10	0	<10	3,600	20	3,620	3,620
		Recommended Plan[d]	0	<10	0	<10	3,610	20	3,630	3,630
		Extreme Measures Condition[d]	0	<10	0	<10	3,610	20	3,630	3,630
	S. 43rd Street Ditch	Existing	490	<10	0	490	5,570	30	5,600	6,090
		Revised 2020 Baseline	490	<10	0	490	4,980	20	5,000	5,490
		Revised 2020 Baseline with Five-Year LOP	490	<10	0	490	4,980	20	5,000	5,490
		Recommended Plan[d]	490	<10	0	490	4,990	20	5,010	5,500
		Extreme Measures Condition[d]	490	<10	0	490	4,990	20	5,010	5,500
	Watershed Total	Existing	6,730	1,870	2,290	10,890	61,870	1,370	63,240	74,130
		Revised 2020 Baseline	6,730	1,900	1,510	10,140	55,840	640	56,480	66,620
		Revised 2020 Baseline with Five-Year LOP	6,730	270	1,360	8,360	55,840	640	56,480	64,840
		Recommended Plan[d]	6,730	270	1,360	8,360	55,870	640	56,510	64,870
		Extreme Measures Condition[d]	6,730	270	1,360	8,360	55,870	640	56,510	64,870
Biochemical Oxygen Demand (pounds)	Kinnickinnic River	Existing	3,680	12,370	6,880	22,930	80,050	740	80,790	103,720
		Revised 2020 Baseline	3,680	12,750	4,530	20,960	66,440	750	67,190	88,150
		Revised 2020 Baseline with Five-Year LOP	3,680	1,780	4,080	9,540	66,440	750	67,190	76,730
		Recommended Plan[d]	3,680	1,780	4,080	9,540	66,210	750	66,960	76,500
		Extreme Measures Condition[d]	3,680	1,780	4,080	9,540	66,210	750	66,960	76,500
	Wilson Park Creek	Existing	5,630	210	0	5,840	165,660	1,900	167,560	173,400
		Revised 2020 Baseline	5,630	90	0	5,720	154,960	1,240	156,200	161,920
		Revised 2020 Baseline with Five-Year LOP	5,630	50	0	5,680	154,960	1,240	156,200	161,880
		Recommended Plan[d]	5,630	50	0	5,680	154,300	1,240	155,540	161,220
		Extreme Measures Condition[d]	5,630	50	0	5,680	154,300	1,240	155,540	161,220

Table M-1 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Biochemical Oxygen Demand (pounds) (continued)	Holmes Avenue Creek	Existing	1,120	0	0	1,120	44,320	160	44,480	45,600
		Revised 2020 Baseline	1,120	0	0	1,120	39,100	120	39,220	40,340
		Revised 2020 Baseline with Five-Year LOP	1,120	0	0	1,120	39,100	120	39,220	40,340
		Recommended Plan[d]	1,120	0	0	1,120	39,010	120	39,130	40,250
		Extreme Measures Condition[d]	1,120	0	0	1,120	39,010	120	39,130	40,250
	Villa Mann Creek	Existing	0	0	0	0	20,320	80	20,400	20,400
		Revised 2020 Baseline	0	0	0	0	17,000	40	17,040	17,040
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	17,000	40	17,040	17,040
		Recommended Plan[d]	0	0	0	0	16,910	40	16,950	16,950
		Extreme Measures Condition[d]	0	0	0	0	16,910	40	16,950	16,950
	Cherokee Park Creek	Existing	0	0	0	0	11,980	140	12,120	12,120
		Revised 2020 Baseline	0	0	0	0	10,310	110	10,420	10,420
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	10,310	110	10,420	10,420
		Recommended Plan[d]	0	0	0	0	10,240	110	10,350	10,350
		Extreme Measures Condition[d]	0	0	0	0	10,240	110	10,350	10,350
	Lyons Park Creek	Existing	0	10	0	10	16,880	60	16,940	16,950
		Revised 2020 Baseline	0	10	0	10	14,360	50	14,410	14,420
		Revised 2020 Baseline with Five-Year LOP	0	10	0	10	14,360	50	14,410	14,420
		Recommended Plan[d]	0	10	0	10	14,290	50	14,340	14,350
		Extreme Measures Condition[d]	0	10	0	10	14,290	50	14,340	14,350
	S. 43rd Street Ditch	Existing	5,420	30	0	5,450	30,730	130	30,860	36,310
		Revised 2020 Baseline	5,420	30	0	5,450	25,440	70	25,510	30,960
		Revised 2020 Baseline with Five-Year LOP	5,420	30	0	5,450	25,440	70	25,510	30,960
		Recommended Plan[d]	5,420	30	0	5,450	25,350	70	25,420	30,870
		Extreme Measures Condition[d]	5,420	30	0	5,450	25,350	70	25,420	30,870
	Watershed Total	Existing	15,850	12,620	6,880	35,350	369,940	3,210	373,150	408,500
		Revised 2020 Baseline	15,850	12,880	4,530	33,260	327,610	2,380	329,990	363,250
		Revised 2020 Baseline with Five-Year LOP	15,850	1,870	4,080	21,800	327,610	2,380	329,990	351,790
		Recommended Plan[d]	15,850	1,870	4,080	21,800	326,310	2,380	328,690	350,490
		Extreme Measures Condition[d]	15,850	1,870	4,080	21,800	326,310	2,380	328,690	350,490
Copper (pounds)	Kinnickinnic River	Existing	7	8	15	30	146	<1	146	176
		Revised 2020 Baseline	7	8	10	25	118	<1	118	143
		Revised 2020 Baseline with Five-Year LOP	7	1	9	17	118	<1	118	135
		Recommended Plan[d]	7	1	9	17	118	<1	118	135
		Extreme Measures Condition[d]	7	1	9	17	118	<1	118	135

Table M-1 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Copper (pounds) (continued)	Wilson Park Creek	Existing	0	<1	0	<1	174	1	175	175
		Revised 2020 Baseline	0	<1	0	<1	147	<1	147	147
		Revised 2020 Baseline with Five-Year LOP	0	<1	0	<1	147	<1	147	147
		Recommended Plan[d]	0	<1	0	<1	147	<1	147	147
		Extreme Measures Condition[d]	0	<1	0	<1	147	<1	147	147
	Holmes Avenue Creek	Existing	0	0	0	0	59	<1	59	59
		Revised 2020 Baseline	0	0	0	0	48	<1	48	48
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	48	<1	48	48
		Recommended Plan[d]	0	0	0	0	48	<1	48	48
		Extreme Measures Condition[d]	0	0	0	0	48	<1	48	48
	Villa Mann Creek	Existing	0	0	0	0	37	<1	37	37
		Revised 2020 Baseline	0	0	0	0	30	<1	30	30
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	30	<1	30	30
		Recommended Plan[d]	0	0	0	0	30	<1	30	30
		Extreme Measures Condition[d]	0	0	0	0	30	<1	30	30
	Cherokee Park Creek	Existing	0	0	0	0	22	<1	22	22
		Revised 2020 Baseline	0	0	0	0	18	<1	18	18
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	18	<1	18	18
		Recommended Plan[d]	0	0	0	0	18	<1	18	18
		Extreme Measures Condition[d]	0	0	0	0	18	<1	18	18
	Lyons Park Creek	Existing	0	<1	0	<1	30	<1	30	30
		Revised 2020 Baseline	0	<1	0	<1	25	<1	25	25
		Revised 2020 Baseline with Five-Year LOP	0	<1	0	<1	25	<1	25	25
		Recommended Plan[d]	0	<1	0	<1	25	<1	25	25
		Extreme Measures Condition[d]	0	<1	0	<1	25	<1	25	25
	S. 43rd Street Ditch	Existing	0	<1	0	<1	57	<1	57	57
		Revised 2020 Baseline	0	<1	0	<1	46	<1	46	46
		Revised 2020 Baseline with Five-Year LOP	0	<1	0	<1	46	<1	46	46
		Recommended Plan[d]	0	<1	0	<1	46	<1	46	46
		Extreme Measures Condition[d]	0	<1	0	<1	46	<1	46	46
	Watershed Total	Existing	7	8	15	30	525	1	526	556
		Revised 2020 Baseline	7	8	10	25	432	<1	432	457
		Revised 2020 Baseline with Five-Year LOP	7	1	9	17	432	<1	432	449
		Recommended Plan[d]	7	1	9	17	432	<1	432	449
		Extreme Measures Condition[d]	7	1	9	17	432	<1	432	449

Table M-1 Footnotes

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*In certain limited cases, relatively minor anomalies in nonpoint source pollutant loads may occur among the five conditions for which model results are presented in this table. Those anomalies might indicate a relatively slight increase load under the recommended plan and/or "extreme measures" conditions, relative to revised 2020 baseline and/or revised 2020 baseline with five-year LOP conditions. In those cases, it may be assumed that no significant change in pollutant load occurs among those various conditions. Since it was not always possible to explicitly represent certain components of the recommended plan and "extreme measures" conditions in the LSPC water quality model, adjustments were made to model parameters that served as surrogates for the actual water pollution control measure being represented. In the sense that those modifications sometimes alter parameters established under the revised 2020 baseline and/or revised 2020 baseline with five-year LOP model versions, in limited cases, representation of a measure in the recommended plan or "extreme measures" models may have a side effect of introducing small, relatively small anomalies in the comparative results.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominately urban setting.*

[d]*Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table M-2

AVERAGE ANNUAL POLLUTANT LOADS FOR RECOMMENDED PLAN AND EXTREME MEASURES CONDITION: MENOMONEE RIVER WATERSHED

			Point Sources				Nonpoint Source[a,b]			
Water Quality Indicator	Subwatershed	Condition	Industrial Point Sources	SSOs	CSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Phosphorus (pounds)	Butler Ditch	Existing	0	10	0	10	1,490	50	1,540	1,550
		Revised 2020 Baseline	0	10	0	10	1,270	40	1,310	1,320
		Revised 2020 Baseline with Five-Year LOP	0	10	0	10	1,270	40	1,310	1,320
		Recommended Plan[d]	0	10	0	10	1,240	40	1,280	1,290
		Extreme Measures Condition[d]	0	10	0	10	1,010	40	1,050	1,060
	Honey Creek	Existing	200	10	0	210	3,900	20	3,920	4,130
		Revised 2020 Baseline	200	10	0	210	3,430	10	3,440	3,650
		Revised 2020 Baseline with Five-Year LOP	200	10	0	210	3,430	10	3,440	3,650
		Recommended Plan[d]	200	10	0	210	3,270	10	3,280	3,490
		Extreme Measures Condition[d]	80	10	0	90	2,700	10	2,710	2,800
	Lily Creek	Existing	0	0	0	0	1,200	90	1,290	1,290
		Revised 2020 Baseline	0	0	0	0	1,110	40	1,150	1,150
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	1,110	40	1,150	1,150
		Recommended Plan[d]	0	0	0	0	1,040	40	1,080	1,080
		Extreme Measures Condition[d]	0	0	0	0	890	40	930	930
	Little Menomonee Creek	Existing	0	0	0	0	80	350	430	430
		Revised 2020 Baseline	0	0	0	0	70	310	380	380
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	70	310	380	380
		Recommended Plan[d]	0	0	0	0	70	270	340	340
		Extreme Measures Condition[d]	0	0	0	0	70	230	300	300
	Little Menomonee River	Existing	360	<10	0	360	3,300	840	4,140	4,500
		Revised 2020 Baseline	360	<10	0	360	3,020	720	3,740	4,100
		Revised 2020 Baseline with Five-Year LOP	360	<10	0	360	3,020	720	3,740	4,100
		Recommended Plan[d]	360	<10	0	360	2,850	660	3,510	3,870
		Extreme Measures Condition[d]	70	<10	0	70	2,550	550	3,100	3,170
	Lower Menomonee River	Existing	15,650	550	1,880	18,080	7,180	70	7,250	25,330
		Revised 2020 Baseline	3,910	320	1,380	5,610	6,280	70	6,350	11,960
		Revised 2020 Baseline with Five-Year LOP	3,910	90	1,130	5,130	6,280	70	6,350	11,480
		Recommended Plan[d]	3,910	90	1,130	5,130	5,980	70	6,050	11,180
		Extreme Measures Condition[d]	2,920	90	1,130	4,140	5,030	70	5,100	9,240

Table M-2 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Total Phosphorus (pounds) (continued)	North Branch Menomonee River	Existing	0	0	0	0	50	220	270	270
		Revised 2020 Baseline	0	0	0	0	40	230	270	270
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	40	230	270	270
		Recommended Plan[d]	0	0	0	0	50	180	230	230
		Extreme Measures Condition[d]	0	0	0	0	40	170	210	210
	Nor-X-Way Channel	Existing	160	0	0	160	630	340	970	1,130
		Revised 2020 Baseline	160	0	0	160	690	370	1,060	1,220
		Revised 2020 Baseline with Five-Year LOP	160	0	0	160	690	370	1,060	1,220
		Recommended Plan[d]	160	0	0	160	660	340	1,000	1,160
		Extreme Measures Condition[d]	0	0	0	0	630	260	890	890
	Underwood Creek	Existing	30	10	0	40	6,350	270	6,620	6,660
		Revised 2020 Baseline	30	10	0	40	5,470	220	5,690	5,730
		Revised 2020 Baseline with Five-Year LOP	30	10	0	40	5,470	220	5,690	5,730
		Recommended Plan[d]	30	10	0	40	5,340	220	5,560	5,600
		Extreme Measures Condition[d]	0	10	0	10	4,400	220	4,620	4,630
	Upper Menomonee River	Existing	1,150	<10	0	1,150	4,170	1,150	5,320	6,470
		Revised 2020 Baseline	1,150	<10	0	1,150	4,370	1,150	5,520	6,670
		Revised 2020 Baseline with Five-Year LOP	1,150	<10	0	1,150	4,370	1,150	5,520	6,670
		Recommended Plan[d]	1,150	<10	0	1,150	4,070	1,040	5,110	6,260
		Extreme Measures Condition[d]	0	<10	0	<10	3,690	870	4,560	4,560
	West Branch Menomonee River	Existing	0	0	0	0	370	240	610	610
		Revised 2020 Baseline	0	0	0	0	410	290	700	700
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	410	290	700	700
		Recommended Plan[d]	0	0	0	0	430	230	660	660
		Extreme Measures Condition[d]	0	0	0	0	400	180	580	580
	Willow Creek	Existing	0	0	0	0	320	430	750	750
		Revised 2020 Baseline	0	0	0	0	350	490	840	840
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	350	490	840	840
		Recommended Plan[d]	0	0	0	0	350	420	770	770
		Extreme Measures Condition[d]	0	0	0	0	340	340	680	680
	Watershed Total	Existing	17,550	580	1,880	20,010	29,040	4,070	33,110	53,120
		Revised 2020 Baseline	5,810	350	1,380	7,540	26,510	3,940	30,450	37,990
		Revised 2020 Baseline with Five-Year LOP	5,810	120	1,130	7,060	26,510	3,940	30,450	37,510
		Recommended Plan[d]	5,810	120	1,130	7,060	25,350	3,520	28,870	35,930
		Extreme Measures Condition[d]	3,070	120	1,130	4,320	21,750	2,980	24,730	29,050

Table M-2 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Total Suspended Solids (pounds)	Butler Ditch	Existing	0	320	0	320	689,190	8,000	697,190	697,510
		Revised 2020 Baseline	0	290	0	290	493,940	2,620	496,560	496,850
		Revised 2020 Baseline with Five-Year LOP	0	290	0	290	493,940	2,620	496,560	496,850
		Recommended Plan[d]	0	290	0	290	505,550	3,760	509,310	509,600
		Extreme Measures Condition[d]	0	290	0	290	505,550	3,760	509,310	509,600
	Honey Creek	Existing	800	470	0	1,270	1,874,860	2,400	1,877,260	1,878,530
		Revised 2020 Baseline	800	440	0	1,240	1,449,100	1,840	1,450,940	1,452,180
		Revised 2020 Baseline with Five-Year LOP	800	440	0	1,240	1,449,100	1,840	1,450,940	1,452,180
		Recommended Plan[d]	800	440	0	1,240	1,447,090	1,800	1,448,890	1,450,130
		Extreme Measures Condition[d]	800	440	0	1,240	1,447,090	1,800	1,448,890	1,450,130
	Lily Creek	Existing	0	0	0	0	666,000	53,720	719,720	719,720
		Revised 2020 Baseline	0	0	0	0	490,830	3,010	493,840	493,840
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	490,830	3,010	493,840	493,840
		Recommended Plan[d]	0	0	0	0	494,570	3,010	497,580	497,580
		Extreme Measures Condition[d]	0	0	0	0	494,570	3,010	497,580	497,580
	Little Menomonee Creek	Existing	0	0	0	0	58,630	205,820	264,450	264,450
		Revised 2020 Baseline	0	0	0	0	44,710	151,230	195,940	195,940
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	44,710	151,230	195,940	195,940
		Recommended Plan[d]	0	0	0	0	44,650	103,560	148,210	148,210
		Extreme Measures Condition[d]	0	0	0	0	44,650	97,610	142,260	142,260
	Little Menomonee River	Existing	2,530	30	0	2,560	1,976,270	437,140	2,413,410	2,415,970
		Revised 2020 Baseline	2,530	30	0	2,560	1,568,570	209,970	1,778,540	1,781,100
		Revised 2020 Baseline with Five-Year LOP	2,530	30	0	2,560	1,568,570	209,970	1,778,540	1,781,100
		Recommended Plan[d]	2,530	30	0	2,560	1,559,610	155,070	1,714,680	1,717,240
		Extreme Measures Condition[d]	2,530	30	0	2,560	1,559,570	148,330	1,707,900	1,710,460
	Lower Menomonee River	Existing	51,660	31,670	182,960	266,290	4,001,330	10,180	4,011,510	4,277,800
		Revised 2020 Baseline	30,880	18,400	132,120	181,400	3,092,990	10,280	3,103,270	3,284,670
		Revised 2020 Baseline with Five-Year LOP	30,880	5,080	108,140	144,100	3,092,990	10,280	3,103,270	3,247,370
		Recommended Plan[d]	30,880	5,080	108,140	144,100	3,071,350	10,160	3,081,510	3,225,610
		Extreme Measures Condition[d]	30,880	5,080	108,140	144,100	3,071,330	10,160	3,081,490	3,225,590
	North Branch Menomonee River	Existing	0	0	0	0	27,660	117,390	145,050	145,050
		Revised 2020 Baseline	0	0	0	0	25,290	106,030	131,320	131,320
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	25,290	106,030	131,320	131,320
		Recommended Plan[d]	0	0	0	0	25,750	67,430	93,180	93,180
		Extreme Measures Condition[d]	0	0	0	0	25,750	63,470	89,220	89,220

Table M-2 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Total Suspended Solids (pounds) (continued)	Nor-X-Way Channel	Existing	280	0	0	280	478,790	351,000	829,790	830,070
		Revised 2020 Baseline	280	0	0	280	493,480	107,560	601,040	601,320
		Revised 2020 Baseline with Five-Year LOP	280	0	0	280	493,480	107,560	601,040	601,320
		Recommended Plan[d]	280	0	0	280	486,900	96,140	583,040	583,320
		Extreme Measures Condition[d]	280	0	0	280	486,900	95,560	582,460	582,740
	Underwood Creek	Existing	90	860	0	950	3,031,420	46,540	3,077,960	3,078,910
		Revised 2020 Baseline	90	740	0	830	2,233,400	15,690	2,249,090	2,249,920
		Revised 2020 Baseline with Five-Year LOP	90	740	0	830	2,233,400	15,690	2,249,090	2,249,920
		Recommended Plan[d]	90	740	0	830	2,320,320	15,530	2,335,850	2,336,680
		Extreme Measures Condition[d]	90	740	0	830	2,320,150	15,500	2,335,650	2,336,480
	Upper Menomonee River	Existing	3,380	240	0	3,620	2,504,060	462,670	2,966,730	2,970,350
		Revised 2020 Baseline	3,380	110	0	3,490	2,382,930	281,120	2,664,050	2,667,540
		Revised 2020 Baseline with Five-Year LOP	3,380	110	0	3,490	2,382,930	281,120	2,664,050	2,667,540
		Recommended Plan[d]	3,380	110	0	3,490	2,309,140	236,910	2,546,050	2,549,540
		Extreme Measures Condition[d]	3,380	110	0	3,490	2,308,420	232,470	2,540,890	2,544,380
	West Branch Menomonee River	Existing	0	0	0	0	232,070	103,580	335,650	335,650
		Revised 2020 Baseline	0	0	0	0	251,480	89,010	340,490	340,490
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	251,480	89,010	340,490	340,490
		Recommended Plan[d]	0	0	0	0	255,490	62,210	317,700	317,700
		Extreme Measures Condition[d]	0	0	0	0	255,470	60,580	316,050	316,050
	Willow Creek	Existing	0	0	0	0	197,990	151,790	349,780	349,780
		Revised 2020 Baseline	0	0	0	0	211,650	137,580	349,230	349,230
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	211,650	137,580	349,230	349,230
		Recommended Plan[d]	0	0	0	0	204,320	105,350	309,670	309,670
		Extreme Measures Condition[d]	0	0	0	0	204,320	103,580	307,900	307,900
	Watershed Total	Existing	58,740	33,590	182,960	275,290	15,738,270	1,950,230	17,688,500	17,963,790
		Revised 2020 Baseline	37,960	20,010	132,120	190,090	12,738,350	1,115,930	13,854,310	14,044,400
		Revised 2020 Baseline with Five-Year LOP	37,960	6,690	108,140	152,790	12,738,370	1,115,940	13,854,310	14,007,100
		Recommended Plan[d]	37,960	6,690	108,140	152,790	12,724,740	860,930	13,585,670	13,738,460
		Extreme Measures Condition[d]	37,960	6,690	108,140	152,790	12,723,770	835,830	13,559,600	13,712,390

Table M-2 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells)	Butler Ditch	Existing	0.00	6.07	0.00	6.07	223.75	0.46	224.21	230.28
		Revised 2020 Baseline	0.00	5.55	0.00	5.55	186.21	0.18	186.39	191.94
		Revised 2020 Baseline with Five-Year LOP	0.00	5.55	0.00	5.55	186.21	0.18	186.39	191.94
		Recommended Plan[d]	0.00	5.55	0.00	5.55	122.08	0.18	122.26	127.81
		Extreme Measures Condition[d]	0.00	5.55	0.00	5.55	60.85	0.18	61.03	66.58
	Honey Creek	Existing	0.00	9.01	0.00	9.01	2,342.61	0.14	2,342.75	2,351.76
		Revised 2020 Baseline	0.00	8.44	0.00	8.44	1,961.47	0.12	1,961.59	1,970.03
		Revised 2020 Baseline with Five-Year LOP	0.00	8.44	0.00	8.44	1,961.47	0.12	1,961.59	1,970.03
		Recommended Plan[d]	0.00	8.44	0.00	8.44	1,226.53	0.10	1,226.63	1,235.07
		Extreme Measures Condition[d]	0.00	8.44	0.00	8.44	618.35	0.10	618.45	626.89
	Lily Creek	Existing	0.00	0.00	0.00	0.00	199.31	1.25	200.56	200.56
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	182.84	0.19	183.03	183.03
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	182.84	0.19	183.03	183.03
		Recommended Plan[d]	0.00	0.00	0.00	0.00	103.39	0.19	103.58	103.58
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	52.46	0.19	52.65	52.65
	Little Menomonee Creek	Existing	0.00	0.00	0.00	0.00	65.43	84.91	150.34	150.34
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	58.45	72.81	131.26	131.26
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	58.45	72.81	131.26	131.26
		Recommended Plan[d]	0.00	0.00	0.00	0.00	57.37	69.48	126.85	126.85
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	57.16	69.21	126.37	126.37
	Little Menomonee River	Existing	0.00	0.52	0.00	0.52	2,097.81	105.28	2,203.09	2,203.61
		Revised 2020 Baseline	0.00	0.52	0.00	0.52	1,815.94	105.81	1,921.75	1,922.27
		Revised 2020 Baseline with Five-Year LOP	0.00	0.52	0.00	0.52	1,815.94	105.81	1,921.75	1,922.27
		Recommended Plan[d]	0.00	0.52	0.00	0.52	1,640.53	98.79	1,739.32	1,739.84
		Extreme Measures Condition[d]	0.00	0.52	0.00	0.52	1,634.66	98.36	1,733.02	1,733.54
	Lower Menomonee River	Existing	0.00	604.24	1,727.39	2,331.63	4,067.91	0.28	4,068.19	6,399.82
		Revised 2020 Baseline	0.00	351.07	1,314.48	1,665.55	3,365.96	0.45	3,366.41	5,031.96
		Revised 2020 Baseline with Five-Year LOP	0.00	96.96	1,088.25	1,185.21	3,365.96	0.45	3,366.41	4,551.62
		Recommended Plan[d]	0.00	96.96	1,088.25	1,185.21	2,224.02	0.39	2,224.41	3,409.62
		Extreme Measures Condition[d]	0.00	96.96	1,088.25	1,185.21	1,107.42	0.39	1,107.81	2,293.02
	North Branch Menomonee River	Existing	0.00	0.00	0.00	0.00	9.30	7.82	17.12	17.12
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	8.90	13.02	21.92	21.92
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	8.90	13.02	21.92	21.92
		Recommended Plan[d]	0.00	0.00	0.00	0.00	9.18	7.72	16.90	16.90
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	8.65	7.18	15.83	15.83

Table M-2 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Fecal Coliform Bacteria (trillions of cells) (continued)	Nor-X-Way Channel	Existing	0.00	0.00	0.00	0.00	256.06	48.78	304.84	304.84
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	257.77	87.35	345.12	345.12
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	257.77	87.35	345.12	345.12
		Recommended Plan[d]	0.00	0.00	0.00	0.00	161.65	54.10	215.75	215.75
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	82.79	27.73	110.52	110.52
	Underwood Creek	Existing	0.00	16.33	0.00	16.33	3,454.09	1.67	3,455.76	3,472.09
		Revised 2020 Baseline	0.00	14.07	0.00	14.07	2,785.45	1.04	2,786.49	2,800.56
		Revised 2020 Baseline with Five-Year LOP	0.00	14.07	0.00	14.07	2,785.45	1.04	2,786.49	2,800.56
		Recommended Plan[d]	0.00	14.07	0.00	14.07	1,817.14	1.02	1,818.16	1,832.23
		Extreme Measures Condition[d]	0.00	14.07	0.00	14.07	922.19	1.02	923.21	937.28
	Upper Menomonee River	Existing	0.00	4.65	0.00	4.65	1,274.47	79.98	1,354.45	1,359.10
		Revised 2020 Baseline	0.00	2.07	0.00	2.07	1,269.25	111.76	1,381.01	1,383.08
		Revised 2020 Baseline with Five-Year LOP	0.00	2.07	0.00	2.07	1,269.25	111.76	1,381.01	1,383.08
		Recommended Plan[d]	0.00	2.07	0.00	2.07	882.90	88.35	971.25	973.32
		Extreme Measures Condition[d]	0.00	2.07	0.00	2.07	623.26	80.11	703.37	705.44
	West Branch Menomonee River	Existing	0.00	0.00	0.00	0.00	62.41	16.80	79.21	79.21
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	66.66	34.70	101.36	101.36
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	66.66	34.70	101.36	101.36
		Recommended Plan[d]	0.00	0.00	0.00	0.00	68.72	20.06	88.78	88.78
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	64.66	18.55	83.21	83.21
	Willow Creek	Existing	0.00	0.00	0.00	0.00	58.69	45.74	104.43	104.43
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	63.80	63.99	127.79	127.79
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	63.80	63.99	127.79	127.79
		Recommended Plan[d]	0.00	0.00	0.00	0.00	57.73	45.97	103.70	103.70
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	56.86	44.99	101.85	101.85
	Watershed Total	Existing	0.00	640.82	1,727.39	2,368.21	14,111.84	393.11	14,504.95	16,873.16
		Revised 2020 Baseline	0.00	381.72	1,314.48	1,696.20	12,022.71	491.42	12,514.13	14,210.33
		Revised 2020 Baseline with Five-Year LOP	0.00	127.61	1,088.25	1,215.86	12,022.70	491.42	12,514.12	13,729.98
		Recommended Plan[d]	0.00	127.61	1,088.25	1,215.86	8,371.24	386.35	8,757.59	9,973.45
		Extreme Measures Condition[d]	0.00	127.61	1,088.25	1,215.86	5,289.31	348.01	5,637.32	6,853.18

Table M-2 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Total Nitrogen (pounds)	Butler Ditch	Existing	0	10	0	10	10,890	570	11,460	11,470
		Revised 2020 Baseline	0	10	0	10	9,700	220	9,920	9,930
		Revised 2020 Baseline with Five-Year LOP	0	10	0	10	9,700	220	9,920	9,930
		Recommended Plan[d]	0	10	0	10	9,980	260	10,240	10,250
		Extreme Measures Condition[d]	0	10	0	10	9,980	260	10,240	10,250
	Honey Creek	Existing	640	20	0	660	27,300	220	27,520	28,180
		Revised 2020 Baseline	640	20	0	660	24,730	160	24,890	25,550
		Revised 2020 Baseline with Five-Year LOP	640	20	0	660	24,730	160	24,890	25,550
		Recommended Plan[d]	640	20	0	660	24,620	150	24,770	25,430
		Extreme Measures Condition[d]	640	20	0	660	24,620	150	24,770	25,430
	Lily Creek	Existing	0	0	0	0	9,530	2,920	12,450	12,450
		Revised 2020 Baseline	0	0	0	0	9,180	290	9,470	9,470
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	9,180	290	9,470	9,470
		Recommended Plan[d]	0	0	0	0	9,040	290	9,330	9,330
		Extreme Measures Condition[d]	0	0	0	0	9,040	290	9,330	9,330
	Little Menomonee Creek	Existing	0	0	0	0	530	9,610	10,140	10,140
		Revised 2020 Baseline	0	0	0	0	530	7,890	8,420	8,420
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	530	7,890	8,420	8,420
		Recommended Plan[d]	0	0	0	0	510	6,210	6,720	6,720
		Extreme Measures Condition[d]	0	0	0	0	500	5,850	6,350	6,350
	Little Menomonee River	Existing	1,350	<10	0	1,350	25,150	22,270	47,420	48,770
		Revised 2020 Baseline	1,350	<10	0	1,350	23,310	12,840	36,150	37,500
		Revised 2020 Baseline with Five-Year LOP	1,350	<10	0	1,350	23,310	12,840	36,150	37,500
		Recommended Plan[d]	1,350	<10	0	1,350	22,800	10,860	33,660	35,010
		Extreme Measures Condition[d]	1,350	<10	0	1,350	22,750	10,450	33,200	34,550
	Lower Menomonee River	Existing	52,730	1,160	11,610	65,500	49,520	730	50,250	115,750
		Revised 2020 Baseline	20,850	670	8,200	29,720	44,520	670	45,190	74,910
		Revised 2020 Baseline with Five-Year LOP	20,850	190	6,670	27,710	44,520	670	45,190	72,900
		Recommended Plan[d]	20,850	190	6,670	27,710	44,250	670	44,920	72,630
		Extreme Measures Condition[d]	20,850	190	6,670	27,710	44,220	670	44,890	72,600
	North Branch Menomonee River	Existing	0	0	0	0	310	13,000	13,310	13,310
		Revised 2020 Baseline	0	0	0	0	300	12,070	12,370	12,370
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	300	12,070	12,370	12,370
		Recommended Plan[d]	0	0	0	0	300	8,860	9,160	9,160
		Extreme Measures Condition[d]	0	0	0	0	280	8,110	8,390	8,390

Table M-2 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Total Nitrogen (pounds) (continued)	Nor-X-Way Channel	Existing	100	0	0	100	4,350	8,110	12,460	12,560
		Revised 2020 Baseline	100	0	0	100	4,670	3,900	8,570	8,670
		Revised 2020 Baseline with Five-Year LOP	100	0	0	100	4,670	3,900	8,570	8,670
		Recommended Plan[d]	100	0	0	100	4,590	3,720	8,310	8,410
		Extreme Measures Condition[d]	100	0	0	100	4,550	3,650	8,200	8,300
	Underwood Creek	Existing	20	30	0	50	45,090	2,810	47,900	47,950
		Revised 2020 Baseline	20	30	0	50	40,150	1,590	41,740	41,790
		Revised 2020 Baseline with Five-Year LOP	20	30	0	50	40,150	1,590	41,740	41,790
		Recommended Plan[d]	20	30	0	50	40,950	1,580	42,530	42,580
		Extreme Measures Condition[d]	20	30	0	50	40,920	1,580	42,500	42,550
	Upper Menomonee River	Existing	810	10	0	820	32,240	32,270	64,510	65,330
		Revised 2020 Baseline	810	<10	0	810	33,780	22,250	56,030	56,840
		Revised 2020 Baseline with Five-Year LOP	810	<10	0	810	33,780	22,250	56,030	56,840
		Recommended Plan[d]	810	<10	0	810	32,650	19,080	51,730	52,540
		Extreme Measures Condition[d]	810	<10	0	810	31,800	17,820	49,620	50,430
	West Branch Menomonee River	Existing	0	0	0	0	2,500	10,770	13,270	13,270
		Revised 2020 Baseline	0	0	0	0	2,860	7,840	10,700	10,700
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	2,860	7,840	10,700	10,700
		Recommended Plan[d]	0	0	0	0	2,880	6,230	9,110	9,110
		Extreme Measures Condition[d]	0	0	0	0	2,670	5,630	8,300	8,300
	Willow Creek	Existing	0	0	0	0	1,930	15,130	17,060	17,060
		Revised 2020 Baseline	0	0	0	0	2,140	10,060	12,200	12,200
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	2,140	10,060	12,200	12,200
		Recommended Plan[d]	0	0	0	0	2,130	8,820	10,950	10,950
		Extreme Measures Condition[d]	0	0	0	0	2,100	8,550	10,650	10,650
	Watershed Total	Existing	55,650	1,230	11,610	68,490	209,340	118,410	327,750	396,240
		Revised 2020 Baseline	23,770	730	8,200	32,700	195,870	79,780	275,650	308,350
		Revised 2020 Baseline with Five-Year LOP	23,770	250	6,670	30,690	195,870	79,780	275,650	306,340
		Recommended Plan[d]	23,770	250	6,670	30,690	194,700	66,730	261,430	292,120
		Extreme Measures Condition[d]	23,770	250	6,670	30,690	193,430	63,010	256,440	287,130

Table M-2 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Biochemical Oxygen Demand (pounds)	Butler Ditch	Existing	0	80	0	80	44,260	1,680	45,940	46,020
		Revised 2020 Baseline	0	70	0	70	35,720	1,210	36,930	37,000
		Revised 2020 Baseline with Five-Year LOP	0	70	0	70	35,720	1,210	36,930	37,000
		Recommended Plan[d]	0	70	0	70	36,870	1,660	38,530	38,600
		Extreme Measures Condition[d]	0	70	0	70	36,870	1,660	38,530	38,600
	Honey Creek	Existing	970	120	0	1,090	119,400	720	120,120	121,210
		Revised 2020 Baseline	970	110	0	1,080	100,280	530	100,810	101,890
		Revised 2020 Baseline with Five-Year LOP	970	110	0	1,080	100,280	530	100,810	101,890
		Recommended Plan[d]	970	110	0	1,080	99,010	530	99,540	100,620
		Extreme Measures Condition[d]	970	110	0	1,080	99,010	530	99,540	100,620
	Lily Creek	Existing	0	0	0	0	42,390	4,250	46,640	46,640
		Revised 2020 Baseline	0	0	0	0	36,690	1,090	37,780	37,780
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	36,690	1,090	37,780	37,780
		Recommended Plan[d]	0	0	0	0	35,460	1,090	36,550	36,550
		Extreme Measures Condition[d]	0	0	0	0	35,460	1,090	36,550	36,550
	Little Menomonee Creek	Existing	0	0	0	0	3,570	13,290	16,860	16,860
		Revised 2020 Baseline	0	0	0	0	3,280	12,980	16,260	16,260
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	3,280	12,980	16,260	16,260
		Recommended Plan[d]	0	0	0	0	3,080	12,410	15,490	15,490
		Extreme Measures Condition[d]	0	0	0	0	3,080	11,970	15,050	15,050
	Little Menomonee River	Existing	3,090	10	0	3,100	126,650	32,380	159,030	162,130
		Revised 2020 Baseline	3,090	10	0	3,100	114,100	24,300	138,400	141,500
		Revised 2020 Baseline with Five-Year LOP	3,090	10	0	3,100	114,100	24,300	138,400	141,500
		Recommended Plan[d]	3,090	10	0	3,100	109,120	23,720	132,840	135,940
		Extreme Measures Condition[d]	3,090	10	0	3,100	109,110	23,210	132,320	135,420
	Lower Menomonee River	Existing	104,920	7,790	58,680	171,390	236,620	2,440	239,060	410,450
		Revised 2020 Baseline	61,040	4,530	39,320	104,890	197,450	2,240	199,690	304,580
		Revised 2020 Baseline with Five-Year LOP	61,040	1,250	31,620	93,910	197,450	2,240	199,690	293,600
		Recommended Plan[d]	61,040	1,250	31,620	93,910	194,520	2,240	196,760	290,670
		Extreme Measures Condition[d]	61,040	1,250	31,620	93,910	194,510	2,240	196,750	290,660
	North Branch Menomonee River	Existing	0	0	0	0	2,200	16,120	18,320	18,320
		Revised 2020 Baseline	0	0	0	0	2,040	16,060	18,100	18,100
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	2,040	16,060	18,100	18,100
		Recommended Plan[d]	0	0	0	0	2,130	15,190	17,320	17,320
		Extreme Measures Condition[d]	0	0	0	0	2,130	14,560	16,690	16,690

Table M-2 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Biochemical Oxygen Demand (pounds) (continued)	Nor-X-Way Channel	Existing	450	0	0	450	26,530	9,200	35,730	36,180
		Revised 2020 Baseline	450	0	0	450	30,410	7,590	38,000	38,450
		Revised 2020 Baseline with Five-Year LOP	450	0	0	450	30,410	7,590	38,000	38,450
		Recommended Plan[d]	450	0	0	450	29,600	7,310	36,910	37,360
		Extreme Measures Condition[d]	450	0	0	450	29,600	7,300	36,900	37,350
	Underwood Creek	Existing	200	210	0	410	194,480	9,490	203,970	204,380
		Revised 2020 Baseline	200	180	0	380	159,060	6,450	165,510	165,890
		Revised 2020 Baseline with Five-Year LOP	200	180	0	380	159,060	6,450	165,510	165,890
		Recommended Plan[d]	200	180	0	380	162,960	6,440	169,400	169,780
		Extreme Measures Condition[d]	200	180	0	380	162,910	6,440	169,350	169,730
	Upper Menomonee River	Existing	6,880	60	0	6,940	164,500	52,650	217,150	224,090
		Revised 2020 Baseline	6,880	30	0	6,910	175,250	46,050	221,300	228,210
		Revised 2020 Baseline with Five-Year LOP	6,880	30	0	6,910	175,250	46,050	221,300	228,210
		Recommended Plan[d]	6,880	30	0	6,910	166,440	45,070	211,510	218,420
		Extreme Measures Condition[d]	6,880	30	0	6,910	166,250	44,340	210,590	217,500
	West Branch Menomonee River	Existing	0	0	0	0	18,000	14,280	32,280	32,280
		Revised 2020 Baseline	0	0	0	0	19,880	13,110	32,990	32,990
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	19,880	13,110	32,990	32,990
		Recommended Plan[d]	0	0	0	0	21,320	12,010	33,330	33,330
		Extreme Measures Condition[d]	0	0	0	0	21,320	11,790	33,110	33,110
	Willow Creek	Existing	0	0	0	0	14,790	19,350	34,140	34,140
		Revised 2020 Baseline	0	0	0	0	16,070	20,520	36,590	36,590
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	16,070	20,520	36,590	36,590
		Recommended Plan[d]	0	0	0	0	16,140	18,290	34,430	34,430
		Extreme Measures Condition[d]	0	0	0	0	16,140	18,100	34,240	34,240
	Watershed Total	Existing	116,510	8,270	58,680	183,460	993,390	175,850	1,169,240	1,352,700
		Revised 2020 Baseline	72,630	4,930	39,320	116,880	890,230	152,130	1,042,360	1,159,240
		Revised 2020 Baseline with Five-Year LOP	72,630	1,650	31,620	105,900	890,230	152,130	1,042,360	1,148,260
		Recommended Plan[d]	72,630	1,650	31,620	105,900	876,650	145,960	1,022,610	1,128,510
		Extreme Measures Condition[d]	72,630	1,650	31,620	105,900	876,390	143,230	1,019,620	1,125,520

Table M-2 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	Subtotal	Urban	Rural[c]	Subtotal	
Copper (pounds)	Butler Ditch	Existing	0	<1	0	<1	78	1	79	79
		Revised 2020 Baseline	0	<1	0	<1	60	<1	60	60
		Revised 2020 Baseline with Five-Year LOP	0	<1	0	<1	60	<1	60	60
		Recommended Plan[d]	0	<1	0	<1	61	<1	61	61
		Extreme Measures Condition[d]	0	<1	0	<1	61	<1	61	61
	Honey Creek	Existing	1	<1	0	1	211	<1	211	212
		Revised 2020 Baseline	1	<1	0	1	171	<1	171	172
		Revised 2020 Baseline with Five-Year LOP	1	<1	0	1	171	<1	171	172
		Recommended Plan[d]	1	<1	0	1	171	<1	171	172
		Extreme Measures Condition[d]	1	<1	0	1	171	<1	171	172
	Lily Creek	Existing	0	0	0	0	73	1	74	74
		Revised 2020 Baseline	0	0	0	0	59	<1	59	59
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	59	<1	59	59
		Recommended Plan[d]	0	0	0	0	59	<1	59	59
		Extreme Measures Condition[d]	0	0	0	0	59	<1	59	59
	Little Menomonee Creek	Existing	0	0	0	0	6	9	15	15
		Revised 2020 Baseline	0	0	0	0	5	8	13	13
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	5	8	13	13
		Recommended Plan[d]	0	0	0	0	5	8	13	13
		Extreme Measures Condition[d]	0	0	0	0	5	8	13	13
	Little Menomonee River	Existing	0	<1	0	<1	224	17	241	241
		Revised 2020 Baseline	0	<1	0	<1	192	16	208	208
		Revised 2020 Baseline with Five-Year LOP	0	<1	0	<1	192	16	208	208
		Recommended Plan[d]	0	<1	0	<1	186	16	202	202
		Extreme Measures Condition[d]	0	<1	0	<1	186	16	202	202
	Lower Menomonee River	Existing	3	5	48	56	428	1	429	485
		Revised 2020 Baseline	3	3	36	42	347	1	348	390
		Revised 2020 Baseline with Five-Year LOP	3	1	30	34	347	1	348	382
		Recommended Plan[d]	3	1	30	34	343	1	344	378
		Extreme Measures Condition[d]	3	1	30	34	343	1	344	378
	North Branch Menomonee River	Existing	0	0	0	0	4	6	10	10
		Revised 2020 Baseline	0	0	0	0	4	7	11	11
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	4	7	11	11
		Recommended Plan[d]	0	0	0	0	4	7	11	11
		Extreme Measures Condition[d]	0	0	0	0	4	7	11	11

Table M-2 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Copper (pounds) (continued)	Nor-X-Way Channel	Existing	0	0	0	0	49	8	57	57
		Revised 2020 Baseline	0	0	0	0	54	10	64	64
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	54	10	64	64
		Recommended Plan[d]	0	0	0	0	53	10	63	63
		Extreme Measures Condition[d]	0	0	0	0	53	10	63	63
	Underwood Creek	Existing	0	<1	0	<1	340	3	343	343
		Revised 2020 Baseline	0	<1	0	<1	267	2	269	269
		Revised 2020 Baseline with Five-Year LOP	0	<1	0	<1	267	2	269	269
		Recommended Plan[d]	0	<1	0	<1	273	2	275	275
		Extreme Measures Condition[d]	0	<1	0	<1	273	2	275	275
	Upper Menomonee River	Existing	0	<1	0	<1	295	35	330	330
		Revised 2020 Baseline	0	<1	0	<1	302	39	341	341
		Revised 2020 Baseline with Five-Year LOP	0	<1	0	<1	302	39	341	341
		Recommended Plan[d]	0	<1	0	<1	287	38	325	325
		Extreme Measures Condition[d]	0	<1	0	<1	287	37	324	324
	West Branch Menomonee River	Existing	0	0	0	0	33	9	42	42
		Revised 2020 Baseline	0	0	0	0	36	11	47	47
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	36	11	47	47
		Recommended Plan[d]	0	0	0	0	37	10	47	47
		Extreme Measures Condition[d]	0	0	0	0	37	10	47	47
	Willow Creek	Existing	0	0	0	0	27	16	43	43
		Revised 2020 Baseline	0	0	0	0	29	18	47	47
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	29	18	47	47
		Recommended Plan[d]	0	0	0	0	28	16	44	44
		Extreme Measures Condition[d]	0	0	0	0	28	16	44	44
	Watershed Total	Existing	4	5	48	57	1,768	106	1,874	1,931
		Revised 2020 Baseline	4	3	36	43	1,526	112	1,638	1,681
		Revised 2020 Baseline with Five-Year LOP	4	1	30	35	1,526	112	1,638	1,673
		Recommended Plan[d]	4	1	30	35	1,507	108	1,615	1,650
		Extreme Measures Condition[d]	4	1	30	35	1,507	107	1,614	1,649

Table M-2 Footnotes

[a] *Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b] *In certain limited cases, relatively minor anomalies in nonpoint source pollutant loads may occur among the five conditions for which model results are presented in this table. Those anomalies might indicate a relatively slight increase load under the recommended plan and/or "extreme measures" conditions, relative to revised 2020 baseline and/or revised 2020 baseline with five-year LOP conditions. In those cases, it may be assumed that no significant change in pollutant load occurs among those various conditions. Since it was not always possible to explicitly represent certain components of the recommended plan and "extreme measures" conditions in the LSPC water quality model, adjustments were made to model parameters that served as surrogates for the actual water pollution control measure being represented. In the sense that those modifications sometimes alter parameters established under the revised 2020 baseline and/or revised 2020 baseline with five-year LOP model versions, in limited cases, representation of a measure in the recommended plan or "extreme measures" models may have a side effect of introducing small, relatively small anomalies in the comparative results.*

[c] *For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominately urban setting.*

[d] *Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table M-3

AVERAGE ANNUAL POLLUTANT LOADS FOR RECOMMENDED PLAN AND EXTREME MEASURES CONDITION: MILWAUKEE RIVER WATERSHED

			Point Sources					Nonpoint Source[a,b]			
Water Quality Indicator	Subwatershed	Condition	Industrial Point Sources	SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Phosphorus (pounds)	Batavia Creek	Existing	0	0	0	0	0	120	480	600	600
		Revised 2020 Baseline	0	0	0	0	0	120	460	580	580
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	120	460	580	580
		Recommended Plan[d]	0	0	0	0	0	120	350	470	470
		Extreme Measures Condition[d]	0	0	0	0	0	120	350	470	470
	Cedar Creek	Existing	<10	0	0	7,400	7,400	3,310	15,390	18,700	26,100
		Revised 2020 Baseline	<10	0	0	10,050	10,050	3,430	14,870	18,300	28,350
		Revised 2020 Baseline with Five-Year LOP	<10	0	0	10,050	10,050	3,430	14,870	18,300	28,350
		Recommended Plan[d]	<10	0	0	10,050	10,050	3,000	10,150	13,150	23,200
		Extreme Measures Condition[d]	<10	0	0	10,050	10,050	2,810	8,930	11,740	21,790
	Cedar Lake	Existing	0	0	0	0	0	390	2,250	2,640	2,640
		Revised 2020 Baseline	0	0	0	0	0	380	2,200	2,580	2,580
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	380	2,200	2,580	2,580
		Recommended Plan[d]	0	0	0	0	0	250	1,600	1,850	1,850
		Extreme Measures Condition[d]	0	0	0	0	0	240	1,410	1,650	1,650
	Chambers Creek	Existing	0	0	0	0	0	150	500	650	650
		Revised 2020 Baseline	0	0	0	0	0	150	490	640	640
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	150	490	640	640
		Recommended Plan[d]	0	0	0	0	0	150	390	540	540
		Extreme Measures Condition[d]	0	0	0	0	0	150	390	540	540
	East Branch Milwaukee River	Existing	0	0	0	0	0	460	2,140	2,600	2,600
		Revised 2020 Baseline	0	0	0	0	0	460	2,130	2,590	2,590
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	460	2,130	2,590	2,590
		Recommended Plan[d]	0	0	0	0	0	460	1,980	2,440	2,440
		Extreme Measures Condition[d]	0	0	0	0	0	440	1,970	2,410	2,410
	Kettle Moraine Lake	Existing	0	0	0	0	0	270	3,180	3,450	3,450
		Revised 2020 Baseline	0	0	0	0	0	270	3,050	3,320	3,320
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	270	3,050	3,320	3,320
		Recommended Plan[d]	0	0	0	0	0	260	1,810	2,070	2,070
		Extreme Measures Condition[d]	0	0	0	0	0	260	1,770	2,030	2,030

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources					Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Total Phosphorus (pounds) (continued)	Kewaskum Creek	Existing	0	0	0	0	0	370	1,870	2,240	2,240
		Revised 2020 Baseline	0	0	0	0	0	380	1,800	2,180	2,180
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	380	1,800	2,180	2,180
		Recommended Plan[d]	0	0	0	0	0	360	1,690	2,050	2,050
		Extreme Measures Condition[d]	0	0	0	0	0	320	1,530	1,850	1,850
	Lake Fifteen Creek	Existing	0	0	0	0	0	220	1,200	1,420	1,420
		Revised 2020 Baseline	0	0	0	0	0	220	1,180	1,400	1,400
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	220	1,180	1,400	1,400
		Recommended Plan[d]	0	0	0	0	0	220	1,080	1,300	1,300
		Extreme Measures Condition[d]	0	0	0	0	0	210	1,050	1,260	1,260
	Lincoln Creek	Existing	4,260	200	80	0	4,540	7,870	70	7,940	12,480
		Revised 2020 Baseline	4,260	180	10	0	4,450	6,900	80	6,980	11,430
		Revised 2020 Baseline with Five-Year LOP	4,260	160	10	0	4,430	6,900	80	6,980	11,410
		Recommended Plan[d]	4,260	160	10	0	4,430	5,020	250	5,270	9,700
		Extreme Measures Condition[d]	0	160	10	0	170	4,390	250	4,640	4,810
	Lower Cedar Creek	Existing	10	10	0	5,730	5,750	3,200	5,210	8,410	14,160
		Revised 2020 Baseline	10	10	0	7,470	7,490	3,330	4,990	8,320	15,810
		Revised 2020 Baseline with Five-Year LOP	10	10	0	7,470	7,490	3,330	4,990	8,320	15,810
		Recommended Plan[d]	10	10	0	7,470	7,490	2,760	3,620	6,380	13,870
		Extreme Measures Condition[d]	0	10	0	7,470	7,480	2,260	3,320	5,580	13,060
	Lower Milwaukee River	Existing	73,470	540	1,710	0	75,720	14,780	6,740	21,520	97,240
		Revised 2020 Baseline	73,470	730	1,210	0	75,410	13,280	6,290	19,570	94,980
		Revised 2020 Baseline with Five-Year LOP	73,470	360	1,070	0	74,900	13,280	6,290	19,570	94,470
		Recommended Plan[d]	73,470	360	1,070	0	74,900	9,790	5,570	15,360	90,260
		Extreme Measures Condition[d]	0	360	1,070	0	1,430	8,260	4,590	12,850	14,280
	Middle Milwaukee River	Existing	10	0	0	14,740	14,750	3,480	6,150	9,630	24,380
		Revised 2020 Baseline	10	0	0	19,420	19,430	3,710	6,120	9,830	29,260
		Revised 2020 Baseline with Five-Year LOP	10	0	0	19,420	19,430	3,710	6,120	9,830	29,260
		Recommended Plan[d]	10	0	0	19,420	19,430	2,930	5,240	8,170	27,600
		Extreme Measures Condition[d]	0	0	0	19,420	19,420	2,660	4,500	7,160	26,580
	Mink Creek	Existing	0	0	0	0	0	320	1,120	1,440	1,440
		Revised 2020 Baseline	0	0	0	0	0	320	1,080	1,400	1,400
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	320	1,080	1,400	1,400
		Recommended Plan[d]	0	0	0	0	0	310	850	1,160	1,160
		Extreme Measures Condition[d]	0	0	0	0	0	310	880	1,190	1,190

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources					Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Total Phosphorus (pounds) (continued)	North Branch Milwaukee River	Existing	15,870	<10	0	6,580	22,450	1,480	6,240	7,720	30,170
		Revised 2020 Baseline	15,870	<10	0	6,830	22,700	1,480	6,080	7,560	30,260
		Revised 2020 Baseline with Five-Year LOP	15,870	<10	0	6,830	22,700	1,480	6,080	7,560	30,260
		Recommended Plan[d]	15,870	<10	0	6,830	22,700	1,420	5,620	7,040	29,740
		Extreme Measures Condition[d]	15,870	<10	0	6,830	22,700	1,380	5,370	6,750	29,450
	Silver Creek (Sheboygan County)	Existing	0	0	0	900	900	830	1,350	2,180	3,080
		Revised 2020 Baseline	0	0	0	1,070	1,070	940	1,300	2,240	3,310
		Revised 2020 Baseline with Five-Year LOP	0	0	0	1,070	1,070	940	1,300	2,240	3,310
		Recommended Plan[d]	0	0	0	1,070	1,070	750	1,320	2,070	3,140
		Extreme Measures Condition[d]	0	0	0	1,070	1,070	720	1,300	2,020	3,090
	Silver Creek (West Bend)	Existing	0	0	0	0	0	1,280	730	2,010	2,010
		Revised 2020 Baseline	0	0	0	0	0	1,400	750	2,150	2,150
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	1,400	750	2,150	2,150
		Recommended Plan[d]	0	0	0	0	0	1,200	670	1,870	1,870
		Extreme Measures Condition[d]	0	0	0	0	0	1,040	570	1,610	1,610
	Stony Creek	Existing	0	0	0	0	0	310	1,090	1,400	1,400
		Revised 2020 Baseline	0	0	0	0	0	310	1,060	1,370	1,370
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	310	1,060	1,370	1,370
		Recommended Plan[d]	0	0	0	0	0	310	960	1,270	1,270
		Extreme Measures Condition[d]	0	0	0	0	0	300	950	1,250	1,250
	Upper Lower Milwaukee River	Existing	140	30	0	12,850	13,020	3,480	5,120	8,600	21,620
		Revised 2020 Baseline	140	30	0	17,370	17,540	3,840	4,810	8,650	26,190
		Revised 2020 Baseline with Five-Year LOP	140	30	0	17,370	17,540	3,840	4,810	8,650	26,190
		Recommended Plan[d]	140	30	0	17,370	17,540	2,960	4,240	7,200	24,740
		Extreme Measures Condition[d]	0	30	0	17,370	17,400	2,570	3,900	6,470	23,870
	Upper Milwaukee River	Existing	80	0	0	3,540	3,620	1,400	8,830	10,230	13,850
		Revised 2020 Baseline	80	0	0	4,620	4,700	1,480	8,420	9,900	14,600
		Revised 2020 Baseline with Five-Year LOP	80	0	0	4,620	4,700	1,480	8,420	9,900	14,600
		Recommended Plan[d]	80	0	0	4,620	4,700	1,290	5,990	7,280	11,980
		Extreme Measures Condition[d]	70	0	0	4,620	4,690	1,220	5,670	6,890	11,580
	Watercress Creek	Existing	0	0	0	0	0	300	2,360	2,660	2,660
		Revised 2020 Baseline	0	0	0	0	0	300	2,290	2,590	2,590
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	300	2,290	2,590	2,590
		Recommended Plan[d]	0	0	0	0	0	240	1,540	1,780	1,780
		Extreme Measures Condition[d]	0	0	0	0	0	240	1,480	1,720	1,720

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources					Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Total Phosphorus (pounds) (continued)	West Branch Milwaukee River	Existing	0	0	0	0	0	1,270	9,040	10,310	10,310
		Revised 2020 Baseline	0	0	0	0	0	1,260	8,630	9,890	9,890
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	1,260	8,630	9,890	9,890
		Recommended Plan[d]	0	0	0	0	0	1,140	7,820	8,960	8,960
		Extreme Measures Condition[d]	0	0	0	0	0	1,110	7,320	8,430	8,430
	Watershed Total	Existing	93,840	780	1,790	51,740	148,150	45,290	81,060	126,350	274,500
		Revised 2020 Baseline	93,840	950	1,220	66,830	162,840	43,960	78,080	122,040	284,880
		Revised 2020 Baseline with Five-Year LOP	93,840	560	1,080	66,830	162,310	43,960	78,080	122,040	284,350
		Recommended Plan[d]	93,840	560	1,080	66,830	162,310	34,940	66,740	97,680	259,990
		Extreme Measures Condition[d]	15,940	560	1,080	66,830	84,410	31,010	57,500	88,510	172,920
Total Suspended Solids (pounds)	Batavia Creek	Existing	0	0	0	0	0	40,000	186,000	226,000	226,000
		Revised 2020 Baseline	0	0	0	0	0	40,000	180,000	220,000	220,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	40,000	180,000	220,000	220,000
		Recommended Plan[d]	0	0	0	0	0	24,000	84,000	108,000	108,000
		Extreme Measures Condition[d]	0	0	0	0	0	24,000	88,000	112,000	112,000
	Cedar Creek	Existing	0	0	0	24,000	24,000	1,504,000	6,782,000	8,286,000	8,310,000
		Revised 2020 Baseline	0	0	0	32,000	32,000	1,526,000	6,632,000	8,158,000	8,190,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	32,000	32,000	1,526,000	6,632,000	8,158,000	8,190,000
		Recommended Plan[d]	0	0	0	32,000	32,000	908,000	3,354,000	4,262,000	4,294,000
		Extreme Measures Condition[d]	0	0	0	32,000	32,000	870,000	3,486,000	4,356,000	4,388,000
	Cedar Lake	Existing	0	0	0	0	0	186,000	1,070,000	1,256,000	1,256,000
		Revised 2020 Baseline	0	0	0	0	0	180,000	1,048,000	1,228,000	1,228,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	180,000	1,048,000	1,228,000	1,228,000
		Recommended Plan[d]	0	0	0	0	0	86,000	542,000	628,000	628,000
		Extreme Measures Condition[d]	0	0	0	0	0	82,000	542,000	624,000	624,000
	Chambers Creek	Existing	0	0	0	0	0	52,000	200,000	252,000	252,000
		Revised 2020 Baseline	0	0	0	0	0	52,000	194,000	246,000	246,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	52,000	194,000	246,000	246,000
		Recommended Plan[d]	0	0	0	0	0	30,000	90,000	120,000	120,000
		Extreme Measures Condition[d]	0	0	0	0	0	30,000	94,000	124,000	124,000
	East Branch Milwaukee River	Existing	0	0	0	0	0	150,000	860,000	1,010,000	1,010,000
		Revised 2020 Baseline	0	0	0	0	0	150,000	852,000	1,002,000	1,002,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	150,000	852,000	1,002,000	1,002,000
		Recommended Plan[d]	0	0	0	0	0	90,000	476,000	566,000	566,000
		Extreme Measures Condition[d]	0	0	0	0	0	88,000	486,000	574,000	574,000

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Total Suspended Solids (pounds) (continued)	Kettle Moraine Lake	Existing	0	0	0	0	0	126,000	1,916,000	2,042,000	2,042,000
		Revised 2020 Baseline	0	0	0	0	0	126,000	1,874,000	2,000,000	2,000,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	126,000	1,874,000	2,000,000	2,000,000
		Recommended Plan[d]	0	0	0	0	0	80,000	956,000	1,036,000	1,036,000
		Extreme Measures Condition[d]	0	0	0	0	0	78,000	1,018,000	1,096,000	1,096,000
	Kewaskum Creek	Existing	0	0	0	0	0	162,000	878,000	1,040,000	1,040,000
		Revised 2020 Baseline	0	0	0	0	0	160,000	842,000	1,002,000	1,002,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	160,000	842,000	1,002,000	1,002,000
		Recommended Plan[d]	0	0	0	0	0	100,000	562,000	662,000	662,000
		Extreme Measures Condition[d]	0	0	0	0	0	96,000	586,000	682,000	682,000
	Lake Fifteen Creek	Existing	0	0	0	0	0	94,000	686,000	780,000	780,000
		Revised 2020 Baseline	0	0	0	0	0	94,000	680,000	774,000	774,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	94,000	680,000	774,000	774,000
		Recommended Plan[d]	0	0	0	0	0	58,000	408,000	466,000	466,000
		Extreme Measures Condition[d]	0	0	0	0	0	56,000	420,000	476,000	476,000
	Lincoln Creek	Existing	28,000	6,000	4,000	0	38,000	2,778,000	48,000	2,826,000	2,864,000
		Revised 2020 Baseline	28,000	6,000	0	0	34,000	2,170,000	42,000	2,212,000	2,246,000
		Revised 2020 Baseline with Five-Year LOP	28,000	4,000	0	0	32,000	2,170,000	42,000	2,212,000	2,244,000
		Recommended Plan[d]	28,000	4,000	0	0	32,000	1,152,000	100,000	1,252,000	1,284,000
		Extreme Measures Condition[d]	28,000	4,000	0	0	32,000	1,152,000	100,000	1,252,000	1,284,000
	Lower Cedar Creek	Existing	0	0	0	46,000	46,000	1,256,000	3,094,000	4,350,000	4,396,000
		Revised 2020 Baseline	0	0	0	62,000	62,000	1,270,000	3,026,000	4,296,000	4,358,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	62,000	62,000	1,270,000	3,026,000	4,296,000	4,358,000
		Recommended Plan[d]	0	0	0	62,000	62,000	684,000	1,692,000	2,376,000	2,438,000
		Extreme Measures Condition[d]	0	0	0	62,000	62,000	644,000	1,764,000	2,408,000	2,470,000
	Lower Milwaukee River	Existing	370,000	16,000	139,650	0	525,650	5,236,000	3,032,000	8,268,000	8,793,650
		Revised 2020 Baseline	370,000	20,000	103,670	0	493,670	4,224,000	2,682,000	6,906,000	7,399,670
		Revised 2020 Baseline with Five-Year LOP	370,000	10,000	91,810	0	471,810	4,224,000	2,682,000	6,906,000	7,377,810
		Recommended Plan[d]	370,000	10,000	91,810	0	471,810	2,300,000	1,678,000	3,978,000	4,449,810
		Extreme Measures Condition[d]	370,000	10,000	91,810	0	471,810	2,264,000	1,692,000	3,956,000	4,427,810
	Middle Milwaukee River	Existing	0	0	0	44,000	44,000	1,510,000	3,088,000	4,598,000	4,642,000
		Revised 2020 Baseline	0	0	0	60,000	60,000	1,564,000	2,992,000	4,556,000	4,616,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	60,000	60,000	1,564,000	2,992,000	4,556,000	4,616,000
		Recommended Plan[d]	0	0	0	60,000	60,000	804,000	1,758,000	2,562,000	2,622,000
		Extreme Measures Condition[d]	0	0	0	60,000	60,000	768,000	1,782,000	2,550,000	2,610,000

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Total Suspended Solids (pounds) (continued)	Mink Creek	Existing	0	0	0	0	0	106,000	460,000	566,000	566,000
		Revised 2020 Baseline	0	0	0	0	0	106,000	442,000	548,000	548,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	106,000	442,000	548,000	548,000
		Recommended Plan[d]	0	0	0	0	0	62,000	204,000	266,000	266,000
		Extreme Measures Condition[d]	0	0	0	0	0	60,000	218,000	278,000	278,000
	North Branch Milwaukee River	Existing	54,000	0	0	8,000	62,000	532,000	2,666,000	3,198,000	3,260,000
		Revised 2020 Baseline	54,000	0	0	22,280	76,280	528,000	2,584,000	3,112,000	3,188,280
		Revised 2020 Baseline with Five-Year LOP	54,000	0	0	22,280	76,280	528,000	2,584,000	3,112,000	3,188,280
		Recommended Plan[d]	54,000	0	0	22,280	76,280	306,000	1,512,000	1,818,000	1,894,280
		Extreme Measures Condition[d]	54,000	0	0	22,280	76,280	298,000	1,536,000	1,834,000	1,910,280
	Silver Creek (Sheboygan County)	Existing	0	0	0	16,000	16,000	292,000	532,000	824,000	840,000
		Revised 2020 Baseline	0	0	0	20,000	20,000	328,000	514,000	842,000	862,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	20,000	20,000	328,000	514,000	842,000	862,000
		Recommended Plan[d]	0	0	0	20,000	20,000	152,000	322,000	474,000	494,000
		Extreme Measures Condition[d]	0	0	0	20,000	20,000	148,000	324,000	472,000	492,000
	Silver Creek (West Bend)	Existing	0	0	0	0	0	526,000	470,000	996,000	996,000
		Revised 2020 Baseline	0	0	0	0	0	542,000	458,000	1,000,000	1,000,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	542,000	458,000	1,000,000	1,000,000
		Recommended Plan[d]	0	0	0	0	0	278,000	264,000	542,000	542,000
		Extreme Measures Condition[d]	0	0	0	0	0	264,000	262,000	526,000	526,000
	Stony Creek	Existing	0	0	0	0	0	100,000	434,000	534,000	534,000
		Revised 2020 Baseline	0	0	0	0	0	100,000	426,000	526,000	526,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	100,000	426,000	526,000	526,000
		Recommended Plan[d]	0	0	0	0	0	58,000	228,000	286,000	286,000
		Extreme Measures Condition[d]	0	0	0	0	0	58,000	236,000	294,000	294,000
	Upper Lower Milwaukee River	Existing	0	2,000	0	130,000	132,000	1,748,000	2,574,000	4,322,000	4,454,000
		Revised 2020 Baseline	0	2,000	0	172,000	174,000	1,904,000	2,422,000	4,326,000	4,500,000
		Revised 2020 Baseline with Five-Year LOP	0	2,000	0	172,000	174,000	1,904,000	2,422,000	4,326,000	4,500,000
		Recommended Plan[d]	0	2,000	0	172,000	174,000	952,000	1,416,000	2,368,000	2,542,000
		Extreme Measures Condition[d]	0	2,000	0	172,000	174,000	900,000	1,446,000	2,346,000	2,520,000
	Upper Milwaukee River	Existing	2,000	0	0	26,000	28,000	580,000	4,714,000	5,294,000	5,322,000
		Revised 2020 Baseline	2,000	0	0	36,000	38,000	610,000	4,574,000	5,184,000	5,222,000
		Revised 2020 Baseline with Five-Year LOP	2,000	0	0	36,000	38,000	610,000	4,574,000	5,184,000	5,222,000
		Recommended Plan[d]	2,000	0	0	36,000	38,000	352,000	2,514,000	2,866,000	2,904,000
		Extreme Measures Condition[d]	2,000	0	0	36,000	38,000	344,000	2,650,000	2,994,000	3,032,000

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Total Suspended Solids (pounds) (continued)	Watercress Creek	Existing	0	0	0	0	0	134,000	1,388,000	1,522,000	1,522,000
		Revised 2020 Baseline	0	0	0	0	0	134,000	1,358,000	1,492,000	1,492,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	134,000	1,358,000	1,492,000	1,492,000
		Recommended Plan[d]	0	0	0	0	0	74,000	738,000	812,000	812,000
		Extreme Measures Condition[d]	0	0	0	0	0	72,000	782,000	854,000	854,000
	West Branch Milwaukee River	Existing	0	0	0	0	0	596,000	4,682,000	5,278,000	5,278,000
		Revised 2020 Baseline	0	0	0	0	0	590,000	4,538,000	5,128,000	5,128,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	590,000	4,538,000	5,128,000	5,128,000
		Recommended Plan[d]	0	0	0	0	0	356,000	2,954,000	3,310,000	3,310,000
		Extreme Measures Condition[d]	0	0	0	0	0	348,000	3,078,000	3,426,000	3,426,000
	Watershed Total	Existing	454,000	24,000	143,650	294,000	915,650	17,708,000	39,760,000	57,468,000	58,383,650
		Revised 2020 Baseline	454,000	28,000	103,670	404,280	989,950	16,398,000	38,360,000	54,758,000	55,747,950
		Revised 2020 Baseline with Five-Year LOP	454,000	16,000	91,810	404,280	966,090	16,398,000	38,360,000	54,758,000	55,724,090
		Recommended Plan[d]	454,000	16,000	91,810	404,280	966,090	8,906,000	21,852,000	30,758,000	31,724,090
		Extreme Measures Condition[d]	454,000	16,000	91,810	404,280	966,090	8,644,000	22,590,000	31,234,000	32,200,090
Fecal Coliform Bacteria (trillions of cells)	Batavia Creek	Existing	0.00	0.00	0.00	0.00	0.00	73.50	87.60	161.10	161.10
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	73.30	87.52	160.82	160.82
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	73.30	87.52	160.82	160.82
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	72.02	29.67	101.69	101.69
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	70.09	28.65	98.74	98.74
	Cedar Creek	Existing	0.01	0.00	0.00	0.20	0.21	1,664.36	1,878.04	3,542.40	3,542.61
		Revised 2020 Baseline	0.01	0.00	0.00	0.27	0.28	1,505.35	1,595.56	3,100.91	3,101.19
		Revised 2020 Baseline with Five-Year LOP	0.01	0.00	0.00	0.27	0.28	1,505.35	1,595.56	3,100.91	3,101.19
		Recommended Plan[d]	0.01	0.00	0.00	0.27	0.28	843.05	698.22	1,541.27	1,541.55
		Extreme Measures Condition[d]	0.01	0.00	0.00	0.27	0.28	802.19	660.43	1,462.62	1,462.90
	Cedar Lake	Existing	0.00	0.00	0.00	0.00	0.00	212.84	1,362.21	1,575.05	1,575.05
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	3.03	51.54	54.57	54.57
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	3.03	51.54	54.57	54.57
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	35.11	223.83	258.94	258.94
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	33.60	213.60	247.20	247.20
	Chambers Creek	Existing	0.00	0.00	0.00	0.00	0.00	82.08	105.88	187.96	187.96
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	81.86	105.74	187.60	187.60
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	81.86	105.74	187.60	187.60
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	80.42	52.27	132.69	132.69
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	78.27	50.63	128.90	128.90

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	East Branch Milwaukee River	Existing	0.00	0.00	0.00	0.00	0.00	270.07	521.74	791.81	791.81
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	269.35	532.82	802.17	802.17
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	269.35	532.82	802.17	802.17
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	232.11	388.94	621.05	621.05
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	225.89	378.02	603.91	603.91
	Kettle Moraine Lake	Existing	0.00	0.00	0.00	0.00	0.00	157.94	540.89	698.83	698.83
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	157.84	540.62	698.46	698.46
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	157.84	540.62	698.46	698.46
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	150.66	328.19	478.85	478.85
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	147.89	321.79	469.68	469.68
	Kewaskum Creek	Existing	0.00	0.00	0.00	0.00	0.00	198.48	180.39	378.87	378.87
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	131.68	204.79	336.47	336.47
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	131.68	204.79	336.47	336.47
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	105.02	74.18	179.20	179.20
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	100.12	70.16	170.28	170.28
	Lake Fifteen Creek	Existing	0.00	0.00	0.00	0.00	0.00	114.69	340.61	455.30	455.30
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	114.49	340.00	454.49	454.49
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	114.49	340.00	454.49	454.49
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	112.75	283.49	396.24	396.24
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	110.14	276.22	386.36	386.36
	Lincoln Creek	Existing	0.79	111.29	57.96	0.00	170.04	4,178.24	0.28	4,178.52	4,348.56
		Revised 2020 Baseline	0.79	97.03	5.81	0.00	103.63	3,454.26	17.82	3,472.08	3,575.71
		Revised 2020 Baseline with Five-Year LOP	0.79	89.69	4.05	0.00	94.53	3,454.26	17.82	3,472.08	3,566.61
		Recommended Plan[d]	0.79	89.69	4.05	0.00	94.53	1,601.37	194.37	1,794.74	1,890.27
		Extreme Measures Condition[d]	0.79	89.69	4.05	0.00	94.53	999.90	188.25	1,188.15	1,282.68
	Lower Cedar Creek	Existing	0.00	2.78	0.00	1.67	4.45	1,637.71	851.03	2,488.74	2,493.19
		Revised 2020 Baseline	0.00	2.78	0.00	2.17	4.95	847.85	890.00	1,737.85	1,742.80
		Revised 2020 Baseline with Five-Year LOP	0.00	2.78	0.00	2.17	4.95	847.85	890.00	1,737.85	1,742.80
		Recommended Plan[d]	0.00	2.78	0.00	2.17	4.95	495.00	510.64	1,005.64	1,010.59
		Extreme Measures Condition[d]	0.00	2.78	0.00	2.17	4.95	384.17	486.37	870.54	875.49
	Lower Milwaukee River	Existing	9.84	296.62	1,820.95	0.00	2,127.41	7,522.97	973.60	8,496.57	10,623.98
		Revised 2020 Baseline	9.84	397.29	1,343.30	0.00	1,750.43	5,871.29	946.20	6,817.49	8,567.92
		Revised 2020 Baseline with Five-Year LOP	9.84	195.71	1,186.54	0.00	1,392.09	5,871.29	946.20	6,817.49	8,209.58
		Recommended Plan[d]	9.84	195.71	1,186.54	0.00	1,392.09	3,000.89	955.25	3,956.14	5,348.23
		Extreme Measures Condition[d]	9.84	195.71	1,186.54	0.00	1,392.09	2,007.26	897.12	2,904.38	4,296.47

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Middle Milwaukee River	Existing	0.02	0.00	0.00	27.70	27.72	1,909.21	1,396.42	3,305.63	3,333.35
		Revised 2020 Baseline	0.02	0.00	0.00	37.73	37.75	647.52	1,366.47	2,013.99	2,051.74
		Revised 2020 Baseline with Five-Year LOP	0.02	0.00	0.00	37.73	37.75	647.52	1,366.47	2,013.99	2,051.74
		Recommended Plan[d]	0.02	0.00	0.00	37.73	37.75	488.31	726.49	1,214.80	1,252.55
		Extreme Measures Condition[d]	0.02	0.00	0.00	37.73	37.75	413.51	695.63	1,109.14	1,146.89
	Mink Creek	Existing	0.00	0.00	0.00	0.00	0.00	183.01	263.94	446.95	446.95
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	182.53	263.62	446.15	446.15
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	182.53	263.62	446.15	446.15
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	179.33	121.80	301.13	301.13
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	174.53	118.05	292.58	292.58
	North Branch Milwaukee River	Existing	0.67	1.77	0.00	8.19	10.63	814.80	1,623.75	2,438.55	2,449.18
		Revised 2020 Baseline	0.67	1.77	0.00	8.26	10.70	812.17	1,667.64	2,479.81	2,490.51
		Revised 2020 Baseline with Five-Year LOP	0.67	1.77	0.00	8.26	10.70	812.17	1,667.64	2,479.81	2,490.51
		Recommended Plan[d]	0.67	1.77	0.00	8.26	10.70	690356	910.24	1,600.80	1,611.50
		Extreme Measures Condition[d]	0.67	1.77	0.00	8.26	10.70	671.28	881.66	1,552.94	1,563.64
	Silver Creek (Sheboygan County)	Existing	0.05	0.00	0.00	0.82	0.87	599.28	295.74	895.02	895.89
		Revised 2020 Baseline	0.05	0.00	0.00	0.97	1.02	314.93	309.31	624.24	625.26
		Revised 2020 Baseline with Five-Year LOP	0.05	0.00	0.00	0.97	1.02	314.93	309.31	624.24	625.26
		Recommended Plan[d]	0.05	0.00	0.00	0.97	1.02	192.44	208.06	400.50	401.52
		Extreme Measures Condition[d]	0.05	0.00	0.00	0.97	1.02	185.99	201.25	387.24	388.26
	Silver Creek (West Bend)	Existing	0.00	0.00	0.00	0.00	0.00	722.20	210.56	932.76	932.76
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	193.65	184.03	377.68	377.68
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	193.65	184.03	377.68	377.68
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	231.76	176.74	408.50	408.50
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	162.80	168.73	331.53	331.53
	Stony Creek	Existing	0.00	0.00	0.00	0.00	0.00	188.85	271.65	460.50	460.50
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	188.35	271.24	459.59	459.59
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	188.35	271.24	459.59	459.59
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	185.05	153.39	338.44	338.44
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	180.09	148.66	328.75	328.75
	Upper Lower Milwaukee River	Existing	0.62	16.58	0.00	1.75	18.95	1,849.48	1,104.93	2,954.41	2,973.36
		Revised 2020 Baseline	0.62	16.58	0.00	2.22	19.42	1,463.29	1,189.59	2,652.88	2,672.30
		Revised 2020 Baseline with Five-Year LOP	0.62	16.58	0.00	2.22	19.42	1,463.29	1,189.59	2,652.88	2,672.30
		Recommended Plan[d]	0.62	16.58	0.00	2.22	19.42	429.53	557.42	986.95	1,006.37
		Extreme Measures Condition[d]	0.62	16.58	0.00	2.22	19.42	386.84	534.96	921.80	941.22

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources					Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Fecal Coliform Bacteria (trillions of cells) (continued)	Upper Milwaukee River	Existing	0.11	0.00	0.00	1.21	1.32	820.18	809.09	1,629.27	1,630.59
		Revised 2020 Baseline	0.11	0.00	0.00	1.45	1.56	792.32	835.49	1,627.81	1,629.37
		Revised 2020 Baseline with Five-Year LOP	0.11	0.00	0.00	1.45	1.56	792.32	835.49	1,627.81	1,629.37
		Recommended Plan[d]	0.11	0.00	0.00	1.45	1.56	445.64	267.21	712.85	714.41
		Extreme Measures Condition[d]	0.11	0.00	0.00	1.45	1.56	415.43	257.02	672.45	674.01
	Watercress Creek	Existing	0.00	0.00	0.00	0.00	0.00	201.89	723.77	925.66	925.66
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	201.74	723.37	925.11	925.11
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	201.74	723.37	925.11	925.11
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	167.02	422.03	589.05	589.05
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	163.86	413.72	577.58	577.58
	West Branch Milwaukee River	Existing	0.00	0.00	0.00	0.00	0.00	697.12	824.04	1,521.16	1,521.16
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	0.00	690.13	823.45	1,513.58	1,513.58
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	0.00	690.13	823.45	1,513.58	1,513.58
		Recommended Plan[d]	0.00	0.00	0.00	0.00	0.00	546.37	315.69	862.06	862.06
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	0.00	532.02	303.02	835.85	835.85
	Watershed Total	Existing	12.11	429.04	1,878.91	41.54	2,361.60	24,098.90	14,366.16	38,465.06	40,826.66
		Revised 2020 Baseline	12.11	515.45	1,349.11	53.07	1,929.74	17,996.93	12,946.82	30,943.75	32,873.49
		Revised 2020 Baseline with Five-Year LOP	12.11	306.53	1,190.59	53.07	1,562.30	17,996.93	12,946.82	30,943.75	32,506.05
		Recommended Plan[d]	12.11	306.53	1,190.59	53.07	1,562.30	10,284.41	7,598.12	17,882.53	19,444.83
		Extreme Measures Condition[d]	12.11	306.53	1,190.59	53.07	1,562.30	8,245.87	7,294.75	15,540.62	17,102.92
Total Nitrogen (pounds)	Batavia Creek	Existing	0	0	0	0	0	560	18,950	19,510	19,510
		Revised 2020 Baseline	0	0	0	0	0	560	18,800	19,360	19,360
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	560	18,800	19,360	19,360
		Recommended Plan[d]	0	0	0	0	0	550	10,800	11,350	11,350
		Extreme Measures Condition[d]	0	0	0	0	0	540	10,020	10,560	10,560
	Cedar Creek	Existing	40	0	0	4,580	4,620	13,420	286,240	299,660	304,280
		Revised 2020 Baseline	40	0	0	6,220	6,260	14,180	273,120	287,300	293,560
		Revised 2020 Baseline with Five-Year LOP	40	0	0	6,220	6,260	14,180	273,120	287,300	293,560
		Recommended Plan[d]	40	0	0	6,220	6,260	12,570	157,950	170,520	176,780
		Extreme Measures Condition[d]	40	0	0	6,220	6,260	11,910	145,090	157,000	163,260
	Cedar Lake	Existing	0	0	0	0	0	1,610	24,990	26,600	26,600
		Revised 2020 Baseline	0	0	0	0	0	1,610	24,560	26,170	26,170
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	1,610	24,560	26,170	26,170
		Recommended Plan[d]	0	0	0	0	0	1,050	18,100	19,150	19,150
		Extreme Measures Condition[d]	0	0	0	0	0	1,010	16,600	17,610	17,610

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources					Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Total Nitrogen (pounds) (continued)	Chambers Creek	Existing	0	0	0	0	0	650	18,970	19,620	19,620
		Revised 2020 Baseline	0	0	0	0	0	650	18,830	19,480	19,480
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	650	18,830	19,480	19,480
		Recommended Plan[d]	0	0	0	0	0	640	11,100	11,740	11,740
		Extreme Measures Condition[d]	0	0	0	0	0	620	10,330	10,950	10,950
	East Branch Milwaukee River	Existing	0	0	0	0	0	2,080	41,270	43,350	43,350
		Revised 2020 Baseline	0	0	0	0	0	2,080	40,700	42,780	42,780
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	2,080	40,700	42,780	42,780
		Recommended Plan[d]	0	0	0	0	0	2,040	28,000	30,040	30,040
		Extreme Measures Condition[d]	0	0	0	0	0	1,980	26,760	28,740	28,740
	Kettle Moraine Lake	Existing	0	0	0	0	0	1,220	58,780	60,000	60,000
		Revised 2020 Baseline	0	0	0	0	0	1,220	57,820	59,040	59,040
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	1,220	57,820	59,040	59,040
		Recommended Plan[d]	0	0	0	0	0	1,170	21,990	23,160	23,160
		Extreme Measures Condition[d]	0	0	0	0	0	1,150	20,890	22,040	22,040
	Kewaskum Creek	Existing	0	0	0	0	0	1,780	42,100	43,880	43,880
		Revised 2020 Baseline	0	0	0	0	0	1,850	39,920	41,770	41,770
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	1,850	39,920	41,770	41,770
		Recommended Plan[d]	0	0	0	0	0	1,770	36,640	38,410	38,410
		Extreme Measures Condition[d]	0	0	0	0	0	1,660	33,270	34,930	34,930
	Lake Fifteen Creek	Existing	0	0	0	0	0	920	20,270	21,190	21,190
		Revised 2020 Baseline	0	0	0	0	0	920	20,080	21,000	21,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	920	20,080	21,000	21,000
		Recommended Plan[d]	0	0	0	0	0	910	15,630	16,540	16,540
		Extreme Measures Condition[d]	0	0	0	0	0	890	14,680	15,570	15,570
	Lincoln Creek	Existing	3,530	850	960	0	5,340	42,420	500	42,920	48,260
		Revised 2020 Baseline	3,530	740	100	0	4,370	39,480	490	39,970	44,340
		Revised 2020 Baseline with Five-Year LOP	3,530	690	70	0	4,290	39,480	490	39,970	44,260
		Recommended Plan[d]	3,530	690	70	0	4,290	32,820	920	33,740	38,030
		Extreme Measures Condition[d]	3,530	690	70	0	4,290	32,820	920	33,740	38,030
	Lower Cedar Creek	Existing	<10	20	0	950	970	16,910	95,100	112,010	112,980
		Revised 2020 Baseline	<10	20	0	1,230	1,250	17,980	89,350	107,330	108,580
		Revised 2020 Baseline with Five-Year LOP	<10	20	0	1,230	1,250	17,980	89,350	107,330	108,580
		Recommended Plan[d]	<10	20	0	1,230	1,250	15,870	50,050	65,920	67,170
		Extreme Measures Condition[d]	<10	20	0	1,230	1,250	14,490	46,520	61,010	62,260

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Total Nitrogen (pounds) (continued)	Lower Milwaukee River	Existing	64,010	2,270	16,950	0	83,230	79,020	109,560	188,580	271,810
		Revised 2020 Baseline	64,010	3,040	11,630	0	78,680	76,690	82,750	159,440	238,120
		Revised 2020 Baseline with Five-Year LOP	64,010	1,500	10,300	0	75,810	76,690	82,750	159,440	235,250
		Recommended Plan[d]	64,010	1,500	10,300	0	75,810	64,500	65,770	130,270	206,080
		Extreme Measures Condition[d]	64,010	1,500	10,300	0	75,810	63,350	60,580	123,930	199,740
	Middle Milwaukee River	Existing	10	0	0	27,930	27,940	16,190	123,790	139,980	167,920
		Revised 2020 Baseline	10	0	0	37,670	37,680	17,330	109,140	126,470	164,150
		Revised 2020 Baseline with Five-Year LOP	10	0	0	37,670	37,680	17,330	109,140	126,470	164,150
		Recommended Plan[d]	10	0	0	37,670	37,680	14,150	90,200	104,350	142,030
		Extreme Measures Condition[d]	10	0	0	37,670	37,680	13,280	82,340	95,620	133,300
	Mink Creek	Existing	0	0	0	0	0	1,420	49,620	51,040	51,040
		Revised 2020 Baseline	0	0	0	0	0	1,420	49,240	50,660	50,660
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	1,420	49,240	50,660	50,660
		Recommended Plan[d]	0	0	0	0	0	1,390	27,170	28,560	28,560
		Extreme Measures Condition[d]	0	0	0	0	0	1,350	25,240	26,590	26,590
	North Branch Milwaukee River	Existing	7,560	10	0	9,530	17,100	6,410	171,210	177,620	194,720
		Revised 2020 Baseline	7,560	10	0	9,780	17,350	6,410	167,880	174,290	191,640
		Revised 2020 Baseline with Five-Year LOP	7,560	10	0	9,780	17,350	6,410	167,880	174,290	191,640
		Recommended Plan[d]	7,560	10	0	9,780	17,350	6,140	138,100	144,240	161,590
		Extreme Measures Condition[d]	7,560	10	0	9,780	17,350	5,970	126,640	132,610	149,960
	Silver Creek (Sheboygan County)	Existing	0	0	0	350	350	3,680	44,550	48,230	48,580
		Revised 2020 Baseline	0	0	0	420	420	4,300	42,790	47,090	47,510
		Revised 2020 Baseline with Five-Year LOP	0	0	0	420	420	4,300	42,790	47,090	47,510
		Recommended Plan[d]	0	0	0	420	420	3,680	39,500	43,180	43,600
		Extreme Measures Condition[d]	0	0	0	420	420	3,530	36,090	39,620	40,040
	Silver Creek (West Bend)	Existing	0	0	0	0	0	6,410	10,860	17,270	17,270
		Revised 2020 Baseline	0	0	0	0	0	7,230	8,820	16,050	16,050
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	7,230	8,820	16,050	16,050
		Recommended Plan[d]	0	0	0	0	0	6,520	7,380	13,900	13,900
		Extreme Measures Condition[d]	0	0	0	0	0	6,020	6,840	12,860	12,860
	Stony Creek	Existing	0	0	0	0	0	1,440	39,770	41,210	41,210
		Revised 2020 Baseline	0	0	0	0	0	1,440	39,540	40,980	40,980
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	1,440	39,540	40,980	40,980
		Recommended Plan[d]	0	0	0	0	0	1,410	28,530	29,940	29,940
		Extreme Measures Condition[d]	0	0	0	0	0	1,370	26,360	27,730	27,730

