MINUTES

SEWRPC ADVISORY COMMITTEE ON REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

DATE: October 12, 2005

TIME: 1:30 p.m.

PLACE: City of Mequon City Hall
Upper Level Council Chambers
11333 N. Cedarburg Road
Mequon, Wisconsin

<u>Committee Members Present</u>

Daniel S. Schmidt, Chairman	Administrator, Village of Kewaskum, SEWRPC Commissioner
Michael G. Hahn, Secretary	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Martin A. Aquino (for Jeffrey Mantes)	Environmental Manager, Environmental Engineering, City of Milwaukee
John R. Behrens	Commissioner-Secretary, Silver Lake Protection and Rehabilitation District
John M. Bennett	City Engineer, City of Franklin
Marsha Burzynski (for Charles J. Krohn)	Wisconsin Department of Natural Resources
Diane M. Georgetta	Coordinator, Town and Country Resource Conservation and Development. Inc.
Andrew A. Holschbach	Director, Ozaukee County Planning, Resources, and Land Management Department
William A. Kappel	Director of Public Works, City of Wauwatosa
James Lubner	Sea Grant Advisory Services Specialist, UW Sea Grant Institute
Scott Mathie (for Matthew Moroney)	Metropolitan Builders Association of Greater Milwaukee
Gary A. Mick	Director of Environmental Services, Milwaukee County
Cheryl Nenn	Riverkeeper/Project Director, Friends of Milwaukee's Rivers
Jeffrey S. Nettesheim	Senior Utility Engineer, Village of Menomonee Falls
Stephen Poloncsik (for Peter G. Swenson)	Senior Staff Engineer, U.S. Environmental Protection Agency
Kevin L. Shafer	Executive Director, Milwaukee Metropolitan Sewerage District
Thomas A. Wiza	Director of Engineering and Public Works, City of Cedarburg

<u>Staff Members and Guests</u>

Don Behm	Environmental Reporter, Milwaukee Journal-Sentinel
Robert P. Biebel	Special Projects Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Joseph E. Boxhorn	Senior Planner, Southeastern Wisconsin Regional Planning Commission
Troy E. Deibert (for William Krill)	Water Resources Engineer, HNTB Corporation
Thomas M. Slawski	Principal Planner, Southeastern Wisconsin Regional Planning Commission

WELCOME AND INTRODUCTIONS

Mr. Schmidt thanked the Advisory Committee members for attending this meeting. He indicated that roll call would be accomplished with a sign-in sheet circulated by Commission staff.

APPROVAL OF MINUTES OF THE MEETING OF AUGUST 3, 2005

Mr. Schmidt asked if there were any additions or revisions to be made to the minutes of the August 3, 2005, meeting of the Committee.

Mr. Nettesheim said that prior to the meeting he provided Mr. Hahn with maps clarifying locations of areas served by sanitary sewers in the Villages of Germantown and Menomonee Falls.

[Secretary's Note: The information provided by Mr. Nettesheim was used to revise Map VI-15 from the draft provided for Committee review and Map VI-17 that was added to the chapter as Exhibit F of the minutes of the August 3, 2005, Committee meeting.]

There being no further additions or revisions, the minutes were approved, on a motion by Mr. Bennett, seconded by Mr. Shafer, and carried unanimously.

CONSIDERATION OF CHAPTER V, "SURFACE WATER QUALITY CONDITIONS AND SOURCES OF POLLUTION IN THE KINNICKINNIC RIVER WATERSHED," OF SEWRPC TECHNICAL REPORT NO. 39, *WATER QUALITY CONDITIONS AND SOURCES OF POLLUTION IN THE GREATER MILWAUKEE WATERSHEDS*

Mr. Schmidt asked Mr. Hahn to review the preliminary draft of the chapter.

Mr. Hahn began by explaining that the chapter will be presented in separate sections by Mr. Joseph E. Boxhorn, Mr. Thomas M. Slawski, and himself.

Mr. Boxhorn began summarizing the introduction, description of the watershed, land use, quantity and quality of surface water, and toxicity conditions sections of the chapter.

Mr. Mathie noted that in the second last sentence in the second last paragraph on page 3, the word "decrease" should be changed to "increase."

[Secretary's Note: That change has been made.]

Mr. Bennett noted that in Table V-3 on page 8, the urban land area developed between 1900 and 1920 was listed incorrectly.

[Secretary's Note: That area has been corrected to 1,311 acres.]

Mr. Holschbach asked if the water quality sample sites listed in Table V-4 were located on a map. Mr. Boxhorn replied that Map V-5 showed the sample locations.

[Secretary's Note: In response to Mr. Holschbach's comment, revisions were made to make the river mile locations consistent between Table V-4 and Map V-4 and the following sentence was added at the end of footnote "a" in Table V-4:

"The river mile locations corresponding to these samplings sites are shown on Map V-5."]

[Secretary's Note: In order to emphasize the location of the water quality sampling sites relative to combined sanitary sewer overflow outfalls, the following sentence was added after the third sentence in the second paragraph on page 11:

"All of the sampling stations along the main stem of the Kinnickinnic River are located at, or downstream from, combined sanitary sewer overflow outfalls."]

Mr. Lubner said that in Table V-6 on page 37, the consumption advisory level for carp could not be both "one meal per two months" for all sizes and "do not eat" for all sizes.

[Secretary's Note: The table has been corrected to only list an advisory level of one meal per two months for all sizes.]

Mr. Slawski then began a summary of the biological conditions, channel conditions, and habitat and riparian corridor condition sections for the Kinnickinnic River watershed.

Mr. Mathie said that 10 to 20 percent watershed impervious area threshold beyond which IBI scores have been found to decline dramatically cited is contradicted by the information presented at the previous meeting for the Menomonee River watershed. He also said that concrete channel linings in some streams in the Kinnickinnic River watershed may have a greater impact on the fishery. Mr. Slawski noted that streams in the Kinnickinnic River watershed have concrete lining along about 30 percent of their length and enclosed channels along an additional 30 percent of their length. He said that those conditions along with drop structures in the streams were more limiting from the perspective of habitat than are conditions in much of the Menomonee River watershed. However, he also stated that, while the proportion of urban land in the Menomonee River watershed is lower than in the Kinnickinnic River watershed, impacts to the fishery have also been documented in the Menomonee watershed. Mr Slawski noted that studies of biological conditions based on data from Wisconsin or the Midwest were used wherever possible.

Mr. Mathie asked that the impact of concrete channel lining also be mentioned as a negative influence on habitat, and he said that he supported limiting research results cited in the report to those from Wisconsin- or Midwest-based studies. Mr. Hahn replied that the Commission staff would use study results from geographic areas outside the State and the Midwest if the conditions under which those studies were conducted were judged to be applicable to the regional water quality management study.

Mr. Biebel said that the paragraph relating impervious percentages to declines in IBI scores implies that land use is an overriding factor in reductions in those scores and he said that the Commission staff would reconsider how to address the issue.

Mr. Lubner cited information from Table VI-3 in draft Chapter VI of TR No. 39, "Surface Water Quality Conditions and Sources of Pollution in the Menomonee River Watershed," that shows that the Menomonee watershed was 20 percent urban in 1950 and about 60 percent urban in 2000. He offered the opinion that the situation in the Kinnickinnic watershed is consistent with the research regarding the effect of impervious area on IBI scores and the situation in the Menomonee watershed is an exception.

Mr. Slawski noted that the greater presence of riparian buffers in the Menomonee River watershed than in the Kinnickinnic River watershed may compensate for some of the negative effectives of urbanization on instream habitat.

[Secretary's Note: As a result of the foregoing discussion, the following revisions were made:.

- The paragraph after the bulleted list on page 45 was expanded as shown in the attached Exhibit A (Doc #113693), and it was moved to page 26 of Chapter II, "Water Quality Definitions and Issues," after the **Macroinvertebrates** subsection.

- The last two paragraphs on page 45 of Chapter V were replaced with the following:

"Chapter II of this report includes a description of the correlation between urbanization in a watershed and the quality of the aquatic biological resources. The amount of imperviousness in a watershed that is directly connected to the stormwater drainage system can be used as a surrogate for the combined impacts of urbanization in the absence of mitigation. The Kinnickinnic River watershed included about 30 percent urban land use in 1940, which approximately corresponds to about 10 percent imperviousness in the watershed; about 90 percent urban land use in 1970, corresponding to about 30 to 40 percent imperviousness, and it currently has about 93 percent urban land overall. Thus, since about 1940, the amount of impervious land cover in the watershed has been beyond the threshold level of 10 percent at which previously cited studies indicate that negative biological impacts have been observed. Based upon the amount of urban lands in the watershed and, in the past, a lack of measures to mitigate the adverse effects of those land uses, the resultant poor to very poor IBI scores observed throughout this watershed are not surprising."

- The following footnote was added to end of the second full paragraph on page 47 at the end of the **Macroinvertebrates** subsection:

  J. Masterson and R. Bannerman, "Impact of Stormwater Runoff on Urban Streams in Milwaukee County, Wisconsin," *Wisconsin Department of Natural Resources, Madison, Wisconsin, 1994*.]

[Secretary's Note: The following also relates to the **HABITAT AND RIPARIAN CORRIDOR CONDITIONS** section of Chapter V. At the May 25, 2005, Advisory Committee meeting during which Chapters I through IV of SEWRPC TR No. 39 were reviewed, Mr. Matthew Moroney, the Executive Director of the Metropolitan Builders Association of Greater Milwaukee, raised questions relative to Figure II-1 on page 24, "Range of Buffer Widths for Providing Specific Buffer Functions." He expressed concern that the information in the figure could be misinterpreted as representing absolute standards that must be met in all cases. In response, the Commission staff made revisions to the figure, including the addition of a footnote explaining that "site-specific evaluations are required to determine the need for buffers and specific buffer characteristics" (see page 7 of the minutes of the May 25, 2005, Advisory Committee meeting). Mr. Moroney was provided a revised copy of Figure II-1 on October 4. He responded by electronic mail to Mr. Hahn that he thought the figure should be eliminated from the report, primarily because he did not think that the information presented was applicable to conditions in the State of Wisconsin. Based on additional review by the Commission staff of the source document for Figure II-1, it was concluded that, while the paper did present information which was applicable to the State of Wisconsin, the information shown on Figure II-1 was misleading to some degree. While the figure indicates a wide range of buffer widths for potential functions, it does not adequately convey the information presented in the paper regarding the relative levels of control achieved for different buffer widths. That information indicates that buffer widths less than the maxima indicated in the figure can be effective in reducing nonpoint source pollution.

To address this issue, Figure II-1 was deleted and replaced with Table V-10, "Effect of Buffer Width on Contaminant Removal," from page 59 of Chapter V (Kinnickinnic River watershed) of TR No. 39. Table V-10 was renumbered to Table II-5. The first sentence in the last paragraph on page 58 of Chapter V was revised to refer to "Table II-5 in Chapter II of this report", rather than Table V-10. The first sentence in the second full paragraph on page 60 of Menomonee River watershed Chapter VI (now revised to be the first sentence in the last paragraph on page 66) was also edited to refer to "Table II-5 in Chapter II of this report."

The first full paragraph on page 23 of Chapter II of TR No. 39 will be revised to refer to the information set forth in the new Table II-5.]

Mr. Bennett said that the chapter did not mention dredging of the Kinnickinnic River channel within the Milwaukee Harbor estuary. Mr. Biebel said that the Commission staff had data on dredging which would be presented in the alternatives chapter of the companion planning report.

Mr. Slawski noted that in general the maps of the watershed show the area that is directly tributary to the Milwaukee Harbor estuary and he said that salient information from the Kinnickinnic, Menomonee, and Milwaukee River watershed chapters on water quality data and sources of pollution will be summarized in a later chapter of the Technical Report on the Milwaukee Harbor estuary and the adjacent nearshore areas of Lake Michigan.

Mr. Hahn then began a review of the sources of water pollution, achievement of water use objectives, and summary sections of the chapter.

Mr. Lubner said that on page 62 there are references to "separate sewer overflows," "overflows," "combined sewer bypasses," "sanitary sewer overflows," and "public sanitary sewer systems," and he noted that these references are inconsistent and confusing.

[Secretary's Note: In response to Mr. Lubner's comment, the following changes in terminology were made on page 62, and throughout the report to standardize references to sewers and overflows:

- "separate sewer overflows" was changed to "separate sanitary sewer overflows"
- "overflows" was changed to "combined sewer overflows"
- "combined sewer bypasses" was changed to "combined sewer overflows"
- "sanitary sewer overflows" was changed to "separate sanitary sewer overflows," and
- "public sanitary sewer systems" was changed to "public separate sanitary sewer systems."]

Mr. Lubner noted that in Table V-13 on page 68, the building number in the address for Elite Finishing was listed as 32695, but that it should only have four digits.

[Secretary's Note: The building number was corrected to 3970.]

[Secretary's Note: The Commission staff realized that the subsection on **Nonpoint Source Pollution** does not include any mention of Chapter NR 151 of the *Wisconsin Administrative Code*. To correct that omission, the third full paragraph on page 70 was revised as follows and the following subsection was added. Chapter VI for the Menomonee River watershed will also be revised to include this subsection.

"The WPDES stormwater permits for municipalities within the watershed are described below.

Chapter NR 151 of the Wisconsin Administrative Code

Chapter NR 151, "Runoff Management," of the *Wisconsin Administrative Code* establishes performance standards for the control of nonpoint source pollution from agricultural lands, nonagricultural (urban) lands, and transportation facilities. The standards for urban lands apply to areas of existing development, redevelopment, infill, and construction sites. In general, the construction erosion control, post-construction nonpoint source pollution control, and stormwater infiltration requirements of Chapter NR 151 apply to projects associated with construction activities that disturb at least one acre of land.

The urban standards are applied to activities covered under the WPDES program for stormwater discharges. As noted below, communities with WPDES stormwater discharge permits must adopt stormwater management ordinances that have requirements at least as stringent as the standards of Chapter NR 151. Those communities must also achieve levels of control of nonpoint source pollution from areas of existing development (as of October 1, 2004) that are specified under Chapter NR 151."]

Mr. Hahn said that the ***Annual Loadings*** and *Point Source Loadings* subsections on page 72 would be provided to the Committee at a later date.

[Secretary's Note: Those subsections are provided in the attached Exhibit B. In addition, the same subsections from Chapter VI for the Menomonee River watershed are provided as Exhibit C]

Mr. Hahn also said that the missing information from the *Nonpoint Source Loads* subsection, which begins on page 72, would be provided to the Committee at a later date.

[Secretary's Note: The paragraphs from that subsection that had missing information are provided in the attached Exhibit D. In addition, point and nonpoint source load Tables V-16 through V-23, which were not provided in the preliminary draft of Chapter V are provided as Exhibit E. Also, the same paragraphs from Chapter VI for the Menomonee River watershed are provided as Exhibit F, and pollution load Tables VI-24 through VI-31 are provided as Exhibit G. The Menomonee River watershed tables have been revised to include point source loads and to separately list urban and rural nonpoint source loads. The subwatersheds for which information is provided have also been revised to reflect the subwatersheds used in the rest of Chapter VI. Finally, maps showing information on nonpoint source load total amounts by subwatershed and unit area loads are now included in Appendix H of TR No. 39, rather than in the body of the report. The attached Exhibit H includes the maps for the Kinnickinnic River watershed (Maps H-1 through H-12), which were not provided previously. Exhibit I includes Maps H-13 through H-24 for the Menomonee River watershed. The total load maps are revised to reflect subwatersheds consistent with the rest of the chapter. The unit area load maps were not provided previously.]

Mr. Mathie inquired as to how changed or new regulations, such as Chapter NR 151, "Runoff Management," of the *Wisconsin Administrative Code* will be addressed in the water quality model. Mr. Hahn replied that the planning report chapter on the water quality model would describe all assumptions and would specifically address the incorporation of the NR 151 standards in the model.

Mr. Hahn noted that the ***Wet-Weather and Dry-Weather Loads*** subsection of the chapter would be prepared later and provided to the Committee for review.

[Secretary's Note: Chapter VIII, "Surface Water Quality Conditions and Sources of Pollution in the Oak Creek Watershed," of Technical Report No. 39 will include the ***Wet-Weather and Dry-Weather Loads*** subsection. Following Committee review and comment on that chapter at the December 14, 2005, meeting, similar subsections will be drafted for the Kinnickinnic and Menomonee River watersheds, Chapters V and VI, respectively, and those drafts will be provided to the Committee with the minutes from the December 14 meeting.]

Mr. Lubner said that researchers at the Great Lakes WATER Institute have found that phosphorus levels have been increasing in the estuary, but that they were not yet sure of the cause. Mr. Slawski replied that this observation would be added to the summary section of Chapter V.

A motion to approve preliminary draft Chapter V, "Surface Water Quality Conditions and Sources of Pollution in the Kinnickinnic River Watershed," as amended, was made by Mr. Kappel and seconded by Mr. Lubner.

Mr. Shafer asked if the Committee would have the opportunity to review the load data. Mr. Biebel replied that those data would be included in the meeting minutes, which would be considered for approval by the Committee at its next meeting.

There being no further discussion, the motion was carried unanimously by the Committee.

OVERVIEW OF SCENARIOS AND CONCEPTUAL ALTERNATIVE PLANS TO BE EVALUATED UNDER THE SEWRPC RWQMPU AND THE MMSD 2020 FACILITIES PLAN

At Mr. Schmidt's request, Mr. Hahn summarized the scenarios and conceptual alternative plans.

[Secretary's Note: The PowerPoint presentation made by Mr. Hahn is attached as Exhibit I.]

Mr. Biebel noted that Mr. Bennett's comment regarding dredging of the Kinnickinnic River in the estuary should be addressed in the future conditions model.

Mr. Shafer stated that conceptual alternative plan B-2, which is designed to meet nonpoint source discharge regulations and to operate the MMSD system to minimize overflows should not be considered a regulatory alternative because it does not completely meet the current regulations. He added that he did not object to consideration of this alternative, only to classifying it as a regulatory alternative.

Mr. Bennett asked how the scenarios and alternative plans would be integrated with the MMSD 2020 facilities plan. Mr. Hahn replied that it is intended that the recommendations of the SEWRPC RWQMPU and the MMSD 2020 facilities plan be consistent. He said that MMSD and other sewage treatment plant operators in the study area would have to meet current regulations, but if the planning process identified another approach that would better achieve water use objectives and also be cost effective, the RWQMPU would hold that approach out for consideration as the recommended plan, while recognizing that, until the regulations are changed to accommodate such an approach, MMSD must meet the regulations.