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources					Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Total Nitrogen (pounds) (continued)	Upper Lower Milwaukee River	Existing	350	130	0	77,920	78,400	17,730	123,670	141,400	219,800
		Revised 2020 Baseline	350	130	0	99,960	100,440	19,560	114,090	133,650	234,090
		Revised 2020 Baseline with Five-Year LOP	350	130	0	99,960	100,440	19,560	114,090	133,650	234,090
		Recommended Plan[d]	350	130	0	99,960	100,440	16,310	92,460	108,770	209,210
		Extreme Measures Condition[d]	350	130	0	99,960	100,440	14,990	84,500	99,490	199,930
	Upper Milwaukee River	Existing	30	0	0	1,950	1,980	6,740	194,190	200,930	202,910
		Revised 2020 Baseline	30	0	0	2,300	2,330	7,130	188,880	196,010	198,340
		Revised 2020 Baseline with Five-Year LOP	30	0	0	2,300	2,330	7,130	188,880	196,010	198,340
		Recommended Plan[d]	30	0	0	2,300	2,330	6,060	116,360	122,720	125,050
		Extreme Measures Condition[d]	30	0	0	2,300	2,330	6,130	107,150	113,280	115,610
	Watercress Creek	Existing	0	0	0	0	0	1,480	40,150	41,630	41,630
		Revised 2020 Baseline	0	0	0	0	0	1,480	39,440	40,920	40,920
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	1,480	39,440	40,920	40,920
		Recommended Plan[d]	0	0	0	0	0	1,220	20,970	22,190	22,190
		Extreme Measures Condition[d]	0	0	0	0	0	1,200	19,880	21,080	21,080
	West Branch Milwaukee River	Existing	0	0	0	0	0	5,390	219,160	224,550	224,550
		Revised 2020 Baseline	0	0	0	0	0	5,360	214,960	220,320	220,320
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	5,360	214,960	220,320	220,320
		Recommended Plan[d]	0	0	0	0	0	4,900	186,200	191,100	191,100
		Extreme Measures Condition[d]	0	0	0	0	0	4,770	169,470	174,240	174,240
	Watershed Total	Existing	75,530	3,280	17,910	123,210	219,930	227,480	1,733,700	1,961,180	2,181,110
		Revised 2020 Baseline	75,530	3,940	11,730	157,580	248,780	228,880	1,641,200	1,870,080	2,118,860
		Revised 2020 Baseline with Five-Year LOP	75,530	2,350	10,370	157,580	245,830	228,880	1,641,200	1,870,080	2,115,910
		Recommended Plan[d]	75,530	2,350	10,370	157,580	245,830	195,970	1,163,820	1,359,790	1,605,620
		Extreme Measures Condition[d]	75,530	2,350	10,370	157,580	245,830	189,030	1,070,170	1,259,200	1,505,030
Biochemical Oxygen Demand (pounds)	Batavia Creek	Existing	0	0	0	0	0	4,000	24,470	28,470	28,470
		Revised 2020 Baseline	0	0	0	0	0	3,990	23,680	27,670	27,670
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	3,990	23,680	27,670	27,670
		Recommended Plan[d]	0	0	0	0	0	3,920	15,480	19,400	19,400
		Extreme Measures Condition[d]	0	0	0	0	0	3,810	15,330	19,140	19,140
	Cedar Creek	Existing	60	0	0	10,370	10,430	105,650	632,050	737,700	748,130
		Revised 2020 Baseline	60	0	0	14,080	14,140	109,810	604,330	714,140	728,280
		Revised 2020 Baseline with Five-Year LOP	60	0	0	14,080	14,140	109,810	604,330	714,140	728,280
		Recommended Plan[d]	60	0	0	14,080	14,140	95,970	366,220	462,190	476,330
		Extreme Measures Condition[d]	60	0	0	14,080	14,140	91,420	344,760	436,180	450,320

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources					Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Biochemical Oxygen Demand (pounds) (continued)	Cedar Lake	Existing	0	0	0	0	0	12,700	68,630	81,330	81,330
		Revised 2020 Baseline	0	0	0	0	0	12,440	67,470	79,910	79,910
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	12,440	67,470	79,910	79,910
		Recommended Plan[d]	0	0	0	0	0	8,170	48,860	57,030	57,030
		Extreme Measures Condition[d]	0	0	0	0	0	7,820	46,180	54,000	54,000
	Chambers Creek	Existing	0	0	0	0	0	5,140	23,440	28,580	28,580
		Revised 2020 Baseline	0	0	0	0	0	5,130	22,900	28,030	28,030
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	5,130	22,900	28,030	28,030
		Recommended Plan[d]	0	0	0	0	0	5,040	16,150	21,190	21,190
		Extreme Measures Condition[d]	0	0	0	0	0	4,900	16,070	20,970	20,970
	East Branch Milwaukee River	Existing	0	0	0	0	0	15,060	82,180	97,240	97,240
		Revised 2020 Baseline	0	0	0	0	0	15,020	80,980	96,000	96,000
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	15,020	80,980	96,000	96,000
		Recommended Plan[d]	0	0	0	0	0	14,760	69,060	83,820	83,820
		Extreme Measures Condition[d]	0	0	0	0	0	14,360	68,740	83,100	83,100
	Kettle Moraine Lake	Existing	0	0	0	0	0	8,880	120,250	129,130	129,130
		Revised 2020 Baseline	0	0	0	0	0	8,880	115,640	124,520	124,520
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	8,880	115,640	124,520	124,520
		Recommended Plan[d]	0	0	0	0	0	8,480	55,250	63,730	63,730
		Extreme Measures Condition[d]	0	0	0	0	0	8,330	54,770	63,100	63,100
	Kewaskum Creek	Existing	0	0	0	0	0	11,340	81,960	93,300	93,300
		Revised 2020 Baseline	0	0	0	0	0	11,260	76,800	88,060	88,060
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	11,260	76,800	88,060	88,060
		Recommended Plan[d]	0	0	0	0	0	10,800	71,520	82,320	82,320
		Extreme Measures Condition[d]	0	0	0	0	0	10,270	66,260	76,530	76,530
	Lake Fifteen Creek	Existing	0	0	0	0	0	7,770	41,080	48,850	48,850
		Revised 2020 Baseline	0	0	0	0	0	7,760	40,510	48,270	48,270
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	7,760	40,510	48,270	48,270
		Recommended Plan[d]	0	0	0	0	0	7,640	35,180	42,820	42,820
		Extreme Measures Condition[d]	0	0	0	0	0	7,460	34,570	42,030	42,030
	Lincoln Creek	Existing	15,210	1,440	720	0	17,370	216,100	1,840	217,940	235,310
		Revised 2020 Baseline	15,210	1,250	70	0	16,530	186,070	2,140	188,210	204,740
		Revised 2020 Baseline with Five-Year LOP	15,210	1,160	50	0	16,420	186,070	2,140	188,210	204,630
		Recommended Plan[d]	15,210	1,160	50	0	16,420	133,290	6,100	139,390	155,810
		Extreme Measures Condition[d]	15,210	1,160	50	0	16,420	133,280	6,100	139,380	155,800

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Biochemical Oxygen Demand (pounds) (continued)	Lower Cedar Creek	Existing	20	40	0	20,080	20,140	85,590	185,110	270,700	290,840
		Revised 2020 Baseline	20	40	0	26,160	26,220	88,320	176,340	264,660	290,880
		Revised 2020 Baseline with Five-Year LOP	20	40	0	26,160	26,220	88,320	176,340	264,660	290,880
		Recommended Plan[d]	20	40	0	26,160	26,220	74,820	113,230	188,050	214,270
		Extreme Measures Condition[d]	20	40	0	26,160	26,220	70,460	109,290	179,750	205,970
	Lower Milwaukee River	Existing	259,990	3,830	22,550	0	286,370	388,570	234,560	623,130	909,500
		Revised 2020 Baseline	259,990	5,120	16,640	0	281,750	343,650	180,190	523,840	805,590
		Revised 2020 Baseline with Five-Year LOP	259,990	2,520	14,690	0	277,200	343,650	180,190	523,840	801,040
		Recommended Plan[d]	259,990	2,520	14,690	0	277,200	248,640	152,810	401,450	678,650
		Extreme Measures Condition[d]	259,990	2,520	14,690	0	277,200	244,740	144,800	389,540	666,740
	Middle Milwaukee River	Existing	20	0	0	296,770	296,790	108,290	220,120	328,410	625,200
		Revised 2020 Baseline	20	0	0	390,710	390,730	117,190	201,100	318,290	709,020
		Revised 2020 Baseline with Five-Year LOP	20	0	0	390,710	390,730	117,190	201,100	318,290	709,020
		Recommended Plan[d]	20	0	0	390,710	390,730	94,220	171,240	265,460	656,190
		Extreme Measures Condition[d]	20	0	0	390,710	390,730	89,860	161,870	251,730	642,460
	Mink Creek	Existing	0	0	0	0	0	10,490	56,310	66,800	66,800
		Revised 2020 Baseline	0	0	0	0	0	10,460	54,640	65,100	65,100
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	10,460	54,640	65,100	65,100
		Recommended Plan[d]	0	0	0	0	0	10,280	36,810	47,090	47,090
		Extreme Measures Condition[d]	0	0	0	0	0	10,000	36,870	46,870	46,870
	North Branch Milwaukee River	Existing	7,020	20	0	6,080	13,120	50,380	267,240	317,620	330,740
		Revised 2020 Baseline	7,020	20	0	6,700	13,740	50,240	256,750	306,990	320,730
		Revised 2020 Baseline with Five-Year LOP	7,020	20	0	6,700	13,740	50,240	256,750	306,990	320,730
		Recommended Plan[d]	7,020	20	0	6,700	13,740	48,020	227,150	275,170	288,910
		Extreme Measures Condition[d]	7,020	20	0	6,700	13,740	46,640	218,010	264,650	278,390
	Silver Creek (Sheboygan County)	Existing	4,330	0	0	2,990	7,320	26,810	63,180	89,990	97,310
		Revised 2020 Baseline	4,330	0	0	3,560	7,890	30,820	60,320	91,140	99,030
		Revised 2020 Baseline with Five-Year LOP	4,330	0	0	3,560	7,890	30,820	60,320	91,140	99,030
		Recommended Plan[d]	4,330	0	0	3,560	7,890	25,460	58,750	84,210	92,100
		Extreme Measures Condition[d]	4,330	0	0	3,560	7,890	24,680	56,260	80,940	88,830
	Silver Creek (West Bend)	Existing	0	0	0	0	0	36,060	23,710	59,770	59,770
		Revised 2020 Baseline	0	0	0	0	0	40,190	22,180	62,370	62,370
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	40,190	22,180	62,370	62,370
		Recommended Plan[d]	0	0	0	0	0	35,400	19,900	55,300	55,300
		Extreme Measures Condition[d]	0	0	0	0	0	33,500	18,970	52,470	52,470

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Biochemical Oxygen Demand (pounds) (continued)	Stony Creek	Existing	0	0	0	0	0	10,240	51,490	61,730	61,730
		Revised 2020 Baseline	0	0	0	0	0	10,220	50,450	60,670	60,670
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	10,220	50,450	60,670	60,670
		Recommended Plan[d]	0	0	0	0	0	10,040	41,290	51,330	51,330
		Extreme Measures Condition[d]	0	0	0	0	0	9,770	40,530	50,300	50,300
	Upper Lower Milwaukee River	Existing	2,770	210	0	52,690	55,670	103,450	199,780	303,230	358,900
		Revised 2020 Baseline	2,770	210	0	68,820	71,800	115,060	182,470	297,530	369,330
		Revised 2020 Baseline with Five-Year LOP	2,770	210	0	68,820	71,800	115,060	182,470	297,530	369,330
		Recommended Plan[d]	2,770	210	0	68,820	71,800	90,100	155,230	245,330	317,130
		Extreme Measures Condition[d]	2,770	210	0	68,820	71,800	85,360	147,910	233,270	305,070
	Upper Milwaukee River	Existing	1,030	0	0	10,830	11,860	44,460	373,160	417,620	429,480
		Revised 2020 Baseline	1,030	0	0	14,490	15,520	47,150	356,200	403,350	418,870
		Revised 2020 Baseline with Five-Year LOP	1,030	0	0	14,490	15,520	47,150	356,200	403,350	418,870
		Recommended Plan[d]	1,030	0	0	14,490	15,520	41,370	232,580	273,950	289,470
		Extreme Measures Condition[d]	1,030	0	0	14,490	15,520	40,200	221,280	261,480	277,000
	Watercress Creek	Existing	0	0	0	0	0	10,130	86,840	96,970	96,970
		Revised 2020 Baseline	0	0	0	0	0	10,130	83,890	94,020	94,020
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	10,130	83,890	94,020	94,020
		Recommended Plan[d]	0	0	0	0	0	8,260	50,620	58,880	58,880
		Extreme Measures Condition[d]	0	0	0	0	0	8,110	49,880	57,990	57,990
	West Branch Milwaukee River	Existing	0	0	0	0	0	42,450	373,130	415,580	415,580
		Revised 2020 Baseline	0	0	0	0	0	42,090	358,060	400,150	400,150
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	42,090	358,060	400,150	400,150
		Recommended Plan[d]	0	0	0	0	0	37,810	315,970	353,780	353,780
		Extreme Measures Condition[d]	0	0	0	0	0	36,870	295,980	332,850	332,850
	Watershed Total	Existing	290,450	5,540	23,270	399,810	719,070	1,303,560	3,210,530	4,514,090	5,233,160
		Revised 2020 Baseline	290,450	6,640	16,710	524,520	838,320	1,265,880	3,017,040	4,282,920	5,121,240
		Revised 2020 Baseline with Five-Year LOP	290,450	3,950	14,740	524,520	833,660	1,265,880	3,017,040	4,282,920	5,116,580
		Recommended Plan[d]	290,450	3,950	14,740	524,520	833,660	1,012,490	2,259,400	3,271,890	4,105,550
		Extreme Measures Condition[d]	290,450	3,950	14,740	524,520	833,660	981,840	2,154,430	3,136,270	3,969,930

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Copper (pounds)	Batavia Creek	Existing	0	0	0	0	0	7	11	18	18
		Revised 2020 Baseline	0	0	0	0	0	7	11	18	18
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	7	11	18	18
		Recommended Plan[d]	0	0	0	0	0	7	8	15	15
		Extreme Measures Condition[d]	0	0	0	0	0	7	8	15	15
	Cedar Creek	Existing	0	0	0	46	46	190	187	377	423
		Revised 2020 Baseline	0	0	0	63	63	197	189	386	449
		Revised 2020 Baseline with Five-Year LOP	0	0	0	63	63	197	189	386	449
		Recommended Plan[d]	0	0	0	63	63	177	156	333	396
		Extreme Measures Condition[d]	0	0	0	63	63	177	159	336	399
	Cedar Lake	Existing	0	0	0	0	0	23	76	99	99
		Revised 2020 Baseline	0	0	0	0	0	22	74	96	96
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	22	74	96	96
		Recommended Plan[d]	0	0	0	0	0	15	54	69	69
		Extreme Measures Condition[d]	0	0	0	0	0	15	54	69	69
	Chambers Creek	Existing	0	0	0	0	0	9	13	22	22
		Revised 2020 Baseline	0	0	0	0	0	9	13	22	22
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	9	13	22	22
		Recommended Plan[d]	0	0	0	0	0	9	11	20	20
		Extreme Measures Condition[d]	0	0	0	0	0	9	11	20	20
	East Branch Milwaukee River	Existing	0	0	0	0	0	27	61	88	88
		Revised 2020 Baseline	0	0	0	0	0	27	62	89	89
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	27	62	89	89
		Recommended Plan[d]	0	0	0	0	0	27	57	84	84
		Extreme Measures Condition[d]	0	0	0	0	0	27	57	84	84
	Kettle Moraine Lake	Existing	0	0	0	0	0	16	47	63	63
		Revised 2020 Baseline	0	0	0	0	0	16	47	63	63
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	16	47	63	63
		Recommended Plan[d]	0	0	0	0	0	16	35	51	51
		Extreme Measures Condition[d]	0	0	0	0	0	16	36	52	52
	Kewaskum Creek	Existing	0	0	0	0	0	20	21	41	41
		Revised 2020 Baseline	0	0	0	0	0	20	22	42	42
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	20	22	42	42
		Recommended Plan[d]	0	0	0	0	0	20	21	41	41
		Extreme Measures Condition[d]	0	0	0	0	0	20	21	41	41

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Copper (pounds) (continued)	Lake Fifteen Creek	Existing	0	0	0	0	0	14	30	44	44
		Revised 2020 Baseline	0	0	0	0	0	14	30	44	44
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	14	30	44	44
		Recommended Plan[d]	0	0	0	0	0	14	29	43	43
		Extreme Measures Condition[d]	0	0	0	0	0	14	29	43	43
	Lincoln Creek	Existing	0	1	2	0	3	380	1	381	384
		Revised 2020 Baseline	0	1	0	0	1	313	1	314	315
		Revised 2020 Baseline with Five-Year LOP	0	1	0	0	1	313	1	314	315
		Recommended Plan[d]	0	1	0	0	1	222	7	229	230
		Extreme Measures Condition[d]	0	1	0	0	1	222	7	229	230
	Lower Cedar Creek	Existing	0	0	0	97	97	146	83	229	326
		Revised 2020 Baseline	0	0	0	127	127	149	83	232	359
		Revised 2020 Baseline with Five-Year LOP	0	0	0	127	127	149	83	232	359
		Recommended Plan[d]	0	0	0	127	127	130	69	199	326
		Extreme Measures Condition[d]	0	0	0	127	127	130	70	200	327
	Lower Milwaukee River	Existing	0	2	50	0	52	684	101	785	837
		Revised 2020 Baseline	0	3	37	0	40	576	112	688	728
		Revised 2020 Baseline with Five-Year LOP	0	2	33	0	35	576	112	688	723
		Recommended Plan[d]	0	2	33	0	35	414	115	529	564
		Extreme Measures Condition[d]	0	2	33	0	35	414	116	530	565
	Middle Milwaukee River	Existing	0	0	0	307	307	192	119	311	618
		Revised 2020 Baseline	0	0	0	405	405	205	130	335	740
		Revised 2020 Baseline with Five-Year LOP	0	0	0	405	405	205	130	335	740
		Recommended Plan[d]	0	0	0	405	405	167	118	285	690
		Extreme Measures Condition[d]	0	0	0	405	405	167	119	286	691
	Mink Creek	Existing	0	0	0	0	0	19	30	49	49
		Revised 2020 Baseline	0	0	0	0	0	19	30	49	49
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	19	30	49	49
		Recommended Plan[d]	0	0	0	0	0	19	23	42	42
		Extreme Measures Condition[d]	0	0	0	0	0	19	24	43	43
	North Branch Milwaukee River	Existing	0	0	0	18	18	93	144	237	255
		Revised 2020 Baseline	0	0	0	18	18	92	145	237	255
		Revised 2020 Baseline with Five-Year LOP	0	0	0	18	18	92	145	237	255
		Recommended Plan[d]	0	0	0	18	18	90	136	226	244
		Extreme Measures Condition[d]	0	0	0	18	18	90	137	227	245

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Copper (pounds) (continued)	Silver Creek (Sheboygan County)	Existing	0	0	0	15	15	49	30	79	94
		Revised 2020 Baseline	0	0	0	18	18	55	30	85	103
		Revised 2020 Baseline with Five-Year LOP	0	0	0	18	18	55	30	85	103
		Recommended Plan[d]	0	0	0	18	18	46	32	78	96
		Extreme Measures Condition[d]	0	0	0	18	18	46	32	78	96
	Silver Creek (West Bend)	Existing	0	0	0	0	0	62	19	81	81
		Revised 2020 Baseline	0	0	0	0	0	68	21	89	89
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	68	21	89	89
		Recommended Plan[d]	0	0	0	0	0	62	20	82	82
		Extreme Measures Condition[d]	0	0	0	0	0	62	20	82	82
	Stony Creek	Existing	0	0	0	0	0	18	30	48	48
		Revised 2020 Baseline	0	0	0	0	0	18	30	48	48
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	18	30	48	48
		Recommended Plan[d]	0	0	0	0	0	18	27	45	45
		Extreme Measures Condition[d]	0	0	0	0	0	18	27	45	45
	Upper Lower Milwaukee River	Existing	0	0	0	113	113	181	96	277	390
		Revised 2020 Baseline	0	0	0	145	145	201	98	299	444
		Revised 2020 Baseline with Five-Year LOP	0	0	0	145	145	201	98	299	444
		Recommended Plan[d]	0	0	0	145	145	161	95	256	401
		Extreme Measures Condition[d]	0	0	0	145	145	161	95	256	401
	Upper Milwaukee River	Existing	0	0	0	38	38	80	99	179	217
		Revised 2020 Baseline	0	0	0	49	49	84	100	184	233
		Revised 2020 Baseline with Five-Year LOP	0	0	0	49	49	84	100	184	233
		Recommended Plan[d]	0	0	0	49	49	75	84	159	208
		Extreme Measures Condition[d]	0	0	0	49	49	75	87	162	211
	Watercress Creek	Existing	0	0	0	0	0	18	55	73	73
		Revised 2020 Baseline	0	0	0	0	0	18	55	73	73
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	18	55	73	73
		Recommended Plan[d]	0	0	0	0	0	15	41	56	56
		Extreme Measures Condition[d]	0	0	0	0	0	15	42	57	57
	West Branch Milwaukee River	Existing	0	0	0	0	0	77	99	176	176
		Revised 2020 Baseline	0	0	0	0	0	76	99	175	175
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	0	76	99	175	175
		Recommended Plan[d]	0	0	0	0	0	70	96	166	166
		Extreme Measures Condition[d]	0	0	0	0	0	70	97	167	167

Table M-3 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: CSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Copper (pounds) (continued)	Watershed Total	Existing	0	3	52	634	689	2,305	1,352	3,657	4,346
		Revised 2020 Baseline	0	4	37	825	866	2,186	1,382	3,568	4,434
		Revised 2020 Baseline with Five-Year LOP	0	3	33	825	861	2,186	1,382	3,568	4,429
		Recommended Plan[d]	0	3	33	825	861	1,774	1,234	3,008	3,869
		Extreme Measures Condition[d]	0	3	33	825	861	1,774	1,248	3,022	3,883

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*In certain limited cases, relatively minor anomalies in nonpoint source pollutant loads may occur among the five conditions for which model results are presented in this table. Those anomalies might indicate a relatively slight increase load under the recommended plan and/or "extreme measures" conditions, relative to revised 2020 baseline and/or revised 2020 baseline with five-year LOP conditions. In those cases, it may be assumed that no significant change in pollutant load occurs among those various conditions. Since it was not always possible to explicitly represent certain components of the recommended plan and "extreme measures" conditions in the LSPC water quality model, adjustments were made to model parameters that served as surrogates for the actual water pollution control measure being represented. In the sense that those modifications sometimes alter parameters established under the revised 2020 baseline and/or revised 2020 baseline with five-year LOP model versions, in limited cases, representation of a measure in the recommended plan or "extreme measures" models may have a side effect of introducing small, relatively small anomalies in the comparative results.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominately urban setting.*

[d]*Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table M-4

AVERAGE ANNUAL POLLUTANT LOADS FOR RECOMMENDED PLAN AND EXTREME MEASURES CONDITION: OAK CREEK WATERSHED

			Point Sources			Nonpoint Source[a,b]			
Water Quality Indicator	Subwatershed	Condition	Industrial Point Sources	SSOs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Phosphorus (pounds)	Lower Oak Creek	Existing	10	10	20	2,200	40	2,240	2,260
		Revised 2020 Baseline	10	10	20	1,830	20	1,850	1,870
		Revised 2020 Baseline with Five-Year LOP	10	10	20	1,830	20	1,850	1,870
		Recommended Plan[d]	10	10	20	1,730	20	1,750	1,770
		Extreme Measures Condition[d]	10	10	20	1,670	20	1,690	1,710
	Middle Oak Creek	Existing	0	0	0	1,310	980	2,290	2,290
		Revised 2020 Baseline	0	0	0	1,230	1,050	2,280	2,280
		Revised 2020 Baseline with Five-Year LOP	0	0	0	1,230	1,050	2,280	2,280
		Recommended Plan[d]	0	0	0	1,160	970	2,130	2,130
		Extreme Measures Condition[d]	0	0	0	1,130	930	2,060	2,060
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	980	410	1,390	1,390
		Revised 2020 Baseline	<10	0	<10	950	350	1,300	1,300
		Revised 2020 Baseline with Five-Year LOP	<10	0	<10	950	350	1,300	1,300
		Recommended Plan[d]	<10	0	<10	730	260	990	990
		Extreme Measures Condition[d]	<10	0	<10	720	250	970	970
	North Branch Oak Creek	Existing	0	0	0	2,650	510	3,160	3,160
		Revised 2020 Baseline	0	0	0	2,370	520	2,890	2,890
		Revised 2020 Baseline with Five-Year LOP	0	0	0	2,370	520	2,890	2,890
		Recommended Plan[d]	0	0	0	1,950	460	2,410	2,410
		Extreme Measures Condition[d]	0	0	0	1,900	440	2,340	2,340
	Upper Oak Creek	Existing	0	0	0	1,360	170	1,530	1,530
		Revised 2020 Baseline	0	0	0	1,270	120	1,390	1,390
		Revised 2020 Baseline with Five-Year LOP	0	0	0	1,270	120	1,390	1,390
		Recommended Plan[d]	0	0	0	1,190	110	1,300	1,300
		Extreme Measures Condition[d]	0	0	0	1,150	100	1,250	1,250
	Watershed Total	Existing	10	10	20	8,500	2,110	10,610	10,630
		Revised 2020 Baseline	10	10	20	7,650	2,060	9,710	9,730
		Revised 2020 Baseline with Five-Year LOP	10	10	20	7,650	2,060	9,710	9,730
		Recommended Plan[d]	10	10	20	6,760	1,820	8,580	8,600
		Extreme Measures Condition[d]	10	10	20	6,570	1,740	8,310	8,330
Total Suspended Solids (pounds)	Lower Oak Creek	Existing	1,930	500	2,430	974,250	23,560	997,810	1,000,240
		Revised 2020 Baseline	1,930	500	2,430	689,780	3,970	693,750	696,180
		Revised 2020 Baseline with Five-Year LOP	1,930	500	2,430	689,780	3,970	693,750	696,180
		Recommended Plan[d]	1,930	500	2,430	692,760	3,970	696,730	699,160
		Extreme Measures Condition[d]	1,930	500	2,430	692,750	3,970	696,720	699,150

Table M-4 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources			Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	Subtotal	Urban	Rural[c]	Subtotal	
Total Suspended Solids (pounds) (continued)	Middle Oak Creek	Existing	0	0	0	685,780	387,670	1,073,450	1,073,450
		Revised 2020 Baseline	0	0	0	528,200	102,730	630,930	630,930
		Revised 2020 Baseline with Five-Year LOP	0	0	0	528,200	102,730	630,930	630,930
		Recommended Plan[d]	0	0	0	545,020	102,060	647,080	647,080
		Extreme Measures Condition[d]	0	0	0	545,020	101,660	646,680	646,680
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	532,620	108,810	641,430	641,430
		Revised 2020 Baseline	<10	0	<10	438,880	29,820	468,700	468,700
		Revised 2020 Baseline with Five-Year LOP	<10	0	<10	438,880	29,820	468,700	468,700
		Recommended Plan[d]	<10	0	<10	364,090	23,660	387,750	387,750
		Extreme Measures Condition[d]	<10	0	<10	**364,090**	**23,570**	**387,660**	**387,660**
	North Branch Oak Creek	Existing	0	0	0	1,558,560	212,030	1,770,590	1,770,590
		Revised 2020 Baseline	0	0	0	1,169,670	50,010	1,219,680	1,219,680
		Revised 2020 Baseline with Five-Year LOP	0	0	0	1,169,670	50,010	1,219,680	1,219,680
		Recommended Plan[d]	0	0	0	1,012,020	47,270	1,059,290	1,059,290
		Extreme Measures Condition[d]	0	0	0	1,012,020	47,110	1,059,130	1,059,130
	Upper Oak Creek	Existing	0	0	0	663,060	156,240	819,300	819,300
		Revised 2020 Baseline	0	0	0	513,460	10,710	524,170	524,170
		Revised 2020 Baseline with Five-Year LOP	0	0	0	513,460	10,710	524,170	524,170
		Recommended Plan[d]	0	0	0	532,840	10,360	543,200	543,200
		Extreme Measures Condition[d]	0	0	0	532,840	10,320	543,160	543,160
	Watershed Total	Existing	1,930	500	2,430	4,414,270	888,310	5,302,580	5,305,010
		Revised 2020 Baseline	1,930	500	2,430	3,339,990	197,240	3,537,230	3,539,660
		Revised 2020 Baseline with Five-Year LOP	1,930	500	2,430	3,339,990	197,240	3,537,230	3,539,660
		Recommended Plan[d]	1,930	500	2,430	3,146,730	187,320	3,334,050	3,336,480
		Extreme Measures Condition[d]	1,930	500	2,430	3,146,720	186,630	3,333,350	3,335,780
Fecal Coliform Bacteria (trillions of cells)	Lower Oak Creek	Existing	0.00	9.55	9.55	612.67	0.33	613.00	622.55
		Revised 2020 Baseline	0.00	9.55	9.55	493.55	0.10	493.65	503.20
		Revised 2020 Baseline with Five-Year LOP	0.00	9.55	9.55	493.55	0.10	493.65	503.20
		Recommended Plan[d]	0.00	9.55	9.55	315.86	0.10	315.96	325.51
		Extreme Measures Condition[d]	0.00	9.55	9.55	160.17	0.10	160.27	169.82
	Middle Oak Creek	Existing	0.00	0.00	0.00	394.77	96.09	490.86	490.86
		Revised 2020 Baseline	0.00	0.00	0.00	357.33	100.90	458.23	458.23
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	357.33	100.90	458.23	458.23
		Recommended Plan[d]	0.00	0.00	0.00	227.44	66.76	294.20	294.20
		Extreme Measures Condition[d]	0.00	0.00	0.00	115.34	34.09	149.43	149.43

Table M-4 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Fecal Coliform Bacteria (trillions of cells) (continued)	Mitchell Field Drainage Ditch	Existing	0.00	0.00	0.00	505.12	36.28	541.40	541.40
		Revised 2020 Baseline	0.00	0.00	0.00	524.29	28.76	553.05	553.05
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	524.29	28.76	553.05	553.05
		Recommended Plan[d]	0.00	0.00	0.00	269.75	15.19	284.94	284.94
		Extreme Measures Condition[d]	0.00	0.00	0.00	136.89	8.03	144.92	144.92
	North Branch Oak Creek	Existing	0.00	0.00	0.00	735.48	39.60	775.08	775.08
		Revised 2020 Baseline	0.00	0.00	0.00	646.58	47.39	693.97	693.97
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	646.58	47.39	693.97	693.97
		Recommended Plan[d]	0.00	0.00	0.00	359.89	30.36	390.25	390.25
		Extreme Measures Condition[d]	0.00	0.00	0.00	182.62	15.55	198.17	198.17
	Upper Oak Creek	Existing	0.00	0.00	0.00	354.83	7.39	362.22	362.22
		Revised 2020 Baseline	0.00	0.00	0.00	310.06	6.17	316.23	316.23
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	310.06	6.17	316.23	316.23
		Recommended Plan[d]	0.00	0.00	0.00	201.08	4.16	205.24	205.24
		Extreme Measures Condition[d]	0.00	0.00	0.00	101.76	2.16	103.92	103.92
	Watershed Total	Existing	0.00	9.55	9.55	2,602.87	179.69	2,782.56	2,792.11
		Revised 2020 Baseline	0.00	9.55	9.55	2,331.81	183.32	2,515.13	2,524.68
		Revised 2020 Baseline with Five-Year LOP	0.00	9.55	9.55	2,331.81	183.32	2,515.13	2,524.68
		Recommended Plan[d]	0.00	9.55	9.55	1,374.02	116.57	1,490.59	1,500.14
		Extreme Measures Condition[d]	0.00	9.55	9.55	696.78	59.93	756.71	766.26
Total Nitrogen (pounds)	Lower Oak Creek	Existing	340	20	360	15,280	1,010	16,290	16,650
		Revised 2020 Baseline	340	20	360	13,320	380	13,700	14,060
		Revised 2020 Baseline with Five-Year LOP	340	20	360	13,320	380	13,700	14,060
		Recommended Plan[d]	340	20	360	13,350	380	13,730	14,090
		Extreme Measures Condition[d]	340	20	360	13,320	380	13,700	14,060
	Middle Oak Creek	Existing	0	0	0	9,240	13,810	23,050	23,050
		Revised 2020 Baseline	0	0	0	8,950	8,280	17,230	17,230
		Revised 2020 Baseline with Five-Year LOP	0	0	0	8,950	8,280	17,230	17,230
		Recommended Plan[d]	0	0	0	8,920	8,290	17,210	17,210
		Extreme Measures Condition[d]	0	0	0	8,910	8,270	17,180	17,180
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	9,360	7,580	16,940	16,940
		Revised 2020 Baseline	<10	0	<10	9,060	4,630	13,690	13,690
		Revised 2020 Baseline with Five-Year LOP	<10	0	<10	9,060	4,630	13,690	13,690
		Recommended Plan[d]	<10	0	<10	7,340	3,740	11,080	11,080
		Extreme Measures Condition[d]	<10	0	<10	7,340	3,730	11,070	11,070

Table M-4 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources			Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	Subtotal	Urban	Rural[c]	Subtotal	
Total Nitrogen (pounds) (continued)	North Branch Oak Creek	Existing	0	0	0	17,590	8,790	26,380	26,380
		Revised 2020 Baseline	0	0	0	16,500	4,490	20,990	20,990
		Revised 2020 Baseline with Five-Year LOP	0	0	0	16,500	4,490	20,990	20,990
		Recommended Plan[d]	0	0	0	14,290	4,280	18,570	18,570
		Extreme Measures Condition[d]	0	0	0	14,290	4,270	18,560	18,560
	Upper Oak Creek	Existing	0	0	0	9,180	4,910	14,090	14,090
		Revised 2020 Baseline	0	0	0	9,000	1,140	10,140	10,140
		Revised 2020 Baseline with Five-Year LOP	0	0	0	9,000	1,140	10,140	10,140
		Recommended Plan[d]	0	0	0	8,920	1,130	10,050	10,050
		Extreme Measures Condition[d]	0	0	0	8,880	1,130	10,010	10,010
	Watershed Total	Existing	340	20	360	60,650	36,100	96,750	97,110
		Revised 2020 Baseline	340	20	360	56,830	18,920	75,750	76,110
		Revised 2020 Baseline with Five-Year LOP	340	20	360	56,830	18,920	75,750	76,110
		Recommended Plan[d]	340	20	360	52,820	17,820	70,640	71,000
		Extreme Measures Condition[d]	340	20	360	52,740	17,780	70,520	70,880
Biochemical Oxygen Demand (pounds)	Lower Oak Creek	Existing	3,440	120	3,560	56,390	1,970	58,360	61,920
		Revised 2020 Baseline	3,440	120	3,560	45,430	1,210	46,640	50,200
		Revised 2020 Baseline with Five-Year LOP	3,440	120	3,560	45,430	1,210	46,640	50,200
		Recommended Plan[d]	3,440	120	3,560	45,210	1,210	46,420	49,980
		Extreme Measures Condition[d]	3,440	120	3,560	45,210	1,210	46,420	49,980
	Middle Oak Creek	Existing	0	0	0	37,820	26,670	64,490	64,490
		Revised 2020 Baseline	0	0	0	34,950	19,500	54,450	54,450
		Revised 2020 Baseline with Five-Year LOP	0	0	0	34,950	19,500	54,450	54,450
		Recommended Plan[d]	0	0	0	34,380	19,530	53,910	53,910
		Extreme Measures Condition[d]	0	0	0	34,380	19,510	53,890	53,890
	Mitchell Field Drainage Ditch	Existing	<10	0	<10	28,860	9,150	38,010	38,010
		Revised 2020 Baseline	<10	0	<10	30,710	5,480	36,190	36,190
		Revised 2020 Baseline with Five-Year LOP	<10	0	<10	30,710	5,480	36,190	36,190
		Recommended Plan[d]	<10	0	<10	24,310	4,580	28,890	28,890
		Extreme Measures Condition[d]	<10	0	<10	24,310	4,570	28,880	28,880
	North Branch Oak Creek	Existing	0	0	0	79,090	15,680	94,770	94,770
		Revised 2020 Baseline	0	0	0	71,670	9,450	81,120	81,120
		Revised 2020 Baseline with Five-Year LOP	0	0	0	71,670	9,450	81,120	81,120
		Recommended Plan[d]	0	0	0	60,760	9,020	69,780	69,780
		Extreme Measures Condition[d]	0	0	0	60,760	9,010	69,770	69,770

Table M-4 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources			Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	Subtotal	Urban	Rural[c]	Subtotal	
Biochemical Oxygen Demand (pounds) (continued)	Upper Oak Creek	Existing	0	0	0	35,580	7,690	43,270	43,270
		Revised 2020 Baseline	0	0	0	35,250	2,550	37,800	37,800
		Revised 2020 Baseline with Five-Year LOP	0	0	0	35,250	2,550	37,800	37,800
		Recommended Plan[d]	0	0	0	34,110	2,550	36,660	36,660
		Extreme Measures Condition[d]	0	0	0	34,110	2,540	36,650	36,650
	Watershed Total	Existing	3,440	120	3,560	237,740	61,160	298,900	302,460
		Revised 2020 Baseline	3,440	120	3,560	218,010	38,190	256,200	259,760
		Revised 2020 Baseline with Five-Year LOP	3,440	120	3,560	218,010	38,190	256,200	259,760
		Recommended Plan[d]	3,440	120	3,560	198,770	36,890	235,660	239,220
		Extreme Measures Condition[d]	3,440	120	3,560	198,770	36,840	235,610	239,170
Copper (pounds)	Lower Oak Creek	Existing	0	<1	<1	105	<1	105	105
		Revised 2020 Baseline	0	<1	<1	80	<1	80	80
		Revised 2020 Baseline with Five-Year LOP	0	<1	<1	80	<1	80	80
		Recommended Plan[d]	0	<1	<1	80	<1	80	80
		Extreme Measures Condition[d]	0	<1	<1	80	<1	80	80
	Middle Oak Creek	Existing	0	0	0	70	25	95	95
		Revised 2020 Baseline	0	0	0	60	24	84	84
		Revised 2020 Baseline with Five-Year LOP	0	0	0	60	24	84	84
		Recommended Plan[d]	0	0	0	60	24	84	84
		Extreme Measures Condition[d]	0	0	0	60	24	84	84
	Mitchell Field Drainage Ditch	Existing	0	0	0	56	11	67	67
		Revised 2020 Baseline	0	0	0	52	8	60	60
		Revised 2020 Baseline with Five-Year LOP	0	0	0	52	8	60	60
		Recommended Plan[d]	0	0	0	41	6	47	47
		Extreme Measures Condition[d]	0	0	0	41	6	47	47
	North Branch Oak Creek	Existing	0	0	0	148	13	161	161
		Revised 2020 Baseline	0	0	0	123	12	135	135
		Revised 2020 Baseline with Five-Year LOP	0	0	0	123	12	135	135
		Recommended Plan[d]	0	0	0	104	11	115	115
		Extreme Measures Condition[d]	0	0	0	104	11	115	115
	Upper Oak Creek	Existing	0	0	0	66	3	69	69
		Revised 2020 Baseline	0	0	0	59	2	61	61
		Revised 2020 Baseline with Five-Year LOP	0	0	0	59	2	61	61
		Recommended Plan[d]	0	0	0	58	2	60	60
		Extreme Measures Condition[d]	0	0	0	58	2	60	60

Table M-4 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Copper (pounds) (continued)	Watershed Total	Existing	0	<1	<1	445	52	497	497
		Revised 2020 Baseline	0	<1	<1	374	46	420	420
		Revised 2020 Baseline with Five-Year LOP	0	<1	<1	374	46	420	420
		Recommended Plan[d]	0	<1	<1	343	43	386	386
		Extreme Measures Condition[d]	0	<1	<1	343	43	386	386

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*In certain limited cases, relatively minor anomalies in nonpoint source pollutant loads may occur among the five conditions for which model results are presented in this table. Those anomalies might indicate a relatively slight increase load under the recommended plan and/or "extreme measures" conditions, relative to revised 2020 baseline and/or revised 2020 baseline with five-year LOP conditions. In those cases, it may be assumed that no significant change in pollutant load occurs among those various conditions. Since it was not always possible to explicitly represent certain components of the recommended plan and "extreme measures" conditions in the LSPC water quality model, adjustments were made to model parameters that served as surrogates for the actual water pollution control measure being represented. In the sense that those modifications sometimes alter parameters established under the revised 2020 baseline and/or revised 2020 baseline with five-year LOP model versions, in limited cases, representation of a measure in the recommended plan or "extreme measures" models may have a side effect of introducing small, relatively small anomalies in the comparative results.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominately urban setting.*

[d]*Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table M-5

AVERAGE ANNUAL POLLUTANT LOADS FOR RECOMMENDED PLAN AND EXTREME MEASURES CONDITION: ROOT RIVER WATERSHED

			Point Sources				Nonpoint Source[a,b]			
Water Quality Indicator	Subwatershed	Condition	Industrial Point Sources	SSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Phosphorus (pounds)	Lower Root River	Existing	130	10	0	140	8,750	14,670	23,420	23,560
		Revised 2020 Baseline	130	10	0	140	7,660	11,760	19,420	19,560
		Revised 2020 Baseline with Five-Year LOP	130	10	0	140	7,660	11,760	19,420	19,560
		Recommended Plan[d]	130	10	0	140	7,070	9,930	17,000	17,140
		Extreme Measures Condition[d]	130	10	0	140	6,660	8,900	15,560	15,700
	Middle Root River	Existing	0	0	0	0	3,780	5,130	8,910	8,910
		Revised 2020 Baseline	0	0	0	0	3,530	4,520	8,050	8,050
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	3,530	4,520	8,050	8,050
		Recommended Plan[d]	0	0	0	0	3,320	3,880	7,200	7,200
		Extreme Measures Condition[d]	0	0	0	0	3,200	3,410	6,610	6,610
	Upper Root River	Existing	0	<10	0	<10	6,000	170	6,170	6,170
		Revised 2020 Baseline	0	20	0	20	4,450	120	4,570	4,590
		Revised 2020 Baseline with Five-Year LOP	0	20	0	20	4,450	120	4,570	4,590
		Recommended Plan[d]	0	20	0	20	4,260	120	4,380	4,400
		Extreme Measures Condition[d]	0	20	0	20	4,150	120	4,270	4,290
	Hoods Creek	Existing	0	0	940	940	1,020	5,610	6,630	7,570
		Revised 2020 Baseline	0	0	1,350	1,350	990	4,420	5,410	6,760
		Revised 2020 Baseline with Five-Year LOP	0	0	1,350	1,350	990	4,420	5,410	6,760
		Recommended Plan[d]	0	0	1,350	1,350	950	3,910	4,860	6,210
		Extreme Measures Condition[d]	0	0	1,350	1,350	930	3,700	4,630	5,980
	Root River Canal	Existing	0	0	0	0	180	4,720	4,900	4,900
		Revised 2020 Baseline	0	0	0	0	170	4,260	4,430	4,430
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	170	4,260	4,430	4,430
		Recommended Plan[d]	0	0	0	0	170	3,400	3,570	3,570
		Extreme Measures Condition[d]	0	0	0	0	160	3,130	3,290	3,290
	East Branch Root River Canal	Existing	0	0	220	220	430	6,880	7,310	7,530
		Revised 2020 Baseline	0	0	220	220	500	6,010	6,510	6,730
		Revised 2020 Baseline with Five-Year LOP	0	0	220	220	500	6,010	6,510	6,730
		Recommended Plan[d]	0	0	220	220	480	4,710	5,190	5,410
		Extreme Measures Condition[d]	0	0	220	220	460	4,340	4,800	5,020

Table M-5 (continued)

			Point Sources				Nonpoint Source[a,b]			
Water Quality Indicator	Subwatershed	Condition	Industrial Point Sources	SSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Phosphorus (pounds) (continued)	West Branch Root River Canal	Existing	<10	0	1,990	1,990	1,040	15,890	16,930	18,920
		Revised 2020 Baseline	<10	0	2,620	2,620	1,050	13,940	14,990	17,610
		Revised 2020 Baseline with Five-Year LOP	<10	0	2,620	2,620	1,050	13,940	14,990	17,610
		Recommended Plan[d]	<10	0	2,620	2,620	970	10,950	11,920	14,540
		Extreme Measures Condition[d]	<10	0	2,620	2,620	900	10,140	11,040	13,660
	East Branch Root River	Existing	0	0	0	0	1,660	180	1,840	1,840
		Revised 2020 Baseline	0	0	0	0	1,460	50	1,510	1,510
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	1,460	50	1,510	1,510
		Recommended Plan[d]	0	0	0	0	1,380	50	1,430	1,430
		Extreme Measures Condition[d]	0	0	0	0	1,340	50	1,390	1,390
	Whitnall Park Creek	Existing	0	<10	0	<10	3,650	1,010	4,660	4,660
		Revised 2020 Baseline	0	<10	0	<10	2,940	740	3,680	3,680
		Revised 2020 Baseline with Five-Year LOP	0	<10	0	<10	2,940	740	3,680	3,680
		Recommended Plan[d]	0	<10	0	<10	2,790	690	3,480	3,480
		Extreme Measures Condition[d]	0	<10	0	<10	2,710	670	3,380	3,380
	Watershed Total	Existing	130	10	3,150	3,290	26,510	54,260	80,770	84,060
		Revised 2020 Baseline	130	30	4,190	4,350	22,750	45,820	68,570	72,920
		Revised 2020 Baseline with Five-Year LOP	130	30	4,190	4,350	22,750	45,820	68,570	72,920
		Recommended Plan[d]	130	30	4,190	4,350	21,390	37,640	59,030	63,380
		Extreme Measures Condition[d]	130	30	4,190	4,350	20,510	34,460	54,970	59,320
Total Suspended Solids (pounds)	Lower Root River	Existing	480	710	0	1,190	2,781,990	18,169,680	20,951,670	20,952,860
		Revised 2020 Baseline	480	710	0	1,190	2,052,910	11,915,640	13,968,550	13,969,740
		Revised 2020 Baseline with Five-Year LOP	480	710	0	1,190	2,052,910	11,915,640	13,968,550	13,969,740
		Recommended Plan[d]	480	710	0	1,190	2,104,660	9,405,010	11,509,670	11,510,860
		Extreme Measures Condition[d]	480	710	0	1,190	2,104,660	8,431,590	10,536,250	10,537,440
	Middle Root River	Existing	0	0	0	0	1,290,740	5,439,900	6,730,640	6,730,640
		Revised 2020 Baseline	0	0	0	0	1,037,170	2,221,250	3,258,420	3,258,420
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	1,037,170	2,221,250	3,258,420	3,258,420
		Recommended Plan[d]	0	0	0	0	1,077,250	1,783,570	2,860,820	2,860,820
		Extreme Measures Condition[d]	0	0	0	0	1,077,250	1,615,200	2,692,450	2,692,450

Table M-5 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Total Suspended Solids (pounds) (continued)	Upper Root River	Existing	0	80	0	80	1,918,200	18,970	1,937,170	1,937,250
		Revised 2020 Baseline	0	890	0	890	1,299,350	8,060	1,307,410	1,308,300
		Revised 2020 Baseline with Five-Year LOP	0	890	0	890	1,299,350	8,060	1,307,410	1,308,300
		Recommended Plan[d]	0	890	0	890	1,305,180	8,060	1,313,240	1,314,130
		Extreme Measures Condition[d]	0	890	0	890	1,305,180	8,060	1,313,240	1,314,130
	Hoods Creek	Existing	0	0	1,060	1,060	536,060	7,409,050	7,945,110	7,946,170
		Revised 2020 Baseline	0	0	1,520	1,520	395,060	4,980,580	5,375,640	5,377,160
		Revised 2020 Baseline with Five-Year LOP	0	0	1,520	1,520	395,060	4,980,580	5,375,640	5,377,160
		Recommended Plan[d]	0	0	1,520	1,520	411,000	4,078,040	4,489,040	4,490,560
		Extreme Measures Condition[d]	0	0	1,520	1,520	411,000	3,648,260	4,059,260	4,060,780
	Root River Canal	Existing	0	0	0	0	114,030	7,048,210	7,162,240	7,162,240
		Revised 2020 Baseline	0	0	0	0	105,770	6,051,940	6,157,710	6,157,710
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	105,770	6,051,940	6,157,710	6,157,710
		Recommended Plan[d]	0	0	0	0	106,150	4,431,700	4,537,850	4,537,850
		Extreme Measures Condition[d]	0	0	0	0	106,150	3,960,810	4,066,960	4,066,960
	East Branch Root River Canal	Existing	0	0	450	450	271,250	10,618,210	10,889,460	10,889,910
		Revised 2020 Baseline	0	0	450	450	296,030	9,004,670	9,300,700	9,301,150
		Revised 2020 Baseline with Five-Year LOP	0	0	450	450	296,030	9,004,670	9,300,700	9,301,150
		Recommended Plan[d]	0	0	450	450	301,200	6,583,660	6,884,860	6,885,310
		Extreme Measures Condition[d]	0	0	450	450	301,200	5,879,240	6,180,440	6,180,890
	West Branch Root River Canal	Existing	0	0	8,890	8,890	468,430	25,202,610	25,671,040	25,679,930
		Revised 2020 Baseline	0	0	11,730	11,730	415,390	21,557,740	21,973,130	21,984,860
		Revised 2020 Baseline with Five-Year LOP	0	0	11,730	11,730	415,390	21,557,740	21,973,130	21,984,860
		Recommended Plan[d]	0	0	11,730	11,730	419,490	15,758,740	16,178,230	16,189,960
		Extreme Measures Condition[d]	0	0	11,730	11,730	419,490	14,072,260	14,491,750	14,503,480
	East Branch Root River	Existing	0	0	0	0	494,130	229,360	723,490	723,490
		Revised 2020 Baseline	0	0	0	0	371,160	4,170	375,330	375,330
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	371,160	4,170	375,330	375,330
		Recommended Plan[d]	0	0	0	0	378,760	4,170	382,930	382,930
		Extreme Measures Condition[d]	0	0	0	0	378,760	4,170	382,930	382,930

Table M-5 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Total Suspended Solids (pounds) (continued)	Whitnall Park Creek	Existing	0	240	0	240	1,112,640	636,060	1,748,700	1,748,940
		Revised 2020 Baseline	0	240	0	240	781,980	66,120	848,100	848,340
		Revised 2020 Baseline with Five-Year LOP	0	240	0	240	781,980	66,120	848,100	848,340
		Recommended Plan[d]	0	240	0	240	795,850	66,280	862,130	862,370
		Extreme Measures Condition[d]	0	240	0	240	795,850	66,280	862,130	862,370
	Watershed Total	Existing	480	1,030	10,400	11,910	8,987,470	74,772,050	83,759,520	83,771,430
		Revised 2020 Baseline	480	1,840	13,700	16,020	6,754,820	55,810,170	62,564,990	62,581,010
		Revised 2020 Baseline with Five-Year LOP	480	1,840	13,700	16,020	6,754,820	55,810,170	62,564,990	62,581,010
		Recommended Plan[d]	480	1,840	13,700	16,020	6,899,540	42,119,230	49,018,770	49,034,790
		Extreme Measures Condition[d]	480	1,840	13,700	16,020	6,899,540	37,685,870	44,585,410	44,601,430
Fecal Coliform Bacteria (trillions of cells)	Lower Root River	Existing	0.00	13.58	0.00	13.58	2,641.12	853.13	3,494.25	3,507.83
		Revised 2020 Baseline	0.00	13.58	0.00	13.58	2,133.73	737.65	2,871.38	2,884.96
		Revised 2020 Baseline with Five-Year LOP	0.00	13.58	0.00	13.58	2,133.73	737.65	2,871.38	2,884.96
		Recommended Plan[d]	0.00	13.58	0.00	13.58	1,580.26	586.33	2,166.59	2,180.17
		Extreme Measures Condition[d]	0.00	13.58	0.00	13.58	1,105.71	513.77	1,619.48	1,633.06
	Middle Root River	Existing	0.00	0.00	0.00	0.00	1,323.10	317.14	1,640.24	1,640.24
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	1,223.78	340.37	1,564.15	1,564.15
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	1,223.78	340.37	1,564.15	1,564.15
		Recommended Plan[d]	0.00	0.00	0.00	0.00	849.20	279.53	1,128.73	1,128.73
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	531.95	232.15	764.10	764.10
	Upper Root River	Existing	0.00	1.55	0.00	1.55	2,202.96	0.75	2,203.71	2,205.26
		Revised 2020 Baseline	0.00	16.89	0.00	16.89	1,657.14	0.28	1,657.42	1,674.31
		Revised 2020 Baseline with Five-Year LOP	0.00	16.89	0.00	16.89	1,657.14	0.28	1,657.42	1,674.31
		Recommended Plan[d]	0.00	16.89	0.00	16.89	1,032.09	0.28	1,032.37	1,049.26
		Extreme Measures Condition[d]	0.00	16.89	0.00	16.89	523.69	0.28	523.97	540.86
	Hoods Creek	Existing	0.00	0.00	0.30	0.30	418.83	276.59	695.42	695.72
		Revised 2020 Baseline	0.00	0.00	0.43	0.43	361.82	243.26	605.08	605.51
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.43	0.43	361.82	243.26	605.08	605.51
		Recommended Plan[d]	0.00	0.00	0.43	0.43	231.09	141.43	372.52	372.95
		Extreme Measures Condition[d]	0.00	0.00	0.43	0.43	117.62	73.39	191.01	191.44

Table M-5 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Fecal Coliform Bacteria (trillions of cells) (continued)	Root River Canal	Existing	0.00	0.00	0.00	0.00	96.48	180.79	277.27	277.27
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	91.35	181.30	272.65	272.65
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	91.35	181.30	272.65	272.65
		Recommended Plan[d]	0.00	0.00	0.00	0.00	88.87	134.61	223.48	223.48
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	85.15	125.78	210.93	210.93
	East Branch Root River Canal	Existing	0.00	0.00	0.14	0.14	215.12	251.23	466.35	466.49
		Revised 2020 Baseline	0.00	0.00	0.14	0.14	228.91	237.03	465.94	466.08
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.14	0.14	228.91	237.03	465.94	466.08
		Recommended Plan[d]	0.00	0.00	0.14	0.14	217.11	166.12	383.23	383.37
		Extreme Measures Condition[d]	0.00	0.00	0.14	0.14	208.03	155.31	363.34	363.48
	West Branch Root River Canal	Existing	0.00	0.00	2.85	2.85	451.94	560.80	1,012.74	1,015.59
		Revised 2020 Baseline	0.00	0.00	3.76	3.76	423.71	529.13	952.84	956.60
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	3.76	3.76	423.71	529.13	952.84	956.60
		Recommended Plan[d]	0.00	0.00	3.76	3.76	404.16	370.69	774.85	778.61
		Extreme Measures Condition[d]	0.00	0.00	3.76	3.76	384.72	347.08	731.80	735.56
	East Branch Root River	Existing	0.00	0.00	0.00	0.00	554.63	2.49	557.12	557.12
		Revised 2020 Baseline	0.00	0.00	0.00	0.00	478.13	0.13	478.26	478.26
		Revised 2020 Baseline with Five-Year LOP	0.00	0.00	0.00	0.00	478.13	0.13	478.26	478.26
		Recommended Plan[d]	0.00	0.00	0.00	0.00	307.63	0.13	307.76	307.76
		Extreme Measures Condition[d]	0.00	0.00	0.00	0.00	155.85	0.13	155.98	155.98
	Whitnall Park Creek	Existing	0.00	4.52	0.00	4.52	1,309.52	100.59	1,410.11	1,414.63
		Revised 2020 Baseline	0.00	4.52	0.00	4.52	1,043.97	93.23	1,137.20	1,141.72
		Revised 2020 Baseline with Five-Year LOP	0.00	4.52	0.00	4.52	1,043.97	93.23	1,137.20	1,141.72
		Recommended Plan[d]	0.00	4.52	0.00	4.52	653.06	58.95	712.01	716.53
		Extreme Measures Condition[d]	0.00	4.52	0.00	4.52	331.34	30.11	361.45	365.97
	Watershed Total	Existing	0.00	19.65	3.29	22.94	9,213.70	2,543.51	11,757.21	11,780.15
		Revised 2020 Baseline	0.00	34.99	4.33	39.32	7,642.54	2,362.38	10,004.92	10,044.24
		Revised 2020 Baseline with Five-Year LOP	0.00	34.99	4.33	39.32	7,642.54	2,362.38	10,004.92	10,044.24
		Recommended Plan[d]	0.00	34.99	4.33	39.32	5,363.47	1,738.07	7,101.54	7,140.86
		Extreme Measures Condition[d]	0.00	34.99	4.33	39.32	3,444.06	1,478.00	4,922.06	4,961.38

Table M-5 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Total Nitrogen (pounds)	Lower Root River	Existing	540	30	0	570	48,810	232,290	281,100	281,670
		Revised 2020 Baseline	540	30	0	570	44,430	170,830	215,260	215,830
		Revised 2020 Baseline with Five-Year LOP	540	30	0	570	44,430	170,830	215,260	215,830
		Recommended Plan[d]	540	30	0	570	43,420	140,330	183,750	184,320
		Extreme Measures Condition[d]	540	30	0	570	42,100	126,720	168,820	169,390
	Middle Root River	Existing	0	0	0	0	24,170	76,660	100,830	100,830
		Revised 2020 Baseline	0	0	0	0	23,730	44,100	67,830	67,830
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	23,730	44,100	67,830	67,830
		Recommended Plan[d]	0	0	0	0	23,400	37,950	61,350	61,350
		Extreme Measures Condition[d]	0	0	0	0	23,090	34,300	57,390	57,390
	Upper Root River	Existing	0	<10	0	<10	38,610	1,220	39,830	39,830
		Revised 2020 Baseline	0	30	0	30	29,920	780	30,700	30,730
		Revised 2020 Baseline with Five-Year LOP	0	30	0	30	29,920	780	30,700	30,730
		Recommended Plan[d]	0	30	0	30	29,960	780	30,740	30,770
		Extreme Measures Condition[d]	0	30	0	30	29,890	780	30,670	30,700
	Hoods Creek	Existing	0	0	3,980	3,980	6,060	97,320	103,380	107,360
		Revised 2020 Baseline	0	0	5,690	5,690	5,940	72,550	78,490	84,180
		Revised 2020 Baseline with Five-Year LOP	0	0	5,690	5,690	5,940	72,550	78,490	84,180
		Recommended Plan[d]	0	0	5,690	5,690	5,860	61,870	67,730	73,420
		Extreme Measures Condition[d]	0	0	5,690	5,690	5,850	57,090	62,940	68,630
	Root River Canal	Existing	0	0	0	0	1,180	89,940	91,120	91,120
		Revised 2020 Baseline	0	0	0	0	1,150	80,550	81,700	81,700
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	1,150	80,550	81,700	81,700
		Recommended Plan[d]	0	0	0	0	1,120	60,990	62,110	62,110
		Extreme Measures Condition[d]	0	0	0	0	1,070	55,350	56,420	56,420
	East Branch Root River Canal	Existing	0	0	1,820	1,820	2,600	132,080	134,680	136,500
		Revised 2020 Baseline	0	0	1,820	1,820	2,960	116,320	119,280	121,100
		Revised 2020 Baseline with Five-Year LOP	0	0	1,820	1,820	2,960	116,320	119,280	121,100
		Recommended Plan[d]	0	0	1,820	1,820	2,880	87,290	90,170	91,990
		Extreme Measures Condition[d]	0	0	1,820	1,820	2,760	79,040	81,800	83,620

Table M-5 (continued)

			Point Sources				Nonpoint Source[a,b]			
Water Quality Indicator	Subwatershed	Condition	Industrial Point Sources	SSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	Total
Total Nitrogen (pounds) (continued)	West Branch Root River Canal	Existing	<10	0	20,720	20,720	6,720	305,720	312,440	333,160
		Revised 2020 Baseline	<10	0	27,340	27,340	6,800	271,210	278,010	305,350
		Revised 2020 Baseline with Five-Year LOP	<10	0	27,340	27,340	6,800	271,210	278,010	305,350
		Recommended Plan[d]	<10	0	27,340	27,340	6,530	203,490	210,020	237,360
		Extreme Measures Condition[d]	<10	0	27,340	27,340	6,120	184,420	190,540	217,880
	East Branch Root River	Existing	0	0	0	0	10,570	4,030	14,600	14,600
		Revised 2020 Baseline	0	0	0	0	9,840	410	10,250	10,250
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	9,840	410	10,250	10,250
		Recommended Plan[d]	0	0	0	0	9,800	410	10,210	10,210
		Extreme Measures Condition[d]	0	0	0	0	9,770	410	10,180	10,180
	Whitnall Park Creek	Existing	0	10	0	10	23,440	14,650	38,090	38,100
		Revised 2020 Baseline	0	10	0	10	19,710	5,150	24,860	24,870
		Revised 2020 Baseline with Five-Year LOP	0	10	0	10	19,710	5,150	24,860	24,870
		Recommended Plan[d]	0	10	0	10	19,690	5,170	24,860	24,870
		Extreme Measures Condition[d]	0	10	0	10	19,640	5,160	24,800	24,810
	Watershed Total	Existing	540	40	26,520	27,100	162,160	953,910	1,116,070	1,143,170
		Revised 2020 Baseline	540	70	34,850	35,460	144,480	761,900	906,380	941,840
		Revised 2020 Baseline with Five-Year LOP	540	70	34,850	35,460	144,480	761,900	906,380	941,840
		Recommended Plan[d]	540	70	34,850	35,460	142,660	598,280	740,940	776,400
		Extreme Measures Condition[d]	540	70	34,850	35,460	140,290	543,270	683,560	719,020
Biochemical Oxygen Demand (pounds)	Lower Root River	Existing	820	180	0	1,000	215,660	577,910	793,570	794,570
		Revised 2020 Baseline	820	180	0	1,000	192,700	526,280	718,980	719,980
		Revised 2020 Baseline with Five-Year LOP	820	180	0	1,000	192,700	526,280	718,980	719,980
		Recommended Plan[d]	820	180	0	1,000	197,450	492,610	690,060	691,060
		Extreme Measures Condition[d]	820	180	0	1,000	197,450	457,580	655,030	656,030
	Middle Root River	Existing	0	0	0	0	105,600	186,700	292,300	292,300
		Revised 2020 Baseline	0	0	0	0	105,760	126,990	232,750	232,750
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	105,760	126,990	232,750	232,750
		Recommended Plan[d]	0	0	0	0	106,860	121,580	228,440	228,440
		Extreme Measures Condition[d]	0	0	0	0	106,860	115,510	222,370	222,370

Table M-5 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources: Industrial Point Sources	Point Sources: SSOs	Point Sources: WWTPs	Point Sources: Subtotal	Nonpoint Source[a,b]: Urban	Nonpoint Source[a,b]: Rural[c]	Nonpoint Source[a,b]: Subtotal	Total
Biochemical Oxygen Demand (pounds) (continued)	Upper Root River	Existing	0	20	0	20	169,850	6,380	176,230	176,250
		Revised 2020 Baseline	0	220	0	220	126,190	4,610	130,800	131,020
		Revised 2020 Baseline with Five-Year LOP	0	220	0	220	126,190	4,610	130,800	131,020
		Recommended Plan[d]	0	220	0	220	130,170	4,610	134,780	135,000
		Extreme Measures Condition[d]	0	220	0	220	130,170	4,610	134,780	135,000
	Hoods Creek	Existing	0	0	990	990	37,740	214,960	252,700	253,690
		Revised 2020 Baseline	0	0	1,410	1,410	35,610	198,010	233,620	235,030
		Revised 2020 Baseline with Five-Year LOP	0	0	1,410	1,410	35,610	198,010	233,620	235,030
		Recommended Plan[d]	0	0	1,410	1,410	36,500	184,730	221,230	222,640
		Extreme Measures Condition[d]	0	0	1,410	1,410	36,500	171,140	207,640	209,050
	Root River Canal	Existing	0	0	0	0	8,330	230,680	239,010	239,010
		Revised 2020 Baseline	0	0	0	0	8,000	246,990	254,990	254,990
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	8,000	246,990	254,990	254,990
		Recommended Plan[d]	0	0	0	0	8,100	228,500	236,600	236,600
		Extreme Measures Condition[d]	0	0	0	0	8,100	210,030	218,130	218,130
	East Branch Root River Canal	Existing	0	0	750	750	19,720	383,470	403,190	403,940
		Revised 2020 Baseline	0	0	750	750	23,540	407,750	431,290	432,040
		Revised 2020 Baseline with Five-Year LOP	0	0	750	750	23,540	407,750	431,290	432,040
		Recommended Plan[d]	0	0	750	750	23,780	374,910	398,690	399,440
		Extreme Measures Condition[d]	0	0	750	750	23,780	342,070	365,850	366,600
	West Branch Root River Canal	Existing	10	0	11,280	11,290	36,630	870,200	906,830	918,120
		Revised 2020 Baseline	10	0	14,890	14,900	35,170	931,950	967,120	982,020
		Revised 2020 Baseline with Five-Year LOP	10	0	14,890	14,900	35,170	931,950	967,120	982,020
		Recommended Plan[d]	10	0	14,890	14,900	35,870	857,720	893,590	908,490
		Extreme Measures Condition[d]	10	0	14,890	14,900	35,870	783,350	819,220	834,120
	East Branch Root River	Existing	0	0	0	0	42,060	8,260	50,320	50,320
		Revised 2020 Baseline	0	0	0	0	36,720	2,030	38,750	38,750
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	36,720	2,030	38,750	38,750
		Recommended Plan[d]	0	0	0	0	37,430	2,030	39,460	39,460
		Extreme Measures Condition[d]	0	0	0	0	37,430	2,030	39,460	39,460

Table M-5 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Biochemical Oxygen Demand (pounds) (continued)	Whitnall Park Creek	Existing	0	60	0	60	99,220	31,140	130,360	130,420
		Revised 2020 Baseline	0	60	0	60	80,110	14,620	94,730	94,790
		Revised 2020 Baseline with Five-Year LOP	0	60	0	60	80,110	14,620	94,730	94,790
		Recommended Plan[d]	0	60	0	60	81,860	14,790	96,650	96,710
		Extreme Measures Condition[d]	0	60	0	60	81,860	14,790	96,650	96,710
	Watershed Total	Existing	830	260	13,020	14,110	734,810	2,509,700	3,244,510	3,258,620
		Revised 2020 Baseline	830	460	17,050	18,340	643,800	2,459,230	3,103,030	3,121,370
		Revised 2020 Baseline with Five-Year LOP	830	460	17,050	18,340	643,800	2,459,230	3,103,030	3,121,370
		Recommended Plan[d]	830	460	17,050	18,340	658,020	2,281,480	2,939,500	2,957,840
		Extreme Measures Condition[d]	830	460	17,050	18,340	658,020	2,101,110	2,759,130	2,777,470
Copper (pounds)	Lower Root River	Existing	3	<1	0	3	404	171	575	578
		Revised 2020 Baseline	3	<1	0	3	333	146	479	482
		Revised 2020 Baseline with Five-Year LOP	3	<1	0	3	333	146	479	482
		Recommended Plan[d]	3	<1	0	3	328	147	475	478
		Extreme Measures Condition[d]	3	<1	0	3	328	146	474	477
	Middle Root River	Existing	0	0	0	0	194	70	264	264
		Revised 2020 Baseline	0	0	0	0	177	73	250	250
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	177	73	250	250
		Recommended Plan[d]	0	0	0	0	173	74	247	247
		Extreme Measures Condition[d]	0	0	0	0	173	74	247	247
	Upper Root River	Existing	0	<1	0	<1	305	2	307	307
		Revised 2020 Baseline	0	<1	0	<1	217	1	218	218
		Revised 2020 Baseline with Five-Year LOP	0	<1	0	<1	217	1	218	218
		Recommended Plan[d]	0	<1	0	<1	217	1	218	218
		Extreme Measures Condition[d]	0	<1	0	<1	217	1	218	218
	Hoods Creek	Existing	0	0	4	4	69	64	133	137
		Revised 2020 Baseline	0	0	5	5	59	54	113	118
		Revised 2020 Baseline with Five-Year LOP	0	0	5	5	59	54	113	118
		Recommended Plan[d]	0	0	5	5	58	54	112	117
		Extreme Measures Condition[d]	0	0	5	5	58	53	111	116

Table M-5 (continued)

Water Quality Indicator	Subwatershed	Condition	Point Sources				Nonpoint Source[a,b]			Total
			Industrial Point Sources	SSOs	WWTPs	Subtotal	Urban	Rural[c]	Subtotal	
Copper (pounds) (continued)	Root River Canal	Existing	0	0	0	0	15	42	57	57
		Revised 2020 Baseline	0	0	0	0	14	41	55	55
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	14	41	55	55
		Recommended Plan[d]	0	0	0	0	14	40	54	54
		Extreme Measures Condition[d]	0	0	0	0	14	40	54	54
	East Branch Root River Canal	Existing	0	0	1	1	36	55	91	92
		Revised 2020 Baseline	0	0	1	1	42	51	93	94
		Revised 2020 Baseline with Five-Year LOP	0	0	1	1	42	51	93	94
		Recommended Plan[d]	0	0	1	1	42	51	93	94
		Extreme Measures Condition[d]	0	0	1	1	42	51	93	94
	West Branch Root River Canal	Existing	0	0	35	35	67	122	189	224
		Revised 2020 Baseline	0	0	47	47	63	112	175	222
		Revised 2020 Baseline with Five-Year LOP	0	0	47	47	63	112	175	222
		Recommended Plan[d]	0	0	47	47	62	112	174	221
		Extreme Measures Condition[d]	0	0	47	47	62	112	174	221
	East Branch Root River	Existing	0	0	0	0	77	2	79	79
		Revised 2020 Baseline	0	0	0	0	63	1	64	64
		Revised 2020 Baseline with Five-Year LOP	0	0	0	0	63	1	64	64
		Recommended Plan[d]	0	0	0	0	62	1	63	63
		Extreme Measures Condition[d]	0	0	0	0	62	1	63	63
	Whitnall Park Creek	Existing	0	<1	0	<1	181	20	201	201
		Revised 2020 Baseline	0	<1	0	<1	138	16	154	154
		Revised 2020 Baseline with Five-Year LOP	0	<1	0	<1	138	16	154	154
		Recommended Plan[d]	0	<1	0	<1	137	16	153	153
		Extreme Measures Condition[d]	0	<1	0	<1	137	16	153	153
	Watershed Total	Existing	3	<1	40	43	1,348	548	1,896	1,939
		Revised 2020 Baseline	3	<1	53	56	1,106	495	1,601	1,657
		Revised 2020 Baseline with Five-Year LOP	3	<1	53	56	1,106	495	1,601	1,657
		Recommended Plan[d]	3	<1	53	56	1,093	496	1,589	1,645
		Extreme Measures Condition[d]	3	<1	53	56	1,093	494	1,587	1,643

Table M-5 Footnotes

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*In certain limited cases, relatively minor anomalies in nonpoint source pollutant loads may occur among the five conditions for which model results are presented in this table. Those anomalies might indicate a relatively slight increase load under the recommended plan and/or "extreme measures" conditions, relative to revised 2020 baseline and/or revised 2020 baseline with five-year LOP conditions. In those cases, it may be assumed that no significant change in pollutant load occurs among those various conditions. Since it was not always possible to explicitly represent certain components of the recommended plan and "extreme measures" conditions in the LSPC water quality model, adjustments were made to model parameters that served as surrogates for the actual water pollution control measure being represented. In the sense that those modifications sometimes alter parameters established under the revised 2020 baseline and/or revised 2020 baseline with five-year LOP model versions, in limited cases, representation of a measure in the recommended plan or "extreme measures" models may have a side effect of introducing small, relatively small anomalies in the comparative results.*

[c]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominately urban setting.*

[d]*Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

Source: Brown and Caldwell; Tetra Tech, Inc.; and SEWRPC.

Table M-6

AVERAGE ANNUAL POLLUTANT LOADS FOR RECOMMENDED PLAN AND EXTREME MEASURES CONDITION: LAKE MICHIGAN DIRECT DRAINAGE AREA

			Point Sources				Nonpoint Source[a]			
Water Quality Indicator	Location	Condition	SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[b]	Subtotal	Total
Total Phosphorus (pounds)	Ozaukee County	Existing	10	0	0	10	2,370	630	3,000	3,010
		Revised 2020 Baseline	10	0	0	10	2,130	550	2,680	2,690
		Revised 2020 Baseline with Five-Year LOP	10	0	0	10	2,130	550	2,680	2,690
		Recommended Plan[c]	10	0	0	10	2,000	520	2,520	2,530
		Extreme Measures Condition[c]	10	0	0	10	1,930	510	2,440	2,450
	Milwaukee County	Existing	30	160	316,550	316,740	5,930	720	6,650	323,390
		Revised 2020 Baseline	<10	100	336,550	336,650	5,190	660	5,850	342,500
		Revised 2020 Baseline with Five-Year LOP	<10	100	337,940	338,040	5,190	660	5,850	343,890
		Recommended Plan[c]	<10	100	337,940	338,040	4,910	620	5,530	343,570
		Extreme Measures Condition[c]	<10	100	337,940	338,040	4,770	590	5,360	343,400
	Racine County	Existing	<10	0	0	<10	4,880	890	5,770	5,770
		Revised 2020 Baseline	<10	0	0	<10	4,200	670	4,870	4,870
		Revised 2020 Baseline with Five-Year LOP	<10	0	0	<10	4,200	670	4,870	4,870
		Recommended Plan[c]	<10	0	0	<10	3,940	650	4,590	4,590
		Extreme Measures Condition[c]	<10	0	0	<10	3,790	630	4,420	4,420
	Lake Michigan Direct Drainage Area Total	Existing	40	160	316,550	316,750	13,180	2,240	15,420	332,170
		Revised 2020 Baseline	10	100	336,550	336,660	11,520	1,880	13,400	350,060
		Revised 2020 Baseline with Five-Year LOP	10	100	337,940	338,050	11,520	1,880	13,400	351,450
		Recommended Plan[c]	10	100	337,940	338,050	10,850	1,790	12,640	350,690
		Extreme Measures Condition[c]	10	100	337,940	338,050	10,490	1,730	12,220	350,270
Total Suspended Solids (pounds)	Ozaukee County	Existing	310	0	0	310	838,280	397,340	1,235,620	1,235,930
		Revised 2020 Baseline	360	0	0	360	673,900	344,990	1,018,890	1,019,250
		Revised 2020 Baseline with Five-Year LOP	340	0	0	340	673,900	344,990	1,018,890	1,019,230
		Recommended Plan[c]	340	0	0	340	678,060	318,770	996,830	997,170
		Extreme Measures Condition[c]	340	0	0	340	678,060	292,490	970,550	970,890
	Milwaukee County	Existing	1,160	16,040	6,926,460	6,943,660	2,770,770	126,260	2,897,030	9,840,690
		Revised 2020 Baseline	180	10,300	7,152,790	7,163,270	2,067,520	76,420	2,143,940	9,307,210
		Revised 2020 Baseline with Five-Year LOP	170	9,720	7,214,010	7,223,900	2,067,520	76,420	2,143,940	9,367,840
		Recommended Plan[c]	170	9,720	7,214,010	7,223,900	2,084,370	76,140	2,160,510	9,384,410
		Extreme Measures Condition[c]	170	9,720	7,214,010	7,223,900	2,083,590	74,670	2,158,260	9,382,160

Table M-6 (continued)

Water Quality Indicator	Location	Condition	Point Sources				Nonpoint Source[a]			Total
			SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[b]	Subtotal	
Total Suspended Solids (pounds) (continued)	Racine County	Existing	130	0	0	130	1,932,680	703,620	2,636,300	2,636,430
		Revised 2020 Baseline	130	0	0	130	1,433,770	550,150	1,983,920	1,984,050
		Revised 2020 Baseline with Five-Year LOP	130	0	0	130	1,433,770	550,150	1,983,920	1,984,050
		Recommended Plan[c]	130	0	0	130	1,456,570	468,680	1,925,250	1,925,380
		Extreme Measures Condition[c]	130	0	0	130	1,452,240	423,950	1,876,190	1,876,320
	Lake Michigan Direct Drainage Area	Existing	1,600	16,040	6,926,460	6,944,100	5,541,730	1,227,220	6,768,950	13,713,050
		Revised 2020 Baseline	670	10,300	7,152,790	7,163,760	4,175,190	971,560	5,146,750	12,310,510
		Revised 2020 Baseline with Five-Year LOP	640	9,720	7,214,010	7,224,370	4,175,190	971,560	5,146,750	12,371,120
		Recommended Plan[c]	640	9,720	7,214,010	7,224,370	4,219,000	863,590	5,082,590	12,306,960
		Extreme Measures Condition[c]	640	9,720	7,214,010	7,224,370	4,213,890	791,110	5,005,000	12,229,370
Fecal Coliform Bacteria (trillions of cells)	Ozaukee County	Existing	5.87	0.00	0.00	5.87	682.50	60.95	743.45	749.32
		Revised 2020 Baseline	6.83	0.00	0.00	6.83	589.01	51.63	640.64	647.47
		Revised 2020 Baseline with Five-Year LOP	6.44	0.00	0.00	6.44	589.01	51.63	640.64	647.08
		Recommended Plan[c]	6.44	0.00	0.00	6.44	394.56	32.55	427.11	433.55
		Extreme Measures Condition[c]	6.44	0.00	0.00	6.44	200.22	16.86	217.08	223.52
	Milwaukee County	Existing	25.07	132.23	2,043.01	2,200.31	1,971.96	43.48	2,015.44	4,215.75
		Revised 2020 Baseline	3.97	84.95	2,157.78	2,246.70	1,663.36	50.43	1,713.79	3,960.49
		Revised 2020 Baseline with Five-Year LOP	3.74	80.13	2,167.02	2,250.89	1,663.36	50.43	1,713.79	3,964.68
		Recommended Plan[c]	3.74	80.13	2,167.02	2,250.89	1,111.79	34.00	1,145.79	3,396.68
		Extreme Measures Condition[c]	3.74	80.13	2,167.02	2,250.89	564.01	17.40	581.41	2,832.30
	Racine County	Existing	2.88	0.00	0.00	2.88	1,252.98	50.70	1,303.68	1,306.56
		Revised 2020 Baseline	2.88	0.00	0.00	2.88	1,037.60	40.38	1,077.98	1,080.86
		Revised 2020 Baseline with Five-Year LOP	2.88	0.00	0.00	2.88	1,037.60	40.38	1,077.98	1,080.86
		Recommended Plan[c]	2.88	0.00	0.00	2.88	692.32	24.99	717.31	720.19
		Extreme Measures Condition[c]	2.88	0.00	0.00	2.88	350.21	13.02	363.23	366.11
	Lake Michigan Direct Drainage Area Total	Existing	33.82	132.23	2,043.01	2,209.06	3,907.44	155.13	4,062.57	6,271.63
		Revised 2020 Baseline	13.68	84.95	2,157.78	2,256.41	3,289.97	142.44	3,432.41	5,688.82
		Revised 2020 Baseline with Five-Year LOP	13.06	80.13	2,167.02	2,260.21	3,289.97	142.44	3,432.41	5,692.62
		Recommended Plan[c]	13.06	80.13	2,167.02	2,260.21	2,198.67	91.54	2,290.21	4,550.42
		Extreme Measures Condition[c]	13.06	80.13	2,167.02	2,260.21	1,114.44	47.28	1,161.72	3,421.93
Total Nitrogen (pounds)	Ozaukee County	Existing	10	0	0	10	15,310	9,910	25,220	25,230
		Revised 2020 Baseline	10	0	0	10	14,130	9,370	23,500	23,510
		Revised 2020 Baseline with Five-Year LOP	10	0	0	10	14,130	9,370	23,500	23,510
		Recommended Plan[c]	10	0	0	10	14,130	8,900	23,030	23,040
		Extreme Measures Condition[c]	10	0	0	10	14,130	8,420	22,550	22,560

Table M-6 (continued)

Water Quality Indicator	Location	Condition	Point Sources				Nonpoint Source[a]			Total
			SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[b]	Subtotal	
Total Nitrogen (pounds) (continued)	Milwaukee County	Existing	60	1,120	8,261,880	8,263,060	38,940	7,650	46,590	8,309,650
		Revised 2020 Baseline	10	720	8,750,650	8,751,380	35,140	6,180	41,320	8,792,700
		Revised 2020 Baseline with Five-Year LOP	10	680	8,780,750	8,781,440	35,140	6,180	41,320	8,822,760
		Recommended Plan[c]	10	680	8,780,750	8,781,440	35,110	6,160	41,270	8,822,710
		Extreme Measures Condition[c]	10	680	8,780,750	8,781,440	35,090	6,120	41,210	8,822,650
	Racine County	Existing	10	0	0	10	33,130	20,450	53,580	53,590
		Revised 2020 Baseline	10	0	0	10	29,850	14,800	44,650	44,660
		Revised 2020 Baseline with Five-Year LOP	10	0	0	10	29,850	14,800	44,650	44,660
		Recommended Plan[c]	10	0	0	10	29,860	13,170	43,030	43,040
		Extreme Measures Condition[c]	10	0	0	10	29,750	12,340	42,090	42,100
	Lake Michigan Direct Drainage Area Total	Existing	80	1,120	8,261,880	8,263,080	87,380	38,010	125,390	8,388,470
		Revised 2020 Baseline	30	720	8,750,650	8,751,400	79,120	30,350	109,470	8,860,870
		Revised 2020 Baseline with Five-Year LOP	30	680	8,780,750	8,781,460	79,120	30,350	109,470	8,890,930
		Recommended Plan[c]	30	680	8,780,750	8,781,460	79,100	28,230	107,330	8,888,790
		Extreme Measures Condition[c]	30	680	8,780,750	8,781,460	78,970	26,880	105,850	8,887,310
Biochemical Oxygen Demand (pounds)	Ozaukee County	Existing	80	0	0	80	52,360	16,560	68,920	69,000
		Revised 2020 Baseline	90	0	0	90	45,770	21,810	67,580	67,670
		Revised 2020 Baseline with Five-Year LOP	80	0	0	80	45,770	21,810	67,580	67,660
		Recommended Plan[c]	80	0	0	80	45,660	20,940	66,600	66,680
		Extreme Measures Condition[c]	80	0	0	80	45,660	20,070	65,730	65,810
	Milwaukee County	Existing	320	2,980	7,380,790	7,384,090	162,330	15,420	177,750	7,561,840
		Revised 2020 Baseline	50	1,920	7,697,200	7,699,170	134,800	12,860	147,660	7,846,830
		Revised 2020 Baseline with Five-Year LOP	50	1,810	7,744,930	7,746,790	134,800	12,860	147,660	7,894,450
		Recommended Plan[c]	50	1,810	7,744,930	7,746,790	134,220	12,850	147,070	7,893,860
		Extreme Measures Condition[c]	50	1,810	7,744,930	7,746,790	134,170	12,780	146,950	7,893,740
	Racine County	Existing	40	0	0	40	119,170	31,920	151,090	151,130
		Revised 2020 Baseline	40	0	0	40	97,400	37,100	134,500	134,540
		Revised 2020 Baseline with Five-Year LOP	40	0	0	40	97,400	37,100	134,500	134,540
		Recommended Plan[c]	40	0	0	40	97,350	35,090	132,440	132,480
		Extreme Measures Condition[c]	40	0	0	40	97,060	33,020	130,080	130,120
	Lake Michigan Direct Drainage Area Total	Existing	440	2,980	7,380,790	7,384,210	333,860	63,900	397,760	7,781,970
		Revised 2020 Baseline	180	1,920	7,697,200	7,699,300	277,970	71,770	349,740	8,049,040
		Revised 2020 Baseline with Five-Year LOP	170	1,810	7,744,930	7,746,910	277,970	71,770	349,740	8,096,650
		Recommended Plan[c]	170	1,810	7,744,930	7,746,910	277,230	68,880	346,110	8,093,020
		Extreme Measures Condition[c]	170	1,810	7,744,930	7,746,910	276,890	65,870	342,760	8,089,670

Table M-6 (continued)

Water Quality Indicator	Location	Condition	Point Sources				Nonpoint Source[a]			Total
			SSOs	CSOs	WWTPs	Subtotal	Urban	Rural[b]	Subtotal	
Copper (pounds)	Ozaukee County	Existing	<1	0	0	<1	96	13	109	109
		Revised 2020 Baseline	<1	0	0	<1	81	11	92	92
		Revised 2020 Baseline with Five-Year LOP	<1	0	0	<1	81	11	92	92
		Recommended Plan[c]	<1	0	0	<1	81	11	92	92
		Extreme Measures Condition[c]	<1	0	0	<1	81	11	92	92
	Milwaukee County	Existing	<1	4	10,445	10,449	298	17	315	10,764
		Revised 2020 Baseline	<1	2	10,853	10,855	237	14	251	11,106
		Revised 2020 Baseline with Five-Year LOP	<1	2	10,906	10,908	237	14	251	11,159
		Recommended Plan[c]	<1	2	10,906	10,908	236	14	250	11,158
		Extreme Measures Condition[c]	<1	2	10,906	10,908	236	14	250	11,158
	Racine County	Existing	<1	0	0	<1	228	18	246	246
		Revised 2020 Baseline	<1	0	0	<1	179	14	193	193
		Revised 2020 Baseline with Five-Year LOP	<1	0	0	<1	179	14	193	193
		Recommended Plan[c]	<1	0	0	<1	179	13	192	192
		Extreme Measures Condition[c]	<1	0	0	<1	178	13	191	191
	Lake Michigan Direct Drainage Area Total	Existing	<1	4	10,445	10,449	622	48	670	11,119
		Revised 2020 Baseline	<1	2	10,853	10,855	497	39	536	11,391
		Revised 2020 Baseline with Five-Year LOP	<1	2	10,906	10,908	497	39	536	11,444
		Recommended Plan[c]	<1	2	10,906	10,908	496	38	534	11,442
		Extreme Measures Condition[c]	<1	2	10,906	10,908	495	38	533	11,441

[a]*Certain apparent anomalies in the relationship between urban and rural nonpoint source loads are due to the manner in which the loads were apportioned. In those cases, the loads in the nonpoint subtotal column generally exhibit the anticipated relationships between conditions.*

[b]*For reporting purposes, certain land uses such as forests and wetlands have been categorized as rural sources even though they may exist in a predominately urban setting.*

[c]*Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

Source: Brown and Caldwell; HydroQual, Inc.; and SEWRPC.

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Appendix N (revised)

WATER QUALITY SUMMARY STATISTICS FOR THE RECOMMENDED PLAN

Table N-1

WATER QUALITY SUMMARY STATISTICS FOR THE RECOMMENDED PLAN: KINNICKINNIC RIVER WATERSHED[a]

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
KK-1 Lyons Park Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,659	4,770	4,770	3,184	1,632
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	80	81	81	82	85
		Geometric mean (cells per 100 ml)	492	416	416	278	143
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	296	309	309	331	353
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,660	2,255	2,255	1,522	807
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	90	90	90	92	93
		Geometric mean (cells per 100 ml)	361	308	308	205	106
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	150	152	152	153	153
	Dissolved Oxygen	Mean (mg/l)	6.6	6.7	6.7	6.6	6.6
		Median (mg/l)	6.3	6.3	6.3	6.3	6.3
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.075	0.068	0.068	0.067	0.064
		Median (mg/l)	0.036	0.034	0.034	0.034	0.033
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	85	86	86	86	87
	Total Nitrogen	Mean (mg/l)	1.14	1.03	1.03	1.03	1.03
		Median (mg/l)	1.17	1.06	1.06	1.06	1.06
	Total Suspended Solids	Mean (mg/l)	8.5	6.8	6.8	6.8	6.8
		Median (mg/l)	5.0	3.9	3.9	4.0	4.0
	Copper	Mean (mg/l)	0.0036	0.0030	0.0030	0.0030	0.0030
		Median (mg/l)	0.0013	0.0011	0.0011	0.0011	0.0011

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Table N-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Condition: Revised 2020 Baseline	Condition: Revised 2020 Baseline with Five-Year LOP[b]	Condition: Recommended Plan[c]	Condition: "Extreme Measures" Condition[c]
KK-2 S. 43rd Street Ditch	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,080	3,402	3,402	2,280	1,177
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	82	81	81	84	87
		Geometric mean (cells per 100 ml)	227	197	197	132	68
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	325	334	334	347	359
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,047	1,770	1,770	1,201	650
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	91	90	90	92	94
		Geometric mean (cells per 100 ml)	153	138	138	92	47
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	9.5	9.6	9.6	9.6	9.2
		Median (mg/l)	9.4	9.4	9.4	9.4	8.8
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.347	0.338	0.338	0.338	0.083
		Median (mg/l)	0.346	0.337	0.337	0.336	0.060
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	2	2	2	2	85
	Total Nitrogen	Mean (mg/l)	1.63	1.56	1.56	1.56	1.55
		Median (mg/l)	1.61	1.54	1.54	1.54	1.53
	Total Suspended Solids	Mean (mg/l)	9.2	7.5	7.5	8.0	8.0
		Median (mg/l)	3.8	3.4	3.4	3.4	3.4
	Copper	Mean (mg/l)	0.0033	0.0026	0.0026	0.0026	0.0026
		Median (mg/l)	0.0007	0.0006	0.0006	0.0006	0.0006

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Table N-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	“Extreme Measures” Condition[c]
KK-3 Kinnickinnic River Upstream of Confluence with Wilson Park Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,373	4,514	4,510	3,011	1,542
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	79	80	80	82	85
		Geometric mean (cells per 100 ml)	371	318	318	214	110
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	305	317	317	335	355
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,747	2,356	2,347	1,578	830
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	89	89	89	91	93
		Geometric mean (cells per 100 ml)	260	228	228	152	79
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	152	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	9.4	9.4	9.4	9.4	9.3
		Median (mg/l)	8.8	8.8	8.8	8.8	8.5
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.222	0.213	0.213	0.212	0.076
		Median (mg/l)	0.206	0.199	0.199	0.198	0.048
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	13	14	14	15	85
	Total Nitrogen	Mean (mg/l)	1.39	1.30	1.30	1.30	1.30
		Median (mg/l)	1.36	1.27	1.27	1.27	1.29
	Total Suspended Solids	Mean (mg/l)	10.6	8.5	8.5	8.7	8.7
		Median (mg/l)	4.2	3.5	3.5	3.5	3.5
	Copper	Mean (mg/l)	0.0037	0.0030	0.0030	0.0030	0.0030
		Median (mg/l)	0.001	0.0008	0.0008	0.0008	0.0008

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Table N-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Condition: Revised 2020 Baseline	Condition: Revised 2020 Baseline with Five-Year LOP[b]	Condition: Recommended Plan[c]	Condition: “Extreme Measures” Condition[c]
KK-4 Wilson Creek Upstream of Holmes Avenue Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,897	3,249	3,247	2,091	1,063
		Percent compliance with single sample standard (<400 cells per 100 ml)	52	53	53	58	66
		Geometric mean (cells per 100 ml)	609	517	517	330	169
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	54	72	72	126	219
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,179	1,781	1,775	1,024	523
		Percent compliance with single sample standard (<400 cells per 100 ml)	67	68	68	75	81
		Geometric mean (cells per 100 ml)	313	259	258	155	79
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	36	46	46	80	133
	Dissolved Oxygen	Mean (mg/l)	7.5	7.6	7.6	7.6	7.6
		Median (mg/l)	7.3	7.3	7.3	7.3	7.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.222	0.218	0.218	0.216	0.154
		Median (mg/l)	0.123	0.121	0.121	0.120	0.042
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	35	34	34	35	79
	Total Nitrogen	Mean (mg/l)	1.65	1.56	1.56	1.56	1.56
		Median (mg/l)	0.99	0.89	0.89	0.89	0.89
	Total Suspended Solids	Mean (mg/l)	20.1	15.1	15.1	15.1	15.8
		Median (mg/l)	6.5	5.4	5.4	5.4	5.5
	Copper	Mean (mg/l)	0.0041	0.0035	0.0035	0.0035	0.0035
		Median (mg/l)	0.0019	0.0018	0.0018	0.0017	0.0017

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Table N-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
KK-5 Holmes Avenue Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,178	4,228	4,228	2,824	1,433
		Percent compliance with single sample standard (<400 cells per 100 ml)	72	71	71	73	77
		Geometric mean (cells per 100 ml)	385	317	317	213	110
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	106	133	133	199	276
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,162	1,790	1,790	1,192	605
		Percent compliance with single sample standard (<400 cells per 100 ml)	86	84	84	85	88
		Geometric mean (cells per 100 ml)	213	179	179	120	62
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	58	73	73	111	150
	Dissolved Oxygen	Mean (mg/l)	9.9	9.9	9.9	9.9	9.9
		Median (mg/l)	9.8	9.8	9.8	9.8	9.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	92	92	92	92	93
	Total Phosphorus	Mean (mg/l)	0.450	0.442	0.442	0.441	0.333
		Median (mg/l)	0.400	0.391	0.391	0.389	0.287
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	2	2	2	2	9
	Total Nitrogen	Mean (mg/l)	2.35	2.26	2.26	2.26	2.25
		Median (mg/l)	2.03	1.93	1.93	1.93	1.93
	Total Suspended Solids	Mean (mg/l)	9.7	7.5	7.5	7.8	7.8
		Median (mg/l)	3.8	3.0	3.0	3.1	3.1
	Copper	Mean (mg/l)	0.0040	0.0033	0.0033	0.0033	0.0033
		Median (mg/l)	0.0009	0.0008	0.0008	0.0008	0.0008

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Table N-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	“Extreme Measures” Condition[c]
KK-6 Villa Mann Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,565	4,563	4,563	3,041	1,544
		Percent compliance with single sample standard (<400 cells per 100 ml)	72	71	71	73	76
		Geometric mean (cells per 100 ml)	557	462	462	309	158
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	38	59	59	122	258
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,339	1,952	1,952	1,294	657
		Percent compliance with single sample standard (<400 cells per 100 ml)	87	84	84	85	88
		Geometric mean (cells per 100 ml)	346	293	293	196	101
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	19	33	33	68	143
	Dissolved Oxygen	Mean (mg/l)	7.4	7.4	7.4	7.4	7.4
		Median (mg/l)	6.6	6.7	6.7	6.7	6.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	70	71	71	71	71
	Total Phosphorus	Mean (mg/l)	0.085	0.076	0.076	0.075	0.071
		Median (mg/l)	0.041	0.037	0.037	0.037	0.037
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	82	82	82	83	83
	Total Nitrogen	Mean (mg/l)	1.18	1.05	1.05	1.05	1.05
		Median (mg/l)	1.20	1.07	1.07	1.07	1.07
	Total Suspended Solids	Mean (mg/l)	8.9	6.9	6.9	7.3	7.3
		Median (mg/l)	5.0	3.7	3.7	3.7	3.7
	Copper	Mean (mg/l)	0.0041	0.0034	0.0034	0.0033	0.0033
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010

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Table N-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
KK-7 Cherokee Park Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,715	3,950	3,950	2,632	1,337
		Percent compliance with single sample standard (<400 cells per 100 ml)	75	74	74	75	78
		Geometric mean (cells per 100 ml)	453	393	393	265	139
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	47	64	64	137	267
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,187	1,905	1,905	1,260	641
		Percent compliance with single sample standard (<400 cells per 100 ml)	87	84	84	85	87
		Geometric mean (cells per 100 ml)	337	301	301	203	107
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	19	28	28	66	140
	Dissolved Oxygen	Mean (mg/l)	7.3	7.3	7.3	7.3	7.3
		Median (mg/l)	6.5	6.7	6.7	6.7	6.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	71	71	71	71	71
	Total Phosphorus	Mean (mg/l)	0.076	0.069	0.069	0.068	0.065
		Median (mg/l)	0.039	0.036	0.036	0.036	0.036
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	84	84	84	84	85
	Total Nitrogen	Mean (mg/l)	1.12	1.02	1.02	1.02	1.02
		Median (mg/l)	1.01	0.94	0.94	0.93	0.93
	Total Suspended Solids	Mean (mg/l)	7.7	6.3	6.3	6.7	6.7
		Median (mg/l)	5.0	4.0	4.0	4.0	4.0
	Copper	Mean (mg/l)	0.0036	0.0030	0.0030	0.0030	0.0030
		Median (mg/l)	0.0012	0.0010	0.0010	0.0010	0.0010

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Table N-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
KK-8 Wilson Park Creek, USGS Gauge	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,124	4,259	4,259	2,794	1,419
		Percent compliance with single sample standard (<400 cells per 100 ml)	56	57	57	63	70
		Geometric mean (cells per 100 ml)	697	596	596	386	198
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	35	49	49	99	214
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,552	2,133	2,132	1,315	669
		Percent compliance with single sample standard (<400 cells per 100 ml)	73	73	73	79	83
		Geometric mean (cells per 100 ml)	357	304	304	189	97
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	26	34	34	63	131
	Dissolved Oxygen	Mean (mg/l)	10.9	10.9	10.9	10.9	10.8
		Median (mg/l)	11.2	11.2	11.2	11.2	10.9
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.200	0.193	0.193	0.192	0.141
		Median (mg/l)	0.142	0.138	0.138	0.137	0.079
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	33	33	33	33	66
	Total Nitrogen	Mean (mg/l)	1.48	1.38	1.38	1.38	1.38
		Median (mg/l)	1.16	1.07	1.07	1.06	1.07
	Total Suspended Solids	Mean (mg/l)	14.1	10.8	10.8	11.3	11.3
		Median (mg/l)	4.8	3.7	3.7	3.7	3.7
	Copper	Mean (mg/l)	0.0044	0.0037	0.0037	0.0037	0.0037
		Median (mg/l)	0.0018	0.0016	0.0016	0.0015	0.0015

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Table N-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Condition: Revised 2020 Baseline	Condition: Revised 2020 Baseline with Five-Year LOP[b]	Condition: Recommended Plan[c]	Condition: "Extreme Measures" Condition[c]
KK-9 Kinnickinnic River Downstream of Wilson Park Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,785	4,885	4,553	3,028	1,569
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	74	75	75	78	82
		Geometric mean (cells per 100 ml)	654	560	556	363	186
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	254	266	266	297	334
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,360	2,978	2,421	1,579	851
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	87	86	86	89	92
		Geometric mean (cells per 100 ml)	343	295	292	184	95
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	146	148	148	153	153
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.2
		Median (mg/l)	11.4	11.4	11.4	11.4	11.3
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.206	0.198	0.196	0.195	0.112
		Median (mg/l)	0.171	0.164	0.164	0.162	0.066
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	24	25	25	25	74
	Total Nitrogen	Mean (mg/l)	1.40	1.30	1.30	1.30	1.31
		Median (mg/l)	1.22	1.13	1.13	1.13	1.15
	Total Suspended Solids	Mean (mg/l)	14.5	11.4	11.3	11.7	11.7
		Median (mg/l)	4.8	3.8	3.8	3.8	3.8
	Copper	Mean (mg/l)	0.0047	0.0040	0.0040	0.0040	0.0040
		Median (mg/l)	0.0019	0.0017	0.0017	0.0017	0.0017

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Table N-1 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
KK-10 Kinnickinnic River near Upstream Limit of Estuary	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,859	4,942	4,633	3,091	1,613
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	74	75	75	78	82
		Geometric mean (cells per 100 ml)	842	702	686	449	230
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	229	250	256	292	332
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,401	2,999	2,470	1,634	904
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	86	86	86	89	92
		Geometric mean (cells per 100 ml)	498	416	398	253	130
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	131	140	145	152	153
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.3
		Median (mg/l)	11.5	11.5	11.5	11.5	11.4
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.196	0.188	0.187	0.185	0.108
		Median (mg/l)	0.165	0.157	0.157	0.155	0.064
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	27	27	28	28	74
	Total Nitrogen	Mean (mg/l)	1.36	1.27	1.26	1.26	1.27
		Median (mg/l)	1.22	1.12	1.12	1.12	1.14
	Total Suspended Solids	Mean (mg/l)	13.2	10.4	10.4	10.7	10.7
		Median (mg/l)	4.7	3.8	3.8	3.9	3.9
	Copper	Mean (mg/l)	0.0048	0.0040	0.0040	0.0040	0.0040
		Median (mg/l)	0.0019	0.0017	0.0017	0.0017	0.0017

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Table N-1 Footnotes

[a]*In certain limited cases, relatively minor anomalies in concentrations or percents compliance may occur among the five conditions for which model results are presented in this table. Those anomalies might indicate a slight decrease in water quality under the recommended plan and/or "extreme measures" conditions, relative to revised 2020 baseline and/or revised 2020 baseline with five-year LOP conditions. In those cases, it may be assumed that no significant change in water quality occurs among those various conditions. Since it was not always possible to explicitly represent certain components of the recommended plan and "extreme measures" conditions in the LSPC water quality model, adjustments were made to model parameters that served as surrogates for the actual water pollution control measure being represented. In the sense that those modifications sometimes alter parameters in the revised 2020 baseline and/or revised 2020 baseline with five-year LOP model versions, in limited cases, representation of a measure in the recommended plan or "extreme measures" models may have a side effect of introducing small, relatively insignificant anomalies in the comparative results.*

[b]*Five-Year LOP refers to a five-year recurrence interval level of protection against sanitary sewer overflows.*

[c]*Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

[d]*Variance Standard in Chapter NR 104 of the* Wisconsin Administrative Code.

Source: Tetra Tech, Inc., and SEWRPC.

Table N-2

WATER QUALITY SUMMARY STATISTICS FOR THE RECOMMENDED PLAN: MENOMONEE RIVER WATERSHED[a]

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-1 North Branch Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	701	955	955	726	692
		Percent compliance with single sample standard (<400 cells per 100 ml)	81	78	78	80	80
		Geometric mean (cells per 100 ml)	116	138	138	68	69
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	287	263	263	309	311
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	672	906	906	700	670
		Percent compliance with single sample standard (<400 cells per 100 ml)	89	86	86	87	88
		Geometric mean (cells per 100 ml)	90	104	104	44	44
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	147	138	138	152	152
	Dissolved Oxygen	Mean (mg/l)	9.6	9.6	9.6	9.5	9.5
		Median (mg/l)	9.5	9.5	9.5	9.5	9.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	90	90	90	90	90
	Total Phosphorus	Mean (mg/l)	0.061	0.061	0.061	0.059	0.058
		Median (mg/l)	0.046	0.046	0.046	0.045	0.045
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	92	91	91	92	92
	Total Nitrogen	Mean (mg/l)	2.10	1.96	1.96	1.57	1.48
		Median (mg/l)	1.87	1.75	1.75	1.42	1.34
	Total Suspended Solids	Mean (mg/l)	8.2	7.9	7.9	7.1	7.1
		Median (mg/l)	6.9	6.7	6.7	5.8	5.9
	Copper	Mean (mg/l)	0.0023	0.0022	0.0022	0.0022	0.0022
		Median (mg/l)	0.0013	0.0013	0.0013	0.0012	0.0012

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-2 Upper Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	797	1,031	1,031	832	787
		Percent compliance with single sample standard (<400 cells per 100 ml)	75	71	71	73	74
		Geometric mean (cells per 100 ml)	124	152	152	100	96
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	262	238	238	269	271
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	602	741	741	502	477
		Percent compliance with single sample standard (<400 cells per 100 ml)	86	82	82	85	85
		Geometric mean (cells per 100 ml)	79	93	93	53	51
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	144	137	137	147	148
	Dissolved Oxygen	Mean (mg/l)	9.3	9.4	9.4	9.3	9.2
		Median (mg/l)	9.1	9.1	9.1	9.1	9.0
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	99
	Total Phosphorus	Mean (mg/l)	0.143	0.147	0.147	0.146	0.058
		Median (mg/l)	0.111	0.113	0.113	0.111	0.046
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	46	45	45	46	91
	Total Nitrogen	Mean (mg/l)	1.47	1.36	1.36	1.16	1.11
		Median (mg/l)	1.35	1.27	1.27	1.10	1.06
	Total Suspended Solids	Mean (mg/l)	7.9	7.8	7.8	7.4	7.4
		Median (mg/l)	5.7	5.6	5.6	5.1	5.1
	Copper	Mean (mg/l)	0.0024	0.0024	0.0024	0.0024	0.0024
		Median (mg/l)	0.0012	0.0011	0.0011	0.0011	0.0011

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-3 West Branch Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,167	1,526	1,526	1,161	1,096
		Percent compliance with single sample standard (<400 cells per 100 ml)	77	74	74	76	76
		Geometric mean (cells per 100 ml)	159	185	185	127	119
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	250	231	231	262	266
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	712	1,021	1,021	612	580
		Percent compliance with single sample standard (<400 cells per 100 ml)	90	86	86	87	87
		Geometric mean (cells per 100 ml)	101	117	117	70	66
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	144	133	133	147	148
	Dissolved Oxygen	Mean (mg/l)	9.4	9.4	9.4	9.4	9.4
		Median (mg/l)	9.5	9.4	9.4	9.4	9.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	91	91	91	91	91
	Total Phosphorus	Mean (mg/l)	0.073	0.075	0.075	0.072	0.070
		Median (mg/l)	0.048	0.048	0.048	0.047	0.046
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	87	86	86	87	87
	Total Nitrogen	Mean (mg/l)	1.77	1.51	1.51	1.29	1.20
		Median (mg/l)	1.59	1.36	1.36	1.17	1.09
	Total Suspended Solids	Mean (mg/l)	10.6	10.0	10.0	10.0	10.0
		Median (mg/l)	8.1	7.8	7.8	7.2	7.2
	Copper	Mean (mg/l)	0.0035	0.0036	0.0036	0.0036	0.0036
		Median (mg/l)	0.0013	0.0012	0.0012	0.0012	0.0012

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Condition: Revised 2020 Baseline	Condition: Revised 2020 Baseline with Five-Year LOP[b]	Condition: Recommended Plan[c]	Condition: "Extreme Measures" Condition[c]
MN-4 Willow Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,244	1,415	1,415	1,196	1,180
		Percent compliance with single sample standard (<400 cells per 100 ml)	76	74	74	75	75
		Geometric mean (cells per 100 ml)	183	200	200	161	160
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	218	206	206	233	234
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	794	872	872	607	601
		Percent compliance with single sample standard (<400 cells per 100 ml)	87	86	86	86	86
		Geometric mean (cells per 100 ml)	125	134	134	99	98
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	125	121	121	136	136
	Dissolved Oxygen	Mean (mg/l)	8.9	8.9	8.9	8.9	8.9
		Median (mg/l)	9.1	9.1	9.1	9.1	9.1
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	94	94	94	94
	Total Phosphorus	Mean (mg/l)	0.052	0.056	0.056	0.055	0.054
		Median (mg/l)	0.032	0.032	0.032	0.032	0.031
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	90	88	88	88	89
	Total Nitrogen	Mean (mg/l)	1.30	1.12	1.12	1.02	0.99
		Median (mg/l)	1.18	1.03	1.03	0.92	0.90
	Total Suspended Solids	Mean (mg/l)	9.1	8.7	8.7	8.8	8.8
		Median (mg/l)	7.3	7.0	7.0	6.7	6.7
	Copper	Mean (mg/l)	0.0030	0.0030	0.0030	0.0030	0.0030
		Median (mg/l)	0.0012	0.0012	0.0012	0.0012	0.0012

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Condition: Revised 2020 Baseline	Condition: Revised 2020 Baseline with Five-Year LOP[b]	Condition: Recommended Plan[c]	Condition: "Extreme Measures" Condition[c]
MN-5 Menomonee River at Washington-Waukesha County Line	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,417	1,649	1,649	1,362	1,314
		Percent compliance with single sample standard (<400 cells per 100 ml)	68	65	65	67	67
		Geometric mean (cells per 100 ml)	205	234	234	180	174
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	202	185	185	214	217
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	890	995	995	657	635
		Percent compliance with single sample standard (<400 cells per 100 ml)	82	79	79	81	82
		Geometric mean (cells per 100 ml)	105	117	117	79	77
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	125	116	116	134	135
	Dissolved Oxygen	Mean (mg/l)	10.5	10.5	10.5	10.5	10.4
		Median (mg/l)	10.7	10.7	10.7	10.7	10.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.097	0.105	0.105	0.102	0.064
		Median (mg/l)	0.063	0.066	0.066	0.065	0.033
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	70	68	68	69	84
	Total Nitrogen	Mean (mg/l)	1.23	1.09	1.09	0.97	0.96
		Median (mg/l)	1.11	0.98	0.98	0.87	0.87
	Total Suspended Solids	Mean (mg/l)	10.2	9.9	9.9	9.7	9.7
		Median (mg/l)	6	5.8	5.8	5.5	5.5
	Copper	Mean (mg/l)	0.0041	0.0043	0.0043	0.0042	0.0042
		Median (mg/l)	0.0016	0.0016	0.0016	0.0016	0.0016

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Table N-2 (continued)

			Condition				
Assessment Point	Water Quality Indicator	Statistic	Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-6 Nor-X-Way Channel	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,261	3,510	3,510	2,124	1,075
		Percent compliance with single sample standard (<400 cells per 100 ml)	72	70	70	72	75
		Geometric mean (cells per 100 ml)	208	187	187	118	69
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	200	212	212	250	284
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,962	1,893	1,893	875	444
		Percent compliance with single sample standard (<400 cells per 100 ml)	83	81	81	83	86
		Geometric mean (cells per 100 ml)	113	92	92	54	32
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	114	122	122	141	149
	Dissolved Oxygen	Mean (mg/l)	10.0	9.9	9.9	9.9	9.7
		Median (mg/l)	9.9	9.7	9.7	9.7	9.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.172	0.190	0.190	0.188	0.071
		Median (mg/l)	0.125	0.136	0.136	0.134	0.037
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	43	38	38	39	84
	Total Nitrogen	Mean (mg/l)	1.34	0.91	0.91	0.88	0.88
		Median (mg/l)	1.17	0.77	0.77	0.74	0.75
	Total Suspended Solids	Mean (mg/l)	16.0	10.8	10.8	10.6	10.6
		Median (mg/l)	4.3	3.2	3.2	3.1	3.1
	Copper	Mean (mg/l)	0.0037	0.0036	0.0036	0.0035	0.0035
		Median (mg/l)	0.0011	0.0008	0.0008	0.0008	0.0008

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-7 Lilly Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,427	2,045	2,045	1,211	617
		Percent compliance with single sample standard (<400 cells per 100 ml)	69	69	69	72	76
		Geometric mean (cells per 100 ml)	359	290	290	190	103
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	89	122	122	210	285
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,416	1,179	1,179	547	282
		Percent compliance with single sample standard (<400 cells per 100 ml)	81	80	80	84	87
		Geometric mean (cells per 100 ml)	265	212	212	132	72
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	38	53	53	115	151
	Dissolved Oxygen	Mean (mg/l)	9.3	9.2	9.2	9.2	9.2
		Median (mg/l)	9.3	9.2	9.2	9.2	9.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	92	92	92	92	92
	Total Phosphorus	Mean (mg/l)	0.092	0.080	0.080	0.079	0.078
		Median (mg/l)	0.048	0.043	0.043	0.043	0.043
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	80	81	81	81	82
	Total Nitrogen	Mean (mg/l)	1.34	0.97	0.97	0.97	0.97
		Median (mg/l)	1.20	0.86	0.86	0.86	0.86
	Total Suspended Solids	Mean (mg/l)	19.0	12.7	12.7	12.9	12.9
		Median (mg/l)	7.9	5.1	5.1	5.2	5.2
	Copper	Mean (mg/l)	0.0051	0.0038	0.0038	0.0038	0.0038
		Median (mg/l)	0.0013	0.0009	0.0009	0.0009	0.0009

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-8 Butler Ditch	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,425	2,022	2,022	1,297	677
		Percent compliance with single sample standard (<400 cells per 100 ml)	64	65	65	68	74
		Geometric mean (cells per 100 ml)	424	345	345	228	119
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	82	109	109	178	269
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,325	1,126	1,126	700	390
		Percent compliance with single sample standard (<400 cells per 100 ml)	79	79	79	82	86
		Geometric mean (cells per 100 ml)	286	233	233	152	80
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	31	46	46	98	150
	Dissolved Oxygen	Mean (mg/l)	9.6	9.6	9.6	9.6	9.6
		Median (mg/l)	9.3	9.3	9.3	9.3	9.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	93	93	93	93	93
	Total Phosphorus	Mean (mg/l)	0.094	0.081	0.081	0.080	0.077
		Median (mg/l)	0.051	0.045	0.045	0.046	0.045
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	79	81	81	81	82
	Total Nitrogen	Mean (mg/l)	1.18	1.01	1.01	1.02	1.02
		Median (mg/l)	1.10	0.95	0.95	0.96	0.96
	Total Suspended Solids	Mean (mg/l)	17.5	12.3	12.3	12.6	12.6
		Median (mg/l)	7.9	5.5	5.5	5.6	5.6
	Copper	Mean (mg/l)	0.0046	0.0035	0.0035	0.0035	0.0035
		Median (mg/l)	0.0014	0.0010	0.0010	0.0010	0.0010

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-9 Menomonee River Down-stream of Butler Ditch	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,828	2,739	2,739	1,865	1,262
		Percent compliance with single sample standard (<400 cells per 100 ml)	57	56	56	59	62
		Geometric mean (cells per 100 ml)	489	477	477	329	231
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	72	83	83	149	191
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,571	1,451	1,451	783	497
		Percent compliance with single sample standard (<400 cells per 100 ml)	76	74	74	78	80
		Geometric mean (cells per 100 ml)	229	212	212	131	88
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	51	61	61	113	136
	Dissolved Oxygen	Mean (mg/l)	10.8	10.8	10.8	10.8	10.8
		Median (mg/l)	11	11.0	11.0	11.0	10.9
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.101	0.101	0.101	0.098	0.067
		Median (mg/l)	0.061	0.064	0.064	0.063	0.029
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	69	67	67	68	80
	Total Nitrogen	Mean (mg/l)	1.10	0.93	0.93	0.86	0.88
		Median (mg/l)	1.01	0.87	0.87	0.80	0.82
	Total Suspended Solids	Mean (mg/l)	15.7	12.9	12.9	12.9	12.9
		Median (mg/l)	6	5.1	5.1	5.0	5.0
	Copper	Mean (mg/l)	0.0052	0.0048	0.0048	0.0047	0.0047
		Median (mg/l)	0.0019	0.0019	0.0019	0.0019	0.0019

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-10 Little Menomonee Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,970	4,101	4,101	4,075	4,091
		Percent compliance with single sample standard (<400 cells per 100 ml)	57	58	58	59	59
		Geometric mean (cells per 100 ml)	438	379	379	278	287
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	91	117	117	163	158
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,710	3,000	3,000	2,998	3,022
		Percent compliance with single sample standard (<400 cells per 100 ml)	73	74	74	74	74
		Geometric mean (cells per 100 ml)	201	173	173	110	115
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	62	80	80	108	106
	Dissolved Oxygen	Mean (mg/l)	9.2	9.2	9.2	9.2	9.2
		Median (mg/l)	9.2	9.2	9.2	9.2	9.2
		Percent compliance with recommended dissolved oxygen standard (>5 mg/l)	97	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.082	0.075	0.075	0.072	0.071
		Median (mg/l)	0.055	0.053	0.053	0.052	0.051
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	81	84	84	84	85
	Total Nitrogen	Mean (mg/l)	1.79	1.56	1.56	1.32	1.28
		Median (mg/l)	1.59	1.39	1.39	1.19	1.15
	Total Suspended Solids	Mean (mg/l)	24.6	19.6	19.6	18.1	17.8
		Median (mg/l)	10.8	9.9	9.9	9.0	9.0
	Copper	Mean (mg/l)	0.0031	0.0026	0.0026	0.0026	0.0025
		Median (mg/l)	0.0014	0.0012	0.0012	0.0012	0.0012

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-11 Little Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,777	6,485	6,485	6,053	6,045
		Percent compliance with single sample standard (<400 cells per 100 ml)	53	54	54	54	54
		Geometric mean (cells per 100 ml)	700	591	591	520	521
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	68	83	83	96	96
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,477	3,677	3,677	2,704	2,705
		Percent compliance with single sample standard (<400 cells per 100 ml)	70	70	70	71	71
		Geometric mean (cells per 100 ml)	261	216	216	171	172
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	48	60	60	69	69
	Dissolved Oxygen	Mean (mg/l)	10.4	10.4	10.4	10.4	10.3
		Median (mg/l)	10.5	10.6	10.6	10.6	10.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	97
	Total Phosphorus	Mean (mg/l)	0.111	0.104	0.104	0.103	0.072
		Median (mg/l)	0.072	0.069	0.069	0.068	0.045
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	68	70	70	70	80
	Total Nitrogen	Mean (mg/l)	1.24	1.01	1.01	0.95	0.99
		Median (mg/l)	1.15	0.93	0.93	0.88	0.91
	Total Suspended Solids	Mean (mg/l)	13.2	9.8	9.8	9.7	9.7
		Median (mg/l)	4.6	3.4	3.4	3.3	3.4
	Copper	Mean (mg/l)	0.005	0.0041	0.0041	0.0040	0.0040
		Median (mg/l)	0.0017	0.0014	0.0014	0.0014	0.0014

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-12 Menomonee River Down-stream of Little Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,366	3,947	3,947	3,237	2,836
		Percent compliance with single sample standard (<400 cells per 100 ml)	50	50	50	52	53
		Geometric mean (cells per 100 ml)	795	731	731	554	448
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	31	39	39	80	115
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,175	1,928	1,928	1,220	1,052
		Percent compliance with single sample standard (<400 cells per 100 ml)	69	69	69	72	73
		Geometric mean (cells per 100 ml)	348	308	308	205	157
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	21	27	27	60	88
	Dissolved Oxygen	Mean (mg/l)	10.7	10.7	10.7	10.7	10.6
		Median (mg/l)	10.9	10.9	10.9	10.9	10.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.1	0.098	0.098	0.096	0.067
		Median (mg/l)	0.061	0.063	0.063	0.062	0.034
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	69	69	69	69	80
	Total Nitrogen	Mean (mg/l)	1.09	0.91	0.91	0.85	0.88
		Median (mg/l)	1.02	0.86	0.86	0.80	0.83
	Total Suspended Solids	Mean (mg/l)	13.4	10.9	10.9	10.8	10.8
		Median (mg/l)	5.2	4.4	4.4	4.2	4.3
	Copper	Mean (mg/l)	0.0054	0.0048	0.0048	0.0048	0.0048
		Median (mg/l)	0.0021	0.0020	0.0020	0.0020	0.0020

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-13 Underwood Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	9,075	7,347	7,347	4,845	2,467
		Percent compliance with single sample standard (<400 cells per 100 ml)	61	62	62	64	67
		Geometric mean (cells per 100 ml)	789	627	627	422	225
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	44	69	69	119	194
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,377	3,545	3,545	2,210	1,134
		Percent compliance with single sample standard (<400 cells per 100 ml)	77	78	78	80	83
		Geometric mean (cells per 100 ml)	404	322	322	212	114
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	17	30	30	66	116
	Dissolved Oxygen	Mean (mg/l)	10.1	10.1	10.1	10.1	10.0
		Median (mg/l)	9.8	9.8	9.8	9.8	9.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	96	96	96	96
	Total Phosphorus	Mean (mg/l)	0.095	0.083	0.083	0.082	0.079
		Median (mg/l)	0.063	0.056	0.056	0.056	0.054
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	75	79	79	79	81
	Total Nitrogen	Mean (mg/l)	1.19	1.02	1.02	1.02	1.02
		Median (mg/l)	1.14	0.97	0.97	0.97	0.97
	Total Suspended Solids	Mean (mg/l)	17.2	12.6	12.6	12.8	12.8
		Median (mg/l)	7.6	5.5	5.5	5.6	5.6
	Copper	Mean (mg/l)	0.0048	0.0038	0.0038	0.0038	0.0038
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-14 Underwood Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	8,133	6,588	6,588	4,250	2,166
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	71	71	71	74	79
		Geometric mean (cells per 100 ml)	691	552	552	369	195
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	247	261	261	282	309
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,964	2,460	2,460	1,332	692
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	86	86	86	89	92
		Geometric mean (cells per 100 ml)	351	279	279	180	96
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	147	151	151	153	153
	Dissolved Oxygen	Mean (mg/l)	11.0	11.1	11.1	11.1	11.1
		Median (mg/l)	11.1	11.2	11.2	11.2	11.2
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.096	0.083	0.083	0.082	0.076
		Median (mg/l)	0.061	0.055	0.055	0.055	0.050
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	77	80	80	80	82
	Total Nitrogen	Mean (mg/l)	1.17	1.00	1.00	1.00	1.00
		Median (mg/l)	1.11	0.95	0.95	0.95	0.95
	Total Suspended Solids	Mean (mg/l)	16.8	12.4	12.4	12.7	12.7
		Median (mg/l)	7.9	5.8	5.8	5.8	5.8
	Copper	Mean (mg/l)	0.0048	0.0037	0.0037	0.0037	0.0037
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-15 Menomonee Mainstem	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,137	5,198	5,198	3,820	2,583
		Percent compliance with single sample standard (<400 cells per 100 ml)	47	47	47	50	52
		Geometric mean (cells per 100 ml)	1,063	930	930	677	469
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	12	21	21	53	107
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,064	2,531	2,531	1,538	946
		Percent compliance with single sample standard (<400 cells per 100 ml)	67	67	67	70	73
		Geometric mean (cells per 100 ml)	476	399	399	263	172
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	6	12	12	36	80
	Dissolved Oxygen	Mean (mg/l)	11.0	10.9	10.9	10.9	10.8
		Median (mg/l)	11.1	11.0	11.0	11.0	10.9
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.102	0.098	0.098	0.096	0.077
		Median (mg/l)	0.063	0.065	0.065	0.064	0.042
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	69	69	69	70	78
	Total Nitrogen	Mean (mg/l)	1.12	0.95	0.95	0.91	0.93
		Median (mg/l)	1.06	0.90	0.90	0.86	0.87
	Total Suspended Solids	Mean (mg/l)	15.6	12.5	12.5	12.5	12.5
		Median (mg/l)	5.6	4.7	4.7	4.6	4.6
	Copper	Mean (mg/l)	0.0057	0.0050	0.0050	0.0049	0.0049
		Median (mg/l)	0.0023	0.0022	0.0022	0.0022	0.0022

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-16 Honey Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	9,286	7,761	7,761	4,864	2,156
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	72	73	73	75	81
		Geometric mean (cells per 100 ml)	612	512	512	338	162
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	259	270	270	294	325
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,073	3,413	3,413	1,882	801
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	86	87	87	88	92
		Geometric mean (cells per 100 ml)	325	273	273	178	86
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	148	152	152	153	153
	Dissolved Oxygen	Mean (mg/l)	11.0	11.0	11.0	11.0	11.0
		Median (mg/l)	10.7	10.6	10.6	10.6	10.6
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	97	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.118	0.110	0.110	0.109	0.106
		Median (mg/l)	0.084	0.080	0.080	0.080	0.079
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	64	67	67	67	68
	Total Nitrogen	Mean (mg/l)	1.28	1.17	1.17	1.18	1.18
		Median (mg/l)	1.22	1.11	1.11	1.12	1.12
	Total Suspended Solids	Mean (mg/l)	14.4	11.2	11.2	11.5	11.5
		Median (mg/l)	7.2	5.7	5.7	5.7	5.7
	Copper	Mean (mg/l)	0.0046	0.0038	0.0038	0.0038	0.0038
		Median (mg/l)	0.0016	0.0014	0.0014	0.0014	0.0014

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-17 Menomonee River Down-stream of Honey Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,926	5,903	5,863	4,198	2,657
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	63	63	63	66	70
		Geometric mean (cells per 100 ml)	1,124	981	978	704	471
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	196	207	207	230	252
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,622	3,064	2,985	1,833	1,100
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	81	81	81	84	87
		Geometric mean (cells per 100 ml)	496	415	412	271	173
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	130	138	138	147	151
	Dissolved Oxygen	Mean (mg/l)	11.1	10.9	10.9	10.9	10.9
		Median (mg/l)	11.1	11.0	11.0	11.0	10.9
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.111	0.107	0.106	0.105	0.082
		Median (mg/l)	0.074	0.076	0.076	0.075	0.048
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	66	66	66	67	77
	Total Nitrogen	Mean (mg/l)	1.14	0.98	0.98	0.94	0.96
		Median (mg/l)	1.08	0.93	0.93	0.90	0.91
	Total Suspended Solids	Mean (mg/l)	16.3	13.2	13.2	13.2	13.2
		Median (mg/l)	6.0	4.9	4.9	4.9	4.9
	Copper	Mean (mg/l)	0.0057	0.0050	0.0050	0.0049	0.0049
		Median (mg/l)	0.0024	0.0022	0.0022	0.0022	0.0022

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Table N-2 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
MN-18 Menomonee River near Upstream Limit of Estuary	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,889	5,945	5,907	4,214	2,552
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	64	63	63	66	70
		Geometric mean (cells per 100 ml)	1,081	955	952	685	449
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	200	209	209	232	254
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,557	3,073	2,998	1,861	1,052
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	81	81	81	85	88
		Geometric mean (cells per 100 ml)	468	399	396	261	163
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	133	138	138	147	151
	Dissolved Oxygen	Mean (mg/l)	11.0	10.9	10.9	10.9	10.9
		Median (mg/l)	11.0	10.9	11.0	10.9	10.9
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.133	0.129	0.129	0.127	0.102
		Median (mg/l)	0.104	0.105	0.105	0.103	0.076
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	52	51	51	52	68
	Total Nitrogen	Mean (mg/l)	1.26	1.11	1.11	1.07	1.09
		Median (mg/l)	1.20	1.07	1.07	1.03	1.04
	Total Suspended Solids	Mean (mg/l)	16	13.1	13.1	13.1	13.1
		Median (mg/l)	5.5	4.8	4.8	4.7	4.7
	Copper	Mean (mg/l)	0.0056	0.0049	0.0049	0.0048	0.0048
		Median (mg/l)	0.0023	0.0022	0.0022	0.0022	0.0022

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Table N-2 Footnotes

[a]*In certain limited cases, relatively minor anomalies in concentrations or percents compliance may occur among the five conditions for which model results are presented in this table. Those anomalies might indicate a slight decrease in water quality under the recommended plan and/or "extreme measures" conditions, relative to revised 2020 baseline and/or revised 2020 baseline with five-year LOP conditions. In those cases, it may be assumed that no significant change in water quality occurs among those various conditions. Since it was not always possible to explicitly represent certain components of the recommended plan and "extreme measures" conditions in the LSPC water quality model, adjustments were made to model parameters that served as surrogates for the actual water pollution control measure being represented. In the sense that those modifications sometimes alter parameters in the revised 2020 baseline and/or revised 2020 baseline with five-year LOP model versions, in limited cases, representation of a measure in the recommended plan or "extreme measures" models may have a side effect of introducing small, relatively insignificant anomalies in the comparative results.*

[b]*Five-Year LOP refers to a five-year recurrence interval level of protection against sanitary sewer overflows.*

[c]*Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

[d]*Variance Standard in Chapter NR 104 of the* Wisconsin Administrative Code.

Source: Tetra Tech, Inc., and SEWRPC.

Table N-3

WATER QUALITY SUMMARY STATISTICS FOR THE RECOMMENDED PLAN: MILWAUKEE RIVER WATERSHED[a]

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-1 Kettle Moraine Lake	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,342	1,521	1,521	1,110	1,103
		Percent compliance with single sample standard (<400 cells per 100 ml)	22	21	21	68	68
		Geometric mean (cells per 100 ml)	742	781	781	164	159
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	5	4	4	206	207
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,036	1,231	1,231	787	785
		Percent compliance with single sample standard (<400 cells per 100 ml)	30	28	28	86	86
		Geometric mean (cells per 100 ml)	578	614	614	65	62
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	5	4	4	138	138
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.4	11.4	11.4	11.5	11.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.082	0.080	0.080	0.059	0.059
		Median (mg/l)	0.068	0.066	0.066	0.049	0.050
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	83	84	84	91	91
	Total Nitrogen	Mean (mg/l)	2.11	2.09	2.09	0.80	0.76
		Median (mg/l)	2.07	2.06	2.06	0.76	0.73
	Total Suspended Solids	Mean (mg/l)	9.1	8.9	8.9	6.3	6.4
		Median (mg/l)	4.3	4.2	4.2	2.7	2.8
	Copper	Mean (mg/l)	0.0034	0.0034	0.0034	0.0027	0.0028
		Median (mg/l)	0.0031	0.0031	0.0031	0.0024	0.0024

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-2 Auburn Lake Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,963	4,558	4,558	3,855	3,811
		Percent compliance with single sample standard (<400 cells per 100 ml)	6	5	5	58	59
		Geometric mean (cells per 100 ml)	1,676	1,811	1,811	472	457
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	78	86
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,026	3,704	3,704	2,822	2,798
		Percent compliance with single sample standard (<400 cells per 100 ml)	4	3	3	74	74
		Geometric mean (cells per 100 ml)	1,428	1,582	1,582	286	276
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	42	48
	Dissolved Oxygen	Mean (mg/l)	10.9	10.9	10.9	10.9	11.0
		Median (mg/l)	11.0	11.0	11.0	11.0	11.0
		Percent compliance with dissolved oxygen standard (>6 mg/l, >7 mg/l October-December)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.046	0.045	0.045	0.044	0.043
		Median (mg/l)	0.015	0.015	0.015	0.014	0.014
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	87	87	87	87	87
	Total Nitrogen	Mean (mg/l)	1.08	1.08	1.08	0.81	0.78
		Median (mg/l)	1.04	1.04	1.04	0.76	0.73
	Total Suspended Solids	Mean (mg/l)	12.2	12.1	12.1	11.2	11.1
		Median (mg/l)	5.4	5.4	5.4	4.6	4.6
	Copper	Mean (mg/l)	0.0028	0.0028	0.0028	0.0026	0.0027
		Median (mg/l)	0.0016	0.0016	0.0016	0.0014	0.0014

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-3 Lake Fifteen Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,334	2,367	2,367	1,932	1,902
		Percent compliance with single sample standard (<400 cells per 100 ml)	14	14	14	65	65
		Geometric mean (cells per 100 ml)	1,021	1,035	1,035	326	316
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	1	1	1	136	143
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,887	1,924	1,924	1,407	1,390
		Percent compliance with single sample standard (<400 cells per 100 ml)	15	14	14	80	80
		Geometric mean (cells per 100 ml)	840	859	859	184	176
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	1	1	1	97	102
	Dissolved Oxygen	Mean (mg/l)	11.1	11.2	11.2	11.2	11.2
		Median (mg/l)	11.2	11.2	11.2	11.2	11.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.075	0.075	0.075	0.071	0.070
		Median (mg/l)	0.057	0.057	0.057	0.053	0.053
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	86	87	87	88	88
	Total Nitrogen	Mean (mg/l)	1.40	1.38	1.38	1.09	1.03
		Median (mg/l)	1.38	1.36	1.36	1.06	1.00
	Total Suspended Solids	Mean (mg/l)	6.2	6.2	6.2	5.8	5.8
		Median (mg/l)	2.6	2.6	2.6	2.4	2.3
	Copper	Mean (mg/l)	0.0036	0.0036	0.0036	0.0035	0.0036
		Median (mg/l)	0.0027	0.0027	0.0027	0.0026	0.0026

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-4 West Branch of the Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,808	3,375	3,375	2,128	2,095
		Percent compliance with single sample standard (<400 cells per 100 ml)	1	1	1	54	54
		Geometric mean (cells per 100 ml)	1,770	1,997	1,997	582	562
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	28	33
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,003	2,500	2,500	1,488	1,468
		Percent compliance with single sample standard (<400 cells per 100 ml)	3	3	3	72	72
		Geometric mean (cells per 100 ml)	1,302	1,492	1,492	332	319
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	24	28
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.5	11.5	11.5	11.5	11.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.060	0.058	0.058	0.054	0.052
		Median (mg/l)	0.024	0.023	0.023	0.022	0.021
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	82	82	82	84	84
	Total Nitrogen	Mean (mg/l)	2.59	2.57	2.57	2.30	2.15
		Median (mg/l)	2.53	2.52	2.52	2.26	2.11
	Total Suspended Solids	Mean (mg/l)	17.7	17.3	17.3	16.3	16.0
		Median (mg/l)	8.4	8.3	8.3	7.7	7.6
	Copper	Mean (mg/l)	0.0030	0.0030	0.0030	0.0029	0.0030
		Median (mg/l)	0.0020	0.0020	0.0020	0.0019	0.0019

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-5 Kewaskum, USGS Sampling Location (4086149)	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,761	2,051	2,051	1,245	1,215
		Percent compliance with single sample standard (<400 cells per 100 ml)	11	10	10	52	52
		Geometric mean (cells per 100 ml)	1,116	1,225	1,225	409	393
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	3	3	3	102	108
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,088	1,341	1,341	744	728
		Percent compliance with single sample standard (<400 cells per 100 ml)	24	22	22	74	74
		Geometric mean (cells per 100 ml)	702	783	783	189	180
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	3	3	3	90	94
	Dissolved Oxygen	Mean (mg/l)	11.2	11.2	11.2	11.2	11.2
		Median (mg/l)	11.2	11.2	11.2	11.2	11.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.068	0.068	0.068	0.058	0.057
		Median (mg/l)	0.047	0.047	0.047	0.041	0.041
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	84	84	84	88	88
	Total Nitrogen	Mean (mg/l)	2.33	2.31	2.31	1.67	1.56
		Median (mg/l)	2.29	2.27	2.27	1.64	1.54
	Total Suspended Solids	Mean (mg/l)	14.1	13.9	13.9	14.6	14.5
		Median (mg/l)	8.5	8.5	8.5	9.7	9.7
	Copper	Mean (mg/l)	0.0032	0.0032	0.0032	0.0029	0.0030
		Median (mg/l)	0.0027	0.0027	0.0027	0.0025	0.0025

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-7 Upper Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,950	2,046	2,046	1,030	1,003
		Percent compliance with single sample standard (<400 cells per 100 ml)	19	19	19	52	53
		Geometric mean (cells per 100 ml)	1,069	1,092	1,092	377	361
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	6	7	7	109	115
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,128	1,222	1,222	564	548
		Percent compliance with single sample standard (<400 cells per 100 ml)	39	39	39	74	74
		Geometric mean (cells per 100 ml)	600	617	617	171	162
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	6	7	7	96	99
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.3	11.4	11.4	11.3	11.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.080	0.085	0.085	0.077	0.076
		Median (mg/l)	0.061	0.066	0.066	0.061	0.061
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	75	75	80	80
	Total Nitrogen	Mean (mg/l)	2.20	2.15	2.15	1.60	1.49
		Median (mg/l)	2.15	2.11	2.11	1.57	1.47
	Total Suspended Solids	Mean (mg/l)	10.8	10.6	10.6	9.8	9.7
		Median (mg/l)	5.7	5.6	5.6	5.0	5.0
	Copper	Mean (mg/l)	0.0035	0.0037	0.0037	0.0034	0.0035
		Median (mg/l)	0.0031	0.0032	0.0032	0.0030	0.0030

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-8 Watercress Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,280	3,733	3,733	2,627	2,613
		Percent compliance with single sample standard (<400 cells per 100 ml)	0	0	0	57	58
		Geometric mean (cells per 100 ml)	1,860	1,985	1,985	500	491
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	38	40
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,908	3,459	3,459	1,998	1,998
		Percent compliance with single sample standard (<400 cells per 100 ml)	0	0	0	70	70
		Geometric mean (cells per 100 ml)	1,827	1,988	1,988	344	338
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	24	25
	Dissolved Oxygen	Mean (mg/l)	11.0	11.0	11.0	11.0	11.0
		Median (mg/l)	11.0	11.0	11.0	11.0	11.0
		Percent compliance with dissolved oxygen standard (>6 mg/l, >7 mg/l October-December)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.032	0.032	0.032	0.028	0.028
		Median (mg/l)	0.012	0.012	0.012	0.009	0.009
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	92	93	93	93	93
	Total Nitrogen	Mean (mg/l)	1.49	1.48	1.48	0.90	0.87
		Median (mg/l)	1.53	1.43	1.43	0.84	0.80
	Total Suspended Solids	Mean (mg/l)	10.8	10.6	10.6	8.3	8.3
		Median (mg/l)	5.6	5.6	5.6	4.0	4.0
	Copper	Mean (mg/l)	0.0022	0.0022	0.0022	0.0019	0.0020
		Median (mg/l)	0.0014	0.0014	0.0014	0.0011	0.0011

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-9 Watercress Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	301	313	313	265	263
		Percent compliance with single sample standard (<400 cells per 100 ml)	90	90	90	91	91
		Geometric mean (cells per 100 ml)	76	77	77	27	26
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	311	311	311	363	364
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	232	255	255	231	231
		Percent compliance with single sample standard (<400 cells per 100 ml)	95	95	95	95	95
		Geometric mean (cells per 100 ml)	44	44	44	11	11
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	150	150	150	153	153
	Dissolved Oxygen	Mean (mg/l)	11.6	11.6	11.6	11.6	11.6
		Median (mg/l)	11.7	11.7	11.7	11.7	11.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.118	0.114	0.114	0.081	0.079
		Median (mg/l)	0.117	0.114	0.114	0.080	0.079
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	38	43	43	89	92
	Total Nitrogen	Mean (mg/l)	1.66	1.64	1.64	0.79	0.75
		Median (mg/l)	1.67	1.64	1.64	0.78	0.75
	Total Suspended Solids	Mean (mg/l)	3.4	3.4	3.4	3.0	3.0
		Median (mg/l)	3.0	3.0	3.0	2.5	2.6
	Copper	Mean (mg/l)	0.0034	0.0034	0.0034	0.0026	0.0027
		Median (mg/l)	0.0033	0.0033	0.0033	0.0025	0.0026

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-10 East Branch Milwaukee River, USGS Sampling Location (4086200)	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	948	991	991	884	871
		Percent compliance with single sample standard (<400 cells per 100 ml)	48	48	48	57	58
		Geometric mean (cells per 100 ml)	472	478	478	310	304
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	45	44	44	119	121
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	667	736	736	631	626
		Percent compliance with single sample standard (<400 cells per 100 ml)	80	80	80	85	85
		Geometric mean (cells per 100 ml)	268	274	274	134	131
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	41	40	40	104	105
	Dissolved Oxygen	Mean (mg/l)	11.5	11.5	11.5	11.5	11.5
		Median (mg/l)	11.6	11.6	11.6	11.6	11.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.084	0.083	0.083	0.067	0.066
		Median (mg/l)	0.079	0.078	0.078	0.062	0.061
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	82	83	83	94	94
	Total Nitrogen	Mean (mg/l)	1.37	1.35	1.35	0.75	0.71
		Median (mg/l)	1.36	1.35	1.35	0.73	0.70
	Total Suspended Solids	Mean (mg/l)	3.5	3.4	3.4	3.2	3.2
		Median (mg/l)	2.2	2.1	2.1	2.0	2.0
	Copper	Mean (mg/l)	0.0032	0.0032	0.0032	0.0028	0.0028
		Median (mg/l)	0.0030	0.0030	0.0030	0.0026	0.0026

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-11 East Branch of the Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,030	1,087	1,087	707	695
		Percent compliance with single sample standard (<400 cells per 100 ml)	51	51	51	60	60
		Geometric mean (cells per 100 ml)	452	452	452	246	241
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	62	64	64	148	149
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	680	729	729	393	388
		Percent compliance with single sample standard (<400 cells per 100 ml)	81	81	81	84	85
		Geometric mean (cells per 100 ml)	231	228	228	91	89
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	57	59	59	126	127
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.5	11.5	11.5	11.5	11.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.080	0.079	0.079	0.065	0.064
		Median (mg/l)	0.073	0.072	0.072	0.057	0.057
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	83	84	84	92	93
	Total Nitrogen	Mean (mg/l)	1.32	1.31	1.31	0.76	0.72
		Median (mg/l)	1.31	1.30	1.30	0.74	0.70
	Total Suspended Solids	Mean (mg/l)	2.7	2.7	2.7	2.6	2.6
		Median (mg/l)	1.8	1.8	1.8	1.6	1.6
	Copper	Mean (mg/l)	0.0032	0.0032	0.0032	0.0028	0.0029
		Median (mg/l)	0.0029	0.0029	0.0029	0.0025	0.0025

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-14 Middle Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,493	1,123	1,123	647	603
		Percent compliance with single sample standard (<400 cells per 100 ml)	39	40	40	52	53
		Geometric mean (cells per 100 ml)	601	510	510	212	194
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	80	85	85	153	157
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	533	458	458	318	298
		Percent compliance with single sample standard (<400 cells per 100 ml)	72	74	74	79	80
		Geometric mean (cells per 100 ml)	207	187	187	58	52
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	72	76	76	128	130
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.4	11.4	11.4	11.4	11.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	100	100
	Total Phosphorus	Mean (mg/l)	0.110	0.120	0.120	0.113	0.112
		Median (mg/l)	0.095	0.107	0.107	0.102	0.102
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	55	48	48	53	53
	Total Nitrogen	Mean (mg/l)	1.71	1.62	1.62	1.20	1.12
		Median (mg/l)	1.64	1.56	1.56	1.15	1.08
	Total Suspended Solids	Mean (mg/l)	11.8	11.6	11.6	10.9	10.8
		Median (mg/l)	7.4	7.3	7.3	6.9	6.8
	Copper	Mean (mg/l)	0.0054	0.0059	0.0059	0.0056	0.0057
		Median (mg/l)	0.0052	0.0057	0.0057	0.0054	0.0055

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-15 North Branch of the Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,252	4,260	4,260	3,213	3,167
		Percent compliance with single sample standard (<400 cells per 100 ml)	0	0	0	50	50
		Geometric mean (cells per 100 ml)	2,313	2,325	2,325	626	616
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	60	64
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,530	3,501	3,501	2,249	2,224
		Percent compliance with single sample standard (<400 cells per 100 ml)	0	1	1	81	81
		Geometric mean (cells per 100 ml)	1,867	1,845	1,845	253	247
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	55	58
	Dissolved Oxygen	Mean (mg/l)	10.8	10.8	10.8	10.8	10.8
		Median (mg/l)	10.9	10.9	10.9	10.9	10.9
		Percent compliance with dissolved oxygen standard (>6 mg/l, >7 mg/l October-December)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.785	0.881	0.881	0.898	0.921
		Median (mg/l)	0.748	0.844	0.844	0.862	0.887
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	2	1	1	1	1
	Total Nitrogen	Mean (mg/l)	2.27	2.30	2.30	1.34	1.29
		Median (mg/l)	2.24	2.27	2.27	1.29	1.24
	Total Suspended Solids	Mean (mg/l)	7.1	7.0	7.0	5.7	5.7
		Median (mg/l)	4.4	4.4	4.4	3.4	3.4
	Copper	Mean (mg/l)	0.0037	0.0038	0.0038	0.0035	0.0036
		Median (mg/l)	0.0025	0.0026	0.0026	0.0023	0.0023

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-16 Chambers Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,613	4,229	4,229	2,664	2,625
		Percent compliance with single sample standard (<400 cells per 100 ml)	0	0	0	75	75
		Geometric mean (cells per 100 ml)	2,095	2,277	2,277	285	272
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	127	141
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,982	4,863	4,863	2,694	2,677
		Percent compliance with single sample standard (<400 cells per 100 ml)	0	0	0	85	85
		Geometric mean (cells per 100 ml)	2,418	2,684	2,684	250	240
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	62	71
	Dissolved Oxygen	Mean (mg/l)	10.7	10.7	10.7	10.7	10.6
		Median (mg/l)	10.7	10.7	10.7	10.7	10.7
		Percent compliance with dissolved oxygen standard (>6 mg/l, >7 mg/l October-December)[d]	86	86	86	85	85
	Total Phosphorus	Mean (mg/l)	0.038	0.037	0.037	0.031	0.031
		Median (mg/l)	0.012	0.012	0.012	0.009	0.009
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	92	92	92	93	93
	Total Nitrogen	Mean (mg/l)	2.36	2.35	2.35	1.43	1.35
		Median (mg/l)	2.29	2.29	2.29	1.37	1.29
	Total Suspended Solids	Mean (mg/l)	19.7	19.5	19.5	15.5	15.3
		Median (mg/l)	14.9	14.9	14.9	12.0	12.0
	Copper	Mean (mg/l)	0.0023	0.0023	0.0023	0.0020	0.0020
		Median (mg/l)	0.0013	0.0013	0.0013	0.0010	0.0010

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-17 Melius Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,637	4,129	4,129	2,798	2,749
		Percent compliance with single sample standard (<400 cells per 100 ml)	0	0	0	75	75
		Geometric mean (cells per 100 ml)	1,937	2,063	2,063	260	248
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	157	169
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,328	4,021	4,021	2,248	2,219
		Percent compliance with single sample standard (<400 cells per 100 ml)	1	1	1	87	87
		Geometric mean (cells per 100 ml)	1,985	2,170	2,170	190	180
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	89	97
	Dissolved Oxygen	Mean (mg/l)	11.1	11.1	11.1	11.1	11.1
		Median (mg/l)	11.1	11.1	11.1	11.1	11.1
		Percent compliance with dissolved oxygen standard (>6 mg/l, >7 mg/l October-December)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.037	0.037	0.037	0.032	0.032
		Median (mg/l)	0.011	0.011	0.011	0.009	0.009
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	91	91	91	92	92
	Total Nitrogen	Mean (mg/l)	1.97	1.97	1.97	1.17	1.12
		Median (mg/l)	1.93	1.93	1.93	1.12	1.06
	Total Suspended Solids	Mean (mg/l)	10.8	10.7	10.7	8.3	8.2
		Median (mg/l)	6.4	6.4	6.4	4.6	4.7
	Copper	Mean (mg/l)	0.0025	0.0025	0.0025	0.0022	0.0023
		Median (mg/l)	0.0014	0.0014	0.0014	0.0010	0.0011

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-18 Batavia Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,460	4,105	4,105	2,649	2,611
		Percent compliance with single sample standard (<400 cells per 100 ml)	1	0	0	71	72
		Geometric mean (cells per 100 ml)	2,091	2,296	2,296	302	289
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	121	135
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,302	4,133	4,133	2,336	2,314
		Percent compliance with single sample standard (<400 cells per 100 ml)	1	1	1	85	85
		Geometric mean (cells per 100 ml)	2,037	2,294	2,294	215	205
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	67	79
	Dissolved Oxygen	Mean (mg/l)	11.0	11.0	11.0	11.0	11.0
		Median (mg/l)	11.0	11.0	11.0	11.0	11.1
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.040	0.040	0.040	0.034	0.034
		Median (mg/l)	0.012	0.012	0.012	0.009	0.009
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	90	90	90	91	92
	Total Nitrogen	Mean (mg/l)	2.31	2.30	2.30	1.37	1.29
		Median (mg/l)	2.27	2.26	2.26	1.31	1.24
	Total Suspended Solids	Mean (mg/l)	13.4	13.2	13.2	9.9	9.9
		Median (mg/l)	7.4	7.4	7.4	5.2	5.3
	Copper	Mean (mg/l)	0.0025	0.0025	0.0025	0.0021	0.0021
		Median (mg/l)	0.0014	0.0014	0.0014	0.0010	0.0010

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-20 Silver Creek (Sheboygan County)	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,944	3,369	3,369	1,487	1,450
		Percent compliance with single sample standard (<400 cells per 100 ml)	3	3	3	73	73
		Geometric mean (cells per 100 ml)	1,341	1,347	1,347	348	330
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	44	60
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,287	2,744	2,744	1,113	1,086
		Percent compliance with single sample standard (<400 cells per 100 ml)	6	7	7	87	87
		Geometric mean (cells per 100 ml)	1,125	1,149	1,149	278	264
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	15	25
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.4	11.4	11.4	11.4	11.4
		Percent compliance with dissolved oxygen standard (>3 mg/l)[e]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.111	0.120	0.120	0.116	0.116
		Median (mg/l)	0.091	0.102	0.102	0.099	0.099
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	64	57	57	59	59
	Total Nitrogen	Mean (mg/l)	1.50	1.43	1.43	1.31	1.21
		Median (mg/l)	1.46	1.39	1.39	1.27	1.17
	Total Suspended Solids	Mean (mg/l)	8.8	8.9	8.9	8.7	8.4
		Median (mg/l)	4.3	4.5	4.5	4.4	4.3
	Copper	Mean (mg/l)	0.0056	0.0060	0.0060	0.0056	0.0057
		Median (mg/l)	0.0047	0.0052	0.0052	0.0048	0.0049

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-21 Silver Creek (Sheboygan County)	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,909	3,321	3,321	1,622	1,585
		Percent compliance with single sample standard (<400 cells per 100 ml)	3	3	3	70	70
		Geometric mean (cells per 100 ml)	1,439	1,466	1,466	369	351
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	54	68
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,277	2,667	2,667	1,190	1,165
		Percent compliance with single sample standard (<400 cells per 100 ml)	6	7	7	84	84
		Geometric mean (cells per 100 ml)	1,169	1,195	1,195	265	252
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	30	37
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.4	11.4	11.4	11.4	11.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.101	0.109	0.109	0.106	0.106
		Median (mg/l)	0.078	0.087	0.087	0.085	0.086
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	70	65	65	66	66
	Total Nitrogen	Mean (mg/l)	1.66	1.59	1.59	1.46	1.35
		Median (mg/l)	1.61	1.55	1.55	1.42	1.31
	Total Suspended Solids	Mean (mg/l)	8.8	8.5	8.5	8.4	8.1
		Median (mg/l)	4.3	4.3	4.3	4.2	4.1
	Copper	Mean (mg/l)	0.0053	0.0057	0.0057	0.0053	0.0054
		Median (mg/l)	0.0043	0.0047	0.0047	0.0044	0.0045

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-22 Stony Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,751	4,536	4,536	3,458	3,407
		Percent compliance with single sample standard (<400 cells per 100 ml)	0	0	0	43	43
		Geometric mean (cells per 100 ml)	2,124	2,392	2,392	805	788
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	10	11
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,240	4,241	4,241	2,964	2,936
		Percent compliance with single sample standard (<400 cells per 100 ml)	1	1	1	53	53
		Geometric mean (cells per 100 ml)	1,856	2,163	2,163	554	545
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	4	5
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.5	11.5	11.5	11.5	11.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.044	0.044	0.044	0.041	0.040
		Median (mg/l)	0.015	0.015	0.015	0.013	0.013
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	88	89	89	89	90
	Total Nitrogen	Mean (mg/l)	2.02	2.02	2.02	1.50	1.41
		Median (mg/l)	2.00	1.99	1.99	1.46	1.37
	Total Suspended Solids	Mean (mg/l)	16.1	16.0	16.0	13.9	13.7
		Median (mg/l)	10.0	10.0	10.0	8.4	8.3
	Copper	Mean (mg/l)	0.0028	0.0028	0.0028	0.0026	0.0027
		Median (mg/l)	0.0016	0.0016	0.0016	0.0014	0.0014

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-23 North Branch of the Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,707	2,773	2,773	1,886	1,858
		Percent compliance with single sample standard (<400 cells per 100 ml)	7	7	7	53	54
		Geometric mean (cells per 100 ml)	1,447	1,469	1,469	508	494
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	3	3	3	73	79
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,718	1,756	1,756	1,070	1,057
		Percent compliance with single sample standard (<400 cells per 100 ml)	16	15	15	74	74
		Geometric mean (cells per 100 ml)	892	904	904	235	227
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	3	3	3	66	72
	Dissolved Oxygen	Mean (mg/l)	11.6	11.6	11.6	11.6	11.6
		Median (mg/l)	11.7	11.7	11.7	11.7	11.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.206	0.212	0.212	0.217	0.222
		Median (mg/l)	0.185	0.190	0.190	0.197	0.202
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	40	39	39	38	37
	Total Nitrogen	Mean (mg/l)	1.77	1.76	1.76	1.36	1.27
		Median (mg/l)	1.73	1.72	1.72	1.32	1.23
	Total Suspended Solids	Mean (mg/l)	7.9	7.9	7.9	7.3	7.2
		Median (mg/l)	4.6	4.6	4.6	4.2	4.1
	Copper	Mean (mg/l)	0.0036	0.0035	0.0035	0.0033	0.0034
		Median (mg/l)	0.0027	0.0026	0.0026	0.0024	0.0024

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	“Extreme Measures” Condition[c]
ML-24 Fredonia, USGS Sampling Location (4086360)	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,678	1,497	1,497	964	926
		Percent compliance with single sample standard (<400 cells per 100 ml)	32	32	32	51	52
		Geometric mean (cells per 100 ml)	777	722	722	290	274
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	52	52	52	141	145
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	673	664	664	433	417
		Percent compliance with single sample standard (<400 cells per 100 ml)	63	64	64	77	77
		Geometric mean (cells per 100 ml)	311	305	305	90	84
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	49	49	49	118	121
	Dissolved Oxygen	Mean (mg/l)	11.5	11.5	11.5	11.5	11.5
		Median (mg/l)	11.6	11.6	11.6	11.6	11.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.129	0.136	0.136	0.132	0.133
		Median (mg/l)	0.112	0.121	0.121	0.120	0.121
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	49	45	45	48	48
	Total Nitrogen	Mean (mg/l)	1.73	1.67	1.67	1.25	1.17
		Median (mg/l)	1.67	1.62	1.62	1.21	1.13
	Total Suspended Solids	Mean (mg/l)	11.9	11.7	11.7	11.1	10.9
		Median (mg/l)	7.5	7.4	7.4	7.0	6.9
	Copper	Mean (mg/l)	0.0048	0.0051	0.0051	0.0048	0.0049
		Median (mg/l)	0.0045	0.0048	0.0048	0.0046	0.0046

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-25 Upper Lower Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,154	1,066	1,066	512	486
		Percent compliance with single sample standard (<400 cells per 100 ml)	42	42	42	60	61
		Geometric mean (cells per 100 ml)	382	364	364	138	129
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	128	130	130	180	183
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	370	360	360	204	193
		Percent compliance with single sample standard (<400 cells per 100 ml)	75	75	75	83	84
		Geometric mean (cells per 100 ml)	107	105	105	38	35
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	102	102	102	128	130
	Dissolved Oxygen	Mean (mg/l)	11.1	11.0	11.0	10.9	10.9
		Median (mg/l)	11.1	11.1	11.1	10.9	10.9
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.134	0.145	0.145	0.141	0.141
		Median (mg/l)	0.120	0.132	0.132	0.131	0.133
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	43	38	38	39	39
	Total Nitrogen	Mean (mg/l)	1.74	1.67	1.67	1.29	1.20
		Median (mg/l)	1.67	1.61	1.61	1.24	1.16
	Total Suspended Solids	Mean (mg/l)	16.7	16.5	16.5	15.7	15.5
		Median (mg/l)	12.4	12.3	12.3	11.7	11.6
	Copper	Mean (mg/l)	0.0049	0.0053	0.0053	0.0049	0.0050
		Median (mg/l)	0.0048	0.0051	0.0051	0.0048	0.0049

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-27 Cedar Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,887	1,793	1,793	771	744
		Percent compliance with single sample standard (<400 cells per 100 ml)	17	19	19	67	68
		Geometric mean (cells per 100 ml)	938	909	909	226	214
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	1	2	2	176	183
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,143	1,090	1,090	458	443
		Percent compliance with single sample standard (<400 cells per 100 ml)	31	32	32	83	83
		Geometric mean (cells per 100 ml)	626	612	612	119	112
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	1	1	1	127	129
	Dissolved Oxygen	Mean (mg/l)	10.7	10.8	10.8	10.8	10.8
		Median (mg/l)	10.8	10.8	10.8	10.8	10.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.149	0.160	0.160	0.143	0.140
		Median (mg/l)	0.129	0.142	0.142	0.130	0.128
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	35	29	29	37	38
	Total Nitrogen	Mean (mg/l)	1.74	1.68	1.68	1.01	0.94
		Median (mg/l)	1.66	1.60	1.60	0.96	0.89
	Total Suspended Solids	Mean (mg/l)	11.7	11.4	11.4	9.9	9.7
		Median (mg/l)	9.1	8.9	8.9	7.8	7.6
	Copper	Mean (mg/l)	0.0043	0.0046	0.0046	0.0040	0.0040
		Median (mg/l)	0.0037	0.0040	0.0040	0.0035	0.0035

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-29 Milwaukee River at the Milwaukee-Ozaukee County Line	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,107	964	964	448	415
		Percent compliance with single sample standard (<400 cells per 100 ml)	42	43	43	62	64
		Geometric mean (cells per 100 ml)	385	339	339	129	117
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	127	136	136	184	194
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	358	319	319	178	163
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	76	76	84	85
		Geometric mean (cells per 100 ml)	112	99	99	36	33
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	103	106	106	131	134
	Dissolved Oxygen	Mean (mg/l)	11.0	11.0	11.0	10.9	10.8
		Median (mg/l)	11.1	11.0	11.0	10.9	10.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.132	0.142	0.142	0.136	0.136
		Median (mg/l)	0.119	0.131	0.131	0.128	0.129
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	41	34	34	37	38
	Total Nitrogen	Mean (mg/l)	1.69	1.62	1.62	1.19	1.11
		Median (mg/l)	1.62	1.56	1.56	1.15	1.07
	Total Suspended Solids	Mean (mg/l)	17.8	17.5	17.5	16.4	16.2
		Median (mg/l)	13.9	13.6	13.6	12.9	12.8
	Copper	Mean (mg/l)	0.0049	0.0053	0.0053	0.0049	0.0050
		Median (mg/l)	0.0048	0.0052	0.0052	0.0048	0.0049

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-30 Milwaukee River Downstream of Beaver Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,359	1,211	1,211	647	532
		Percent compliance with single sample standard (<400 cells per 100 ml)	42	43	43	54	56
		Geometric mean (cells per 100 ml)	442	393	393	167	133
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	120	130	130	177	188
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	543	532	532	423	354
		Percent compliance with single sample standard (<400 cells per 100 ml)	73	73	73	78	79
		Geometric mean (cells per 100 ml)	143	130	130	54	40
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	94	99	99	128	131
	Dissolved Oxygen	Mean (mg/l)	11.0	10.9	10.9	10.9	10.8
		Median (mg/l)	11.0	11.0	11.0	10.8	10.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	99	99	98	98
	Total Phosphorus	Mean (mg/l)	0.134	0.143	0.143	0.134	0.133
		Median (mg/l)	0.122	0.132	0.132	0.126	0.126
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	39	34	34	37	38
	Total Nitrogen	Mean (mg/l)	1.67	1.58	1.58	1.16	1.09
		Median (mg/l)	1.60	1.52	1.52	1.12	1.05
	Total Suspended Solids	Mean (mg/l)	20.7	19.9	19.9	18.9	18.6
		Median (mg/l)	16.1	15.6	15.6	14.9	14.6
	Copper	Mean (mg/l)	0.0049	0.0052	0.0052	0.0047	0.0048
		Median (mg/l)	0.0048	0.0051	0.0051	0.0046	0.0047

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-31 Indian Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,135	6,898	6,898	2,956	1,814
		Percent compliance with single sample standard (<2000 cells per 100 ml)[f]	57	56	56	65	73
		Geometric mean (cells per 100 ml)	614	649	649	307	180
		Days of compliance with geometric mean standard (<1000 cells per 100 ml)[b]	214	215	215	267	315
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,587	3,275	3,275	2,615	2,071
		Percent compliance with single sample standard (<2000 cells per 100 ml)[f]	78	75	75	77	79
		Geometric mean (cells per 100 ml)	130	159	159	103	70
		Days of compliance with geometric mean standard (<1000 cells per 100 ml)[f]	138	137	137	146	150
	Dissolved Oxygen	Mean (mg/l)	8.0	8.1	8.1	7.8	7.7
		Median (mg/l)	7.8	8.0	8.0	7.7	7.6
		Percent compliance with dissolved oxygen standard (>2 mg/l)[f]	95	95	95	95	95
	Total Phosphorus	Mean (mg/l)	0.128	0.106	0.106	0.075	0.071
		Median (mg/l)	0.092	0.075	0.075	0.051	0.048
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	55	60	60	73	75
	Total Nitrogen	Mean (mg/l)	1.07	0.99	0.99	0.85	0.86
		Median (mg/l)	0.98	0.93	0.93	0.82	0.83
	Total Suspended Solids	Mean (mg/l)	41.5	34.0	34.0	37.1	37.1
		Median (mg/l)	32.2	28.0	28.0	29.1	29.1
	Copper	Mean (mg/l)	0.0073	0.0057	0.0057	0.0041	0.0041
		Median (mg/l)	0.0056	0.0045	0.0045	0.0031	0.0031

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-32 Lincoln Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,770	4,405	4,400	1,913	1,168
		Percent compliance with single sample standard (<2000 cells per 100 ml)[f]	55	51	51	65	80
		Geometric mean (cells per 100 ml)	561	742	741	403	206
		Days of compliance with geometric mean standard (<1000 cells per 100 ml)[f]	200	184	184	225	297
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,223	1,866	1,860	1,505	1,213
		Percent compliance with single sample standard (<2000 cells per 100 ml)[f]	82	77	77	79	82
		Geometric mean (cells per 100 ml)	106	162	162	130	69
		Days of compliance with geometric mean standard (<1000 cells per 100 ml)[f]	135	129	129	138	150
	Dissolved Oxygen	Mean (mg/l)	6.4	7.1	7.1	6.5	6.5
		Median (mg/l)	6.3	7.0	7.0	6.5	6.5
		Percent compliance with dissolved oxygen standard (>2 mg/l)[f]	90	95	95	93	93
	Total Phosphorus	Mean (mg/l)	0.260	0.231	0.231	0.191	0.185
		Median (mg/l)	0.256	0.228	0.228	0.188	0.183
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	5	7	7	9	11
	Total Nitrogen	Mean (mg/l)	1.10	0.98	0.98	0.82	0.82
		Median (mg/l)	1.09	0.98	0.98	0.81	0.81
	Total Suspended Solids	Mean (mg/l)	55.2	44.1	44.1	48.7	48.7
		Median (mg/l)	49.8	39.9	39.9	44.3	44.3
	Copper	Mean (mg/l)	0.0093	0.0075	0.0075	0.0054	0.0054
		Median (mg/l)	0.0091	0.0074	0.0074	0.0053	0.0053

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Condition: Revised 2020 Baseline	Condition: Revised 2020 Baseline with Five-Year LOP[b]	Condition: Recommended Plan[c]	Condition: "Extreme Measures" Condition[c]
ML-33 Milwaukee River at Lincoln/ Estabrook Parks	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,559	1,483	1,472	736	553
		Percent compliance with single sample standard (<400 cells per 100 ml)	43	43	43	53	56
		Geometric mean (cells per 100 ml)	354	333	333	185	141
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	140	143	143	173	187
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	596	674	653	515	417
		Percent compliance with single sample standard (<400 cells per 100 ml)	73	72	72	76	78
		Geometric mean (cells per 100 ml)	84	83	83	61	45
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	107	107	108	125	130
	Dissolved Oxygen	Mean (mg/l)	10.8	10.8	10.8	10.7	10.7
		Median (mg/l)	10.9	10.9	10.9	10.8	10.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.139	0.145	0.145	0.134	0.132
		Median (mg/l)	0.128	0.135	0.135	0.127	0.126
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	35	32	32	35	37
	Total Nitrogen	Mean (mg/l)	1.63	1.54	1.54	1.14	1.07
		Median (mg/l)	1.57	1.49	1.49	1.10	1.04
	Total Suspended Solids	Mean (mg/l)	24.2	22.4	22.4	21.9	21.7
		Median (mg/l)	18.7	17.6	17.6	17.1	16.9
	Copper	Mean (mg/l)	0.0052	0.0053	0.0053	0.0047	0.0048
		Median (mg/l)	0.0051	0.0052	0.0052	0.0047	0.0047

Table N-3 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
ML-34 Milwaukee River at the Former North Avenue Dam	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,380	1,275	1,263	628	471
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	76	76	94	98
		Geometric mean (cells per 100 ml)	311	293	292	155	103
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	236	242	242	342	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	515	557	533	426	353
		Percent compliance with single sample standard (<400 cells per 100 ml)	92	92	92	94	96
		Geometric mean (cells per 100 ml)	73	73	73	48	28
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	145	147	147	153	153
	Dissolved Oxygen	Mean (mg/l)	10.6	10.6	10.6	10.4	10.4
		Median (mg/l)	10.6	10.6	10.6	10.5	10.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.169	0.173	0.173	0.163	0.161
		Median (mg/l)	0.160	0.165	0.165	0.158	0.157
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	24	22	22	22	22
	Total Nitrogen	Mean (mg/l)	1.60	1.52	1.52	1.13	1.06
		Median (mg/l)	1.53	1.46	1.46	1.09	1.03
	Total Suspended Solids	Mean (mg/l)	24.8	22.6	22.6	22.2	22.0
		Median (mg/l)	19.3	17.8	17.8	17.4	17.3
	Copper	Mean (mg/l)	0.0051	0.0051	0.0051	0.0046	0.0046
		Median (mg/l)	0.0052	0.0053	0.0053	0.0045	0.0046

Table N-3 Footnotes

[a]*In certain limited cases, relatively minor anomalies in concentrations or percents compliance may occur among the five conditions for which model results are presented in this table. Those anomalies might indicate a slight decrease in water quality under the recommended plan and/or "extreme measures" conditions, relative to revised 2020 baseline and/or revised 2020 baseline with five-year LOP conditions. In those cases, it may be assumed that no significant change in water quality occurs among those various conditions. Since it was not always possible to explicitly represent certain components of the recommended plan and "extreme measures" conditions in the LSPC water quality model, adjustments were made to model parameters that served as surrogates for the actual water pollution control measure being represented. In the sense that those modifications sometimes alter parameters in the revised 2020 baseline and/or revised 2020 baseline with five-year LOP model versions, in limited cases, representation of a measure in the recommended plan or "extreme measures" models may have a side effect of introducing small, relatively insignificant anomalies in the comparative results.*

[b]*Five-Year LOP refers to a five-year recurrence interval level of protection against sanitary sewer overflows.*

[c]*Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

[d]*Under Chapter NR 102 of the* Wisconsin Administrative Code *and* Wisconsin Trout Streams (1980)*, this assessment point is in a stream reach classified as capable of supporting a coldwater biological community.*

[e]*Under Chapter NR 104 of the* Wisconsin Administrative Code*, this assessment point is in a stream reach classified as capable of supporting limited forage fish.*

[f]*Variance Standard in Chapter NR 104 of the* Wisconsin Administrative Code*.*

Source: Tetra Tech, Inc., and SEWRPC.