[Secretary's Note: Subsequent to the Meeting, Ms. Nenn wrote to the Regional Planning Commission, on behalf of Friends of Milwaukee's Rivers, commenting on the conceptual alternatives and expressing some concerns with those alternatives. Ms. Nenn's letter and the SEWRPC responses to her comments, along with supporting information are included as Exhibit K.]

REVIEW OF REVISED APPENDIX VII-1, "OBJECTIVES, PRINCIPLES, AND STANDARDS," OF SEWRPC PLANNING REPORT NO. 50, *A REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS*

Mr. Schmidt asked Mr. Biebel to summarize the status of the objectives, principles, and standards appendix. Mr. Biebel said that, as a result of the 2035 land use planning process, the Land Use Plan Advisory Committee had made some changes to the version of the appendix that the RWQMPU Committee was previously provided. He also said that the RWQMPU Committee would be provided with a revised copy of the appendix, indicating changes with bold text and strikeouts.

RESPONSES TO COMMENTS FROM MS. BURZYNSKI, MR. THEODORE BOSCH, AND MR. WILLIAM WAWRZYN OF THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES STAFF

[Secretary's Note: Subsequent to the meeting, Ms. Burzynski provided additional written comments on Chapter V. A summary of these revisions is provided below.]

[Secretary's Note: As had been noted by other Committee members at a previous meeting, Ms. Burzynski asked that page number references to maps, tables, and figures be provided since they are often located several pages after their references in the text.

Response: The final report layout will be refined to insert tables, figures, and maps more closely to the associated text. Depending on how that works out, consideration will be given to adding page references to the final report where needed, but such references will not be included in preliminary drafts, since each will undergo several iterations as committee and public comments are addressed.]

[Secretary's Note: Ms. Burzynski noted that the symbols for some types of sites partially obscure the symbols for other sites at the same, or nearby, locations. She also asked that the map clarify which sampling sites were used for long-term analysis. Finally, she asked for clarification regarding the source of the water quality data.

Response: Some types of sites are partially obscured because they are at the same general location as other types of sites. However none of the sites is completely obscured, so the map will not be revised. The map will be revised to clarify the sites that were used for long-term analysis by listing the River Miles on the map exactly as they appear in Table V-4 and by changing the "RIVER MILE DESIGNATION" legend item on Map V-5 to read "RIVER MILE LOCATION OF SITE USED FOR LONG-TERM ANALYSIS." The sources of the water quality data are listed on page 9. All water quality data was either obtained from the MMSD Corridor Study database, which was prepared by the U.S. Geological Survey with input from MMSD and WDNR, or it was directly obtained from WDNR. For most analyses, all available station data that were collected by USGS, WDNR, and MMSD were pooled and analyzed together. The exception to this was that data from water quality samples collected during the winter months of December through February were not utilized for some statistical analyses. This was done because MMSD did not collect data during the winter after 1986.]

[Secretary's Note: Ms. Burzynski asked if the report could include information on the effect of precipitation/streamflow on constituent concentrations. Chapter VIII of TR No. 39, which presents water quality conditions and sources of pollution for the Oak Creek watershed, is the first chapter to include the ***Wet-Weather and Dry-Weather Loads*** subsection. That subsection was always intended to be a part of each chapter, but the format and approach were not finalized until the Oak Creek chapter was prepared. Following incorporation of any Advisory Committee comments on the Oak Creek subsection at the December 14, 2005, meeting, similar subsections will be included in each watershed chapter in TR No. 39. We believe that the addition of this subsection addresses Ms. Burzynski's comment.]

[Secretary's Note: Ms. Burzynski noted that additional factors besides differential loading could account for the differences observed between mean fecal coliform bacteria concentrations in the estuary and the section of the River upstream of the estuary. In response to this comment, the seventh sentence of the third paragraph on page 11 was deleted and the following text was added beginning after the sixth sentence:

"Several factors could account for this difference. First, water in the upstream section of the River may be receiving more contamination from sources containing these bacteria than water in the estuary. Second, larger water volumes coupled with settling of cells might reduce fecal coliform bacteria concentrations in the estuary. By contrast, lower flows coupled with less settling might maintain higher concentrations in the upstream section of the River. Third, dilution effects from the influence of Lake Michigan might act to reduce fecal coliform bacteria concentrations in the estuary. Fourth, in the upstream portion of the River, scour occurring during periods of increased flow could act to resuspend bacteria that had previously settled."]

[Secretary's Note: The beginning of the first sentence of the last paragraph on page 15 was revised to read as follows (additional text indicated in bold characters):

As shown on Map V-5 **and in Figure V-11**….]

[Secretary's Note: Ms. Burzynski noted that while BOD concentrations downstream of General Mitchell International airport were higher due to deicing operations, studies done for Milwaukee County found little apparent correlations between glycol deicer usage and dissolved oxygen depletion. These studies did find that the deicers can be toxic to aquatic life. The last sentence of the first partial paragraph on page 18 was revised to read (added text indicated in bold):

"**While** these compounds are known to create high oxygen demands in waters, **studies conducted for GMIA found little correlation between glycol deicer usage and periods of dissolved oxygen depletion.**[1] **The frequency of low dissolved oxygen concentrations in the receiving stream was found to be comparable to that at an upstream reference site. This may be due to slowed bacterial metabolism at low water temperatures, short travel times, and dilution from downstream tributaries.**[2]"]

[Secretary's Note: The last sentence in the first paragraph on page 30 was revised to read as follows (added text indicated in bold):

"Total phosphorus represents all the phosphorus contained in material dissolved or suspended within the water, including phosphorus contained in detritus and organisms **and attached to soil and sediment**.]

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[1]*Camp Dresser & McKee,* Impact of Aircraft Glycol Deicers on the Kinnickinnic River Watershed: Phase II, *February 1998; S.R. Corsi, N.L. Booth, and D.W. Hall, "Aircraft and Runway Deicers at General Mitchell International Airport, Milwaukee, Wisconsin, USA. 1. Biochemical Oxygen Demand and Dissolved Oxygen in Receiving Streams,"* Environmental Toxicology and Chemistry, *Volume 20, 2001.*

[2]*S.R. Corsi, N.L. Booth, and D.W. Hall* op. cit.

[Secretary's Note: The second last sentence in the second paragraph on page 30 was revised to refer to "dissolved **phosphorus**".]

[Secretary's Note: Ms. Burzynski provided additional information on a possible phosphorus source and the figures attached as Exhibits L (Kinnickinnic River watershed) and M (Menomonee River watershed) were developed by the SEWRPC staff to better explain observed increases in phosphorus. Exhibit L was added as Figure V-21 and the subsequent figures were renumbered. The following paragraph was added to the ***Total and Dissolved Phosphorus*** section after the third paragraph on page 30:

"Figure V-21 shows the annual mean total phosphorus concentration in the Kinnickinnic River for the years 1985-2001. Mean annual total phosphorus concentration increased sharply after 1996. In addition, researchers at the University of Wisconsin-Milwaukee/University of Wisconsin System Great Lakes WATER Institute have found that phosphorus concentrations have been increasing in the upper reaches of the estuary. One possible cause of this increase is phosphorus loads from facilities discharging noncontact cooling water drawn from municipal water utilities. The City of Milwaukee began treating its municipal water with orthophosphate to inhibit release of copper and lead from pipes in the water system and private residences in 1996. In 2004, for instance, concentrations of orthophosphate in plant finished water from the Milwaukee Water Works ranged between 1.46 mg/l and 2.24 mg/l,[3] considerably above average concentrations of total phosphorus in the Kinnickinnic River."

Exhibit M of these minutes was added as Figure VI-18 in Chapter VI and the subsequent figures were renumbered. The following paragraph was added to the ***Total and Dissolved Phosphorus*** section of the most recent version of Chapter VI after the first paragraph on page 30:

"Figure V-21 shows the annual mean total phosphorus concentration in the Menomonee River for the years 1985-2001. Mean annual total phosphorus concentration increased sharply after 1996. One possible cause of this increase is phosphorus loads from facilities discharging noncontact cooling water drawn from municipal water utilities. The City of Milwaukee began treating its municipal water with orthophosphate to inhibit release of copper and lead from pipes in the water system and private residences in 1996. In 2004, for instance, concentrations of orthophosphate in plant finished water from the Milwaukee Water Works ranged between 1.46 mg/l and 2.24 mg/l,[4] considerably above average concentrations of total phosphorus in the Menomonee River."]

[Secretary's Note: Ms. Burzynski suggested eliminating information on spatial trends in fish tissue with PCBs since fish can migrate freely in the River. In response to this suggestion Figure V-27 was deleted and last sentence of the second paragraph on page 37 was deleted.]

[Secretary's Note: Ms. Burzynski suggested citing an additional study by Wang and Lyons that provides additional information on the effects of urbanization on fisheries in southeastern Wisconsin. Since that issue has implications for all watersheds in the study area, the

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[3]*Milwaukee Water Works,* Annual Water Quality Report, 2004, *February 2005.*

[4]*Milwaukee Water Works,* Annual Water Quality Report, 2004, *February 2005.*

subsection set forth in Exhibit A of these minutes was added to Chapter II of TR No. 39, as noted previously in these minutes.

Also, the first two full paragraphs on page 48 of Chapter VI (Menomonee River watershed) of TR No. 39 were deleted and replaced with the following:

"Chapter II of this report includes a description of the correlation between urbanization in a watershed and the quality of the aquatic biological resources. The amount of imperviousness in a watershed that is directly connected to the stormwater drainage system can be used as a surrogate for the combined impacts of urbanization in the absence of mitigation. Between 1950 and 1960, the percentage of urban land in the Menomonee River watershed equaled, and then surpassed, 30 percent, which approximately corresponds to about 10 percent imperviousness in the watershed. The watershed currently has about 64 percent urban land overall (approximately 20 to 30 percent imperviousness). Thus, since the 1950s the level of impervious land cover in the watershed has been beyond the threshold level of 10 percent at which previously cited studies indicate that negative biological impacts have been observed. As also described in Chapter II of this report, studies have indicated that the amount of agricultural land in a watershed can also be correlated with negative instream biological conditions. Significant areas of agricultural lands have existed in the upper portions of the watershed, whereas the lower portions of the watershed have been dominated by urban development. Based upon the amount of agricultural and urban lands in the watershed and, in the past, a lack of measures to mitigate the adverse effects of those land uses, the resultant poor to very poor IBI scores observed throughout this watershed are not surprising. However, despite the increase in urban development from 1950 to the present, the quality of the fishery has not significantly changed. This may be due in part to the mitigative effects of the maintenance of significant riparian buffers, primarily comprised of Milwaukee County park land in the urban areas, along several streams in the watershed."]

[Secretary's Note: To accommodate the changes on page 48 of Chapter VI as described in the preceding note, the first two sentences of the third paragraph on page 48 were deleted and the beginning of the third sentences was revised to read:

"The Little Menomonee River ….]

DETERMINATION OF NEXT MEETING DATE AND LOCATION

The next meeting of the Advisory Committee was tentatively scheduled for December 14, 2005, at 9:30 a.m. at the Mequon City Hall in the upstairs Council Chambers.

ADJOURNMENT

The October 12, 2005, meeting of the Advisory Committee on the regional water quality management plan update was adjourned at 3:18 p.m. on a motion by Mr. Wiza, seconded by Mr. Shafer, and carried unanimously by the Committee.

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#113766 V1 - RWQMP UPDATE MINUTES 10/12/05
300-4001
MGH/pk
12/06/05

Exhibit A

TEXT TO BE ADDED TO SEWRPC TECHNICAL REPORT NO. 39, CHAPTER II

Effects of Urbanization and Agriculture on Instream Biological Communities
Researchers evaluated 134 sites on 103 streams throughout the State of Wisconsin and have found that the amount of urban land use upstream of sample sites had a negative relationship with biotic integrity scores, and there appeared to be a threshold of about 10 percent directly-connected impervious cover where IBI scores declined dramatically.[1,2] Fish IBI scores were found to be good to excellent below this threshold, but were consistently rated as poor to fair above this threshold. They also found that habitat scores were not tightly associated with degraded fish community attributes in the studied streams. Wisconsin researchers also found that the number of trout per 100 meters in coldwater streams dramatically decreased at a threshold of six percent imperviousness, and no trout were observed in cold water streams in watersheds with greater than 11 percent imperviousness.[3] Wang and others also studied 47 small streams in 43 watersheds in Southeastern Wisconsin to retrospectively analyze fisheries and land use data from between 1970-1990.[4] This allowed them to determine the historical changes in land uses as provided by SEWRPC and the changes in the fishery over the two decades. Streams that were already extensively urbanized as of 1970 had fish communities characterized as highly tolerant with low species richness. As these areas urbanized even more, the fish communities changed little since they were already degraded. In contrast, stream sites that had little urbanization (characterized by connected imperviousness) in 1970 that were urbanizing by 1990, showed decreases in the fishery community quality. This study further supported major differences at the 10 percent impervious cover threshold, with poorer fisheries quality generally reported for stream sites above this threshold. In addition, numerous studies over different ecoregions and using various techniques have revealed that as watersheds become highly urban, aquatic diversity becomes extremely degraded.[5]

In addition to increases in the amount of impervious land cover that are associated with urbanization, urban development has also often been accompanied by alteration, or loss of wetlands; disturbance or reductions in the sizes of riparian corridors; stream channel modification, including straightening and lining with concrete; and occasional spills of hazardous materials. All of these factors contribute to degradation of fish communities and of aquatic diversity. The following list describes approaches to mitigating the adverse effects of these factors.

- The impacts of increased imperviousness can be mitigated through the provision of stormwater best management practices that promote infiltration of rainfall and runoff, thereby increasing stream baseflow and lowering water temperatures; that control peak rates of runoff; and that remove nonpoint source pollutants from runoff prior to discharge to receiving streams.

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[1]*L. Wang, J. Lyons, P. Kanehl, and R. Gatti, "Influences of Watershed Land Use on Habitat Quality and Biotic Integrity in Wisconsin Streams,"* Fisheries, *Volume 22, 1997.*

[2]*Directly connected impervious area is area that discharges directly to the stormwater drainage system without the potential for infiltration through discharge to impervious surfaces or facilities specifically designed to infiltrate runoff.*

[3]*Personal communication, L. Wang, Wisconsin Department of Natural Resources.*

[4]*L. Wang, J. Lyons, P. Kanehl, R. Bannerman, and E. Emmons, "Watershed Urbanization and Changes In Fish Communities In Southeastern Wisconsin Streams,"* Journal of the American Water Resources Association, *Volume 36, No. 5, 2000.*

[5]*Center for Watershed Protection,* op. cit.

- While alteration and loss of wetlands occurred in the past, that trend has been changed in Wisconsin through enforcement of local shoreland and wetland zoning ordinances, navigable waters protection by the Wisconsin Department of Natural Resources under Chapter 30 of the *Wisconsin Statutes*, and application of wetland water quality standards under Chapter NR 103 of the *Wisconsin Administrative Code*.

- As noted above, the Regional Planning Commission has identified and delineated environmental corridors which function as riparian buffers.

- In some cases, such as the Milwaukee Metropolitan Sewerage District's Lincoln Creek environmental restoration and flood control project, it may be possible to partially reverse the effects of channel straightening and lining with concrete.

- Finally, although by their very nature the occurrence of hazardous spills is difficult to control, Chapter 292 of the *Wisconsin Statutes* establishes the legal basis for actions to mitigate the effects of such spills.

Researchers in Wisconsin have also found that the amount of agricultural land use upstream of sample sites had a negative relationship with biotic integrity scores, and there appeared to be a threshold of about 50 percent for agricultural land use where IBI scores declined dramatically.[6] A separate study looking at the effects of multi-scale environmental characteristics on agricultural stream biota in Eastern Wisconsin demonstrated a strong negative correlation between Fisheries IBI and increased proportion of agricultural land ranging from zero to 80 percent within watersheds, which indicates that, as the percent of agricultural land increased, the resultant fishery community decreased in abundance and diversity.[7] This study also discovered a positive relationship between Fisheries IBI and increased riparian buffer vegetation width, which implies that, by analogy, the impacts of increased urban land use can also be mitigated by an increased riparian buffer that acts to protect the stream aquatic biota. A follow up study investigating the influence of watershed, riparian corridor, and reach scale characteristics on aquatic biota in agricultural watersheds found that land use within the watershed, the presence of riparian corridors, and fragmentation of vegetation were the most important variables influencing fish and macroinvertebrate abundance and diversity.[8] In addition, combined upland best management practices (BMPs) that included barnyard runoff controls; manure storage; contour plowing and reduced tillage; and riparian BMPs that included streambank fencing, streambank sloping, and limited streambank riprapping where shown to significantly improve overall stream habitat quality, bank stability, instream cover for fishes, and fish abundance and diversity.[9] Improvements were most pronounced at sites with riparian BMPs. At sites with limited upland BMPs installed in the watershed there were no improvements in water temperature or the quality of fish community.

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[6] *L. Wang, J. Lyons, P. Kanehl, and R. Gatti, "Influences of Watershed Land Use on Habitat Quality and Biotic Integrity in Wisconsin Streams,"* Fisheries*, Volume 22, 1997.*

[7] *F. Fitzpatrick, B. Scudder, B. Lenz, and D. Sullivan, "Effects of Multi-Scale Environmental Characteristics on Agricultural Stream Biota in Eastern Wisconsin,"* Journal of the American Water Resources Association*, Volume 37, No. 6, 2001.*

[8] *J. Stewart, L. Wang, J. Lyons, J. Horwatich, and R. Bannerman, "Influence of Watershed, Riparian Corridor, and Reach Scale Characteristics on Aquatic Biota in Agricultural Watersheds,"* Journal of the American Water Resources Association*, Volume 37, No. 6, 2001.*

[9] *L. Wang, J. Lyons, and P. Kanehl, "Effects of Watershed Best Management Practices on Habitat and Fish in Wisconsin's Streams,"* Journal of the American Water Resources Association*, Volume 38, No. 3, 2002.*

Exhibit B

TEXT TO BE ADDED TO SEWRPC TECHNICAL REPORT NO. 39, CHAPTER V

Annual Loadings

Annual average point and/or nonpoint pollution loads to the Kinnickinnic River watershed are set forth in Tables V-16 and V-18 through V-23. Average annual per acre nonpoint source loads are set forth in Table V-17. The nonpoint source load estimates represent loads delivered to the modeled stream reaches after accounting for any trapping factors that would retain pollutants on the surface of the land. They include loads from groundwater. It is important to note that the stream channel pollutant loads may be expected to be different from the actual transport from the watershed, because physical, chemical, and/or biological processes may retain or remove pollutants or change their form during transport within the stream system. These processes include particle deposition or entrapment in floodplains, stream channel deposition or aggradation, biological uptake, and chemical transformation and precipitation. The total nonpoint source pollution loads set forth in Table V-16 are representative of the total annual quantities of potential pollutants moved from the Kinnickinnic River watershed into stream channels, but are not intended to reflect the total amount of the pollutants moving from those sources through the entire hydrologic-hydraulic system.