Table N-4

WATER QUALITY SUMMARY STATISTICS FOR THE RECOMMENDED PLAN: OAK CREEK WATERSHED[a]

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
OK-1 Upper Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,905	3,983	3,983	2,603	1,321
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	64	64	67	72
		Geometric mean (cells per 100 ml)	541	508	508	346	192
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	65	65	65	123	231
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,012	1,713	1,713	1,079	552
		Percent compliance with single sample standard (<400 cells per 100 ml)	84	82	82	84	87
		Geometric mean (cells per 100 ml)	256	264	264	181	103
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	47	46	46	82	141
	Dissolved Oxygen	Mean (mg/l)	8.4	8.2	8.2	8.2	8.2
		Median (mg/l)	8.7	8.6	8.6	8.6	8.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	77	73	73	73	73
	Total Phosphorus	Mean (mg/l)	0.075	0.066	0.066	0.064	0.063
		Median (mg/l)	0.031	0.025	0.025	0.025	0.025
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	83	83	83	83	84
	Total Nitrogen	Mean (mg/l)	1.52	0.89	0.89	0.88	0.87
		Median (mg/l)	1.38	0.84	0.84	0.82	0.82
	Total Suspended Solids	Mean (mg/l)	13.7	7.4	7.4	7.9	7.9
		Median (mg/l)	7.8	4.6	4.6	4.6	4.6
	Copper	Mean (mg/l)	0.0038	0.0030	0.0030	0.0030	0.0029
		Median (mg/l)	0.0012	0.0008	0.0008	0.0008	0.0008

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Table N-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
OK-2 North Branch of Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,987	4,199	4,199	2,722	1,385
		Percent compliance with single sample standard (<400 cells per 100 ml)	57	56	56	60	65
		Geometric mean (cells per 100 ml)	611	568	568	385	213
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	60	63	63	108	210
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,561	2,113	2,113	1,289	658
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	73	73	76	80
		Geometric mean (cells per 100 ml)	289	281	281	192	109
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	44	45	45	71	131
	Dissolved Oxygen	Mean (mg/l)	8.8	8.6	8.6	8.6	8.6
		Median (mg/l)	8.6	8.3	8.3	8.3	8.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	82	80	80	80	80
	Total Phosphorus	Mean (mg/l)	0.084	0.074	0.074	0.072	0.071
		Median (mg/l)	0.032	0.030	0.030	0.030	0.030
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	79	79	80	80
	Total Nitrogen	Mean (mg/l)	1.32	0.91	0.91	0.91	0.90
		Median (mg/l)	1.18	0.81	0.81	0.80	0.80
	Total Suspended Solids	Mean (mg/l)	22.9	15.1	15.1	15.7	15.7
		Median (mg/l)	9	6.4	6.4	6.4	6.4
	Copper	Mean (mg/l)	0.0052	0.0040	0.0040	0.0040	0.0040
		Median (mg/l)	0.0014	0.0010	0.0010	0.0010	0.0010

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Table N-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
OK-3 Oak Creek Downstream of North Branch of Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	10,233	8,341	8,341	5,436	2,760
		Percent compliance with single sample standard (<400 cells per 100 ml)	55	55	55	58	63
		Geometric mean (cells per 100 ml)	1,191	1,070	1,070	729	402
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	17	19	19	36	99
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,750	3,834	3,834	2,382	1,216
		Percent compliance with single sample standard (<400 cells per 100 ml)	72	72	72	76	80
		Geometric mean (cells per 100 ml)	555	518	518	355	203
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	15	16	16	30	69
	Dissolved Oxygen	Mean (mg/l)	10	9.7	9.7	9.7	9.7
		Median (mg/l)	10.5	10.4	10.4	10.4	10.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	83	81	81	81	81
	Total Phosphorus	Mean (mg/l)	0.086	0.076	0.076	0.074	0.073
		Median (mg/l)	0.032	0.029	0.029	0.029	0.029
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	79	79	79	80	80
	Total Nitrogen	Mean (mg/l)	1.37	0.89	0.89	0.88	0.88
		Median (mg/l)	1.24	0.81	0.81	0.80	0.80
	Total Suspended Solids	Mean (mg/l)	20.9	13.2	13.2	13.7	13.7
		Median (mg/l)	8.5	5.9	5.9	5.9	5.9
	Copper	Mean (mg/l)	0.0049	0.0038	0.0038	0.0037	0.0037
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010

Table N-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Condition: Revised 2020 Baseline	Condition: Revised 2020 Baseline with Five-Year LOP[b]	Condition: Recommended Plan[c]	Condition: "Extreme Measures" Condition[c]
OK-4 Middle Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,953	6,856	6,856	4,447	2,259
		Percent compliance with single sample standard (<400 cells per 100 ml)	51	52	52	56	62
		Geometric mean (cells per 100 ml)	1,041	956	956	648	357
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	20	21	21	46	125
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,103	2,780	2,780	1,672	855
		Percent compliance with single sample standard (<400 cells per 100 ml)	69	70	70	75	79
		Geometric mean (cells per 100 ml)	463	453	453	308	175
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	17	17	17	35	87
	Dissolved Oxygen	Mean (mg/l)	9.4	9.2	9.2	9.2	9.2
		Median (mg/l)	9.6	9.5	9.5	9.5	9.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	85	82	82	82	82
	Total Phosphorus	Mean (mg/l)	0.081	0.073	0.073	0.071	0.071
		Median (mg/l)	0.032	0.030	0.030	0.029	0.029
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	79	80	80	81	81
	Total Nitrogen	Mean (mg/l)	1.34	0.87	0.87	0.86	0.86
		Median (mg/l)	1.17	0.76	0.76	0.76	0.76
	Total Suspended Solids	Mean (mg/l)	14.9	9.6	9.6	9.9	9.9
		Median (mg/l)	7.9	5.3	5.3	5.3	5.3
	Copper	Mean (mg/l)	0.0049	0.0039	0.0039	0.0038	0.0038
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010

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Table N-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
OK-5 Middle Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,666	6,634	6,634	4,289	2,178
		Percent compliance with single sample standard (<400 cells per 100 ml)	49	50	50	55	62
		Geometric mean (cells per 100 ml)	1,105	995	995	664	360
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	18	20	20	40	115
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,019	2,700	2,700	1,595	814
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	67	67	73	79
		Geometric mean (cells per 100 ml)	497	466	466	309	172
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	15	17	17	32	81
	Dissolved Oxygen	Mean (mg/l)	9.5	9.3	9.3	9.3	9.3
		Median (mg/l)	9.6	9.7	9.7	9.7	9.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	93	90	90	90	90
	Total Phosphorus	Mean (mg/l)	0.083	0.078	0.078	0.076	0.075
		Median (mg/l)	0.033	0.032	0.032	0.032	0.032
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	79	78	78	78	78
	Total Nitrogen	Mean (mg/l)	1.32	0.89	0.89	0.89	0.88
		Median (mg/l)	1.15	0.78	0.78	0.78	0.77
	Total Suspended Solids	Mean (mg/l)	14.1	9.1	9.1	9.4	9.4
		Median (mg/l)	7.2	4.6	4.6	4.7	4.7
	Copper	Mean (mg/l)	0.0051	0.0040	0.0040	0.0039	0.0039
		Median (mg/l)	0.0014	0.0010	0.0010	0.0010	0.0010

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Table N-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
OK-6 Mitchell Field Drainage Ditch	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,917	6,257	6,257	3,966	2,035
		Percent compliance with single sample standard (<400 cells per 100 ml)	31	56	56	62	68
		Geometric mean (cells per 100 ml)	1,442	1,179	1,179	775	457
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	2	2	13	66
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,906	2,761	2,761	1,590	836
		Percent compliance with single sample standard (<400 cells per 100 ml)	27	75	75	80	84
		Geometric mean (cells per 100 ml)	806	644	644	411	256
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	0	0	0	5	33
	Dissolved Oxygen	Mean (mg/l)	9	8.9	8.9	8.8	8.9
		Median (mg/l)	8.7	8.5	8.5	8.4	8.5
		Percent compliance with dissolved oxygen standard (>5 mg/l)	81	79	79	78	79
	Total Phosphorus	Mean (mg/l)	0.076	0.073	0.073	0.070	0.070
		Median (mg/l)	0.046	0.048	0.048	0.046	0.046
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	84	81	81	82	82
	Total Nitrogen	Mean (mg/l)	1.57	1.08	1.08	1.00	1.00
		Median (mg/l)	1.41	1.00	1.00	0.94	0.94
	Total Suspended Solids	Mean (mg/l)	11	6.9	6.9	7.1	7.1
		Median (mg/l)	7	4.2	4.2	4.2	4.2
	Copper	Mean (mg/l)	0.0041	0.0032	0.0032	0.0031	0.0031
		Median (mg/l)	0.0012	0.0008	0.0008	0.0008	0.0008

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Table N-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
OK-7 Oak Creek Downstream of Mitchell Field Drainage Ditch	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,729	6,765	6,765	4,358	2,216
		Percent compliance with single sample standard (<400 cells per 100 ml)	49	51	51	56	62
		Geometric mean (cells per 100 ml)	1,190	1,039	1,039	696	384
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	13	18	18	35	101
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,136	2,818	2,818	1,657	848
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	69	69	74	79
		Geometric mean (cells per 100 ml)	543	481	481	320	183
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	11	16	16	28	70
	Dissolved Oxygen	Mean (mg/l)	9.3	9.1	9.1	9.1	9.1
		Median (mg/l)	9.2	9.3	9.3	9.3	9.3
		Percent compliance with dissolved oxygen standard (>5 mg/l)	81	79	79	80	80
	Total Phosphorus	Mean (mg/l)	0.091	0.090	0.090	0.088	0.087
		Median (mg/l)	0.056	0.060	0.060	0.058	0.058
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	76	74	74	75	75
	Total Nitrogen	Mean (mg/l)	1.38	1.00	1.00	0.98	0.98
		Median (mg/l)	1.25	0.93	0.93	0.92	0.91
	Total Suspended Solids	Mean (mg/l)	14.9	9.6	9.6	9.9	9.9
		Median (mg/l)	7.3	4.7	4.7	4.8	4.8
	Copper	Mean (mg/l)	0.0051	0.0040	0.0040	0.0039	0.0039
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010

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Table N-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
OK-8 Lower Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	15,506	13,491	13,491	8,662	4,405
		Percent compliance with single sample standard (<400 cells per 100 ml)	17	23	23	39	53
		Geometric mean (cells per 100 ml)	2,700	2,363	2,363	1,550	834
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	6	11	11	13	27
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	6,370	5,619	5,619	3,218	1,649
		Percent compliance with single sample standard (<400 cells per 100 ml)	31	40	40	61	74
		Geometric mean (cells per 100 ml)	1,079	919	919	593	331
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	6	11	11	12	22
	Dissolved Oxygen	Mean (mg/l)	10.2	10.2	10.2	10.2	10.2
		Median (mg/l)	10	10.1	10.1	10.2	10.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	93	92	92	92	92
	Total Phosphorus	Mean (mg/l)	0.091	0.091	0.091	0.088	0.087
		Median (mg/l)	0.058	0.062	0.062	0.060	0.059
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	76	73	73	74	75
	Total Nitrogen	Mean (mg/l)	1.30	0.97	0.97	0.96	0.95
		Median (mg/l)	1.18	0.91	0.91	0.90	0.89
	Total Suspended Solids	Mean (mg/l)	15.9	10.4	10.4	10.7	10.7
		Median (mg/l)	7.3	4.7	4.7	4.8	4.8
	Copper	Mean (mg/l)	0.0052	0.0041	0.0041	0.0040	0.0040
		Median (mg/l)	0.0014	0.0010	0.0010	0.0010	0.0010

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Table N-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
OK-9 Lower Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,401	6,384	6,384	4,091	2,079
		Percent compliance with single sample standard (<400 cells per 100 ml)	51	54	54	57	62
		Geometric mean (cells per 100 ml)	993	790	790	526	289
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	26	40	40	68	150
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,061	2,661	2,661	1,502	768
		Percent compliance with single sample standard (<400 cells per 100 ml)	71	73	73	76	80
		Geometric mean (cells per 100 ml)	388	288	288	189	107
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	21	31	31	50	104
	Dissolved Oxygen	Mean (mg/l)	10.5	10.5	10.5	10.5	10.5
		Median (mg/l)	10.3	10.3	10.3	10.3	10.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	96	96	96	96
	Total Phosphorus	Mean (mg/l)	0.092	0.087	0.087	0.085	0.084
		Median (mg/l)	0.062	0.065	0.065	0.063	0.063
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	75	75	75	76	76
	Total Nitrogen	Mean (mg/l)	1.26	0.96	0.96	0.95	0.95
		Median (mg/l)	1.14	0.92	0.92	0.91	0.91
	Total Suspended Solids	Mean (mg/l)	16	10.4	10.4	10.4	10.4
		Median (mg/l)	6.7	4.3	4.3	4.3	4.3
	Copper	Mean (mg/l)	0.0052	0.0040	0.0040	0.0040	0.0040
		Median (mg/l)	0.0013	0.0010	0.0010	0.0010	0.0010

Indicates Revision from May 2013 Plan Amendment

Table N-4 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
OK-10 Lower Oak Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,643	5,733	5,733	3,696	1,878
		Percent compliance with single sample standard (<400 cells per 100 ml)	48	49	49	52	58
		Geometric mean (cells per 100 ml)	752	607	607	404	220
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	70	86	86	118	178
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,504	2,189	2,189	1,262	644
		Percent compliance with single sample standard (<400 cells per 100 ml)	71	71	71	74	78
		Geometric mean (cells per 100 ml)	179	134	134	89	51
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	59	70	70	93	131
	Dissolved Oxygen	Mean (mg/l)	11.2	11.2	11.2	11.2	11.2
		Median (mg/l)	11.2	11.2	11.2	11.2	11.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.078	0.071	0.071	0.070	0.069
		Median (mg/l)	0.046	0.045	0.045	0.044	0.043
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	80	80	80	80
	Total Nitrogen	Mean (mg/l)	1.07	0.82	0.82	0.81	0.81
		Median (mg/l)	0.98	0.71	0.71	0.71	0.70
	Total Suspended Solids	Mean (mg/l)	19.6	12.8	12.8	13.2	13.2
		Median (mg/l)	7.4	5.1	5.1	5.1	5.1
	Copper	Mean (mg/l)	0.006	0.0047	0.0047	0.0047	0.0047
		Median (mg/l)	0.0025	0.0021	0.0021	0.0021	0.0021

Indicates Revision from May 2013 Plan Amendment

Table N-4 Footnotes

[a] *In certain limited cases, relatively minor anomalies in concentrations or percents compliance may occur among the five conditions for which model results are presented in this table. Those anomalies might indicate a slight decrease in water quality under the recommended plan and/or "extreme measures" conditions, relative to revised 2020 baseline and/or revised 2020 baseline with five-year LOP conditions. In those cases, it may be assumed that no significant change in water quality occurs among those various conditions. Since it was not always possible to explicitly represent certain components of the recommended plan and "extreme measures" conditions in the LSPC water quality model, adjustments were made to model parameters that served as surrogates for the actual water pollution control measure being represented. In the sense that those modifications sometimes alter parameters in the revised 2020 baseline and/or revised 2020 baseline with five-year LOP model versions, in limited cases, representation of a measure in the recommended plan or "extreme measures" models may have a side effect of introducing small, relatively insignificant anomalies in the comparative results.*

[b] *Five-Year LOP refers to a five-year recurrence interval level of protection against sanitary sewer overflows.*

[c] *Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

Source: Tetra Tech, Inc., and SEWRPC.

Table N-5

WATER QUALITY SUMMARY STATISTICS FOR THE RECOMMENDED PLAN: ROOT RIVER WATERSHED[a]

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-1 Root River Upstream of Hale Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,644	4,728	4,728	2,979	1,545
		Percent compliance with single sample standard (<400 cells per 100 ml)	70	71	71	73	77
		Geometric mean (cells per 100 ml)	525	413	413	272	141
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	33	60	60	136	260
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,385	2,929	2,929	1,572	868
		Percent compliance with single sample standard (<400 cells per 100 ml)	80	81	81	84	87
		Geometric mean (cells per 100 ml)	393	308	308	195	101
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	13	27	27	71	139
	Dissolved Oxygen	Mean (mg/l)	10.8	10.8	10.8	10.8	10.8
		Median (mg/l)	10.8	10.8	10.8	10.8	10.8
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	96	96	96	96
	Total Phosphorus	Mean (mg/l)	0.062	0.053	0.053	0.053	0.053
		Median (mg/l)	0.025	0.022	0.022	0.022	0.022
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	87	88	88	88	88
	Total Nitrogen	Mean (mg/l)	0.98	0.85	0.85	0.85	0.85
		Median (mg/l)	1.01	0.87	0.87	0.87	0.87
	Total Suspended Solids	Mean (mg/l)	6.9	5.0	5.0	5.1	5.1
		Median (mg/l)	4.8	3.3	3.3	3.4	3.4
	Copper	Mean (mg/l)	0.0033	0.0026	0.0026	0.0026	0.0026
		Median (mg/l)	0.0013	0.0009	0.0009	0.0009	0.0009

Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-2 Root River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,040	5,898	5,898	3,765	1,929
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	66	66	69	72
		Geometric mean (cells per 100 ml)	630	504	504	333	172
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	27	45	45	98	228
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,968	3,478	3,478	1,927	1,019
		Percent compliance with single sample standard (<400 cells per 100 ml)	77	76	76	79	82
		Geometric mean (cells per 100 ml)	464	374	374	240	124
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	10	17	17	46	121
	Dissolved Oxygen	Mean (mg/l)	8.4	8.4	8.4	8.4	8.4
		Median (mg/l)	8.4	8.4	8.4	8.4	8.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	96	96	96	96	96
	Total Phosphorus	Mean (mg/l)	0.079	0.067	0.067	0.067	0.066
		Median (mg/l)	0.025	0.02	0.02	0.020	0.020
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	82	83	83	84	84
	Total Nitrogen	Mean (mg/l)	1.13	0.97	0.97	0.97	0.97
		Median (mg/l)	1.07	0.91	0.91	0.91	0.91
	Total Suspended Solids	Mean (mg/l)	6.3	4.6	4.6	4.9	4.9
		Median (mg/l)	4.9	3.4	3.4	3.4	3.4
	Copper	Mean (mg/l)	0.0047	0.0036	0.0036	0.0036	0.0036
		Median (mg/l)	0.0013	0.0009	0.0009	0.0009	0.0009

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-3 Root River at Wildcat Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,328	6,087	6,087	3,800	1,933
		Percent compliance with single sample standard (<400 cells per 100 ml)	64	64	64	66	70
		Geometric mean (cells per 100 ml)	645	521	521	342	177
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	27	42	42	96	222
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,228	3,563	3,563	1,799	926
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	74	74	76	80
		Geometric mean (cells per 100 ml)	477	386	386	244	126
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	10	16	16	46	117
	Dissolved Oxygen	Mean (mg/l)	8.9	8.9	8.9	8.9	8.9
		Median (mg/l)	8.7	8.7	8.7	8.7	8.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	87	88	88	88	88
	Total Phosphorus	Mean (mg/l)	0.078	0.066	0.066	0.066	0.066
		Median (mg/l)	0.022	0.018	0.018	0.018	0.018
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	81	82	82	82	82
	Total Nitrogen	Mean (mg/l)	1.08	0.93	0.93	0.93	0.93
		Median (mg/l)	0.98	0.83	0.83	0.84	0.83
	Total Suspended Solids	Mean (mg/l)	9.2	6.8	6.8	6.9	6.9
		Median (mg/l)	4.8	3.3	3.3	3.3	3.3
	Copper	Mean (mg/l)	0.0049	0.0038	0.0038	0.0038	0.0038
		Median (mg/l)	0.0013	0.0009	0.0009	0.0009	0.0009

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-4 Root River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	7,101	5,944	5,944	3,707	1,883
		Percent compliance with single sample standard (<400 cells per 100 ml)	56	58	58	61	66
		Geometric mean (cells per 100 ml)	865	701	701	450	234
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	19	28	28	64	167
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,018	3,393	3,393	1,681	859
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	68	68	71	76
		Geometric mean (cells per 100 ml)	603	495	495	297	154
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	7	11	11	33	88
	Dissolved Oxygen	Mean (mg/l)	9.6	9.6	9.6	9.6	9.6
		Median (mg/l)	9.4	9.4	9.4	9.4	9.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	95	95	95	95	95
	Total Phosphorus	Mean (mg/l)	0.08	0.068	0.068	0.068	0.067
		Median (mg/l)	0.022	0.019	0.019	0.019	0.019
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	80	80	80	80
	Total Nitrogen	Mean (mg/l)	1.12	0.89	0.89	0.90	0.89
		Median (mg/l)	1.00	0.77	0.77	0.77	0.77
	Total Suspended Solids	Mean (mg/l)	10.3	7.2	7.2	7.3	7.3
		Median (mg/l)	4.7	3.2	3.2	3.3	3.3
	Copper	Mean (mg/l)	0.0054	0.0042	0.0042	0.0042	0.0042
		Median (mg/l)	0.0014	0.0011	0.0011	0.0011	0.0011

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Condition: Revised 2020 Baseline	Condition: Revised 2020 Baseline with Five-Year LOP[b]	Condition: Recommended Plan[c]	Condition: "Extreme Measures" Condition[c]
RT-5 Whitnall Park Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	8,198	6,734	6,734	4,213	2,139
		Percent compliance with single sample standard (<400 cells per 100 ml)	55	57	57	59	63
		Geometric mean (cells per 100 ml)	896	715	715	461	239
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	18	28	28	66	165
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	5,142	4,201	4,201	2,141	1,091
		Percent compliance with single sample standard (<400 cells per 100 ml)	66	67	67	70	74
		Geometric mean (cells per 100 ml)	628	497	497	301	156
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	7	13	13	34	90
	Dissolved Oxygen	Mean (mg/l)	8.5	8.5	8.5	8.5	8.5
		Median (mg/l)	8.4	8.4	8.4	8.4	8.4
		Percent compliance with dissolved oxygen standard (>3 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.089	0.076	0.076	0.076	0.075
		Median (mg/l)	0.027	0.024	0.024	0.023	0.023
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	76	78	78	78	78
	Total Nitrogen	Mean (mg/l)	1.12	0.96	0.96	0.97	0.97
		Median (mg/l)	0.98	0.83	0.83	0.84	0.83
	Total Suspended Solids	Mean (mg/l)	15.3	11.3	11.3	11.5	11.5
		Median (mg/l)	5.0	3.5	3.5	3.5	3.5
	Copper	Mean (mg/l)	0.0056	0.0044	0.0044	0.0045	0.0045
		Median (mg/l)	0.0016	0.0012	0.0012	0.0012	0.0012

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-6 Tess Corners Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5,811	5,007	5,007	3,094	1,574
		Percent compliance with single sample standard (<400 cells per 100 ml)	64	64	64	66	69
		Geometric mean (cells per 100 ml)	502	477	477	314	167
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	43	48	48	105	230
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,814	3,218	3,218	1,592	816
		Percent compliance with single sample standard (<400 cells per 100 ml)	75	73	73	76	79
		Geometric mean (cells per 100 ml)	368	356	356	223	117
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	19	20	20	54	123
	Dissolved Oxygen	Mean (mg/l)	10.3	10.3	10.3	10.3	10.3
		Median (mg/l)	10.4	10.4	10.4	10.4	10.4
		Percent compliance with dissolved oxygen standard (>3 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.068	0.060	0.060	0.059	0.059
		Median (mg/l)	0.021	0.018	0.018	0.018	0.018
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	83	83	83	83	83
	Total Nitrogen	Mean (mg/l)	1.28	0.81	0.81	0.82	0.81
		Median (mg/l)	1.17	0.72	0.72	0.72	0.72
	Total Suspended Solids	Mean (mg/l)	16.4	9.4	9.4	9.9	9.9
		Median (mg/l)	5.0	3.5	3.5	3.5	3.5
	Copper	Mean (mg/l)	0.0042	0.0033	0.0033	0.0033	0.0033
		Median (mg/l)	0.0012	0.0009	0.0009	0.0009	0.0009

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-7 Whitnall Park Creek Down-stream of Tess Corners Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,947	5,721	5,721	3,573	1,815
		Percent compliance with single sample standard (<400 cells per 100 ml)	57	58	58	61	65
		Geometric mean (cells per 100 ml)	725	617	617	401	211
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	25	35	35	77	187
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	4,307	3,536	3,536	1,787	913
		Percent compliance with single sample standard (<400 cells per 100 ml)	68	68	68	71	75
		Geometric mean (cells per 100 ml)	496	428	428	263	138
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	12	16	16	41	103
	Dissolved Oxygen	Mean (mg/l)	10.1	10.1	10.1	10.1	10.1
		Median (mg/l)	10.0	9.9	9.9	9.9	9.9
		Percent compliance with dissolved oxygen standard (>3 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.078	0.067	0.067	0.066	0.065
		Median (mg/l)	0.023	0.020	0.020	0.020	0.020
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	80	80	80	80
	Total Nitrogen	Mean (mg/l)	1.17	0.86	0.86	0.87	0.87
		Median (mg/l)	1.09	0.74	0.74	0.74	0.74
	Total Suspended Solids	Mean (mg/l)	14.9	9.8	9.8	10.1	10.1
		Median (mg/l)	5.0	3.4	3.4	3.5	3.5
	Copper	Mean (mg/l)	0.0051	0.0040	0.0040	0.0040	0.0040
		Median (mg/l)	0.0015	0.0011	0.0011	0.0011	0.0011

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-8 Middle Root River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,584	5,569	5,569	3,674	2,134
		Percent compliance with single sample standard (<400 cells per 100 ml)	46	48	48	52	56
		Geometric mean (cells per 100 ml)	1,262	1,069	1,069	714	418
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	6	10	10	27	79
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,951	3,257	3,257	1,788	1,090
		Percent compliance with single sample standard (<400 cells per 100 ml)	58	60	60	65	70
		Geometric mean (cells per 100 ml)	770	643	643	394	226
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	3	5	5	18	53
	Dissolved Oxygen	Mean (mg/l)	11.5	11.5	11.5	11.5	11.5
		Median (mg/l)	11.7	11.7	11.7	11.7	11.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.092	0.082	0.082	0.080	0.078
		Median (mg/l)	0.061	0.058	0.058	0.056	0.055
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	73	76	76	76	77
	Total Nitrogen	Mean (mg/l)	1.27	0.99	0.99	0.96	0.94
		Median (mg/l)	1.22	0.97	0.97	0.95	0.93
	Total Suspended Solids	Mean (mg/l)	19.4	11.6	11.6	11.3	11.1
		Median (mg/l)	5.1	3.5	3.5	3.5	3.5
	Copper	Mean (mg/l)	0.0007	0.0007	0.0007	0.0007	0.0007
		Median (mg/l)	0.0002	0.0002	0.0002	0.0002	0.0002

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Table N-5 (continued)

			Condition				
Assessment Point	Water Quality Indicator	Statistic	Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-9 East Branch Root River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,332	5,369	5,369	3,443	1,746
		Percent compliance with single sample standard (<400 cells per 100 ml)	65	64	64	67	70
		Geometric mean (cells per 100 ml)	594	523	523	349	183
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	35	49	49	104	226
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,348	2,866	2,866	1,590	807
		Percent compliance with single sample standard (<400 cells per 100 ml)	79	77	77	79	83
		Geometric mean (cells per 100 ml)	365	326	326	213	111
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	21	27	27	59	130
	Dissolved Oxygen	Mean (mg/l)	8.2	8.2	8.2	8.2	8.2
		Median (mg/l)	7.8	7.8	7.8	7.8	7.8
		Percent compliance with dissolved oxygen standard (>1 mg/l)[e]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.072	0.063	0.063	0.063	0.062
		Median (mg/l)	0.029	0.024	0.024	0.024	0.024
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	82	83	83	83	83
	Total Nitrogen	Mean (mg/l)	1.27	0.91	0.91	0.91	0.91
		Median (mg/l)	1.22	0.89	0.89	0.89	0.89
	Total Suspended Solids	Mean (mg/l)	10.8	6.6	6.6	6.9	6.9
		Median (mg/l)	5.0	3.3	3.3	3.3	3.3
	Copper	Mean (mg/l)	0.0042	0.0033	0.0033	0.0033	0.0033
		Median (mg/l)	0.0012	0.0009	0.0009	0.0009	0.0009

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Condition: Revised 2020 Baseline	Condition: Revised 2020 Baseline with Five-Year LOP[b]	Condition: Recommended Plan[c]	Condition: "Extreme Measures" Condition[c]
RT-10 Root River Upstream of Ryan Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	6,995	5,982	5,982	3,770	1,913
		Percent compliance with single sample standard (<400 cells per 100 ml)	48	51	51	55	61
		Geometric mean (cells per 100 ml)	1,189	985	985	628	324
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	9	17	17	39	116
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,768	3,229	3,229	1,655	842
		Percent compliance with single sample standard (<400 cells per 100 ml)	59	62	62	68	74
		Geometric mean (cells per 100 ml)	717	594	594	353	182
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	4	9	9	26	71
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.6	11.6	11.6	11.6	11.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.087	0.076	0.076	0.075	0.075
		Median (mg/l)	0.057	0.052	0.052	0.051	0.051
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	73	76	76	76	77
	Total Nitrogen	Mean (mg/l)	1.15	0.91	0.91	0.90	0.90
		Median (mg/l)	1.13	0.88	0.88	0.88	0.87
	Total Suspended Solids	Mean (mg/l)	12.9	8.7	8.7	8.8	8.8
		Median (mg/l)	4.8	3.3	3.3	3.3	3.3
	Copper	Mean (mg/l)	0.002	0.0017	0.0017	0.0017	0.0017
		Median (mg/l)	0.0006	0.0005	0.0005	0.0005	0.0005

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-11 West Branch Root River Canal	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,428	2,336	2,336	2,152	2,059
		Percent compliance with single sample standard (<400 cells per 100 ml)	72	71	71	71	72
		Geometric mean (cells per 100 ml)	262	267	267	209	199
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	129	125	125	172	180
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,995	1,877	1,877	1,579	1,500
		Percent compliance with single sample standard (<400 cells per 100 ml)	81	79	79	80	80
		Geometric mean (cells per 100 ml)	164	174	174	137	129
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	67	64	64	85	89
	Dissolved Oxygen	Mean (mg/l)	12.2	12.6	12.6	12.6	12.6
		Median (mg/l)	12.9	13.3	13.3	13.3	13.3
		Percent compliance with dissolved oxygen standard (>1 mg/l)[e]	92	95	95	95	95
	Total Phosphorus	Mean (mg/l)	0.266	0.239	0.239	0.231	0.226
		Median (mg/l)	0.179	0.150	0.150	0.147	0.146
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	32	40	40	41	42
	Total Nitrogen	Mean (mg/l)	3.72	3.43	3.43	3.06	2.94
		Median (mg/l)	3.12	2.79	2.79	2.41	2.29
	Total Suspended Solids	Mean (mg/l)	31.2	26.7	26.7	20.6	18.9
		Median (mg/l)	3.6	3.7	3.7	3.4	3.4
	Copper	Mean (mg/l)	0.0062	0.0055	0.0055	0.0054	0.0054
		Median (mg/l)	0.0046	0.0040	0.0040	0.0039	0.0039

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-12 West Branch Root River Canal	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,573	2,429	2,429	2,240	2,139
		Percent compliance with single sample standard (<400 cells per 100 ml)	71	70	70	71	72
		Geometric mean (cells per 100 ml)	250	254	254	190	183
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	139	133	133	187	195
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,270	2,104	2,104	1,830	1,736
		Percent compliance with single sample standard (<400 cells per 100 ml)	81	79	79	80	80
		Geometric mean (cells per 100 ml)	160	170	170	129	123
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	70	66	66	92	98
	Dissolved Oxygen	Mean (mg/l)	12.2	12.4	12.4	12.3	12.3
		Median (mg/l)	12.7	12.8	12.8	12.7	12.7
		Percent compliance with dissolved oxygen standard (>3 mg/l)[e]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.242	0.217	0.217	0.208	0.203
		Median (mg/l)	0.135	0.117	0.117	0.114	0.112
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	40	46	46	47	47
	Total Nitrogen	Mean (mg/l)	3.57	3.32	3.32	2.91	2.77
		Median (mg/l)	2.84	2.63	2.63	2.21	2.09
	Total Suspended Solids	Mean (mg/l)	39.1	34.2	34.2	26.1	23.8
		Median (mg/l)	4.1	4.1	4.1	3.7	3.8
	Copper	Mean (mg/l)	0.0057	0.0050	0.0050	0.0050	0.0049
		Median (mg/l)	0.0039	0.0034	0.0034	0.0033	0.0032

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-13 West Branch Root River Canal	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,372	2,234	2,234	2,105	2,015
		Percent compliance with single sample standard (<400 cells per 100 ml)	64	65	65	68	68
		Geometric mean (cells per 100 ml)	412	396	396	313	297
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	59	61	61	101	110
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,099	1,968	1,968	1,801	1,710
		Percent compliance with single sample standard (<400 cells per 100 ml)	74	74	74	77	77
		Geometric mean (cells per 100 ml)	256	252	252	198	188
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	41	42	42	62	66
	Dissolved Oxygen	Mean (mg/l)	11.8	11.8	11.8	11.7	11.7
		Median (mg/l)	12.3	12.2	12.2	12.2	12.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.164	0.151	0.151	0.143	0.138
		Median (mg/l)	0.076	0.069	0.069	0.067	0.066
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	63	66	66	67	67
	Total Nitrogen	Mean (mg/l)	2.75	2.61	2.61	2.21	2.08
		Median (mg/l)	2.00	1.95	1.95	1.58	1.47
	Total Suspended Solids	Mean (mg/l)	28.1	25.3	25.3	19.5	17.9
		Median (mg/l)	4.0	4.0	4.0	3.6	3.7
	Copper	Mean (mg/l)	0.0006	0.0006	0.0006	0.0006	0.0006
		Median (mg/l)	0.0002	0.0002	0.0002	0.0002	0.0002

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Condition: Revised 2020 Baseline	Condition: Revised 2020 Baseline with Five-Year LOP[b]	Condition: Recommended Plan[c]	Condition: "Extreme Measures" Condition[c]
RT-14 East Branch Root River Canal	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,582	2,417	2,417	2,234	2,124
		Percent compliance with single sample standard (<400 cells per 100 ml)	75	75	75	76	76
		Geometric mean (cells per 100 ml)	227	221	221	136	136
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	160	168	168	258	260
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,456	2,275	2,275	2,133	2,023
		Percent compliance with single sample standard (<400 cells per 100 ml)	83	83	83	84	84
		Geometric mean (cells per 100 ml)	178	172	172	112	110
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	82	86	86	126	127
	Dissolved Oxygen	Mean (mg/l)	12.1	12.1	12.1	12.0	12.0
		Median (mg/l)	12.3	12.3	12.3	12.3	12.3
		Percent compliance with dissolved oxygen standard (>1 mg/l)[e]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.183	0.181	0.181	0.168	0.162
		Median (mg/l)	0.074	0.074	0.074	0.070	0.068
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	65	65	65	67	68
	Total Nitrogen	Mean (mg/l)	3.14	3.10	3.10	2.55	2.37
		Median (mg/l)	2.43	2.40	2.40	1.92	1.76
	Total Suspended Solids	Mean (mg/l)	59.6	53.7	53.7	40.4	36.6
		Median (mg/l)	5.0	4.9	4.9	4.3	4.4
	Copper	Mean (mg/l)	0.0028	0.0028	0.0028	0.0027	0.0026
		Median (mg/l)	0.0014	0.0014	0.0014	0.0013	0.0013

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-15 East Branch Root River Canal	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,272	3,025	3,025	2,698	2,570
		Percent compliance with single sample standard (<400 cells per 100 ml)	71	71	71	72	72
		Geometric mean (cells per 100 ml)	288	280	280	189	185
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	121	127	127	209	213
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,853	2,572	2,572	2,109	2,003
		Percent compliance with single sample standard (<400 cells per 100 ml)	80	80	80	80	81
		Geometric mean (cells per 100 ml)	213	207	207	142	137
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	64	67	67	109	112
	Dissolved Oxygen	Mean (mg/l)	11.3	11.3	11.3	11.3	11.3
		Median (mg/l)	11.5	11.5	11.5	11.5	11.5
		Percent compliance with dissolved oxygen standard (>3 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.143	0.141	0.141	0.131	0.126
		Median (mg/l)	0.065	0.066	0.066	0.063	0.062
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	72	71	71	73	74
	Total Nitrogen	Mean (mg/l)	2.64	2.58	2.58	2.11	1.96
		Median (mg/l)	2.05	2.02	2.02	1.64	1.52
	Total Suspended Solids	Mean (mg/l)	57.2	50.2	50.2	38.4	35.1
		Median (mg/l)	5	4.9	4.9	4.3	4.4
	Copper	Mean (mg/l)	0.0034	0.0034	0.0034	0.0033	0.0032
		Median (mg/l)	0.0014	0.0014	0.0014	0.0013	0.0012

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-16 Root River Canal	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	2,401	2,304	2,304	2,161	2,069
		Percent compliance with single sample standard (<400 cells per 100 ml)	62	62	62	65	66
		Geometric mean (cells per 100 ml)	423	415	415	332	315
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	62	64	64	95	105
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,066	1,968	1,968	1,772	1,682
		Percent compliance with single sample standard (<400 cells per 100 ml)	72	72	72	75	75
		Geometric mean (cells per 100 ml)	255	254	254	202	191
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	47	49	49	66	70
	Dissolved Oxygen	Mean (mg/l)	11.7	11.8	11.8	11.8	11.7
		Median (mg/l)	12.1	12.2	12.2	12.2	12.2
		Percent compliance with dissolved oxygen standard (>5 mg/l)	97	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.129	0.122	0.122	0.114	0.110
		Median (mg/l)	0.069	0.065	0.065	0.063	0.062
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	71	73	73	74	74
	Total Nitrogen	Mean (mg/l)	2.31	2.23	2.23	1.85	1.73
		Median (mg/l)	1.79	1.73	1.73	1.43	1.33
	Total Suspended Solids	Mean (mg/l)	27.4	24.6	24.6	19.3	17.8
		Median (mg/l)	4.5	4.5	4.5	4.1	4.1
	Copper	Mean (mg/l)	0.0019	0.0019	0.0019	0.0018	0.0018
		Median (mg/l)	0.0006	0.0006	0.0006	0.0006	0.0006

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-17 Root River at Upstream Crossing of Milwaukee-Racine County Line and Down-stream of Root River Canal	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,656	4,077	4,077	2,909	1,982
		Percent compliance with single sample standard (<400 cells per 100 ml)	43	45	45	51	55
		Geometric mean (cells per 100 ml)	1,123	1,008	1,008	713	503
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	7	9	9	18	45
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,994	2,570	2,570	1,594	1,145
		Percent compliance with single sample standard (<400 cells per 100 ml)	55	57	57	63	68
		Geometric mean (cells per 100 ml)	720	641	641	422	291
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	4	4	4	12	33
	Dissolved Oxygen	Mean (mg/l)	11.5	11.5	11.5	11.5	11.5
		Median (mg/l)	11.7	11.7	11.7	11.7	11.7
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.104	0.096	0.096	0.091	0.088
		Median (mg/l)	0.071	0.067	0.067	0.065	0.064
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	71	73	73	74	75
	Total Nitrogen	Mean (mg/l)	1.68	1.48	1.48	1.29	1.23
		Median (mg/l)	1.39	1.21	1.21	1.11	1.07
	Total Suspended Solids	Mean (mg/l)	20.6	16.3	16.3	13.8	13.0
		Median (mg/l)	4.6	3.8	3.8	3.6	3.6
	Copper	Mean (mg/l)	0.0006	0.0005	0.0005	0.0005	0.0005
		Median (mg/l)	0.0001	0.0001	0.0001	0.0001	0.0001

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-18 Root River Upstream of Hoods Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,253	3,675	3,675	2,801	2,096
		Percent compliance with single sample standard (<400 cells per 100 ml)	46	48	48	51	54
		Geometric mean (cells per 100 ml)	983	865	865	629	466
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	11	16	16	37	69
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,687	2,255	2,255	1,589	1,290
		Percent compliance with single sample standard (<400 cells per 100 ml)	60	61	61	65	68
		Geometric mean (cells per 100 ml)	556	485	485	330	241
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	9	12	12	29	54
	Dissolved Oxygen	Mean (mg/l)	11.4	11.4	11.4	11.4	11.4
		Median (mg/l)	11.6	11.6	11.6	11.6	11.6
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	100	100
	Total Phosphorus	Mean (mg/l)	0.102	0.094	0.094	0.089	0.085
		Median (mg/l)	0.068	0.065	0.065	0.064	0.063
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	73	75	75	76	76
	Total Nitrogen	Mean (mg/l)	1.64	1.45	1.45	1.26	1.19
		Median (mg/l)	1.32	1.16	1.16	1.04	1.00
	Total Suspended Solids	Mean (mg/l)	31	23.8	23.8	20.0	18.7
		Median (mg/l)	5.2	4.4	4.4	4.1	4.1
	Copper	Mean (mg/l)	0.0013	0.0012	0.0012	0.0012	0.0012
		Median (mg/l)	0.0004	0.0003	0.0003	0.0003	0.0003

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-19 Ives Grove Ditch	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,398	2,730	2,730	1,649	841
		Percent compliance with single sample standard (<400 cells per 100 ml)	73	74	74	77	80
		Geometric mean (cells per 100 ml)	219	204	204	78	53
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	183	194	194	270	303
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2,457	2,013	2,013	991	509
		Percent compliance with single sample standard (<400 cells per 100 ml)	85	84	84	86	89
		Geometric mean (cells per 100 ml)	103	104	104	29	21
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	105	109	109	147	151
	Dissolved Oxygen	Mean (mg/l)	10.1	9.9	9.9	9.9	9.9
		Median (mg/l)	8.8	8.8	8.8	8.7	8.7
		Percent compliance with dissolved oxygen standard (>1 mg/l)	96	97	97	97	97
	Total Phosphorus	Mean (mg/l)	0.771	0.659	0.659	0.673	0.690
		Median (mg/l)	0.343	0.263	0.263	0.265	0.268
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	21	25	25	25	25
	Total Nitrogen	Mean (mg/l)	4.67	4.27	4.27	4.07	4.04
		Median (mg/l)	3.47	3.15	3.15	2.87	2.75
	Total Suspended Solids	Mean (mg/l)	20.5	18.0	18.0	15.5	14.4
		Median (mg/l)	4.8	4.6	4.6	4.2	4.2
	Copper	Mean (mg/l)	0.0056	0.0048	0.0048	0.0048	0.0048
		Median (mg/l)	0.0035	0.0029	0.0029	0.0029	0.0029

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-20 Hoods Creek	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,039	3,218	3,218	1,975	1,006
		Percent compliance with single sample standard (<400 cells per 100 ml)	69	68	68	71	75
		Geometric mean (cells per 100 ml)	286	277	277	121	76
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	148	149	149	248	287
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,354	2,602	2,602	1,393	714
		Percent compliance with single sample standard (<400 cells per 100 ml)	81	79	79	80	83
		Geometric mean (cells per 100 ml)	158	161	161	55	37
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	84	83	83	138	149
	Dissolved Oxygen	Mean (mg/l)	11	11.0	11.0	11.0	11.0
		Median (mg/l)	11.7	11.8	11.8	11.8	11.8
		Percent compliance with dissolved oxygen standard (>3 mg/l)[d]	98	98	98	98	98
	Total Phosphorus	Mean (mg/l)	0.381	0.337	0.337	0.345	0.355
		Median (mg/l)	0.131	0.113	0.113	0.113	0.112
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	43	49	49	49	49
	Total Nitrogen	Mean (mg/l)	3.20	2.84	2.84	2.67	2.63
		Median (mg/l)	2.39	2.05	2.05	1.86	1.79
	Total Suspended Solids	Mean (mg/l)	33.5	23.4	23.4	20.5	19.0
		Median (mg/l)	4.9	4.5	4.5	4.2	4.1
	Copper	Mean (mg/l)	0.0048	0.0040	0.0040	0.0040	0.0040
		Median (mg/l)	0.0022	0.0020	0.0020	0.0020	0.0020

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-21 Root River at the City of Racine, USGS Sampling Location (4087240)	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,547	3,910	3,910	2,672	1,677
		Percent compliance with single sample standard (<400 cells per 100 ml)	48	49	49	53	56
		Geometric mean (cells per 100 ml)	853	759	759	522	352
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	17	23	23	57	105
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,041	2,555	2,555	1,489	943
		Percent compliance with single sample standard (<400 cells per 100 ml)	62	63	63	67	71
		Geometric mean (cells per 100 ml)	479	421	421	268	178
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	13	18	18	43	79
	Dissolved Oxygen	Mean (mg/l)	11	11.1	11.1	11.1	11.1
		Median (mg/l)	11.3	11.4	11.4	11.4	11.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.109	0.099	0.099	0.094	0.091
		Median (mg/l)	0.075	0.071	0.071	0.070	0.069
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	67	71	71	71	72
	Total Nitrogen	Mean (mg/l)	1.58	1.38	1.38	1.20	1.14
		Median (mg/l)	1.24	1.09	1.09	0.99	0.95
	Total Suspended Solids	Mean (mg/l)	35.9	25.6	26.6	22.8	21.4
		Median (mg/l)	7	5.8	5.8	5.2	5.1
	Copper	Mean (mg/l)	0.0008	0.0006	0.0006	0.0006	0.0006
		Median (mg/l)	0.0002	0.0001	0.0001	0.0001	0.0001

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Table N-5 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
RT-22 Mouth of Root River at Lake Michigan	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	4,924	4,135	4,135	2,762	1,165
		Percent compliance with single sample standard (<400 cells per 100 ml)	47	48	48	51	55
		Geometric mean (cells per 100 ml)	869	761	761	516	339
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	28	34	34	68	114
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	3,327	2,714	2,714	1,508	903
		Percent compliance with single sample standard (<400 cells per 100 ml)	62	62	62	67	70
		Geometric mean (cells per 100 ml)	440	382	382	240	155
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	22	27	27	54	87
	Dissolved Oxygen	Mean (mg/l)	11.1	11.1	11.1	11.1	11.1
		Median (mg/l)	11.3	11.3	11.3	11.4	11.4
		Percent compliance with dissolved oxygen standard (>5 mg/l)	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.115	0.104	0.104	0.099	0.096
		Median (mg/l)	0.079	0.074	0.074	0.073	0.072
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	65	68	68	69	70
	Total Nitrogen	Mean (mg/l)	1.56	1.36	1.36	1.20	1.13
		Median (mg/l)	1.23	1.08	1.08	0.98	0.94
	Total Suspended Solids	Mean (mg/l)	38.5	28.9	28.9	25.3	23.9
		Median (mg/l)	9.4	8.0	8.0	7.3	7.2
	Copper	Mean (mg/l)	0.0015	0.0011	0.0011	0.0011	0.0011
		Median (mg/l)	0.0002	0.0002	0.0002	0.0002	0.0002

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Table N-5 Footnotes

[a]*In certain limited cases, relatively minor anomalies in concentrations or percents compliance may occur among the five conditions for which model results are presented in this table. Those anomalies might indicate a slight decrease in water quality under the recommended plan and/or "extreme measures" conditions, relative to revised 2020 baseline and/or revised 2020 baseline with five-year LOP conditions. In those cases, it may be assumed that no significant change in water quality occurs among those various conditions. Since it was not always possible to explicitly represent certain components of the recommended plan and "extreme measures" conditions in the LSPC water quality model, adjustments were made to model parameters that served as surrogates for the actual water pollution control measure being represented. In the sense that those modifications sometimes alter parameters in the revised 2020 baseline and/or revised 2020 baseline with five-year LOP model versions, in limited cases, representation of a measure in the recommended plan or "extreme measures" models may have a side effect of introducing small, relatively insignificant anomalies in the comparative results.*

[b]*Five-Year LOP refers to a five-year recurrence interval level of protection against sanitary sewer overflows.*

[c]*Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

[d]*Under Chapter NR 104 of the Wisconsin Administrative Code, this assessment point is in a stream reach classified as capable of supporting limited forage fish.*

[e]*Under Chapter NR 104 of the Wisconsin Administrative Code, this assessment point is in a stream reach classified as capable of supporting limited aquatic life.*

Source: Tetra Tech, Inc., and SEWRPC.

Table N-6

WATER QUALITY SUMMARY STATISTICS FOR THE RECOMMENDED PLAN: MILWAUKEE HARBOR ESTUARY AND NEARSHORE LAKE MICHIGAN AREA[a]

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-1 Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	1,101	863	850	428	331
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	79	85	85	99	99
		Geometric mean (cells per 100 ml)	175	145	144	79	50
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	254	277	277	364	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	457	353	328	272	241
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	95	97	97	98	98
		Geometric mean (cells per 100 ml)	26	22	21	16	9
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	147	150	150	153	153
	Dissolved Oxygen	Mean (mg/l)	9.96	9.94	9.94	9.89	9.87
		Median (mg/l)	10.85	10.85	10.85	10.75	10.73
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	99	99	99	99	99
	Total Phosphorus	Mean (mg/l)	0.0657	0.0653	0.0652	0.0536	0.0512
		Median (mg/l)	0.0550	0.0554	0.0555	0.0447	0.0426
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	78	79	79	87	89
	Total Nitrogen	Mean (mg/l)	1.69	1.63	1.63	1.24	1.18
		Median (mg/l)	1.48	1.43	1.43	1.11	1.05
	Total Suspended Solids	Mean (mg/l)	22.46	20.69	20.68	20.28	20.14
		Median (mg/l)	13.09	12.38	12.38	11.47	11.38
	Copper	Mean (mg/l)	0.0045	0.0046	0.0046	0.0040	0.0041
		Median (mg/l)	0.0044	0.0044	0.0044	0.0039	0.0039

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-2 Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3,466	3,208	3,169	2,245	1,280
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	58	59	59	67	78
		Geometric mean (cells per 100 ml)	595	546	542	376	233
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	208	211	212	229	253
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	1,250	1,111	1,040	709	418
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	84	85	86	91	96
		Geometric mean (cells per 100 ml)	135	119	117	79	49
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	139	142	142	148	152
	Dissolved Oxygen	Mean (mg/l)	9.26	9.45	9.46	9.49	9.51
		Median (mg/l)	9.71	9.96	9.96	9.95	9.93
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0704	0.0698	0.0696	0.0651	0.0611
		Median (mg/l)	0.0645	0.0659	0.0659	0.0609	0.0574
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	86	88	88	90	93
	Total Nitrogen	Mean (mg/l)	1.53	1.33	1.33	1.19	1.17
		Median (mg/l)	1.51	1.31	1.31	1.19	1.17
	Total Suspended Solids	Mean (mg/l)	20.09	18.00	17.99	17.96	17.92
		Median (mg/l)	11.64	11.20	11.20	10.88	10.83
	Copper	Mean (mg/l)	0.0187	0.0183	0.0182	0.0173	0.0174
		Median (mg/l)	0.0141	0.0134	0.0134	0.0130	0.0130

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-3 Menomonee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	931	828	808	533	320
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	86	87	88	93	98
		Geometric mean (cells per 100 ml)	141	127	126	80	53
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	308	320	320	353	364
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	494	442	406	286	180
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	94	94	95	97	99
		Geometric mean (cells per 100 ml)	40	35	34	24	16
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	150	151	151	153	153
	Dissolved Oxygen	Mean (mg/l)	9.12	9.28	9.28	9.32	9.34
		Median (mg/l)	9.74	9.95	9.96	9.93	9.90
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0620	0.0619	0.0618	0.0553	0.0522
		Median (mg/l)	0.0589	0.0600	0.0600	0.0533	0.0508
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	93	94	94	96	98
	Total Nitrogen	Mean (mg/l)	1.53	1.40	1.40	1.18	1.15
		Median (mg/l)	1.44	1.31	1.31	1.13	1.10
	Total Suspended Solids	Mean (mg/l)	19.00	17.49	17.49	17.19	17.12
		Median (mg/l)	12.24	11.66	11.65	11.11	11.06
	Copper	Mean (mg/l)	0.0056	0.0053	0.0053	0.0050	0.0050
		Median (mg/l)	0.0051	0.0048	0.0048	0.0045	0.0045

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-4 Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	850	731	716	416	278
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	85	89	89	97	99
		Geometric mean (cells per 100 ml)	147	132	131	78	54
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	298	310	310	360	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	399	345	319	235	167
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	95	96	96	98	99
		Geometric mean (cells per 100 ml)	37	31	31	22	15
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	150	151	151	153	153
	Dissolved Oxygen	Mean (mg/l)	9.51	9.62	9.63	9.63	9.64
		Median (mg/l)	10.13	10.33	10.34	10.28	10.25
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0591	0.0595	0.0594	0.0512	0.0486
		Median (mg/l)	0.0545	0.0549	0.0550	0.0467	0.0448
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	92	91	91	96	97
	Total Nitrogen	Mean (mg/l)	1.58	1.49	1.49	1.20	1.15
		Median (mg/l)	1.42	1.33	1.33	1.10	1.06
	Total Suspended Solids	Mean (mg/l)	19.03	17.84	17.84	17.34	17.24
		Median (mg/l)	12.06	11.75	11.75	10.94	10.84
	Copper	Mean (mg/l)	0.0054	0.0052	0.0052	0.0048	0.0048
		Median (mg/l)	0.0051	0.0049	0.0049	0.0045	0.0045

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-5 Kinnickinnic River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	352	358	265	184	129
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	98	98	99	99	99
		Geometric mean (cells per 100 ml)	52	48	47	31	21
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	363	363	363	364	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	255	298	166	140	118
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	98	99	99	99	99
		Geometric mean (cells per 100 ml)	17	15	15	11	9
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	152	152	153	153	153
	Dissolved Oxygen	Mean (mg/l)	8.09	8.24	8.26	8.37	8.42
		Median (mg/l)	8.58	8.74	8.76	8.91	8.95
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0490	0.0480	0.0471	0.0423	0.0398
		Median (mg/l)	0.0436	0.0429	0.0429	0.0384	0.0365
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	97	97	98	99	99
	Total Nitrogen	Mean (mg/l)	1.39	1.32	1.31	1.13	1.10
		Median (mg/l)	1.30	1.24	1.23	1.07	1.05
	Total Suspended Solids	Mean (mg/l)	12.16	11.26	11.20	10.85	10.80
		Median (mg/l)	7.83	7.44	7.44	7.08	7.03
	Copper	Mean (mg/l)	0.0069	0.0066	0.0066	0.0063	0.0063
		Median (mg/l)	0.0070	0.0066	0.0065	0.0062	0.0062

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-6 Mouth of Milwaukee River	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	445	396	383	230	160
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	95	96	97	99	99
		Geometric mean (cells per 100 ml)	78	74	73	47	35
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	352	357	358	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	229	203	180	139	107
		Percent compliance with single sample standard (<2,000 cells per 100 ml)[d]	98	98	98	99	99
		Geometric mean (cells per 100 ml)	26	23	23	18	14
		Days of compliance with geometric mean standard (<1,000 cells per 100 ml)[d]	152	152	152	153	153
	Dissolved Oxygen	Mean (mg/l)	9.46	9.55	9.55	9.58	9.59
		Median (mg/l)	9.97	10.10	10.11	10.13	10.13
		Percent compliance with dissolved oxygen standard (>2 mg/l)[d]	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0471	0.0473	0.0472	0.0418	0.0398
		Median (mg/l)	0.0424	0.0427	0.0426	0.0378	0.0364
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	97	97	97	98	99
	Total Nitrogen	Mean (mg/l)	1.51	1.44	1.44	1.24	1.21
		Median (mg/l)	1.44	1.39	1.39	1.20	1.16
	Total Suspended Solids	Mean (mg/l)	13.28	12.62	12.61	12.18	12.12
		Median (mg/l)	8.48	8.28	8.28	7.83	7.77
	Copper	Mean (mg/l)	0.0072	0.0069	0.0069	0.0066	0.0067
		Median (mg/l)	0.0073	0.0069	0.0069	0.0066	0.0066

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-7 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	91	84	78	53	41
		Percent compliance with single sample standard (<400 cells per 100 ml)	96	97	97	98	99
		Geometric mean (cells per 100 ml)	21	20	20	15	12
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	360	361	361	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	81	73	64	53	43
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	98	98	98
		Geometric mean (cells per 100 ml)	13	12	12	10	9
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	152	152	152	153	153
	Dissolved Oxygen	Mean (mg/l)	10.34	10.36	10.36	10.37	10.37
		Median (mg/l)	10.69	10.73	10.74	10.74	10.75
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0274	0.0276	0.0276	0.0258	0.0250
		Median (mg/l)	0.0242	0.0246	0.0246	0.0231	0.0226
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	99	99	99	100	100
	Total Nitrogen	Mean (mg/l)	1.15	1.13	1.13	1.06	1.05
		Median (mg/l)	1.09	1.08	1.08	1.03	1.02
	Total Suspended Solids	Mean (mg/l)	6.45	6.22	6.22	6.10	6.09
		Median (mg/l)	4.01	4.03	4.03	3.93	3.91
	Copper	Mean (mg/l)	0.0094	0.0093	0.0093	0.0092	0.0092
		Median (mg/l)	0.0096	0.0095	0.0095	0.0094	0.0094

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-8 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	66	61	55	39	30
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	98	99	99
		Geometric mean (cells per 100 ml)	15	15	15	11	9
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	363	363	363	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	65	59	51	42	34
		Percent compliance with single sample standard (<400 cells per 100 ml)	98	98	98	99	99
		Geometric mean (cells per 100 ml)	11	10	10	9	7
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	152	152	152	153	153
	Dissolved Oxygen	Mean (mg/l)	10.51	10.52	10.52	10.53	10.53
		Median (mg/l)	10.80	10.83	10.83	10.84	10.84
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0236	0.0239	0.0238	0.0223	0.0217
		Median (mg/l)	0.0195	0.0199	0.0199	0.0190	0.0187
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	99	99	99	100	100
	Total Nitrogen	Mean (mg/l)	1.04	1.02	1.02	0.97	0.96
		Median (mg/l)	0.98	0.97	0.97	0.93	0.92
	Total Suspended Solids	Mean (mg/l)	5.74	5.55	5.55	5.45	5.44
		Median (mg/l)	3.51	3.54	3.54	3.44	3.43
	Copper	Mean (mg/l)	0.0095	0.0094	0.0094	0.0093	0.0093
		Median (mg/l)	0.0097	0.0096	0.0096	0.0096	0.0096

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-9 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	47	43	41	27	20
		Percent compliance with single sample standard (<400 cells per 100 ml)	98	98	99	99	100
		Geometric mean (cells per 100 ml)	11	11	11	8	7
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	26	23	21	17	14
		Percent compliance with single sample standard (<400 cells per 100 ml)	99	99	99	99	100
		Geometric mean (cells per 100 ml)	6	6	6	5	4
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	10.68	10.70	10.71	10.71	10.71
		Median (mg/l)	10.94	10.97	10.98	10.99	11.00
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0205	0.0205	0.0205	0.0193	0.0189
		Median (mg/l)	0.0179	0.0182	0.0182	0.0172	0.0169
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.95	0.93	0.93	0.89	0.89
		Median (mg/l)	0.84	0.83	0.83	0.80	0.79
	Total Suspended Solids	Mean (mg/l)	4.64	4.50	4.50	4.40	4.39
		Median (mg/l)	3.19	3.20	3.20	3.16	3.15
	Copper	Mean (mg/l)	0.0097	0.0096	0.0096	0.0095	0.0096
		Median (mg/l)	0.0099	0.0098	0.0098	0.0098	0.0098

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-10 Outer Harbor	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	66	61	57	39	30
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	98	99	99
		Geometric mean (cells per 100 ml)	17	16	16	12	10
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	362	363	363	364	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	50	46	40	34	28
		Percent compliance with single sample standard (<400 cells per 100 ml)	98	98	98	99	99
		Geometric mean (cells per 100 ml)	11	11	10	9	8
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	152	152	152	153	153
	Dissolved Oxygen	Mean (mg/l)	10.37	10.38	10.39	10.39	10.39
		Median (mg/l)	10.75	10.78	10.78	10.79	10.80
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0262	0.0263	0.0263	0.0248	0.0242
		Median (mg/l)	0.0233	0.0236	0.0236	0.0225	0.0220
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	99	100	100	100	100
	Total Nitrogen	Mean (mg/l)	1.14	1.12	1.13	1.07	1.06
		Median (mg/l)	1.08	1.06	1.07	1.03	1.02
	Total Suspended Solids	Mean (mg/l)	5.64	5.45	5.45	5.34	5.32
		Median (mg/l)	3.68	3.71	3.71	3.62	3.61
	Copper	Mean (mg/l)	0.0096	0.0095	0.0095	0.0095	0.0095
		Median (mg/l)	0.0097	0.0096	0.0096	0.0096	0.0096

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	“Extreme Measures” Condition[c]
LM-11 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	11	10	10	7	5
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	5	4	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	6	5	5	4	3
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.21	11.21	11.21	11.21	11.21
		Median (mg/l)	11.49	11.50	11.50	11.51	11.51
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0095	0.0095	0.0095	0.0093	0.0092
		Median (mg/l)	0.0076	0.0077	0.0077	0.0075	0.0074
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.62	0.61	0.61	0.61	0.60
		Median (mg/l)	0.55	0.55	0.55	0.55	0.55
	Total Suspended Solids	Mean (mg/l)	2.64	2.61	2.61	2.58	2.57
		Median (mg/l)	2.34	2.34	2.34	2.33	2.33
	Copper	Mean (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-12 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	12	11	11	8	6
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	5	4	4
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	6	6	6	5	4
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	4	3	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.18	11.19	11.19	11.19	11.19
		Median (mg/l)	11.46	11.48	11.48	11.48	11.48
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0099	0.0099	0.0099	0.0096	0.0095
		Median (mg/l)	0.0080	0.0080	0.0081	0.0078	0.0077
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.63	0.63	0.63	0.62	0.61
		Median (mg/l)	0.56	0.56	0.56	0.55	0.55
	Total Suspended Solids	Mean (mg/l)	2.71	2.67	2.67	2.64	2.63
		Median (mg/l)	2.39	2.38	2.38	2.37	2.37
	Copper	Mean (mg/l)	0.0099	0.0099	0.0099	0.0098	0.0098
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-13 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	69	59	59	40	25
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	98	100	100
		Geometric mean (cells per 100 ml)	16	15	15	11	9
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	363	364	364	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	58	49	48	35	22
		Percent compliance with single sample standard (<400 cells per 100 ml)	97	98	98	99	100
		Geometric mean (cells per 100 ml)	10	9	9	8	6
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	10.87	10.89	10.89	10.88	10.88
		Median (mg/l)	11.14	11.16	11.17	11.16	11.15
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0195	0.0195	0.0195	0.0186	0.0182
		Median (mg/l)	0.0162	0.0164	0.0164	0.0157	0.0155
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.86	0.85	0.85	0.82	0.82
		Median (mg/l)	0.78	0.77	0.78	0.76	0.75
	Total Suspended Solids	Mean (mg/l)	4.24	4.04	4.04	3.97	3.96
		Median (mg/l)	2.84	2.82	2.82	2.78	2.77
	Copper	Mean (mg/l)	0.0098	0.0098	0.0098	0.0097	0.0097
		Median (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-14 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3	3	3	3	2
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2	2	2	2	2
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.36	11.36	11.36	11.36	11.36
		Median (mg/l)	11.64	11.66	11.66	11.66	11.66
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0068	0.0068	0.0068	0.0067	0.0067
		Median (mg/l)	0.0049	0.0049	0.0049	0.0048	0.0048
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.54	0.54	0.54	0.54	0.54
		Median (mg/l)	0.53	0.53	0.53	0.52	0.52
	Total Suspended Solids	Mean (mg/l)	2.39	2.38	2.38	2.37	2.37
		Median (mg/l)	2.33	2.32	2.32	2.32	2.32
	Copper	Mean (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition				
			Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-15 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	5	5	4	4	3
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	3	3	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	8	7	6	5	4
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.31	11.32	11.32	11.31	11.31
		Median (mg/l)	11.59	11.59	11.59	11.60	11.60
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0086	0.0086	0.0086	0.0084	0.0083
		Median (mg/l)	0.0064	0.0065	0.0065	0.0063	0.0063
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.58	0.57	0.57	0.57	0.57
		Median (mg/l)	0.55	0.55	0.55	0.55	0.55
	Total Suspended Solids	Mean (mg/l)	2.67	2.63	2.63	2.63	2.63
		Median (mg/l)	2.31	2.31	2.31	2.30	2.30
	Copper	Mean (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-16 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	9	9	9	7	5
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	5	4	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	5	4	4	4	3
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	3	3	3	3	3
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.26	11.27	11.27	11.27	11.26
		Median (mg/l)	11.56	11.57	11.57	11.56	11.56
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0118	0.0119	0.0119	0.0117	0.0115
		Median (mg/l)	0.0101	0.0102	0.0103	0.0100	0.0099
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.65	0.65	0.65	0.64	0.64
		Median (mg/l)	0.62	0.62	0.62	0.61	0.61
	Total Suspended Solids	Mean (mg/l)	2.57	2.53	2.53	2.50	2.50
		Median (mg/l)	2.30	2.30	2.29	2.28	2.28
	Copper	Mean (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-17 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	21	21	21	18	16
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	8	8	8	7	6
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	364	364	364	364	364
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	9	10	10	8	7
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	5	5	5	4	4
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.19	11.19	11.19	11.19	11.19
		Median (mg/l)	11.39	11.40	11.40	11.40	11.40
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0196	0.0207	0.0207	0.0206	0.0205
		Median (mg/l)	0.0161	0.0167	0.0167	0.0166	0.0165
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.97	1.02	1.02	1.01	1.01
		Median (mg/l)	0.88	0.92	0.92	0.91	0.91
	Total Suspended Solids	Mean (mg/l)	2.52	2.50	2.50	2.48	2.48
		Median (mg/l)	2.31	2.32	2.32	2.31	2.31
	Copper	Mean (mg/l)	0.0102	0.0102	0.0102	0.0102	0.0102
		Median (mg/l)	0.0101	0.0101	0.0101	0.0101	0.0101

Table N-6 (continued)

Assessment Point	Water Quality Indicator	Statistic	Condition: Existing	Revised 2020 Baseline	Revised 2020 Baseline with Five-Year LOP[b]	Recommended Plan[c]	"Extreme Measures" Condition[c]
LM-18 Nearshore Lake Michigan Area	Fecal Coliform Bacteria (annual)	Mean (cells per 100 ml)	3	3	3	2	2
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	365	365	365	365	365
	Fecal Coliform Bacteria (May-September: 153 days total)	Mean (cells per 100 ml)	2	2	2	2	2
		Percent compliance with single sample standard (<400 cells per 100 ml)	100	100	100	100	100
		Geometric mean (cells per 100 ml)	2	2	2	2	2
		Days of compliance with geometric mean standard (<200 cells per 100 ml)	153	153	153	153	153
	Dissolved Oxygen	Mean (mg/l)	11.37	11.37	11.37	11.37	11.37
		Median (mg/l)	11.63	11.63	11.63	11.63	11.63
		Percent compliance with dissolved oxygen standard (>5 mg/l)	100	100	100	100	100
	Total Phosphorus	Mean (mg/l)	0.0080	0.0080	0.0080	0.0080	0.0079
		Median (mg/l)	0.0062	0.0063	0.0063	0.0062	0.0062
		Percent compliance with recommended phosphorus standard (0.1 mg/l)	100	100	100	100	100
	Total Nitrogen	Mean (mg/l)	0.57	0.57	0.57	0.57	0.57
		Median (mg/l)	0.56	0.56	0.56	0.56	0.56
	Total Suspended Solids	Mean (mg/l)	2.20	2.20	2.20	2.19	2.19
		Median (mg/l)	2.18	2.17	2.17	2.17	2.17
	Copper	Mean (mg/l)	0.0099	0.0099	0.0099	0.0099	0.0099
		Median (mg/l)	0.0100	0.0100	0.0100	0.0100	0.0100

Table N-6 Footnotes

[a]*In certain limited cases, relatively minor anomalies in concentrations or percents compliance may occur among the five conditions for which model results are presented in this table. Those anomalies might indicate a slight decrease in water quality under the recommended plan and/or "extreme measures" conditions, relative to revised 2020 baseline and/or revised 2020 baseline with five-year LOP conditions. In those cases, it may be assumed that no significant change in water quality occurs among those various conditions. Since it was not always possible to explicitly represent certain components of the recommended plan and "extreme measures" conditions in the LSPC water quality model, adjustments were made to model parameters that served as surrogates for the actual water pollution control measure being represented. In the sense that those modifications sometimes alter parameters in the revised 2020 baseline and/or revised 2020 baseline with five-year LOP model versions, in limited cases, representation of a measure in the recommended plan or "extreme measures" models may have a side effect of introducing small, relatively insignificant anomalies in the comparative results.*

[b]*Five-Year LOP refers to a five-year recurrence interval level of protection against sanitary sewer overflows.*

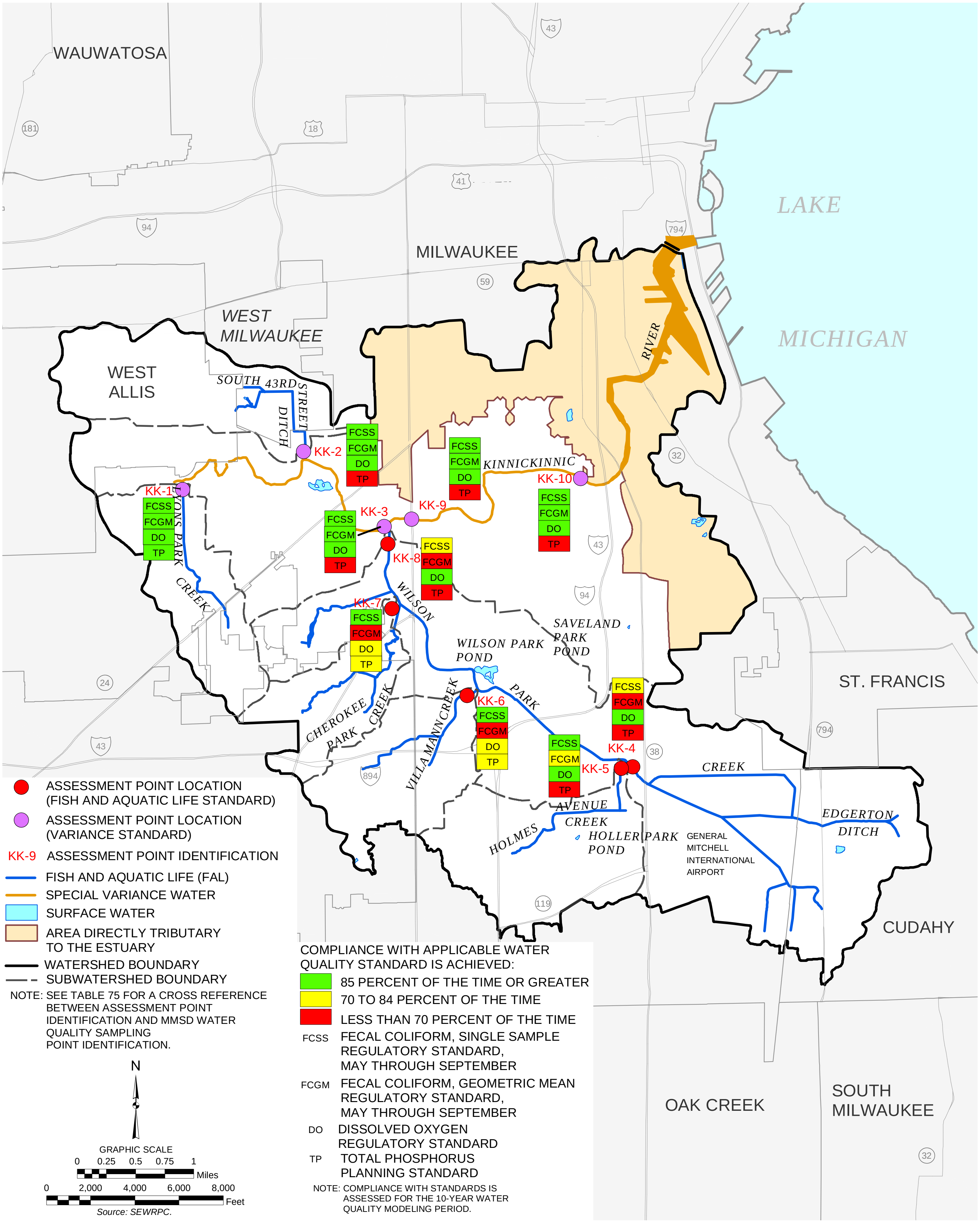
[c]*Within the water quality models for the recommended plan and extreme measures condition, the detection and elimination of illicit discharges to storm sewer systems and control of urban sourced pathogens, including those in stormwater runoff, are represented using stormwater disinfection units. Such units were initially considered as a recommended approach to treatment of runoff, but were eliminated from further consideration based on comments from the Technical Advisory Committee. However, the use of such units is considered to be appropriate as a surrogate representation of the varied and as yet undetermined means that would be applied to detect and eliminate illicit discharges and to control pathogens in urban stormwater runoff. Those units explicitly address the control of bacteria in stormwater runoff, and, based on the way that bacteria loads are represented in the calibrated model, they also implicitly provide some control of bacteria that may reach streams through illicit connections that contribute to baseflow.*

[d]*This assessment point is located within the estuary. Variance standards are from Chapter NR 104 of the* Wisconsin Administrative Code *apply.*

Source: HydroQual, Inc., and SEWRPC.

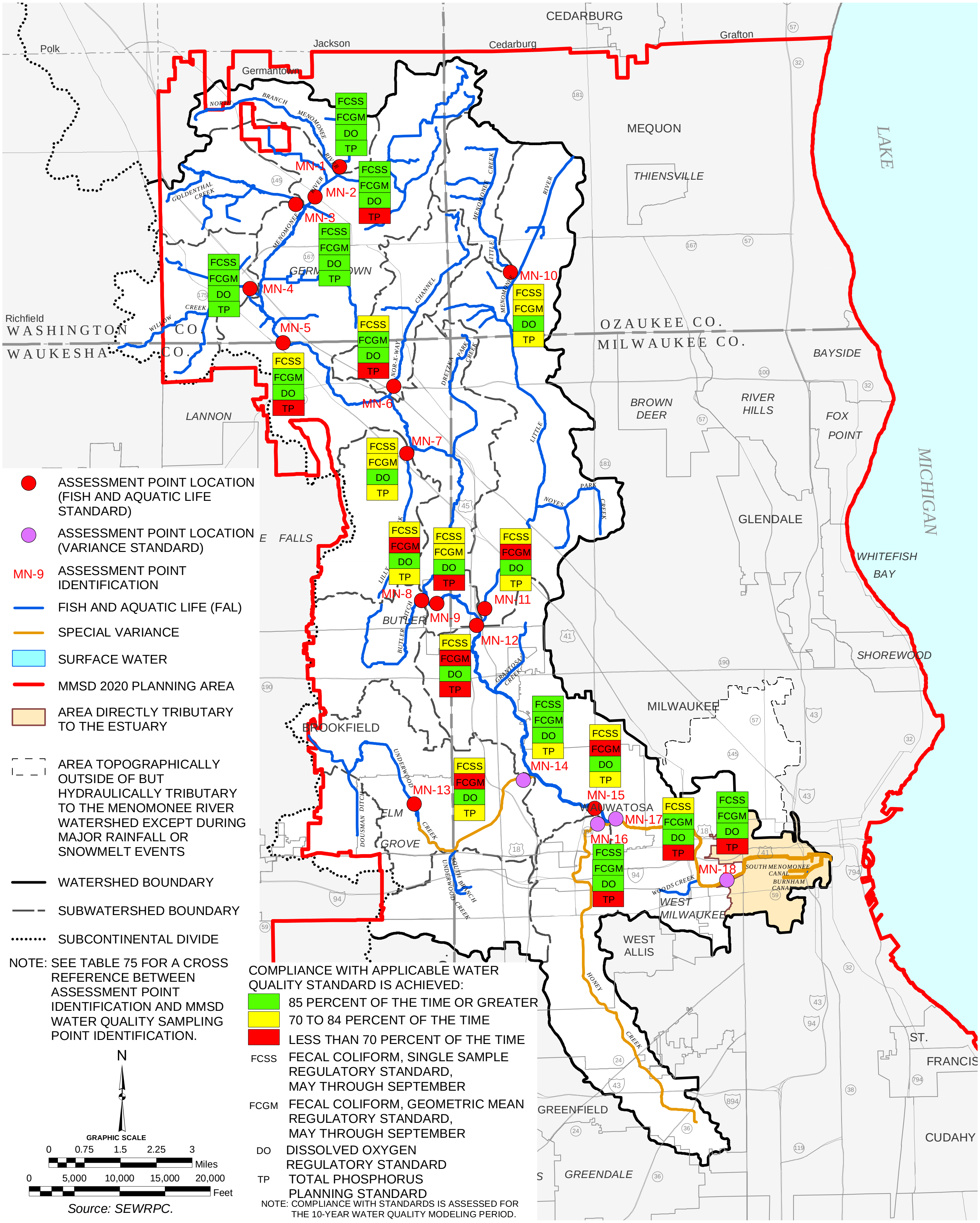
Map N-1

ASSESSMENT POINTS WITHIN THE KINNICKINNIC RIVER WATERSHED FOR THE RECOMMENDED WATER QUALITY MANAGEMENT PLAN



Map N-2

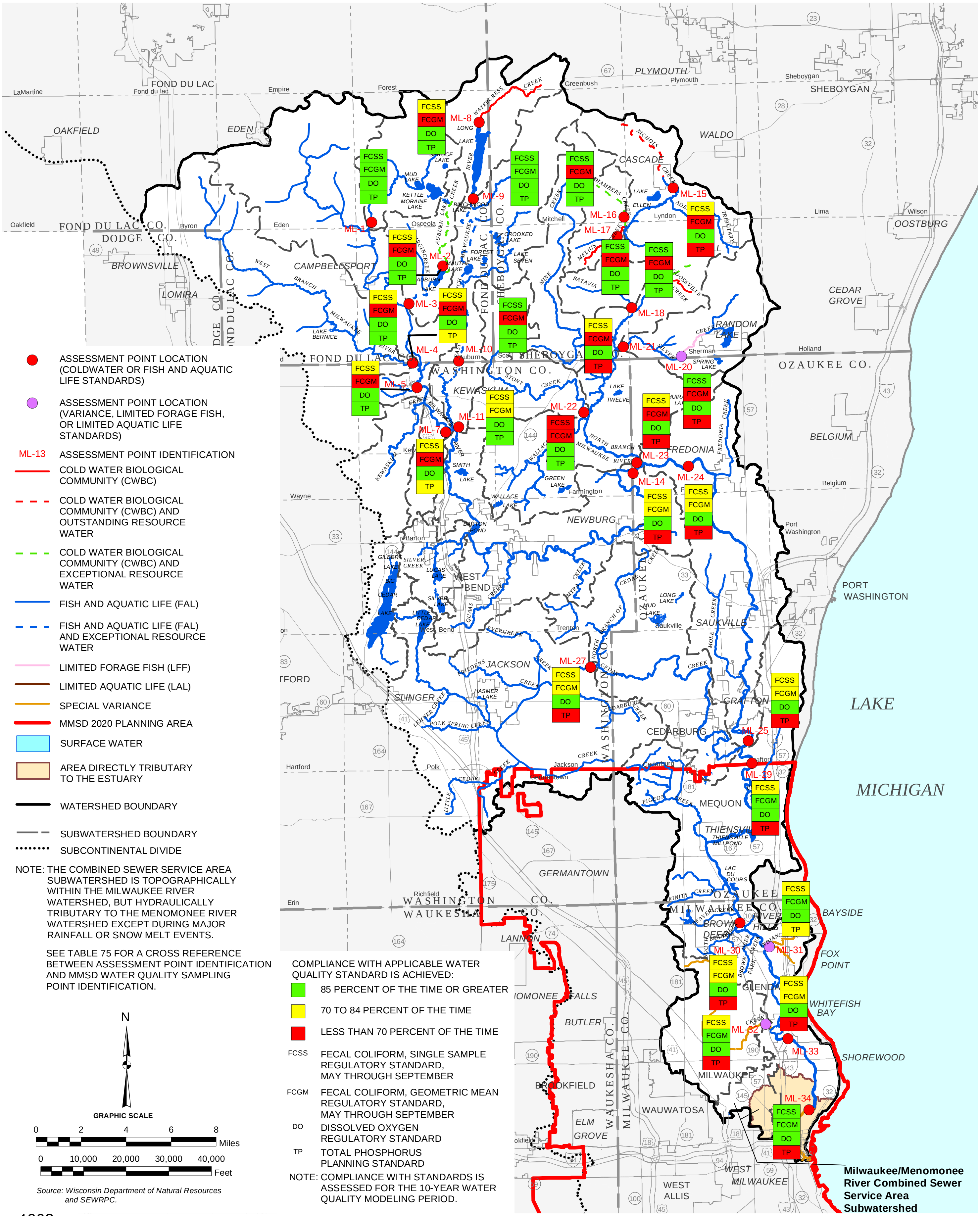
ASSESSMENT POINTS WITHIN THE MENOMONEE RIVER WATERSHED FOR THE RECOMMENDED WATER QUALITY MANAGEMENT PLAN



Source: SEWRPC.

Map N-3

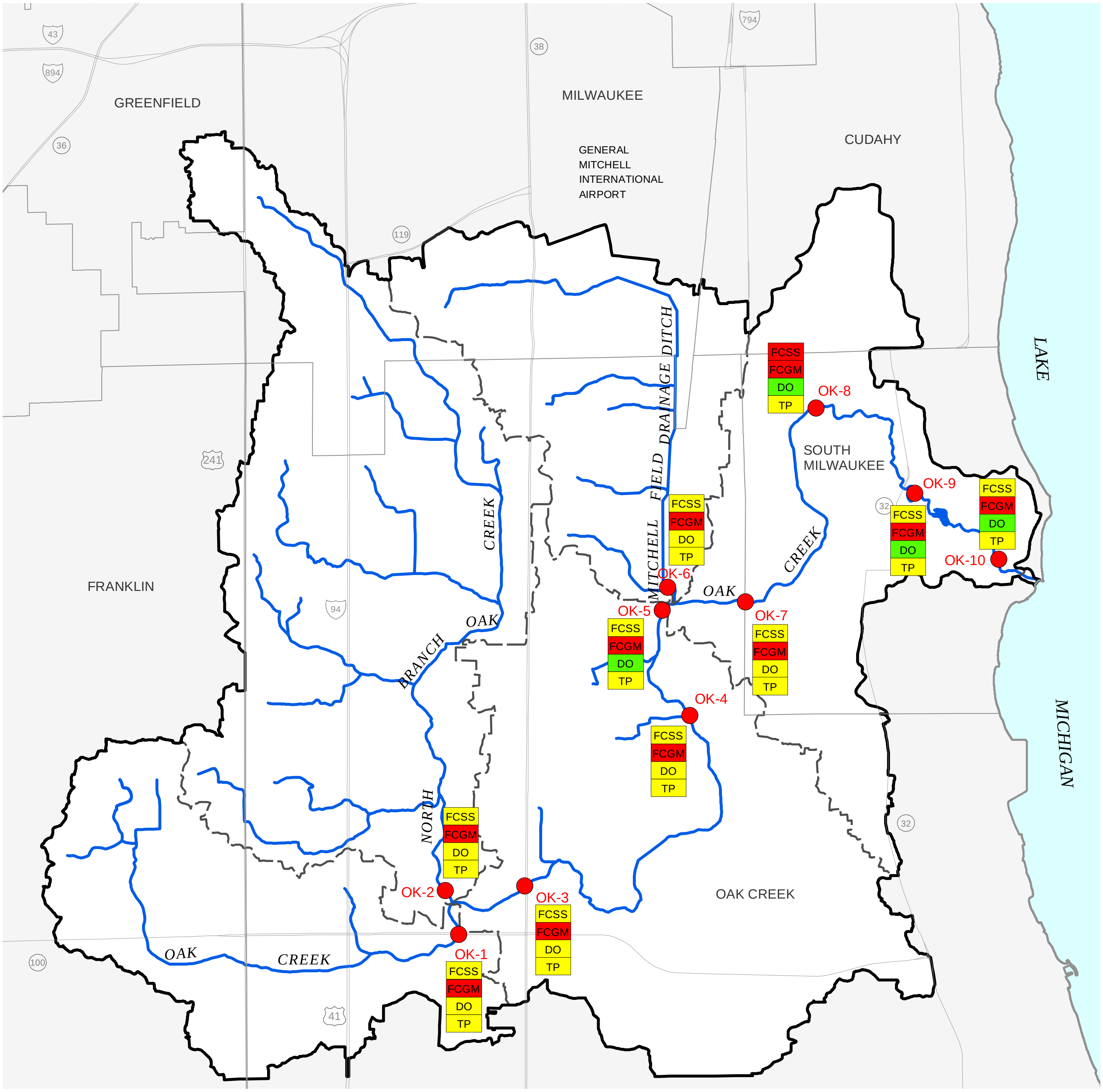
ASSESSMENT POINTS WITHIN THE MILWAUKEE RIVER WATERSHED FOR THE RECOMMENDED WATER QUALITY MANAGEMENT PLAN



Source: Wisconsin Department of Natural Resources and SEWRPC.

Map N-4

ASSESSMENT POINTS WITHIN THE OAK CREEK WATERSHED FOR THE RECOMMENDED WATER QUALITY MANAGEMENT PLAN



ASSESSMENT POINT LOCATION (FISH AND AQUATIC LIFE STANDARD)

OK-9 ASSESSMENT POINT IDENTIFICATION

FISH AND AQUATIC LIFE (FAL)

SURFACE WATER

WATERSHED BOUNDARY

SUBWATERSHED BOUNDARY

NOTE: SEE TABLE 75 FOR A CROSS REFERENCE BETWEEN ASSESSMENT POINT IDENTIFICATION AND MMSD WATER QUALITY SAMPLING POINT IDENTIFICATION.

COMPLIANCE WITH APPLICABLE WATER QUALITY STANDARD IS ACHIEVED:

85 PERCENT OF THE TIME OR GREATER

70 TO 84 PERCENT OF THE TIME

LESS THAN 70 PERCENT OF THE TIME

FCSS FECAL COLIFORM, SINGLE SAMPLE REGULATORY STANDARD, MAY THROUGH SEPTEMBER

FCGM FECAL COLIFORM, GEOMETRIC MEAN REGULATORY STANDARD, MAY THROUGH SEPTEMBER

DO DISSOLVED OXYGEN REGULATORY STANDARD

TP TOTAL PHOSPHORUS PLANNING STANDARD

N

GRAPHIC SCALE

0 0.25 0.5 0.75 1 Miles

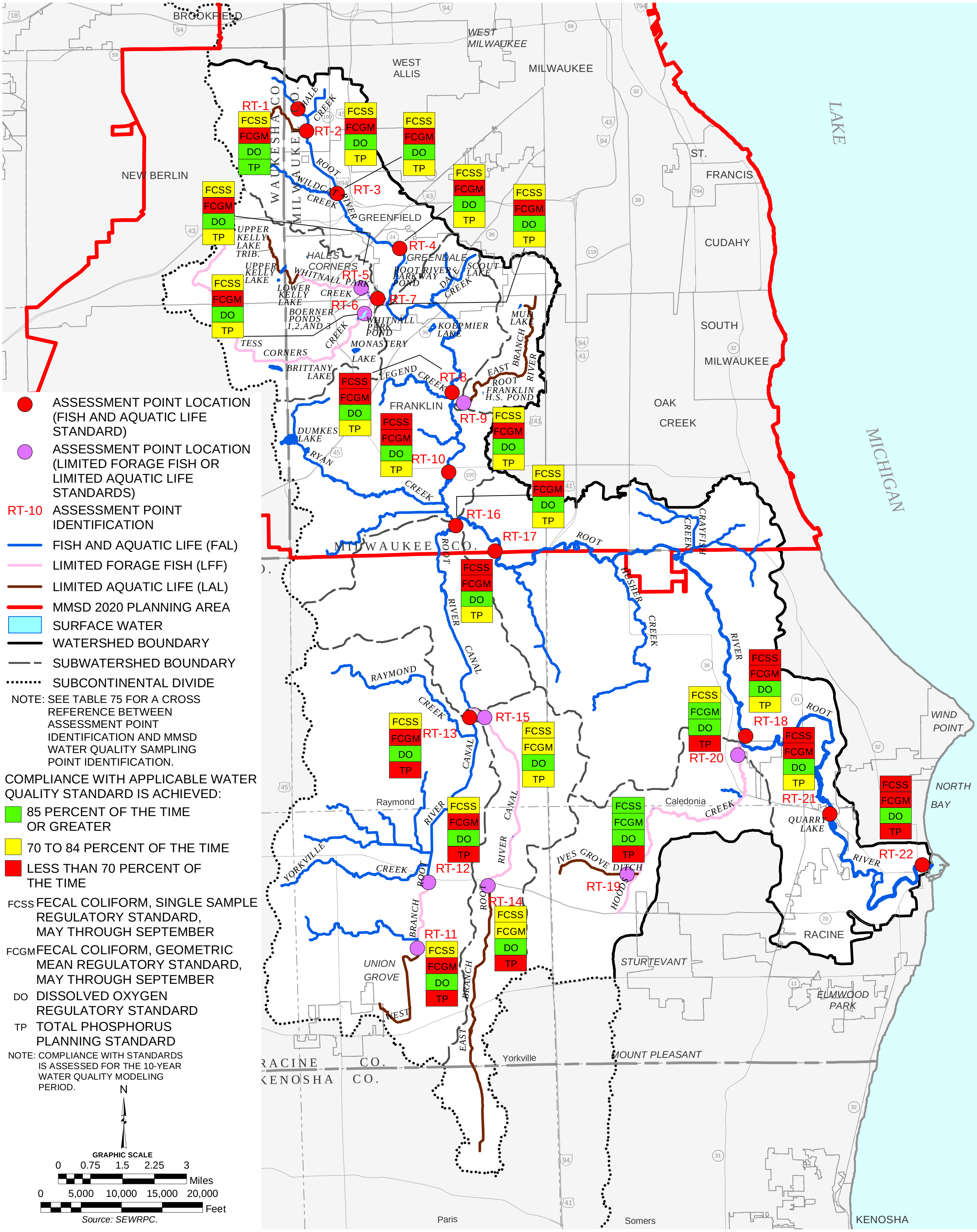
0 2,000 4,000 6,000 8,000 Feet

Source: SEWRPC.

NOTE: COMPLIANCE WITH STANDARDS IS ASSESSED FOR THE 10-YEAR WATER QUALITY MODELING PERIOD.