Tables V-18 through 23 indicate that nonpoint source pollution loads comprise from 70 to 98 percent of the total pollution load, while point sources only account for 2 to 30 percent of the total load, depending on the pollutant.

Point Source Loadings

Annual average total point source pollutant loads of six pollutants in the Kinnickinnic River watershed are set forth in Tables V-18 through V-23. Contributions of these pollutants by point sources represent from 2 percent of the total average annual load of total suspended solids to 30 percent of the total average annual loads of fecal coliform bacteria.

Average annual point source loads of total phosphorus in the Kinnickinnic River watershed are shown on Table V-18. The total average annual point source load of total phosphorus is about 2,760 pounds. Most of this is contributed by the Kinnickinnic River subwatershed. Industrial dischargers represent about 52 percent of the point source contributions of total phosphorus, combined sanitary sewer overflows represent about 29 percent, and separate sanitary sewer overflows represent approximately 19 percent.

Average annual point source loads of total suspended solids in the Kinnickinnic River watershed are shown on Table V-19. The total average annual point source load of total suspended solids is about 111,600 pounds. About 90 percent of that load is contributed by the Kinnickinnic River subwatershed. Combined sanitary sewer overflows represent about 62 percent of the point source contributions of total suspended solids, separate sanitary sewer overflows represent about 27 percent, and industrial discharges represent about 11 percent.

Average annual point source loads of fecal coliform bacteria in the Kinnickinnic River watershed are shown on Table V-20. The total average annual point source loads of fecal coliform bacteria is about 1,468.95 trillion cells per year, which is contributed by separate sanitary sewer overflows in the Kinnickinnic River, Wilson Park Creek, Lyons Creek, and S. 43rd Street Ditch subwatersheds (39 percent of the point source total) and combined sanitary sewer overflows in the Kinnickinnic River watershed (61 percent of the point source total).

Average annual point source loads of total nitrogen in the Kinnickinnic River watershed are shown on Table V-21. The total average annual point source load of total nitrogen is about 11,530 pounds. Most of this is contributed by the Kinnickinnic River subwatershed. Industrial discharges represent about 59 percent of the point source contributions of total nitrogen, combined sanitary sewer overflows represent about 32 percent, and separate sanitary sewer overflows represent about 9 percent.

Average annual point source loads of BOD in the Kinnickinnic River watershed are shown on Table V-22. The total average annual point source load of BOD is about 34,360 pounds. Most of this is contributed by the Kinnickinnic River subwatershed. Industrial discharges represent about 46 percent of the point source contributions of BOD, combined sanitary sewer overflows represent about 32 percent, and separate sanitary sewer overflows represent about 22 percent.

Average annual point source loads of copper in the Kinnickinnic River watershed are shown on Table V-23. The total average annual point source load of copper is less than 37 pounds per year, almost all of which is contributed by the Kinnickinnic River subwatershed. Combined sanitary sewer overflows represent about 68 percent of the point source contributions of total suspended solids, industrial discharges represent about 19 percent, and separate sanitary sewer overflows represent about 13 percent.

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Exhibit C

TEXT TO BE ADDED TO SEWRPC TECHNICAL REPORT NO. 39, CHAPTER VI

Annual Loadings

Annual average point and/or nonpoint pollution loads to the Menomonee River watershed are set forth in Tables VI-24 and VI-26 through VI-31. Average annual per acre nonpoint source loads are set forth in Table VI-25. The nonpoint source load estimates represent loads delivered to the modeled stream reaches after accounting for any trapping factors that would retain pollutants on the surface of the land. They include loads from groundwater. It is important to note that the stream channel pollutant loads may be expected to be different from the actual transport from the watershed, because physical, chemical, and/or biological processes may retain or remove pollutants or change their form during transport within the stream system. These processes include particle deposition or entrapment in floodplains, stream channel deposition or aggradation, biological uptake, and chemical transformation and precipitation. The total nonpoint source pollution loads set forth in Table VI-24 are representative of the total annual quantities of potential pollutants moved from the Menomonee River watershed into stream channels, but are not intended to reflect the total amount of the pollutants moving from those sources through the entire hydrologic-hydraulic system.

Tables VI-26 through VI-31 indicate that nonpoint source pollution loads comprise from 62 to 98 percent of the total pollution load, while point sources only account for 2 to 38 percent of the total load, depending on the pollutant.

Point Source Loadings

Annual average total point source pollutant loads of six pollutants in the Menomonee River watershed are set forth in Tables VI-26 through VI-31. Contributions of these pollutants by point sources represent from 2 percent of the total average annual load of total suspended solids to 38 percent of the total average annual loads of phosphorus.

Average annual point source loads of total phosphorus in the Menomonee River watershed are shown on Table VI-26. The total average annual point source load of total phosphorus is about 20,450 pounds. Most of this is contributed by the Lower Menomonee River subwatershed. Industrial dischargers represent about 86 percent of the point source contributions of total phosphorus, combined sanitary sewer overflows represent about 13 percent, and separate sanitary sewer overflows represent approximately 1 percent.

Average annual point source loads of total suspended solids in the Menomonee River watershed are shown on Table VI-27. The total average annual point source load of total suspended solids is about 338,330 pounds. About 97 percent of that load is contributed by the Lower Menomonee River subwatershed. Combined sanitary sewer overflows represent about 79 percent of the point source contributions of total suspended solids, industrial discharges represent about 17 percent, and separate sanitary sewer overflows represent about 4 percent.

Average annual point source loads of fecal coliform bacteria in the Menomonee River watershed are shown on Table VI-28. The total average annual point source loads of fecal coliform bacteria is about 2,623.58 trillion cells per year, which is contributed by separate sanitary sewer overflows in the Butler Ditch, Honey Creek, Little Menomonee River, Underwood Creek, and Upper and Lower Menomonee River subwatersheds (8 percent of the point source total) and combined sanitary sewer overflows in the Lower Menomonee River watershed (92 percent of the point source total).

Average annual point source loads of total nitrogen in the Menomonee River watershed are shown on Table VI-29. The total average annual point source load of total nitrogen is about 73,440 pounds. Most of this is contributed by the Lower Menomonee River subwatershed. Industrial discharges represent about 76 percent of the point source contributions of total nitrogen, combined sanitary sewer overflows represent about 24 percent, and separate sanitary sewer overflows represent less than 1 percent.

Average annual point source loads of BOD in the Menomonee River watershed are shown on Table VI-30. The total average annual point source load of BOD is about 211,040 pounds. Most of this is contributed by the Lower Menomonee River subwatershed. Industrial discharges represent about 55 percent of the point source contributions of BOD, combined sanitary sewer overflows represent about 43 percent, and separate sanitary sewer overflows represent about 2 percent.

Average annual point source loads of copper in the Menomonee River watershed are shown on Table VI-31. The total average annual point source load of copper is less than 71 pounds per year, almost all of which is contributed by the Lower Menomonee River subwatershed. Combined sanitary sewer overflows represent about 93 percent of the point source contributions of total suspended solids, industrial discharges represent about 6 percent, and separate sanitary sewer overflows represent about 1 percent.

* * *

Exhibit D

TEXT TO BE ADDED TO SEWRPC TECHNICAL REPORT NO. 39, CHAPTER V

For each of the pollutants listed in Tables V-18 through V-23, the highest nonpoint source loads are contributed by the Wilson Park Creek and Kinnickinnic River subwatersheds, reflecting the relatively large areas of those subwatersheds. For all pollutants listed in the tables, the highest unit area loads occur in the Holmes Avenue Creek subwatershed.

The average annual nonpoint load of total phosphorus is estimated to be 9,960 pounds per year. The distribution of the total load among the subwatersheds is shown on Map H-1 in Appendix H. Map H-2 shows the annual per acre loads of total phosphorus for the subwatersheds. Contributions of total phosphorus vary among the subwatersheds (Table V-16) from a low of 440 pounds per year from the Cherokee Park Creek subwatershed to 3,440 pounds per year from the Wilson Park Creek subwatershed.

The average annual nonpoint load of total suspended solids is estimated to be 5,192,290 pounds per year. The distribution of this load among the subwatersheds is shown on Map H-3 in Appendix H. Map H-4 shows the annual per acre loads of total suspended solids for the subwatersheds. Contributions of total suspended solids vary among the subwatersheds (Table V-16) from a low of 217,010 pounds per year from the Cherokee Park Creek subwatershed to 1,706,120 pounds per year from the Wilson Park Creek subwatershed.

The average annual nonpoint load of fecal coliform bacteria is estimated to be 3,358.52 trillion cells per year. The distribution of this load among the subwatersheds is shown on Map H-5 in Appendix H. Map H-6 shows the annual per acre loads of fecal coliform bacteria for the subwatersheds. Contributions of fecal coliform bacteria vary among the subwatersheds (Table V-16) from a low of 145.04 trillion cells per year from the Cherokee Park Creek subwatershed to 1,032.01 trillion cells per year from the Kinnickinnic River subwatershed.

The average annual nonpoint load of total nitrogen in the watershed is estimated to be 63,230 pounds per year. The distribution of this load among the subwatersheds is shown in Map H-7 in Appendix H. Map H-8 shows the annual per acre loads of total nitrogen for the subwatersheds. Contributions of total nitrogen vary among the subwatersheds (Table V-16) from a low of 2,800 pounds per year from the Cherokee Park Creek subwatershed to 22,250 pounds per year from the Wilson Park Creek subwatershed.

The average annual nonpoint load of BOD in the watershed is estimated to be 373,140 pounds per year. The distribution of this load among the subwatersheds is shown in Map H-9 in Appendix H. Map H-10 shows the annual per acre loads of BOD for the subwatersheds. Contributions of BOD vary among the subwatersheds (Table V-16) from a low of 12,120 pounds per year from the Cherokee Park Creek subwatershed to 167,560 pounds per year from the Wilson Park Creek subwatershed.

The average annual nonpoint load of copper in the watershed is estimated to be 526 pounds per year. The distribution of this load among the subwatersheds is shown in Map H-11 in Appendix H. Map H-12 in Appendix H shows the annual per acre loads of copper for the subwatersheds. Contributions of copper vary among the subwatersheds (Table V-16) from a low of 22 pounds per year from the Cherokee Park Creek subwatershed to 175 pounds per year from the Wilson Park Creek subwatershed.

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Exhibit E

TABLES TO BE ADDED TO SEWRPC TECHNICAL REPORT NO. 39, CHAPTER V

Table V-16

AVERAGE ANNUAL TOTAL NONPOINT SOURCE POLLUTANT LOADS IN THE KINNICKINNIC RIVER WATERSHED[a]

Subwatershed	Total Phosphorus (pounds)	Total Suspended Solids (pounds)	Fecal Coliform Bacteria (trillions of cells)	Total Nitrogen (pounds)	Biochemical Oxygen Demand (pounds)	Copper (pounds)
Kinnickinnic River	2,810	1,403,490	1,032.01	17,950	80,780	146
Wilson Park Creek	3,440	1,706,120	996.58	22,250	167,560	175
Holmes Avenue Creek	1,010	643,540	361.87	6,140	44,480	59
Villa Mann Creek	740	380,430	247.97	4,490	20,400	37
Cherokee Park Creek	440	217,010	145.04	2,800	12,120	22
Lyons Creek	630	283,870	247.10	4,000	16,940	30
S. 43rd Street Ditch	890	557,830	327.95	5,600	30,860	57
Total	9,960	5,192,290	3,358.52	63,230	373,140	526

[a]*Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.*

Source: Tetra Tech, Inc.

Table V-17

AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTANT LOADS IN THE KINNICKINNIC RIVER WATERSHED[a]

Subwatershed	Total Phosphorus (pounds per acre)	Total Suspended Solids (pounds per acre)	Fecal Coliform Bacteria (trillions of cells per acre)	Total Nitrogen (pounds per acre)	Biochemical Oxygen Demand (pounds per acre)	Copper (pounds per acre)
Kinnickinnic River	0.73	367	0.27	4.69	21.11	0.038
Wilson Park Creek	0.77	380	0.22	4.95	37.27	0.039
Holmes Avenue Creek	0.94	600	0.34	5.72	41.45	0.055
Villa Mann Creek	0.88	451	0.29	5.32	24.16	0.044
Cherokee Park Creek	0.72	353	0.24	4.55	19.71	0.036
Lyons Creek	0.74	333	0.29	4.69	19.85	0.035
S. 43rd Street Ditch	0.81	508	0.30	5.10	28.12	0.052

[a]*Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.*

Source: Tetra Tech, Inc.

Table V-18

AVERAGE ANNUAL LOADS OF TOTAL PHOSPHORUS IN THE KINNICKINNIC RIVER WATERSHED[a]

Subwatershed	Point Sources				Nonpoint Source	
	Industrial Point Sources (pounds)	SSOs (pounds)	CSOs (pounds)	Subtotal (pounds)	Urban (pounds)	Total (pounds)
Kinnickinnic River	220	510	790	1,520	2,810	4,330
Wilson Park Creek	320	20	0	340	3,440	3,780
Holmes Avenue Creek	440	0	0	440	1,010	1,450
Villa Mann Creek	0	0	0	0	740	740
Cherokee Park Creek	0	0	0	0	440	440
Lyons Creek	0	<10	0	<10	630	630
S. 43rd Street Ditch	460	<10	0	460	890	1,350
Total	1,440	530	790	2,760	9,960	12,720
Percent of Total	11.3	4.2	6.2	21.7	78.3	100.0

[a]*Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.*

Source: Tetra Tech, Inc.

Table V-19

AVERAGE ANNUAL LOADS OF TOTAL SUSPENDED SOLIDS IN THE KINNICKINNIC RIVER WATERSHED[a]

Subwatershed	Point Sources				Nonpoint Sources	
	Industrial Point Sources (pounds)	SSOs (pounds)	CSOs (pounds)	Subtotal (pounds)	Urban (pounds)	Total (pounds)
Kinnickinnic River	2,230	28,970	69,200	100,400	1,403,490	1,503,890
Wilson Park Creek	6,300	880	0	7,180	1,706,120	1,713,300
Holmes Avenue Creek	800	0	0	800	643,540	644,340
Villa Mann Creek	0	0	0	0	380,430	380,430
Cherokee Park Creek	0	0	0	0	217,010	217,010
Lyons Creek	0	30	0	30	283,870	283,900
S. 43rd Street Ditch	3,080	110	0	3,190	557,830	561,020
Total	12,410	29,990	69,200	111,600	5,192,290	5,303,890
Percent of Total	0.2	0.6	1.3	2.1	97.9	100.0

[a]*Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.*

Source: Tetra Tech, Inc.

Table V-20

AVERAGE ANNUAL LOADS OF FECAL COLIFORM BACTERIA IN THE KINNICKINNIC RIVER WATERSHED[a]

Subwatershed	Point Sources				Nonpoint Sources	Total (trillions of cells)
	Industrial Point Sources (trillions of cells)	SSOs (trillions of cells)	CSOs (trillions of cells)	Subtotal (trillions of cells)	Urban (trillions of cells)	
Kinnickinnic River	0	552.74	896.8	1,449.54	1,032.01	2,481.55
Wilson Park Creek	0	16.82	0.0	16.82	996.58	1,013.40
Holmes Avenue Creek	0	0.00	0.0	0.00	361.87	361.87
Villa Mann Creek	0	0.00	0.0	0.00	247.97	247.97
Cherokee Park Creek	0	0.00	0.0	0.00	145.04	145.04
Lyons Creek	0	0.52	0.0	0.52	247.10	247.62
S. 43rd Street Ditch	0	2.07	0.0	2.07	327.95	330.02
Total	0	572.15	896.8	1,468.95	3,358.52	4,827.47
Percent of Total	0.0	11.8	18.6	30.4	69.6	100.0

[a]Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.

Source: Tetra Tech, Inc.

Table V-21

AVERAGE ANNUAL LOADS OF TOTAL NITROGEN IN THE KINNICKINNIC RIVER WATERSHED[a]

Subwatershed	Point Sources				Nonpoint Sources	Total (pounds)
	Industrial Point Sources (pounds)	SSOs (pounds)	CSOs (pounds)	Subtotal (pounds)	Urban (pounds)	
Kinnickinnic River	3,800	1,060	3,710	8,570	17,950	26,520
Wilson Park Creek	980	30	0	1,010	22,250	23,260
Holmes Avenue Creek	1,460	0	0	1,460	6,140	7,600
Villa Mann Creek	0	0	0	0	4,490	4,490
Cherokee Park Creek	0	0	0	0	2,800	2,800
Lyons Creek	0	<10	0	0	4,000	4,000
S. 43rd Street Ditch	490	<10	0	490	5,600	6,090
Total	6,730	1,090	3,710	11,530	63,230	74,760
Percent of Total	9.0	1.4	5.0	15.4	84.6	100.0

[a]Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.

Source: Tetra Tech, Inc.

Table V-22

AVERAGE ANNUAL LOADS OF BIOCHEMICAL OXYGEN DEMAND TO THE KINNICKINNIC RIVER WATERSHED[a]

Subwatershed	Point Sources				Nonpoint Sources	Total (pounds)
	Industrial Point Sources (pounds)	SSOs (pounds)	CSOs (pounds)	Subtotal (pounds)	Urban (pounds)	
Kinnickinnic River	3,680	7,130	11,120	21,930	80,780	102,710
Wilson Park Creek	5,630	220	0	5,850	167,560	173,410
Holmes Avenue Creek	1,120	0	0	1,120	44,480	45,600
Villa Mann Creek	0	0	0	0	20,400	20,400
Cherokee Park Creek	0	0	0	0	12,120	12,120
Lyons Creek	0	10	0	10	16,940	16,950
S. 43rd Street Ditch	5,420	30	0	5,450	30,860	36,610
Total	15,850	7,390	11,120	34,360	373,140	407,500
Percent of Total	3.9	1.8	2.7	8.4	91.6	100.0

[a]Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.

Source: Tetra Tech, Inc.