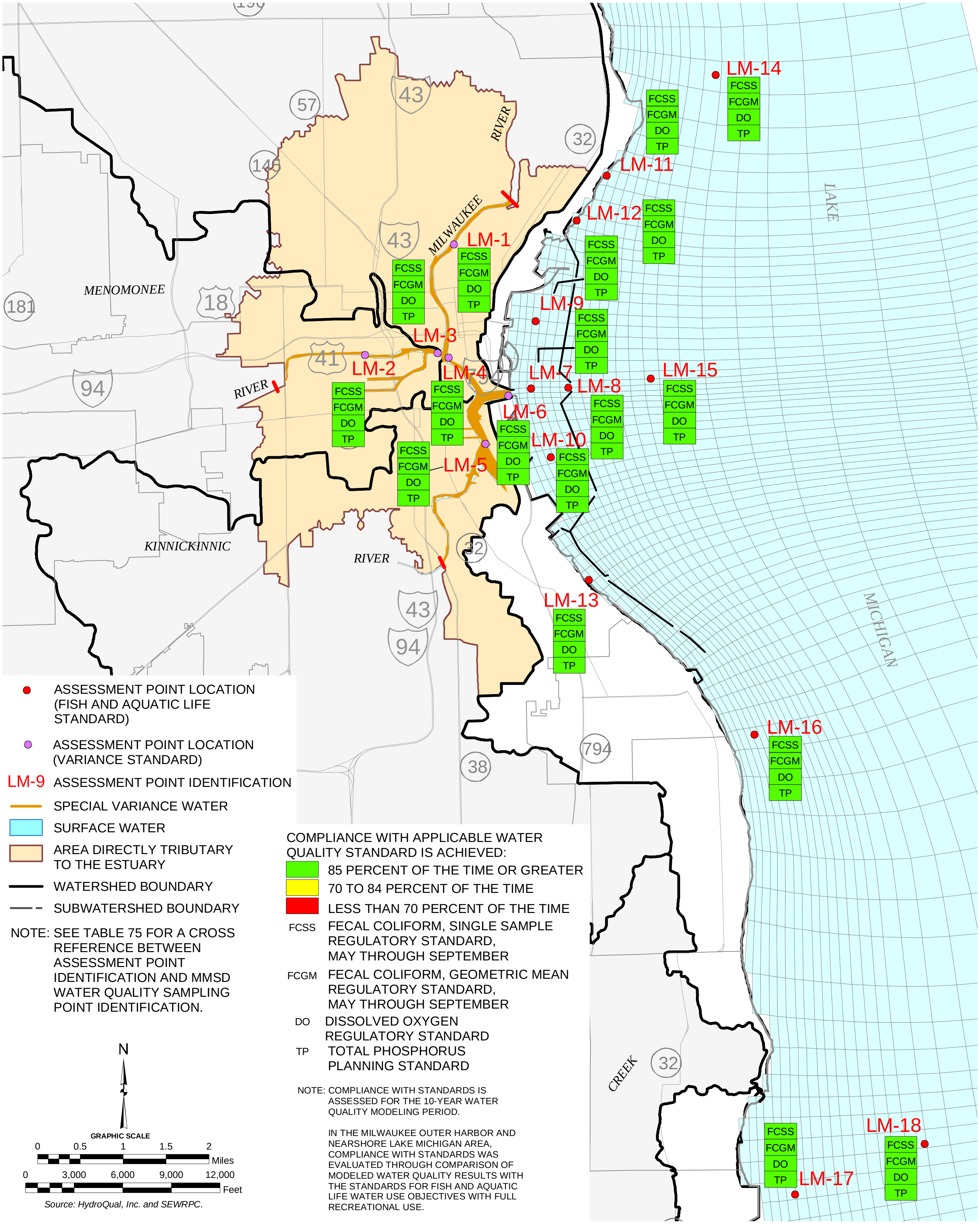
Map N-5

ASSESSMENT POINTS WITHIN THE ROOT RIVER WATERSHED FOR THE RECOMMENDED WATER QUALITY MANAGEMENT PLAN



Map N-6

ASSESSMENT POINTS WITHIN THE MILWAUKEE HARBOR ESTUARY AND NEARSHORE LAKE MICHIGAN AREA FOR THE RECOMMENDED WATER QUALITY MANAGEMENT PLAN



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Appendix O

RIPARIAN BUFFER EFFECTIVENESS ANALYSIS

INTRODUCTION

The scientific literature on the effectiveness of riparian buffers in improving water quality through processing and removing anthropogenic contaminants from surface and ground waters is extensive. Added to this literature is legal practice that has established the principle of shoreline setbacks, especially with respect to both the shoreland management of lakes and flowages and to flood control. Recently, riparian buffers have been employed as an environmental management tool. Despite significant research efforts, there remains no consensus for what constitutes optimal riparian buffer design or proper buffer width to achieve maximum pollutant removal effectiveness, water quality protection, and biological protection. The Wisconsin Buffer Initiative (WBI) further developed two key concepts that are relevant to this plan: 1) riparian buffers are very effective in protecting water resources, and 2) riparian buffers need to be a part of a larger conservation system to be most effective.[1] However, it is important to note that the WBI limited its assessment and recommendations solely to the protection of water quality, and did not consider the additional values and benefits of riparian buffers such as flood control, prevention of channel erosion, provision of fish and wildlife habitat, enhancement of environmental corridors, and water temperature moderation, among others.

This analysis seeks to identify documented scientific information extracted from published literature, which allowed the derivation of the recommended 75-foot-wide riparian buffer width for lakes and streams in the regional water quality management plan update study area, and by extension, the Southeastern Wisconsin Region. This will aid managers and planners in making decisions about establishing, maintaining, or restoring riparian buffers adjacent to all waterbodies. Although, buffer width stands out as one factor influencing the capacity for buffers to remove potential contaminants, numerous other factors described herein play significant roles in the establishment of 75-foot-wide riparian buffers as part of this comprehensive water quality management plan update.

More than 65 peer-reviewed scientific publications dating from 1975 through 2005 were examined for data on the effectiveness of riparian buffers for total suspended solids (TSS), nitrogen, and phosphorus removal around streams and lakes. These data form the basis for defining the relationship between buffer width and percent removal efficiencies for those contaminants. When introduced into the natural environment in quantities or

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[1]*University of Wisconsin-Madison, College of Agricultural and Life Sciences,* The Wisconsin Buffer Initiative, *December 2005.*

concentrations exceeding the absorption capacity of shoreland buffers, these potential pollutants have the ability to negatively impact waterways and waterbodies, diminishing their utility as recreational and aesthetic resources and reducing their value as essential elements of aquatic ecosystems.

As part of this analysis, three key elements were incorporated into the general 75-foot buffer width recommendation set forth in the regional water quality management plan update. These elements are:

- The value of riparian buffers as vegetated zones adjacent to streams, lakes, and wetlands and their use as a best management practice (BMP) for **controlling contaminants** such as nutrients and TSS entering waterbodies.

- The value of riparian buffers as habitat areas adjacent to streams, lakes, and wetlands and their use as a BMP for **protecting and maintaining species** habitat and diversity, especially amongst species of economic concern.

- The role of riparian buffers as a **component of comprehensive watershed management plans**, which must also include point source and nonpoint source control of nutrients and TSS loadings.

CONTROL OF CONTAMINANTS

Riparian buffers are one of the most effective best management practices to protect water resources in terms of water quality, riverbank stability, wildlife habitat, and aesthetics. These strips of grass, shrubs, and/or trees along the banks of rivers, streams, and lake shorelines filter polluted runoff and provide a transition zone between the land and water and associated human uses. These buffers work in various ways and with varying degrees of effectiveness. Effectiveness depends upon a number of factors including the nature of the specific contaminant, its environmental reactivity, the mass of contaminant being conveyed across the land surface, and the distance and slope across which the contaminant is being carried. The role of buffers in controlling and managing the transfer of several major contaminants through the land-water ecotone, or interface, is briefly reviewed below.

Sediment Filter
Riparian buffers help catch and filter out sediment and debris from surface runoff. Depending upon the width and complexity of the buffer, generally 50 percent to 100 percent of the sediment particles—as well as the nutrients and other contaminants attached to them—can settle out and be retained within the buffer strip as plants slow sediment-laden runoff waters. These buffers act as physical filters, retaining particulates within the mass of plant materials, roots, and stalks. For this purpose, wider forested buffers are even more effective than narrow grassed buffers.

Nutrient Filter, Transformer, and Sink
Riparian buffers “trap” pollutants that could otherwise wash into surface and ground water. Such buffers act both as a physical filter, retaining contaminants that adhere to sediment particles through the settling processes described above, and as biological filters. The plants that comprise the buffer strips can utilize a portion of the nutrient load being processed through the buffer strip for nutrition and growth. Phosphorus and nitrogen from sources such as fertilizer application and animal waste can become pollutants if more is applied to the land than upland plants can use. These “excess” nutrients can be transported by runoff of rainfall or snowmelt to aquatic systems, such as streams and lakes where the nutrients are then available to support and sustain the growth and reproduction of shoreland and aquatic plants. In large quantities, these plants commonly limit recreational use of the waters and shorelands, and interfere with the aesthetic enjoyment of these areas.

Phosphorus stimulates growth (i.e. it is a growth limiting element) of both terrestrial and aquatic plants in the Southeastern Wisconsin Region, and is largely responsible for the eutrophication of our waterbodies. The affinity of this element to soil particles results in approximately 80 percent or more of the available phosphorus being captured when sediment is filtered out of surface runoff by passing through the buffer.

In the case of nitrogen, another important element for plant growth, the chemical and biological activity in the soil, particularly in the soils of streamside forests, can capture and transform nitrogen and other pollutants into less biologically-available forms. Nitrogen-fixing bacteria are especially useful in capturing “excessive” nitrogen and transforming the elemental nitrogen into biologically available and/or gaseous forms.

It should be noted that, with respect to aquatic systems, the vegetation within the buffers acts as a temporary sink as the nutrients and excess water are taken up by root systems and stored in the biomass of trees during the growing season. A large portion of these nutrients are then re-released into the environment during the autumn as the plants senesce or die; however, nutrients entering the aquatic environment during the fall are less likely to create or contribute to conditions that interfere with human recreational use and aesthetic enjoyment of the downstream water resources.

Stream Flow Regulator
Riparian buffers slow the passage of water across the land surface and allow water to infiltrate into the soil. This recharge contributes to the maintenance of the groundwater supply. Groundwater reaches streams and rivers at a much slower rate, and over longer periods of time, than surface runoff. Thus, increasing recharge helps maintain stream flow during the driest times of the year.

Bed and Bank Stabilizer
Riparian buffer vegetation helps to stabilize streambanks and shorelines and reduce erosion. The roots of the plants hold bank soils together, and the stems protect banks by deflecting the erosive action of waves, ice, boat wakes, and storm runoff. In like manner, riparian buffers also can reduce the amount of streambed scour by absorbing surface water runoff and slowing water velocities. When plant cover is removed, more surface water reaches a stream, causing the water to crest higher during storms or snowmelt, and subjecting the shorelands to higher flow velocities that can scour shorelines and streambeds.

Effectiveness of Shoreland Buffers
The following range of buffer widths can be gleaned from the literature:

- To Stabilize Eroding Banks: On smaller streams, good erosion control may only require covering the banks with shrubs and trees, and a 35-foot-wide managed grass buffer. If there is active bank erosion, or on larger streams, at least a 50-foot width is necessary. Severe bank erosion on larger streams may require engineering actions to stabilize and protect the bank; however, once completed, bank protection can be done with plants. For better stabilization, more of the buffer should be planted in shrubs and trees.

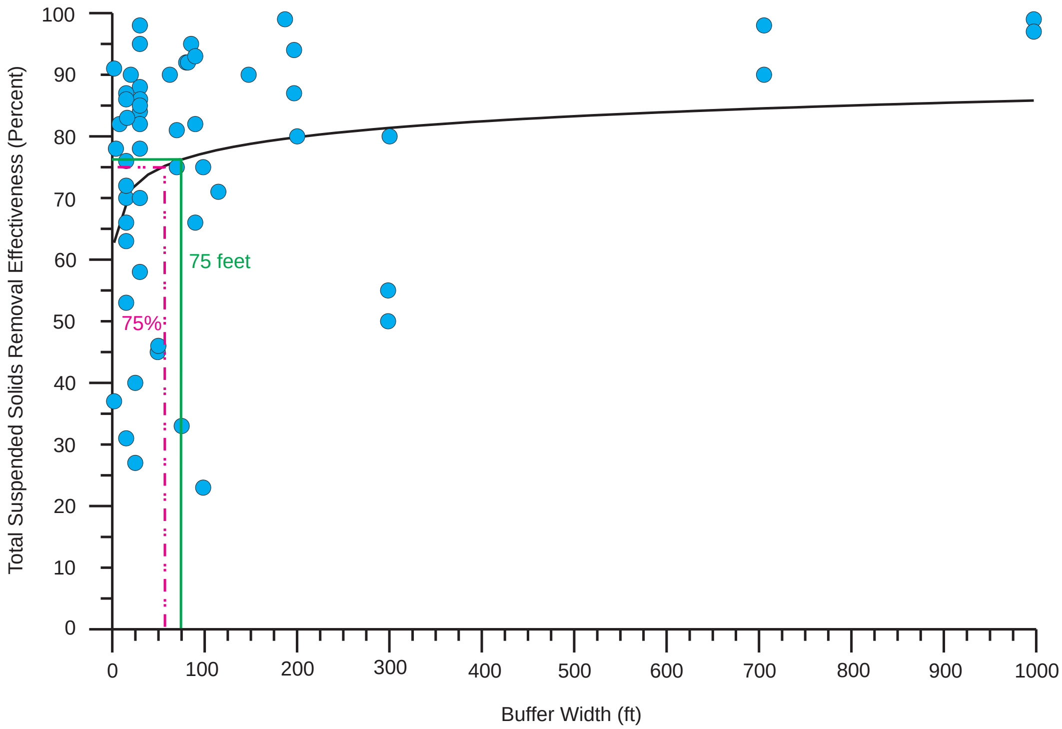
- To Filter Sediment and Attached Contaminants from Runoff: For slopes of less than 15 percent, most sediment settling occurs within a 35-foot-wide buffer of grass. Greater width is needed on steeper slopes, for shrubs and trees, or where sediment loads are particularly high.

- To Filter Dissolved Nutrients and Pesticides from Runoff: A width of up to 100 feet or more may be necessary on steeper slopes and on less permeable soils to allow runoff to soak in sufficiently, and for vegetation and microbes to work on nutrients and pesticides. Most pollutants are removed within 75 feet.

Based upon the literature review, for the purposes of contaminant management, a buffer width of 75 feet represents the most appropriate width for water quality protection. As shown in Figures O-1 through O-4, and consistent with the water quality modeling assumptions applied for the regional water quality management plan update, a 75-foot buffer width provides a high level of effectiveness in reducing TSS loads delivered to the buffer by about 75 percent, delivered total nitrogen loads by about 65 percent, delivered nitrate loads by about 75 percent, and delivered total phosphorus loads by about 70 percent. There are increased benefits of reduction beyond the 75-foot width for each of these parameters. For example, about 90 percent removal effectiveness would be expected for both nitrate and total phosphorus at approximately a 300-foot buffer width. Coincidently,

Figure O-1

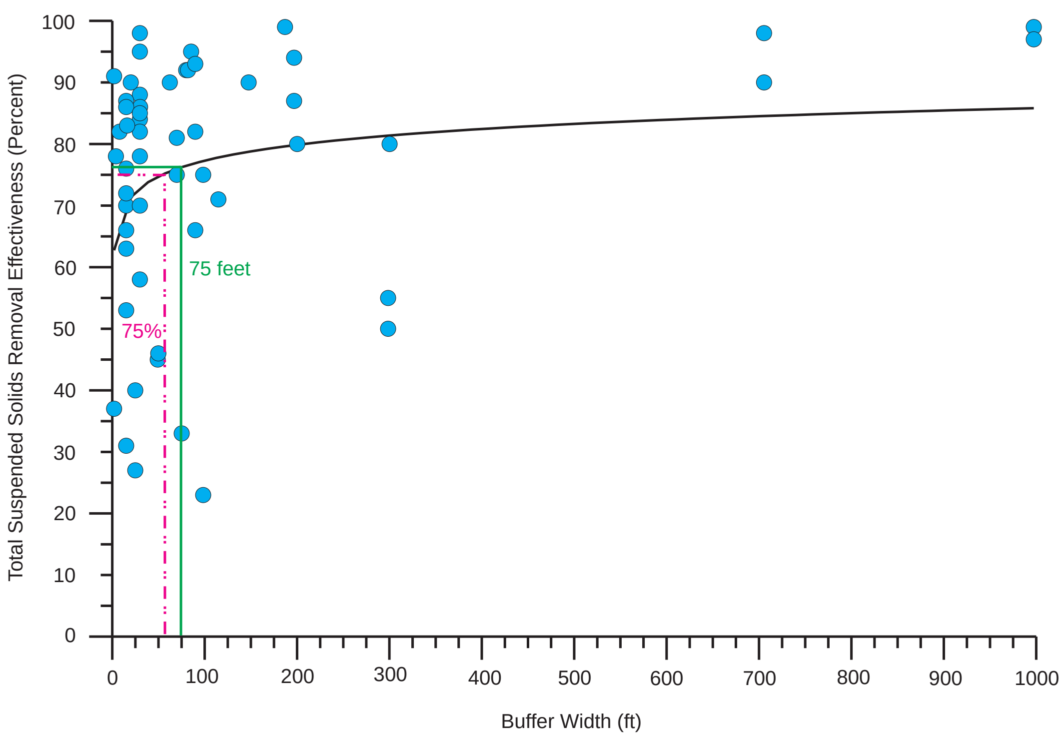
RELATIONSHIP OF TOTAL SUSPENDED SOLIDS REMOVAL EFFECTIVENESS TO RIPARIAN BUFFER WIDTH



Source: SEWRPC.

Figure O-2

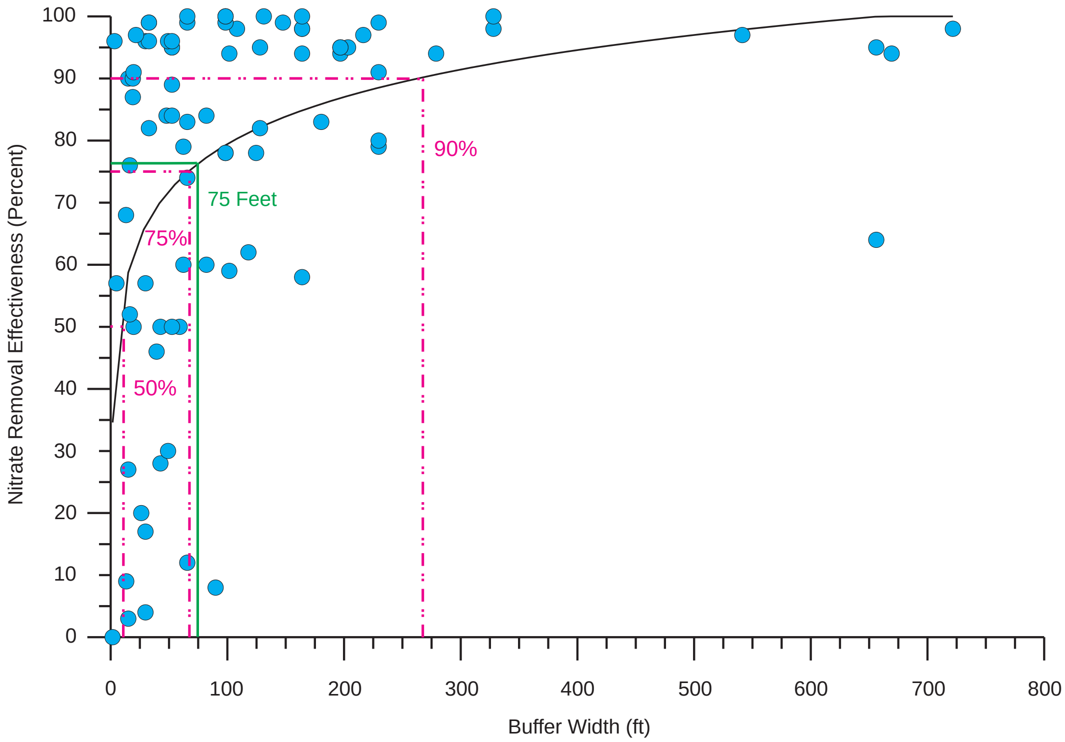
RELATIONSHIP OF TOTAL NITROGEN REMOVAL EFFECTIVENESS TO RIPARIAN BUFFER WIDTH



Source: SEWRPC.

Figure O-3

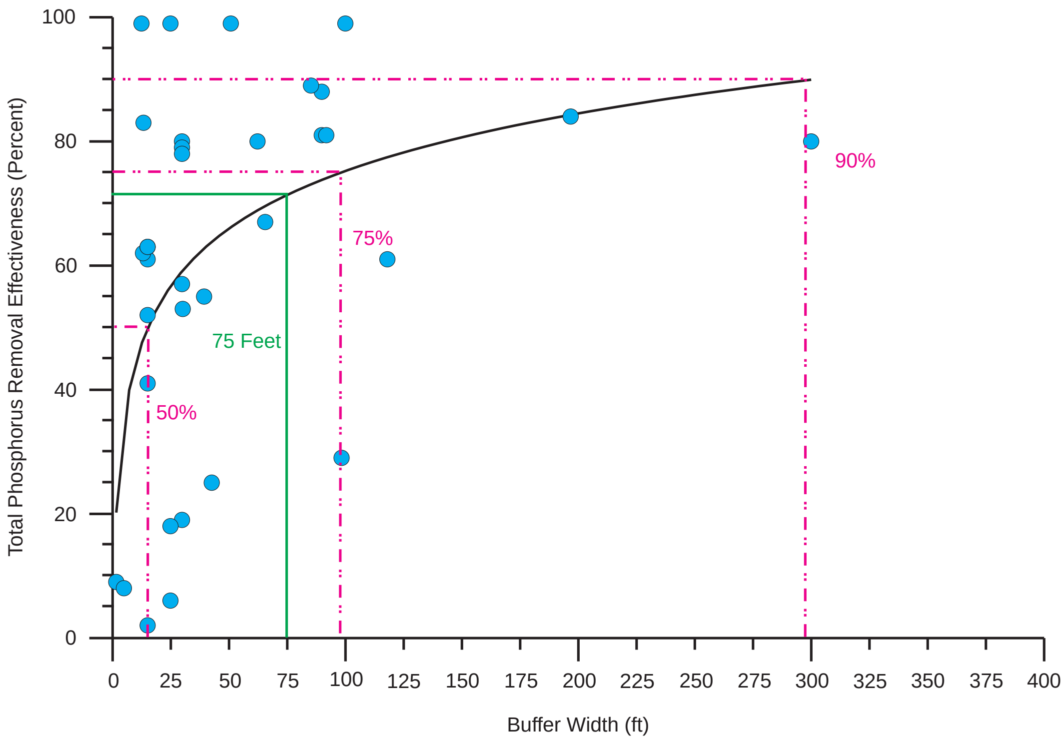
RELATIONSHIP OF NITRATE REMOVAL EFFECTIVENESS TO RIPARIAN BUFFER WIDTH



Source: SEWRPC.

Figure O-4

RELATIONSHIP OF TOTAL PHOSPHORUS REMOVAL EFFECTIVENESS TO RIPARIAN BUFFER WIDTH



Source: SEWRPC.

this 300-foot buffer width is well within the range for added biological community benefits as described below. However, examination of Figures O-1 through O-4 indicates that for a relatively high cost, as indicated by the incremental buffer width beyond 75 feet, a relatively small improvement in water quality would be achieved, as indicated by the incremental increase in pollutant removal effectiveness beyond that for the 75-foot buffer.

It should also be noted that buffer effectiveness is determined by slope, soil permeability, and nature of vegetative cover. Steep slopes and soils of low permeability have less capacity to provide water quality benefits and therefore, require greater buffer widths than less steeply sloped and more permeable soils. Steeply sloped lands promote rapid runoff of water and associated contaminants, while less permeable soils limit infiltration and interflow. Studies show that subsurface flows provide more effective pollutant removal capacity than surface runoff flows.[2] However, the effectiveness and efficiency of all buffers can be limited by the extent of contaminant loading, with even the largest buffers having reduced effectiveness under conditions of extremely high loadings. Thus, a system of riparian buffers along with agricultural nutrient management plans and urban stormwater management plans is recommended under the regional water quality management plan update to provide effective control of nonpoint source pollution.

The nature of vegetated cover within the buffer also will determine in part the magnitude of nutrient removal based upon: the requirements of specific plants primarily for nitrogen and phosphorus necessary for growth; the season, with the majority of removal occurring during the growing season; and the degree of physical filtration, with more densely packed stems typically slowing runoff and retaining a greater percentage of soil bound pollutants. Seasonality in terms of both plant growth cycles and freeze thaw cycles can influence the net effectiveness of pollutant removal, with plants actively taking up or removing nutrients in the spring and summer and releasing those nutrients during the fall when plants senesce, while frozen ground limits the ability of water to infiltrate during the winter months reducing the percentage of uptake of nutrients.[3] Modifying the timing and rate of delivery of contaminants to aquatic systems can significantly modify undesirable biological responses in receiving waters such as lakes and streams.

BIOLOGICAL PROTECTION

Riparian buffers can be complex ecosystems that provide habitat and improve the stream and lake communities that they shelter. Habitat and riparian corridor conditions are strongly influenced by the width and nature of the buffers adjacent to a waterbody and are an important BMP with regard to protecting water from contamination by nonpoint source pollutants, as previously noted. There are many different kinds of buffers. While these buffers may be applied to a variety of situations and may be called by different names, their functions are much the same—the improvement and protection of surface water and groundwater quality; reduction of erosion on croplands, streambanks, and lakeshores; and, provision of protection and cover for insects, fish, birds, amphibians, reptiles, and mammals. The types of riparian buffers include, but are not limited to: streamside or lakeshore plantings of trees, shrubs, and grasses; filter strips or grassed waterways; and undisturbed shoreland vegetation.

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[2]*Paul M. Mayer, Steven K. Reynolds, and Timothy J. Canfield*, Riparian Buffer Width, Vegetative Cover, and Nitrogen Removal Effectiveness: A Review of Current Science and Regulations, *U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory, EPA/600/R-05/118, October 2005.*

[3]*D.M. Robertson, S.J. Field, J.F. Elder, G.L. Goddard, and W.F. James,* Phosphorus Dynamics in Delavan Lake Inlet, Southeastern Wisconsin, 1994, *U.S. Geological Survey Water Resources Report 96-4160, 1996; W.F. James, C.S. Smith, J.W Barko, and S.J. Field, "Direct and Indirect Influences on Aquatic Macrophyte Communities on Phosphorus Mobilization from Littoral Sediments of an Inlet Region in Lake Delavan, Wisconsin," U.S. Army Corps of Engineers,* Technical Report W-95-2, *September 1995.*

Wildlife Habitat
The distinctive habitat offered by riparian buffers is home to a multitude of plant and animal species, including those rarely found outside of this band of land influenced by a river or lake. Continuous stretches of riparian buffer serve as wildlife travel corridors. Consequently, streambanks and lakeshores form integral elements of the environmental corridor concept developed and implemented within the Region in accordance with the regional land use and natural areas and critical species habitat protection and management plans.

Aquatic Habitat
Riparian buffers benefit aquatic habitat by improving the quality of nearby waters through shading, filtering, and moderating stream flow. Trees and shrubs provide shade during the summer months, maintaining cooler and more even water temperatures, especially along small streams. Cooler water holds more oxygen and reduces stress on fish and other aquatic creatures. A few degrees difference in temperature can have a major effect on their survival. High value species, such a trout, for example, require cooler water temperatures for survival and reproduction.

The woody debris generated from within the riparian buffer supports the aquatic food web by providing food and cover for fish and their food organisms. By slowing water velocities, providing substrate for insects, among other benefits the woody debris encourages a range of organisms within a system that would be less diversely populated if it did not contain woody debris.

Recreation and Aesthetics
Riparian buffers are especially valuable in providing a green screen along waterways, blocking views of nearby development, and allowing privacy for riverfront landowners. Buffers also provide such recreational opportunities as hiking trails. For many humans, it is these attributes of riparian buffers that are most obvious and most enjoyable.

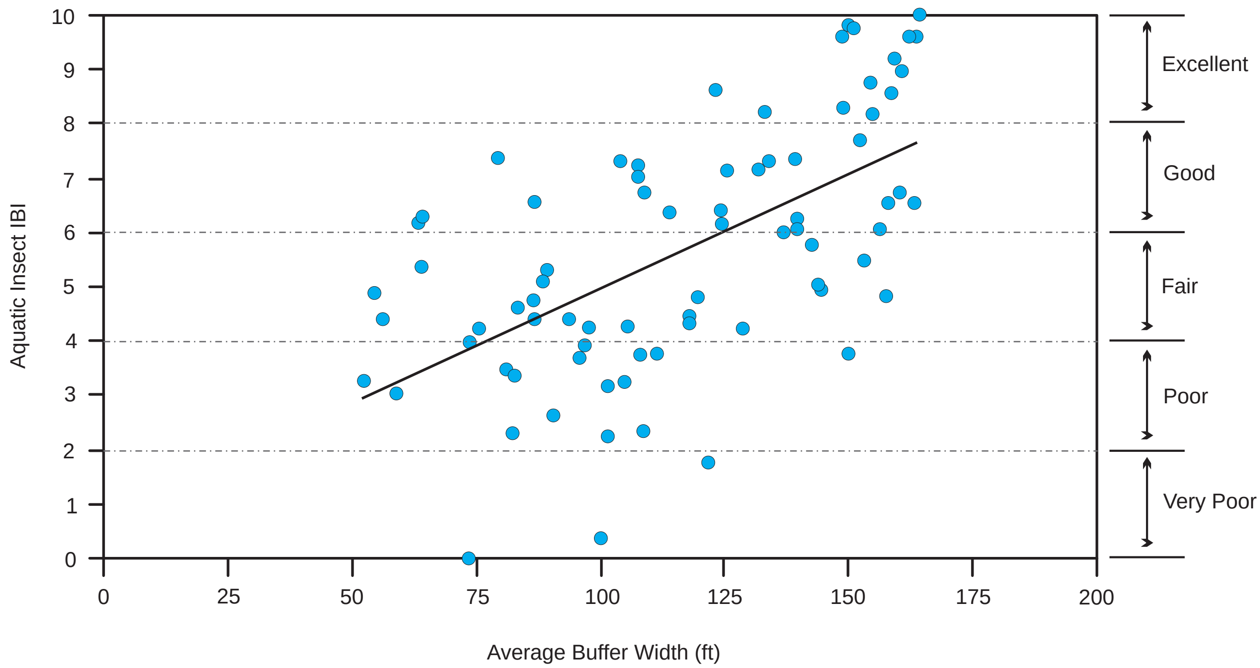
To Protect Fisheries
Research has shown that a minimum 100-foot buffer width is required to protect the quality and health of the aquatic food web.[4] However, the highest quality fishery communities were associated with the widest riparian buffers that ranged from approximately 650-3,000 feet in width, which indicates that buffer widths greater than 100 feet continue to provide additional protection benefits to the fishery community. Regardless of the type of fishery, the 100-foot minimum is a relevant buffer width standard to protect and maintain a coldwater, coolwater, or warmwater fishery and associated aquatic community. The quality of these communities improves with increases beyond the minimum buffer width. In addition, research also has shown that impacts to the continuity and fragmentation of the riparian corridor buffer width are equally as important in protecting aquatic communities. Similarly, both width and continuity of undisturbed buffer strips were related positively to stream health as indicated by aquatic insect IBI, aquatic insect species richness, fisheries Index of Biotic Integrity (IBI), and trout presence.[5] These researchers found that stream health was generally well protected with riparian buffers that ranged from about 110-130 feet in width, contained less than 13 fragments per kilometer (e.g., number of road crossings or some equivalent per length of buffer), and at least 31 percent of the buffer was comprised of 100 feet or more in width. As shown in Figure O-5, stream health (i.e. aquatic insect IBI) and buffer characteristics were linearly related where stream health improves with buffer width from about 50 to 160 feet in width. Narrow buffers having some fragmentation had modest effects on reducing stresses to stream health, whereas wide buffers

[4]*Jana S. Stewart, Lizhu Wang, John Lyons, Judy A. Horwatich, Roger Bannerman, "Influences of watershed, riparian-corridor, and reach-scale characteristics on aquatic biota in agricultural watersheds,"* Journal of the American Water Resources Association*, Vol. 37, No. 6, 1475-1487, 2001; Wisconsin Department of Natural Resources Bureau of Integrated Science Services*, Buffer Width and Continuity for Preserving Stream Health in Agricultural Landscapes, *Issue Fifty-six, December 2005.*

[5]*Wisconsin Department of Natural Resources Bureau of Integrated Science Services,* Buffer Width and Continuity for Preserving Stream Health in Agricultural Landscapes, *Issue Fifty-six, December 2005.*

Figure O-5

MACROINVERTEBRATE INDEX OF BIOTIC INTEGRITY SCORES AND AVERAGE BUFFER WIDTH



Source: Adapted from B.M. Weigel and others, "Buffer Width and Continuity for Preserving Stream Health in Agricultural Landscapes," Bureau of Integrated Science Services, Wisconsin Department of Natural Resources, Issue 56, 2005.

without fragmentation had substantial effects. Consistent with these findings related to stream health, the regional water quality management plan update includes a recommendation that opportunities to expand riparian buffers beyond the recommended 75-foot width be pursued along high-quality stream systems including those designated as outstanding or exceptional resource waters of the State, trout streams, or other waterways that support and sustain the life cycles of economically important species such as salmon, walleye, and northern pike.

Land use within the watershed also is an important variable influencing fish and macroinvertebrate abundance and diversity, which is why riparian buffers alone cannot address the stresses of excessive nutrient loading, stormwater runoff, or other nonpoint source pollution. For example, researchers found that combined upland (barnyard runoff controls, manure storage, and contour plowing and reduced tillage) and riparian (streambank fencing, streambank sloping, limited streambank riprapping) Best Management Practices (BMPs) treatments significantly improved overall stream habitat quality, bank stability, instream cover for fishes, and fish abundance and diversity.[6] Specifically, improvements were most pronounced at sites with riparian BMPs; however, in sites with limited upland BMPs installed in the watershed there were no improvements in water temperature or the quality of fish community. The regional water quality management plan update recommends buffers as part of an overall system of agricultural controls such as those listed above.

To Protect Wildlife Habitat

Buffer widths for wildlife depend upon the desired species to be protected. As shown in Figure O-6, large streamside forest buffer widths of up to 350 feet are needed for wildlife habitat purposes in contrast to those required for protection of water quality. The larger the buffer zone, the more valuable it is as wildlife habitat.

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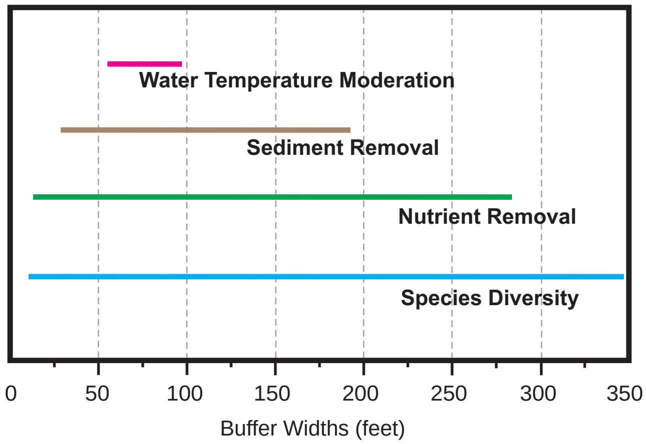
[6]*Lizhu Wang, John Lyons, and Paul Kanehl, "Effects of watershed best management practices on habitat and fish in Wisconsin streams,"* Journal of the American Water Resources Association, *Vol. 38, No. 3, 663-680, June 2002.*

Figure O-6

RANGE OF BUFFER WIDTHS FOR PROVIDING SPECIFIC BUFFER FUNCTIONS



NOTE: Site-specific evaluations are required to determine the need for buffers and specific buffer characteristics.

Source: Adapted from A.J. Castelle and others, "Wetland and Stream Buffer Size Requirements–A Review," Journal of Environmental Quality*, Vol. 23.*

Larger animals—such as fox, deer, raccoon, and large birds of prey—and interior forest species—especially forest dwelling birds that require deep forest habitat—generally require more room. Additionally, the diversity of various sedges, grasses, forbs, shrubs, and trees may be dependent upon the area available for seed dispersal, germination, and growth. Nevertheless, a narrow width and reduced diversity of vegetation may be acceptable as a travel corridor if connected to larger diverse areas of habitat. Even small patches of trees are better for migrating birds than no buffer or monotypical stands such as lawns or crops. These wildlife buffer concepts underlie the primary environmental corridor specifications of a 200-foot minimum width and two mile length[7]

SYNTHESIS

Buffers can be used for a variety of purposes from enhancing aquatic species diversity through reducing water temperature entering streams to enhancing terrestrial species diversity through the provision of safe passages with adequate food and shelter. For these reasons, buffer size may vary widely, depending on the specific functions required for a particular buffer or for the protection of a particular species as shown in Figure O-6. Buffers that have widths in the 15- to 35-foot range generally provide limited water quality benefit and minimal protection of aquatic resources under most conditions. Under most circumstances, a minimum buffer width of about 50 to 100 feet is necessary to protect wetlands and streams. In general, minimum buffer widths in the 50- to 65-foot range would be expected to provide for the maintenance of the natural physical and chemical characteristics of aquatic resources. Buffer widths at the upper end of the 50- to 100-foot range seem to be necessary for the maintenance of the biological components of many wetland and stream systems, although it is important to note that site-specific conditions, such as slope, vegetation, and soil characteristics, can greatly influence the need for either wider or narrower buffers. Based upon the literature review, for the purposes of habitat management, a buffer width of 75 feet represents the minimum width necessary for provision of protection of aquatic organisms and habitat. However, a buffer of only 75 feet is not adequate to protect all aquatic and terrestrial plant and animal species.

It is clear that "one size does not fit all" with regard to riparian buffers. Buffer width depends on the purpose which the buffer is meant to serve. There is no single generic buffer which will keep the water clean, stabilize the bank, protect the fish and wildlife, and satisfy human demands. The minimum acceptable width is one that will provide acceptable levels of all of these beneficial uses at an acceptable cost. Consequently, a basic buffer should be about 75 feet from the top of the bank at the water's edge.

In practice, the size and vegetation of the buffer should match the land use and topography of the site.

- Topography: A buffer is more important for water quality in areas that collect runoff and deliver it to streams, and less critical on lands that drain away from the water. Steeper slopes call for a wider riparian buffer to allow more opportunity for the buffer to capture pollutants from faster moving runoff.

[7]*Paul Beier and Reed F. Noss, "Do Habitat Corridors Provide Connectivity?,"* Conservation Biology, Review, *Vol. 12, No. 6, 1241-1252, December 1998.*

- Hydrology and Soils: The ability of the soil to remove pollutants and nutrients from surface and ground water depends upon the type of soil, its depth, and relation to the water table. On wetter soils, a wider buffer is needed to achieve the same benefit.

- Vegetation: The purposes of the buffer will influence the type of vegetation to plant or encourage. In urban and residential areas, trees and shrubs do a better job at capturing pollutants from parking lots and lawn runoff and providing visual screening and wildlife habitat. Between croplands and waterways, a buffer of shrubs and grasses can provide many of the benefits of a forested buffer without shading crops, although trees can be used on the north side of fields. Trees have several advantages over other plants in improving water quality and offering habitat. Trees are not easily smothered by sediment and have greater root mass to resist erosion. Above ground, they provide better cover for birds and other wildlife using waterways as migratory routes. Trees can especially benefit aquatic habitat on smaller streams. In general, native vegetation is preferable to nonnative plants.

CONCLUDING REMARKS

While it is clear from the literature that wider buffers can provide a greater range of values for aquatic systems, the need to balance human access and use with the environmental benefits to be achieved suggests that a 75-foot-wide riparian buffer provides a minimum width necessary to contribute to good water quality and a healthy aquatic ecosystem. In general, most pollutants are removed within a 75-foot buffer width. While water quality benefits increase somewhat when buffers exceed the 75-foot width, such increases in width are increasingly less cost effective as a smaller portion of the total pollutant load is removed at a significantly higher cost. From an ecological point of view, buffers beyond a 75-foot width provide greater benefits.

These findings form the basis for the Washington County shoreland protection program, for example, and underlie many of the other shoreland ordinances adopted elsewhere in Wisconsin. A 75-foot buffer width is consistent with the required shoreland setbacks set forth in Chapter NR 115 of the *Wisconsin Administrative Code*, and with other recommended setbacks currently included within legal definitions of the shoreland area. Thus, a 75-foot wide buffer appears to be the best and most practical compromise between human use of the landscape and the needs of the environment that sustain such human uses. However, the quality and continuity of these corridors play important roles in their effectiveness, with greater levels of fragmentation by roadways and other structures limiting the effectiveness of those buffers that are put into place.

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Appendix P

CRITERIA AND GUIDELINES FOR STREAM CROSSINGS TO ALLOW FISH PASSAGE AND MAINTAIN STREAM STABILITY WITHIN THE REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE STUDY AREA

TYPES OF CROSSINGS

- The number of stream crossings should be minimized.
- If a crossing is necessary, structures that maintain to the extent possible the existing streambed and bank conditions are preferable; therefore, bridges spanning streams are preferable to other structures.
- If a culvert is necessary, open bottom structures are preferable to closed bottom structures.
- If a closed bottom culvert is necessary, box culverts, elliptical, or pipe arch culverts are preferable to round pipe culverts, because round pipes generally reduce stream width to a much larger degree than the aforementioned structures, causing long term upstream and downstream passage limitations (see physical considerations below).

BIOLOGICAL CONSIDERATIONS[1]

- Contact the area WDNR fisheries manager prior to design.[2]
- Species of fish present (coldwater, warmwater, threatened, endangered, species of special concern).
- Life stages to potentially be impacted (e.g., egg development within substrates should be avoided).
- Migration timing of affected species/ life stages (e.g., adult spawning times should be avoided).

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[1]*British Colombia Ministry of Forests,* Fish-stream crossing guidebook*, For. Prac. Br., Min. For., http://www.for.gov.bc.ca/tasb/legsregs/fpc/FPCGUIDE/Guidetoc.htm, Victoria, B.C. Forest Practices Code of British Columbia guidebook, 2002.*

[2]*UW-Extension and WDNR,* Fish Friendly Culverts*, 2002.*

PHYSICAL CONSIDERATIONS[3]

It is important to note that in order to achieve the minimum physical criteria outlined below, the culvert(s) will need to be oversized as part of the design to ensure adequate long-term fish passage as well as the ability to pass the design period rainfall event.

It is understood that it may not be possible to achieve some of the minimum passage criteria below based upon specific on-site conditions or constraints, however, the closer the designed and completed culvert can meet these criteria the better the long-term passage and overall sustainability of the fishery will be achieved in this region.

Provide Adequate Depth

- Slope—Culvert should be installed with a slope that matches the riffle slope as measured in the thalweg[4] (see Minnesota DNR guidelines[5])

- Water Depth—Depths should maintain the determined thalweg depth at any point within the culvert during low flow periods (see Minnesota DNR guidelines).

- Installation Below Grade—The culvert should be installed so that the bottom of the structure is buried to a depth equal to 1/6th the bankfull width of the stream (up to two feet) below the natural grade line elevation of the stream bottom (see Minnesota DNR guidelines). The culvert should then be filled to stream grade with natural substrates. The substrates should consist of a variety of gravel ranging from one to four inches in diameter and either mixed with nonuniformly laid riprap or uniformly placed alternate riprap baffles, large enough to be stable during the culvert design discharge, which will ensure stability of substrates during high flow events.

Provide Adequate Width

- Width—Culvert width shall match the bankfull width (minimum) of the existing channel.

- Offsetting Multiple Culverts—The number culverts used should be minimized. However, if multiple culverts are necessary, it is recommended that the culvert inverts be offset vertically and only one culvert be designed to provide passage during low flow conditions and the additional culverts be used to pass the higher flow events (see Figure P-1). Therefore, the low flow culvert will be the only culvert, in a series of two or more culverts, designed to provide fish passage during low flows and shall meet the physical requirements of passage above.

Provide Adequate Resting Areas

- Length—Culverts that exceed more than 75 feet in length need to provide additional resting areas (e.g., installation of baffles or weirs) within the culvert to facilitate passage.[6]

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[3] *Washington Department of Fish and Wildlife, Habitat and Lands Program, Environmental Engineering Division,* Fish Passage Design at Road Culverts: A Design Manual for Fish Passage at Road Crossings, *Washington, March 3, 1999.*

[4] *The thalweg is the lowest point of the streambed.*

[5] *Minnesota DNR, Best Practices for Meeting DNR General Public Waters Work Permit GP 2004-0001, March 2006.*

[6] *Thomas Slawski and Timothy Ehlinger, "Habitat Improvement in Box Culverts: Management in the Dark?," North American Journal of Fisheries Management, Volume 18:676-685, 1998.*

Figure P-1

COMPARISON OF UNDERSIZED AND ADEQUATELY SIZED AND PLACED CULVERTS

Undersized culvert.

Properly sized and placed culverts.

Source: Minnesota Department of Natural Resources.

Inlet and Outlet Protection

- Align the culvert with the existing stream alignment (e.g., 90 degree bends at the inlet or outlet should be avoided, even though this will increase culvert length, see Minnesota DNR guidelines).
- The low flow culvert should be centered on the thalweg of the channel to ensure adequate depths inside the culvert.
- Provide grade control where there is potential for head-cuts that could degrade the channel.
- It may be necessary to install riprap protection on the outside bank below the outlet to reduce bank erosion during high flow events.

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Appendix Q

RECOMMENDED INLAND LAKE MANAGEMENT MEASURES

INTRODUCTION

Lakes are unique features of the landscape, being repositories of materials transported from the land surface and conveyed by streams and rivers into their basins, as well as significant recreational, aesthetic, and environmental resources. The major lakes of the greater Milwaukee watersheds are relatively unique within the Region in that they are generally headwater lakes, situated within the drainage system tributary to the mainstem of the Milwaukee River system. These waterbodies include Auburn Lake, Crooked Lake, Forest Lake, Kettle Moraine Lake, Long Lake, Mauthe Lake, and Mud Lake in Fond du Lac County; Mud Lake and Spring Lake in Ozaukee County; Lake Ellen and Random Lake in Sheboygan County; and Barton Pond, Big Cedar Lake, Green Lake, Lake Twelve, Little Cedar Lake, Lucas Lake, Silver Lake, Smith Lake, and Wallace Lake in Washington County. Where available, water quality-related data on these lakes are set forth in Chapter VII, "Surface Water Quality Conditions and Sources of Pollution in the Milwaukee River Watershed," of SEWRPC Technical Report No 39 (TR No. 39), *Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds,* which is a companion document to this report. While relatively few data were available for the majority of the lakes, the available data indicated that these waterbodies could be considered to be mesotrophic to eutrophic in nature, or enriched with the plant nutrients nitrogen and phosphorus and capable of supporting abundant growths of aquatic plants and sustaining a productive fishery, albeit one likely to become increasingly dominated by pollution tolerant fishes.

Given this status, the adopted regional water quality management plan,[1] as refined by the plans derived from the Milwaukee River Priority Watersheds Program,[2] recommended that nutrient loads to the lakes of the greater

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[1]*See SEWRPC Planning Report No. 30,* A Regional Water Quality Management Plan for Southeastern Wisconsin—2000, *Volume Two,* Alternative Plans, *February 1979; see also SEWRPC Memorandum Report No. 93,* A Regional Water Quality Management Plan for Southeastern Wisconsin: An Update and Status Report, *March 1995.*

[2]*Wisconsin Department of Natural Resources Publication No. PUBL-WR-255-90,* A Nonpoint Source Control Plan for the East and West Branches of the Milwaukee River Priority Watershed Project, *February 1989; Wisconsin Department of Natural Resources Publication No. PUBL-WR-253-90,* A Nonpoint Source Control Plan for the North Branch Milwaukee River Priority Watershed Project, *July 1989; Wisconsin Department of Natural Resources Publication No. PUBL-WR-245-91,* A Nonpoint Source Control Plan for the Milwaukee River South Priority Watershed Project, *December 1991; Wisconsin Department of Natural Resources Publication No. PUBL-WR-336-93,* Nonpoint Source Control Plan for the Cedar Creek Priority Watershed Project, *August 1993. See also SEWRPC Planning Report No. 9,* A Comprehensive Plan for the Root River Watershed, *September 1966; SEWRPC Planning Report No. 36,* A Comprehensive Plan for the Oak Creek Watershed, *August 1986.*

Milwaukee watersheds be minimized by application of nonpoint source pollution control measures designed to reduce pollutant loads to the lakes from rural lands by up to 75 percent, in the case of Lake Twelve, and by up to 50 percent from urban lands, in the case of the Kelly Lakes. For this reason, implementation of the watershed management measures set forth elsewhere in this report will complement and contribute to the control of nonpoint source pollution loading to the lakes, benefiting not only the streamcourses themselves, but also the lentic waterbodies within the greater Milwaukee watersheds. Thus, the general recommendations regarding water quality management and nonpoint source pollution control, set forth in Chapter X of this report are incorporated herein by reference.

The regional water quality management plan update and status report further recommended that lake specific management plans be prepared for the waterbodies within the greater Milwaukee watersheds.[3] These plans would present lake-specific inventory data for the direct and total drainage basins tributary to the 20 lakes and address both drainage basin and in-lake issues of concern. Appropriate in-lake water quality monitoring, aquatic plant surveys, and fisheries surveys would form part of these planning programs. Based upon the current knowledge of water quality conditions in these waterbodies, set forth in the regional water quality management plan update, and in summary form in Chapter VII of TR No. 39, it is likely that the range of issues to be addressed in such local-level plans would include watershed-based management measures designed to address nutrient loading from both public sewage treatment facilities and onsite sewage disposal systems, rural agricultural lands, and urban lands and construction sites; aquatic plant management; fisheries management; lake depth and sedimentation; and, in the case of impounded waterbodies, lake-level management. Identification and protection of environmental corridors, including riparian wetlands, as recommended in the adopted regional land use plan, regional natural areas and critical species habitat protection and management plan, and county land and water resource management plans, would also be likely issues of concern to be addressed in lake-specific management planning programs.[4]

This appendix sets forth a summary of the lake-specific plan elements applicable to the major lakes of the greater Milwaukee watersheds, based upon consideration of the inventory data presented in the report. While these recommendations are made for the 20 major lakes, similar recommendations should be considered for application to lakes of less than 50 surface acres in areal extent, such as the Kelly Lakes and the Milwaukee County ponds and lagoons,[5] where such measures are deemed important for purposes of water quality protection.

As of 2006, lake management plan elements had been prepared for three of the major lakes—Big Cedar Lake, Little Cedar Lake, and Silver Lake, all in Washington County—and two of the minor lakes—Upper and Lower Kelly Lakes in Milwaukee and Waukesha Counties.[6]

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[3]*SEWRPC Memorandum Report No. 93,* op. cit.

[4]*See SEWRPC Planning Report No. 48,* A Regional Land Use Plan for Southeastern Wisconsin: 2035, *June 2006; SEWRPC Planning Report No. 42,* A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin, *September 1997; and SEWRPC Community Assistance Planning Report No. 259,* A Land and Water Resource Management Plan for Racine County: 2000-2004, *September 2000.*

[5]*See SEWRPC Memorandum Report No. 135,* A Lake Protection Plan for the Kelly Lakes, Milwaukee and Waukesha Counties, Wisconsin, *October 2000; Milwaukee County Environmental Services,* Milwaukee County Pond & Lagoon Management Plan, *June 2005.*

[6]*See SEWRPC Memorandum Report No. 123, 2nd Edition,* A Lake Protection and Recreational Use Plan for Silver Lake, Washington County, *December 2005; SEWRPC Memorandum Report No. 135,* op. cit.*; SEWRPC Memorandum Report No. 137,* A Water Quality Protection and Stormwater Management Plan for Big Cedar Lake, Washington County, Wisconsin, *Volume One,* Inventory Findings, Water Quality Analyses, and Recommended Management Measures, *August 2001; SEWRPC Memorandum Report No. 146,* An Aquatic Plant Management Plan for Little Cedar Lake, Washington County, Wisconsin, *May 2004; see also, SEWRPC*
(Footnote Continued on Next Page)

County Lake and Stream Classification Programs

During 1997, the Wisconsin Legislature created a lake classification grant program as described under Chapter NR 191 of the *Wisconsin Administrative Code*. This cost-share program was to be administered by the Wisconsin Department of Natural Resources (WDNR) as part of the existing Lake Protection Grant Program, and was intended to further the degree of protection of lakeshore areas within the State. Both Washington County and Waukesha County in the greater Milwaukee watersheds successfully applied for funds under this program and completed lake and stream classification projects. In terms of Washington County, this project complemented efforts by the County to recodify their shoreland, floodland, and shoreland wetland ordinances. Washington County utilized a process that resulted in the compilation of a physical and chemical description and a resource value and use assessment for each waterbody inventoried, organized by Public Land Survey township so as to be most useful to local governments tasked with adopting and implementing local zoning systems. Available data on all of the major lakes with surface areas of 50 acres in areal extent or greater and the perennial streams were collected and analyzed during this process. In addition, data on many of the minor lakes and streams were also included in this inventory process.[7] Waukesha County used a similar process, with the inventory data being organized according to waterbody name.[8] Waukesha County has not adopted a classification system within its shoreland zoning ordinance. The recommendations of the Washington and Waukesha County lake and stream classification projects are incorporated by reference in the regional water quality management plan update.

As shown on Map Q-1, within the Milwaukee River watershed in Washington County, the following major and minor lakes were included in the classification system: Allis Lake, Big Cedar Lake, Boltonville Millpond, Brickyard Lake, Ehne Lake, Erler Lake, Gilbert Lake, Green Lake, Hackbarth Lake, Hasmer Lake, Hawthorn Lake, Keown Lake, Kewaskum Millpond, Lehner Lake, Lent Lake, Little Cedar Lake, Little Drickens Lake, Lucas Lake, Newburg Pond, Proschinger Lake, Quaas Lake, Radtke Lake, Silver Lake, Smith Lake, Tily Lake, Lake Twelve, and Wallace Lake. Of these waterbodies, Gilbert Lake, Kewaskum Millpond, Lehner Lake, and Newburg Pond were ranked as Class I and recommended to be subject to the highest levels of protection. These protections included limits on impervious area, increased setbacks, and related measures designed to minimize the impacts of development on the waterbodies. Allis Lake, Boltonville Millpond, Brickyard Lake, Ehne Lake, Erler Lake, Hackbarth Lake, Hasmer Lake, Hawthorn Lake, Keown Lake, Lent Lake, Little Drickens Lake, Lucas Lake, Proschinger Lake, Quaas Lake, Radtke Lake, Smith Lake, and Tily Lake were ranked as Class II and recommended to be subjected to an intermediate level of protections. Recommended setbacks were greater than the statewide minimum, for example. Class II was the default class into which any new entrants into the classification pool would be placed, unless there was documentation to support their placement into one of the other classes. The balance of the lakes, including most of the larger lakes in the Milwaukee River watershed in Washington County, were placed into Class III, which conforms to the statewide minimum requirements for shoreland protection.

Within the greater Milwaukee watersheds in Waukesha County, there are no major lakes, although several minor lakes were included in the classification system. Lower and Upper Kelly Lakes, in the Root River system, are the only named lakes within the study area that were included in this inventory. Lower Kelly Lake was utilized as an example of the application of various alternative classification systems outlined within the report, generally being proposed to be classified as a Class I waterbody under each of the alternative systems. As in Washington County, Class I was used to designate those waterbodies that should receive a higher degree of protection than currently afforded under the statewide minimum shoreland protection requirements.

(Footnote Continued from Previous Page)

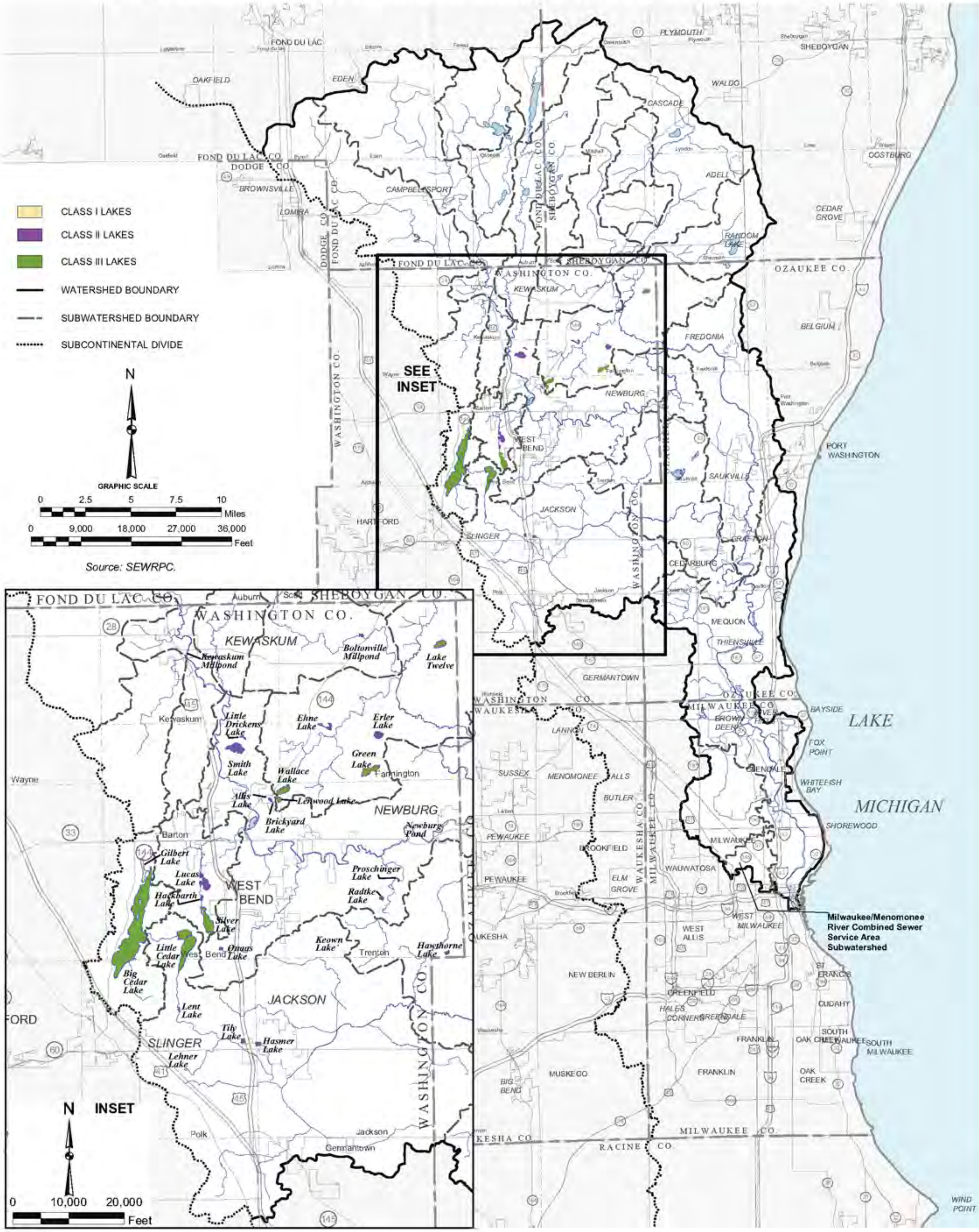
Memorandum Report No. 139, Surface Water Resources of Washington County, Wisconsin, Lake and Stream Classification Project: 2000, *September 2001; Memorandum Report No. 145,* Lake and Stream Resources Classification Project for Waukesha County, Wisconsin: 2000*, December 2005.*

[7]*SEWRPC Memorandum Report No. 139,* op. cit.

[8]*SEWRPC Memorandum Report No. 145,* op. cit.

Map Q-1

LAKE CLASSIFICATION IN WASHINGTON COUNTY WITHIN THE MILWAUKEE RIVER WATERSHED



DESCRIPTIONS OF MAJOR AND SELECTED MINOR LAKES AND PAST LAKE MANAGEMENT RECOMMENDATIONS

Major Lakes

Auburn Lake

Auburn Lake, in the Town of Auburn in Fond du Lac County, is a drainage lake, discharging to a tributary to the Milwaukee River. Inflow to the Lake is through Lake Fifteen Creek. The Lake has a surface area of about 107 acres, with a maximum depth of 29 feet, and a shoreline development factor of about 1.7.[9] The lands draining to the Lake are dominated by a marsh bog, which comprises about one-half of the shoreline of the Lake, portions of which are located within the Northern Unit of the State-owned Kettle Moraine State Forest. The Lake itself is comprised of two distinct basins connected by a shallow, relatively narrow channel. The location of the Lake adjacent to the Kettle Moraine State Forest provides an opportunity for the implementation of management measures to reduce nutrient inputs to the Lake through the maintenance of the natural landscape. The presence of park staff also provides the opportunity to control litter and macropollutants within the drainage area. Implementation of drainage basin-scale measures to limit the inflow of runoff to the Lake from the surrounding developed lands remains a potential issue of concern, including measures affecting discharges from the roadways and parking areas. The East and West Branches of the Milwaukee River Priority Watershed Plan recommended no additional reductions in phosphorus loading or suspended sediment deliveries to Auburn Lake.

Barton Pond

Barton Pond, in the City of West Bend in Washington County, is an impoundment on the mainstem of the Milwaukee River. The Pond was originally created as a stone and timber dam to provide power to run a feed and flour mill. The Pond is comprised of a single, elongated basin, with a surface area of about 51 acres, a maximum depth of seven feet, and a shoreline development factor of about 1.2. The lands draining to the Pond include both urban residential and industrial lands which abut the western and eastern shores of the waterbody, respectively. This urban-density development is served by a public sanitary sewerage system, as recommended in the adopted regional water quality management plan. Urban runoff from lands surrounding the Pond remains a potential concern and the implementation of drainage basin-scale measures to limit the inflow of stormwater runoff to the Pond from the urbanized portion of the drainage basin is likely to benefit this waterbody. A 25 percent reduction in urban nonpoint source pollutant loads to the Pond was recommended in the initial regional water quality management plan. The East and West Branches of the Milwaukee River Priority Watershed Plan refined this recommendation to an approximately 35 percent reduction in suspended sediment delivery to Barton Pond through the application of urban management practices in the West Bend metropolitan area.

Big Cedar Lake

Big Cedar Lake, in the Town of West Bend in Washington County, forms the headwaters of, and drains to, Cedar Creek. Big Cedar Lake has a surface area of about 1,004 acres, with a maximum depth of 105 feet, and a shoreline development factor of about 2.25. The lands draining to Big Cedar Lake include both urban residential lands and rural, formerly agricultural lands, with residential lands comprising the major portion of the riparian lands to the Lake. The urban residential lands are currently served by onsite sewage disposal systems. The control of urban nonpoint source pollutants is a potential issue of concern and the implementation of drainage basin-scale measures to limit the inflow of runoff to the Lake from the urbanized portion of the drainage basin is likely to benefit this lake. The Big Cedar Lake Protection and Rehabilitation District has implemented a series of lake management actions in concert with other nongovernmental organizations and governmental agencies within the watershed to manage stormwater and protect lake water quality. As of 1995, the Lake also was being monitored

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[9]*Shoreline Development Factor (SDF) is the ratio between the actual circumference of a lake and the circumference of a circle with the same radius. A higher number indicates a more irregular lakeshore as the shoreline length is greater than the circular reference. The lower the number, the more circular a lake is in shape. A circular lake would have a SDF of 1.0, while a dendritic lake would have a SDF of greater than 1.0. SDF is related to the amount of shoreline available for development, with more irregular shorelines offering more shoreline length along which development could occur.*

by a volunteer under the WDNR Self-Help Monitoring Program. Both urban and rural nonpoint source pollution abatement measures are likely to be warranted in this drainage basin. To this end, a 25 percent reduction in both urban and rural nonpoint source pollutant loads to the Lake was recommended in the initial regional water quality management plan. The Cedar Creek Priority Watershed Plan refined this recommendation as a 30 percent reduction in suspended sediment delivery to Big Cedar Lake. Implementation of the stormwater management practices identified by SEWRPC, specifically the construction of stormwater management basins in the vicinities of STH 33/144 and STH 144, were estimated to accomplish an approximately 30 percent reduction in nonpoint source contaminants delivered to Big Cedar Lake.[10] The Big Cedar Lake Protection and Rehabilitation District has implemented those recommended measures.

Crooked Lake

Crooked Lake, in the Town of Auburn in Fond du Lac County and Town of Scott in Sheboygan County, drains to the East Branch of the Milwaukee River. Crooked Lake lies largely within the Northern Unit of the State-owned Kettle Moraine State Forest. The Lake has a surface area of about 65 acres, a maximum depth of 34 feet, and a shoreline development factor of about 1.8. The Crooked Lake Wetlands Marsh forms a substantial portion of the lakeshore and is a designated State Natural Area. The inlet to Crooked Lake provides a spawning ground for northern pike while the outlet forms a small tributary to the East Branch of the Milwaukee River. The control of nonpoint source pollution from onsite sewage disposal systems is not an issue of concern, and the location of the Lake within the Kettle Moraine State Forest provides an opportunity for the implementation of management measures to reduce nutrient inputs to the Lake through the maintenance of the natural landscape. The presence of park staff also provides the opportunity to control litter and macropollutants within the drainage area. The East and West Branches of the Milwaukee River Priority Watershed Plan recommended a 25 percent reduction in suspended sediments.

Lake Ellen

Lake Ellen, in the Town of Lyndon in Sheboygan County, drains to Chambers Creek, a tributary to the North Branch of the Milwaukee River. Lake Ellen lies adjacent to the urbanized area of the Village of Cascade. The Lake has a surface area of about 121 acres and a maximum depth of 42 feet. Control of nonpoint source pollution from onsite sewage disposal systems was an issue of concern, as was the control of urban nonpoint source pollutants. The North Branch of the Milwaukee River Priority Watershed Plan recommended a 50 percent reduction in phosphorus load and a 30 percent reduction in suspended solids in Nichols Creek downstream of the Lake Ellen outlet. A similar reduction in suspended sediments and a 25 percent reduction in the phosphorus load upstream of Lake Ellen from both rural and urban sources also were recommended.

Forest Lake

Forest Lake, in the Town of Auburn in Fond du Lac County, is a “kettle” lake located within the Northern Unit of the State-owned Kettle Moraine State Forest. The Lake is a seepage lake with a surface area of about 51 acres, a maximum depth of 32 feet, and a shoreline development factor of about 1.3. The lands draining to the Lake are largely in public ownership, although a small residential community exists in the vicinity of the waterbody. The control of nonpoint source pollution from onsite sewage disposal systems is not an issue of concern, and the location of the Lake within the Kettle Moraine State Forest provides an opportunity for the implementation of management measures to reduce nutrient inputs to the Lake through the maintenance of the natural landscape. The presence of park staff also provides the opportunity to control litter and macropollutants within the drainage area. The East and West Branches of the Milwaukee River Priority Watershed Plan recommended no additional reductions in phosphorus loading or suspended sediments delivery to Forest Lake.

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[10]*SEWRPC Memorandum Report No. 137,* A Water Quality Protection and Stormwater Management Plan for Big Cedar Lake, Washington County, Wisconsin, *Volume Two*, Stormwater Management Plans for Three Pilot Subbasins*, August 2001.*

Green Lake

Green Lake, in the Town of Farmington in Washington County, is a small, elongate, seepage lake formed as a remnant of a large glacial lake in the area of the Lake Michigan terminal moraine. The Lake has a surface area of about 82 acres, a maximum depth of 35 feet, and a shoreline development factor of about 1.6. The lands surrounding the Lake are largely developed for urban-density residential use. A 25 percent reduction in rural nonpoint source pollutant loads to the Lake is recommended in the initial regional water quality management plan. The East and West Branches of the Milwaukee River Priority Watershed Plan refined this recommendation as a 30 percent reduction in phosphorus loading to Green Lake.

Kettle Moraine Lake

Kettle Moraine Lake, in the Town of Osceola in Fond du Lac County, is a shallow, fertile lake draining into Mud Lake, also in Fond du Lac County, and ultimately into the Milwaukee River. The Lake is surrounded by an extensive area of wetland, and is adjacent to the Northern Unit of the State-owned Kettle Moraine State Forest. Kettle Moraine Lake has a surface area of about 227 acres, a maximum depth of 30 feet, and a shoreline development factor of about 1.1. The Lake is reported to be subject to significant fluctuations in water level, contributing to fish kills, including winter kills, which have been reported at irregular intervals since 1951. The East and West Branches of the Milwaukee River Priority Watershed Plan recommended no additional reductions in phosphorus loading or suspended sediments deliveries to Kettle Moraine Lake, although management measures were recommended in the downstream reaches of the Waucousta River.

Little Cedar Lake

Little Cedar Lake, in the Town of West Bend in Washington County, receives inflow via Cedar Creek from Big Cedar Lake, and, in turn, drains to Cedar Creek, a tributary of the Milwaukee River. The Lake has a surface area of about 259 acres, a maximum depth of 55 feet, and a shoreline development factor of about 1.8. The lands draining to Little Cedar Lake include both urban residential lands and rural, formerly agricultural lands, with residential lands comprising the major portion of the riparian lands to the Lake. The urban residential lands are currently served by onsite sewage disposal systems. The control of urban nonpoint source pollutants is a potential issue of concern and the implementation of drainage basin-scale measures to limit the inflow of runoff to the Lake from the urbanized portion of the drainage basin is likely to benefit this lake. The Little Cedar Lake Protection and Rehabilitation District conducts an aquatic plant management program on the Lake, as well as informational programming aimed at protecting lake water quality.[11] Both urban and rural nonpoint source pollution abatement measures are likely to be warranted in this drainage basin. To this end, a 25 percent reduction in both urban and rural nonpoint source pollutant loads to the Lake was recommended in the initial regional water quality management plan. The Cedar Creek Priority Watershed Plan refined this recommendation as a 30 percent reduction in suspended sediment delivery to Little Cedar Lake.

Long Lake

Long Lake, in the Town of Osceola in Fond du Lac County, drains to the East Branch of the Milwaukee River. The Lake has a surface area of about 427 acres, a maximum depth of 47 feet, and a shoreline development factor of about 1.8. Long Lake lies largely within the Northern Unit of the State-owned Kettle Moraine State Forest, while portions of the northern shoreline are owned by the Boy Scouts of America and utilized as a camping area. Inflow to the Lake is via Watercress Creek, a state designated trout stream populated by brook trout. Water levels in Long Lake are maintained by an approximately six-foot elevation impoundment, which was constructed in 1860. The inundated areas of the lake shoreline were primarily shoreland wetland prior to the construction of the dam. These areas currently form a shallow shelf surrounding the deeper water portions of the Lake. The control of nonpoint source pollution from onsite sewage disposal systems is an issue of concern, given the relatively dense seasonal camper population. However, the location of the Lake within the Kettle Moraine State Forest provides an opportunity for the implementation of management measures to reduce nutrient inputs to the Lake through the maintenance of the natural landscape. The presence of park staff also provides the opportunity to control litter and macropollutants within the drainage area. The East and West Branches of the Milwaukee River Priority

[11] *SEWRPC Memorandum Report No. 146,* op. cit.

Watershed Plan recommended no additional reduction in phosphorus loading to Long Lake, and a 15 percent reduction in suspended sediments.

Lucas Lake

Lucas Lake, in the Town of West Bend in Washington County, is an elongate waterbody on Silver Creek, located at the end of a chain-of-lakes comprised of Silver Lake, Hackbarth Lake, and Lucas Lake. A seven-foot elevation dam controls outflow from this waterbody. Outflow from Lucas Lake drains to Silver Creek, a tributary to the Milwaukee River. The Lake has a surface area of about 73 acres, a maximum depth of 15 feet, and a shoreline development factor of about 2.3. A youth camp occupies a significant portion of the shoreline, which remains in largely rural land use. Control of nonpoint source pollution is not an issue of concern at this time. A 25 percent reduction in urban nonpoint source pollutant loads to the Lake was recommended in the initial regional water quality management plan. The East and West Branches of the Milwaukee River Priority Watershed Plan refined this recommendation as a 10 percent reduction in suspended sediment delivery to Lucas Lake through the application of urban management practices in the urbanized areas of Silver Creek within the West Bend metropolitan area.

Mauthe Lake

Mauthe Lake, in the Town of Auburn in Fond du Lac County, is a shallow, wetland-fringed lake located within the Northern Unit of the State-owned Kettle Moraine State Forest. The Lake is a drainage lake, located immediately downstream of Long Lake on the East Branch of the Milwaukee River, and receives inflow from the upstream waterbody. Mauthe Lake has a surface area of about 63 acres, a maximum depth of 22 feet, and a shoreline development factor of about 2.2. A three-foot elevation, fixed crest dam maintains the water levels within Mauthe Lake, and sustains water-based recreation at the State campground and picnic area located on the east shore of the Lake. The control of nonpoint source pollution from onsite sewage disposal systems is not an issue of concern, and the location of the Lake within the Kettle Moraine State Forest provides an opportunity for the implementation of management measures to reduce nutrient inputs to the Lake through the maintenance of the natural landscape. The presence of park staff also provides the opportunity to control litter and macropollutants within the drainage area. The East and West Branches of the Milwaukee River Priority Watershed Plan recommended no additional reductions in phosphorus loading or suspended sediment delivery to Mauthe Lake.

Mud Lake (Fond du Lac County)

Mud Lake, in the Town of Osceola in Fond du Lac County, is a drained lake, receiving inflow from Kettle Moraine Lake, located immediately upstream of Mud Lake. Outflow from Mud Lake drains to the Milwaukee River near the Village of Campbellsport. Mud Lake has a surface area of about 56 acres, a maximum depth of 16 feet, and a shoreline development factor of about 1.3. The Lake is shallow and surrounded by a marshy fringe that limits development around its shorelands. Occasional winterkills have been reported from this waterbody. The East and West Branches of the Milwaukee River Priority Watershed Plan recommended no additional reductions in phosphorus loading or suspended sediments deliveries to Mud Lake, although management measures are recommended in the downstream reaches of the Waucousta River.

Mud Lake (Ozaukee County)

Mud Lake, in the Town of Saukville in Ozaukee County, is a large, shallow lake surrounded by an extensive floating bog and tamarack forest. The Lake has a surface area of about 245 acres, a maximum depth of four feet, and a shoreline development factor of about 1.4. A 25 percent reduction in nonpoint source pollutant loads to the Lake was recommended in the initial regional water quality management plan. No specific or refined reductions in nonpoint source nutrient loads to the Lake were recommended in the Milwaukee River South Priority Watershed Plan.

Random Lake

Random Lake, in the Village of Random Lake in Sheboygan County, is a heavily used recreational lake serving this residential community. The Lake has a surface area of about 213 acres, a maximum depth of 19 feet, and a shoreline development factor of about 1.9. The lands draining to Random Lake include both urban and rural lands, with residential lands comprising the major portion of the riparian lands to the Lake. The control of urban nonpoint source pollutants is a potential issue of concern and the implementation of drainage basin-scale measures to limit the inflow of runoff to the Lake from the urbanized portion of the drainage basin is likely to benefit this lake. Both urban and rural nonpoint source pollution abatement measures are likely to be warranted in this drainage basin. To this end, the North Branch of the Milwaukee River Priority Watershed Plan recommends a 35 percent reduction in phosphorus load and a 10 percent reduction in suspended solids delivery to the Lake.

Silver Lake

Silver Lake, in the Town of West Bend in Washington County, forms the headwaters of Silver Creek, which drains to the Milwaukee River through a chain-of-lakes comprised of Silver Lake, Hackbarth Lake, and Lucas Lake. The Lake has a surface area of about 119 acres, a maximum depth of 45 feet, and a shoreline development factor of about 1.7. Silver Lake is surrounded by an established residential community served by public sanitary sewerage service provided by the Silver Lake Sanitary District. Lake management activities are managed by the Silver Lake Protection and Rehabilitation District, which maintains an active program of public informational programming in association with the Silver Lake Improvement Association and Silver Lake Yacht Club. The control of nonpoint source pollution from onsite sewage disposal systems is not an issue of concern. However, management measures to reduce nutrient inputs to the Lake as a result of landscape maintenance practices are indicated. To this end, a 25 percent reduction in both urban and rural nonpoint source pollutant loads to the Lake was recommended in the initial regional water quality management plan. The East and West Branches of the Milwaukee River Priority Watershed Plan refined this recommendation as a 10 percent reduction in suspended sediment delivery to Silver Lake through the application of urban management practices in the urbanized areas of Silver Creek within the West Bend metropolitan area. The implementation of good urban “housekeeping” practices within this watershed was estimated to be adequate achieve this goal.[12]

Smith Lake

Smith Lake, in the Town of Barton in Washington County, also known as Dickens or Drickens Lake, drains to the Milwaukee River. The Lake is located in a shallow depression in the terminal moraine of the Lake Michigan glacier, and receives surface inflow from the upstream Little Drickens Lake. Smith Lake has a surface area of about 77 acres, a maximum depth of five feet, and a shoreline development factor of about 1.4. While much of the lake shoreline is comprised of marsh, portions of the northern shoreline of the Lake are utilized for residential development which occurred during the 1960s. Much of the remainder of the lake watershed is in agricultural land use. Control of nonpoint source pollution from onsite sewage disposal systems is an issue of concern, as is the control of urban- and agricultural nonpoint source pollutants. No specific reductions in nonpoint source pollutant loads to the Lake were recommended in the initial regional water quality management plan. Likewise, the East and West Branches of the Milwaukee River Priority Watershed Plan recommended no additional or refined reductions in phosphorus loading or suspended sediment delivery to Smith Lake.

Spring Lake

Spring Lake, in the Town of Fredonia in Ozaukee County, is a seepage lake, located within the terminal moraine of the Lake Michigan glacier. The Lake has a surface area of about 66 acres, a maximum depth of 20 feet, and a shoreline development factor of about 1.5. A 25 percent reduction in nonpoint source pollutant loads to the Lake was recommended in the regional water quality management plan. The North Branch of the Milwaukee River Priority Watershed Plan refined this recommendation as a 10 percent reduction in phosphorus load and suspended solids delivery.

Lake Twelve

Lake Twelve, in the Town of Farmington in Washington County, is a shallow depression in the ground moraine of the Lake Michigan glacier. The Lake is spring fed, with a marshy seepage outflow to a small stream tributary to the North Branch of the Milwaukee River. Lake Twelve has a surface area of 56 acres, a maximum depth of 20 feet, and a shoreline development factor of about 1.0. The lake shoreland is occupied in large part by a church camp located on the southern shore of the Lake. Much of the north shore of the Lake is occupied by woodlands

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[12]*SEWRPC Memorandum Report No. 123,* op. cit.

and wetlands. Runoff from developed lands surrounding the Lake is a limited concern. The initial regional water quality management plan recommended a 25 percent reduction in urban and a 75 percent reduction in rural nonpoint source pollutant loads to the Lake. The North Branch of the Milwaukee River Priority Watershed Plan refined this recommendation to require a 20 percent reduction in phosphorus and bacteria loads to be effected by reducing barnyard runoff and winter-spreading of manure and a 20 percent reduction in suspended solids by reducing cropland erosion.

Wallace Lake

Wallace Lake, in the Town of Barton in Washington County, receives inflow from the upstream Lenwood Lake. However, the Lake, which is a small, ”kettle” lake in the terminal moraine of the Lake Michigan glacier receives the majority of its inflow from groundwater sources. Outflow from the Lake drains through a small tributary to the Milwaukee River. Wallace Lake has a surface area of about 50 acres, a maximum depth of 35 feet, and a shoreline development factor of about 1.7. An urban-density residential community forms the shorelands of Wallace Lake. These residences are served by public sanitary sewerage services provided by the Wallace Lake Sanitary District, which also performs lake-oriented services such as aquatic plant management. The control of urban nonpoint source pollutants is a potential issue of concern. To this end, a 25 percent reduction in urban nonpoint source pollutant loads to the Lake was recommended in the initial regional water quality management plan. The North Branch of the Milwaukee River Priority Watershed Plan refined this recommendation to require a 20 percent reduction in phosphorus load and suspended solids.

Minor Lakes

Milwaukee County Ponds and Lagoons

The Milwaukee County ponds and lagoons collectively include 68 small waterbodies primarily located within the Milwaukee County Park System that range in surface area from the approximately 0.1 acre dry basins in Bender Park to the 19-acre Grobschmidt Park Pond, also known as Mud Lake. This waterbody is also the deepest of the ponds and lagoons, having a maximum depth of 17 feet. The 1.2-acre Root River Parkway Pond also has a maximum depth of 17 feet. The ponds and lagoons are the point of contact with inland lake ecosystems for many Milwaukee County residents and their visitors, and are heavily used recreational resources, supporting a heavily utilized fishery. In general, the initial regional water quality management plan recommended a reduction in nonpoint source contaminants of between 25 and 50 percent within Milwaukee County, with the 50 percent level of reductions in nonpoint source loadings applying to the southern portions of the County, within the Oak Creek and Root River watersheds, and the 25 percent reductions applying to the Menomonee and Milwaukee River watersheds. These reductions in the case of the ponds and lagoons are proposed to be achieved through control of shoreline erosion and stabilization of shorelines, as set forth in the pond and lagoon management plan and through implementation of the recommended urban nonpoint source pollution measures set forth in this water quality plan update.[13]

Upper and Lower Kelly Lakes

The Kelly Lakes have a collective surface area of about 15 acres: Upper Kelly Lake has a surface area of 12 acres, a maximum depth of 31 feet, and a shoreline development factor of about 1.1; Lower Kelly Lake has a surface area of about 3 acres, a maximum depth of 36 feet, and a shoreline development factor of about 1.1. Lower Kelly Lake drains through a wetland complex into Upper Kelly Lake, which is a drainage lake situated on an unnamed tributary stream of the Root River. The nonpoint source pollution reduction goals for the Lakes have been set at a 50 percent reduction in loadings in both the Root River Priority Watershed Plan and the initial regional water quality management plan.[14] The implementation of a stream and wetland restoration program at the mouth of the

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[13]*Milwaukee County Environmental Services,* op. cit.

[14]*SEWRPC Planning Report No. 9,* op. cit.*; SEWRPC Planning Report No. 30,* op. cit.

unnamed tributary discharging into Upper Kelly Lake, documented in the refined lake protection plan,[15] together with the application of good "housekeeping" practices in the drainage area, is estimated to accomplish a cumulative nonpoint source pollution load reduction of about 50 percent to Upper Kelly Lake.

EFFECTIVENESS OF PLAN IMPLEMENTATION AND RECOMMENDATIONS FOR FUTURE ACTION

Setting Goals

The initial regional water quality management plan set forth specific watershed-based management measures recommended for implementation in the areas directly tributary to the major lakes within the Southeastern Wisconsin Region. In several cases, these recommendations were refined through the priority watershed nonpoint source pollution abatement planning process. In many of those refined plans, the nonpoint source pollution reduction goals were slightly higher or lower than those established during the initial regional water quality management planning program. The pollutant reductions recommended under the priority watershed study generally applied to total suspended solids and, in some instances, phosphorus and/or bacteria. It is recommended that 1) the priority watershed pollutant reductions as enumerated herein be achieved for the applicable pollutants and 2) the reductions recommended under the initial regional water quality management plan be achieved for other nonpoint source pollutants.

The specific point and nonpoint source pollution reduction goals for any given waterbody should be refined through a detailed lake-focused planning program. As noted above, various levels of plans have been prepared, among others, for Big Cedar Lake, Little Cedar Lake, and Silver Lake within the greater Milwaukee watersheds. These plans have been prepared at the request of the public inland lake protection and rehabilitation districts serving these lake-oriented communities. Financial assistance in preparing these plans can be accessed through the Chapter NR 190 Lake Management Planning Grant program. Plans can be prepared by a variety of contractors, including SEWRPC and private sector consulting firms. Some firms are listed in *The Lake List*, compiled by the University of Wisconsin-Extension. The costs of these plans, and nature of these plans—whether planning or engineering design, will depend upon site-specific conditions and requirements.

It is recommended that lake plans be prepared for the remaining major lakes in the study area. It is also recommended that Milwaukee County pursue implementation of the recommendations in its 2005 pond and lagoon management plan.

Lake Monitoring

Few long-term data sets exist for the major lakes within the greater Milwaukee watersheds. Of the available data sets, the data on Big Cedar Lake in Washington County provide the best available index of the success of the initial regional water quality management plan. These data, summarized in SEWRPC MR No. 137,[16] and updated in SEWRPC TR No. 39, clearly demonstrate the effectiveness of the recommended lake management actions set forth in the initial regional water quality management plan for lakes within the greater Milwaukee watersheds.

Establishment, of long-term-trend lake monitoring programs for the major lakes of the study area is recommended. These programs could be conducted by an appropriate State agency or by local government units, such as public inland lake protection and rehabilitation districts, with some of the monitoring program costs being offset through grant programs, such as the Chapter NR 190 lake management planning grant program. The estimated cost of a trophic state monitoring program, that would acquire data on phosphorus and chlorophyll

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[15]*See SEWRPC Memorandum Report No. 135, 2nd Edition (draft),* A Lake Protection Plan for the Kelly Lakes, Milwaukee and Waukesha Counties, Wisconsin, *January 2007.*

[16]*SEWRPC Memorandum Report No. 137,* op. cit.

concentrations and Secchi-disc transparency, ranges from $1,000 to $6,000 per year, depending upon frequency of sampling, the entity collecting the samples, and water quality monitoring program selected.[17]

Informational Programming

Figure Q-1 shows the trends observed in the Wisconsin Trophic State Index (WTSI) values calculated for Big Cedar Lake between 1971 and 2005. Given that a lower WTSI indicates better water quality for the period from 1980 to 1995, this figure shows, in part, the effectiveness of implementing nonpoint source pollution abatement measures recommended in the original regional water quality management plan. This figure also reflects the impact of changing land use conditions within the area tributary to Big Cedar Lake during this period, as well as the results of the active informational and educational campaign conducted by the Big Cedar Lake Protection and Rehabilitation District. The latter included the distributing informational materials on residential good "housekeeping" practices, promoting and selling phosphorus-free fertilizer, and conducting events aimed at raising public awareness of lake issues. With the exception of the bulk purchase of phosphorus-free fertilizer, most of these efforts have involved little or no additional cost to the District. Many informational materials are available without charge or at a nominal charge from various agencies and organizations, such as the WDNR and University of Wisconsin-Extension. Consequently, implementation of a community-based informational program is recommended.

Formal, school-based curricula are available to complement public informational programming. Programs such as Project WET (Water Education for Teachers) and Adopt-A-Lake have been utilized by school districts to promote lake awareness and environmental awareness in general. Some lake management organizations have supported teacher training, and even the implementation of these curricula, while other lake organizations have organized and conducted "pontoon classrooms" that put young people "on the water" where they can be instructed on aquatic ecology and related topics by WDNR staff, community-based consultants, and others who are engaged in the practice of lake management. Where the opportunities exist, the conduct of these types of educational programs is recommended. Because they are frequently organized and staffed by volunteers or agency staff, these programs can have a relatively low cost.