Table V-23

AVERAGE ANNUAL LOADS OF COPPER IN THE KINNICKINNIC RIVER WATERSHED[a]

Subwatershed	Point Sources				Nonpoint Sources	Total (pounds)
	Industrial Point Sources (pounds)	SSOs (pounds)	CSOs (pounds)	Subtotal (pounds)	Urban (pounds)	
Kinnickinnic River	7	5	25	37	146	183
Wilson Park Creek	0	<1	0	0	175	175
Holmes Avenue Creek	0	0	0	0	59	59
Villa Mann Creek	0	0	0	0	37	37
Cherokee Park Creek	0	0	0	0	22	22
Lyons Creek	0	<1	0	0	30	30
S. 43rd Street Ditch	0	<1	0	0	57	57
Total	7	5	25	37	526	563
Percent of Total	1.2	0.9	4.5	6.6	93.4	100.0

[a]Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.

Source: Tetra Tech, Inc.

Exhibit F

TEXT TO BE ADDED TO SEWRPC TECHNICAL REPORT NO. 39, CHAPTER VI

The average annual nonpoint load of total phosphorus is estimated to be 33,120 pounds per year. The distribution of the total load among the subwatersheds is shown on Map H-13 in Appendix H. Map H-14 shows the annual per acre loads of total phosphorus for the subwatersheds. Contributions of total phosphorus vary among the subwatersheds (Table VI-24) from a low of 270 pounds per year from the North Branch Menomonee River subwatershed to 7,250 pounds per year from the Lower Menomonee River subwatershed. The highest loads of total phosphorus are contributed by the Lower Menomonee River and Underwood Creek subwatersheds. This reflects a combination of relatively large subwatershed size and relatively high unit area loads. The highest unit area loads occur in the Lower Menomonee subwatershed.

The average annual nonpoint load of total suspended solids is estimated to be 17,668,470 pounds per year. The distribution of this load among the subwatersheds is shown on Map H-15 in Appendix H. Map H-16 shows the annual per acre loads of total suspended solids for the subwatersheds. Contributions of total suspended solids vary among the subwatersheds (Table VI-24) from a low of 145,050 pounds per year from the North Branch Menomonee River subwatershed to 4,011,510 pounds per year from the Lower Menomonee River subwatershed. The highest loads of total suspended solids are contributed by the Lower Menomonee River and Underwood Creek subwatersheds. That reflects a combination of relatively large subwatershed size and relatively high unit area loads. The highest unit area loads occur in the Lower Menomonee subwatershed.

The average annual nonpoint load of fecal coliform bacteria is estimated to be 14,504.94 trillion cells per year. The distribution of this load among the subwatersheds is shown on Map H-17 in Appendix H. Map H-18 shows the annual per acre loads of fecal coliform bacteria for the subwatersheds. Contributions of fecal coliform bacteria vary among the subwatersheds (Table VI-24) from a low of 17.12 trillion cells per year from the North Branch Menomonee River subwatershed to 4,068.18 trillion cells per year from the Lower Menomonee River subwatershed. The highest loads of fecal coliform bacteria are contributed by the Lower Menomonee River and Underwood Creek subwatersheds. That reflects a combination of relatively large subwatershed size and relatively high unit area loads. The highest unit area loads occur in the Lower Menomonee subwatershed.

The average annual nonpoint load of total nitrogen in the watershed is estimated to be 327,810 pounds per year. The distribution of this load among the subwatersheds is shown in Map H-19 in Appendix H. Map H-20 shows the annual per acre loads of total nitrogen for the subwatersheds. Contributions of total nitrogen vary among the subwatersheds (Table VI-24) from a low of 10,150 pounds per year from the Little Menomonee Creek subwatershed to 64,520 pounds per year from the Upper Menomonee River subwatershed. The highest loads of total nitrogen are contributed by the Upper and Lower Menomonee River subwatersheds. For the Upper Menomonee, that reflects the relatively large area of the subwatershed, and for the Lower Menomonee it results from a combination of a relatively large subwatershed size and relatively high unit area loads. The highest unit area loads occur in the North Branch Menomonee River subwatershed, but because of the relatively small size of that subwatershed, its total load does not rank among the highest .

The average annual nonpoint load of BOD in the watershed is estimated to be 1,169,250 pounds per year. The distribution of this load among the subwatersheds is shown in Map H-21 in Appendix H. Map H-22 shows the annual per acre loads of BOD for the subwatersheds. Contributions of BOD vary among the subwatersheds (Table VI-24) from a low of 16,860 pounds per year from the Little Menomonee Creek subwatershed to 239,060 pounds per year from the Lower Menomonee River subwatershed. The highest loads of BOD are contributed by the Upper and Lower Menomonee River and Underwood Creek subwatersheds. For the Upper Menomonee, this reflects the relatively large area of the subwatershed, and for the Lower Menomonee and Underwood Creek subwatersheds, it results from a combination of relatively large subwatershed size and relatively high unit area loads. The highest unit area loads occur in the Lower Menomonee River subwatershed.

The average annual nonpoint load of copper in the watershed is estimated to be 1,872 pounds per year. The distribution of this load among the subwatersheds is shown in Map H-23 in Appendix H. Map H-24 in Appendix H shows the annual per acre loads of copper for the subwatersheds. Contributions of copper vary among the subwatersheds (Table VI-24) from a low of 10 pounds per year from the North Branch Menomonee River subwatershed to 429 pounds per year from the Lower Menomonee River subwatershed. The high loads of copper contributed by the Lower Menomonee River subwatershed reflect the relatively large subwatershed size and the highest unit area loads of all the subwatersheds.

* * *

#113766 V1 - RWQMP UPDATE MINUTES 10/12/05
MGH/pk
12/05/05

Exhibit G

TABLES TO BE ADDED TO SEWRPC TECHNICAL REPORT NO. 39, CHAPTER VI

Table VI-24

AVERAGE ANNUAL TOTAL NONPOINT POLLUTANT LOADS IN THE MENOMONEE RIVER WATERSHED[a]

Subwatershed	Total Phosphorus (pounds)	Total Suspended Solids (pounds)	Fecal Coliform Bacteria (trillions of cells)	Total Nitrogen (pounds)	Biochemical Oxygen Demand (pounds)	Copper (pounds)
Butler Ditch	1,550	697,190	224.21	11,460	45,940	78
Honey Creek	3,920	1,877,260	2,342.74	27,520	120,120	211
Lilly Creek	1,290	719,730	200.55	12,450	46,640	75
Little Menomonee Creek	430	264,450	150.34	10,150	16,860	15
Little Menomonee River	4,140	2,413,400	2,203.09	47,420	159,040	241
Lower Menomonee River	7,250	4,011,510	4,068.18	50,250	239,060	429
North Branch Menomonee River	270	145,050	17.12	13,320	18,310	10
Nor-X-Way Channel	970	829,780	304.85	12,470	35,730	57
Underwood Creek	6,620	3,077,950	3,455.76	47,910	203,970	343
Upper Menomonee River	5,320	2,966,730	1,354.45	64,520	217,150	329
West Branch Menomonee River	610	335,650	79.21	13,280	32,290	42
Willow Creek	750	349,770	104.44	17,060	34,140	42
Total	33,120	17,688,470	14,504.94	327,810	1,169,250	1,872

[a] *Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.*

Source: Tetra Tech, Inc.

Table VI-25

AVERAGE ANNUAL PER ACRE NONPOINT POLLUTANT LOADS IN THE MENOMONEE RIVER WATERSHED[a]

Subwatershed	Total Phosphorus (pounds)	Total Suspended Solids (pounds)	Fecal Coliform Bacteria (trillions of cells)	Total Nitrogen (pounds)	Biochemical Oxygen Demand (pounds)	Copper (pounds)
Butler Ditch	0.43	193	0.06	3.18	12.74	0.022
Honey Creek	0.56	270	0.34	3.95	17.25	0.030
Lilly Creek	0.35	198	0.06	3.42	12.81	0.021
Little Menomonee Creek	0.20	125	0.07	4.78	7.94	0.007
Little Menomonee River	0.35	205	0.19	4.03	13.52	0.020
Lower Menomonee River	0.66	364	0.37	4.56	21.69	0.039
North Branch Menomonee River	0.11	60	0.01	5.55	7.63	0.004
Nor-X-Way Channel	0.30	253	0.09	3.80	10.88	0.017
Underwood Creek	0.53	245	0.28	3.82	16.27	0.027
Upper Menomonee River	0.29	160	0.07	3.47	11.69	0.018
West Branch Menomonee River	0.21	115	0.03	4.53	11.02	0.014
Willow Creek	0.19	89	0.03	4.33	8.67	0.011

[a] *Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.*

Source: Tetra Tech, Inc.

Table VI-26

AVERAGE ANNUAL LOADS OF TOTAL PHOSPHORUS IN THE MENOMONEE RIVER WATERSHED[a]

	Point Sources				Nonpoint Sources			
Subwatershed	Industrial Point Sources (pounds)	SSOs (pounds)	CSOs (pounds)	Subtotal (pounds)	Urban (pounds)	Rural (pounds)	Subtotal (pounds)	Total (pounds)
Butler Ditch	0	10	0	10	1,550	0	1,550	1,560
Honey Creek	200	10	0	210	3,920	0	3,920	4,130
Lilly Creek	0	0	0	0	1,290	0	1,290	1,290
Little Menomonee Creek	0	0	0	0	0	430	430	430
Little Menomonee River	360	0	0	360	3,300	840	4,140	4,500
Lower Menomonee River	15,650	160	2,710	18,520	7,250	0	7,250	25,770
North Branch Menomonee River	0	0	0	0	0	270	270	270
Nor-X-Way Channel	160	0	0	160	490	480	970	1,130
Underwood Creek	30	10	0	40	6,620	0	6,620	6,660
Upper Menomonee River	1,150	<10	0	1,150	3,880	1,450	5,320	6,470
West Branch Menomonee River	0	0	0	0	170	440	610	610
Willow Creek	0	0	0	0	0	750	750	750
Total	17,550	190	2,710	20,450	28,470	4,660	33,120	53,570
Percent of Total Load	32.8	0.3	5.1	38.2	53.1	8.7	61.8	100.0

[a]*Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.*

Source: Tetra Tech, Inc.

Table VI-27

AVERAGE ANNUAL LOADS OF TOTAL SUSPENDED SOLIDS IN THE MENOMONEE RIVER WATERSHED[a]

	Point Sources				Nonpoint Sources			
Subwatershed	Industrial Point Sources (pounds)	SSOs (pounds)	CSOs (pounds)	Subtotal (pounds)	Urban (pounds)	Rural (pounds)	Subtotal (pounds)	Total (pounds)
Butler Ditch	0	320	0	320	697,190	0	697,190	697,510
Honey Creek	800	780	0	1,580	1,877,260	0	1,877,260	1,878,840
Lilly Creek	0	0	0	0	719,730	0	719,730	719,730
Little Menomonee Creek	0	0	0	0	0	264,450	264,450	264,450
Little Menomonee River	2,530	30	0	2,560	1,888,920	524,480	2,413,400	2,415,960
Lower Menomonee River	51,660	9,250	268,230	329,140	4,011,510	0	4,011,510	4,340,650
North Branch Menomonee River	0	0	0	0	0	145,050	145,050	145,050
Nor-X-Way Channel	280	0	0	280	363,270	466,510	829,780	830,060
Underwood Creek	90	740	0	830	3,077,950	0	3,077,950	3,078,780
Upper Menomonee River	3,380	240	0	3,620	2,300,750	665,980	2,966,730	2,970,350
West Branch Menomonee River	0	0	0	0	93,790	241,860	335,650	335,650
Willow Creek	0	0	0	0	0	349,770	349,770	349,770
Total	58,740	11,360	268,230	338,330	15,030,370	2,658,100	17,688,470	18,026,800
Percent of Total Load	0.3	0.1	1.5	1.9	83.4	14.7	98.1	100.0

[a]*Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.*

Source: Tetra Tech, Inc.

Table VI-28

AVERAGE ANNUAL LOADS OF FECAL COLIFORM BACTERIA IN THE MENOMONEE RIVER WATERSHED[a]

Subwatershed	Point Sources				Nonpoint Sources			Total (trillions of cells)
	Industrial Point Sources (trillions of cells)	SSOs (trillions of cells)	CSOs (trillions of cells)	Subtotal (trillions of cells)	Urban (trillions of cells)	Rural (trillions of cells)	Subtotal (trillions of cells)	
Butler Ditch	0	6.07	0.00	6.07	224.21	0.00	224.21	230.28
Honey Creek	0	14.92	0.00	14.92	2,342.74	0.00	2,342.74	2,357.66
Lilly Creek	0	0.00	0.00	0.00	200.55	0.00	200.55	200.55
Little Menomonee Creek	0	0.00	0.00	0.00	0.00	150.34	150.34	150.34
Little Menomonee River	0	0.52	0.00	0.52	1,975.43	227.66	2,203.09	2,203.61
Lower Menomonee River	0	176.46	2,406.89	2,583.35	4,068.18	0.00	4,068.18	6,651.53
North Branch Menomonee River	0	0.00	0.00	0.00	0.00	17.12	17.12	17.12
Nor-X-Way Channel	0	0.00	0.00	0.00	186.83	118.02	304.85	304.85
Underwood Creek	0	14.07	0.00	14.07	3,455.76	0.00	3,455.76	3,469.83
Upper Menomonee River	0	4.65	0.00	4.65	1,158.95	195.50	1,354.45	1,359.10
West Branch Menomonee River	0	0.00	0.00	0.00	27.32	51.89	79.21	79.21
Willow Creek	0	0.00	0.00	0.00	0.00	104.44	104.44	104.44
Total	0	216.69	2,406.89	2,623.58	13,639.97	864.97	14,504.94	17,128.52
Percent of Total Load	0.0	1.3	14.0	15.3	79.6	5.1	84.7	100.0

[a]*Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.*

Source: Tetra Tech, Inc.

Table VI-29

AVERAGE ANNUAL LOADS OF TOTAL NITROGEN IN THE MENOMONEE RIVER WATERSHED[a]

Subwatershed	Point Sources				Nonpoint Sources			Total (pounds)
	Industrial Point Sources (pounds)	SSOs (pounds)	CSOs (pounds)	Subtotal (pounds)	Urban (pounds)	Rural (pounds)	Subtotal (pounds)	
Butler Ditch	0	10	0	10	11,460	0	11,460	11,470
Honey Creek	640	30	0	670	27,520	0	27,520	28,190
Lilly Creek	0	0	0	0	12,450	0	12,450	12,450
Little Menomonee Creek	0	0	0	0	0	10,150	10,150	10,150
Little Menomonee River	1,350	<10	0	1,350	26,560	20,860	47,420	48,770
Lower Menomonee River	52,730	340	17,370	70,440	50,250	0	50,250	120,690
North Branch Menomonee River	0	0	0	0	0	13,320	13,320	13,320
Nor-X-Way Channel	100	0	0	100	3,810	8,660	12,470	12,570
Underwood Creek	20	30	0	50	47,910	0	47,910	47,960
Upper Menomonee River	810	10	0	820	33,640	30,880	64,520	65,340
West Branch Menomonee River	0	0	0	0	1,800	11,480	13,280	13,280
Willow Creek	0	0	0	0	0	17,060	17,060	17,060
Total	55,650	420	17,370	73,440	215,400	112,410	327,810	401,250
Percent of Total Load	13.9	0.1	4.3	18.3	53.7	28.0	81.7	100.0

[a]*Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.*

Source: Tetra Tech, Inc.

Table VI-30

AVERAGE ANNUAL LOADS OF BIOCHEMICAL OXYGEN DEMAND IN THE MENOMONEE RIVER WATERSHED[a]

Subwatershed	Point Sources				Nonpoint Sources			Total (pounds)
	Industrial Point Sources (pounds)	SSOs (pounds)	CSOs (pounds)	Subtotal (pounds)	Urban (pounds)	Rural (pounds)	Subtotal (pounds)	
Butler Ditch	0	80	0	80	45,940	0	45,940	46,020
Honey Creek	970	190	0	1,160	120,120	0	120,120	121,280
Lilly Creek	0	0	0	0	46,640	0	46,640	46,640
Little Menomonee Creek	0	0	0	0	0	16,860	16,860	16,860
Little Menomonee River	3,090	10	0	3,100	125,200	33,840	159,040	162,140
Lower Menomonee River	104,920	2,280	91,730	198,930	239,060	0	239,060	437,990
North Branch Menomonee River	0	0	0	0	0	18,310	18,310	18,310
Nor-X-Way Channel	450	0	0	450	19,460	16,270	35,730	36,180
Underwood Creek	200	180	0	380	203,970	0	203,970	204,350
Upper Menomonee River	6,880	60	0	6,940	148,070	69,080	217,150	224,090
West Branch Menomonee River	0	0	0	0	8,350	23,940	32,290	32,290
Willow Creek	0	0	0	0	0	34,140	34,140	34,140
Total	116,510	2,800	91,730	211,040	956,810	212,440	1,169,250	1,380,290
Percent of Total Load	8.4	0.2	6.7	15.3	69.3	15.4	84.7	100.0

[a]Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.

Source: Tetra Tech, Inc.

Table VI-31

AVERAGE ANNUAL LOADS OF COPPER IN THE MENOMONEE RIVER WATERSHED[a]

Subwatershed	Point Sources				Nonpoint Sources			Total (pounds)
	Industrial Point Sources (pounds)	SSOs (pounds)	CSOs (pounds)	Subtotal (pounds)	Urban (pounds)	Rural (pounds)	Subtotal (pounds)	
Butler Ditch	0	<1	0	<1	78	0	78	78
Honey Creek	1	<1	0	1	211	0	211	212
Lilly Creek	0	0	0	0	75	0	75	75
Little Menomonee Creek	0	0	0	0	0	15	15	15
Little Menomonee River	0	0	0	0	212	29	241	241
Lower Menomonee River	3	1	66	70	429	0	429	499
North Branch Menomonee River	0	0	0	0	0	10	10	10
Nor-X-Way Channel	0	0	0	0	35	22	57	57
Underwood Creek	0	<1	0	<1	343	0	343	343
Upper Menomonee River	0	<1	0	<1	254	75	329	329
West Branch Menomonee River	0	0	0	0	14	28	42	42
Willow Creek	0	0	0	0	0	42	42	42
Total	4	1	66	71	1,651	221	1,872	1,943
Percent of Total Load	0.2	0.1	3.4	3.7	85.0	11.3	96.3	100.0

[a]Loads from groundwater are included. The results are annual averages based on simulation of baseline watershed conditions using meteorological data from 1988 through 1997, which is a representative rainfall period for the Southeastern Wisconsin Region from 1988-1997.

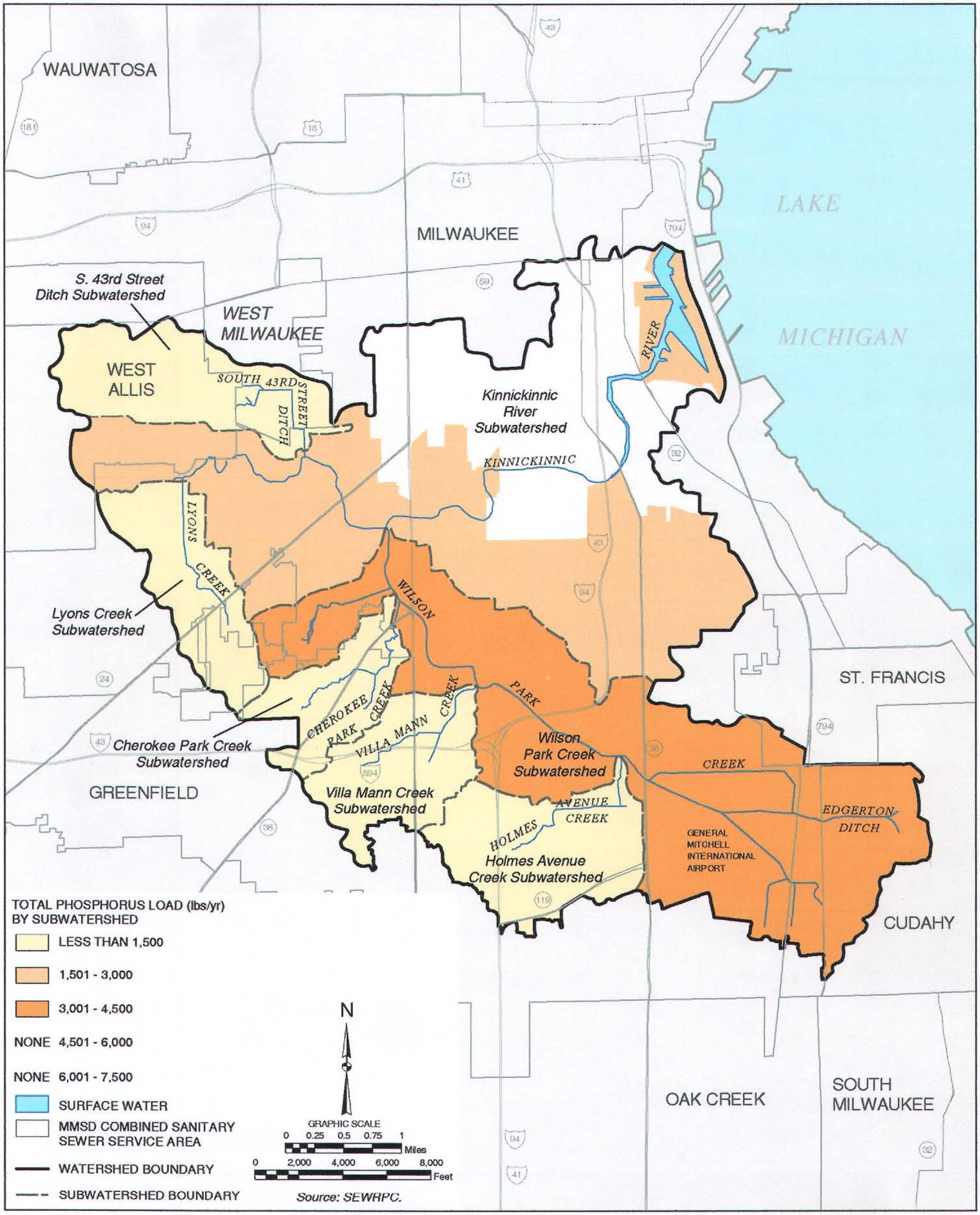
Source: Tetra Tech, Inc.

Exhibit H

MAPS FOR THE KINNICKINNIC RIVER TO BE ADDED TO APPENDIX H

Map H-1

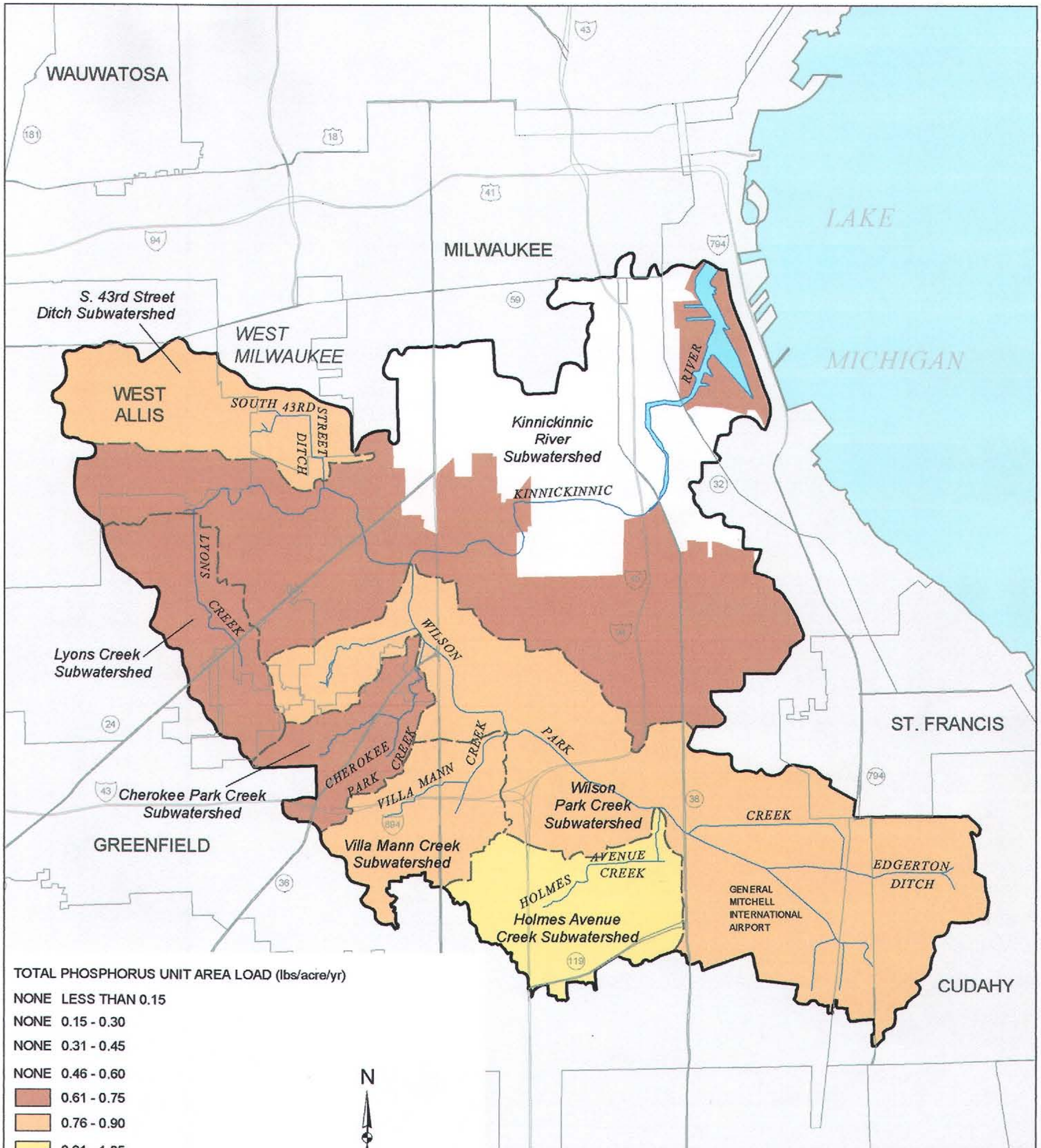
ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF TOTAL PHOSPHORUS IN THE KINNICKINNIC RIVER WATERSHED



PRELIMINARY DRAFT

Map H-2

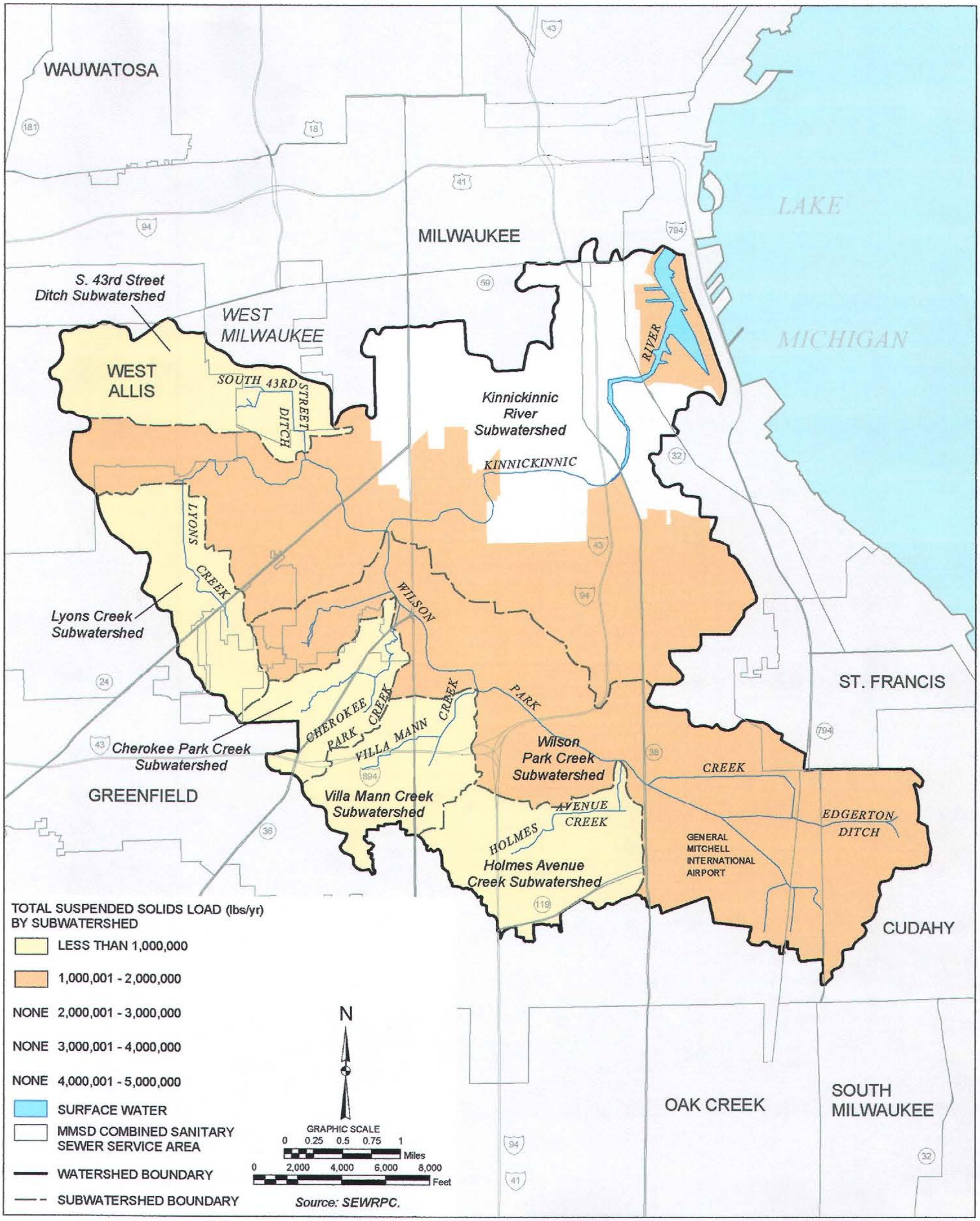
ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF TOTAL PHOSPHORUS IN THE KINNICKINNIC RIVER WATERSHED



PRELIMINARY DRAFT

Map H-3

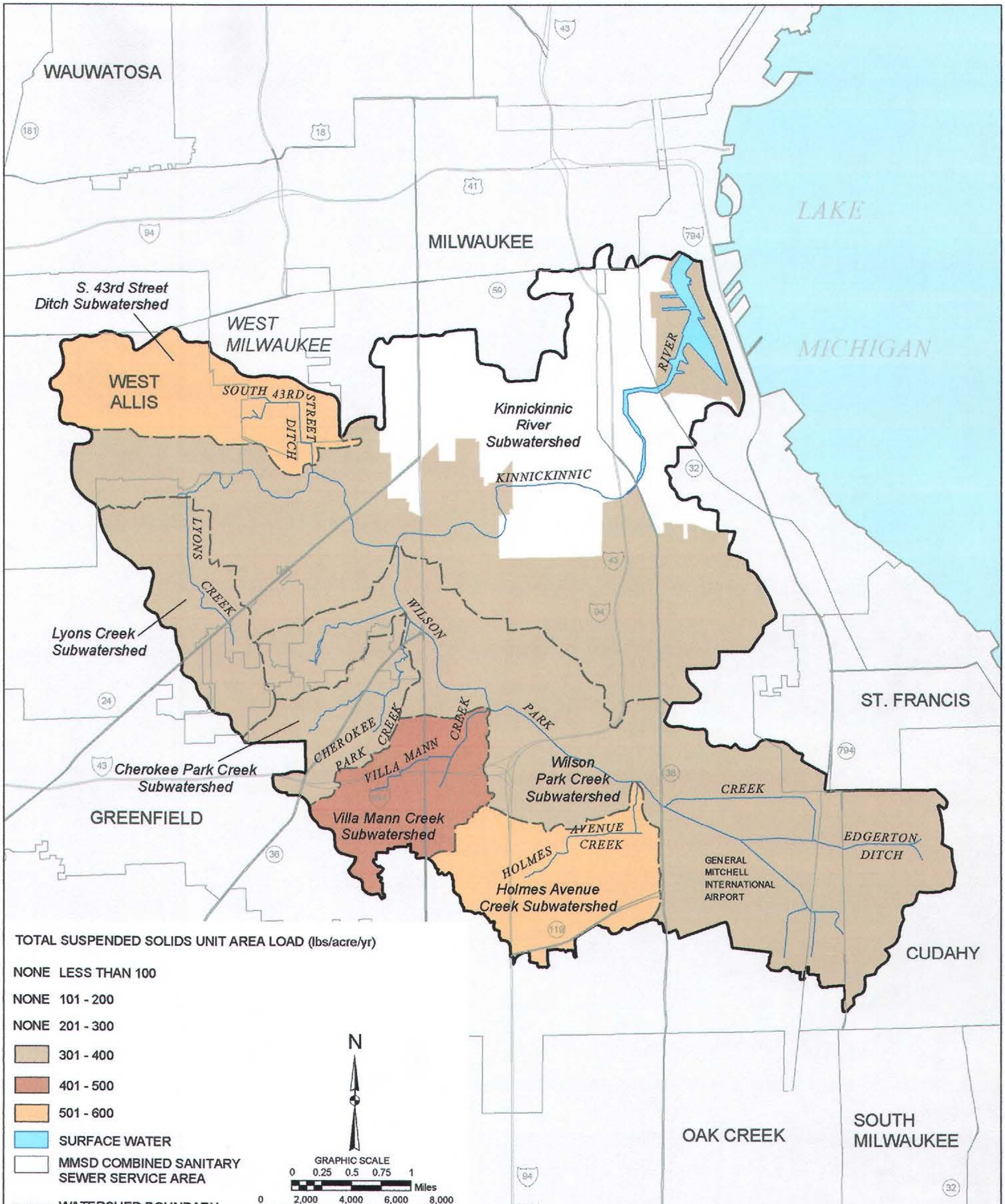
ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF TOTAL SUSPENDED SOLIDS IN THE KINNICKINNIC RIVER WATERSHED



PRELIMINARY DRAFT

Map H-4

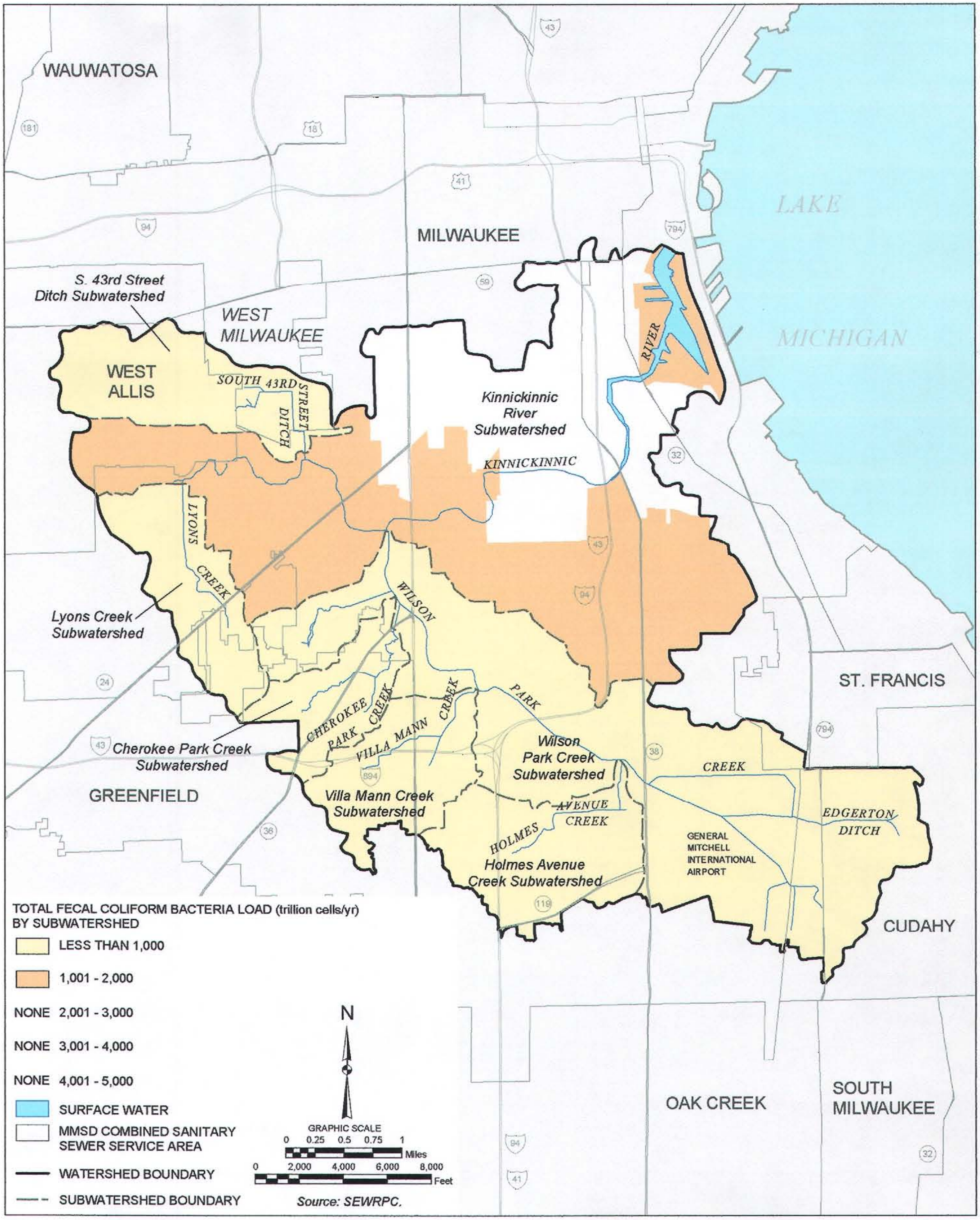
ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF TOTAL SUSPENDED SOLIDS IN THE KINNICKINNIC RIVER WATERSHED