Changing Land Uses

Superimposed upon the actions of the Big Cedar Lake Protection and Rehabilitation District was the trend toward urban residential land uses within the drainage area and, indeed, within the Town of West Bend as a whole, that resulted in the diminution of agricultural sources of contaminants to the Lake with concomitant water quality benefit. Subsequent to the data shown in Figure Q-1, data reported in SEWRPC TR No. 39 suggested that there was a period during the late 1990s and early 2000s during which water quality, as measured by Secchi disc transparency, as well as in terms of total phosphorus and chlorophyll concentrations, deteriorated, possibly in response to the extension of intensive residential and commercial land uses westward from the City of West Bend along the STH 33 corridor. Similar trends and tendencies can be seen for most of the lakes for which data are

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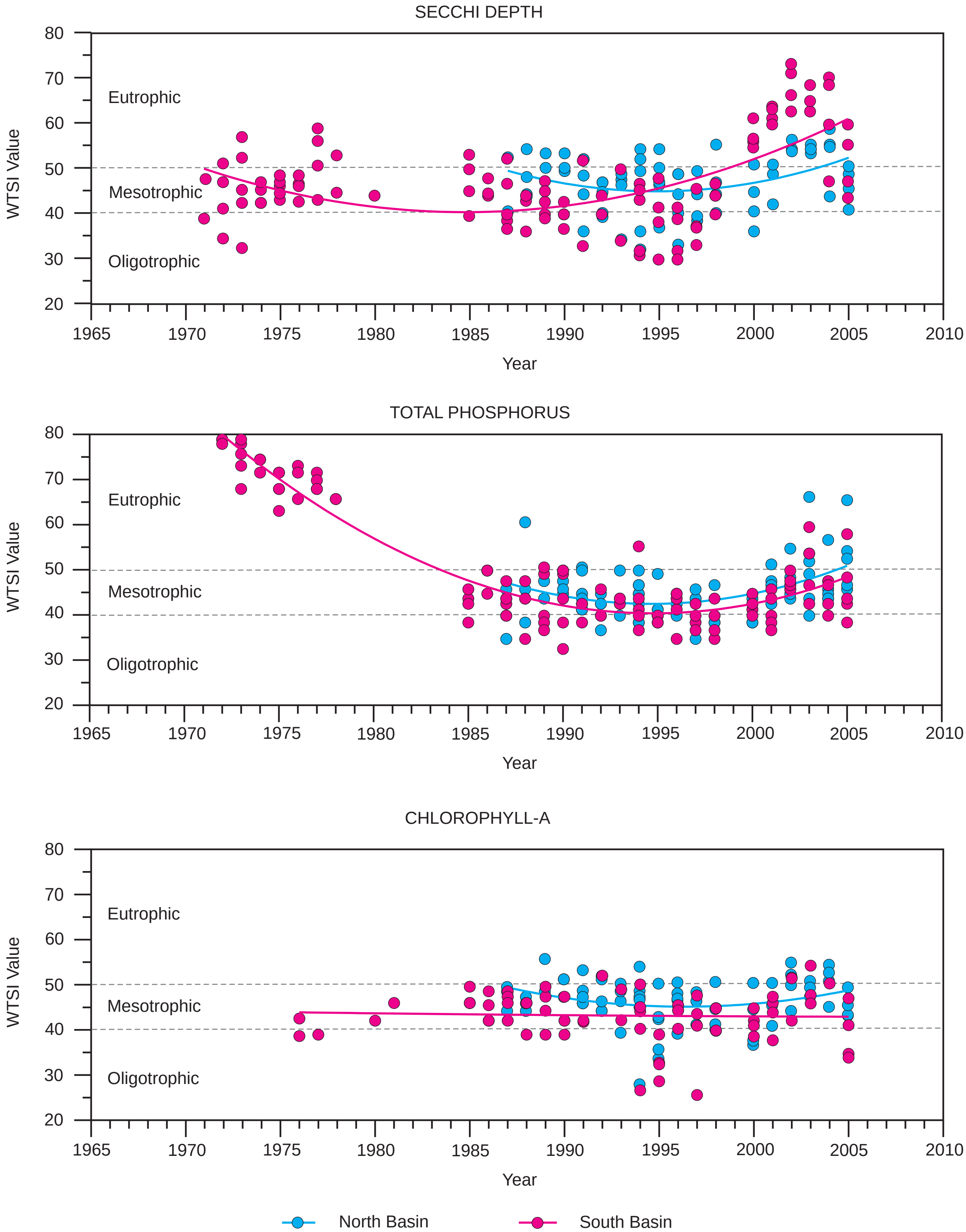
[17]*Sampling and analysis services provided by the Wisconsin District of the U.S. Geological Survey offer a comprehensive program of sample collection, analysis and reporting, with data being published annually in the U.S. Geological Survey Open-File Report Series, Water-Quality and Lake-Stage Data for Wisconsin Lakes; the WDNR Self-Help Monitoring program offers a standard, Secchi-disc-based citizen water clarity monitoring package in which volunteers can enroll at no cost and an expanded trophic state index monitoring program in which volunteers who have successfully completed a year in the Secchi-disc-based program can enroll; and the University of Wisconsin-Stevens Point, Water and Environmental Analysis Laboratory (WEAL) lake monitoring programs offer both a spring and fall overturn package and a summer season package in which citizens collect samples for analysis by the University. These programs span the range of costs, and provide quantitative data on lake ecosystem health that are essential to assessing the degree to which both point and nonpoint source pollution abatement programs benefit the lakes of the greater Milwaukee watersheds. The selection of specific programs has been the decision of the local communities, and specifically of the public inland lake protection and rehabilitation districts where such special purpose units of government exist.*

Figure Q-1

TROPHIC STATE INDEX FOR THE NORTHERN AND SOUTHERN BASIN OF BIG CEDAR LAKE: 1990-2005



Source: Wisconsin Department of Natural Resources and SEWRPC.

available, as documented in the Wisconsin Trophic State Index figures in Chapter VII of SEWRPC TR No. 39, although it is more clearly seen in the deeper lakes (Big Cedar, Little Cedar, Long, and Random), as shown in Chapter VII of SEWRPC TR No. 39. This millennium maximum can be clearly seen in the Secchi disc-based Wisconsin Trophic State Index (WTSI) values for Random Lake and Little Cedar Lake, and in the total phosphorus concentration-based WTSI values for Big Cedar Lake, Little Cedar Lake, and Random Lake. The data set for Long Lake is less clear, as data were not collected after the 2001 hydrologic year. With respect to the shallow lakes (Ellen, Forest, Green, and Wallace), as shown in Chapter VII of SEWRPC TR No. 39, Secchi disc-based WTSI values for Wallace Lake suggest a millennium peak. While the precise reasons for these changes in lake trophic state may vary among the lakes for which data are available, some measure of water quality impairment and/or improvement can be ascribed to changing land use conditions. Typically, within the Southeastern Wisconsin Region, these changes reflect the conversion of agricultural lands to urban, primarily residential, land uses. Such changes generally reduce the mass of nutrients being placed upon the land surface, reduce the mass of sediment likely to be transported off the land surface by erosion, and modify the composition of the available contaminants by introducing additional pollutants such as heavy metals into the environment. For this reason, it is recommended that land use changes be reviewed and evaluated for potential lake-related impacts at the time planning and zoning decisions are made.

Managing Stormwater and Runoff

In addition to their informational efforts, the Big Cedar Lake Protection and Rehabilitation District, in partnership with other governmental and nongovernmental organizations, such as the Cedar Lakes Foundation Inc., purchased critical properties within the area tributary to the Lake and installed stormwater management practices that reduced the quantities of nonpoint source pollutants entering the Lake. These actions, and the subsequent recovery of water quality within Big Cedar Lake, highlight the need for ongoing remedial actions, especially during periods of land disturbance. Consequently, the ongoing application of construction site erosion controls, and the implementation and maintenance of onsite or community stormwater management practices following construction, is recommended. Costs are proportional to surface area served, and the technology selected. Generally, implementation of stormwater management practices is subject to detailed engineering design. These community-based actions support and complement state and local stormwater management requirements, such as those established pursuant to the standards set forth in Chapter NR 151 of the *Wisconsin Administrative Code*. In this regard, the inclusion of specific stormwater management requirements within local zoning codes is recommended, where such requirements do not currently exist. Likewise, it is recommended that critical parcels be identified for possible acquisition by both governmental and nongovernmental entities for purposes of environmental protection. For example, certain parcels of local, regional, or statewide importance are currently identified in the regional critical species habitat and natural areas protection and management plan, and preservation of those parcels is recommended in the land use element of the recommended plan presented in Chapter X of this report. Property acquisition is site-specific, and in the Southeastern Wisconsin Region, generally involves significant costs, which can, in certain situations, be offset by soliciting support from available grant programs, such as the Chapter NR 50/51 Stewardship program, Chapter NR 191 Lake Protection Grant program, or Chapter NR 195 River Planning and Protection Grant program.

ANCILLARY LAKE MANAGEMENT PLAN RECOMMENDATIONS

In addition to the foregoing lake and watershed management measures set forth in the adopted management plans, and the conduct of recommended local level lake management planning programs, the county land and water resource management plans recommend that lake associations and public inland lake protection and rehabilitation districts, where they exist, continue to participate in the WDNR Self-Help Monitoring Program or an equivalent program so as to further develop the knowledge base on lake water quality. Lakes not currently participating in these programs are encouraged to do so. In addition, it is recommended that the lake communities, through the appropriate local authorities, whether municipal governments or lake organizations, develop and deliver informational and educational programs involving both the community and local schools. Educational programs for schools include the Project WET, or Water Education Training for educators, and Adopt-A-Lake programs run through the University of Wisconsin-Extension. In addition, municipalities and lake organizations serving these lake communities are encouraged to make available appropriate lawn and garden care educational materials, available through the University of Wisconsin-Extension, and to hold periodic seminars and other programs for homeowners and landscape contractors, among others, to present environmentally-friendly design options especially (but not exclusively) for shoreland areas. These efforts will complement other lake- and watershed-based interventions and directly contribute to the implementation of lake management measures within the greater Milwaukee watersheds.

CONCLUDING REMARKS

Lakes are an integral part of the southeastern Wisconsin landscape. They form a focus for recreational activities and often form the center of lake-oriented residential communities. As the watersheds within which the lakes are located change in response to changing human demands, the stressors placed upon these waterbodies change. Currently, many of these stressors have shifted from a primarily rural, agricultural to urban, largely residential basis, resulting in a diminution of some contaminant loads such as sediments and nutrients and the introduction of emerging contaminants such as heavy metals. Management of these changes requires awareness of the likely issues facing lake-oriented communities, as well as awareness-building among the communities to promote lake-friendly practices. More specific interventions for lake protection and rehabilitation require site-specific planning, which will refine the recommendations set forth herein with respect to these community level and watershedwide concerns.

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Appendix R

PUBLIC SECTOR COSTS FOR COMPONENTS OF THE RECOMMENDED REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE BY MUNICIPALITY, COUNTY, OR AGENCY[a]

				City of Brookfield[b]		City of Cedarburg		City of Cudahy[b]		City of Franklin[b]		City of Glendale[b]	
Plan Element	Plan Subelement[c]	Description	Component[c]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	87.5	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	75.0	- -	- -	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	26,751	56.0	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	City of Brookfield[b] Capital Cost (thousands)[d]	City of Brookfield[b] Annual Operation and Maintenance Cost (thousands)[d]	City of Cedarburg Capital Cost (thousands)[d]	City of Cedarburg Annual Operation and Maintenance Cost (thousands)[d]	City of Cudahy[b] Capital Cost (thousands)[d]	City of Cudahy[b] Annual Operation and Maintenance Cost (thousands)[d]	City of Franklin[b] Capital Cost (thousands)[d]	City of Franklin[b] Annual Operation and Maintenance Cost (thousands)[d]	City of Glendale[b] Capital Cost (thousands)[d]	City of Glendale[b] Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$4,460.48	$30.13	$1,296.07	$284.42	$1,565.93	$107.23	$7,370.60	$27.29	$398.94	$9.57
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	$432.00	- -	$204.00	- -	$248.00	- -	$698.00	- -	$320.00	- -
			3. Chloride reduction programs	$10.87	$32.62	$3.55	$10.66	$4.33	$12.98	$12.22	$36.67	$5.59	$16.76
			4. Implement fertilizer management programs	- -	- -	- -	- -	$5.00	- -	$5.00	- -	$5.00	- -
			7. Beach and riparian litter and debris control	- -	$46.11	- -	$7.81	- -	- -	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	$25.00	- -	$75.00	- -	- -	- -	$25.00	- -	$25.00	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	$27.89	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	City of Brookfield[b]		City of Cedarburg		City of Cudahy[b]		City of Franklin[b]		City of Glendale[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region		- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region		- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$4,928**	**$109**	**$1,741**	**$303**	**$1,823**	**$148**	**$34,862**	**$120**	**$755**	**$26**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	City of Greenfield[b]		City of Mequon[b]		City of Milwaukee[b]		City of Muskego[b]		City of New Berlin[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	5,758	3.4	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$3,980.83	$20.67	$3,701.57	$91.02	$32,584.30	$346.63	$389.78	$4.59	$1,312.87	$34.46
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	$650.00	- -	$874.00	- -	$6,698.00	- -	$138.00	- -	$380.00	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	City of Greenfield[b] Capital Cost (thousands)[d]	City of Greenfield[b] Annual Operation and Maintenance Cost (thousands)[d]	City of Mequon[b] Capital Cost (thousands)[d]	City of Mequon[b] Annual Operation and Maintenance Cost (thousands)[d]	City of Milwaukee[b] Capital Cost (thousands)[d]	City of Milwaukee[b] Annual Operation and Maintenance Cost (thousands)[d]	City of Muskego[b] Capital Cost (thousands)[d]	City of Muskego[b] Annual Operation and Maintenance Cost (thousands)[d]	City of New Berlin[b] Capital Cost (thousands)[d]	City of New Berlin[b] Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$11.36	$34.09	$15.31	$45.93	$117.21	$351.64	$2.42	$7.25	$6.63	$19.90
			4. Implement fertilizer management programs	$5.00	- -	- -	- -	$5.00	- -	$5.00	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	$196.54	- -	- -	- -	$3.62	- -	$50.40
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	$25.00	- -	$25.00	- -	$50.00	- -	- -	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	$38.69	- -	$172.78	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	City of Greenfield[b]		City of Mequon[b]		City of Milwaukee[b]		City of Muskego[b]		City of New Berlin[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$4,672**	**$55**	**$4,616**	**$372**	**$39,455**	**$871**	**$6,293**	**$19**	**$1,700**	**$105**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	City of Oak Creek[b]		City of Port Washington		City of Racine		City of South Milwaukee		City of St. Francis[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	155	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	75.0	- -	75.0	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	4,298	1,600	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$5,303.56	$333.89	$5.59	- -	$4,176.98	$332.37	$1,218.46	$15.78	$788.86	$3.67
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	$680.00	- -	- -	- -	$726.00	- -	$298.00	- -	$122.00	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	City of Oak Creek[b]		City of Port Washington		City of Racine		City of South Milwaukee		City of St. Francis[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$11.90	$35.69	- -	- -	$12.70	$38.10	$5.20	$15.59	$2.14	$6.42
			4. Implement fertilizer management programs	$5.00	- -	- -	- -	- -	- -	$5.00	- -	$5.00	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	$39.90	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	$25.00	- -	- -	- -	$25.00	- -	$25.00	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	$3.9	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	$7.90	- -	- -	- -	$272.62	- -	$84.92	- -	$18.76
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	$16.5	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	City of Oak Creek[b]		City of Port Washington		City of Racine		City of South Milwaukee		City of St. Francis[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$6,025**	**$377**	**$- -**	**$- -**	**$5,171**	**$703**	**$5,925**	**$691**	**$918**	**$29**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	City of Wauwatosa[b]		City of West Allis[b]		City of West Bend		Village of Adell		Village of Bayside[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	75.0	- -- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	4,091	3.4	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$5,203.50	$134.67	$4,063.07	$251.92	$3,997.76	$583.98	$66.28	$7.60	$410.03	$3.50
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	$828.00	- -	$848.00	- -	$448.00	- -	$30.00	- -	$116.00	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	City of Wauwatosa[b]		City of West Allis[b]		City of West Bend		Village of Adell		Village of Bayside[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$14.47	$43.42	$14.83	$44.50	$7.84	$23.53	$0.54	$1.61	$2.04	$6.13
			4. Implement fertilizer management programs	$5.00	- -	$5.00	- -	$5.00	- -	- -	- -	$5.00	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	$19.81	- -	$0.37	- -	$36.96
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	- -	- -	$175.00	- -	- -	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	$28.56
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for house-hold hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	City of Wauwatosa[b]		City of West Allis[b]		City of West Bend		Village of Adell		Village of Bayside[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$6,051**	**$178**	**$4,931**	**$296**	**$8,800**	**$631**	**$97**	**$10**	**$533**	**$75**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Brown Deer[b] Capital Cost (thousands)[d]	Village of Brown Deer[b] Annual Operation and Maintenance Cost (thousands)[d]	Village of Butler[b] Capital Cost (thousands)[d]	Village of Butler[b] Annual Operation and Maintenance Cost (thousands)[d]	Village of Caledonia[b] Capital Cost (thousands)[d]	Village of Caledonia[b] Annual Operation and Maintenance Cost (thousands)[d]	Village of Campbellsport Capital Cost (thousands)[d]	Village of Campbellsport Annual Operation and Maintenance Cost (thousands)[d]	Village of Cascade Capital Cost (thousands)[d]	Village of Cascade Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	70	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	75.0	- -	75.0	- -	75.0	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$2,121.43	$54.01	$687.46	$78.74	$2,313.05	$36.85	$244.79	$56.01	$66.05	$1.47
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	$274.00	- -	$52.00	- -	$734.00	- -	$90.00	- -	$42.00	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Brown Deer[b]		Village of Butler[b]		Village of Caledonia[b]		Village of Campbellsport		Village of Cascade	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$4.79	$14.37	$0.91	$2.72	$12.84	$38.51	$1.56	$4.69	$0.73	$2.18
			4. Implement fertilizer management programs	$5.00	- -	- -	- -	- -	- -	- -	- -	$5.00	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	$1.31	- -	- -	- -	$1.37	- -	$0.48
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	- -	- -	- -	- -	$25.00	- -	$25.00	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Brown Deer[b] Capital Cost (thousands)[d]	Village of Brown Deer[b] Annual Operation and Maintenance Cost (thousands)[d]	Village of Butler[b] Capital Cost (thousands)[d]	Village of Butler[b] Annual Operation and Maintenance Cost (thousands)[d]	Village of Caledonia[b] Capital Cost (thousands)[d]	Village of Caledonia[b] Annual Operation and Maintenance Cost (thousands)[d]	Village of Campbellsport Capital Cost (thousands)[d]	Village of Campbellsport Annual Operation and Maintenance Cost (thousands)[d]	Village of Cascade Capital Cost (thousands)[d]	Village of Cascade Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$2,405**	**$68**	**$740**	**$83**	**$3,205**	**$75**	**$436**	**$62**	**$214**	**$4**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Eden		Village of Elm Grove[b]		Village of Fox Point[b]		Village of Fredonia		Village of Germantown[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	75.0	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$35.40	$14.68	$560.17	$38.71	$542.59	$4.80	$215.74	$19.61	$12,777.28	$3,776.45
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	$6.00	- -	$178.00	- -	$160.00	- -	$34.00	- -	$564.00	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Eden: Capital Cost (thousands)[d]	Village of Eden: Annual Operation and Maintenance Cost (thousands)[d]	Village of Elm Grove[b]: Capital Cost (thousands)[d]	Village of Elm Grove[b]: Annual Operation and Maintenance Cost (thousands)[d]	Village of Fox Point[b]: Capital Cost (thousands)[d]	Village of Fox Point[b]: Annual Operation and Maintenance Cost (thousands)[d]	Village of Fredonia: Capital Cost (thousands)[d]	Village of Fredonia: Annual Operation and Maintenance Cost (thousands)[d]	Village of Germantown[b]: Capital Cost (thousands)[d]	Village of Germantown[b]: Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$0.09	$0.28	$3.13	$9.39	$2.80	$8.40	$0.59	$1.78	$9.85	$29.56
			4. Implement fertilizer management programs	- -	- -	- -	- -	$5.00	- -	- -	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	$4.48	- -	- -	- -	$1.33	- -	$13.13
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Eden		Village of Elm Grove[b]		Village of Fox Point[b]		Village of Fredonia		Village of Germantown[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$41**	**$15**	**$741**	**$53**	**$710**	**$13**	**$325**	**$23**	**$13,351**	**$3,819**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Grafton		Village of Greendale[b]		Village of Hales Corners[b]		Village of Jackson		Village of Kewaskum	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	3,440	0.97
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	100	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	87.5	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	75.0	- -	- -	- -	- -	- -	75.0	- -	75.0	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$1,783.27	$306.13	$1,651.12	$59.39	$895.22	$7.75	$645.30	$86.23	$422.88	$59.09
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	$192.00	- -	$298.00	- -	$182.00	- -	$64.00	- -	$54.00	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Grafton: Capital Cost (thousands)[d]	Village of Grafton: Annual Operation and Maintenance Cost (thousands)[d]	Village of Greendale[b]: Capital Cost (thousands)[d]	Village of Greendale[b]: Annual Operation and Maintenance Cost (thousands)[d]	Village of Hales Corners[b]: Capital Cost (thousands)[d]	Village of Hales Corners[b]: Annual Operation and Maintenance Cost (thousands)[d]	Village of Jackson: Capital Cost (thousands)[d]	Village of Jackson: Annual Operation and Maintenance Cost (thousands)[d]	Village of Kewaskum: Capital Cost (thousands)[d]	Village of Kewaskum: Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$3.38	$10.13	$5.22	$15.66	$3.18	$9.54	$1.12	$3.35	$0.95	$2.85
			4. Implement fertilizer management programs	- -	- -	$5.00	- -	$5.00	- -	- -	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	$39.55	- -	- -	- -	- -	- -	$3.54	- -	$2.28
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	$25.00	- -	$25.00	- -	$100.00	- -	- -	- -	$25.00	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Grafton		Village of Greendale[b]		Village of Hales Corners[b]		Village of Jackson		Village of Kewaskum	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$2,166**	**$356**	**$1,984**	**$75**	**$1,185**	**$17**	**$885**	**$93**	**$4,018**	**$161**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Lomira		Village of Menomonee Falls[b]		Village of Mt. Pleasant		Village of Newburg		Village of North Bay	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	100	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	15	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	75.0	- -	75.0	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$22.86	$0.04	$5,849.81	$507.35	$991.67	$20.68	$68.17	$3.28	$8.33	$0.20
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	$2.00	- -	$704.00	- -	$240.00	- -	$28.00	- -	$6.00	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Lomira Capital Cost (thousands)[d]	Village of Lomira Annual Operation and Maintenance Cost (thousands)[d]	Village of Menomonee Falls[b] Capital Cost (thousands)[d]	Village of Menomonee Falls[b] Annual Operation and Maintenance Cost (thousands)[d]	Village of Mt. Pleasant Capital Cost (thousands)[d]	Village of Mt. Pleasant Annual Operation and Maintenance Cost (thousands)[d]	Village of Newburg Capital Cost (thousands)[d]	Village of Newburg Annual Operation and Maintenance Cost (thousands)[d]	Village of North Bay Capital Cost (thousands)[d]	Village of North Bay Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$0.02	$0.07	$12.31	$36.92	$4.19	$12.58	$0.50	$1.49	$0.12	$0.35
			4. Implement fertilizer management programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	$19.31	- -	$55.69	- -	$0.75	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	$25.00	- -	- -	- -	$25.00	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	$3.9
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	$6.38
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	$5.5
		Water Pollution Control	1. Continue collection programs for house-hold hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Lomira		Village of Menomonee Falls[b]		Village of Mt. Pleasant		Village of Newburg		Village of North Bay	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$25**	**$- -**	**$6,591**	**$564**	**$4,326**	**$89**	**$297**	**$6**	**$14**	**$16**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Random Lake		Village of River Hills[b]		Village of Saukville		Village of Shorewood[b]		Village of Slinger	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	75.0	- -	- -	- -	75.0	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$376.80	$51.02	$325.04	$4.46	$748.82	$132.01	$269.75	$3.78	$9.01	$0.12
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	$122.00	- -	$148.00	- -	$94.00	- -	$126.00	- -	$2.00	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Random Lake		Village of River Hills[b]		Village of Saukville		Village of Shorewood[b]		Village of Slinger	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$2.15	$6.45	$2.58	$7.75	$1.64	$4.92	$2.21	$6.62	$0.05	$0.15
			4. Implement fertilizer management programs	$5.00	- -	$5.00	- -	- -	- -	$5.00	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	$1.11	- -	- -	- -	$44.28	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	$25.00	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	$16.22	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	$5.5	- -	- -
		Water Pollution Control	1. Continue collection programs for house-hold hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Random Lake Capital Cost (thousands)[d]	Village of Random Lake Annual Operation and Maintenance Cost (thousands)[d]	Village of River Hills[b] Capital Cost (thousands)[d]	Village of River Hills[b] Annual Operation and Maintenance Cost (thousands)[d]	Village of Saukville Capital Cost (thousands)[d]	Village of Saukville Annual Operation and Maintenance Cost (thousands)[d]	Village of Shorewood[b] Capital Cost (thousands)[d]	Village of Shorewood[b] Annual Operation and Maintenance Cost (thousands)[d]	Village of Slinger Capital Cost (thousands)[d]	Village of Slinger Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$606**	**$59**	**$481**	**$12**	**$919**	**$181**	**$403**	**$32**	**$11**	**$- -**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Sturtevant		Village of Thiensville[b]		Village of Union Grove		Village of West Milwaukee[b]		Village of Whitefish Bay[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$28.37	$2.49	$289.38	$3.17	$131.30	$0.94	$521.20	$1.74	$382.79	$5.39
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	$2.00	- -	$66.00	- -	$32.00	- -	$58.00	- -	$180.00	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Sturtevant		Village of Thiensville[b]		Village of Union Grove		Village of West Milwaukee[b]		Village of Whitefish Bay[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$0.05	$0.15	$1.14	$3.43	$0.55	$1.64	$1.01	$3.04	$3.14	$9.43
			4. Implement fertilizer management programs	- -	- -	- -	- -	- -	- -	$5.00	- -	$5.00	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	$2.35	- -	$1.81	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	$8.47
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	$5.5
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Sturtevant		Village of Thiensville[b]		Village of Union Grove		Village of West Milwaukee[b]		Village of Whitefish Bay[b]	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$30**	**$3**	**$357**	**$9**	**$239**	**$4**	**$585**	**$5**	**$571**	**$29**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Wind Point Capital Cost (thousands)[d]	Village of Wind Point Annual Operation and Maintenance Cost (thousands)[d]	Town of Addison Capital Cost (thousands)[d]	Town of Addison Annual Operation and Maintenance Cost (thousands)[d]	Town of Ashford Capital Cost (thousands)[d]	Town of Ashford Annual Operation and Maintenance Cost (thousands)[d]	Town of Auburn Capital Cost (thousands)[d]	Town of Auburn Annual Operation and Maintenance Cost (thousands)[d]	Town of Barton Capital Cost (thousands)[d]	Town of Barton Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$169.59	$2.55	- -	- -	$58.72	$12.31	$76.29	$3.34	$259.53	$108.82
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	$52.00	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Wind Point		Town of Addison		Town of Ashford		Town of Auburn		Town of Barton	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$0.90	$2.71	$0.05	$0.16	$9.41	$28.23	$10.53	$31.59	$3.85	$11.54
			4. Implement fertilizer management programs	- -	- -	- -	- -	- -	- -	$5.00	- -	$5.00	- -
			7. Beach and riparian litter and debris control	- -	$1.39	- -	- -	- -	- -	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	- -	- -	$50.00	- -	$75.00	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	$7.8	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	$22.30	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	$11.0	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Village of Wind Point Capital Cost (thousands)[d]	Village of Wind Point Annual Operation and Maintenance Cost (thousands)[d]	Town of Addison Capital Cost (thousands)[d]	Town of Addison Annual Operation and Maintenance Cost (thousands)[d]	Town of Ashford Capital Cost (thousands)[d]	Town of Ashford Annual Operation and Maintenance Cost (thousands)[d]	Town of Auburn Capital Cost (thousands)[d]	Town of Auburn Annual Operation and Maintenance Cost (thousands)[d]	Town of Barton Capital Cost (thousands)[d]	Town of Barton Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$222**	**$48**	**$- -**	**$- -**	**$118**	**$41**	**$167**	**$35**	**$268**	**$120**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Brookfield		Town of Byron		Town of Cedarburg		Town of Dover		Town of Eden	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	- -	- -	$4.66	- -	$265.13	$30.49	$108.87	- -	$18.28	$11.87
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Brookfield Capital Cost (thousands)[d]	Town of Brookfield Annual Operation and Maintenance Cost (thousands)[d]	Town of Byron Capital Cost (thousands)[d]	Town of Byron Annual Operation and Maintenance Cost (thousands)[d]	Town of Cedarburg Capital Cost (thousands)[d]	Town of Cedarburg Annual Operation and Maintenance Cost (thousands)[d]	Town of Dover Capital Cost (thousands)[d]	Town of Dover Annual Operation and Maintenance Cost (thousands)[d]	Town of Eden Capital Cost (thousands)[d]	Town of Eden Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$0.10	$0.29	$2.63	$7.89	$5.93	$17.80	$0.33	$1.00	$7.23	$21.68
			4. Implement fertilizer management programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	- -	- -	$75.00	- -	- -	- -	$25.00	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for house-hold hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

				Town of Brookfield		Town of Byron		Town of Cedarburg		Town of Dover		Town of Eden	
Plan Element	Plan Subelement[c]	Description	Component[c]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$- -**	**$- -**	**$7**	**$8**	**$346**	**$48**	**$109**	**$1**	**$51**	**$34**

Appendix R (continued)

				Town of Empire		Town of Farmington		Town of Forest		Town of Fredonia		Town of Germantown	
Plan Element	Plan Subelement[c]	Description	Component[c]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedar-burg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon comple-tion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Manage-ment, Operations, and Maintenance (CMOM) programs for munici-palities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	1,549	11.3	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recom-mended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance stand-ards of Chapter NR 151	- -	- -	$72.11	$6.39	- -	- -	$49.65	$1.40	$30.43	- -
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Empire		Town of Farmington		Town of Forest		Town of Fredonia		Town of Germantown	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	- -	- -	$6.67	$20.00	$0.15	$0.44	$4.97	$14.90	$0.51	$1.52
			4. Implement fertilizer management programs	- -	- -	$5.00	- -	- -	- -	$5.00	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	$225.00	- -	- -	- -	$25.00	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Empire		Town of Farmington		Town of Forest		Town of Fredonia		Town of Germantown	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$- -**	**$- -**	**$309**	**$26**	**$- -**	**$- -**	**$1,634**	**$28**	**$31**	**$2**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Grafton		Town of Greenbush		Town of Holland		Town of Jackson		Town of Kewaskum	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$205.39	$6.78	$22.93	$2.79	$5.16	- -	$183.54	$21.47	$145.59	$26.55
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Grafton Capital Cost (thousands)[d]	Town of Grafton Annual Operation and Maintenance Cost (thousands)[d]	Town of Greenbush Capital Cost (thousands)[d]	Town of Greenbush Annual Operation and Maintenance Cost (thousands)[d]	Town of Holland Capital Cost (thousands)[d]	Town of Holland Annual Operation and Maintenance Cost (thousands)[d]	Town of Jackson Capital Cost (thousands)[d]	Town of Jackson Annual Operation and Maintenance Cost (thousands)[d]	Town of Kewaskum Capital Cost (thousands)[d]	Town of Kewaskum Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$5.23	$15.70	$0.95	$2.86	$0.40	$1.20	$5.04	$15.12	$3.94	$11.81
			4. Implement fertilizer management programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	$25.00	- -	- -	- -	- -	- -	$25.00	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	$4.99	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for house-hold hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Grafton		Town of Greenbush		Town of Holland		Town of Jackson		Town of Kewaskum	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitor-ing programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Manage-ment/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydro-dynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Manage-ment Plan Element	Plan Recommenda-tions Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Ground-water Contamina-tion Potential	1. Extend mapping of groundwater contami-nation potential for shallow aquifers to those portions of the study area located outside of the South-eastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$236**	**$27**	**$24**	**$6**	**$6**	**$1**	**$214**	**$37**	**$150**	**$38**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Lisbon: Capital Cost (thousands)[d]	Town of Lisbon: Annual Operation and Maintenance Cost (thousands)[d]	Town of Lomira: Capital Cost (thousands)[d]	Town of Lomira: Annual Operation and Maintenance Cost (thousands)[d]	Town of Lyndon: Capital Cost (thousands)[d]	Town of Lyndon: Annual Operation and Maintenance Cost (thousands)[d]	Town of Mitchell: Capital Cost (thousands)[d]	Town of Mitchell: Annual Operation and Maintenance Cost (thousands)[d]	Town of Norway: Capital Cost (thousands)[d]	Town of Norway: Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	- -	- -	$285.83	$244.36	$11.40	- -	$48.31	$10.48	$14.62	- -
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Lisbon		Town of Lomira		Town of Lyndon		Town of Mitchell		Town of Norway	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$0.18	$0.53	$1.59	$4.78	$4.72	$14.16	$9.38	$28.13	$0.06	$0.17
			4. Implement fertilizer management programs	- -	- -	- -	- -	$5.00	- -	- -	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	- -	- -	$50.00	- -	- -	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for house-hold hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Lisbon Capital Cost (thousands)[d]	Town of Lisbon Annual Operation and Maintenance Cost (thousands)[d]	Town of Lomira Capital Cost (thousands)[d]	Town of Lomira Annual Operation and Maintenance Cost (thousands)[d]	Town of Lyndon Capital Cost (thousands)[d]	Town of Lyndon Annual Operation and Maintenance Cost (thousands)[d]	Town of Mitchell Capital Cost (thousands)[d]	Town of Mitchell Annual Operation and Maintenance Cost (thousands)[d]	Town of Norway Capital Cost (thousands)[d]	Town of Norway Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$0.2**	**$1**	**$287**	**$249**	**$71**	**$14**	**$58**	**$39**	**$15**	**$- -**

Appendix R (continued)

				Town of Osceola		Town of Paris		Town of Polk		Town of Port Washington		Town of Raymond	
Plan Element	Plan Subelement[c]	Description	Component[c]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	10	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	75.0	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$147.08	$4.92	- -	- -	$547.48	$71.87	$20.11	- -	$351.76	$14.28
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Osceola		Town of Paris		Town of Polk		Town of Port Washington		Town of Raymond	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$9.73	$29.19	$0.29	$0.87	$6.96	$20.89	$0.65	$1.96	$7.10	$21.31
			4. Implement fertilizer management programs	$5.00	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	$25.00	- -	- -	- -	$50.00	- -	- -	- -	$25.00	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Osceola		Town of Paris		Town of Polk		Town of Port Washington		Town of Raymond	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$187**	**$34**	**$0.3**	**$1**	**$604**	**$93**	**$21**	**$2**	**$469**	**$36**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Richfield Capital Cost (thousands)[d]	Town of Richfield Annual Operation and Maintenance Cost (thousands)[d]	Town of Saukville Capital Cost (thousands)[d]	Town of Saukville Annual Operation and Maintenance Cost (thousands)[d]	Town of Scott Capital Cost (thousands)[d]	Town of Scott Annual Operation and Maintenance Cost (thousands)[d]	Town of Sherman Capital Cost (thousands)[d]	Town of Sherman Annual Operation and Maintenance Cost (thousands)[d]	Town of Trenton Capital Cost (thousands)[d]	Town of Trenton Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	75.0	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$332.62	$26.09	$85.50	$8.74	$46.98	$1.55	$39.90	- -	$90.41	$12.25
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Richfield Capital Cost (thousands)[d]	Town of Richfield Annual Operation and Maintenance Cost (thousands)[d]	Town of Saukville Capital Cost (thousands)[d]	Town of Saukville Annual Operation and Maintenance Cost (thousands)[d]	Town of Scott Capital Cost (thousands)[d]	Town of Scott Annual Operation and Maintenance Cost (thousands)[d]	Town of Sherman Capital Cost (thousands)[d]	Town of Sherman Annual Operation and Maintenance Cost (thousands)[d]	Town of Trenton Capital Cost (thousands)[d]	Town of Trenton Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$2.29	$6.87	$5.43	$16.29	$9.95	$29.84	$9.97	$29.92	$6.18	$18.55
			4. Implement fertilizer management programs	- -	- -	$5.00	- -	$5.00	- -	- -	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	- -	- -	$25.00	- -	$25.00	- -	$150.00	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for house-hold hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Richfield		Town of Saukville		Town of Scott		Town of Sherman		Town of Trenton	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$335**	**$33**	**$96**	**$25**	**$162**	**$31**	**$75**	**$30**	**$247**	**$31**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Wayne		Town of West Bend		Town of Yorkville		Dodge County		Fond du Lac County	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	75.0	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	$4.77	- -	$291.63	$36.18	$445.66	- -	- -	- -	- -	- -
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Wayne		Town of West Bend		Town of Yorkville		Dodge County		Fond du Lac County	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	$1.41	$4.24	$3.94	$11.83	$5.90	$17.70	- -	- -	- -	- -
			4. Implement fertilizer management programs	- -	- -	$5.00	- -	- -	- -	- -	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	$125.00	- -	- -	- -	- -	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	$15.0
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	$5.0	- -	$5.0

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Town of Wayne: Capital Cost (thousands)[d]	Town of Wayne: Annual Operation and Maintenance Cost (thousands)[d]	Town of West Bend: Capital Cost (thousands)[d]	Town of West Bend: Annual Operation and Maintenance Cost (thousands)[d]	Town of Yorkville: Capital Cost (thousands)[d]	Town of Yorkville: Annual Operation and Maintenance Cost (thousands)[d]	Dodge County: Capital Cost (thousands)[d]	Dodge County: Annual Operation and Maintenance Cost (thousands)[d]	Fond du Lac County: Capital Cost (thousands)[d]	Fond du Lac County: Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	$5	- -	$10	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	$5	- -	$10	- -
- -	**- -**	**Total[b]**	**- -**	**$6**	**$4**	**$426**	**$48**	**$527**	**$18**	**$10**	**$5**	**$20**	**$20**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Kenosha County		Milwaukee County[b]		Ozaukee County		Racine County		Sheboygan County	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Kenosha County		Milwaukee County[b]		Ozaukee County		Racine County		Sheboygan County	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Implement fertilizer management programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	$7.8	- -	$7.8	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	$110	- -	$11	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	$120	- -	$73	- -	$15
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	$5	- -	- -	- -	$5	- -	$5	- -	$5

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Kenosha County		Milwaukee County[b]		Ozaukee County		Racine County		Sheboygan County	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	$10	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	$10	- -
- -	**- -**	**Total[b]**	**- -**	**$- -**	**$5**	**$- -**	**$118**	**$- -**	**$144**	**$- -**	**$78**	**$20**	**$20**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Washington County		Waukesha County		Milwaukee Metropolitan Sewerage District		Southeastern Wisconsin Regional Planning Commission	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]											
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	18,877	10.4	- -	- -
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	954,900[g]	900	- -	- -
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	- -	- -	- -	- -	- -	- -	- -	- -
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	- -	- -	- -	- -	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Washington County		Waukesha County		Milwaukee Metropolitan Sewerage District		Southeastern Wisconsin Regional Planning Commission	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	- -	- -	- -	- -	- -	- -	- -	- -
			4. Implement fertilizer management programs	- -	- -	- -	- -	- -	- -	- -	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	- -	- -	- -
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	175,200	- -	- -	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	3,400	600	- -	- -
			3. Dam abandonment and restoration plans	- -	- -	- -	- -	- -	- -	- -	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	- -	- -	- -	- -	- -	- -
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	- -	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	- -
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	$151	- -	- -	- -	- -	- -	- -
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	$5.0	- -	$5.0	- -	- -	- -	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	Washington County		Waukesha County		Milwaukee Metropolitan Sewerage District		Southeastern Wisconsin Regional Planning Commission	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	- -	- -	- -	- -	- -	- -	- -	- -
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	$15	- -	- -
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	$15
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -
- -	**- -**	**Total[b]**	**- -**	**$- -**	**$156**	**$- -**	**$5**	**$1,152,377**	**$1,525**	**$- -**	**$15**

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	U.S. Geological Survey and Cooperators		U.S. Army Corps of Engineers		Port of Milwaukee		Lake Districts or Associations		Total Study Area	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Land Use Plan Element[e]													
Surface Water Quality Plan Element	Point Source Pollution Abatement Plan Subelement	Public Wastewater Treatment Plants and Associated Sewer Service Areas	3. Implementation of the Village of Kewaskum WWTP Facilities Plan	- -	- -	- -	- -	- -	- -	- -	- -	$3,440	$97
			4. Prepare facilities plans for the Villages of Jackson and Newburg	- -	- -	- -	- -	- -	- -	- -	- -	200	- -
			5. Prepare facilities plans for the City of Cedarburg and Village of Grafton, including consideration of merging operations into a single, regional treatment facility	- -	- -	- -	- -	- -	- -	- -	- -	175	- -
			6. Prepare facilities plan for City of Racine and environs upon completion of amendment to sewer service area	- -	- -	- -	- -	- -	- -	- -	- -	250	- -
			7. Capacity, Management, Operations, and Maintenance (CMOM) programs for municipalities outside of the MMSD service area	- -	- -	- -	- -	- -	- -	- -	- -	1,425	- -
			8. City of West Bend Northwest Interceptor	- -	- -	- -	- -	- -	- -	- -	- -	4,091	3.4
			9. Force main from Waubeka in the Town of Fredonia to the Village of Fredonia sewerage system	- -	- -	- -	- -	- -	- -	- -	- -	1,549	11.3
			10. Ryan Creek interceptor sewer	- -	- -	- -	- -	- -	- -	- -	- -	51,386	69.8
			11. Implementation of MMSD 2020 Facilities Plan as Recommended under the RWQMPU	- -	- -	- -	- -	- -	- -	- -	- -	954,900	900.0
			12. Implementation of wastewater treatment plant upgrades for City of South Milwaukee	- -	- -	- -	- -	- -	- -	- -	- -	4,298	575
	Nonpoint Source Pollution Abatement Plan Subelement	Recommended Urban Nonpoint Source Pollution Control Measures	1. Implementation of the nonagricultural (urban) performance standards of Chapter NR 151	- -	- -	- -	- -	- -	- -	- -	- -	$121,720	$8,625
			2. Programs to detect and eliminate illicit discharges and control pathogens that are harmful to human health[f]	- -	- -	- -	- -	- -	- -	- -	- -	$19,524	- -

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	U.S. Geological Survey and Cooperators: Capital Cost (thousands)[d]	U.S. Geological Survey and Cooperators: Annual Operation and Maintenance Cost (thousands)[d]	U.S. Army Corps of Engineers: Capital Cost (thousands)[d]	U.S. Army Corps of Engineers: Annual Operation and Maintenance Cost (thousands)[d]	Port of Milwaukee: Capital Cost (thousands)[d]	Port of Milwaukee: Annual Operation and Maintenance Cost (thousands)[d]	Lake Districts or Associations: Capital Cost (thousands)[d]	Lake Districts or Associations: Annual Operation and Maintenance Cost (thousands)[d]	Total Study Area: Capital Cost (thousands)[d]	Total Study Area: Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Nonpoint Source Pollution Abatement Plan Subelement (continued)	Recommended Urban Nonpoint Source Pollution Control Measures (continued)	3. Chloride reduction programs	- -	- -	- -	- -	- -	- -	- -	- -	$499	$1,496
			4. Implement fertilizer management programs	- -	- -	- -	- -	- -	- -	- -	- -	$160	- -
			7. Beach and riparian litter and debris control	- -	- -	- -	- -	- -	- -	- -	- -	- -	$596
	Instream Water Quality Measures Plan Subelement	Hydrologic and Hydraulic Management	1. Concrete channel renovation and rehabilitation	- -	- -	- -	- -	- -	- -	- -	- -	175,200	- -
			2. Renovation of the MMSD Kinnickinnic River flushing station	- -	- -	- -	- -	- -	- -	- -	- -	3,400	600
			3. Dam abandonment and restoration plans	- -	- -	- -	- -	- -	- -	- -	- -	$1,800	- -
			5. Increase the dredged material storage volume of the Jones Island Confined Disposal Facility	- -	- -	$1,600	$12	$1,900	- -	- -	- -	$3,500	$12
	Inland Lakes Water Quality Measures Plan Subelement		1. Lake management plans for 17 major lakes	- -	- -	- -	- -	- -	- -	$850	- -	$850	- -
			2. Implement trophic state monitoring programs for 20 major lakes	- -	- -	- -	- -	- -	- -	- -	$120	- -	$120
	Auxiliary Water Quality Management Plan Subelement	Public Beaches	1. Continue current public health monitoring programs and expand to all public beaches in the study area	- -	- -	- -	- -	- -	- -	- -	- -	- -	$31.2
			3. Continue and expand current beach grooming programs	- -	- -	- -	- -	- -	- -	- -	- -	- -	$710
		Waterfowl Control	1. Implement programs to discourage unacceptably high numbers of waterfowl from congregating near beaches and other water features	- -	- -	- -	- -	- -	- -	- -	- -	- -	$165
		Water Pollution Control	1. Continue collection programs for household hazardous wastes and expand such programs to communities that currently do not have them	- -	- -	- -	- -	- -	- -	- -	- -	- -	$374
		Emerging Issues	2. Implement collection programs for expired and unused household pharmaceuticals	- -	- -	- -	- -	- -	- -	- -	- -	- -	$40

Appendix R (continued)

Plan Element	Plan Subelement[c]	Description	Component[c]	U.S. Geological Survey and Cooperators		U.S. Army Corps of Engineers		Port of Milwaukee		Lake Districts or Associations		Total Study Area	
				Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]	Capital Cost (thousands)[d]	Annual Operation and Maintenance Cost (thousands)[d]
Surface Water Quality Plan Element (continued)	Auxiliary Water Quality Management Plan Subelement (continued)	Water Quality Monitoring	2. Continue and possibly expand USGS stream gauging program	$145	$126	- -	- -	$145	$126	- -	- -	$145	$126
			3. Establish long-term water quality monitoring programs for areas outside of MMSD service area	- -	$156	- -	- -	- -	$156	- -	- -	- -	156
			4. Establish long-term fisheries and macroinvertebrate monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	100
			5. Establish long-term aquatic habitat monitoring stations	- -	- -	- -	- -	- -	- -	- -	- -	- -	59
		Maintenance of the Regional Water Quality Management/MMSD 2020 Facilities Plan Modeling System	1. Continue maintenance of MMSD conveyance system modeling tools	- -	- -	- -	- -	- -	- -	- -	- -	- -	$15
			2. Continue maintenance of watershedwide riverine water quality models (LSPC) and Milwaukee Harbor estuary/nearshore Lake Michigan hydrodynamic (ECOMSED) and water quality (RCA) models	- -	- -	- -	- -	- -	- -	- -	- -	- -	$15
Groundwater Management Plan Element	Plan Recommendations Related to Groundwater	Groundwater Recharge Areas	1. Extend groundwater recharge area mapping to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	$25	- -
		Mapping Groundwater Contamination Potential	1. Extend mapping of groundwater contamination potential for shallow aquifers to those portions of the study area located outside of the Southeastern Wisconsin Region	- -	- -	- -	- -	- -	- -	- -	- -	$25	- -
- -	- -	**Total[b]**	- -	**$145**	**$282**	**$1,600**	**$12**	**$1,900**	**$- -**	**$850**	**$120**	**$1,348,562[h]**	**$14,897[i]**

Appendix R Footnotes

[a]These costs were developed at a systems planning level, and they are provided to indicate to each municipality or unit of government the possible public sector cost to implement the recommended plan. The costs have a range of accuracy of +50 percent to -30 percent. Second level planning, such as facilities and stormwater management planning, would be needed to develop refined costs specific to each municipality or unit of government. The presentation of these costs does not obligate the municipality to make the indicated expenditures.

[b]The totals for each of the 28 MMSD member communities and Milwaukee County do not include the community's portion of the estimated $400 million for local management of sanitary sewer infiltration and inflow. That total amount is included in the cost assigned to the MMSD for implementation of the 2020 facilities plan.

[c]See Table X-2 in Chapter X of this report for a complete listing of recommended plan subelements. Subelements or components of subelements for which no costs are assigned are not included in this table.

[d]Costs represent 2007 conditions. 2007 Engineering New-Record Construction Cost Index = 10,000. In general, where not qualified by another footnote, double dashes indicate that either it is not appropriate to assign a cost to a component, a cost is already incurred under another program or plan, or it is not possible to reasonably estimate the cost of a component because it is affected by future actions whose scope cannot be determined at this time.

[e]The costs associated with implementation of the components of the regional land use plan that are incorporated in this plan are determined by many different, variable factors, such as fluctuations in the real estate market and changing Federal and State programs, making realistic estimation of those costs highly speculative. Thus, the overall costs of implementing a regional land use plan element are traditionally not estimated.

[f]Cost only reflects program to detect locations of illicit discharges. Costs of elimination are case specific and therefore not included here.

[g]A detailed breakdown of the MMSD 2020 Facilities Plan components and associated costs is presented in Tables X-3 and X-3a. The costs presented here reflect only those shown in Table X-3 which represent proposed new facilities, programs, operational improvements, and policies, including an estimated $400 million for management of sanitary sewer infiltration and inflow by the MMSD member and contract communities and Milwaukee County. This total capital cost is $152 million less than the total in Table X-3, and the total annual operation and maintenance cost is $1.7 million less than the amount in Table X-3. Those differences reflect the regional water quality management plan update recommendation that the addition of physical-chemical treatment at the MMSD South Shore wastewater treatment plant not be implemented, pending 1) further development by MMSD of the variable volume reserved for sanitary sewer inflow operating strategy for the Inline Storage System, 2) the results of capacity analyses for the Jones Island and South Shore plants, 3) determination of actual population and land use changes, and 4) determination of the success of the wet weather peak flow management program undertaken by MMSD and the communities that it serves.

[h]Includes $121,720,000 for implementation of the urban nonpoint source pollution abatement standards of Chapter NR 151 of the Wisconsin Administrative Code. That amount is not included in Table X-2.

[i]Includes $8,625,000 for implementation of the urban nonpoint source pollution abatement standards of Chapter NR 151 of the Wisconsin Administrative Code. That amount is not included in Table X-2.

Source: SEWRPC.

Appendix S

INCENTIVES FOR ADDRESSING AGRICULTURAL NONPOINT POLLUTION SOURCES IN THE CONTEXT OF A WATERSHED-BASED PERMIT

INTRODUCTION

During the process of developing the implementation approach for the regional water quality management plan update there has been considerable discussion of mechanisms for addressing abatement of agricultural nonpoint pollution sources. For such sources to be effectively controlled, financial incentives for farmers to implement the measures called for under the plan should be considered. Additionally, certain recommended measures would be implemented through the established land and water resource management plans that are in place for each county in the study area. The following are possible financial incentives that could be provided:

- The implementing entity could provide additional payments to landowners to promote enrollment of land in the Conservation Reserve Enhancement Program (CREP), or similar conservation programs. Enrollment in such programs would further the recommended plan goals regarding riparian buffer establishment and prairie and wetland restoration. The additional payments could be made to make up the difference in the payments under the CREP program and the farmer's cost to remove the enrolled land from production.

- The implementing entity could make grant funding available to enable greater implementation of agricultural nonpoint source pollution control components of the Chapter NR 151 standards.

- Water quality trading which is a voluntary, market-based approach under which an entity which would incur high costs to control a pollutant purchases pollutant reductions, or "credits," from a different entity that has lower costs to produce an environmentally equivalent, or better, pollution reduction.

SPECIFIC ISSUES RELATED TO WATER QUALITY TRADING

Background

According to the USEPA, favorable conditions for successful implementation of a water quality trading system include:[1]

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[1]*http://www.epa.gov/owow/watershed/trading.htm.*

- The existence of a "driver" that motivates facilities to reduce loads of a pollutant, such as a water quality-based requirement in a NPDES permit or establishment of a TMDL (see Chapter VI of this report),

- Pollution sources in a watershed that have significantly different costs to control the pollutant of concern,

- The necessary levels of pollutant reduction are not so large that loads from all sources in a watershed must be reduced as much as possible to attain the total reduction needed, indicating a lack of surplus reductions to trade, and

- State regulators and watershed stakeholders are open to applying a water quality trading approach.

Three approaches to water quality trading may be applicable to implementation of the regional water quality management plan update: 1) trading of point source controls on discharges from sewerage systems, including wastewater treatment plants, for controls on upstream nonpoint sources, such as agricultural runoff; 2) trading of controls on urban stormwater among the municipal members of a group that has obtained a WPDES stormwater discharge permit;[2,3] and 3) trading of controls on urban stormwater for controls on upstream nonpoint sources, such as agricultural runoff.

The USEPA water quality trading policy also specifically supports water quality trades in instances where such trades achieve "greater environmental benefits than … under existing regulatory programs …, such as the creation and restoration of wetlands, floodplains and wildlife and/or waterfowl habitat."[4] Water quality trading within the context of the recommendations of the regional water quality management plan update would likely provide such greater environmental benefits through riparian buffer establishment, wetland and prairie restoration, and instream habitat improvement.

The USEPA supports trading of nutrients, such as nitrogen and phosphorus and sediment (including cross-pollutant trading of nutrient reductions to offset downstream oxygen-related impacts). The USEPA also recognizes that trading could be accomplished for other pollutants such as heavy metals and thermal loads, but it categorizes those types of trades as being riskier. When nonpoint source pollution reductions are traded for point source loads, a factor of safety is generally applied to the nonpoint source reduction because of the inherent uncertainties in estimating the effectiveness of best management practices in reducing nonpoint source loads and the inability to adequately measure nonpoint source loads and load reductions at a large scale. The USDA Conservation Effects Assessment Program has been initiated to develop standardized ways to estimate the environmental value of various agricultural conservation systems.[5]

Water quality trades may occur directly between trading partners, through the intercession of a broker; through aggregators who accumulate pollution reduction credits from several entities that can then be sold in bulk to

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[2]*Stormwater discharge permit group members are listed in Chapter II of this report.*

[3]*In water quality trading cases, application of the principle of environmental equivalence interjects the requirement that the lower cost pollution reduction be obtained from a source that is located upstream of the source for which the credits are to be purchased.*

[4]*USEPA Office of Water Quality Trading Policy,* Final Water Quality Trading Policy, January 13, 2003.

[5]*Marc Ribaudo, Robert Johansson, and Carol Jones,* Environmental Credit Trading: Can Farming Benefit?, U.S. Department of Agriculture, *February 2006. Available at: http://www.usda.gov/AmberWaves/February06/Features/featureupdate.htm.*

entities seeking to purchase credits; and through the facilitation of a single, central exchange that purchases and sells credits.[6]

In situations where a farmer is participating in the USDA cost-share funded conservation programs (e.g., the Conservation Reserve or Conservation Reserve Enhancement Programs), it may not be possible to trade credits from a cost-shared practice.[7]

Water Quality Trading in the Context of the Recommended Plan and a Watershed-Based Permit

The regional water quality management plan update, which is based on a watershedwide water quality model that is applied to establish specific recommendations for improving water quality, could be a key factor in determining the pollution reduction goals that are necessary for implementing water quality trading.

At the most fundamental level, the feasibility of a water quality trading approach is dependent on the availability of excess water quality credits, i.e., additional pollution reductions from a given source beyond the level of reduction needed to meet specified water quality goals. In the case of the recommended regional water quality management plan update, it has been demonstrated that improvements in water quality that are significant enough to achieve compliance with water quality standards in noncompliant stream reaches would not be expected from additional, generally costly controls on point sources such as wastewater treatment plant discharges, combined and separate sanitary sewer overflows, and industrial discharges, but that significant water quality improvements could be attained through implementation of less costly controls on urban and rural nonpoint source pollution. However, as indicated in Chapter X of this report, for certain stream reaches and pollutants, even with complete implementation of the recommended water quality plan, compliance with the applicable water use objectives and supporting water quality standards and criteria would not be expected. Nonetheless, implementation of the recommended plan can be seen as a significant additional step toward attainment of fishable and swimmable conditions in the streams and lakes of the study area as called for under the Federal Clean Water Act. If a watershed-based permit were designed to achieve water quality improvement consistent with implementation of the recommended water quality management plan update, the applicability of water quality credit trading and the degree to which such trading could be applied would be greatly dependent on how baseline conditions for nonpoint sources, particularly agricultural sources, were established. In the future, when total maximum daily loads of pollutants of concern are developed as required by the USEPA, the ability to trade water quality credits would have to be reevaluated.

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[6]*Conservation Technology Information Center*, Getting Paid for Stewardship: An Agricultural Community Water Quality Trading Guide, *July 2006.*

[7]*Ribaudo, et .al and Conservation Technology Information Center,* op. cit.

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Appendix T

MODEL RESOLUTION FOR ENDORSEMENT OF THE REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

WHEREAS, the Southeastern Wisconsin Regional Planning Commission, which was duly created by the Governor of the State of Wisconsin in accordance with Section 66.0309(2) of the *Wisconsin Statutes* on the 8th day of August 1960, upon petition of the Counties of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha, has the function and duty of making and adopting a master plan for the physical development of the Region; and

WHEREAS, the Governor of the State of Wisconsin has designated the seven-county Southeastern Wisconsin Region as an areawide water quality management planning area and the Southeastern Wisconsin Regional Planning Commission as the official water quality management planning agency for that area, all in accordance with the procedural requirements set forth in Section 208 of the Federal Water Pollution Control Act; and

WHEREAS, the Southeastern Wisconsin Regional Planning Commission, pursuant to its function and duty as a regional planning agency and its designation as a water quality management planning agency, has prepared and adopted at its meeting held on the ___ day of ___________ 200_, an update to the areawide water quality management plan set forth in a report entitled, SEWRPC Planning Report No. 50, *A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds*, published in ________ 200_; and

WHEREAS, the Commission has transmitted certified copies of its resolution adopting the regional water quality management plan update for the greater Milwaukee watersheds, together with the aforementioned SEWRPC Planning Report No. 50, to the local units of government concerned and to the appropriate State and Federal agencies; and

WHEREAS, the (name of local governing body) has supported, participated in the financing of, and generally concurred in the regional planning programs undertaken by the Southeastern Wisconsin Regional Planning Commission, and believes that the regional water quality management plan update prepared by the Commission is a sound and valuable guide to water quality management in the development of not only the Region but also the local community, and that the adoption of such plan by the (name of local governing body) will assure a common understanding by the units and agencies of government concerned and enable these units and agencies of government to program the necessary plan implementation work.

NOW, THEREFORE, BE IT RESOLVED that, pursuant to Section 66.0309(12) of the *Wisconsin Statutes*, the (Name of Local Governing Body) on the _____ day of ______, 200_, hereby endorses the regional water quality management plan update for the greater Milwaukee watersheds previously adopted by the Commission as set forth in SEWRPC Planning Report No. 50 as a guide for regional and community development.

BE IT FURTHER HEREBY RESOLVED that the __________ clerk transmit a certified copy of this resolution to the Southeastern Wisconsin Regional Planning Commission and to the Secretary of the Wisconsin Department of Natural Resources.

____

(President, Mayor, or Chairman
of the Local Governing Body)

ATTESTATION:

____

(Clerk of Local Governing Body)

Appendix U

POTENTIAL FUNDING PROGRAMS TO IMPLEMENT PLAN RECOMMENDATIONS

Table U-1

FUNDING PROGRAM DESCRIPTIONS[a]

Administrator of Grant Program	Name of Funding Program	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Deadline
Riparian Buffers, Prairie and Wetland Restoration, and Instream Measures					
U.S. Army Corps of Engineers (USCOE)	Water Resources Development and Flood Control Acts	Local governments	1. Water resources planning assistance 2. Emergency streambank and shoreline protection	50 percent for studies and 65 percent for project implementation of Federal cost-share assistance; 35 to 50 percent local match is required	None
USCOE	Flood Hazard Mitigation and Riverine Ecosystem Restoration Program	Local governments	1. Flood hazard mitigation to include relocation of threatened structures 2. Riverine ecosystem restoration such as conservation or restoration of natural floodwater storage areas 3. Planning activities to determine responses to future flood situations 4. Project areas must be in a floodplain	50 percent for studies and 65 percent for project implementation of Federal cost-share assistance; 35 to 50 percent local match is required	Undetermined
U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS)	Emergency Watershed Protection Program	Individual landowners provided they have a local sponsor such as a local unit of government	1. Sale of agricultural floodprone lands to NRCS for floodplain easements 2. Land must have a history of repeated flooding (at least twice in the past 10 years) 3. Landowner retains most of the rights as before the sale 4. NRCS has authority to restore the floodplain function and value	The USDA pays the landowner one of three options: a geographic rate, a value based on the assessment of the land in agricultural production, or an offer made by the landowner; 75 percent Federal cost-share assistance; 25 percent local match is required[b]	Variable
USDA NRCS	Emergency Conservation Program	Individual landowners	1. Regrading and shaping farmland 2. Restoring conservation structures 3. Redistribution of eroded soil 4. Debris removal 5. Projects must be in response to a natural disaster	Up to 64 percent Federal cost-share assistance; the remaining percentage is the landowner's responsibility	After a designated State or Presidential disaster declaration

Table U-1 (continued)

Administrator of Grant Program	Name of Funding Program	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Deadline
Riparian Buffers, Prairie and Wetland Restoration, and Instream Measures (continued)					
U.S. Department of Agriculture, Farm Services Agency (FSA)	Conservation Reserve Program	Individual landowners in a 10- or 15-year contract	1. Riparian buffers 2. Trees 3. Windbreaks 4. Grassed waterways	50 percent Federal cost-share assistance; 50 percent local match from individual; an annual rental payment for the length of the contract is also provided	Annually or ongoing[c]
USDA FSA	Conservation Reserve Enhancement Program	Individual landowners in a 10- or 15-year contract	1. Filter strips 2. Riparian buffers 3. Grassed waterways 4. Permanent grasses (only in specially designated grassland project areas) 5. Wetland development and restoration	50 percent Federal cost-share assistance; one-time signing incentive payment (up to $150 per acre); practice incentive payment (about 40 percent of cost of establishing practice); annual rental payment; State of Wisconsin lump sum payment; Wisconsin practice incentive payment (about 20 percent of cost of establishing practice)	Ongoing
Wisconsin Department of Natural Resources (WDNR)	Municipal Flood Control Grants Chapter NR 199 of the *Wisconsin Administrative Code*	Cities, villages, towns, metropolitan sewerage districts	1. Acquisition and removal of structures 2. Flood proofing and elevation of structures 3. Riparian restoration projects 4. Acquisition of vacant land or purchase of easements 5. Construction of stormwater and groundwater facilities related to flood control and riparian restoration projects 6. Flood mapping	70 percent State cost-share assistance; 30 percent local match	July 15
U.S. Fish and Wildlife Service (FWS)	Wildlife Conservation and Appreciation Program	State fish and wildlife agencies, private organizations and local communities must work through their State agency	1. Problem identification 2. Species and habitat conservation 3. Public enjoyment of fish and wildlife 4. Species monitoring 5. Identification of significant habitats	$768,000 available nationally[d]	September 1
FWS	Partners for Fish and Wildlife Habitat Restoration Program	Private landowners for a 10-year contract	1. Restoration of degraded wetlands, native grasslands, stream and riparian corridors, and other habitat areas	Full cost-share and technical assistance; individual projects cannot exceed $25,000	Continuous
FWS[e]	Partnership for Wildlife	Nonprofit organizations, State and local agencies, and individuals	1. Preservation of nongame fish and wildlife species 2. Management of nongame fish and wildlife species 3. Habitat restoration projects	$768,000 available nationally[d] Must be matched equally from outside sources	September 1

Table U-1 (continued)

Administrator of Grant Program	Name of Funding Program	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Deadline
Riparian Buffers, Prairie and Wetland Restoration, and Instream Measures (continued)					
FWS	North American Wetlands Conservation Fund	State and public agencies	1. Property acquisition for the protection of wetlands that migratory birds, fish and wildlife are dependant on 2. Wetland restoration and protection projects 3. Habitat restoration projects	50 percent Federal cost-share assistance; 50 percent local match is required	Variable
FWS	Great Lakes Fish and Wildlife Restoration Act Grant Program	States, tribal government, other interested entities	1. Cooperative conservation, restoration, and management of fish and wildlife resources and their habitat	Cost-share up to 75 percent of project cost	February 28
USDA NRCS	Wildlife Habitat Incentives Program	Individual landowners for a 10-year contract	1. Instream structures for fish 2. Prairie restoration 3. Wetland scrapes 4. Wildlife travel lanes	Cost-share of up to 75 percent of installation	Continuous
USDA NRCS	Wetland Reserve Program	Individual landowners for a 10-year agreement, or a 30-year or permanent easement	1. Wetland restoration of lands in current agricultural production	75 to 100 percent cost-share depending on option chosen and technical assistance. Also between 75 to 100 percent of the cost of the land assessment taken out of production in a one time payment for the 30-year and permanent easement options only	Continuous
USDA	Watershed Protection and Flood Prevention Program	State and local governments	1. Fish and wildlife habitat enhancement projects 2. Wetland restoration 3. Projects are intended to be larger scale	Technical assistance and cost-sharing are provided; up to 100 percent Federal cost-share assistance for flood control prevention; typical project range is \$3.5 to \$5.0 million in Federal financial assistance	Ongoing
USCOE	Aquatic Ecosystem Restoration Program	State and local governments	1. Restoration of degraded aquatic ecosystems to a more natural condition	65 percent Federal cost-share assistance; local match of 35 percent is required; maximum Federal share is \$5,000,000 per project; 100 percent of maintenance, replacement, and rehabilitation costs must be provided locally with non-Federal funds	None
U.S. Environmental Protection Agency (USEPA)[f]	Five-Star Restoration Program	Public or private organizations that engage in community-based restoration projects	1. Wetland restoration projects 2. Riparian restoration projects 3. Projects must be part of a larger watershed and be community based 4. Projects must also have at least five contributing partners	\$500,000 available nationally[d]; project award ranges between \$5,000 and \$20,000 at the local level; average award is around \$10,000; technical assistance is also provided	March 2

Table U-1 (continued)

Administrator of Grant Program	Name of Funding Program	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Deadline
Riparian Buffers, Prairie and Wetland Restoration, and Instream Measures (continued)					
U.S. Department of Transportation (USDOT)	Transportation Enhancement Program	State and local units of government	1. Wetland preservation and restoration 2. Stormwater treatment systems to address runoff from roads and highways 3. Natural habitat restoration	80 percent Federal cost-share assistance; 20 percent local match is required	Ongoing
WDNR[g]	Stewardship Incentives Program	Individual landowners	1. Riparian buffers 2. Reforestation 3. Forest improvement 4. Tree planting 5. Forest management plan development 6. Wildlife and fisheries habitat improvement to include travel corridors, nest boxes and platforms, instream habitat enhancements	65 percent Federal cost-share assistance; 35 percent cost-share from individual; $5,000 maximum per project[h]	Ongoing
WDNR	State Wildlife Grants Program	Nonprofit organizations, State and local agencies, and individuals	Project must address an ecological priority, threat/issue, or conservation action as identified in Wisconsin's Wildlife Action Plan	Planning projects require 25 percent non-Federal matching funds and implementation projects require 50 percent non-Federal matching funds	March 13
WDNR	Small and Abandoned Dam Removal Grant Program	Counties, cities, villages, towns, tribes, public inland lake protection and rehabilitation districts, and private dam owners	Eligible project costs include labor, materials, and equipment directly related to planning the actual removal, the dam removal itself, and the restoration of the impoundment.	WDNR will fund 50 percent of eligible project costs, with a maximum grant award of $50,000	Ongoing
WDNR	County Conservation Aids	County and tribal governing bodies participating in the county fish and wildlife programs	Improvement and enhancement of fish and wildlife resources and habitat	Specific funding is allocated to each county with the state paying a maximum of 50 percent of the eligible actual project costs	July 1
WDNR	Urban Rivers Grant Program	Local units of government	Land acquisition to preserve open areas in urban environments adjacent to streams and rivers	50 percent State cost-share assistance; 50 percent local match is required	May 1
WDNR	River Protection Grant Program, Chapter NR 195 of the *Wisconsin Administrative Code*	Local units of government and nonprofit conservation organizations	1. Activities designed to develop partnerships that protect river ecosystems 2. Educational projects 3. Activities associated with river management plan development 4. Land acquisition 5. Ordinance development 6. Installation of practices to control nonpoint source pollution	75 percent State cost-share assistance; 25 percent local match is required	March 15 and September 1

Table U-1 (continued)

Administrator of Grant Program	Name of Funding Program	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Deadline
Riparian Buffers, Prairie and Wetland Restoration, and Instream Measures (continued)					
WDNR Utilizing U.S. Department of Interior Funding	Land and Water Conservation Fund Grants Program	Local units of government and State agencies, apply to the WDNR	1. State planning for the acquisition of State and local parks 2. Land acquisition for open space, estuaries, forests, and wildlife and natural resource areas 3. Facilities to enhance recreational opportunities	$40 million available nationally[d] 50 percent cost-sharing of a project. Federal funds cannot exceed 50 percent of an eligible project	May 1
WDNR	Stewardship Grant Program, Urban Green Space Program	Local units of government , lake protection and rehabilitation districts, and nonprofit conservation organizations	1. Land acquisition for greenway space in urban areas, protection of scenic or ecological features, and wildlife habitat improvement	50 percent State cost-sharing assistance; 50 percent local match is required	Ongoing
Wisconsin Coastal Management Program	Wisconsin Coastal Management Grant Program	State, local, tribal governments, and nonprofit organizations	1. Coastal land acquisition 2. Wetland protection and habitat restoration 3. Nonpoint source pollution control	Total of $1.5 million annually	November 2
National Fish and Wildlife Foundation	Challenge Grant Program	Federal, State, and local governments, educational institutions, and nonprofit organizations	1. Habitat protection and restoration on private lands 2. Sustainable communities through conservation 3. Conservation education	Average funding level is between $25,000 and $75,000 per project; projects must have a match of at least 50 percent from non-Federal funding sources	Project pre-proposal: June 1 and October 15; full project proposal: July 15 and December 1
National Fish and Wildlife Foundation	Great Lakes Watershed Restoration Program	State and local governments, tribes, and nonprofit organizations	1. Restore, enhance, and protect fish communities and habitats, wetlands, tributaries and their watersheds, Great Lakes shoreline and upland habitat. 2. Address terrestrial and aquatic invasive species 3. Promote individual stewardship	Funding level is between $35,000 and $100,000 per project; projects must have a match of at least 50 percent from non-Federal funding sources	Project applications November 15. Announcement of awards April 15 of following year
Eastman Kodak	American Greenway Grants	Land trusts, local units of government, and nonprofit organizations	1. Ecological assessments 2. Mapping and surveying 3. Planning activities 4. Creative projects that work to establish greenways in communities 5. Must have matching funds from other sources 6. Must show that the project will be completed	Grants with a maximum amount of $2,500	March 1 to June 1
Rural and Urban Nonpoint Source Pollution Abatement					
Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP)	Land and Water Resource Management Program	Individual landowners	1. Grassed waterways 2. Manure storage systems 3. Grade stabilization structure 4. Nutrient and pest management plans 5. Conservation tillage	50 to 70 percent State cost-share assistance; 30 to 50 percent individual cost-share is required; in the case of financial hardship, up to 90 percent cost-share assistance can be obtained from the State	December 31

Table U-1 (continued)

Administrator of Grant Program	Name of Funding Program	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Deadline
Rural and Urban Nonpoint Source Pollution Abatement (continued)					
DATCP	Farmland Preservation Program	Individual landowners for a period of 10 years	1. Best management practices that will lower the soil erosion rate to the tolerable soil loss rate or below	Tax incentives on an annual basis	None
WDNR	Urban Nonpoint Source Water Pollution Abatement and Storm Water Management Grant Program. Funding is through Chapter NR 155 of the *Wisconsin Administrative Code*	Local units of government	1. Planning 2. Educational and information activities 3. Ordinance development and enforcement 4. Training 5. Storm water detention ponds 6. Streambank and shoreline stabilization	70 percent State cost-share assistance for projects not involving construction, requiring a 30 percent local match; 50 percent State cost-share assistance for projects involving construction, requiring a 50 percent local match	May 1
WDNR	Targeted Runoff Management Grant Program, Chapter 120 of the *Wisconsin Administrative Code*; in the future, specific rural nonpoint source abatement measures will be funded under Chapter NR 151 of the *Wisconsin Administrative Code*	Local units of government	1. Complying with nonpoint source performance standards 2. Improving 303(d) waters 3. Protecting outstanding water resources 4. Compliance with a notice of discharge for an animal feeding operation 5. Addressing a water quality concern of national or statewide importance, such as the Upper Mississippi River concerns	70 percent State cost-share assistance; 30 percent local match is required. Rural projects cannot exceed $30,000 in funding and urban projects cannot exceed $150,000	May 1
WDNR	Land Recycling Loan (Brownfields) Program	Local units of government	Remedy environmental contamination affecting surface water or groundwater	Low interest loan	Dec. 31
USDA NRCS	Environmental Quality Incentives Program	Individual landowner in a three-year contract	1. Animal waste management practices 2. Soil erosion and sediment control practices 3. Nutrient management 4. Habitat improvement	75 to 90 percent Federal cost-share assistance	Annually[i]
USDA	Water Quality Special Research Grants Program	Land-Grant Institutions, Hispanic-Serving Institutions, State and Private controlled Institutions of higher education	Projects funded shall improve the quality of surface water and groundwater resources through research, education, and extension activities	Awards up to $600,000 a dollar-for-dollar match is required	April 4
USEPA	U.S. Environmental Protection Agency Clean Water State Revolving Fund	Low interest loans offered to and distributed by the state to various borrowers to fund water quality protection projects	1. Agricultural, rural, and urban runoff control 2. Estuary improvement projects 3. Estuary improvement projects 4. Wet weather flow control, including storm water and sewer overflows 5. Alternative treatment technologies water reuse and conservation projects.	Currently the program has more than $27 billion in assets	Ongoing

Table U-1 (continued)

Administrator of Grant Program	Name of Funding Program	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Deadline
Rural and Urban Nonpoint Source Pollution Abatement (continued)					
USEPA	Water Pollution Control Program Grants	State and interstate water pollution control agencies	Water Quality Management programs including permitting, pollution control activities, surveillance, monitoring, and enforcement, and provision for training and public information.	Formula Grants $5,630,000 available nationally[d]	Ongoing
USEPA[j]	Watershed Assistance Grants Program	Local units of government, nonprofit conservation organizations	Developing watershed and river partnerships and organizations	$365,000 available nationally[d]; locally projects are funded in the following ranges: $4,000 and under, and $4,000 and over with a cap of $30,000	Variable
USEPA	Targeted Watershed Grants Program	Watershed organizations nominated by state governor or tribal leader	Innovative watershed level approaches for combating threats and impairments and a clear set of performance measures with identified and measurable environmental indicators	Range from $600,000 to $900,000 and a 25 percent non-Federal match is required	May 1
USEPA	Pesticide Environmental Stewardship Grants Program	Pesticide Environmental Stewardship Program (PESP) Partners and Supports, any organization, group, or business committed to reducing the environmental risk from pesticides is eligible to join	1. Implementation of pollution control measures 2. Plan development which includes strategies to reduce pesticide risk 3. Grant applicants must be PESP partners or members	$300,000 available nationally[d]; locally grants are provided up to a maximum of $50,000	Ongoing
Wisconsin Coastal Management Program	Wisconsin Coastal Management Grant Program	State, local, tribal governments, and nonprofit organizations	1. Coastal land acquisition 2. Wetland protection and habitat restoration 3. Nonpoint source pollution control	Total of $1.5 million annually	November 2
Point Source Pollution Abatement Recommendations					
USEPA	U.S. Environmental Protection Agency Clean Water State Revolving Fund	Funding for State of Wisconsin Clean Water Fund Program which issues grants to municipalities	1. Sewerage and wastewater treatment facilities 2. Nonpoint source pollution abatement projects 3. Estuary protection projects	80 percent Federal, 20 percent State; interest rate varies with State bond issues	Ongoing
USEPA	Direct Federal Line-Item Grant	State and interstate water pollution control agencies	Wastewater construction and planning projects	Formula Grants yielding more than $3 billion in direct wastewater-related grants since 1992	Ongoing
USDA	Water and Waste Disposal Systems for Rural Communities	Local units of governments, nonprofit organizations, associations, and districts	1. Installation, repair, improvement or expansion of a rural water facility 2. Installation, repair, improvement or expansion of a rural waste disposal facility 3. Collection and treatment of sanitary waste, stormwater and solid wastes	$706 million in loans, $528 million in grants, and $75 million in guaranteed loans available nationally[d]	Determined by State USDA office

Table U-1 (continued)

Administrator of Grant Program	Name of Funding Program	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Deadline
			Inland Lake and Lake Michigan Water Quality		
USEPA	Beach Act Grants	State, local, tribal governments	Develop and implement beach water quality monitoring and notification programs at Great Lakes beaches. Develop and implement programs to inform the public about the risk of exposure to disease-causing microorganisms in the waters at the state beaches.	Formula Grants Wisconsin's 2007 allocation $225,960	Annual
FWS	Federal Clean Vessel Act	State, local, tribal governments, and nonprofit organizations	Education/information materials, construction, renovation, operation and maintenance of pump out and dump stations, including floating restrooms	Range from $30,000 (there is no specific minimum) to $1,000,000 and a 25 percent non-Federal match is required	January 31
USCOE	Estuary Habitat Restoration Program	State, local, tribal governments	Habitat restoration activities including the re-establishment of chemical, physical, hydrologic, and biological features and components	Project costs should not be less than $100,000 or more than $1,000,000. The Federal share will generally not exceed 65 percent	Ongoing
WDNR	Aquatic Invasive Species Control Grants	Counties, local and tribal government, public inland lake protection and rehabilitation districts, and town sanitary districts	1. Education, prevention and planning 2. Established infestation control 3. Early detection and rapid response	Awards up to 50 percent of the cost of a project up to a maximum grant amount of $75,000	February 1 and August 1
WDNR	Lake Planning Grant Program, Chapter NR 190 of the *Wisconsin Administrative Code*	Local units of governments, lake districts, and nonprofit conservation organizations	1. Gathering and analyzing water quality information 2. Land use planning within lake watersheds 3. Gathering and compiling demographic information pertinent to individual lakes 4. Developing lake management plans	Up to 75 percent State cost-share assistance, not to exceed $10,000; 25 percent local match is required; lakes are eligible for more than one grant, however, the total amount of State dollars cannot exceed $100,000	February 1 and August 1
WDNR	Lake Protection Grant Program, Chapter NR 191 of the *Wisconsin Administrative Code*	Local units of government, lake districts, and nonprofit conservation organizations	1. Land acquisition for easement establishment 2. Wetland restoration 3. Lake restoration projects 4. Other projects involving lake improvement	75 percent State cost-share which cannot exceed $200,000; 25 percent local match is required	May 1
WDNR	Lake Classification Grant Program[k]	Counties	1. Development of a county lake classification system	$50,000 per grant	May 1
Great Lakes Governors	Great Lakes Protection Fund	Government agencies, nonprofit organizations, businesses, individuals	1. Addressing biological pollution 2. Ecosystem restoration 3. Market mechanisms for environmental improvement 4. Restoring natural flow regimes	Variable	None
			Water Quality Monitoring		
USGS	Stream Gaging Cooperator Program	State agencies, sewerage system and wastewater treatment plant operators, and other units of government	1. Installation, operation, and maintenance of stream gages	50 percent Federal, 50 percent cooperator	Annual

Table U-1 (continued)

Administrator of Grant Program	Name of Funding Program	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Deadline
Educational and Other Watershed Improvement Grants					
USEPA	Environmental Education Grants Program	Local or State education agencies, colleges, and nonprofit organizations, State environmental agencies, and noncommercial education broad-casting agencies	1. Improving environmental education teaching skills 2. Educating teachers, students, or the public about human health problems 3. Building capacity for environmental education programs 4. Education communities 5. Educating the public through print, broadcast, or other media	$2 million available nationally[d]; locally, grants are for $5,000; $5000 to $25,000; and up to $100,000	Mid-November

NOTE: The Catalog of Federal Domestic Assistance programs can be accessed at: http://12.46.245.173/cfda/cfda.html. Additional information on grants can be accessed through the U.S. Environmental Protection Agency at: http://cfpub.epa.gov/fedfund/ and the University of Wisconsin-Madison Libraries Grants Information Collection at: http://grants.library.wisc.edu.

[a]*Some of the programs described in this table may not be available under all envisioned conditions for a variety of reasons, including local eligibility requirements or lack of funds in Federal and/or State budgets at a given time.*

[b]*In kind services are allowed as a part of the local cost-share assistance.*

[c]*Two types of sign-up are available for CRP: continuous CRP, which has no timeline and is used for small sensitive tracts of land and regular CRP, which has an annual sign up application period and is used for large tracts of land.*

[d]*Available on an annual basis.*

[e]*The Fish and Wildlife Service receives support funding from the National Fish and Wildlife Foundation and other private sources to help fund this program.*

[f]*Must apply through an intermediary organization which includes the National Association of Counties, the National Association of Service and Conservation Corps, the National Fish and Wildlife Foundation, and the Wildlife Habitat Council.*

[g]*The Wisconsin Department of Natural Resources utilizes USDA Forest Service funding for the Stewardship Incentives Program.*

[h]*Cost-sharable practices must be part of implementation of a Forest Stewardship Plan prepared by a forester.*

[i]*EQIP provides minimal funding in Southeastern Wisconsin.*

[j]*The USEPA provides grant funding to the private nonprofit organization River Network to disburse funding. Applications must be made through River Network.*

[k]*The Lake Classification Grant Program is a subgrant program of the Lake Protection Grant Program.*

Source: Northeastern Illinois Planning Commission, Upper Des Plaines River Phase 2 Funding Project Interim Report*, December 2000, and SEWRPC.*

Table U-2

POTENTIAL GRANT PROGRAMS TO IMPLEMENT SELECTED SPECIFIC PLAN RECOMMENDATIONS

Plan Recommendations	Grant Programs
Point Source Pollution Abatement	
1. Construction of Municipal Sewerage and Wastewater Treatment Facilities	• USEPA – Clean Water State Revolving Fund • WDNR – State of Wisconsin Clean Water Fund Program • Direct Federal Line-Item Grant • USDA – Water and Waste Disposal Systems for Rural Communities
Rural and Urban Nonpoint Source Pollution Abatement	
1. Reduce Agricultural Nonpoint Source Pollution A. Reduce Erosion from Cropland through Measures Such as Conservation Tillage and Grassed Waterways	• USDA – NRCS – Environmental Quality Incentives Program • USDA – Emergency Conservation Program • USDA – FSA –Conservation Reserve Program • DATCP – Land and Water Resource Management Program • WDNR – Targeted Runoff Management Grant Program
B. Install Riparian Buffers/Filter Strips	• USDA – FSA –Conservation Reserve Program • USDA – FSA – Conservation Reserve Enhancement Program • WDNR – Targeted Runoff Management Grant Program
C. Practice More Effective Manure and Nutrient Management	• USDA – NRCS – Environmental Quality Incentives Program • DATCP – Land and Water Resource Management Program • WDNR – Targeted Runoff Management Grant Program
D. Install Diversions Around Barnyards	• USDA – FSA – Conservation Reserve Program • USDA – NRCS – Environmental Quality Incentives Program • WDNR – Targeted Runoff Management Grant Program
E. Restrict Livestock Access to Streams	• WDNR – Targeted Runoff Management Grant Program
F. Manage Milking Center Wastewater	• DATCP – ATCP50 Cost-Share Funds
G. Expanded Oversight and Maintenance of Private Onsite Sewage Disposal System	• USDA – Water and Waste Disposal Systems for Rural Communities Program
2. Reduce Urban Nonpoint Source Pollution A. Implement Nonagricultural Performance Standards of Chapter NR 151 for Construction Sites, Existing and New Development, and Redevelopment	• WDNR – Urban Nonpoint Source and Stormwater Grants Program
B. Marina Waste Management Facilities	• WDNR/USFWS – Federal Clean Vessel Act Grant Program
Riparian Buffers, Prairie and Wetland Restoration, and Instream Measures	
1. Encourage Riparian Buffer Establishment Along Stream and River Corridors	• USFWS – Partners for Fish and Wildlife Habitat Restoration Program • USDA – NRCS – Wildlife Habitat Incentives Program • USDA – FSA – Conservation Reserve Program • USDA – Emergency Watershed Protection Program • USEPA – Five-Star Restoration Program • WDNR – Stewardship Incentives Program • WDNR – Urban Rivers Grant Program • WDNR – Municipal Flood Control Grants Program • WDNR/U.S. Department of the Interior – Land and Water Conservation Fund Grants Program • National Fish and Wildlife Foundation – Challenge Grant Program • Eastman Kodak – American Greenway Grants Program • Great Lakes Governors – Great Lakes Protection Fund
2. Establish Buffers Along Lake Shorelines	• WDNR – Lake Protection Grant Program
3. Wetland Restoration/Protection	• USDA – Emergency Watershed Protection Program • USFWS – North American Wetlands Conservation Fund • USFWS – Partners for Fish and Wildlife Habitat Restoration Program • USFWS – Partnership for Wildlife • USDA – NRCS – Wetland Reserve Program • USDA – Watershed Protection and Flood Prevention Program • USDA – Emergency Watershed Protection Program • USDA – NRCS – Wildlife Habitat Incentives Program • USDA-FSA – Conservation Reserve Enhancement Program • USDA – FSA – Conservation Reserve Program • USEPA – Five-Star Restoration Program • USDOT – Transportation Enhancement Program • USCOE – Flood Hazard Mitigation and Riverine Ecosystem Restoration Program • WDNR – Lake Protection Grant Program • WDNR – Stewardship Incentives Program • WDNR – Municipal Flood Control Grants Program • WDNR – River Protection Grant Program • Great Lakes Governors – Great Lakes Protection Fund • Eastman Kodak – American Greenway Grants Program

Table U-2 (continued)

Plan Recommendations	Grant Programs
Riparian Buffers, Prairie and Wetland Restoration, and Instream Measures (continued)	
4. Prairie Restoration	• USFWS – Partners for Fish and Wildlife Habitat Restoration Program • USFWS – Partnership for Wildlife • USDA-NRCS – Wildlife Habitat Incentives Program • USDA – Emergency Watershed Protection Program • USDA-FSA – Conservation Reserve Program • USDA-FSA – Conservation Reserve Enhancement Program • National Fish and Wildlife Foundation – Challenge Grant • WDNR – River Protection Grant Program • WDNR – Stewardship Incentives Program • WDNR – Municipal Flood Control Grants Program • Eastman Kodak – American Greenway Grants Program
5. Concrete Channel Renovation and Rehabilitation	• USCOE – Flood Hazard Mitigation and Riverine Ecosystem Restoration Program • WDNR – River Protection Grant Program • Great Lakes Governors – Great Lakes Protection Fund
6. Dam Abandonment and Associated Stream Restoration	• WDNR – Small and Abandoned Dam Removal Grant Program • Great Lakes Governors – Great Lakes Protection Fund
7. Fisheries Protection and Enhancement	• USFWS – Great Lakes Fish and Wildlife Restoration Act Grant Program • USFWS – Wildlife Conservation and Appreciation Program • USFWS – Partners for Fish and Wildlife Habitat Restoration Program • USFWS – Partnership for Wildlife • USDA – NRCS – Wildlife Habitat Incentives Program • USDA – Watershed Protection and Flood Prevention Program • USCOE – Aquatic Ecosystem Restoration • WDNR – State Wildlife Grants Program • WDNR – County Conservation Aids • WDNR – Stewardship Incentives Program • WDNR – Stewardship Grant Program • Great Lakes Governors – Great Lakes Protection Fund • National Fish and Wildlife Foundation – Great Lakes Watershed Restoration Program • National Fish and Wildlife Foundation – Challenge Grant Program
8. Water Quality Monitoring	• USEPA – Beach Act Grants • USGS – Cooperative Stream Gaging Program
Inland Lake Measures	
1. Preparation of Lake Management Plans	• WDNR – Lake Protection Grant Program • WDNR – Lake Planning Grant Program • WDNR – Lake Classification Grant Program • WDNR – Aquatic Invasive Species Control Grants
2. Control of Nonpoint Source Pollution	• See “Rural and Urban Nonpoint Source Pollution Abatement” and “Riparian Buffers, Prairie and Wetland Restoration, and Instream Measures” categories in this table for applicable grant programs
3. Lake Monitoring	• USGS – Cooperative Stream Gaging Program
4. Informational Programming	• See “Education” category in this table for applicable programs
Education	
1. Provide Information to Agricultural Landowners through Short Courses and Distribution of Educational Materials on the Environmental and Economic Benefits of Nutrient Management and Soil Erosion Control	• WDNR – River Protection Grant Program
2. Work with and Provide Information to Agricultural Supply Companies, Lawn Maintenance Companies, and Golf Course Superintendents on the State Requirements and Principles of Nutrient and Chemical Management	• WDNR – River Protection Grant Program
3. Provide Information to Contractors and Developers on Appropriate Best Management Practices for Stormwater Management and Erosion Control	• WDNR – Urban Nonpoint Source and Stormwater Grants Program
4. Provide Information to Riparian Property Owners and Landscape Contractors on the Effectiveness of Riparian Buffers and Design Options	• WDNR – River Protection Grant Program
5. Promote and Help to Implement In-School Environmental and Natural Resource Educational Programs	• USEPA – Environmental Education Grants Program
6. Provide Information to Watershed Residents on Appropriate Yard Care Management Practices	• WDNR – River Protection Grant Program • WDNR – Urban Nonpoint Source and Stormwater Grants Program

Table U-2 (continued)

NOTES: The Catalog of Federal Domestic Assistance programs can be accessed at: http://12.46.245.173/cfda/cfda.html. Additional information on grants can be accessed through the U.S. Environmental Protection Agency at: http://cfpub.epa.gov/fedfund/and the University of Wisconsin-Madison Libraries Grants Information Collection at: http://grants.library.wisc.edu.

The following abbreviations were used in this table:

FSA	– Farm Services Agency	USDOT	– U.S. Department of Transportation
USFWS	– U.S. Fish and Wildlife Service	USEPA	– U.S. Environmental Protection Agency
NRCS	– Natural Resources Conservation Service	USGS	– U.S. Geological Survey
USCOE	– U.S. Army Corps of Engineers	DATCP	– Wisconsin Department of Agriculture, Trade, and Consumer Protection
USDA	– U.S. Department of Agriculture	WDNR	– Wisconsin Department of Natural Resources

Source: SEWRPC.

Appendix V

PLAN IMPLEMENTATION FUNDING CONTACT INFORMATION[a,b]

Administrator of Grant Program	Name of Grant Program	Address	Phone Number	Internet Web Address
Riparian Buffers, Prairie and Wetland Restoration, and Instream Measures				
U.S. Army Corps of Engineers (USCOE)	Water Resources Development and Flood Control Acts	U.S. Army Corps of Engineers Detroit District 477 Michigan Avenue Detroit, MI 48226	(888) 694-8313	www.lre.usace.army.mil
USCOE	Flood Hazard Mitigation and Riverine Ecosystem Restoration Program	U.S. Army Corps of Engineers Planning Division 20 Massachusetts Avenue, NW Washington, DC 20314	(202) 761-0115	www.usace.army.mil
U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS)	Emergency Watershed Protection Program	U.S. Department of Agriculture Natural Resources Conservation Service 6515 Watts Road, Suite 200 Madison, WI 53719	(608) 276-8732	www.nrcs.usda.gov
USDA NRCS	Emergency Conservation Program	U.S. Department of Agriculture Natural Resources Conservation Service 826 Main Street Union Grove, WI 53182	(262) 878-1243	www.nrcs.usda.gov
USDA, Farm Services Agency (FSA)	Conservation Reserve Program	U.S. Department of Agriculture Farm Services Agency 826 Main Street Union Grove, WI 53182	(262) 878-1234	www.fsa.usda.gov
USDA FSA	Conservation Reserve Enhancement Program	County Land Conservation Department USDA Farm Service Agency or USDA Natural Resources Conservation Service	(262) 878-1234	www.fsa.usda.gov
Wisconsin Department of Natural Resources (WDNR)	Municipal Flood Control Grants Chapter NR 199 of the *Wisconsin Administrative Code*	Wisconsin Department of Natural Resources 101 S. Webster Street - CF/8 P.O. Box 7921 Madison, WI 53707-7921	(608) 267-7152	www.dnr.state.wi.us/org/caer/cfa/Ef/flood/grants.html
U.S. Fish and Wildlife Service (FWS)	Wildlife Conservation and Appreciation Program	Fish and Wildlife Service Department of the Interior Division of Federal Aid 4401 N. Fairfax Drive, Room 400 Arlington, VA 22203	(703) 358-1852	www.fws.gov
FWS	Partners for Fish and Wildlife Habitat Restoration Program	Fish and Wildlife Service Department of the Interior Division of Federal Aid 4401 N. Fairfax Drive, Room 400 Arlington, VA 22203	(703) 358-2201	www.fws.gov/cep/coastweb.html
FWS	Partnership for Wildlife	Fish and Wildlife Service Department of the Interior 1849 C Street, NW Washington, DC 20240	(703) 358-2156	www.fa.r9.fws.gov
FWS	North American Wetlands Conservation Fund	Fish and Wildlife Service Department of the Interior Executive Director of North American Waterfowl and Wetlands Office 4401 N. Fairfax Drive, Suite 110 Arlington, VA 22203	(703) 358-1784	www.northamerican.fws.gov/nawchp.html

Appendix V (continued)

Administrator of Grant Program	Name of Grant Program	Address	Phone Number	Internet Web Address
Riparian Buffers, Prairie and Wetland Restoration, and Instream Measures (continued)				
FWS	Great Lakes Fish and Wildlife Restoration Act Grant Program	Great Lakes Fish and Wildlife Restoration Act U.S. Fish and Wildlife Service Bishop Henry Whipple Federal Building 1 Federal Drive Fort Snelling, MN 55111	(612) 713-5168	www.fws.gov/midwest/Fisheries/glfwra-grants.html
NRCS	Wildlife Habitat Incentives Program Wetland Reserve Program	U.S. Department of Agriculture Natural Resources Conservation Service 826 Main Street Union Grove, WI 53182	(262) 878-1234	www.nrcs.usda.gov
USDA	Watershed Protection and Flood Prevention Program	Headquarters: Department of Agriculture Natural Resources Conservation Service P.O. Box 2890 Washington, DC 20013	(202) 720-3534	www.ftw.nrcs.usda.gov/programs.html
USCOE	Aquatic Ecosystem Restoration Program	U.S. Army Corps of Engineers Detroit District 477 Michigan Avenue Detroit, MI 48226	(888) 694-8313	www.lre.usace.army.mil
U.S. Environmental Protection Agency (USEPA)	Five-Star Restoration Program	U.S. Environmental Protection Agency Office of Wetlands, Oceans and Watershed (4502F) Ariel Rios Building 1200 Pennsylvania Avenue, NW Washington, DC 20460 Program operated in cooperation with the National Association of Counties, the National Fish and Wildlife Foundation, the Wildlife Habitat Council, and the Southern Company	(202) 260-8076	www.epa.gov/owow/wetlands/restore/5star www.nfwf.org
U.S. Department of Transportation (USDOT)	Transportation Enhancement Program	U.S. Department of Transportation 400 Seventh Street, SW Washington, DC 20590	(202) 366-4000	www.dot.gov
Wisconsin Coastal Management Program	Wisconsin Coastal Management Grant Program	Wisconsin Coastal Management Program P.O. Box 8944 Madison WI 53708-8944	(608) 267-7982	www.doa.state.wi.us
WDNR	Stewardship Incentives Program	Wisconsin Department of Natural Resources 9531 Rayne Road, Suite 4 Sturtevant, WI 53177	(262) 884-2390	www.dnr.state.wi.us
WDNR	State Wildlife Grants Program	Wisconsin Department of Natural Resources Bureau of Endangered Resources 101 S. Webster Street P.O. Box 7921 Madison, WI 53707	(608) 264-6043	http://dnr.wi.gov/org/land/er/swg/
WDNR	Small and Abandoned Dam Removal Grant Program	Wisconsin Department of Natural Resources Small and Abandoned Dam Removal Grant Program c/o River Program Coordinator, FH/3 P.O. Box 7921 Madison, WI 53707-7921	(608) 266-9273	www.dnr.state.wi.us/org/caer/cfa/Grants/DamRemov.html
WDNR	County Conservation Aids	Wisconsin Department of Natural Resources 2300 N. Dr. Martin Luther King Jr. Drive Milwaukee, WI 53212	(414) 263-8610	www.dnr.state.wi.us/org/caer/cfa/Grants/coconserv.html
WDNR	Urban Rivers Grant Program River Protection Grant Program	Wisconsin Department of Natural Resources 2300 N. Dr. Martin Luther King Jr. Drive Milwaukee, WI 53212	(414) 263-8704	www.dnr.state.wi.us
WDNR Utilizing U.S. Department of Interior Funding	Land and Water Conservation Fund Grants Program Stewardship Grant Program, Urban Green Space Program	Wisconsin Department of Natural Resources 2300 N. Dr. Martin Luther King Jr. Drive Milwaukee, WI 53212 or U.S. Department of the Interior National Park Service, Recreation Programs 1849 C Street NW Washington, DC 20240	(414) 263-8704 (202) 565-1200	www.dnr.state.wi.us www.ncrc.nps.gov/lwcf
National Fish and Wildlife Foundation	Challenge Grant Program	National Fish and Wildlife Foundation 1120 Connecticut Avenue, NW Washington, DC 20036	(202) 857-0166	www.nfwf.org/guideliens.htm
National Fish and Wildlife Foundation	Great Lakes Watershed Restoration Program	National Fish and Wildlife Foundation Attention: Great Lakes Watershed Restoration Grants Program 1 Federal Drive Fort Snelling, MN 55111	- -	http://www.nfwf.org/AM/Template.cfm?Section=Browse_All_Programs&CONTENTID=4883&TEMPLATE=/CM/ContentDisplay.cfm
Eastman Kodak	American Greenway Grants	American Greenways The Conservation Fund 1800 N. Kent Street, Suite 1120, Arlington, VA 22209	(703) 525-6300	www.conservationfund.org

Appendix V (continued)

Administrator of Grant Program	Name of Grant Program	Address	Phone Number	Internet Web Address
Rural and Urban Nonpoint Source Pollution Abatement				
Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP)	Land and Water Resource Management Program Farmland Preservation Program	Wisconsin Department of Agriculture, Trade and Consumer Protection Agricultural Resource Management 2811 Agriculture Drive P.O. Box 8911 Madison, WI 53708	(608) 224-4500 (608) 224-4633	www.datcp.state.wi.us
WDNR	Urban Nonpoint Source Water Pollution Abatement and Storm Water Management Grant Program Targeted Runoff Management Grant Program	Wisconsin Department of Natural Resources Bureau of Watershed Management 101 S. Webster Street P.O. Box 7921 Madison, WI 53707-7921	(608) 266-2621	www.dnr.state.wi.us
WDNR	Land Recycling Loan (Brownfields) Program	Wisconsin Department of Natural Resources Bureau of Community Financial Assistance 101 S. Webster Street P.O. Box 7921 Madison, WI 53707-7921	(608) 266-0849	http://www.dnr.state.wi.us/org/caer/cfa/EL/Section/brownfield.html
NRCS	Environmental Quality Incentives Program	U.S. Department of Agriculture Natural Resources Conservation Service 826 Main Street Union Grove, WI 53182	(262) 878-1234	www.nrcs.usda.gov
USDA	Water Quality Special Research Grants Program	U.S. Department of Agriculture; 1400 Independence Avenue Washington, DC 20250-2210	(202) 205-5952	www.csrees.usda.gov
USEPA	U.S. Environmental Protection Agency Clean Water State Revolving Fund	U.S. Environmental Protection Agency Clean Water State Revolving Fund Branch 401 M Street Washington, DC 20460	(202) 260-7359	http://www.epa.gov/owm
USEPA	Water Pollution Control Program Grants	US Environmental Protection Agency Office of Wastewater Management Office of Wetlands, Oceans and Watersheds 1200 Pennsylvania Avenue, N.W. Washington, DC 20460	(202) 564-8831	http://www.epa.gov/owm
USEPA	Watershed Assistance Grants Program	River Network 520 SW 6th Avenue, Suite 1130 Portland, OR 97204 or U.S. Environmental Protection Agency Office of Wetlands, Oceans, and Watersheds 401 M Street, SW, 4501F Washington, DC 20460	(503) 241-3506 (202) 260-9194	www.rivernetwork.org www.epa.gov/owow/wag.html
USEPA	Targeted Watershed Grants Program	U.S. Environmental Protection Agency Office of Wetlands, Oceans, and Watersheds 1301 Constitution Avenue Washington, DC 20004	(312) 886-7742	www.epa.gov/twg/
USEPA	Pesticide Environmental Stewardship Grants Program	U.S. Environmental Protection Agency Office of Prevention, Pesticides, and Toxic Substances Office of Pesticides Ariel Rios Building 1200 Pennsylvania Avenue, NW Washington, DC 20460	(703) 308-7035	www.epa.gov/oppbppd1/PESP
Point Source Pollution Abatement Recommendations				
USEPA	Direct Federal Line-Item Grant	U.S. Environmental Protection Agency Region 5 77 W. Jackson Boulevard Chicago, IL 60604	(312) 353-2000	www.epa.gov/ogd/
USDA	Water and Waste Disposal Systems for Rural Communities	U.S. Department of Agriculture Rural Utilities Service Water and Environmental Programs Room 4050-S, Stop 1548 1400 Independence Avenue, SW Washington, DC 20250	(202) 690-2670	www.usda.gov/rus//water/programs.htm
Inland Lake and Lake Michigan Water Quality				
USEPA	Beach Act Grants	U.S. Environmental Protection Agency Office of Water Resources Center 1200 Pennsylvania Avenue Washington, DC 20460	(202) 566-1731	www.epa.gov/waterscience/beaches/grants/
FWS	Federal Clean Vessel Act	U.S. Fish and Wildlife Service Division of Federal Assistance 4401 N. Fairfax Drive Arlington, VA 22203	(703) 358-2156	http://federalasst.fws.gov/cva/cva.html

Appendix V (continued)

Administrator of Grant Program	Name of Grant Program	Address	Phone Number	Internet Web Address
Inland Lake and Lake Michigan Water Quality (continued)				
USCOE	Estuary Habitat Restoration Program	U.S. Army Corps of Engineers 441 G Street, NW Washington, DC 20314	(202) 761-4750	www.usace.army.mil/cw/cecw-p/estuary_act/
WDNR	Aquatic Invasive Species Control Grants	Wisconsin Department of Natural Resources 2300 N. Dr. Martin Luther King Jr. Drive Milwaukee, WI 53212	(414) 263-8610	http://dnr.wi.gov/org/caer/cfa/Grants/Lakes/invasivespecies.html
WDNR	Lake Planning Grant Program Lake Protection Grant Program Lake Classification Grant Program	UWEX-Lakes Partnership UW-Stevens Point 1900 Franklin Street Stevens Point, WI 54481	(715) 346-2116	www.uwsp.edu/cnr/uwexlakes/grants
Great Lakes Governors	Great Lakes Protection Fund	Great Lakes Protection Fund 1560 Sherman Avenue, Suite 880 Evanston, IL 60201	(847) 425-8150	www.glpf.org
Water Quality Monitoring				
USGS	Stream Gaging Cooperator Program	U.S. Geological Survey Office of Surface Water 415 National Center Reston, VA 20192	(703) 648-5301	http://water.usgs.gov/wid/html/SG.html
Educational and Other Watershed Improvement Grants				
USEPA	Environmental Education Grants Program	U.S. Environmental Protection Agency Office of Environmental Education (1704) Ariel Rios Building 1200 Pennsylvania Avenue, NW Washington, DC 20460	(202) 260-8619	www.epa.gov/enviroed/grants.html

[a] *The Catalog of Federal Domestic Assistance programs can be accessed at: http://12.46.245.173/cfda/cfda.html. Additional information on grants can be accessed through the U.S. Environmental Protection Agency at: http://cfpub.epa.gov/fedfund/ and through the University of Wisconsin-Madison Libraries Grants Information Collection at: http://grants.library.wisc.edu.*

[b] *Some of the programs described in this table may not be available under all envisioned conditions for a variety of reasons, including local eligibility requirements or lack of funds in Federal and/or State budgets at a given time.*

Source: SEWRPC.

Appendix W

PUBLIC HEARING INFORMATION AND WRITTEN COMMENTS ON THE PLAN

PUBLIC INFORMATION MEETINGS AND HEARINGS
SCHEDULED ON REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE
GREATER MILWAUKEE WATERSHEDS

Citizens are invited to public information meetings and hearings related to the protection and improvement of water quality in a major portion of southeastern Wisconsin. These sessions will provide opportunities to learn more about, and to comment on, the findings and recommendations documented in Southeastern Wisconsin Regional Planning Commission (SEWRPC) Planning Report No. 50, *A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds*. The plan includes recommendations related to land use, surface water quality, and groundwater quality in the Kinnickinnic, Menomonee, Milwaukee, and Root River watersheds; the Oak Creek watershed, and the direct drainage area to Lake Michigan. These watersheds are roughly comprised of areas draining toward Lake Michigan from extreme northeastern Dodge County, southeastern Fond du Lac County, southwestern Sheboygan County, eastern Washington County, all of Ozaukee County except the northeastern portion, extreme eastern Waukesha County, all of Milwaukee County, eastern Racine County, and a small portion of the Town of Paris in Kenosha County. The study area also includes the nearshore Lake Michigan area from the Village of Fox Point to the Village of Wind Point. Copies of the report chapters, including the recommended plan chapter, are now available for review on the SEWRPC web site at *http://www.sewrpc.org/waterqualityplan/chapters.asp*.

The plan was prepared by SEWRPC, in partnership with the Milwaukee Metropolitan Sewerage District (MMSD) under the "Water Quality Initiative," and in cooperation the Wisconsin Department of Natural Resources (WDNR) and the U.S. Geological Survey (USGS). The plan was developed in close coordination with the MMSD 2020 Facilities Plan. Preparation of the plan was guided by a Technical Advisory Committee composed of representatives of county and municipal government, special-purpose units of government, MMSD, WDNR, USGS, the U.S. Environmental Protection Agency, academic institutions, and environmental and conservation organizations. In addition, the regional water quality management plan and MMSD Facilities Plan were presented and discussed at periodic meetings of a joint Citizens Advisory Council formed specifically to provide input on the two plans and at meetings of watershed officials, consisting of the elected and appointed representatives from the counties, cities, villages, and towns in the study area.

The following 4:30-7:00 p.m. sessions will be held during October 2007:

October 15 at Gateway Technical College, Racine Campus, Racine Building, 901 Pershing Drive, Parking Lot D, Great Lakes Room (#110)

October 16 at the Downtown Transit Center, Harbor Lights Room (upper floor), 909 E. Michigan Street, Milwaukee

October 23 at Riveredge Nature Center, 4458 W. Hawthorne Drive, Newburg, WI, 53060, located a mile north of STH 33 on CTH Y, northeast of Newburg

Each session will begin with a meeting in "open house" format from 4:30-5:30 p.m., which will provide an opportunity to meet one-on-one or in small groups with the Commission staff to receive information, ask questions, and provide comment. A presentation will be made by the Commission staff at 5:30 p.m., followed by a public hearing providing a forum for public comment in "town hall" format from approximately 6:00 p.m. to 7:00 p.m.

Persons with special needs are asked to contact Gary K. Korb at (262) 547-6721 a minimum of 72 hours in advance of the public session date so that appropriate arrangements can be made. Affected may be site access and/or mobility, materials review or interpretation, or active participation, including the submission of comments.

In addition to providing comments at the public meetings and hearings, written comments may also be submitted. Written comments should be received no later than Wednesday, October 24, 2007. To obtain a paper copy of the recommended plan chapter, to ask questions, or to submit written comments on the Regional Water Quality Management Plan Update, please contact:

Southeastern Wisconsin Regional Planning Commission
Michael G. Hahn, Chief Environmental Engineer
W239 N1812 Rockwood Drive
P.O. Box 1607
Waukesha, Wisconsin 53187-1607
Phone: 262-547-6721 Fax: 262-547-1103
e-mail: mhahn@sewrpc.org

SEWRPC REGIONAL WATER QUALITY
MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS
PUBLIC INFORMATION MEETING/PUBLIC HEARING

Gateway Technical College – Racine
October 15, 2007

Name	Representing	Address	Telephone Number/E-Mail Address
Walter R. Mader	NM&B	1338 Wash Ave Racine Wis	262 634 5588
Sharon Korponai	Storm Water Commission Town of Raymond	2665 - 96th ST Franksville Wi 53126	262 835 4537
BILL STRUTZ	INSINK ERATOR	4700 21ST STREET RACINE, WI 53406	262-554-360,
Michael Keleman	InSinkErator	4700 21st Street Racine, WI 53406	262-598-5219
Daniel Schmidt	SEWRPC Com.	P.O. Box 394 53040 Kewaskum WI.	262-626-4656
Anna Bopham	citizen	24518 ~~Win~~ Sandy Point Dr Wind Lake 53185	~~262-8~~

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BROWN & JONES REPORTING, INC.

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION
PUBLIC INFORMATION HEARING
ON REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE
FOR THE GREATER MILWAUKEE WATERSHEDS
OCTOBER 15, 2007

Public hearing held before MARY RING, a Registered Professional Reporter and Notary Public in and for the State of Wisconsin, at Gateway Technical College, Racine Campus, Racine Building, 901 Pershing Drive, Great Lakes Room, #110, Racine, Wisconsin, on October 15, 2007, commencing at 4:30 p.m. and concluding at 7:00 p.m.

735 North Water Street, Suite M185
Milwaukee, WI 53202
(414) 224-9533
(800) 456-9531

A P P E A R A N C E S

FOR SEWRPC:

Michael G. Hahn, Chief Environmental Engineer
Daniel Schmidt, Commissioner
Gary K. Korb, Regional Planning Educator
Thomas Slawski, Principal Planner
Joseph Boxhorn, Staff
Ronald Printz, Staff

* * * * *

I N D E X

TRANSCRIPT OF PROCEEDINGS

(Mr. Schmidt announced the following two upcoming meetings, Oct. 16, 2007 and October 23, 2007.)

MR. SCHMIDT: We'll go right into the public comment portion of the meeting. If you have a public comment, I would ask that -- Are there microphones out there at all?

MR. HAHN: There's one up there on the -- in the middle --

MR. SCHMIDT: I would ask that you would state your name and address, and if you have any affiliation to a -- Also, there's cards you should sign in. We need that for the public record.

But if you have any affiliation with a municipality, a county organization, city, village, town, whatever, or DNR, other private or public organization, please state that as well and indicate that on the form.

And also, if you do not wish to publicly comment but would like to send in a comment, there are forms available for that. And we'd ask that you turn those in by the 24th of October.

So would anybody like to comment? Nobody has any general comments? If you have

specific questions relating to any of the topics, you can contact Mike at the Regional Planning Commission, or Joe, Tom, and Ron and Matt. Gary will point you in the right direction as well. They're very helpful and will try and explain in detail any clarification.

No comments or concerns? If you're not sure, please take along one of the forms that you could send in if you have it. Yes, sir?

MR. MADSEN: A question, not a comment. How many places within the study area here are collecting water samples from storm water discharges and then giving you information on those things?

MR. HAHN: Wally, could you just give your name and address, please?

MR. MADSEN: Oh, I'm Wally Madsen, and I live in the Town of Raymond. Business is in the City of Racine. I'm an engineer, sort of it, semiretired.

MR. HAHN: Well, Joe or Tom, you can chime in on this, but we did not -- we were not looking so much at outfall information in terms of storm sewer outfalls. We were monitoring data collected with primarily in-stream data at various locations.

And I think we certainly -- we certainly took into account whatever data we knew of in terms of, for example, the issues that have come up as far as the fecal coliform bacteria counts coming out of the storm sewer outflow, and that certainly informed the decisions we made in terms of crafting the recommended plan.

But we weren't really looking at that kind of monitored data as closely as we were looking at the in-stream data. We did look at point sources at the outfall in terms of general characterization of the quantities of --

MR. MADSEN: One --

MR. HAHN: -- discharge.

MR. MADSEN: -- of the reasons I ask the question, Mike, was because we're doing some monitoring on the Village of Wind Point storm sewer discharges, and we have -- the City of Racine is collecting the samples and doing the chemical analysis of the stuff. And we are looking for fecal coliform, looking for phosphorus, and possibly we'll get into the nitrogen thing, too.

And they're trying to implement then

some programs within the -- not mandatory, but a program that you would follow using the no-phosphorus type fertilizers and that type of stuff. And Wind Point has been kind of blessed or -- or cursed with some of the smells that come off of the decaying vegetation on the shoreline of Lake Michigan.

MR. SLAWSKI: I would like to add something. As -- I'm Tom Slawski with Southeastern Wisconsin Regional Planning Commission staff.

When we were setting up or beginning the process of modeling and looking at loads and trying to come up with this, particularly looking at combined sewer overflow and sanitary sewer overflow numbers for input to loading to the model, we -- MMSD did have some information on first and second flush, pre and post implementation for the in-line storage system.

So we meticulously went through all that data, and some of those had pretty unique -- some were much more loaded than others in different sites, and those -- we did study those, incorporate those into the entire modeling process as well. So we do have some information, and that

is summarized in the technical portion of this.

MR. SCHMIDT: Do you have a comment? It's Bill Krill.

MR. KRILL: I'm sorry. My name is Bill Krill. I'm an agent with -- William Krill, K-R-I-L-L, with HNTB Corporation in Milwaukee. I'm just responding to the gentleman's question and wanted to tell him that the Milwaukee Metro Sewerage District has an ongoing monitoring program for storm water, and I can grab one of my cards and tell him which person at the MMSD to talk to.

They have been monitoring storm water outfalls for about four years now with compositive samplers, and maybe some of their data can help with what he's looking at. Thank you.

MR. MADSEN: Well, we're looking at developing some data for the Village of Wind Point and then implementing some things through that. We don't -- we don't put in direct collection systems. There are direct collection systems -- well, it's all ditched system, also. There's no curb and gutter in the Village of Wind Point -- well, there is some but very little.

And there we're looking to catch some of

that fertilizer that has flushed through the storm sewer system within the grass collection areas of the ditches. And there's small inlets within that, so we use those interim places for storm water storage.

And then the -- the gradings is not put in with solid pipe, it's put in with perforated pipe, so we get some undergrade stuff from -- which benefits our roadbeds. And that was part of the purpose of going to that type of a structure. If anybody wants to know anything about that, I can give you some information on that, too.

But we are looking at what is improving, not improving or deteriorating, and that's really what we're looking for.

MR. SCHMIDT: Thank you. Does anyone have any other comments particularly related to the plan or on the technical report?

If not, I think we can close the public hearing. If you have some questions, I'm sure Mike and the other gentlemen will try and help you for a while yet.

MR. HAHN: Sure.

MR. SCHMIDT: So I thank you all very much for attending this evening. And, like I say,

06:15 if something comes up within the next week, you
06:15 have until the 24th to respond. Thank you.

(Proceedings concluded at 8:00 p.m.)

STATE OF WISCONSIN)
) SS:
COUNTY OF MILWAUKEE)

I, MARY RING, a Registered Professional Reporter and Notary Public in and for the State of Wisconsin, do hereby certify that the above hearing was recorded by me on October 15, 2007, and reduced to writing under my personal direction.

I further certify that I am not a relative or employee or attorney or counsel of any of the parties, or a relative or employee of such attorney or counsel, or financially interested directly or indirectly in this action.

In witness whereof I have hereunder set my hand and affixed my seal of office at Milwaukee, Wisconsin, this 17th day of October, 2007.

____
Notary Public
In and for the State of Wisconsin

My Commission Expires: June 1, 2008.

SEWRPC REGIONAL WATER QUALITY
MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS
PUBLIC INFORMATION MEETING/PUBLIC HEARING

Downtown Transit Center - Milwaukee
October 16, 2007

Name	Representing	Address	Telephone Number/E-Mail Address
Irene Brown		3252 S. Lenox	414-483-3962
Lisa Conley	Town & Country RC+D	516 Lac LaBelle Drive Oconomowoc, WI 53066	262-567-5947
Gregory F. Bird	citizen		gfbird@wi.rr.com
KEVIN HALEY	MILWAUKEE CO. PARKS	9480 ~~WATERTOWN~~ PLANK ROAD WAUWATOSA, WI 53226	414-257-6242
Karen Sands	Earth Tech	1020 N. Broadway Milw. 53202	414-225-5175
Jennifer Runquist	LWVMC	2002 E. Kenwood Blvd Mil WI 53211	414-332-5067
CURT BORA	C OF GREENFIELD	7325 W FOREST HOME GREENFIELD, WI 53220	(414) 329 5372
Cheryl Nenn	FMR	1845 N Farwell MIL WI 53202	(414) 287-0207 x29
Mike Martin	MMSD		

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SEWRPC REGIONAL WATER QUALITY
MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS
PUBLIC INFORMATION MEETING/PUBLIC HEARING

Downtown Transit Center - Milwaukee
October 16, 2007

Name	Representing	Address	Telephone Number/E-Mail Address
Kee Donley	RiverPulse Project	3625 N 86th St. 53222	588-0617 Kdonley@aol.com
Jaren Hiller	Earth Tech	1020 N. Broadway, Milw, 53202	
MARTY WALL		5705 W TRENTON PD 53213	445-3115
Vivian Corres	concerned citizen	1707 N. Prospect Ave #8D Milw 53202	corresv@milwpc.com

#131636 V1 - RWQMPU PUBLIC MTG SIGN IN SHEET

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION
PUBLIC INFORMATION HEARING
ON REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE
FOR THE GREATER MILWAUKEE WATERSHEDS
OCTOBER 16, 2007

Public hearing held before KATHLEEN E. CARTER, a Certified Realtime Reporter, Registered Merit Reporter and Notary Public in and for the State of Wisconsin, at the Downtown Transit Center, Harbor Lights Room, 909 East Michigan Street, Milwaukee, Wisconsin, on October 16, 2007, commencing at 4:30 p.m. and concluding at 7:00 p.m.

A P P E A R A N C E S

FOR SEWRPC:

Michael G. Hahn, Chief Environmental Engineer
Daniel Schmidt, Commissioner
Gary K. Korb, Regional Planning Educator
Thomas Slawski, Principal Planner
Joseph Boxhorn, Staff
Ronald Printz, Staff

* * * * *

I N D E X

TRANSCRIPT OF PROCEEDINGS

MR. SCHMIDT: Good evening. My name's Daniel Schmidt. I'm a SEWRPC commissioner, and I serve as chairman of the Technical Advisory Committee that reviewed the information that Mike just went through.

This will be the beginning of the public comment portion, public hearing. And as Mike indicated, this is the second of three such programs.

Before getting into that, I just want to note that I'm just one of 32 members on the Technical Advisory Committee, and we've been meeting for four years currently. And those people are very dedicated, interested in what they're looking at and reviewing. We have a fantastic staff at SEWRPC that's been providing us the information, along with MMSD, the DNR, and so forth.

At those meeting, and we've been meeting almost monthly, or at least every other month, occasionally missing one, but we've been averaging a 66 percent attendance ratio at those meetings, so it's fantastic the commitment that these members have.

In reference to the public comment portion of this meeting, I would ask -- I'm going to lay the mike over here at the table, and I would ask that you identify yourself by giving your name for our stenographer, as well as your address.

If you're affiliated with a municipality, county, private or public agency, I would ask that you also give us that information for the record. And we'll begin with that comment portion.

Oh, also, if you wish to just comment, you know, in a written format, you may do so. There's forms in the back. That needs to be submitted by the 24th of October. If you want to speak, there are also forms back there that, you know, would provide us your name, and address, and so forth.

And, again, we need the information by the 24th because we are under a strict deadline.

I'll leave the mike on, so you don't have to mess with any buttons.

Does anyone have any public comment that they would like to make?

MS. NENN: I'll come.

MR. SCHMIDT: Fine. Come up, Cheryl.

MS. NENN: It's a small group. Just grab

this.

MR. SCHMIDT: Start out with your name.

MS. NENN: Sure. I'm Cheryl Nenn. I'm with Friends of Milwaukee's Rivers, and I'm also a member of the Technical Advisory Committee for the plan, so been participating in meetings for several years.

We're planning on submitting detailed written comments as well, but I just wanted to say that in general we're very supportive of the plan, with a couple of major concerns.

And those are -- We're still really concerned about the five-year level of protection for MMSD in particular. We really feel that the proposed five-year level of protection is illegal under federal and state law, and that MMSD, as well as all the other treatment plants in the basin, must eliminate SSOs, and have that as a goal, as well as addressing both point and nonpoint sources of pollution.

We -- Let's see here. You know, we're also -- we're very concerned about sanitary sewer overflows. We feel that planning for them as part of the Regional Water Quality Plan is unacceptable.

We certainly acknowledge that there's

special extreme wet weather conditions that cause overflows at times. However, we agree with the USEPA, and others, that prohibit affirmative defenses for SSOs. And what that means is it instead gives the state and federal government enforcement discretion to deal with these special circumstances that happen and cause sewage to be dumped in those situations.

And we feel that the law really exists to create a level playing field out there, and we're concerned about the potential regional and statewide precedents of allowing the five-year level of protection.

And we also feel it's unfair to the other treatment plants within the basin who are complying with the law and making the necessary expenditures to keep their sewage systems well-maintained, although, obviously, MMSD is a special situation.

We also realize that eliminating SSOs is a very costly endeavor, billions of dollars as Mike was mentioning. However, we -- you know, we feel strongly that the Clean Water Act does not allow for overflows in the name of cost effectiveness, and that zero overflows still need to remain the goal.

And while we certainly agree that costs need to be factored in when prioritizing our future actions, we don't feel that they can be an excuse to continue to violate the law and pollute the waterways.

And we feel that we shouldn't have to choose between safe and clean drinking water and adequate sewage treatment, or between having sewage in our basements or sewage in our rivers. These are false choices, and we need to do what we have to do.

And just really quickly, we also would like to -- we feel that holding the line on the inflow and infiltration is not enough, and that we must go after the inflow and infiltration more aggressively to achieve reductions.

Preventing those increases is of the utmost importance in dealing with regional sewer capacity issues. We encourage the future efforts and ongoing efforts to allocate funds for illicit discharge detection and elimination, detection of cross-connections and human fecal contamination, such as the work that's been started by MMSD and Sandra McClellan, as well as implementing new technologies to seal up the cracks and leaks in the

sewers.

We hope that MMSD, as well as other municipalities, move beyond holding the line on inflow and infiltration and move to aggressively decreasing it through regulations, incentives and enforcement actions.

We also -- While we definitely support increased secondary capacity at both South Shore and Jones Island, we continue to believe that sewage blending is unacceptable. We feel that blending or diversion around any stage of sewage treatment presents a threat to human health.

Although we understand that currently MMSD blends sewage, that they're in compliance with their permit, we feel the permit doesn't have standards for parasites, and viruses, and other bacteria that can make people sick.

At present blending is not allowed at South Shore, and we would be against any permit modifications allowing this to occur in the future.

We sincerely hope the physical chemical treatment pilot project is successful. However, if it's not successful, we don't agree that the next logical option should be sewage blending.

We support all the water course

improvements that Mike mentioned, the dam removal, the removal of concrete lining, impediments to fish migration. We're very strongly supportive of that, as well as all the collaborative efforts that are being talked about right now to implement the SEWRPC plan.

And we also encourage SEWRPC in their initial recommendations to come up with a more concrete recommendation on how to address the illicit discharges, as well as how to deal with problem outfalls that are discharging into our waterways.

And there are many of those where we're having a really hard time finding where the illicit connections are coming in because they're draining huge surface areas of the city. And so we feel that we need to actually look at some end-of-the-pipe treatment systems and other emerging technologies that are out there.

That was something that SEWRPC initially recommended as part of the plan. However, in the Technical Advisory Committee there was significant concern on the part of municipalities about how much that would cost and -- However, we really feel that it's important to look at those

end-of-the-pipe treatment systems, which have been successful in many other communities, and, you know, perhaps starting some pilot projects to look at that type of technology and whether it's worth looking at in the future.

And I think that's about it. We support all the nonpoint efforts in the plan. As Mike mentioned, full, you know, implementation of those parts of the plan are unlikely, based on the lack of state funding for NR 151, so we strongly support, you know, the state funding for the nonpoint initiatives and looking at more innovative sources of funding, to make sure, in particular, the agricultural component of the NR 151 is implemented.

The town utility district concept which Mike mentioned, to deal with private on-site systems, inspections of septic systems in the rural areas, there's pretty much very little funding right now and is very important.

And supporting all of the fertilizer reductions, co-ag reductions, et cetera, as well as protection of the primary environmental corridors.

So thanks for listening. I felt that someone needed to speak, so I figured I'd just do

my little stumpage but -- Thanks.

Cheryl, C-H-E-R-Y-L, Nenn, N-E-N-N, and I'm with Friends of Milwaukee's Rivers. Thank you.

MR. SCHMIDT: Thank you, Cheryl. Do we have anybody else that would like to make a public comment at this time? Again, you do have the option to do it in writing and get it to us. Yes, ma'am.

MS. CORRES: Haven't filled this out yet but --

MR. SCHMIDT: So long as you do before you leave. Give your name and address.

MS. CORRES: Hi. My name is Vivian Corres, C-O-R-R-E-S. I live in Milwaukee.

And I just want to say that I support the position of Milwaukee's -- Friends of Milwaukee's Rivers. And this summer the Friends of Milwaukee's Rivers held a program, an educational program, for seniors. I think we were about 50 in the program. And even though there's not many of us here tonight who participated in that program, and I came late because I was at a class, you should know that there are a lot of us as concerned citizens who do approve of the kinds of things that the Friends of Milwaukee's Rivers do.

And I think the strength is, if we're going to have any kind of viable society, that public officials need to work and listen to these public citizen volunteer groups, and maybe some people get a little bit of money because they have to live, and then there's a whole slew of us who are volunteers who support the few people that are working in these citizen-based groups.

And if you listen, things can be done. We're not at odds against each other. So I would highly recommend that you listen and take back the comments from Friends of Milwaukee's Rivers, because they're our citizens.

I'll be taking fifth graders out to count little creepy-crawlies next week with the Urban Economy Center. There are lots of things that we do. And we promote among our friends, and rain barrels, and all these other kinds of things.

So listen to us. And we're all on the same side, if you listen.

Thank you very much.

MR. SCHMIDT: Thank you, Vivian. Anybody else care to comment this evening?

(No response.)

MR. SCHMIDT: Again, if you're not

06:19 commenting tonight, I would encourage you to do so
06:19 by the 24th. As Mike indicated, we have a tight
06:19 deadline to comply with.
06:20 And I do appreciate all of you attending
06:20 tonight. We have another meeting scheduled for
06:20 next Tuesday evening at the Riveredge Nature Center
06:20 on the Ozaukee/Washington county line. If you
06:20 think of something you want to say, and you want to
06:20 say it out loud, you're welcome to come there.
06:20 I believe, if you have any questions, our
06:20 staff will be staying around briefly after the
06:20 meeting, until close to 7:00 o'clock, or
06:20 thereabouts. Feel free to ask any one of them a
06:20 question.
06:20 So thank you all for your participation
06:20 and hope to see you at upcoming meetings. Thank
06:20 you.

* * * * *

STATE OF WISCONSIN)
) SS:
COUNTY OF MILWAUKEE)

I, KATHLEEN E. CARTER, a Certified Realtime Reporter, Registered Merit Reporter and Notary Public in and for the State of Wisconsin, do hereby certify that the above proceedings were recorded by me on October 16, 2007, and reduced to writing under my personal direction.

I further certify that I am not a relative or employee or attorney or counsel of any of the parties, or a relative or employee of such attorney or counsel, or financially interested directly or indirectly in this action.

In witness whereof I have hereunder set my hand and affixed my seal of office at Milwaukee, Wisconsin, this 19th day of October, 2007.

____
Notary Public
In and for the State of Wisconsin

My Commission Expires: March 16, 2009.

SEWRPC REGIONAL WATER QUALITY
MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS
PUBLIC INFORMATION MEETING/PUBLIC HEARING

Riveredge Nature Center - Newburg
October 23, 2007

Name	Representing	Address	Telephone Number/E-Mail Address
Pat Twohig	Village of Campbellsport	329 Windell 53010 Campbellsport WI	920-533-4282 PatTwohig@Yahoo.com
Ginny Plumeau	Cedarburg Science	2433 W Hawthorne DR Saukville WI 53080	gplumeau@cedarburgscience.com
Karen Skuldt	Watershed Watchers	6757 Eastwood Trail West Bend WI 53090	kskuldt@nconnect.net
Mark Pietrowicz	City of West Bend	1115 S. Main St. West Bend, WI 53095	262-335-5122 pietrowm@ci.west-bend.wi.us
Rose Hassleider	Ozaukee County Land Conservation		920-994-4448
Marsha Burzynski	WDNR	2300 N. MLKing JR Dr Milw WI 53212	414-263-8708 Marsha.Burzynski@WI.Gov
Judith A. Neu	City of West Bend	1115 S. Main Street West Bend, WI 53095	262-335-5130 cityeng@ci.west-bend.wi.us
Tim Bate	MMSD	260 W. Seeboth St. Milwaukee, WI 53204	414-225-2156 tbate@mmsd.com
Andrew Struck	Ozaukee Co - Planning & Parks	121 W. Main Street P.O. Box 994 Port Washington WI 53074	262-238-8275 astruck@co.ozaukee.wi.us

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SEWRPC REGIONAL WATER QUALITY
MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS
PUBLIC INFORMATION MEETING/PUBLIC HEARING

Riveredge Nature Center - Newburg
October 23, 2007

Name	Representing	Address	Telephone Number/E-Mail Address
Marylyn John Carl John (2)	Self	West Bend 1061 Tuscola Ln.	262-675-6725
Timothy John	"	707 N. Lake Rd. Oconomowoc, 53066	414 475-7500 work
Eric Ryer	T. Cedarburg		262-377-4509
Andy Holschbach	Ozaukee Co.	P.O. Box 994 Port Washington WI	262-284-8271
Norma Pollkamp Bylow	~~Rec~~ citizen	24518 Sandy Point Dr	262-

#131636 V1 - RWQMPU PUBLIC MTG SIGN IN SHEET

PUBLIC INFORMATION MEETING AND HEARING ON REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

Proceedings taken before ANDREA STEWART, a Registered Professional Reporter and Notary Public in and for the State of Wisconsin, at Riveredge Nature Center, 4458 West Hawthorne Drive, Newburg, Wisconsin, on October 23, 2007, commencing at 4:30 p.m. and concluding at 7:00 p.m.

A P P E A R A N C E S

Southeastern Wisconsin Regional Planning Commission:

Mr. Gary K. Korb,
Regional Planning Educator.

Mr. Michael G. Hahn,
Chief Environmental Engineer.

Mr. Dan Schmidt,
Chairman of Technical Advisory Committee and SEWRPC Commissioner.

Mr. Ron Printz,
Principal Engineer.

Mr. Joe Boxhorn,
Senior Planner.

TRANSCRIPT OF PROCEEDINGS

MR. SCHMIDT: Good evening, my name is Daniel Schmidt. I'm the chairman of the Advisory Committee for the Milwaukee River Watershed.

Just a brief -- long history on that committee. We have been meeting since 2003. The committee consists of 32 members. And I would indicate that we have met once a month or once every other month since the beginning of this committee and there's a couple committee members here that can attest to that.

At those meetings over the last four years, we've had about a two-thirds attendance at those meetings. So, when you're looking at a committee of 32 and that type of attendance, I think it speaks highly of all of those members.

As Mike indicated, this is going into the public common portion of the meeting, and I will do that in just a minute. But, what we would ask, if you haven't, you can sign a comment sheet and put your comments down in writing. You can state them publicly, we will get to that in just a moment, and the court reporter will take those. You can also submit them online or in writing to SEWRPC. But we ask that that be accomplished by

tomorrow afternoon. As Mike indicated, we have some strict deadlines we're trying to make and we ask for your cooperation regarding that.

We will go into the public comment portion now. I would ask that if you wish to comment, you first state your name clearly, and please stand up when you're doing that, as well as your address. And if you are affiliated with any unit of government, county, any public or private agency, please state that as well. It will help us tremendously. So, I open it up for public comment at this point.

MS. ROSE HASS LEIDER: Well, since no one wants to comment, I will. I'm notorious for that.

MR. SCHMIDT: Please state your name.

MS. ROSE HASS LEIDER: My name is Rose, second name, H-A-S-S, third name, L-E-I-D-E-R. I'm an Ozaukee County Supervisor for District No. 2 which has unincorporated villages and many rural people and a great deal of the farming area, parts of three different townships, the rural ones to the north.

And for many years, I sat on Great Lakes boards, and especially representing Lake Michigan, and when I hear them talk tonight and we're talking water quality, maybe somewhere in the future or before this is done, I think you should do something to protect the Great Lakes out there, Lake Michigan. That's part of the lifeline of the people. No water, no life.

And I'm telling you, when they talk about selling the water away, that could be a heck of a disaster for the people that live in the Midwest. And I'm sure SEWRPC somehow can tell you the amount of water and usage and all that type of thing because they certainly are involved with doing surveys and mapping and that type of thing.

And because I think the Great Lakes are the greatest thing we have, our asset for life here, I'm asking that maybe you can address that in here, or isn't that allowed?

MR. HAHN: Well, we certainly will address your comment and we appreciate those comments. This plan is intended to address the quality of the Great Lakes as it relates to the near shore Lake Michigan area.

In terms of the quantity, that's a separate planning effort that we're working on right now, there's a regional water supply plan

going on, and that would address some of those other issues that you mentioned.

So, on those two fronts, we're addressing them. This plan is limited primarily to water quality issues and water quality in the streets and the near shore area of Lake Michigan.

MS. ROSE HASS LEIDER: That would be another study?

MR. HAHN: There's a regional water supply plan that's being conducted right now.

MR. SCHMIDT: That's being conducted in -- I believe I'm correct, that should start winding to the point of public hearings and so forth next spring.

MR. HAHN: Yeah, sometime next year, yes.

MS. ROSE HASS LEIDER: And the other part of my comment you're probably not going to like very well, that's subject number two, is the raw sewage going into Lake Michigan. For years, it's been my pet peeve, because you blame the cows and the farmers for everything, and I think the raw sewage is the most disasterous of anything you can put in that lake because we need that water for drinking and a lot of purposes.

Kids swim in it. People swim in it. We eat the fish. In fact, you can't even get chubs anymore. They're gone. You have to import them to smoke them. And I think it's a shame, a downright shame that for years and years, the raw sewage is there.

And I sit here and look at a map on that screen, "Oh, we're doing better, we're doing better." Yeah, when I got a cold, if I take a lot of medicine, I'm doing better, but it's probably back in another month. There's no reason why they can't address it and do something.

Yeah, I know it takes money. But a fine doesn't cost much, so we let it go and then come back next year and say, "Well, we did a little better." And I know Milwaukee Metropolitan Sewer District is there and trying to come up with some ideas, but I can't see why they can't do something and protect that lake from the raw sewage.

Because I think it's all political. Thanks, guys. But maybe I'm counting on you to do something and not just tell me that it's getting better. Thank you.

MR. SCHMIDT: Thank you, Rose. Would someone else -- yes, ma'am.

MS. MARILYN JOHN: Yes, I read some --

MR. SCHMIDT: Excuse me. State your name and --

MS. MARILYN JOHN: Marilyn John, Watertech Washers (phonetic). I read some of the report on the web, and I got a sense that there was a great deal of contamination in the water and that it was affecting fish. And this kept going throughout the pages that I read, and I know there's more to it than what I read, but I was a little discouraged with that.

And I was wondering what the plan is to correct this because we also have a lot of wetlands that are being destroyed. And there's an article in the paper where -- was it Mr. Lieder (phonetic) -- who was concerned about the number of wetlands that were being destroyed and they were really upset about this. Well, the rest of us are upset about this, too.

So, with all of this great planning and we see all this reporting, what is -- I know that there is an implementation. But is this going to take care of some of these problems, or is it just another big show and nothing is going to really come of all of this?

MR. SCHMIDT: I'll try and address a little bit of it, and Mike can maybe jump in. We're hopeful that this will take care of some of that. But as Mike also indicated, we want and need all 88 municipalities and nine counties to support those recommendations that are before us.

And as Rose indicated, money is always a very strong factor in everything and, you know, we're trying to put in a list of grant information out there. We've had people, you know, from the DNR on the committee. Everybody is bringing their knowledge forward. And we're very hopeful that we can help and improve the situation. Mike, did you --

MR. HAHN: Sure. The plan is intended to address the kind of problems that you talk about. Now, it's not probably going to be talked about and addressed quite as fully as we might like at this point, but we have come up with a good approach to achieving improvement in water quality.

The difficult part is implementation. It always had been implementation. And since the 1979 plan was issued, a lot has been done in terms of implementation to improve water quality by

controlling point sources and an additional amount has been done for not-point sources. This just carries that even further.

And as Dan mentioned, it will be a challenge coming up with the funding necessary to meet these goals. But we have laid out a roadmap, any way, as to how to get there and we will be pursuing implementation in the future.

MS. MARILYN JOHN: So the funding is the barrier here?

MR. HAHN: Yeah, it's a huge impact, certainly.

MS. MARILYN JOHN: What has been done to get some the funding in the past and in the future? Because this is a very serious subject. And I haven't even gotten to the wetlands yet. But I would like to know what is going to be done about the contaminants in the water, to start with.

MR. HAHN: Well, I can't give you a short answer. We'll try and address it a little bit more. The whole report says what's going to be done about contaminants and what I just presented said what would be done about contaminants. It's detailed in the report, but

this was just kind of an overview.

MS. MARILYN JOHN: Well, I read it and I didn't get the sense that it was anything imminent. You know, there are a lot of contaminants out there that -- they're in the streams and they're in the lakes and they're going to be in our bodies, eventually.

MR. SCHMIDT: Again, as far as the specifics, you would have to go back to the report. We're trying to summarize something that's very detailed in a very small amount of time. And if -- one of the hurdles is if we don't have the recommended plan -- and that's what it is, a recommended plan put forward by this Advisory Committee to the Regional Plan Commission.

And as indicated earlier, the Plan Commission is the agency that is looked at for their recommendations and that's how the grants and funds will be made. If we wouldn't have that plan, those grants wouldn't be forthcoming to any one of our 88 communities or nine counties.

MR. HAHN: And I just might say that we will -- it's our intention, all of the formal comments made at this public hearing portion and

also any written comments we receive, we will address those in the plan. So, I'm doing my best to do it now, but I think the best place is in the summary and conclusion section of the plan. We will address the comments, and then we can cite directly, maybe, toward specific parts of the plan with the issues that you phrase.

MS. MARILYN JOHN: Can we also send in comments?

MR. SCHMIDT: Yes. But we would ask that you try and get that in no later than tomorrow because we are on a very strict time table. Yes, sir.

MR. TIMOTHY JOHN: I'm Timothy John and I'm a member of Milwaukee Rivers, and I'm working on a book to try and understand and explain some of these things.

Have you done much work trying to determine what, let's see, a pre-settlement river looked like? You know, let's say we could and we will continue to clean, clean, clean. Well, there are some minerals and oxygen levels, I'm sure, fluctuating from season to season. But is that -- has anything been done to establish what would be a perfect scenario that is agreeable to different experts?

MR. HAHN: That's a very good point, and that was also raised by our Advisory Committee, and it has not been done, it wasn't part of this study, but it would be an interesting exercise to try and represent those kinds of conditions.

Now, to what degree of certainty we can represent them, I'm not sure. Because it would be difficult to really turn back the clock in terms of even knowing what process these might have been working back at that time in a physical nature.

And if you look, there's a display board, not one of ours, actually, but one of Riveredge's in the back of the room, that shows just the way the stream system evolved over time and it's been highly modified in certain areas. So, it would be difficult to reproduce that, but it would be very instructive to know what kind of a background level would be.

MR. SCHMIDT: Just as a note, we do have a member on our committee from Friends of Milwaukee Rivers. Cheryl (phonetic) is on it. Yes, ma'am.

MS. ROSE HASS LEIDER: I have just one more thing. Rose Leider again. And this is

positive for what's going on. And I have to thank -- Andy Hulsbuck (phonetic) is the head of our land conservation in Ozaukee County, and him and his crew do a very good job.

And one of the things they have been pushing the last ten years is for -- I have farms and a fine herd of cattle, and what they're pushing is the manure storage so that it can be controlled and not put out on the fields during winter when it runs in the streams.

Well, we listened to Andy, and we put in the harvester and manure storage and took the milk house waste and ran it into the harvester, and it's probably the best thing we have ever done on the farm, Andy. You talked us into it, it's working wonderful, and it's helping the environment.

And I compliment land conservation in Ozaukee County. I'm on that board, too. But I'm telling you, they're out there trying to do their job well, and I personally know it worked. Because that's, like, five years, and we really, really know that it's helping the environment. It was worth every cent it cost. So, that's a plus for what you're talking --

MR. SCHMIDT: Thank you. And Andy is also one of the 32 on the committee and he's been very active.

MS. MARILYN JOHN: That's an example of implementation and I think that's excellent.

MR. SCHMIDT: Do you have any other comments? Well, on my behalf, as well as SEWRPC's, I would like to thank you all very much for attending this evening. And the court stenographer will stay for a while, as well as the gentlemen, and try to answer any questions privately you have, or if you want to comment privately and record it, you can still do that. I appreciate you coming very much. It's been a four-year process to get to this point, and we appreciate it, all of us. Thank you.

(Proceedings concluded at 7:00 p.m.)

STATE OF WISCONSIN)
) SS:
COUNTY OF MILWAUKEE)

I, ANDREA STEWART, a Registered Professional Reporter and Notary Public in and for the State of Wisconsin, do hereby certify that the above meeting was recorded by me on October 23, 2007, and reduced to writing under my personal direction.

I further certify that I am not a relative or employee or attorney or counsel of any of the parties, or a relative or employee of such attorney or counsel, or financially interested directly or indirectly in this action.

In witness whereof I have hereunder set my hand and affixed my seal of office at Milwaukee, Wisconsin, this 24th day of October, 2007.

____
Notary Public
In and for the State of Wisconsin

My Commission Expires: May 17, 2009.

October 24, 2007

Mike Hahn
Chief Environmental Engineer
SEWRPC
W239 N1812 Rockwood Drive
P.O. Box 1607
Waukesha, WI 53187-1607

Dear Mike,

On behalf of Friends of Milwaukee's Rivers (FMR) and our partners at the Sierra Club Great Waters Group, the Milwaukee County Conservation Coalition, and the Natural Resources Defense Council, thank you for the opportunity to comment on the findings and recommendations in the Southeastern Wisconsin Regional Planning Commission's (SEWRPC) Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds (Plan). This Plan includes recommendations pertaining to land use, surface water quality and groundwater quality in the Greater Milwaukee Watersheds and nearshore areas of Lake Michigan. This Plan was prepared in partnership with the Milwaukee Metropolitan Sewerage District's (MMSD) 2020 Facilities Plan, which identifies the facilities, programs, operational improvements, and policies (FPOPs) required by the year 2020 to meet the existing regulatory framework and permitting requirements in the State of Wisconsin.

FMR appreciates the opportunity to serve on SEWRPC's Technical Advisory Committee, and we submit the following comments in a spirit of cooperation to ensure that SEWRPC's Regional Water Quality Management Plan protects our water quality, wildlife habitat, public health, and quality of life to the greatest extent possible.

Comment: The proposed 5-Year Level of Protection for Sanitary Sewer Overflows (SSOs) is illegal under Federal and State law. MMSD (and other treatment plants) must eliminate SSOs and address both point and non-point sources of pollution affecting our waterways.

As stated in Plan documents for both the MMSD 2020 Facilities Plan as well as the SEWRPC Plan, MMSD is setting forth ongoing investments and facilities improvements to be made in order to provide a 5-year target level of protection (LOP) for sanitary sewer overflows (SSO) and "adequate treatment" under the projected 2020 population and land use conditions. This essentially states that sanitary sewer overflows of sewage will continue to occur and can not be eliminated in the next 20 years, nor will striving for this be a goal of this water quality plan. Sanitary sewer overflows are clearly illegal under the Clean Water Act and prohibited under State permits designed to protect our public health and environment. Planning for SSOs as part of the MMSD Facilities Plan and related Regional Water Quality Plan is unacceptable. While we acknowledge that there may be special extreme weather conditions that cause SSOs, we agree with recent US EPA guidance that prohibits affirmative defenses for dumping sewage, instead giving our State and Federal regulatory agencies appropriate enforcement discretion to deal with these special circumstances. Furthermore, the law exists to create a "level" playing field, and we are concerned about the regional and statewide precedence of illegally allowing MMSD to have a 5-year level of protection. This is also not fair to the other treatment plants in southeastern Wisconsin who are complying with the law and making the necessary expenditures to keep their sewerage systems well maintained.

Comment: Cost effectiveness can be used to prioritize future actions but not to justify continuing pollution of our waterways.

Although we realize that eliminating SSOs is a costly endeavor, the Clean Water Act does not allow for overflows in the name of cost effectiveness, and zero overflows need to remain the goal. While we agree that costs should be factored in when prioritizing future actions, cost cannot be used as an excuse to continue to violate the law and pollute our waterways. Citizens should not have to choose between safe and clean drinking water and adequate sewage treatment, or between having sewage in our basements and sewage in our rivers. These are false choices.

Comment: We encourage SEWRPC to set more concrete water quality goals, which allow agencies and organizations to focus time and attention on addressing specific problems, as well as ensure that we all remember the ultimate goal of improving water quality.

As currently written, the ultimate goal of the SEWRPC Plan is to develop a watershed based plan that addresses water pollution sources cost-effectively and meets designated water use objectives and water quality standards to the degree possible. This is vague and uninspiring. Establishing more outcome focused or performance driven goals (e.g. Milwaukee River swimmable by 2010), provides some context for where agencies should focus their efforts, and performance based goals also better resonate with the public as they are clear and easy to understand. Such goals would also give us a way to continually communicate our progress and be a stronger motivator for action.

Comment: The SEWRPC Regional Water Quality Plan (208 Plan), must comply with Clean Water Act fishable and swimmable goals, and address antidegradation requirements regardless of cost-effectiveness.

The Regional Water Quality Plan does address both watercourse and habitat components, which along with physical/chemical water quality and compliance with discharge permits collectively influence the quality of our surface waters. However, given the vagueness of the Plan and the lack of concrete objectives for water quality improvements, as mentioned above, it seems doubtful that this Plan will adequately address fishable/swimmable goals and antidegradation requirements (e.g. backsliding or deteriorating water quality is prohibited under the law) under the Clean Water Act. There are no concrete goals, objectives, or timelines for ensuring that our waterways don't further degrade nor improve to meet fishable/swimmable goals. Last week, the Clean Water Act turned 35 years old, and we are still far from fishable/swimmable waters.

The waters of the Milwaukee River Basin have not been protected as envisioned under the Clean Water Act, and decisions have been made over the years by the regulatory agencies such that the goal requirements of the Clean Water Act have not been met. Although many of those decisions were logical and sound at the point in time they were made, we are left with rivers that do no

meet fishable/swimmable requirements and current water quality standards that do not protect fishable/swimmable uses as they should. In addition, many of our local waterways have "variance" standards, which provide them with much lower levels of protection than baseline State water quality standards. This is in stark contrast to all our available data that shows the waters of the Milwaukee River Basin are being increasingly used for all forms of recreation: fishing, canoeing, kayaking, sculling, and in some areas, wading, swimming, and water skiing.

We will never meet fishable/swimmable standards without looking comprehensively at both point source and non-point source controls, as well as a mix of "soft" or "green" approaches and "grey" or "infrastructural" approaches. The SEWRPC Plan has made a good effort to identify both point and non-point source solutions; however, acknowledging that there is currently little funding to deal with many of these problems. Coupled with lack of clear goals, it seems that there are little incentives or disincentives to push us away from the status quo. In order to manage both non-point and point source controls to meet fishable/swimmable standards, we will need to increase sources of funding and find more innovative solutions to improving water quality. We realize that this is politically unpopular; however, pretending that we can improve water quality by shifting money from infrastructural projects to non-point demonstration projects without raising additional funding levels is unrealistic. Again, we cannot practice an "either/or" approach to pollution (e.g. spend all our money on non-point pollution to get more "bang for our buck") and expect to meet fishable/swimmable standards throughout both our rural and urban waterways. We must strive to meet general use recreational standards in all of our waterways, and work to upgrade our stream health and not continue to meet only variance standards. This will require creative funding and policy mechanisms, which have not been identified or recommended in the Plan.

We understand that MMSD has been talking about watershed permitting, watershed trading, and other mechanisms, which could improve water quality. Given the role of SEWRPC in planning for regional water quality, it would seem appropriate that SEWRPC analyze existing models in use throughout the country and make some solid recommendations of crucial policy and technical components that should be part of these types of efforts.

Comment: Holding the line on inflow and infiltration (I/I) is not enough. We must go after I/I more aggressively and achieve reductions.

Preventing increases in infiltration and inflow (I/I) of our sewerage infrastructure (e.g. leaky pipes, manholes, etc.) is of the utmost importance in dealing with our regional sewer capacity issues. We encourage future efforts to allocate funds for illicit discharge detection and elimination, detection of cross-connections and human fecal contamination of stormwater (e.g. Great Lakes Water Institute work on *E. bacteroides* monitoring, etc.), as well as implementing new technologies to seal up cracks and leaks in our sewers through the use of "liners" and other new practices. However, we hope that MMSD and other municipalities could move beyond "holding the line" on I/I and move to *decreasing* I/I through increased regulations, incentives, and enforcement actions. MMSD's 2010 Facilities Plan called for a 5% decrease in I/I, and the goal for I/I reductions for the 2020 Plan and SEWRPC Plan should be even more stringent. Given the probability of increasingly volatile storms with global warming, we need to do much more than "hold the line" on I/I if we hope to have enough existing sewer capacity to deal with wet-weather events.

Comment: While we support increasing secondary capacity at South Shore Treatment Plant, sewage blending is unacceptable.

We encourage additional secondary treatment capacity at both Jones Island and South Shore Treatment Plants to eliminate the need for sewage blending. Blending or diversion around any stage of sewage treatment presents a threat to human health. We understand that when MMSD "blends" sewage at Jones Island that they are in compliance with their State WPDES permit; however, this permit does not have standards for parasites, viruses, and other bacteria that can make people sick. At present, blending is not allowed at South Shore Treatment Plant and we would be against any permit modifications allowing this to occur. We hope that the physical-chemical treatment pilot project currently being proposed is successful. However if it is not successful, we do not agree that the next option should be blending based on cost-effectiveness.

Comment: We do not support the efforts of MMSD and customer communities to obtain regulatory recognition of the integrated nature of the MMSD system.

We understand that the effort by MMSD and some customer communities to obtain regulatory recognition of the integrated nature of the MMSD system by EPA is to ultimately lead to possible elimination of the distinction between tunnel-related SSOs and CSOs. This effort fails to recognize the very different nature of SSOs and CSOs, as well the fact that SSOs are illegal under existing federal law, and it is very unlikely that the Clean Water Act would be changed for southeastern Wisconsin. If during rain events, the physical-chemical constituent elements of SSOs and CSOs is similar as suggested by local consultants, than that just stresses the very dire state of our current infrastructure, allowing excessive inflow and infiltration into our separate sewer system, and likewise the need to address this I/I.

On a related note, there has been extensive emphasis on focusing on fecal coliform as a parameter of concern in both the SERWPC and MMSD Plans and models, as well as graphs created showing that fecal is mostly coming now from non-point and not point sources. These graphs are meant to illustrate that we are much better off spending our "next dollar" on non-point sources of pollution instead of point sources of pollution. However, this focus on fecal coliform and interpretation of the data is in many ways disingenuous and completely off target. While we realize that non-point pollution is a significant source of pollution, we can not fail to recognize several things. First, that fecal coliform as an overall parameter of water quality and public health is not ideal. It is ubiquitous in the environment, and not normally indicative of human health risk. For this reason, EPA has been mandated to come up with a new parameter for measuring beach health, and researchers such as Sandra McClellan (with support by MMSD) have been researching better bacterial indicators that are more indicative of human health risk. Second, just focusing on fecal coliform and the predominant non-point sources of this bacteria do not address the fact that SSOs and CSOs, while a smaller piece of the "pie" as far as sources, contribute other bacteria, viruses, and parasites that make people sick. Furthermore, much of the fecal coliform and pollution in the "non-point" urban and rural stormwater is likely coming from failing sewerage infrastructure in the urban areas, and failing septic in the rural areas, so is not without human influence. It seems clear that spending more money on typical non-point BMP projects, while sorely needed, will not address our bacterial loads if we fail to deal with these so-called "nonpoint" sources that are really point sources of pollution. This approach will also not lead us to fishable and swimmable waters.

Comment: We support watercourse improvements to improve physical-chemical water quality as well as fishable/swimmable goals.

Although some people don't feel that the costs of watercourse improvements such as concrete channel removal and dam removal warrant the minimal improvements in water quality, we disagree. Removal of concrete channel and other related stream restoration projects to naturalize our urban streams, improves water temperature and water quality, provides resting places and habitat for fish, and makes our streams less dangerous to adjacent communities especially during flooding events. We support funding for watercourse improvements identified in the SEWRPC plan, as well as recommendations on eliminating barriers to fish migration where possible such as dams, perched culverts, etc.

Comment: We support collaborative efforts to implement solutions to non-point runoff and other sources of pollution as identified in SEWRPC's Regional Water Quality Management Plan.

We encourage SEWRPC and MMSD to continue to work collaboratively with the community toward establishing a region-wide commission (e.g. Milwaukee Regional Partnership Initiative) to help plan and implement solutions for non-point runoff and other sources of pollution that affect water quality and quantity in southeastern Wisconsin's watersheds. However, we encourage these agencies to meaningfully involve the public at early stages of subsequent planning efforts, whether it be more specific sub-watershed plans created as a follow-up to the current planning effort or a TMDL planning process. Moving forward, it is recommended that the public be allowed the opportunity to review how the models are set up, specifically data (both depth and breadth) that are being used as inputs to these models, data gaps, model assumptions, etc. We would also recommend external peer review of these new modeling efforts to ensure that we are doing everything we can to protect our surface waters and capitalize on successes and learning experiences of others.

Comment: We encourage SEWRPC to come up with more concrete recommendations on how to more aggressively deal with illicit discharges to our waterways, as well as how to deal with problem outfalls discharging into our waterways where illicit discharges can not be detected. These may include end of the pipe treatment systems and other emerging technologies.

Although many municipalities are understandably concerned about the costs of such stormwater treatment technologies, we feel that it is appropriate to conduct research and/or implement demonstration project(s) locally that could help determine the effectiveness of end of the pipe treatment systems, which have been very successful in other communities with failing infrastructure where illicit connections or infrastructure problems can not be detected due to the large drainage areas connected to these pipes. Our extremely high bacteria levels in many of our urban streams, coupled with low funding levels for detecting illicit discharges, warrant more examination of these technologies.

Comment: SERWPC has provided solid evidence that orthophosphate, which was added to the water treatment systems of many area communities in the late 90s as an anti-corrosion inhibitor for drinking water pipes, is causing demonstrable spikes in phosphorus in many of our area rivers. We stand by SEWRPC's recommendation that municipalities

using this inhibitor look for alternatives to orthophosphate that still protect our drinking water supply as well as minimize nutrient pollution of our rivers and Lake.

Increasing levels of phosphorus from a variety of sources, including fertilizer use and anti-corrosion inhibitors (added to limit leaching of lead from pipes into drinking water), are likely contributing to algal blooms of *Cladophora* affecting our beaches. These blooms are being exacerbated by zebra mussels, which are contributing to increased clarity of the water and cycling of nutrients, which create conditions for this algal growth. Even though orthophosphate is not the greatest source of phosphorus to our rivers, we need to look at easy ways and "quick wins" to reduce nutrients in our rivers, as well as legislative and policy avenues, which could include phosphorus bans in fertilizers, dishwashing and laundry detergents, etc.

Comment: We support the proposed protection of both Primary Environmental Corridors and Agricultural Buffers as proposed in the land use element of the Plan.

Given the large component that non-point runoff from both urban stormwater and agriculture play in polluting our waterways, it is appropriate to recommend the protection of our riparian corridors in the Plan. Furthermore, it is appropriate that agricultural buffers be at least 75 feet wide, which is consistent with both State Shoreland Development Rules (NR115) as well as scientific consensus on the buffer width needed to adequately protect our waterways. We would encourage SERWPC to prioritize where these buffers should be created, if possible, based on information from our models and taking in consideration erodibility of area soils, slope of riparian areas, land use, etc. This would be a great tool for area land trusts and agencies that acquire land in the area—and could target properties whose conservation would be most protective of water quality.

Comment: We support SEWRPC recommendations to create town utility districts to deal with inspection, and possibly repair, of private onsite treatment systems or septic systems.

Given lack of funding for inspection of private onsite treatment systems throughout Wisconsin and the high probability that many of these systems within the area are old and potentially failing, it is prudent that towns and municipalities with residential septic systems create a mechanism, similar to stormwater utility districts that are being employed throughout the area (e.g. Milwaukee, Elm Grove, etc.), to provide a source of funding for inspection, and perhaps maintenance, of septic systems. Given the high bacterial levels in our local rivers, we must do a better job of identifying and eliminating bacteria both in our urban areas (with more illicit discharge detection) and in many rural areas (with control of septic releases and agricultural runoff).

Comment: We urge SEWRPC to recommend state regulations and local ordinances to more effectively deal with both urban and rural non-point pollution.

We support SEWRPC's efforts to recommend the reduction of fertilizer use and road salt that impair our local waterways with nutrients and chloride respectively, as well as their efforts to promote best management practices to limit land use practices that cause runoff that pollutes our waterways. SEWRPC did recommend ordinance changes in areas where runoff is currently affecting inland lakes, although stopped short of advocating for a phosphorus ban in all fertilizers. We would encourage SEWRPC to readdress these recommendations and recommend that all municipalities, with discharges to either our inland lakes or rivers, consider ordinances

banning phosphorus from fertilizers, as well as encourage the use of road salt alternatives, which are friendlier to our waterways.

Likewise, we support SEWRPC recommendations relating to fuller implementation of NR 151 runoff rules, manure and nutrient management, controls on barnyard runoff, managing milking center wastewater, and restricting livestock access to streams. We would recommend that SEWRPC recommend state rules or county ordinances to restrict livestock access to streams, as there are currently no rules to deal with this situation. We have had problem farmers in the past brought to our attention, and if the counties do not provide cost-share funding or don't think these farms are a priority given their limited funding levels, farmers are unwilling to restrict access to streams of their livestock. Not only do these livestock and their waste add to our significant bacterial loads in our rivers, they also cause extensive disturbance of the streambanks and riparian habitat, contributing sedimentation to our waterways.

Comment: SEWRPC should propose more specific management measures and monitoring to deal with emerging pollutants of pharmaceuticals and personal care products if possible.

While the Plan does address these emerging pollutants in a general sense as well as provides the limited information that we do have on detection and levels of some of these products in our waterways, it falls short of offering recommendations to deal with these emerging pollutants, other than the recommendation to conduct pharmaceutical and personal care product collection programs. There is already considerable science showing the effects these pollutants are having on aquatic organisms that are exposed to a spectrum of substances that persist in treated effluent from sewage facilities. Given that EPA estimates that sewage treatment only removes roughly 60% of pharmaceuticals and personal care products, while acknowledging that treatment can span the spectrum of complete treatment for some substances to nonexistent for others, we would urge SEWRPC to make recommendations for sewage treatment facilities on how to more effectively address these contaminants, where possible. Likewise, these substances are also showing up in some of our area groundwater, presumably coming from leaky septic systems and sludge spread on the land (both from sewage treatment plants and livestock waste). We understand that little is known on this subject, but would recommend that SEWRPC make recommendations where possible. We also advocate for increased monitoring for substances of particular concern, both in our surface waters as well as effluent of our treatment plants and influent waters for our drinking water facilities.

Comment: We support SEWRPC recommendations to more aggressively identify and address local sources of beach contamination.

Given recent monitoring information that much of our beach contamination comes from local sources and stormwater runoff, it is prudent to recommend more comprehensive monitoring to identify and address sources of beach contamination, especially of bacteria. If local municipalities can not find the sources of bacterial contamination, they should ensure that these beaches are closed when they are not safe for the public to use. While many local beaches in Milwaukee are monitored extensively, there are many others that are only monitored weekly or less along the lakeshore, and residents should know that these beaches are not being monitored or frequency of monitoring through signage or another means so they can make their own decisions about beach use. Furthermore, if bacteria sources can not be found, municipalities

should be urged to provide end of the pipe stormwater treatment systems and stormdrain filters that would remove considerable amounts of bacteria before it can contaminate local beaches.

Comment: Upgrade citizen based monitoring programs and continue to support existing monitoring by agencies and expand monitoring efforts into local tributaries.

We support the SEWRPC recommendation to continue existing MMSD, WDNR, and USGS monitoring programs, and to continue to upgrade citizen based monitoring programs. These programs, besides providing useful data, connect local residents to their water resources and educate them about their personal impacts on water quality. We also support efforts to modify or expand existing monitoring programs to include more extensive monitoring on our area tributaries, as well as to add fishery and macroinvertebrate monitoring stations along our waterways. These are also programs where citizens could provide much needed monitoring support. The paucity of fishery and macroinvertebrate data for many of our waterways was surprising, and increasing monitoring of these organisms is especially important as we monitor our progress towards fishable and swimmable waters and implement this Plan.

Thank you for your consideration of these comments. Please feel free to call with any questions at (414) 287-0207 ext. 29.

Sincerely,

Cheryl Nenn
Milwaukee Riverkeeper
Friends of Milwaukee's Rivers

Rosemary Wehnes
Midwest Representative
Sierra Club Great Waters Group

Peter McKeever
Chair
Milwaukee County Conservation Coalition

Ann Alexander
Senior Attorney
Natural Resources Defense Council

WRITTEN COMMENT

PUBLIC INFORMATION MEETING AND PUBLIC HEARING

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE
FOR THE GREATER MILWAUKEE WATERSHEDS

October 16, 2007
Downtown Transit Center, Harbor Lights Room
909 E. Michigan Street
Milwaukee, Wisconsin

Name Vivian Corres

Affiliation Concerned Citizen

Mailing Address 1707 N. Prospect Ave. #8D
Milw 53202-1909

Comment I support the comments of FRIENDS OF MILWAUKEE'S RIVERS!

I participated in a training for seniors this summer organized by F of MR. Even though ~~there~~ there are few of us here tonight, be assured that there are many of us who support F of MR.

Add sheets as needed and leave at the registration table or give to a SEWRPC staff member. Or, send following the meeting to the Southeastern Wisconsin Regional Planning Commission.

Southeastern Wisconsin Regional Planning Commission
W239 N1812 Rockwood Drive
P.O. Box 1607
Waukesha, Wisconsin 53187-1607
Phone: 262-547-6721 Fax: 262-547-1103

Regional Water Quality Management Plan
E-mail:mhahn@sewrpc.org
www.sewrpc.org

WRITTEN COMMENT

PUBLIC INFORMATION MEETING AND PUBLIC HEARING

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE
FOR THE GREATER MILWAUKEE WATERSHEDS

October 16, 2007
Downtown Transit Center, Harbor Lights Room
909 E. Michigan Street
Milwaukee, Wisconsin

Name Curt Bolton

Affiliation C of Greenfield

Mailing Address 7325 W. Forest Home
Greenfield, WI. 53220

Comment THE DEEP TUNNEL SHOULD BE CONSIDERED TO BE CONSIDERED A REGIONAL STORMWATER QUALITY FACILITY. THEN FOR MS4 PERMITS, THE BENEFITS IN REDUCTION OF TSS DISCHARGED TO LAKE MICHIGAN SHOULD BE DISTRIBUTED AMONG THE COMMUNITIES THAT PAID FOR THAT FACILITY.

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PUBLIC INFORMATION MEETING AND PUBLIC HEARING

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE
FOR THE GREATER MILWAUKEE WATERSHEDS

October 16, 2007
Downtown Transit Center, Harbor Lights Room
909 E. Michigan Street
Milwaukee, Wisconsin

Name Gregory F. Bird

Affiliation citizen

Mailing Address 2230 S. WoodWard ST. Milwaukee, WI 53207
gfbird@wi.rr.com

Comment
- expand AOC ~~up~~ to entire watershed because of poorly regulated farm practices upstream, loss of riparian/undeveloped lands to farming & other paving development as West Bend, Saukville, Germantown, [illegible] & winter runoff
- include Milwaukee River Environmental Corridor between N. Ave dam site to S. [illegible] to support efforts to establish 'Central Park' in area
- require best-practices WWTP at all facilities
- begin to separate sanitary sewage from surface runoff by sealing leaking lateral sewers with fabric/resin liners, ~~to~~
- finance above by changing financial responsibility from homeowner responsible to main, to homeowner responsible to curb - municipality/sewer district from curb to main - begin mandatory lateral lining
- phase-out snow-melt chemicals in favor of sand & pavement heaters sometimes

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①

WRITTEN COMMENT

PUBLIC INFORMATION MEETING AND PUBLIC HEARING

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE
FOR THE GREATER MILWAUKEE WATERSHEDS

October 16, 2007
Downtown Transit Center, Harbor Lights Room
909 E. Michigan Street
Milwaukee, Wisconsin

Name Dr. Jennifer A. Runquist

Affiliation League of Women Voters Milwaukee County

Mailing Address 3002 E. Kenwood Blvd.
Milwaukee, WI 53211
414-332-5067 / arunquist@ameritech.net

Comment

See page 2

I was a member of the CAC 2005-2007. Attended Oct 16 Public Meeting at Downtown Transit Center.

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2

Public Comment from the League of Women Voters Milwaukee County

1. The Regional Water Quality Management Plan Update is a good structure for coordinating community efforts towards improving water quality using the Watershed Approach. Importantly MMSD and SEWRPC have developed much data so that efforts can be targeted towards real pollution sources.

2. It is unfortunate to allow CSOs or SSOs into our drinking water and recreational waters. The League of Women Voters of Wisconsin was active in state implementation of the federally mandated Safe Drinking water amendments of 1986 and 1996 to clean up WI's waters sufficiently to reach the federally mandated "swimmable, fishable waters" standard. We think that I/I should be aggressively reduced. Lets not just "hold the line" on I/I but reduce it. Service communities need to do their part in reducing excess rainwater coming into the sewerage collection system so that sewerage systems handle sewerage, not rainwater and, hopefully, CSOs and SSOs can be eliminated.

3. Communities need to be responsible for eliminating Illicit Discharges (human sewerage) into the storm water system which drains into rivers and Lake Michigan. We commend the effort, which allows us to distinguish between human waste and other waste in our storm water management system.

4. State funding is not adequate for inspections and grants to abate water pollution due to agricultural practices or urban runoff. In 2003 the League Women Voters of WI determined that the dedicated revenue sources for water quality programs were insufficient and proposed that new or reallocated funds should be combined with General Purpose Revenues to meet WI's needs for management of its water resources.

5. Monitoring for viruses and parasites in streams and lakes should be required, not just for *E. coli*, oxygen, phosphorus, etc., although these parameters are also important indicators of water quality.

6. We have concerns about sewerage blending, which means disinfecting sewerage faster than normal way with perhaps chlorine. In the slower digestion method followed by drying, all biological entities are removed whether we test for them or not. Faster methods may not destroy all pathogens present. Further, in the case of chlorine, which evidently is subsequently removed, are other molecules chlorinated and then discharged with the water?

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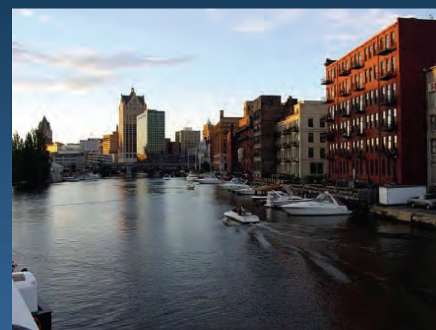
Appendix X

PRESENTATION FOR PUBLIC INFORMATION MEETINGS/PUBLIC HEARINGS OCTOBER 2007

SEWRPC Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds



Presentation for
PUBLIC INFORMATION MEETINGS/PUBLIC HEARINGS
October 2007
Michael G. Hahn, PE, PH
SEWRPC Chief Environmental Engineer

SEWRPC Regional Water Quality Management Plan Update / MMSD 2020 Facilities Plan

Cooperative Intergovernmental Watershed Based Planning Program

Water Quality Initiative

mmsd Preserving The Environment • Improving Water Quality

Southeastern Wisconsin Regional Planning Commission

Partners:

Wisconsin Dept. of Natural Resources

USGS science for a changing world

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE (RWQMPU or 208 Plan)

- SEWRPC is State-designated and Federally-recognized areawide water quality planning agency
- RWQMPU prepared pursuant to Section 208 of the Federal Clean Water Act
- Areawide water quality planning is watershed-based
- Plan provides:
  - Recommendations to abate water pollution
  - Basis for local eligibility for Federal and State sewerage system loans and grants
  - Basis for issuance by WDNR of Wisconsin Pollutant Discharge Elimination System (WPDES) permits
  - Basis for public and private sanitary sewer extension approvals

REGIONAL WATER QUALITY MANAGEMENT PLANNING IN SE WISCONSIN

- Initial 1979 Regionwide Plan
- Amended by SEWRPC Milwaukee Harbor Estuary Study in 1987
- 1995 SEWRPC Report Documented Status of Implementation of 1979 Plan
- Continuing Program is Ongoing—WDNR & SEWRPC Cooperative Program with U.S. EPA Support (sewer service areas, environmental corridor protection, etc.)
- 2003-2007 RWQMPU for Greater Milwaukee Watersheds

208 Plan Objectives

- Develop a watershed-based plan
  - Holistically address all water pollution sources
  - Cost-effectively improve water quality
  - Meet designated water use objectives and water quality standards/criteria to the degree possible
  - Consider alternatives to simply meeting current regulations for point source control if a greater improvement in water quality can be achieved cost-effectively

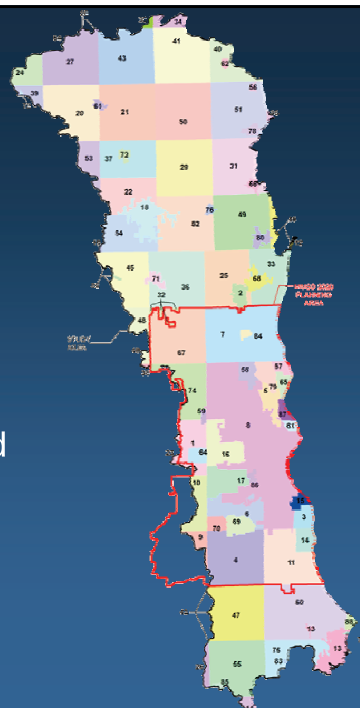
SEWRPC Regional Water Quality Management Plan Update / MMSD 2020 Facilities Plan (2020 FP)

- Parallel, coordinated planning processes
  - Both utilize the same watershed-based water quality models
  - Joint Citizens Advisory Council and Watershed Officials Forum
- SEWRPC RWQMPU also has:
  - Technical Advisory Committee
  - Modeling Subcommittee

SEWRPC Regional Water Quality Management Plan Update Study Area

Civil Divisions

- Nine Counties
  - Kenosha, Milwaukee, Ozaukee, Racine, Washington, and Waukesha
  - Dodge, Fond du Lac, and Sheboygan
- 88 Municipalities

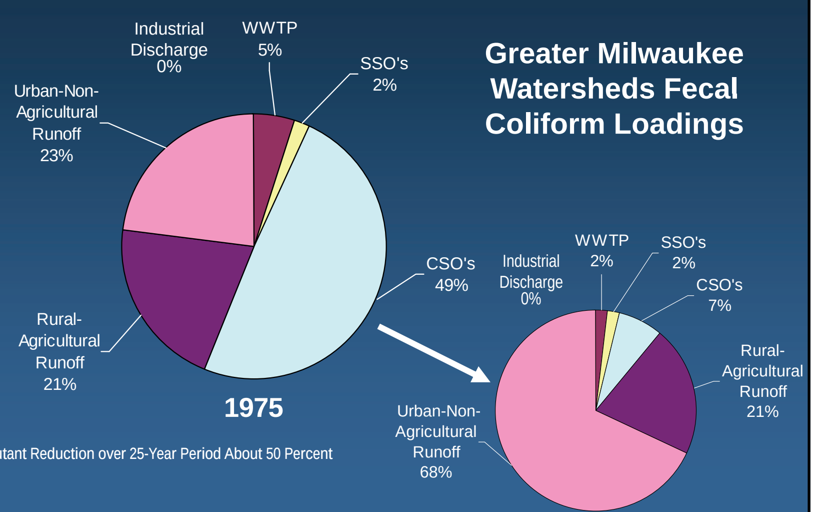


SEWRPC Regional Water Quality Management Plan Update

- SEWRPC is Preparing Two Reports:
  - Planning Report No. 50, *A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds*
  - Technical Report No. 39, *Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds*
  - View preliminary draft chapters at sewrpc.org under “Water Quality Management Plan” and “Plan Chapters”

Pollution Sources Summary

Greater Milwaukee Watersheds Fecal Coliform Loadings



Estimated Pollutant Reduction over 25-Year Period About 50 Percent

CONCLUSION: Focus on abating stormwater runoff pollution

2000

Conditions Simulated in Water Quality Models

- Existing Year 2000
- Planned Year 2020

SCENARIOS: "BOOKEND" CONDITIONS BUILT ON THE FUTURE SITUATION

- 1A: No Sanitary Sewer Overflows (SSO) and No Combined Sewer Overflows (CSO) with Sewer Separation in MMSD Combined Sewer Service Area (CSSA).

  CAPITAL COST=$5.1 BILLION

- 1B: No SSOs and No CSOs – No Sewer Separation in CSSA.