PRELIMINARY DRAFT

Map H-5

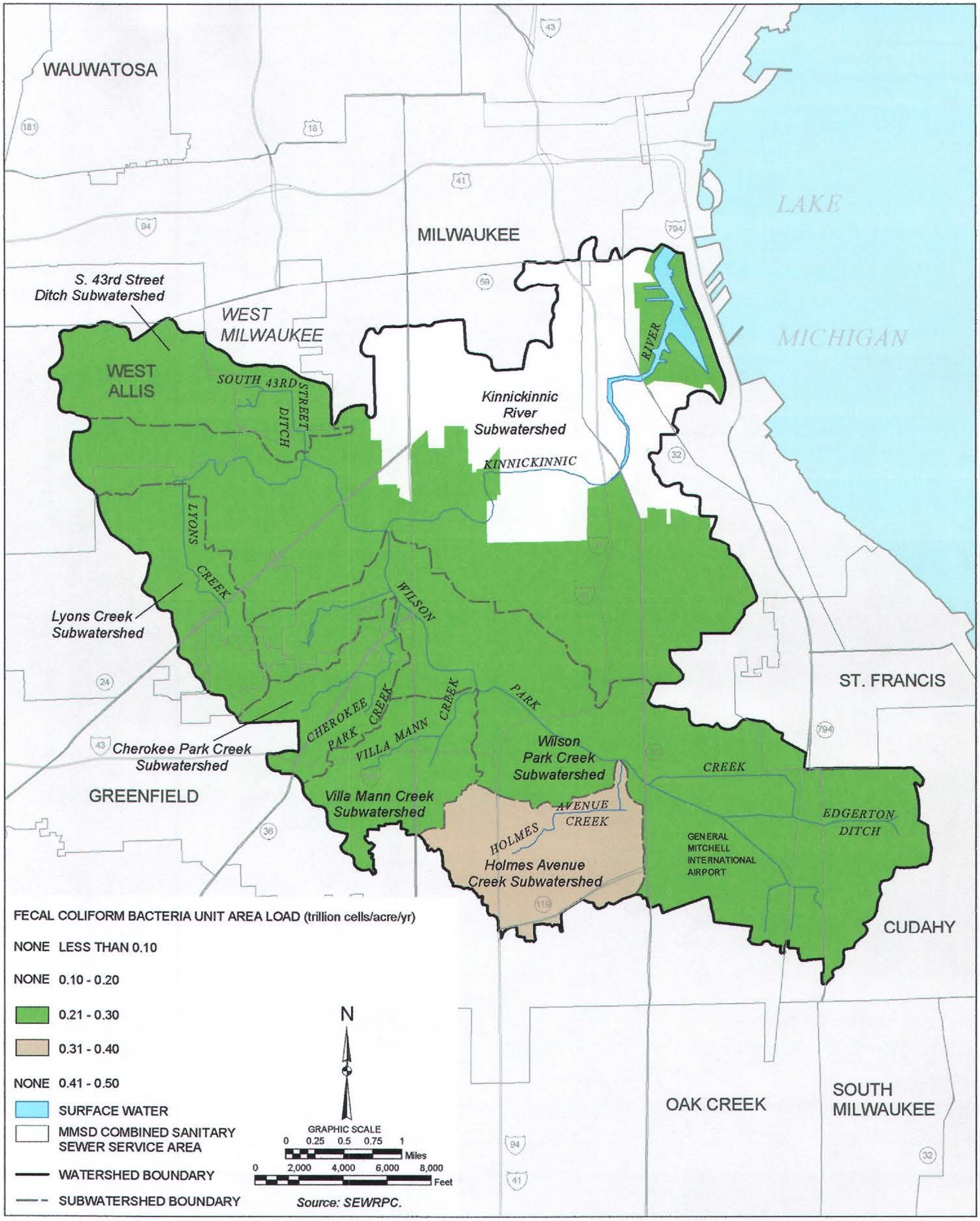
ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF FECAL COLIFORM BACTERIA IN THE KINNICKINNIC RIVER WATERSHED



PRELIMINARY DRAFT

Map H-6

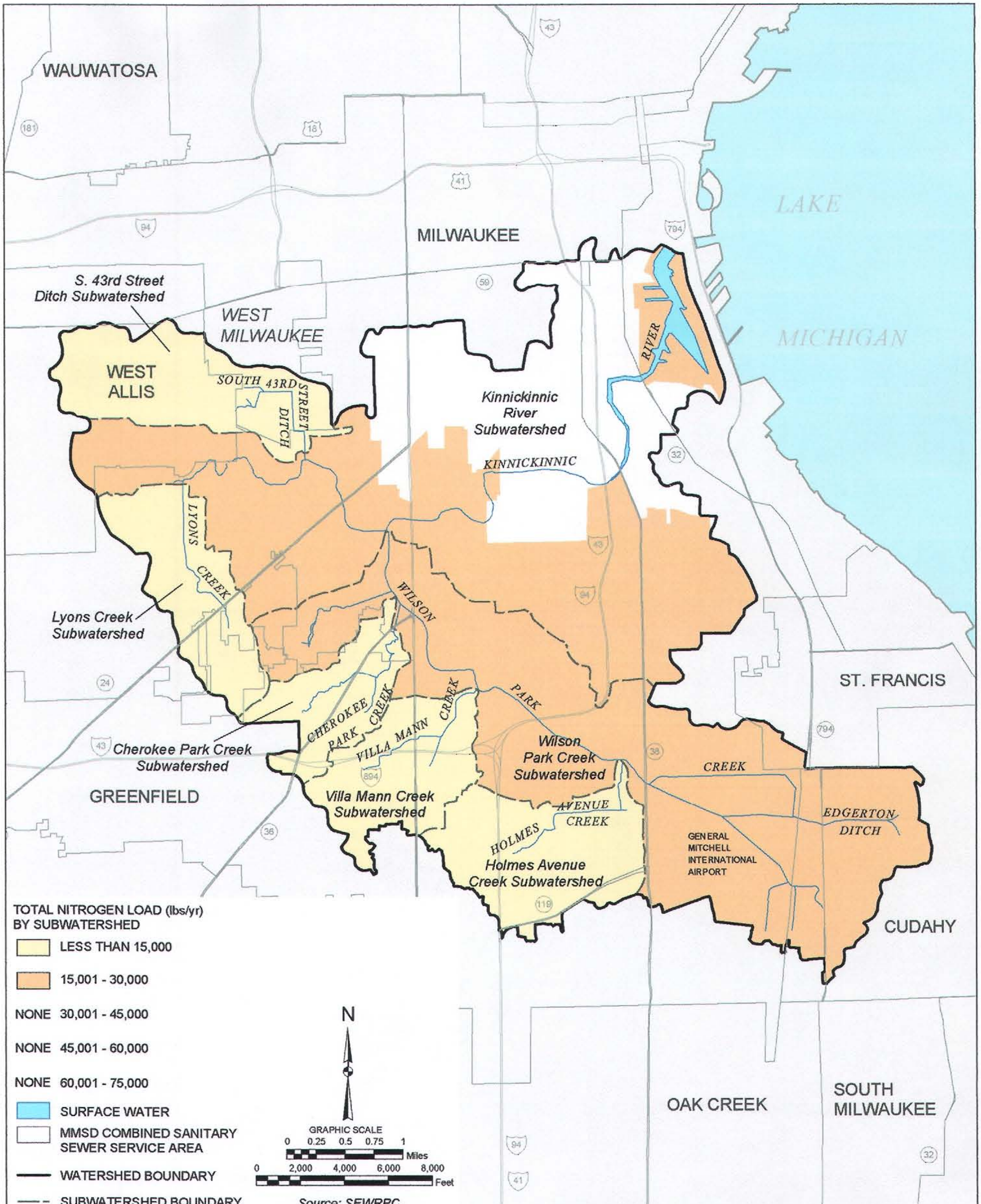
ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF FECAL COLIFORM BACTERIA IN THE KINNICKINNIC RIVER WATERSHED



PRELIMINARY DRAFT

Map H-7

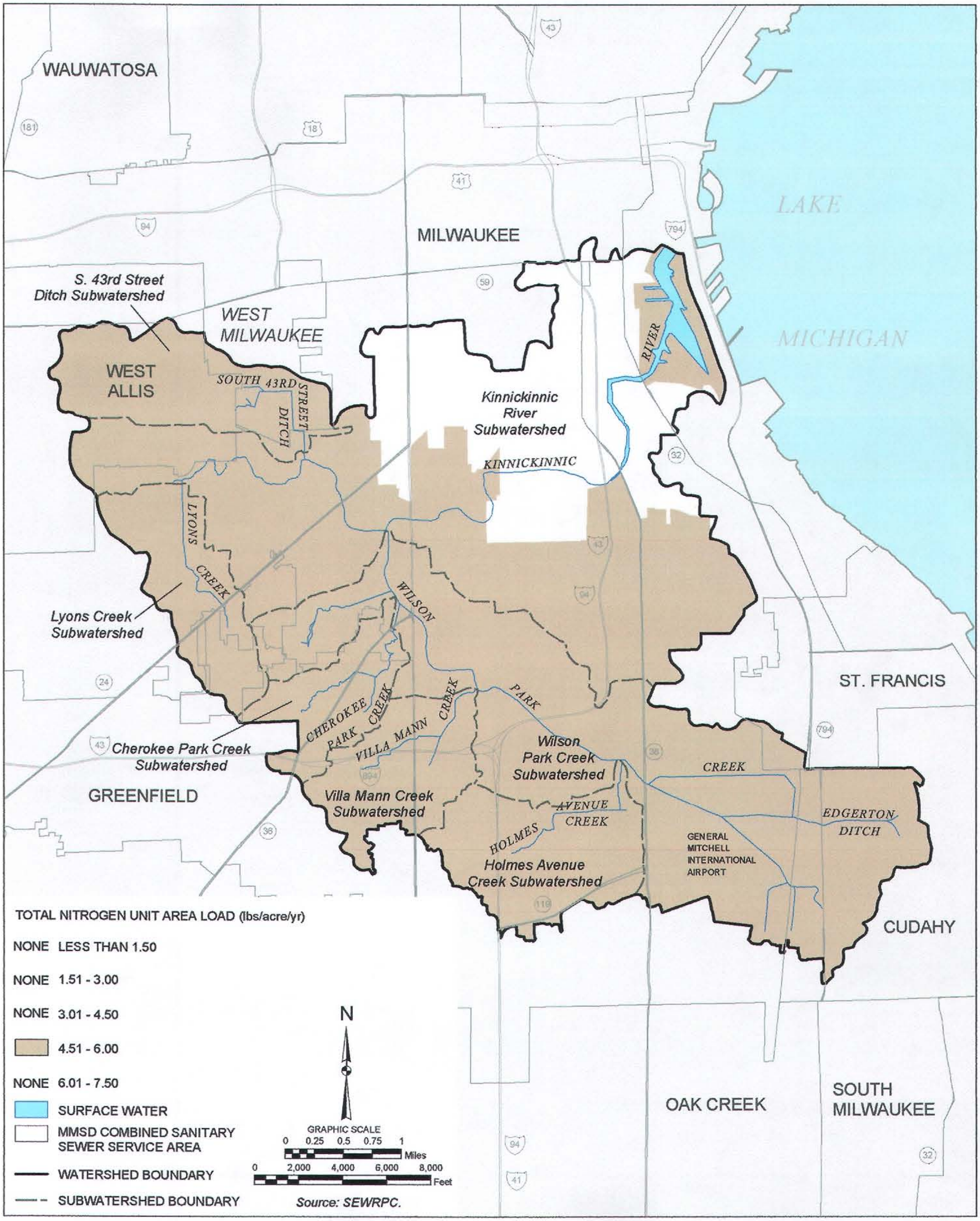
ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF TOTAL NITROGEN IN THE KINNICKINNIC RIVER WATERSHED



PRELIMINARY DRAFT

Map H-8

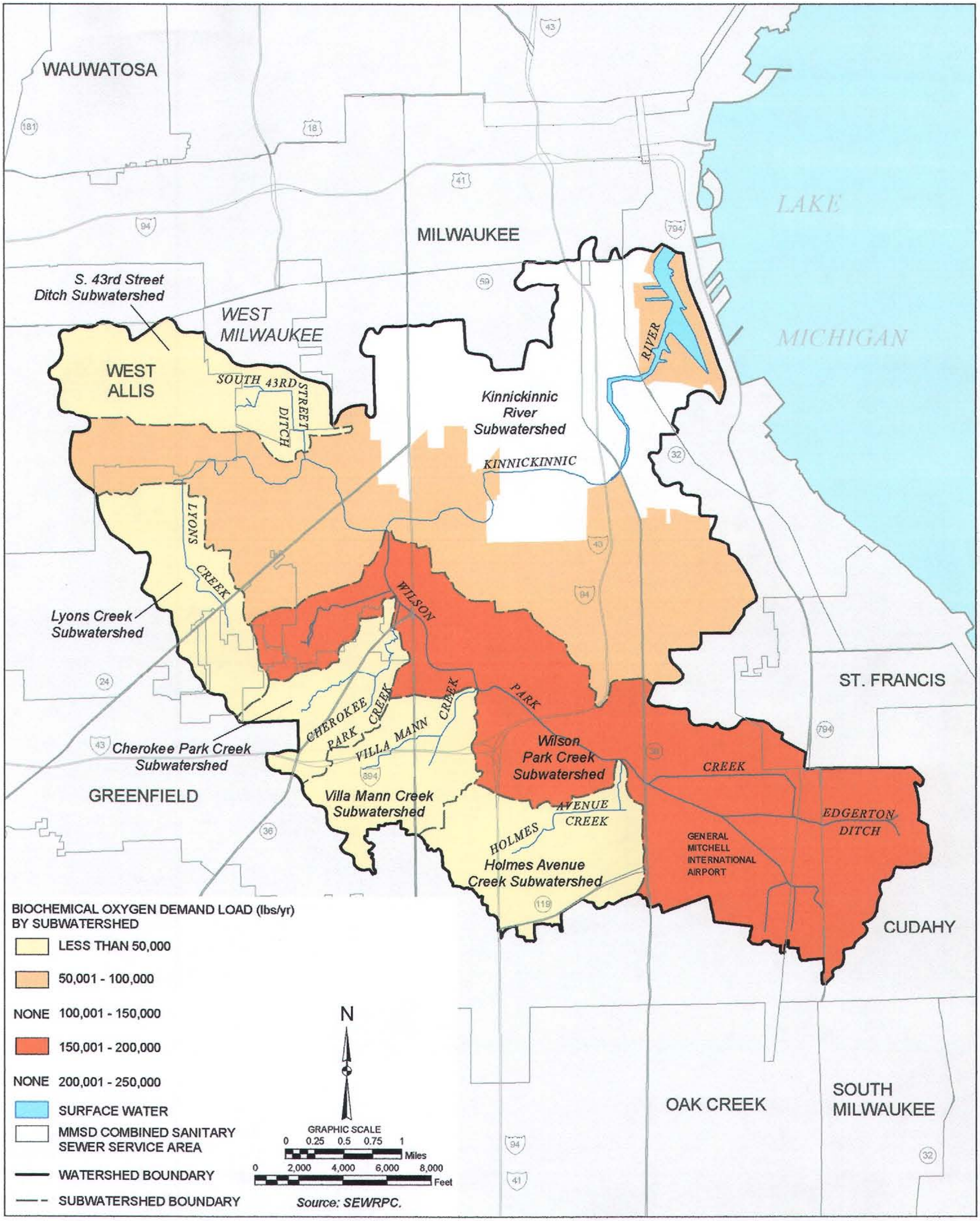
ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF TOTAL NITROGEN IN THE KINNICKINNIC RIVER WATERSHED



PRELIMINARY DRAFT

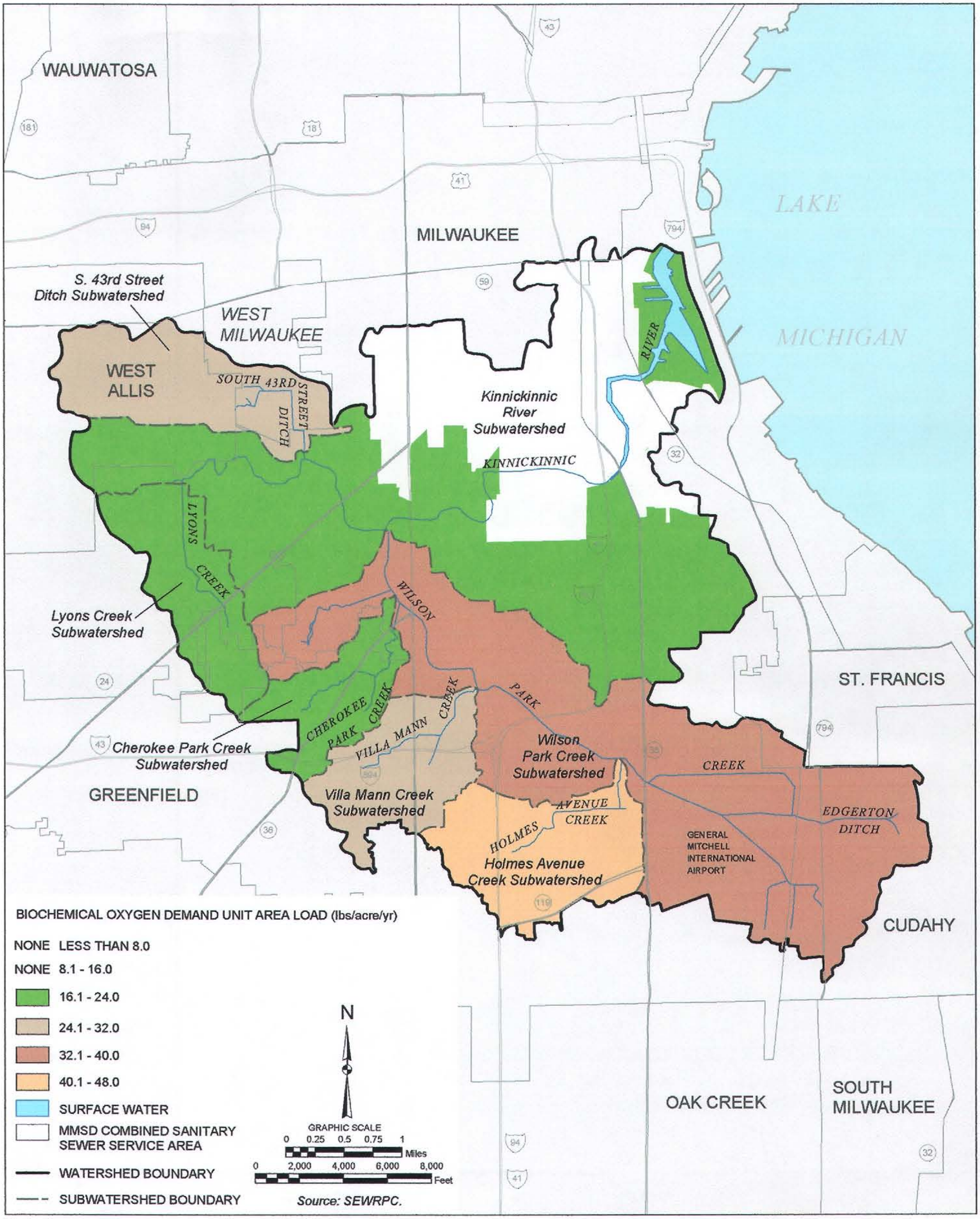
Map H-9

ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF BIOCHEMICAL OXYGEN DEMAND IN THE KINNICKINNIC RIVER WATERSHED



Map H-10

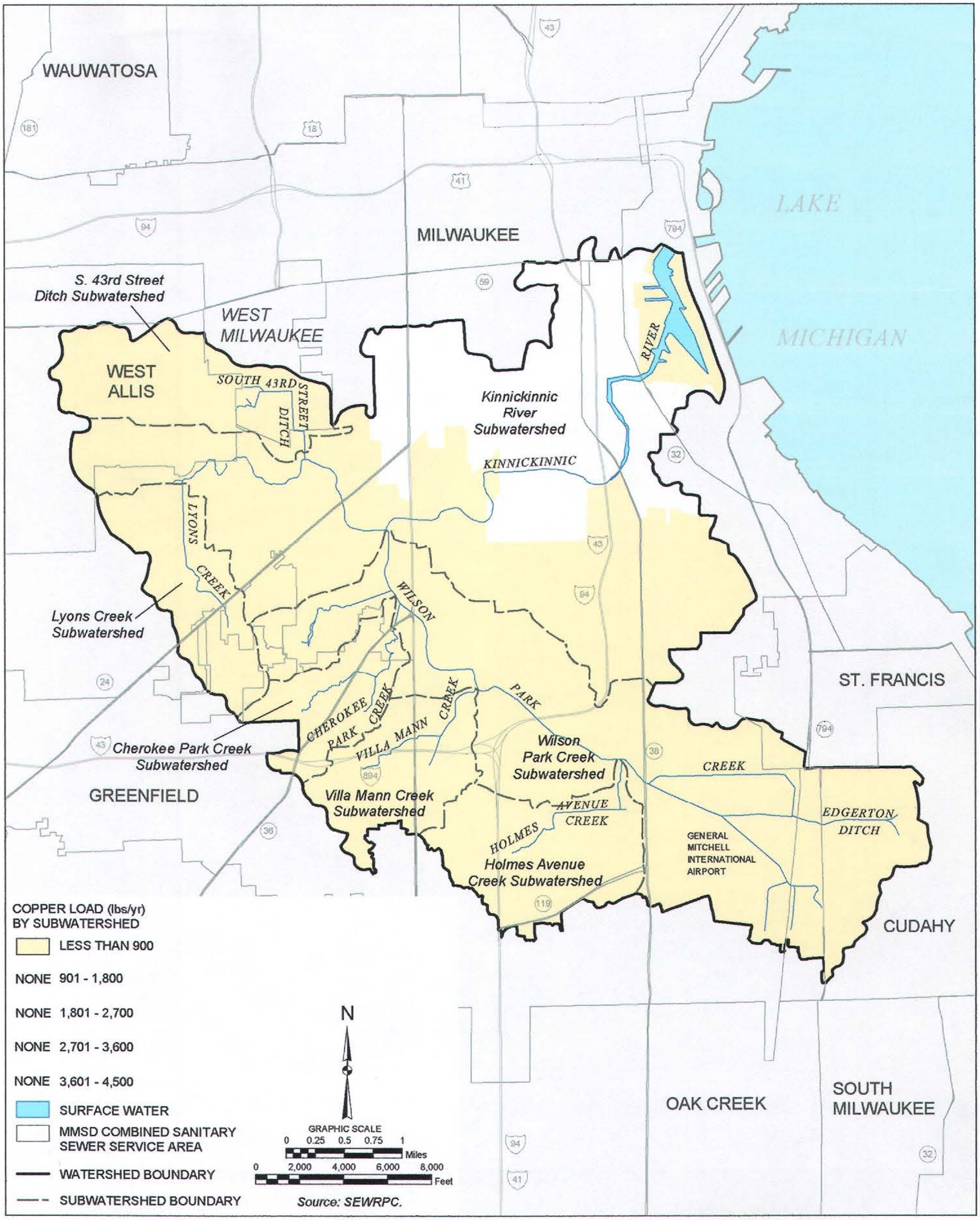
ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF BIOCHEMICAL OXYGEN DEMAND IN THE KINNICKINNIC RIVER WATERSHED



PRELIMINARY DRAFT

Map H-11

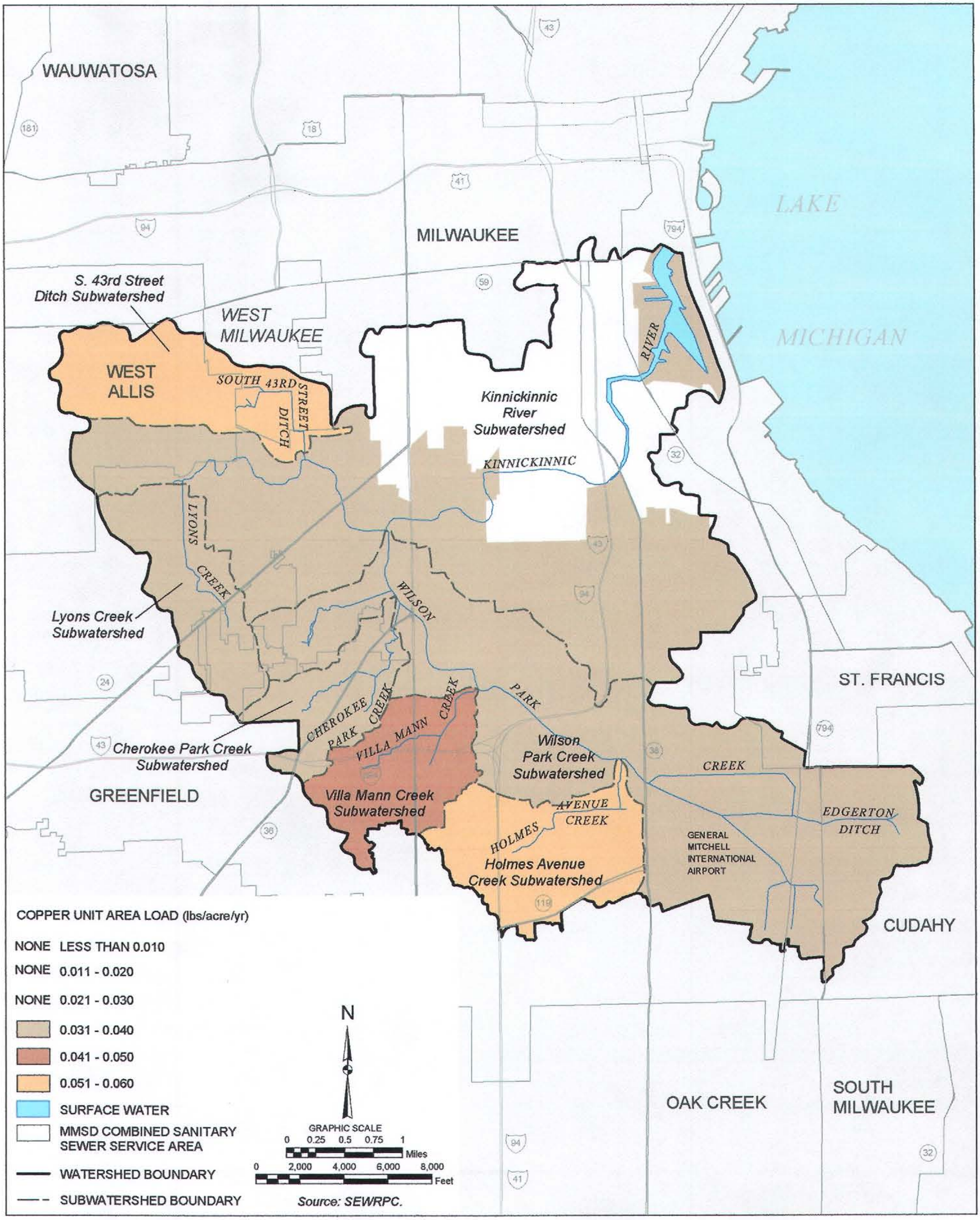
ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF COPPER IN THE KINNICKINNIC RIVER WATERSHED



PRELIMINARY DRAFT

Map H-12

ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF COPPER IN THE KINNICKINNIC RIVER WATERSHED



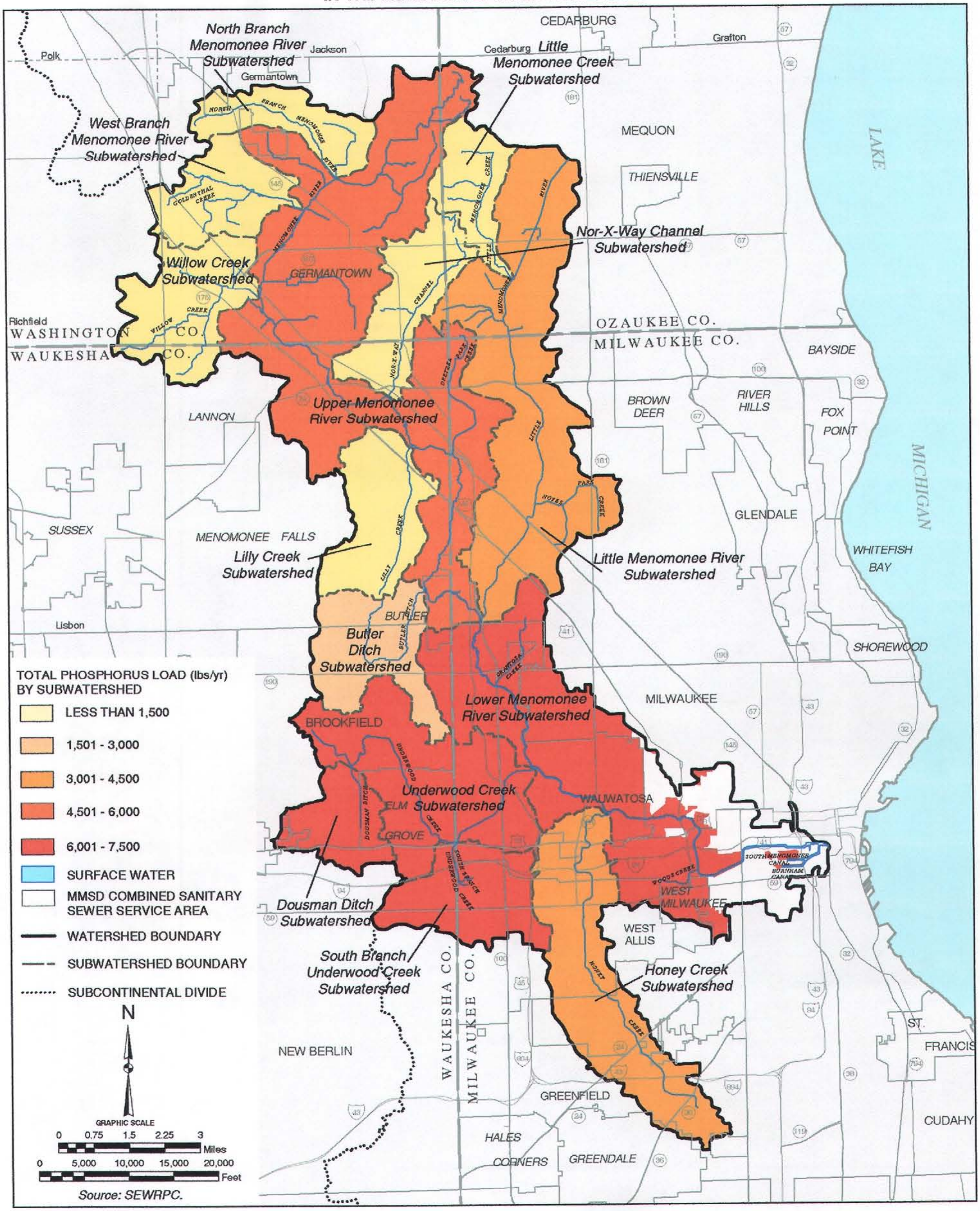
PRELIMINARY DRAFT

Exhibit I

MAPS FOR THE MENOMONEE RIVER TO BE ADDED TO APPENDIX H

Map H-13

ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF TOTAL PHOSPHORUS IN THE MENOMONEE RIVER WATERSHED

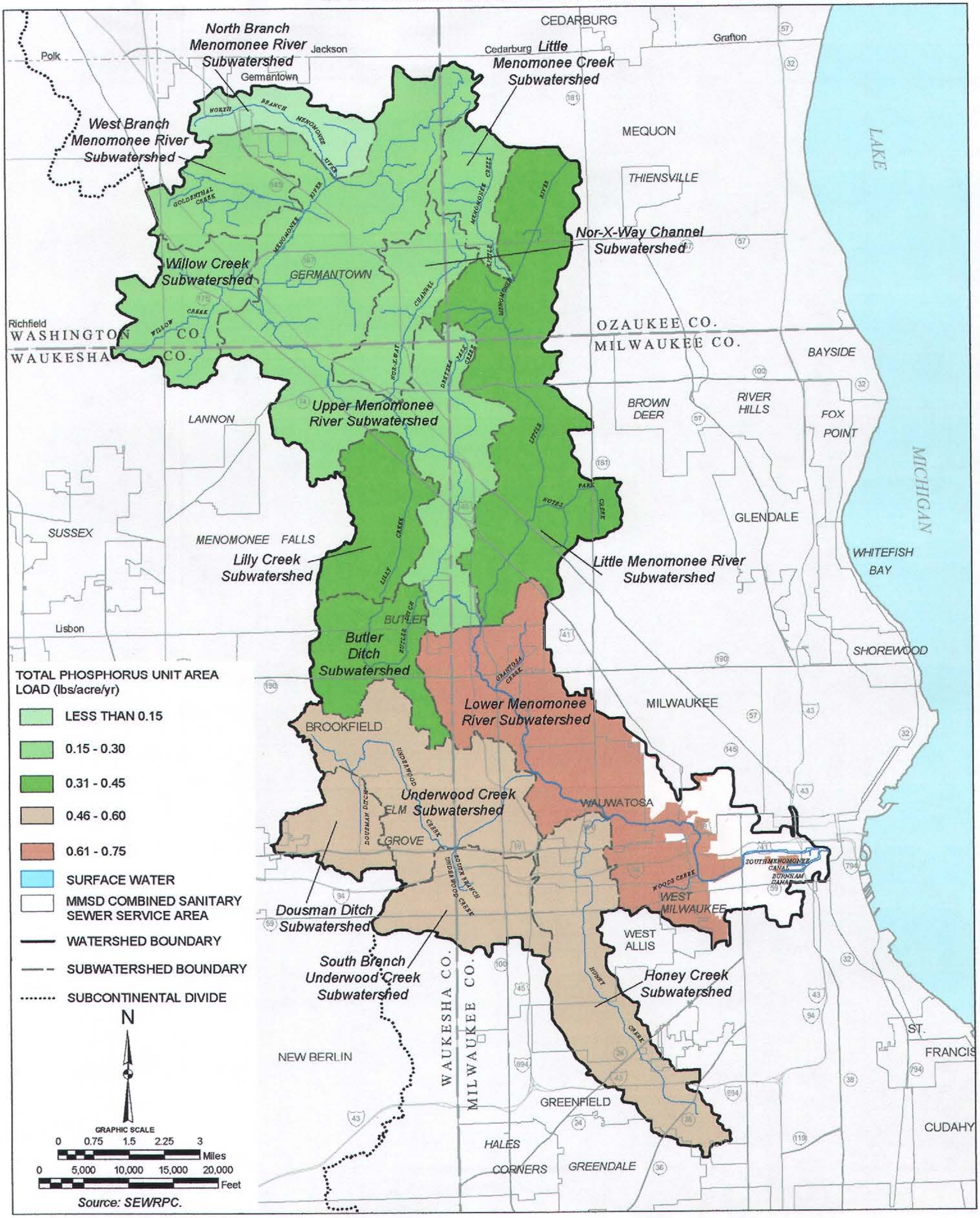


Source: SEWRPC.