  CAPITAL COST=$5.8 BILLION

- 1C: No SSO with Increased Level of Protection (LOP) for CSO.

  CAPITAL COST=$2.2 BILLION

- 1D: No SSO based on I/I Reduction with Increased LOP for CSO.

  CAPITAL COST=$7.7 BILLION

- 2: High Level of Best Management Practices. CAPITAL COST=$2.0 BILLION

CONCEPTUAL ALTERNATIVE PLANS

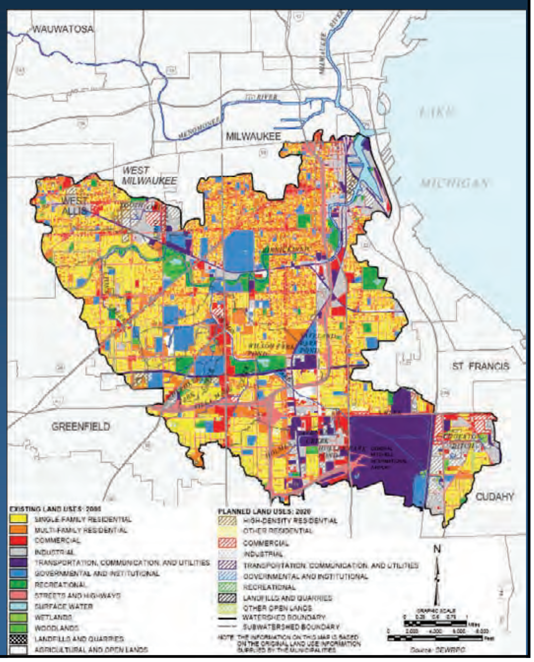
- No Action – Future 2020 Condition
- Regulatory Alternatives
  - B1 - Meet Point and Nonpoint Source Discharge Regulations
  - B2 – Operate MMSD System to Minimize Overflows, Meet Nonpoint Source Discharge Regulations
  - BOTH HAVE CAPITAL COST OF $2.0 BILLION
- Watershed-Based Alternatives
  - C1 – Goal is Compliance with Receiving Water Quality Standards. CAPITAL COST OF $2.6 BILLION
  - C2 – Goal is Compliance with Receiving Water Quality Standards Plus "Green" Components Directed Toward Water Quality Improvement. CAPITAL COST OF $2.2 BILLION

Recommended Plan Components

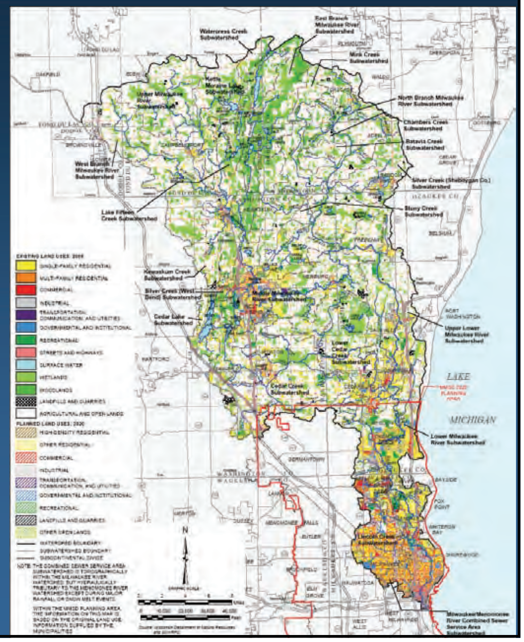
- Land Use Plan Element
- Surface Water Quality Element
  - Urban and rural nonpoint source pollution abatement
  - Point source pollution abatement measures in areas outside the MMSD planning area
  - Includes MMSD 2020 Facilities Plan recommendations except for increase in South Shore WWTP capacity through addition of physical-chemical treatment
  - Instream water quality measures
  - Inland lake measures
  - Auxiliary surface water quality measures
- Groundwater Management Plan Element

Land Use Plan Element: Kinnickinnic River Watershed

- Conveyance facilities sized using year 2020 population and land use based on community-supplied information and
- MMSD regional storage and treatment facilities sized using 2020 population and land use based on 2035 regional land use plan



Land Use Plan Element: Milwaukee River Watershed



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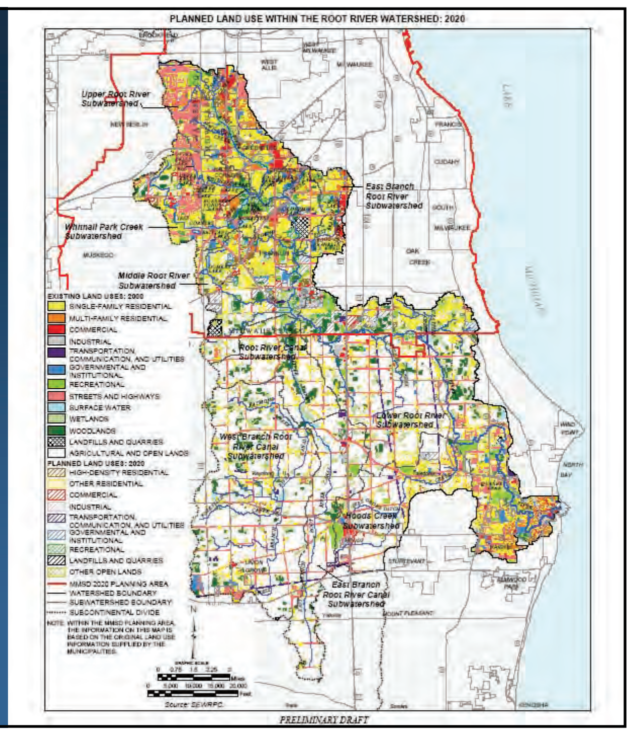
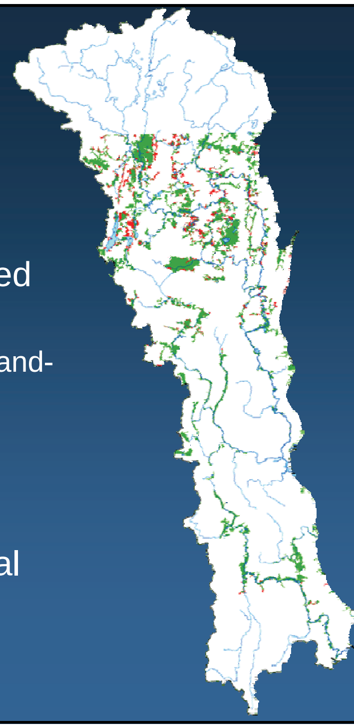


- ***Land Use Plan Element: Root River Watershed***

Land Use Plan Element



- Preserve primary environmental corridors (PEC)
  - 85 % of PEC currently protected
    - Public interest ownership
    - State-local floodplain and shoreland-wetland zoning
    - State rules on sanitary sewer extensions
    - Local land use regulations
- Preserve natural areas and critical species habitat sites

Urban and Rural Runoff Control

- Nonpoint Source Control Component
  - Address urban and rural stormwater runoff pollution
  - Incorporate environmental restoration measures
  - Recognize Federal and State rules regarding urban and rural stormwater management

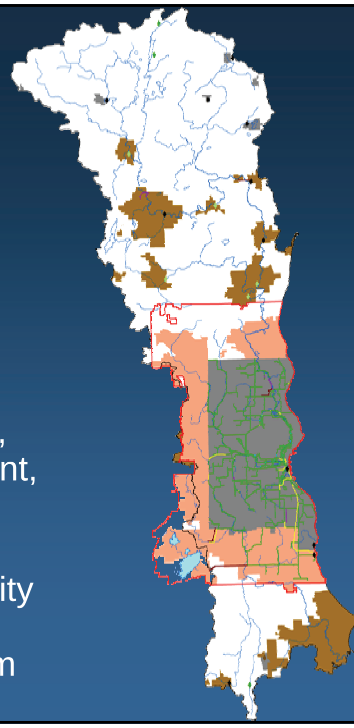
Rural Runoff Control Plan - Overview

- Rural
  - Realistic level of implementation of Chapter NR 151 rules
  - Manure and nutrient management
  - Controls on barnyard runoff
  - Riparian buffers
  - Wetland and prairie restoration
  - Restrict livestock access to streams
  - Manage milking center wastewater
  - Manage private onsite waste treatment systems

Urban Runoff Control Plan - Overview

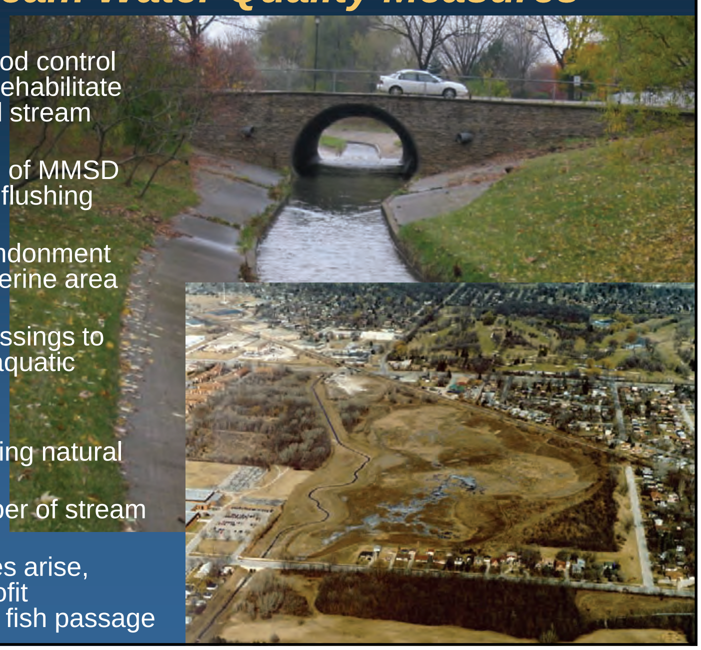
- Urban
  - Full implementation of Chapter NR 151 rules
  - Enhanced program to detect and eliminate illicit discharges to the stormwater management system and to control urban-sourced pathogens
  - Fertilizer management (low phosphorus fertilizer)
  - Chloride reduction (roads and water softeners)
  - Green features such as rain barrels, rain gardens, and stormwater trees
  - Management of pet litter, marina waste
  - Control of non-migratory waterfowl
  - Litter control

Point Source Pollution Abatement Measures in Areas Outside the MMSD Planning Area



- Refinement of Sewer Service Areas
- Facilities planning: Cedarburg/Grafton, Caledonia, Fredonia, Jackson, Mt. Pleasant, Newburg, Racine, Raymond, Sturtevant, and Yorkville
- Programs similar to the Capacity Management, Operations, and Maintenance (CMOM) Program

Instream Water Quality Measures



- Consistent with flood control needs, restore or rehabilitate selected degraded stream channels
- Evaluate condition of MMSD Kinnickinnic River flushing station
- Develop dam abandonment and associated riverine area restoration plans
- Design stream crossings to allow passage of aquatic organisms
- Fisheries
  - Protect remaining natural channels
  - Minimize number of stream crossings
  - As opportunities arise, remove or retrofit obstructions to fish passage

Other Surface Water Quality Measures

- **Identify and address local sources of beach contamination**
- **Conduct household hazardous waste collection programs**
- **Conduct pharmaceutical and personal care product collection programs**
- **Identify and address exotic invasive species in lakes and riverine areas**

Other Surface Water Quality Measures

- Water quality monitoring recommendations:
  - Continue current MMSD, WDNR, and USGS monitoring programs
  - Continue to upgrade Citizen-based programs
  - Modify, or expand, existing programs to include monitoring on tributaries
  - Add fishery and macroinvertebrate monitoring at long-term stations
  - Add habitat monitoring stations
  - Monitoring organizations should standardize 1) quality assurance and control and 2) sampling protocols and analyses

Recommended Plan

- **Does not call for** upgrading MMSD's South Shore WWTP through provision of physical chemical treatment
  - Potential capital cost saving of $97 to $152 million (Might apply cost saving to additional, targeted nonpoint source controls)
- **Calls for**
  - Studies of system capacities at Jones Island and South Shore WWTPs
  - Monitoring actual population and land use changes
  - Evaluating the success of the recommended efforts to "hold the line" on I/I
  - Continued efforts to improve and refine the MMSD real-time control strategy for the deep tunnel (variable VRSSI), including the effect of upgraded pumping capacity from the tunnel to Jones Island
  - Demonstration project for physical-chemical treatment at South Shore
  - Continued study of blending at South Shore
- **MMSD and customer communities attempt to obtain regulatory recognition of the integrated nature of the MMSD system**
  - Possible elimination of the distinction between tunnel-related SSOs and CSOs
- **Depending on outcome of these activities, provision of additional capacity at South Shore may not be needed**

Recommended Plan

- If, in the future, results of variable VRSSI and capacity analyses, future population trends, and I/I efforts indicate that a capacity upgrade is needed at the South Shore WWTP, and physical-chemical treatment with chemical flocculation is found to be feasible:
  - Implementation of physical-chemical treatment with chemical flocculation would be recommended at South Shore

Integrated Watershed-Based Recommended Plan

- If, in the future, a capacity upgrade is needed at the South Shore WWTP, and physical-chemical treatment with chemical flocculation is found to not be feasible:
  - Blending would be recommended at South Shore

Cost Analysis

- Estimated capital cost of new measures recommended under the RWQMPU: $1.5 billion, annual O&M cost is $28.5 million
- Additional, estimated capital cost of associated existing, committed, and regulatory programs: $1.2 billion, annual O&M cost is $33.0 million. Those costs would be incurred regardless of whether full plan is implemented
- Estimated total capital cost of both components : $2.7 billion, annual O&M cost is $61.5 million

Summary of Plan Costs

Plan Category	Estimated Capital Cost	Average Annual Operation and Maintenance Cost
Urban runoff pollution abatement	$239.0 million	$34.7 million
Rural runoff pollution abatement	$244.0 million	$21.9 million
MMSD & member communities sewerage system	$1,962.0 million	$1.5 million
Instream measures	$180.4 million	$0.6 million
Other sewerage systems	$70.1 million	$0.8 million
Monitoring and Other	$1.0 million	$1.9 million
Total	$2.70 billion	$61.5 million

Note: Of the total capital cost, $1.470 billion, or 54 percent, represent new expenditures, of the total Operation and Maintenance cost, $28.5 million, or 46 percent, represent new expenditures.

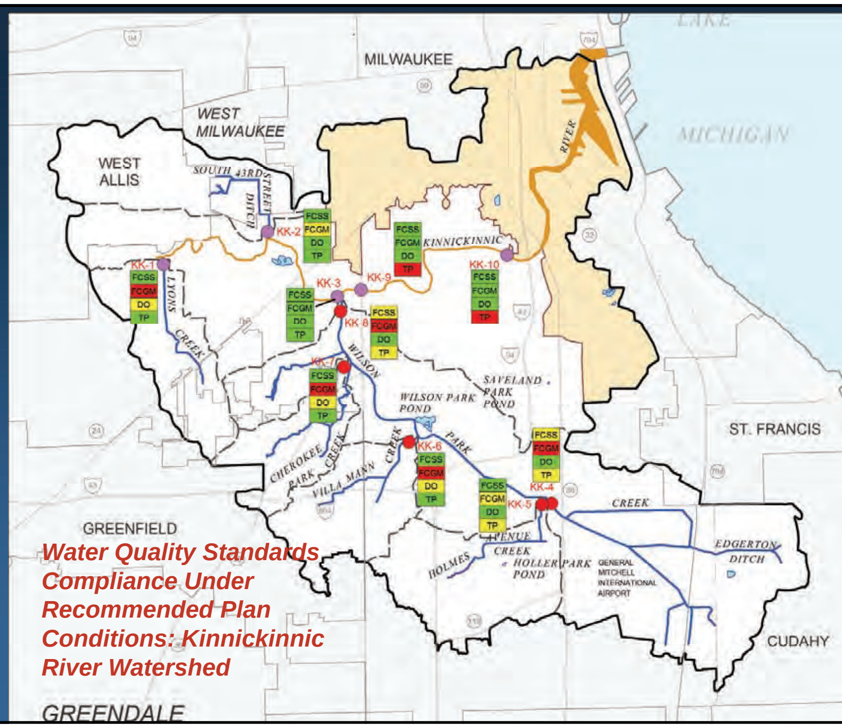
Source: MMSD, HNTB, and SEWRPC.

Ability of Recommended Plan to Meet Water Use Objectives and Water Quality Standards

- Assessed based on:
  - Water quality modeling results for pollutants for which there are regulatory or planning standards
  - Modeled changes in instream pollutant concentrations under recommended conditions relative to existing and future conditions

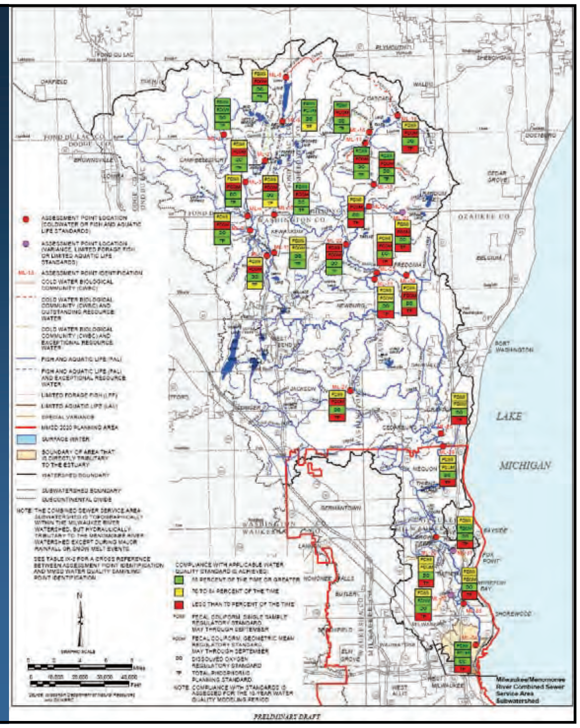
Conformance with Water Quality Standards at Given Locations in Streams

- Water Use Objectives
  - Coldwater Biological Community (CWBC)
  - Fish and Aquatic Life (FAL)
  - Limited Forage Fish
  - Limited Aquatic Life
  - Special Variance (Fecal coliform and DO Standards)
  - CWBC & Outstanding Resource Water (Dashed)
  - CWBC & Exceptional Resource Water (Dashed)
  - FAL & Exceptional Resource Water (Dashed)

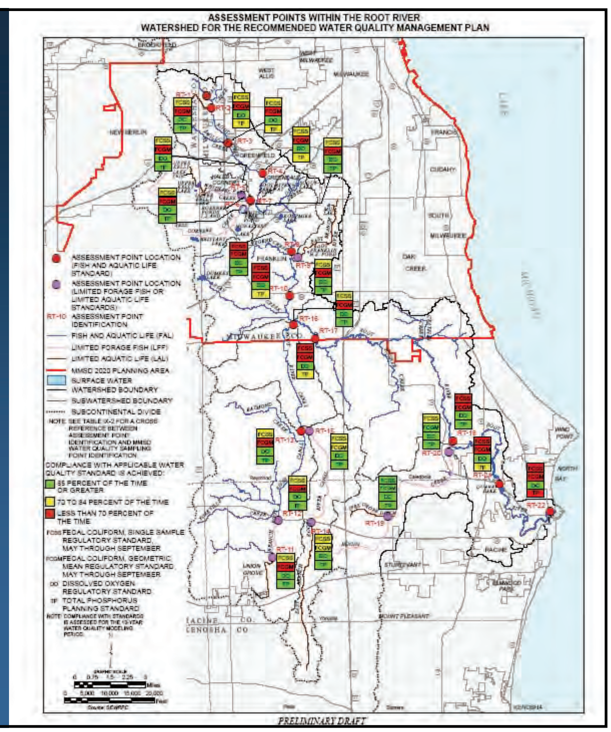


Water Quality Standards Compliance Under Recommended Plan Conditions: Kinnickinnic River Watershed

Water Quality Standards Compliance Under Recommended Plan Conditions: Milwaukee River Watershed



Water Quality Standards Compliance Under Recommended Plan Conditions: Root River Watershed



Implementation Plan

- Assignment of implementation responsibilities
- Costs apportioned between public and private sectors and estimated by community
- Information on grant funding programs

Implementation Plan

- Watershed-based permit will be considered
  - Incorporate existing WPDES permits for WWTP, municipal separate storm sewer systems, and Concentrated Animal Feeding Operations (CAFOs)
  - Expanded State cost-share funding and/or water quality credit trading to provide incentives to address unpermitted agricultural/rural nonpoint sources

Next Steps for the Regional Water Quality Management Plan Update

- Completion of Technical Advisory Committee review of planning report
- Public informational meetings
- Adoption of the plan by the Regional Planning Commission – Anticipated in December 2007
- WDNR approval and Governor’s certification of plan to USEPA
- USEPA approval of plan
- Endorsement of plan by counties and other local units of government

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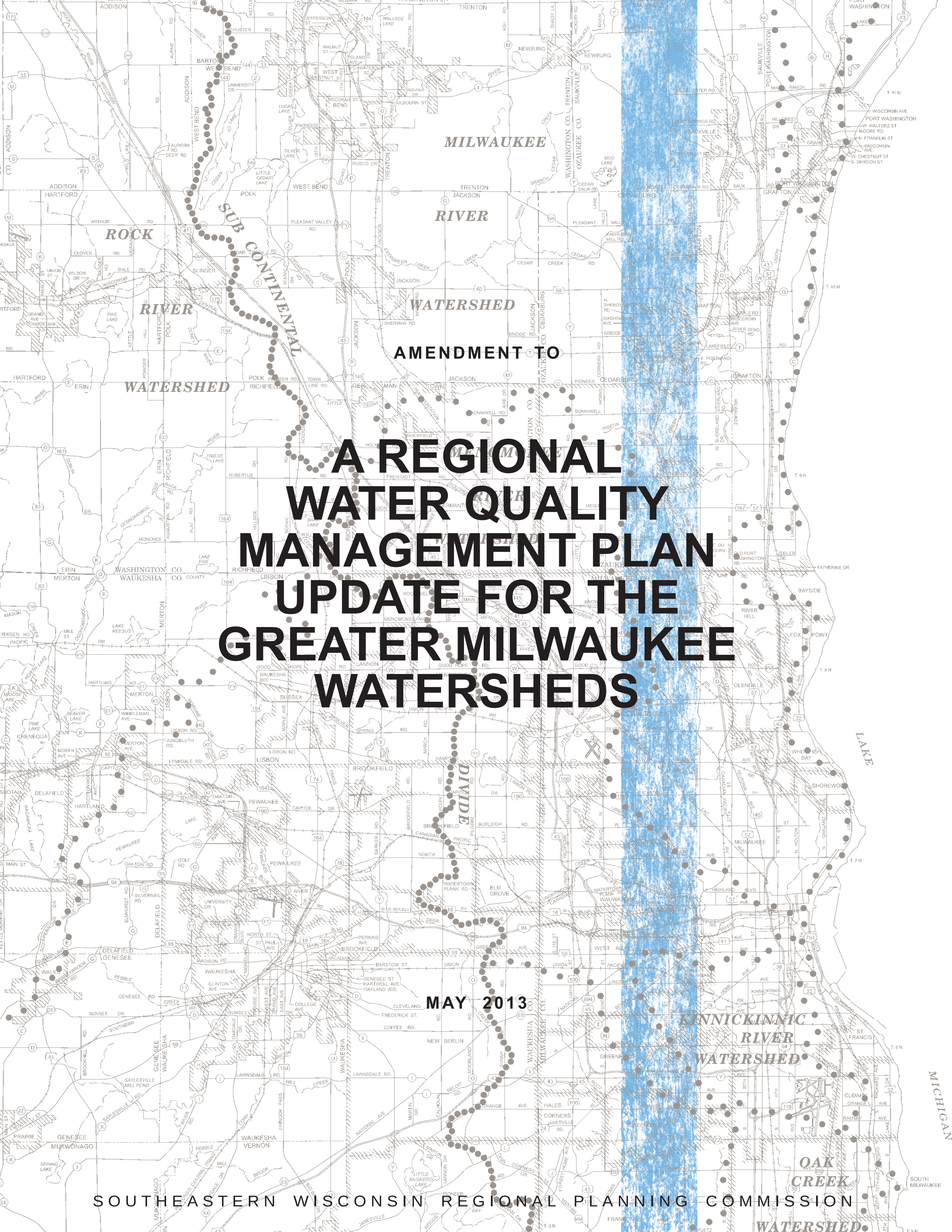
AMENDMENT TO

A REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

MAY 2013



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AMENDMENT TO PLANNING REPORT NUMBER 50

A REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

Prepared by the

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May 2013

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Amendment to SEWRPC Planning Report No. 50

A REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

May 2013

BACKGROUND ON THIS PLAN AMENDMENT

This amendment presents revisions to SEWRPC Planning Report No. 50 (PR No. 50)[1] based on changes to the watershed water quality models necessitated by findings during additional modeling efforts conducted after the plan report was issued. Those modeling efforts were conducted under a separate study directed toward evaluating the possible effects of climate change on water quality in the streams of the study area.

In this plan amendment document:

- New text providing background and explanations of the reasons why this plan amendment report was prepared and notes in the text indicating the location of revised sections of PR No. 50 are indicated with yellow highlighting,
- Revisions to text originally presented in PR No. 50 and subsequently revised for the reasons described below are indicated with blue highlighting, and
- Original text from PR No. 50 that is unchanged, but is provided in this plan amendment report to provide context for associated report changes, is unhighlighted.

REASONS FOR THIS PLAN AMENDMENT

In 2011, the Southeastern Wisconsin Regional Planning Commission staff, with funding from the National Oceanic and Atmospheric Administration (NOAA) Sectoral Applications Research Program (SARP), and working collaboratively with the University of Wisconsin-Milwaukee (UW-M) School of Freshwater Sciences Great Lakes WATER Institute, the UW-M Department of Civil Engineering and Mechanics, the University of Wisconsin-Madison Nelson Institute for Environmental Studies Center for Climatic Research (CCR), and Tetra Tech, Inc., began a study to evaluate the possible effects of climate change on water quality in the greater Milwaukee watersheds. That study was designed to apply statistically downscaled meteorological data representing best and worst case climate change conditions as determined from general circulation models developed by several climatology laboratories using a standard set of greenhouse gas emission scenarios developed by the Intergovernmental Panel on Climate Change. Time series reflecting climate change were developed by the Nelson Institute CCR for precipitation and air temperature, and potential evapotranspiration time series were recomputed using the parameters described in Chapter V, "Water Resource Simulation Models and Analytic Methods," of SEWRPC PR No. 50. The precipitation, air temperature, and potential evapotranspiration time series reflecting best and worst case climate change conditions were input to the calibrated and validated U.S. Environmental Protection Agency HSPF continuous simulation water quality models of the Kinnickinnic, Menomonee, Milwaukee, and Root River watersheds, and the Oak Creek watershed that were developed in conjunction with the planning effort documented in SEWRPC PR No. 50.

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[1]*SEWRPC Planning Report No. 50,* A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds, *Parts 1 and 2, December 2007.*

Tetra Tech performed the watershed water quality modeling under the regional water quality management plan update for the greater Milwaukee watersheds documented in PR No. 50, and they also did the modeling for the NOAA SARP study. In the course of doing the NOAA SARP modeling, Tetra Tech discovered an error in the HSPF input files that affected the summation and reporting of total nitrogen (TN) and total phosphorus (TP) at some water quality assessment locations in the Kinnickinnic, Menomonee, and Root River watersheds and the Oak Creek watershed (see Attachment A).[2,3] The Tetra Tech memorandum notes that "[t]he error was a result of an improper conversion factor applied to the inorganic fraction of N and P when calculating sums of TN and TP." The Milwaukee River LSPC watershed continuous simulation model and the Lake Michigan Direct Drainage area model, and the water quality results from those models, were not affected by the error.

It is important to note that the error did not represent a fundamental problem with the watershed water quality models in that it only affected how total nitrogen and total phosphorus concentrations were summarized at certain instream locations, and it did not affect:

- Model calibration/validation[4]
- Any load predictions
- Boundary conditions to the estuary model
- Internal calculations, and any reported results for nutrient species
- Instream statistical measures for:
  - Fecal coliform bacteria
  - Dissolved oxygen (DO)
  - Biochemical oxygen demand (BOD)
  - Copper
  - Total suspended sediment (TSS)

Tetra Tech revised the continuous simulation models for the Kinnickinnic, Menomonee, and Root River watersheds and the Oak Creek watershed.[5]

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[2]*Tetra Tech Memorandum,* Nutrient Output for Milwaukee HSPF Models (Revised), *March 13, 2012.*

[3]*Specifically, only mean and median TN and TP concentrations and the percent of time that TP exceeds the 0.1 mg/L planning standard applied under the RWQMPU were affected at assessment locations other than those locations where water quality monitoring data were available.*

[4]*Instream concentrations of TN and TP computed at the assessment points representing calibration/validation monitoring stations were not affected by the error.*

[5]*That revision also corrected a relatively minor error that affected total nitrogen concentrations at some instream assessment points. When calibrating and validating the models, nitrite was not modeled because the total nitrogen concentrations reported at instream water quality monitoring stations did not include nitrite. However, when subsequent model analyses were made for existing year 2000 conditions, original and revised 2020 baseline conditions, scenarios, alternatives, the recommended plan, and the extreme measures condition, the modelers did not include nitrite in the calculation of total nitrogen. In general, the inclusion of nitrite in the computation of mean and median total nitrogen concentrations resulted in relatively small (3 percent or less) increases in total nitrogen concentrations. The exception was at assessment point OK-10 in the lower Oak Creek watershed where concentration increases were 9 percent or less.*

The parts of SEWRPC PR No. 50 that were affected by the revisions include:[6]

- The "Comparison of Alternative Plans" subsection on pages 482 through 484 of the report,

- Figures 67 and 68, each entitled "Achievement of Recommended Total Phosphorus Planning Standard," on pages 615 and 616,

- The portion of the "Evaluation of Water Quality Modeling Analysis Results Relative to the Adopted Water Use Objectives and Water Quality Standards/Criteria," subsection related to total phosphorus on pages 617, 621, and 622 of the report,

- Appendix J, "Comparison of Water Quality Summary Statistics for Alternative Water Quality Management Plans,"

- Appendix K, " Water Quality Standard Compliance Summary Statistics for Alternative Water Quality Management Plans," and

- Appendix N, "Water Quality Summary Statistics for the Recommended Plan."

The revised sections and subsections, or portions thereof, of SEWRPC PR No. 50, Part 1, including text, tables, and figures, and the revised Appendices J, K, and N from SEWRPC PR No. 50, Part 2 are presented below. Within a report section or subsection, the revised text and figures are excerpted and some preceding and following text is included to provide proper context for the changed portions. For the three appendices, the entire revised appendix is presented.[7]

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[6]*As noted above, the NOAA SARP study utilized the RWQMPU continuous simulation watershed water quality models. The model error described previously was discovered during conduct of that study, was corrected, and did not adversely affect the results of that study. In addition, MMSD was conducting a third-party total maximum daily load study of the Kinnickinnic, Menomonee, and Milwaukee River watersheds at the time that the error was discovered. That study also applied the RWQMPU water quality models. The error was discovered prior to execution of those models under the TMDL study, and appropriate model revisions were made to ensure that the TMDL study results were correct.*

[7]*The regional water quality management plan update for the greater Milwaukee watersheds (PR No. 50, RWQMPU) was published prior to revisions to Wisconsin's water quality standards for total phosphorus becoming effective on December 1, 2010. In the absence of a State water quality criterion for total phosphorus at the time of publication, a planning standard of 0.1 mg/l was adopted for the RWQMPU. For consistency with the RWQMPU approach, this amendment document also applies a total phosphorus planning standard of 0.1 mg/l to all streams and rivers evaluated. The revisions to the State phosphorus water quality standards are reflected in Chapters NR 102, "Water Quality Standards for Wisconsin Surface Waters," and NR 217 "Effluent Standards and Limitations for Phosphorus," of the* Wisconsin Administrative Code. *Section NR 102.06(3)(a) establishes a total phosphorus water quality criterion of 0.100 mg/l for designated rivers, Section NR 102.06(3)(b) calls for most other "surface waters generally exhibiting unidirectional flow" to meet a total phosphorus criterion of 0.075 mg/l, and Section NR 102.06(5)(b) calls for the nearshore waters of Lake Michigan to meet a total phosphorus criterion of 0.007 mg/l. Within the greater Milwaukee watersheds, the river reaches that are assigned a total phosphorus criterion of 0.100 mg/l are the Kinnickinnic River from its confluence with Wilson Park Creek to the Milwaukee River, the Menomonee River from its confluence with the Little Menomonee River to the Milwaukee River, and the Milwaukee River from its confluence with Cedar Creek downstream through the Milwaukee Harbor estuary and the outer harbor. Thus, in those three river reaches, the planning standard applied under the RWQMPU and herein are equivalent. In other stream reaches evaluated herein, the planning standard of 0.1 mg/l is one-third greater than the current State criterion of 0.075 mg/l.*

[NOTE: The following section is a revised version of the text on pages 480 to 484 in Chapter IX, “Development of Alternative Plans: Description and Evaluation,” of PR No. 50.]

COMPARATIVE EVALUATION OF WATER QUALITY MANAGEMENT ALTERNATIVE PLANS

The preceding section of this chapter describes water quality management plan alternatives for the greater Milwaukee watersheds. This section compares the major features of those alternative plans, including economic considerations and water quality benefits. The following evaluation and comparison serves as the basis for the development of the preliminary recommended water quality management plan.

Pollutant Loading Analysis

Tabular comparisons of the various point and nonpoint source pollutant loadings for the alternative water quality management plans are presented in Appendix B. Also shown for comparative purposes are loads based on existing land use with current wastewater conveyance, storage, and treatment systems in place.

The information presented in Appendix B shows that the expected pollutant loadings under Alternative A, the future year 2020 baseline condition, are generally similar to existing conditions. The largest loading differences are in fecal coliform bacteria, which are anticipated to drop by about 21 percent relative to existing conditions, and total suspended solids, which are anticipated to increase by about 10 percent relative to existing conditions. The other indicator pollutants listed show modest differences of ±3 percent relative to existing conditions. Although there is more development under the future condition, and thus more potential for pollutant loads, this is offset by construction of the additional committed MMSD and community facilities and implementation of the Chapter NR 151 nonpoint source pollution control rules, all of which are assumed under the future condition.

Among the remaining water quality management plan alternatives, Alternatives B1 and B2 provide similar results to one another. The major difference is in the allocation of fecal coliform point source loadings between SSOs and CSOs. Alternative B2, which calls for a change in operating procedure for the ISS, shows a lower loading from CSOs than Alternative B1, but a higher loading from SSOs. Overall, the total combined CSO and SSO fecal coliform bacteria load is higher under Alternative B2 than for Alternative B1. For the other pollutants listed, the difference between these two alternatives is negligible.

In terms of overall pollutant load reduction, Alternative C1 provides results that are similar to Alternatives B1 and B2. Alternative C2, which includes the highest level of nonpoint source controls, provides the highest overall level of pollutant load reduction among the alternative plans. For all of the alternative plans, the highest percent reductions occur for total suspended solids and fecal coliform bacteria, while the lowest percent reductions occur for total nitrogen and copper.

Water Quality Conditions and Ability to Meet Water Use Objectives

The water quality benefits of the alternative plans were evaluated by comparing the effects of the plan alternatives, as predicted using the mathematical simulation modeling techniques described in Chapter V of this report, upon a number of water quality indicators. Tabular comparisons of water quality conditions among alternative plans are presented in Appendix J (revised). In general, the anticipated differences in water quality conditions among alternatives are small.

Methodology for Comparing Alternative Plans

The effects of the alternative plans on water quality indicators were compared at 64 water quality assessment points. The locations of these assessment points are shown on Maps 57 through 62. Many of the assessment points also correspond with the location of MMSD water quality sampling sites. A cross-reference between the assessment point designations shown on the maps and the MMSD sampling site designations is provided in Table 75. A series of comparisons were made at each site using 20 indicators related to concentrations of the following six water quality parameters: fecal coliform bacteria, dissolved oxygen, total phosphorus, total nitrogen, total suspended solids, and copper. These indicators are listed in Table 77. A variety of indicators were compared for these parameters. For all six parameters, comparisons were made among the arithmetic mean concentrations predicted for each alternative plan. Similarly, comparisons were made among the median concentrations predicted for each alternative plan for all parameters except fecal coliform bacteria, where the geometric mean

Table 77

WATER QUALITY INDICATORS USED TO COMPARE ALTERNATIVE PLANS

Parameter	Indicator
Fecal Coliform Bacteria over Entire Year	Arithmetic mean concentration of fecal coliform bacteria
	Proportion of time fecal coliform bacteria concentration is equal to or below single sample standard
	Geometric mean concentration of fecal coliform bacteria
	Days per year geometric mean of fecal coliform bacteria is equal to or below geometric mean standard
Fecal Coliform Bacteria from May to September	Arithmetic mean concentration of fecal coliform bacteria
	Proportion of time fecal coliform bacteria concentration is equal to or below single sample standard
	Geometric mean concentration of fecal coliform bacteria
	Days per year geometric mean of fecal coliform bacteria is equal to or below geometric mean standard
Dissolved Oxygen	Mean concentration of dissolved oxygen
	Median concentration of dissolved oxygen
	Proportion of time dissolved oxygen concentration is equal to or above applicable standard
Total Phosphorus	Mean concentration of total phosphorus
	Median concentration of total phosphorus
	Proportion of time total phosphorus concentration is equal to or below the recommended planning standard
Total Nitrogen	Mean concentration of total nitrogen
	Median concentration of total nitrogen
Total Suspended Solids	Mean concentration of total suspended solids
	Median concentration of total suspended solids
Copper	Mean concentration of copper
	Median concentration of copper

Source: SEWRPC.

concentrations were applied. For those water quality parameters for which there are regulatory or planning water quality criteria and standards (see Chapter VII of this report), comparisons were also made of the proportion of time that the parameter would be in compliance with the criteria and standards.[14] Where special use or variance waters were identified, the applicable standards were used. All comparisons involving fecal coliform bacteria were performed both on a full-year basis and for the May to September period when the potential for body contact would be greater.

For each indicator at each assessment point, the four alternative plans other than the future baseline condition (Alternative A) were compared to one another. Alternative A was not included in the comparison since it served as the basis of the remaining four alternatives, and, thus, should always reflect the worst water quality conditions

[14]*The proportion of time in compliance estimates are based on the results of the water quality model simulation that utilized a 10-year simulation period.*

among all of the alternative plans. The comparison among the remaining four alternatives was made by computing the relative deviation of the value of the indicator associated with that alternative plan from the mean value of the indicator for all four alternatives. This was computed by subtracting the mean value of the indicator for all alternatives at a given site from the value of the indicator for the alternative and dividing the result by the mean value that was subtracted. The sign of the relative deviation was adjusted for some indicators so that a positive relative deviation indicated better water quality and a negative relative deviation indicated poorer water quality.[15] For each water quality parameter, the relative deviations from all indicators were totaled. Subtotals were also computed for each watershed. An overall score was computed by totaling the scores from each water quality parameter. Prior to totaling, the scores were adjusted to give each water quality parameter equal weight in the overall total.[16]

It is worth commenting on two properties of this method. First, this method compares the effects of alternative plans relative to one another. A higher value in the final total for an alternative plan indicates better water quality relative to the other alternative plans. Similarly, a lower value in the final total for an alternative plan indicates poorer water quality relative to the other alternatives. It is important to note that because only the alternative plans were included in this analysis, a negative value in the final total does not indicate poorer water quality than existing or future baseline conditions. Second, because greater differences among alternative plans in the values of indicators result in larger relative deviations, greater differences in the final totals for alternative plans indicate greater differences in overall effects on water quality conditions. Conversely, similar final totals for two alternatives indicate that their overall effects on water quality conditions are not very different.

Comparison of Alternative Plans

Watershed totals and overall totals for relative deviations of water quality indicators from mean values are shown in Table 78. This analysis indicates that the greatest overall water quality benefit is provided by Alternative C2. This alternative is followed, in decreasing order of the benefit provided, by Alternative C1, Alternative B2, and Alternative B1. In most watersheds, the relative effects of the alternative plans follow this overall pattern.

There are four important exceptions to this generalization. First, the differences in total relative deviations between Alternative B1 and Alternative B2 in the Menomonee River, Milwaukee River, and Oak Creek watersheds are small, suggesting that there is little difference between the overall water quality resulting from these two alternatives in these watersheds. Second, there is no difference in the total relative deviations between Alternative C1 and C2 in the Kinnickinnic River watershed, suggesting that there is little difference in overall water quality resulting from these two alternatives in this watershed. Third, in the Kinnickinnic River watershed,

[15]*Because the methodology for assessing relative water quality conditions among alternatives was based on combining relative deviations computed for given indicators that are characteristic of given pollutants, it was necessary that the sign of the relative deviation relate to differences in water quality in a consistent manner. In cases where a lower concentration indicated better water quality, the sign of the relative deviation of a better than average alternative would be computed to be negative. In contrast, in cases where a higher concentration indicated better water quality the sign of the relative deviation of a better than average alternative would be computed to be positive. Therefore, to facilitate combining relative deviations in a manner that would properly represent relative water quality conditions, the sign of the relative deviation was reversed for those indicators for which a lower concentration indicated better water quality. This enabled the relative deviations from different indicators to be combined into a single index for which a larger positive value indicated better relative water quality.*

[16]*This unweighting was necessary because different numbers of indicators were used to characterize different water quality parameters. For example, eight indicators were used to characterize fecal coliform bacteria. By contrast, total phosphorus was characterized by three indicators, Thus, to ensure that each water quality parameter had equal influence when the relative deviations were totaled, the sum of the relative deviations for the eight fecal coliform indicators was divided by eight and the sum of the relative deviations for total phosphorus was divided by three.*

Table 78 (revised)

SUMMED RELATIVE DEVIATIONS OF WATER QUALITY INDICATORS FROM THE AVERAGE VALUE FOR ALTERNATIVE PLANS B1, B2, C1, AND C2

Plan Alternative	Watershed						Total
	Kinnickinnic River	Menomonee River	Milwaukee River	Oak Creek	Root River	Lake Michigan[a]	
B1	-0.367	-0.666	-0.131	-0.738	-0.721	-1.377	-4.001
B2	-0.400	-0.664	-0.131	-0.738	-1.156	-0.027	-3.116
C1	0.384	0.418	-0.597	0.727	-0.173	0.437	1.195
C2	0.384	0.913	0.859	0.750	2.050	0.967	5.922

[a]*Lake Michigan assessment points include sites in the Milwaukee Harbor estuary, outer harbor, and nearshore Lake Michigan areas.*

Source: SEWRPC.

Alternative B1 provides slightly greater water quality benefits than Alternative B2. This difference from the overall result is driven by lower arithmetic and geometric mean concentrations of fecal coliform bacteria and slightly lower mean concentrations of total nitrogen and mean and median concentrations of total phosphorus for Alternative B1 at some assessment points along the mainstem of the Kinnickinnic River. Fourth, in the Milwaukee River watershed, Alternatives B1 and B2 provide greater water quality benefit than Alternative C1. These differences from the overall result are driven by Alternatives B1 and B2 resulting in lower mean concentrations of total phosphorus and total nitrogen and higher percent of compliance with the standard for total phosphorus than Alternative C1 at some assessment points.

The compliance with applicable regulatory or planning water quality standards and criteria for fecal coliform bacteria, dissolved oxygen, and total phosphorus expected under the four alternative plans are summarized in Appendix K (revised). In general, only small differences in compliance with water quality standards were noted among the alternative plans.

Quantitative analyses of the water quality conditions expected to be achieved under the four alternative plans indicated that violations of the applicable regulatory standards for fecal coliform bacteria may be expected to occur in the Kinnickinnic, Menomonee, Milwaukee, and Root Rivers and Oak Creek under each alternative plan. The frequency of these violations is expected to range from occasional to frequent, with chronic violations expected to occur at a few assessment points in upstream areas of the Milwaukee River. By contrast, substantial achievement of applicable standards for fecal coliform bacteria is expected under each alternative plan at most assessment points in the estuary, outer harbor, and nearshore Lake Michigan areas.[17] At most assessment points, the expected level of compliance with applicable standards for fecal coliform bacteria is slightly higher during the May to September swimming season than during the entire year. While differences in the expected levels of compliance among alternative plans are small, Alternative C2 provides the highest level of compliance with water quality standards for fecal coliform bacteria followed by Alternative C1, Alternative B2, and Alternative B1.

Quantitative analyses of the water quality conditions expected to be achieved under the four alternative plans indicated that each alternative would allow for substantial achievement of the applicable regulatory dissolved oxygen standards in the Kinnickinnic River, Menomonee River, Milwaukee River, Root River, estuary, outer harbor, and nearshore Lake Michigan areas. The analyses also indicate that each alternative would allow for substantial achievement of the dissolved oxygen standard for fish and aquatic life in the downstream reaches of Oak Creek. Violations of the dissolved oxygen standard for fish and aquatic life would be expected to occur occasionally to frequently in the upstream reaches of Oak Creek. The analyses indicated that there are few

[17]*In the outer harbor and nearshore Lake Michigan area, the full recreational use fecal coliform standards of a geometric mean concentration of 200 counts per 100 ml and a maximum single sample concentration of 400 counts per 100 ml were used to evaluate compliance.*

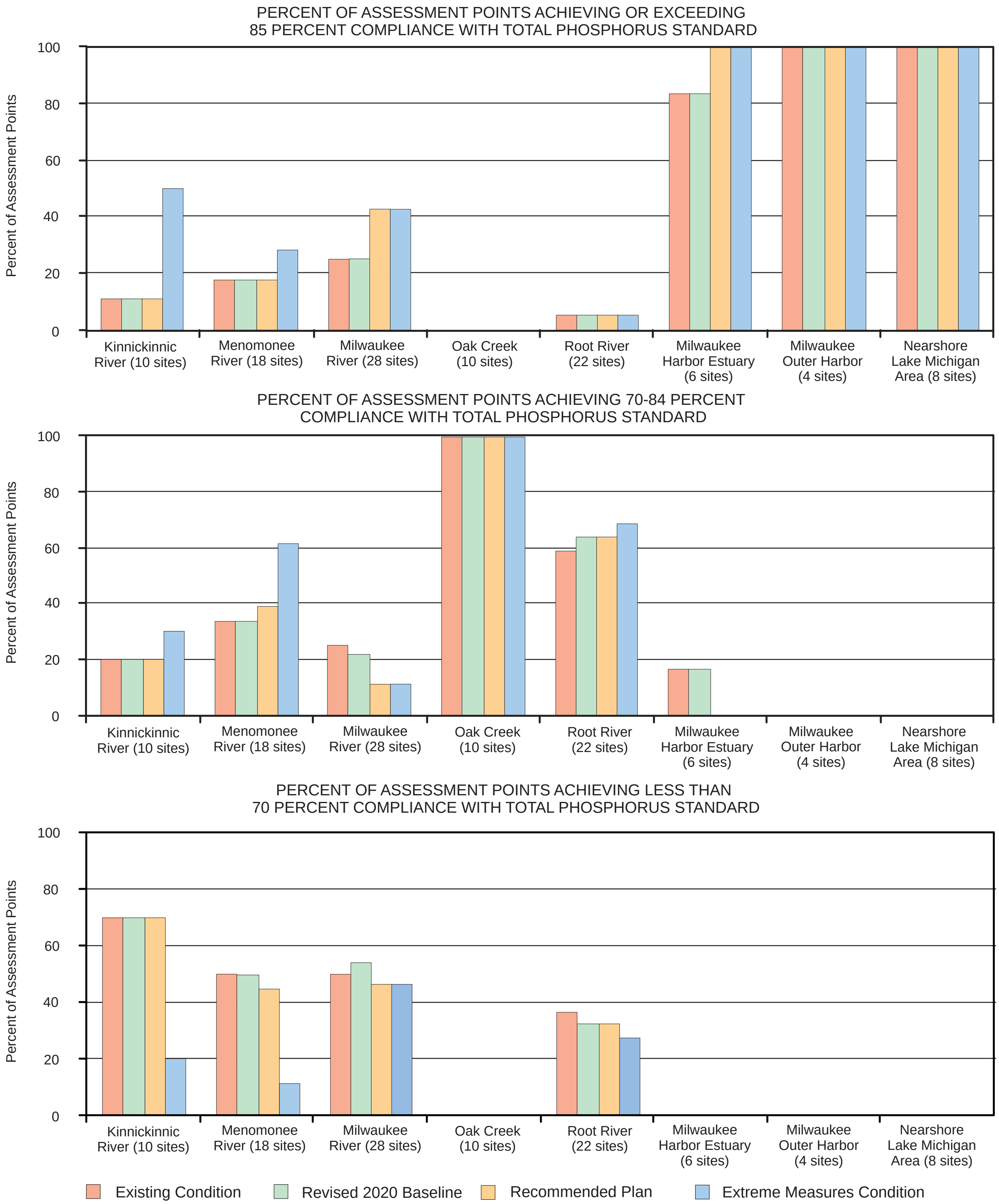
differences among alternatives in the expected level of compliance with applicable dissolved oxygen standards. At assessment points where differences are expected, these differences are small.

Quantitative analyses of the water quality conditions expected to be achieved under the four alternative plans indicated that violations of the recommended planning standard for total phosphorus may be expected to occur in the Kinnickinnic, Menomonee, Milwaukee, and Root Rivers; Oak Creek; and the estuary under each alternative plan. The frequency of these violations is expected to range from occasional to frequent, with total phosphorus exceeding the recommended concentration the majority of the time at all assessment points in the Kinnickinnic River watershed and most in the Milwaukee River watershed, but generally not exceeding the planning standard the majority of the time in the other watersheds. While differences in the expected levels of compliance among alternative plans are small, Alternative C1 provides the highest level of compliance with the recommended planning water quality standard for total phosphorus, followed by Alternative C2, and then by Alternatives B2, and B1, which would generally be expected to achieve the same level of compliance.

[NOTE: Figures 67 and 68 and the following text are revised versions of information set forth in Chapter X, "Recommended Water Quality Management Plan," of PR No. 50 in the section titled "Ability of the Recommended Water Quality Management Plan to Meet Adopted Objectives and Standards." The following figures and text revise information set forth on pages 615 to 622.]

Figure 67 (revised)

ACHIEVEMENT OF THE RECOMMENDED TOTAL PHOSPHORUS PLANNING STANDARD

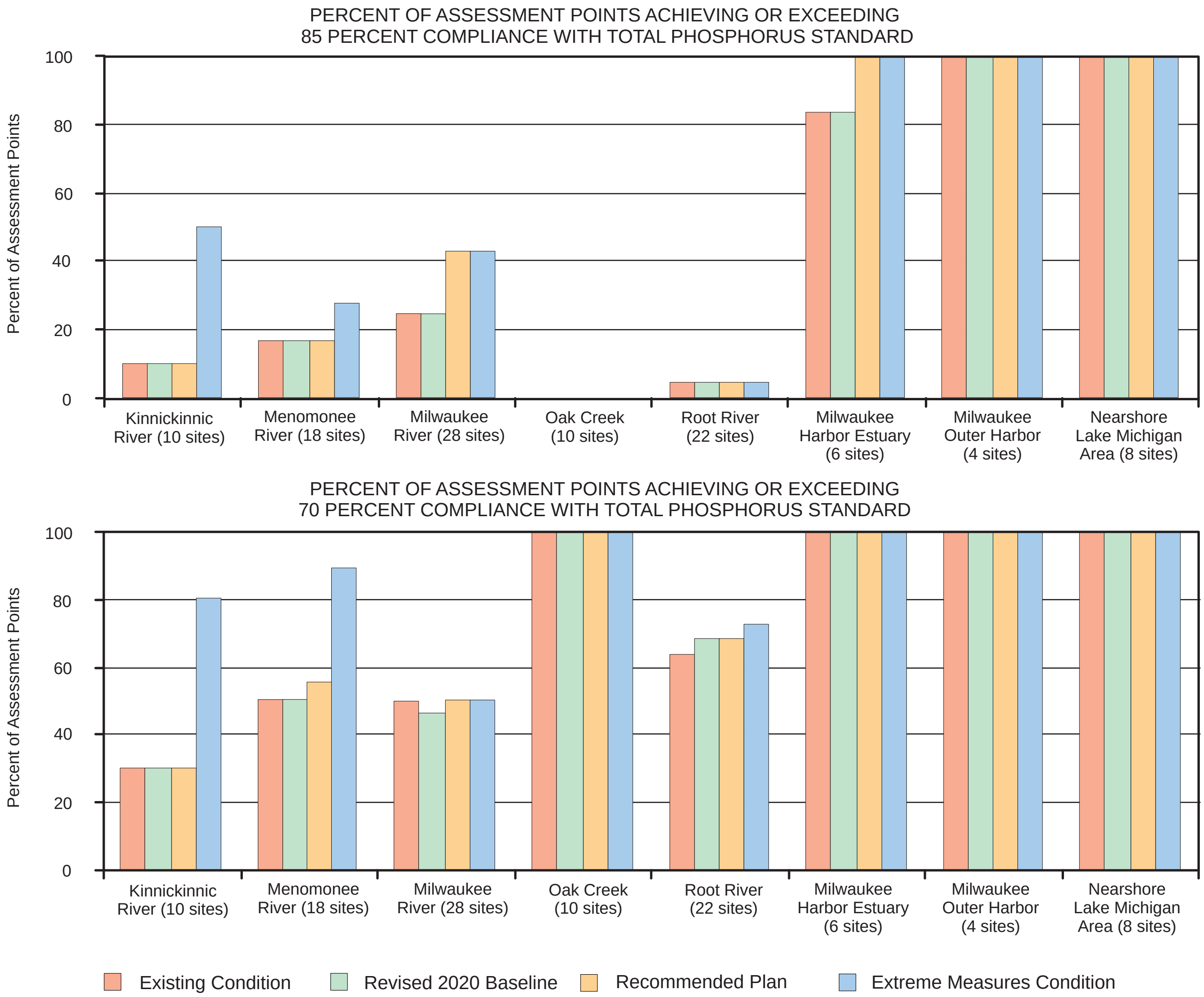


NOTE: The numerical water quality standards that were applied to assess compliance are set forth in Tables N-1 through N-6 of Appendix N (revised) of this report.

Source: Brown and Caldwell; HydroQual, Inc.; Tetra Tech, Inc.; and SEWRPC.

Figure 68 (revised)

ACHIEVEMENT OF THE RECOMMENDED TOTAL PHOSPHORUS PLANNING STANDARD



NOTE: The numerical water quality standards that were applied to assess compliance are set forth in Tables N-1 through N-6 of Appendix N (revised) of this report.

Source: Brown and Caldwell; HydroQual, Inc.; Tetra Tech, Inc.; and SEWRPC.

- **Wetland/Prairie Restoration:** Increase conversion of cropland and pasture to prairie from the recommended 5 percent to 10 percent and increase conversion of cropland and pasture to wetland from the recommended 5 percent to 10 percent.

- **Septic System Management:** Increase reduction in fecal coliform bacteria from systems installed prior to 1980 from 10 percent under the recommended plan to 50 percent.

- **Fertilizer Management:** A 10 percent reduction in the phosphorus load from lawns was assumed under the recommended plan. The extreme measures condition applies targeted reductions of 50 percent from lawns in the Kinnickinnic, Menomonee, and Milwaukee River watersheds and 15 percent in the Oak Creek and Root River watersheds.

- **Phosphorus in Industrial Noncontact Cooling Water:** Assume that there is no significant phosphorus load to streams from noncontact cooling water discharges.

Evaluation of Water Quality Modeling Analysis Results Relative to the Adopted Water Use Objectives and Water Quality Standards/Criteria

Water quality summary statistics for 106 water quality assessment points distributed along streams throughout the 1,127-square mile study area and in the nearshore area of Lake Michigan are set forth by watershed in Tables N-1 through N-6. Mean and median concentrations are set forth for the 10-year simulation period. For pollutants that have regulatory or planning standards, the percent of time is indicated that a given stream or Lake assessment point is in compliance with the applicable standard. Geometric means are presented for fecal coliform bacteria for comparison with regulatory standards.

The following general conclusions can be drawn from review of the data presented in Tables N-1 through N-6:

- **Fecal Coliform Bacteria**
  - Marked reductions in concentration may be achieved under recommended plan conditions.
  - Improvements in compliance with the applicable standards are not as pronounced because of the existing high concentrations.
- **Dissolved Oxygen**
  - Compliance with the applicable standards is generally good under existing conditions.
  - Little change is projected to occur under the other conditions analyzed.
- **Total Phosphorus**
  - The most significant reductions in concentration generally occur under revised 2020 baseline conditions relative to existing conditions, except in stream reaches where discharges of noncontact cooling water are significant. In reaches where there are substantive noncontact cooling water discharges, the most significant total phosphorus reductions occur under the "extreme measures" condition.
  - The reductions under revised 2020 baseline conditions relative to existing conditions may be attributable to the effects of implementation of NR 151 stormwater runoff controls and construction of MMSD committed projects.
  - Increases in concentrations are projected to occur at some locations in the upper Menomonee River watershed and the Milwaukee River watershed under revised 2020 baseline conditions. Relatively small increases in concentrations could occur at three locations in the Outer Harbor and two in the nearshore Lake Michigan area.
  - The recommended plan is projected to produce marked reductions in concentrations relative to revised 2020 baseline conditions in the Lake Michigan inner and outer harbor areas.
  - Under the extreme measures condition marked reductions in concentrations relative to recommended plan conditions could occur in the Lake Michigan inner and outer harbor areas and at some locations in the Kinnickinnic and Menomonee River watersheds, particularly in reaches with significant noncontact cooling water discharges.
- **Total Nitrogen**
  - In the Kinnickinnic River, Menomonee River, and Oak Creek watersheds and the upper portion of the Root River watershed where urban land use predominates, the most significant reductions in concentrations occur under revised 2020 baseline conditions relative to existing conditions.
  - In the Milwaukee River watershed, the most significant reductions in concentrations occur under recommended plan conditions relative to the revised 2020 baseline conditions.
  - In the Root River Canal subwatershed and the lower Root River watershed downstream of the confluence with the Root River Canal, significant reductions in concentrations occur under both revised 2020 baseline conditions relative to existing conditions and recommended plan conditions relative to the revised 2020 baseline conditions.

- In the Lake Michigan inner and outer harbor, significant reductions in concentrations occur both under revised 2020 baseline conditions relative to existing conditions and under recommended plan conditions relative to revised 2020 baseline conditions.
- In the nearshore Lake Michigan area little change in concentrations would be expected among the five conditions considered.

- **Total Suspended Solids**
  - In the Kinnickinnic River, Menomonee River, and Oak Creek watersheds, the most significant reductions in concentrations occur under revised 2020 baseline conditions relative to existing conditions.
  - These reductions may be attributable to the effects of implementation of NR 151 stormwater runoff controls and completion of MMSD committed projects.
  - In the Milwaukee River watershed, the greatest reductions in concentrations occur under recommended plan conditions relative to revised 2020 baseline conditions.
  - In the urban areas of the Root River watershed in Milwaukee County, significant reductions in concentrations are anticipated under revised 2020 baseline conditions relative to existing conditions.
  - In the remainder of the Root River watershed and in the Lake Michigan inner and outer harbor areas, reductions in concentrations would be anticipated to occur both under revised 2020 baseline conditions relative to existing conditions and under recommended plan conditions relative to revised 2020 baseline conditions.
- **Copper**
  - In the Kinnickinnic River, Menomonee River, Oak Creek, and Root River watersheds and in the Lake Michigan inner and outer harbor areas, the most significant reductions in concentrations generally occur under the revised 2020 baseline conditions relative to existing conditions.
  - In most locations in the Milwaukee River watershed and the nearshore Lake Michigan area no significant changes in concentrations would be expected among the five conditions considered.

Compliance with Adopted Water Quality Standards

For purposes of assessing compliance with water quality standards under this regional water quality management plan update, it was assumed that a stream reach would meet the water quality standard and attain its designated use objective if the modeled water quality results indicate compliance with the standard at least 85 percent of the time.

The data on compliance with standards as set forth in Tables N-1 through N-6 are summarized in Figures 57 through 68. For a given pollutant and standard, a pair of figures indicate the degree of compliance with applicable standards among the existing, revised 2020 baseline, recommended plan, and extreme measures conditions for each watershed in the study area, the Milwaukee harbor estuary, the outer harbor, and the nearshore Lake Michigan area. The first figure in each pair presents a set of three graphical comparisons. These comparisons consist of:

- The percentage of assessment points achieving or exceeding 85 percent compliance with the standard over the 10-year water quality simulation period,
- The percentage of assessment points achieving or exceeding 70 to 84 percent compliance with the standard over the 10-year simulation period, and
- The percentage of assessment points achieving less than 70 percent compliance with the standard over the 10-year simulation period.

Thus, for the four conditions represented, these graphs facilitate determination of the degree to which 1) a water quality standard is complied with in a given watershed (defined as compliance 85 percent of the time or greater), 2) a standard is close to being complied with (compliance 70 to 84 percent of the time), and 3) a standard is unlikely to be complied with (compliance less than 70 percent of the time). The second figure in each pair presents a pair of graphical comparisons of cumulative levels of compliance for each of the conditions indicated above. The two graphical comparisons consist of:

- The percentage of assessment points achieving or exceeding 85 percent compliance with the standard over the 10-year water quality simulation period.

- The percentage of assessment points achieving or exceeding 70 percent compliance with the standard over the 10-year water quality simulation period.

The assessments in Figures 57 through 68 are evaluated below.

- **Figures 57 and 58: Achievement of the Single Sample Fecal Coliform Bacteria Standard Assessed on an Annual Basis**
  Compliance with this standard 85 percent of the time would not be expected under existing, revised 2020 baseline, or recommended plan conditions at the assessment points in the Kinnickinnic River, Menomonee River, Oak Creek, or Root River watersheds. In the Kinnickinnic River watershed, 30 percent or less of the assessment points would be expected to achieve compliance 85 percent of the time under the extreme measures condition. In the Menomonee River, Oak Creek and Root River watersheds, none of the assessment points would be expected to achieve 85 percent compliance even under the extreme measures condition. In the Milwaukee River watershed less than 10 percent of the assessment points would be expected to achieve 85 percent compliance, or better, under all four conditions.

  In the Milwaukee outer harbor and nearshore Lake Michigan area, compliance with standards was evaluated through comparison of modeled water quality results with the standards for the fish and aquatic life water use objective with full recreational use. In the Harbor estuary, compliance with the standard would be expected 85 percent of the time or more at more than 80 percent of the assessment points under the revised 2020 baseline, recommended plan, and extreme measures conditions. In the Outer harbor and nearshore Lake Michigan area 85 percent compliance with the standard would be expected at all locations.

  Substantial proportions of the total numbers of assessment points in the Kinnickinnic and Menomonee River watersheds, and to a lesser degree the Root River watershed, would be expected to achieve compliance in the 70 to 84 percent range. Large proportions of the total numbers of assessment points in the Milwaukee River, Oak Creek, and Root River watersheds, would be expected to achieve compliance less than 70 percent of the time.

  Overall, in all riverine reaches, a low degree of compliance with this standard would be expected under all conditions considered. However, a high degree of compliance would be expected in the estuary, outer harbor, and nearshore Lake Michigan area.

- **Figures 59 and 60: Achievement of the Geometric Mean Fecal Coliform Bacteria Standard Assessed on an Annual Basis**
  Compliance with this standard 85 percent of the time would not be expected at a large number of assessment points in any of the watersheds under the four conditions analyzed, although, somewhat greater compliance would be expected under the extreme measures condition in the Kinnickinnic River watershed. That indicates that, if expenditures on additional point source controls could be foregone as might be possible under the recommended plan, additional resources directed toward control of nonpoint source pollution could achieve measurable improvements in water quality in that watershed.

In the Oak Creek and Root River watersheds, none of the assessment points would be expected to achieve compliance 85 percent of the time under any of the four conditions. With the exceptions of the Kinnickinnic River watershed under the extreme measures conditions only, compliance with this standard would be expected less than 70 percent of the time at a large proportion of the assessment points in all of the watersheds. In the estuary, the majority of assessment points would be expected to achieve 85 percent compliance, or better, under the revised 2020 baseline, recommended plan, and extreme measures conditions. All assessment points in the outer harbor and nearshore Lake Michigan area would be expected to achieve at least 85 percent compliance under all four conditions.

Overall, in all riverine reaches, a low degree of compliance with this standard would be expected under all conditions considered. However, a relatively high degree of compliance would be expected in the estuary and a high degree of compliance would be expected in the outer harbor, and nearshore Lake Michigan area.

- **Figures 61 and 62: Achievement of the Single Sample Fecal Coliform Bacteria Standard Assessed on a May to September Basis**
  In comparison to the previously-evaluated single sample standard assessed on an annual basis, much better compliance with this standard would be expected at assessment points in the Kinnickinnic and Menomonee River watersheds, and somewhat better compliance would be expected in the Milwaukee River watershed where implementation of the recommended plan would be expected to achieve a significant improvement relative to the revised 2020 baseline condition. For all four cases in the Root River watershed, 10 percent or fewer of the assessment points would be expected to achieve compliance 85 percent, or more, of the time. In the Oak Creek watershed, none of the assessment points would be expected to achieve compliance 85 percent of the time under any conditions except the extreme measures case, when about 10 percent of the assessment points would achieve 85 percent compliance. In the estuary, all assessment points would be expected to achieve 85 percent compliance, or better, under the revised 2020 baseline, recommended plan, and extreme measures conditions. In the outer harbor, and nearshore Lake Michigan area, all assessment points would be expected to achieve 85 percent compliance, or better, under all four conditions.

  Overall, a relatively high degree of compliance with this standard would be expected in the Kinnickinnic and Menomonee River watersheds under the recommended plan and extreme measures conditions. In comparison to the single sample standard assessed on an annual basis that was evaluated above, assessment points in the Milwaukee and Root River watersheds would achieve higher levels of compliance with the standard under the recommended plan and extreme measures conditions, although those levels fall well short of what would be considered substantial compliance. Once again, the Oak Creek watershed would not be expected to achieve compliance 85 percent of the time under any conditions analyzed, except at 10 percent of the sites under the extreme measures condition. A high degree of compliance would be expected in the estuary, outer harbor, and nearshore Lake Michigan area under all conditions considered.

- **Figures 63 and 64: Achievement of the Geometric Mean Fecal Coliform Bacteria Standard Assessed on a May to September Basis**
  In comparison to the previously-evaluated geometric mean standard assessed on an annual basis, much better compliance with this standard would be expected in the Kinnickinnic and Menomonee River watersheds, and somewhat better compliance would be expected in the Milwaukee River watershed. In the Menomonee and Milwaukee River watersheds, implementation of the recommended plan would be expected to result in improved water quality relative to the revised 2020 baseline condition. While not quite as pronounced as for the geometric mean standard assessed on an annual basis, for this condition there are still large percentages of assessment points in the Kinnickinnic River, Menomonee River, Milwaukee River, Root River, and Oak Creek watersheds that would be expected to achieve less than 70 percent compliance with the standard under recommended plan conditions. In the estuary, outer harbor, and nearshore Lake Michigan area, all assessment points would be expected to achieve 85 percent compliance, or better, under all four conditions.

Overall, a relatively high degree of compliance with this standard would be expected at assessment points in the Kinnickinnic River watershed under the extreme measures condition and in the Menomonee River watershed under the recommended plan and extreme measures conditions. In comparison to the geometric mean standard assessed on an annual basis that was evaluated above, assessment points in the Milwaukee and Root River watersheds would be expected to achieve higher levels of compliance with the standard under the recommended plan and extreme measures conditions, although those levels fall well short of what would be considered substantial compliance. No assessment points in the Oak Creek watershed achieve compliance 85 percent of the time except under the extreme measures condition where 30 percent of the points would be expected to achieve compliance. A high degree of compliance would be expected in the estuary, outer harbor, and nearshore Lake Michigan area under all conditions considered.

- **Figures 65 and 66: Achievement of the Dissolved Oxygen Standard**
  In general, 85 percent compliance with this standard, or better, would be expected under existing, revised 2020 baseline, recommended plan, and extreme measures conditions at the assessment points in the Menomonee, Milwaukee, and Root River watersheds, as well as the estuary, outer harbor, and nearshore Lake Michigan area. A somewhat lesser, but relatively high, degree of compliance would be expected in the Kinnickinnic River watershed, and a lower level of compliance would be anticipated in the Oak Creek watershed. However, at the assessment points in the Kinnickinnic River and Oak Creek watersheds, general compliance with the standard would be expected 70 percent or more of the time. Many of the assessment points in the Oak Creek watershed that are in the 70 to 84 percent of time compliance range fall in the higher end of that range.

  Overall, a high degree of compliance with this standard would be expected under all conditions considered. As noted above, compliance within the Oak Creek watershed is somewhat better than indicated by Figure 65, because, although significant percentages of the Oak Creek watershed assessment points fall in the 70 to 84 percent of time compliance range, many of the points fall in the higher end of that range.

- **Figures 67 and 68: Achievement of the Recommended Total Phosphorus Planning Standard**

  Compliance with the planning standard would be expected eighty-five percent of the time or more at:

  - About 10 percent of the assessment points in the Kinnickinnic River watershed for the existing, revised 2020 baseline, and recommended plan conditions, and about 50 percent of the points under the extreme measures condition;

  - Fifteen to 20 percent of the assessment points in the Menomonee River watershed for the existing, revised 2020 baseline, and recommended plan conditions, and about 25 percent of the points under the extreme measures condition;

  - Twenty-five percent of the assessment points in the Milwaukee River for the existing and revised 2020 baseline conditions, and at about 40 percent of the points under the recommended plan and extreme measures conditions;

  - No assessment points in the Oak Creek watershed. (However, the Oak Creek watershed is the only one where all of the assessment points would be expected to meet the planning standard 70 percent, or more, of the time.); and

  - Five percent of the assessment points in the Root River watershed under all four conditions.

  In the estuary, over 80 percent of the assessment points would be expected to achieve compliance with the planning standard 85 percent of the time or more under existing and revised 2020 baseline conditions. All assessment points would be expected to achieve 85 percent compliance, or better, under the recommended plan and extreme measures conditions. All assessment points in the outer harbor and nearshore Lake Michigan area would be expected to achieve at least 85 percent compliance under all four conditions.

Overall, with respect to the 85 percent of time bench mark, a relatively low degree of compliance with this standard would be expected in all of the watersheds under all four conditions. The assessment points in the Oak Creek watershed would be expected to achieve compliance with the planning standard more than 70 percent of the time for all four conditions. About half of the points in the Milwaukee River watershed and 60 to 70 percent of those in the Root River watershed would be expected to comply with the planning standard 70 percent or more of the time under all four conditions. About 30 percent of the assessment points in the Kinnickinnic River watershed would be expected to comply with the planning standard 70 percent or more of the time under the existing, revised 2020 baseline, and recommended plan conditions, and 80 percent of the points would comply 70 percent or more of the time under the extreme measures condition. About 50 to 55 percent of the assessment points in the Menomonee River watershed would be expected to comply with the planning standard 70 percent or more of the time under the existing, revised 2020 baseline, and recommended plan conditions, and about 90 percent of the points would comply 70 percent or more of the time under the extreme measures condition. A high degree of compliance with the planning standard would be expected in the estuary, outer harbor, and nearshore Lake Michigan area.

Comparison of Water Quality Conditions: Revised 2020 Baseline vs. Revised 2020 Baseline with Five-Year Level of Protection Against SSOs from MMSD System

The water quality assessment points in, or downstream from, the MMSD planning area that are indicated on Maps N-1 through N-6 are the only assessment points that could be affected by SSOs from the MMSD system. Outside of those locations, there is no difference in the water quality statistics between the revised 2020 baseline condition and the revised 2020 baseline with a five-year level of protection (LOP) against SSOs from the MMSD system. Comparison of the water quality conditions tabulated in Appendix N (revised) with and without the five-year LOP (at those locations where there could be SSOs from the MMSD system) indicates no significant difference in water quality under the two conditions. That conclusion supports the observation that has been stated previously in this report that further reductions in point sources of pollution would be expected to have no significant effects on water quality.

Appendix J (revised)

COMPARISON OF WATER QUALITY SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS

[NOTE: These page numbers match those in PR No. 50.]

link to revised Appendix J

Appendix K (revised)

WATER QUALITY STANDARD COMPLIANCE SUMMARY STATISTICS FOR ALTERNATIVE WATER QUALITY MANAGEMENT PLANS

[NOTE: These page numbers match those in PR No. 50.]

link to revised Appendix K

Appendix N (revised)

WATER QUALITY SUMMARY STATISTICS FOR THE RECOMMENDED PLAN

[NOTE: These page numbers match those in PR No. 50.]

link to revised Appendix N

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Amendment to SEWRPC Planning Report No. 50

A REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

May 2013

Attachment A

TETRA TECH MEMORANDUM

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TETRA TECH

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Research Triangle Park, NC 27709
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Memorandum

To:	**Michael Hahn (SEWRPC) and Tim Bate (MMSD)**	**Date:**	**March 13, 2012**
From:	**Scott Job, Kevin Kratt, Jon Butcher**	**Subject:**	**Nutrient Output for Milwaukee HSPF Models (Revised)**
cc:		**Proj. No.**	**100-CLE-T27944**

1 Nutrient Output Processing Error

While post-processing results for the Milwaukee Climate Change Risk Modeling Project, we discovered an error in the HSPF input files that affected the summation and reporting of total nitrogen (TN) and total phosphorus (TP) used in the development of the RWQMPU. The error *did not* involve the parameterization or water quality calibration of the models, but it did affect reported output for TN and TP from the second-tier set of assessment points, specifically for concentration-based statistical measures.

The models simulate ammonia-N, nitrate-N, nitrite-N, organic-N, orthophosphate-P, and organic-P individually and were calibrated for these nutrient species. The error was a result of an improper conversion factor applied to the inorganic fraction of N and P when calculating sums for TN and TP. The lines in the UCI model files containing the improper factor were added following the calibration of the models to provide text file output of simulation results for assessment points not covered by water quality calibration sites. Assessment results coincident with the calibration sites had output stored in the project WDMs, and these locations had the proper factors. Text file output was used to prevent the model WDM from becoming overly large.

It is important to distinguish what *was* and *was not* affected in the results:

Not Affected

- The Milwaukee River model
- Model calibration/validation
- All load predictions
- Boundary conditions to the estuary model
- Direct drainage areas
- Internal calculations, and any reported results for nutrient species
- Statistical measures for

    - Fecal coliform bacteria
    - Dissolved oxygen
    - BOD
    - Metals
    - Sediment
- Statistical measures for TN and TP reported at the initial set of analysis locations (co-located with calibration monitoring stations)

Affected

- Kinnickinnic River, Menomonee River, Oak Creek, and Root River models only
- TN and TP statistical measures for assessment points other than those at monitoring stations, for:
    - Mean and median TN and TP
    - Percent of time TP exceeds the 0.1 mg/L criterion

Specific stations affected are listed below.

Watershed	PR-50 Map ID #	Model Reach
Root River	RT-5	620
Root River	RT-6	817
Root River	RT-7	819
Root River	RT-8	850
Root River	RT-9	837
Root River	RT-11	866
Root River	RT-12	870
Root River	RT-13	883
Root River	RT-14	856
Root River	RT-15	860
Root River	RT-16	897
Root River	RT-18	120
Root River	RT-19	125
Root River	RT-20	128
Root River	RT-21	132
Root River	RT-22	140
Oak Creek	OK-2	240
Oak Creek	OK-5	52
Oak Creek	OK-6	130

Watershed	PR-50 Map ID #	Model Reach
Kinnickinnic	KK-1	831
Kinnickinnic	KK-2	801
Kinnickinnic	KK-3	710
Kinnickinnic	KK-4	828
Kinnickinnic	KK-5	830
Kinnickinnic	KK-6	820
Kinnickinnic	KK-7	19
Kinnickinnic	KK-8	818
Menomonee	MN-1	6
Menomonee	MN-2	803
Menomonee	MN-3	812
Menomonee	MN-4	820
Menomonee	MN-6	834
Menomonee	MN-7	841
Menomonee	MN-8	855
Menomonee	MN-10	861
Menomonee	MN-11	871
Menomonee	MN-13	890
Menomonee	MN-14	905
Menomonee	MN-15	883
Menomonee	MN-16	914

The conversion factor for translating fecal coliform from mass count to concentration (8.107E-8) was used in place of the factor for lb/ac-ft to mg/L (0.368). This was applied to inorganic species in the summation of TN and TP only. As a result, the concentration in the model text output files essentially represents the organic fraction of TN and TP, which is an underestimate.

2 Impacts of the Error

The influence on results is variable, depending largely on the relative contribution of the inorganic fraction to the total value. Assessment points downstream of point sources with high output of inorganic nutrient mass are the most affected, since the reporting error reflected conditions in the reach. In addition, our comparisons to date have been conducted only for the climate scenario results, which (with the exception of Oak Creek) used altered meteorological inputs. Even so, a before-and-after comparison of underreported versus corrected results provides an indication of the discrepancy. Two examples are shown here. The first shows typical changes; mean TP is about 57 percent high, and mean TN is about 100 percent higher. Most stations appear to follow this pattern within a range of +/- 30 percent. The degree of change in TP percent compliance is more variable, depending heavily on how close the mean is to 0.1 mg/L. Example B shows the location with the largest change, in a small channel downstream of GE and several smaller industrial discharges. The difference is much larger (on the order of a 300 percent increase for TP), and TP percent compliance drops to a single digit once the inorganic component of TP from the discharges in this effluent-dominated watercourse is included in the accounting.

Example A – Typical Difference (OK-2: North Branch of Oak Creek)

Parameter	Measure	Original	Corrected
Total Phosphorus	Mean (mg/l)	0.0457	0.0721
	Median (mg/l)	0.0243	0.0298
	Percent compliance with 0.1 mg/l standard	88	80
	Percent compliance with 0.075 mg/l standard	83	76
Total Nitrogen	Mean (mg/l)	0.45	0.91
	Median (mg/l)	0.41	0.8

Example B – Large Difference (KK-2: S. 43rd Street Ditch)

Parameter	Measure	Original	Corrected
Total Phosphorus	Mean (mg/l)	0.0834	0.3303
	Median (mg/l)	0.0721	0.3179
	Percent compliance with 0.1 mg/l standard	85	2
	Percent compliance with 0.075 mg/l standard	65	1
Total Nitrogen	Mean (mg/l)	0.77	1.55
	Median (mg/l)	0.75	1.54

3 Fixing the Error in the UCI Files

As noted above, the error only affects the additional reporting stations. Within the NETWORK block there is a separate section for each new station. Each of these follows a consistent format and is labeled as "*** new station", as in the following example from the Kinnickinnic model (highlights added), except that the RCHRES, PLGTEN, COPY, and GENER numbers will change.

```
NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
...
*** new station 1
RCHRES 818 OXRX   BOD    1 1               PLTGEN  81      INPUT  MEAN   1
RCHRES 818 PLANK  PHYCLA 1 1               PLTGEN  82      INPUT  MEAN   1
RCHRES 818 CONS   CON    1 1               PLTGEN  83      INPUT  MEAN   1
RCHRES 818 OXRX   DOX    1 1               PLTGEN  84   85 INPUT  MEAN   1
RCHRES 818 GQUAL  RSQAL  4 1               COPY    86      INPUT  MEAN   1
RCHRES 818 GQUAL  RDQAL  1 1               COPY    86      INPUT  MEAN   1
COPY    86 OUTPUT MEAN   1                 GENER  186      INPUT  ONE
RCHRES 818 HYDR   VOL                      GENER  186      INPUT  TWO
GENER  186 OUTPUT TIMSER      8.107E-8     PLTGEN  86   87 INPUT  MEAN   1
RCHRES 818 NUTRX  DNUST  2 1               PLTGEN  88      INPUT  MEAN   1
RCHRES 818 NUTRX  DNUST  1 1               COPY    89      INPUT  MEAN   1
RCHRES 818 NUTRX  DNUST  3 1               COPY    89      INPUT  MEAN   1
COPY    89 OUTPUT MEAN   1                 PLTGEN  89      INPUT  MEAN   1
RCHRES 818 NUTRX  DNUST  4 1               PLTGEN  90      INPUT  MEAN   1
RCHRES 818 HYDR   RO     1 1               PLTGEN  91   92 INPUT  MEAN   1
RCHRES 818 NUTRX  NUST   1 1               COPY    93      INPUT  MEAN   1
RCHRES 818 NUTRX  NUST   2 1               COPY    93      INPUT  MEAN   1
RCHRES 818 NUTRX  NUST   3 1               COPY    93      INPUT  MEAN   1
COPY    93 OUTPUT MEAN   1                 GENER  193      INPUT  ONE
RCHRES 818 HYDR   VOL                      GENER  193      INPUT  TWO
RCHRES 818 PLANK  PKST3  4 1               PLTGEN  93      INPUT  MEAN   1
GENER  193 OUTPUT TIMSER      8.107E-8     PLTGEN  93      INPUT  MEAN   1
RCHRES 818 NUTRX  NUST   4                 GENER  194      INPUT  ONE
RCHRES 818 HYDR   VOL                      GENER  194      INPUT  TWO
GENER  194 OUTPUT TIMSER      8.107E-8     COPY    94      INPUT  MEAN   1
RCHRES 818 PLANK  PKST3  5 1               COPY    94      INPUT  MEAN   1
COPY    94 OUTPUT MEAN   1                 PLTGEN  94      INPUT  MEAN   1
RCHRES 818 SEDTRN SSED   4 1               PLTGEN  95      INPUT  MEAN   1
RCHRES 818 SEDTRN SSED   4 1               GENER  196      INPUT  ONE
RCHRES 818 HYDR   RO     1 1               GENER  196      INPUT  TWO
GENER  196 OUTPUT TIMSER      1.0          PLTGEN  96      INPUT  MEAN   1
RCHRES 818 CONS   CON    2 1               PLTGEN  97      INPUT  MEAN   1
GENER  186 OUTPUT TIMSER      8.107E-8     PLTGEN  78      INPUT  MEAN   1
RCHRES 818 OXRX   DOX    1 1               PLTGEN  79      INPUT  MEAN   1
COPY    94 OUTPUT MEAN   1 1               PLTGEN  80      INPUT  MEAN   1
```

The error occurs in the multiplication factors column – specifically in the second and third non-blank multipliers, which respectively point (in this case) to PLTGEN 93 and 94. The PLOTINFO block shows that these PLTGENs are associated with file numbers 93 and 94, and that these in turn are the output for TN and TP. Specifically, the lines in question are routing (1) the concentration calculated from the sum of inorganic N storages (from NUST 1, NUST 2, and NUST 3) and (2) the concentration calculated from the PO_4 storage (from NUST 4) to the concentration summations for TN and TP. The lines should occur in the same order in each new station output block.

The conversion factor is to convert mass (or bacterial number) divided by volume (in AF) to concentration. The factor 8.107E-8 is the appropriate factor for producing fecal coliform concentrations in #/100 ml, and properly occurs twice in the block. The correct factor for converting mass (lbs) divided by volume (AF) to concentration in mg/L is 0.368. Each "new station" section within the NETWORK block should thus be corrected as follows:

```
*** new station 1
RCHRES 818 OXRX   BOD    1 1               PLTGEN  81     INPUT  MEAN    1
RCHRES 818 PLANK  PHYCLA 1 1               PLTGEN  82     INPUT  MEAN    1
RCHRES 818 CONS   CON    1 1               PLTGEN  83     INPUT  MEAN    1
RCHRES 818 OXRX   DOX    1 1               PLTGEN  84  85 INPUT  MEAN    1
RCHRES 818 GQUAL  RSQAL  4 1               COPY    86     INPUT  MEAN    1
RCHRES 818 GQUAL  RDQAL  1 1               COPY    86     INPUT  MEAN    1
COPY    86 OUTPUT MEAN   1                 GENER  186     INPUT  ONE
RCHRES 818 HYDR   VOL                      GENER  186     INPUT  TWO
GENER  186 OUTPUT TIMSER       8.107E-8    PLTGEN  86  87 INPUT  MEAN    1
RCHRES 818 NUTRX  DNUST  2 1               PLTGEN  88     INPUT  MEAN    1
RCHRES 818 NUTRX  DNUST  1 1               COPY    89     INPUT  MEAN    1
RCHRES 818 NUTRX  DNUST  3 1               COPY    89     INPUT  MEAN    1
COPY    89 OUTPUT MEAN   1                 PLTGEN  89     INPUT  MEAN    1
RCHRES 818 NUTRX  DNUST  4 1               PLTGEN  90     INPUT  MEAN    1
RCHRES 818 HYDR   RO     1 1               PLTGEN  91  92 INPUT  MEAN    1
RCHRES 818 NUTRX  NUST   1 1               COPY    93     INPUT  MEAN    1
RCHRES 818 NUTRX  NUST   2 1               COPY    93     INPUT  MEAN    1
RCHRES 818 NUTRX  NUST   3 1               COPY    93     INPUT  MEAN    1
COPY    93 OUTPUT MEAN   1                 GENER  193     INPUT  ONE
RCHRES 818 HYDR   VOL                      GENER  193     INPUT  TWO
RCHRES 818 PLANK  PKST3  4 1               PLTGEN  93     INPUT  MEAN    1
GENER  193 OUTPUT TIMSER       0.368       PLTGEN  93     INPUT  MEAN    1
RCHRES 818 NUTRX  NUST   4                 GENER  194     INPUT  ONE
RCHRES 818 HYDR   VOL                      GENER  194     INPUT  TWO
GENER  194 OUTPUT TIMSER       0.368       COPY    94     INPUT  MEAN    1
RCHRES 818 PLANK  PKST3  5 1               COPY    94     INPUT  MEAN    1
COPY    94 OUTPUT MEAN   1                 PLTGEN  94     INPUT  MEAN    1
RCHRES 818 SEDTRN SSED   4 1               PLTGEN  95     INPUT  MEAN    1
RCHRES 818 SEDTRN SSED   4 1               GENER  196     INPUT  ONE
RCHRES 818 HYDR   RO     1 1               GENER  196     INPUT  TWO
GENER  196 OUTPUT TIMSER       1.0         PLTGEN  96     INPUT  MEAN    1
RCHRES 818 CONS   CON    2 1               PLTGEN  97     INPUT  MEAN    1
GENER  186 OUTPUT TIMSER       8.107E-8    PLTGEN  78     INPUT  MEAN    1
RCHRES 818 OXRX   DOX    1 1               PLTGEN  79     INPUT  MEAN    1
COPY    94 OUTPUT MEAN   1 1               PLTGEN  80     INPUT  MEAN    1
```

Note that this block is in column-sensitive, fixed format. Therefore, the user should ensure that (1) the new factor begins in column 32, and (2) the following PLTGEN or COPY key word continues to begin in column 44.