PRELIMINARY DRAFT

Map H-14

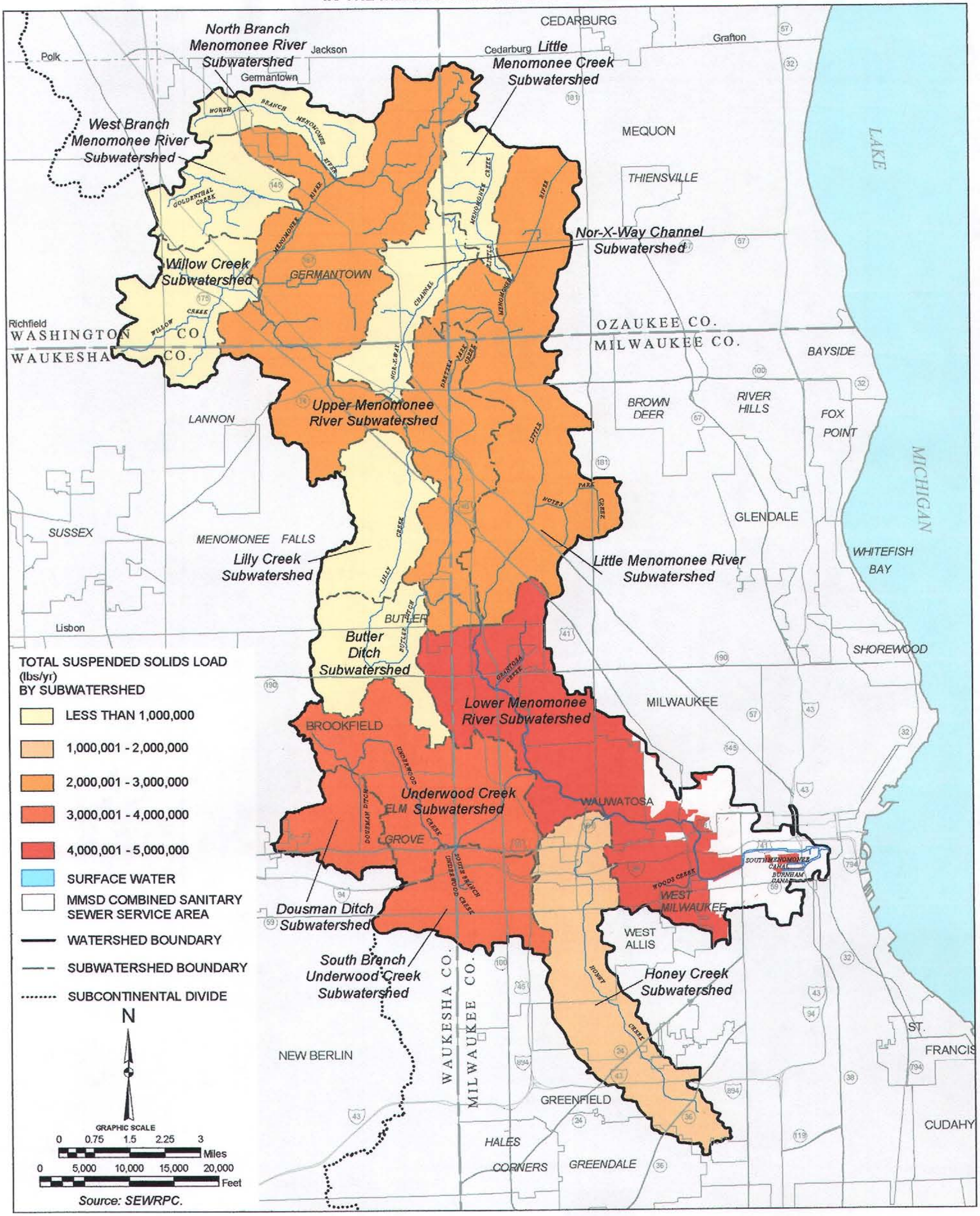
ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF TOTAL PHOSPHORUS IN THE MENOMONEE RIVER WATERSHED



PRELIMINARY DRAFT

Map H-15

ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF TOTAL SUSPENDED SOLIDS IN THE MENOMONEE RIVER WATERSHED

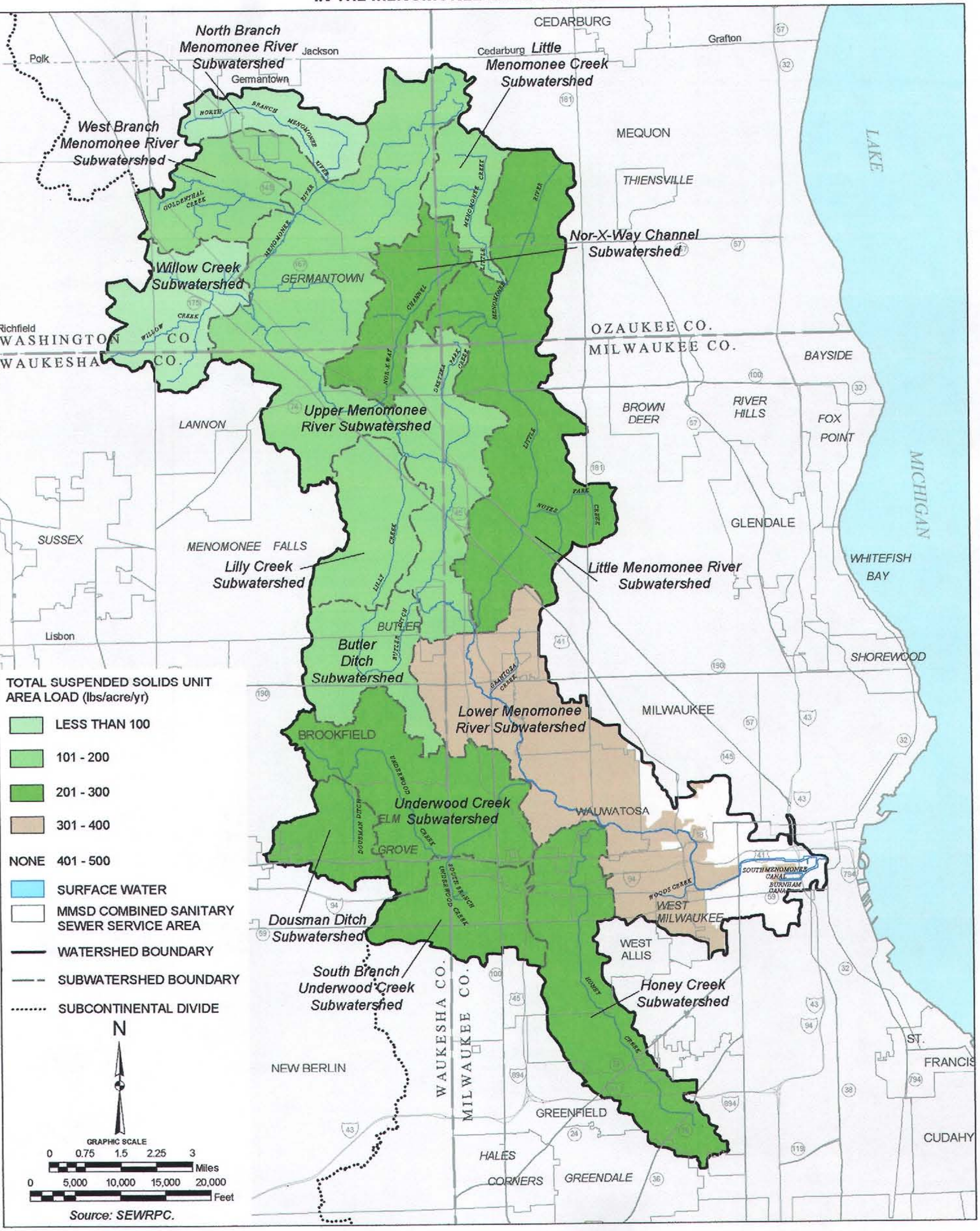


Source: SEWRPC.

PRELIMINARY DRAFT

Map H-16

ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF TOTAL SUSPENDED SOLIDS IN THE MENOMONEE RIVER WATERSHED

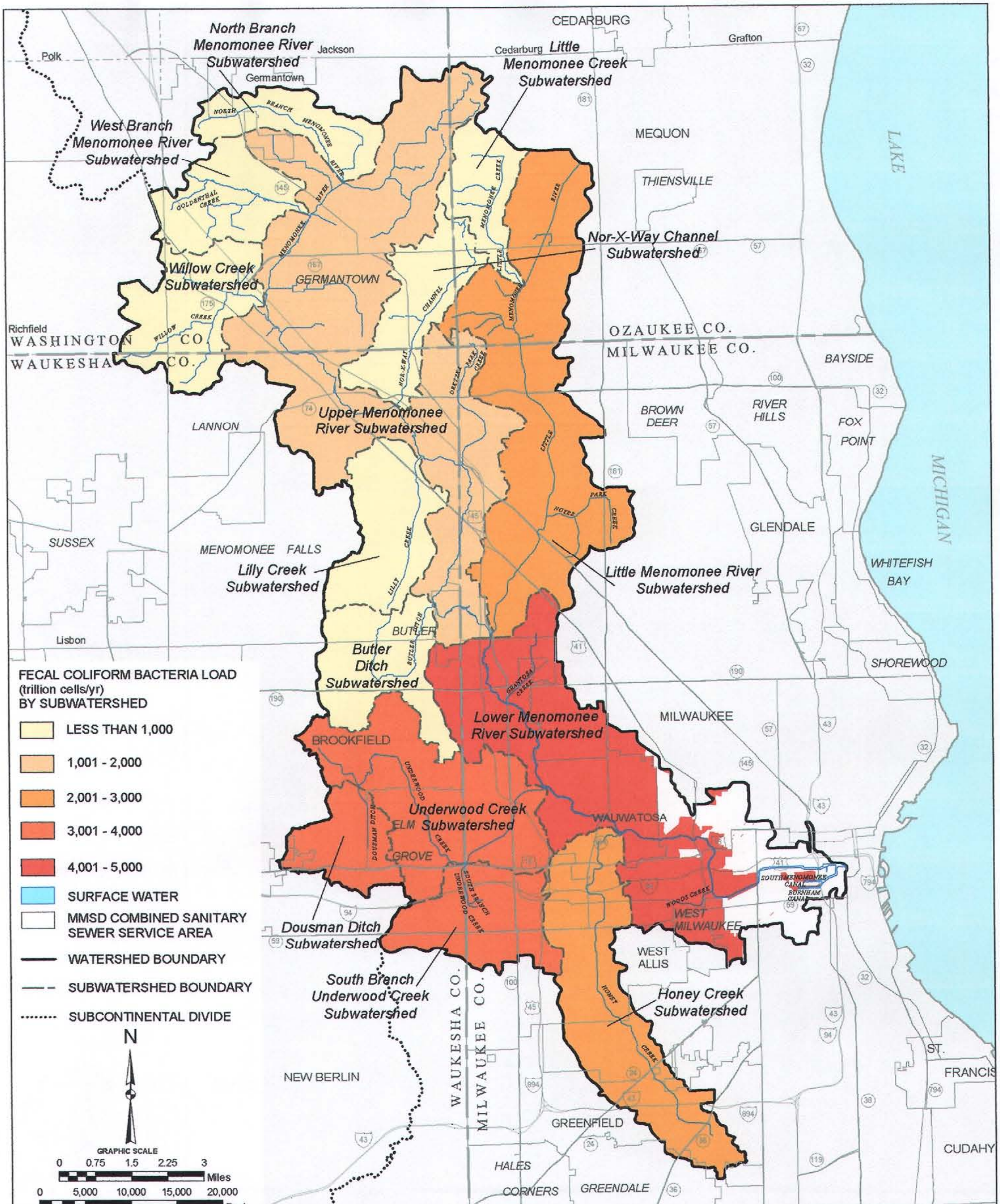


Source: SEWRPC.

PRELIMINARY DRAFT

Map H-17

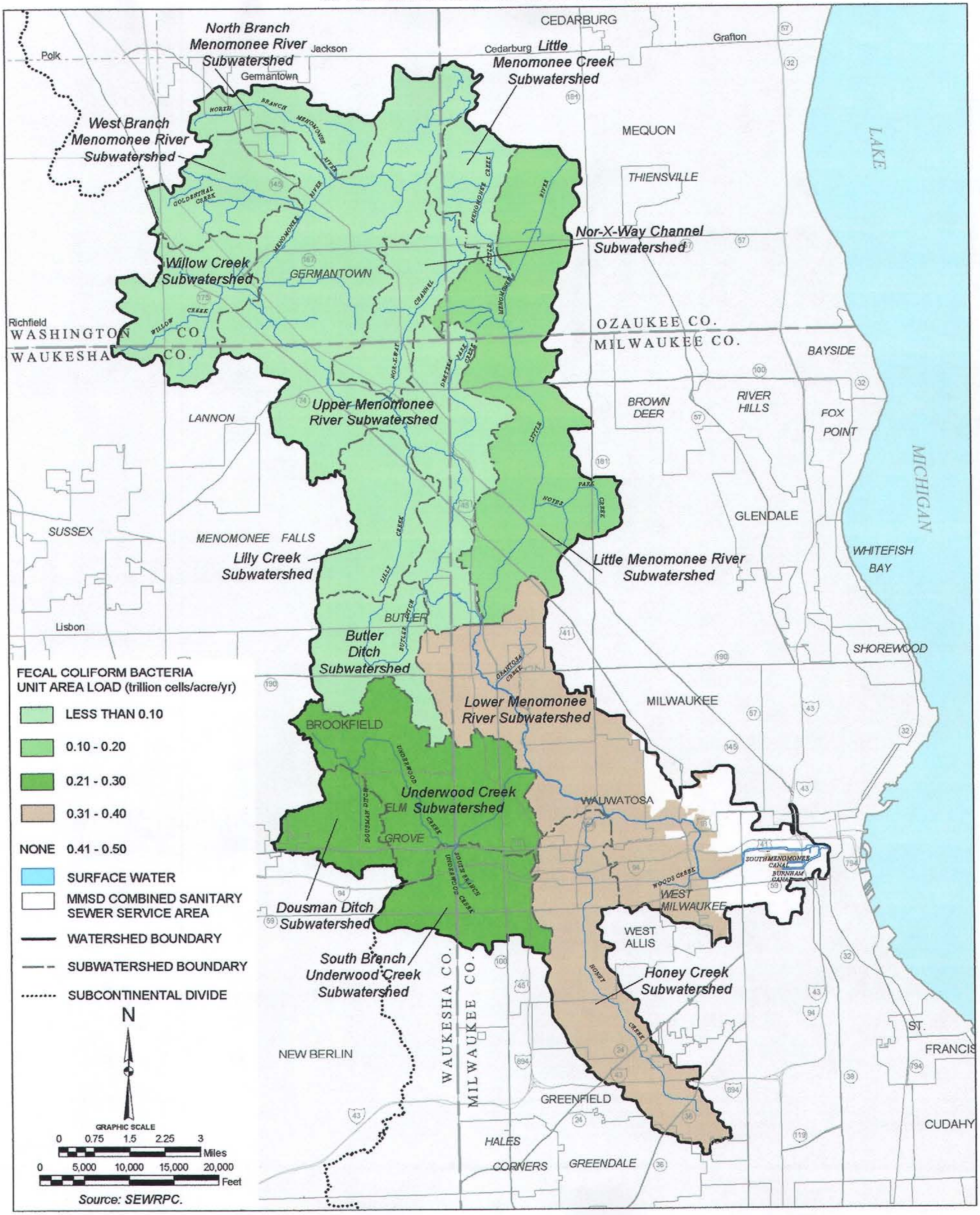
ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF FECAL COLIFORM BACTERIA IN THE MENOMONEE RIVER WATERSHED



PRELIMINARY DRAFT

Map H-18

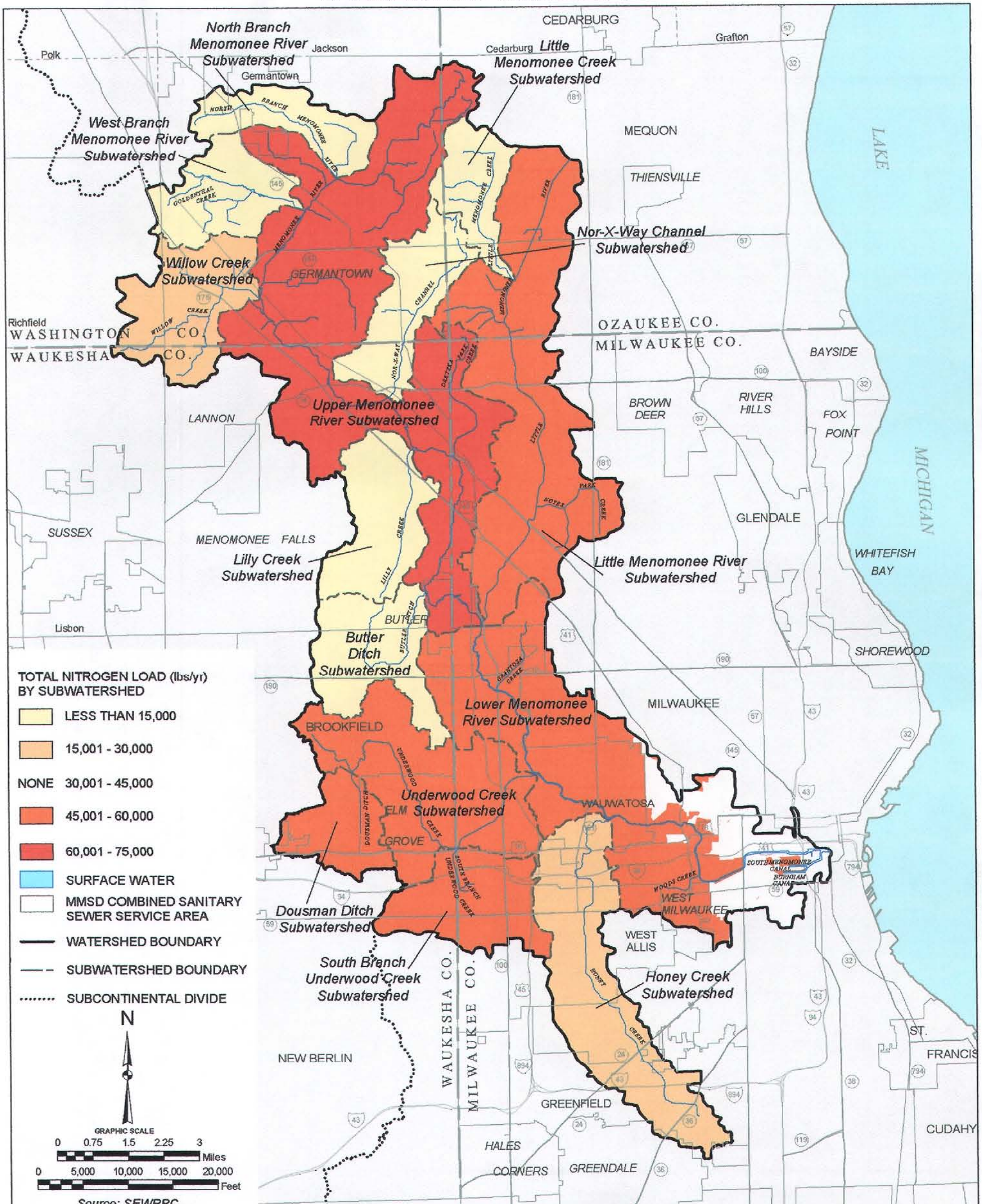
ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF FECAL COLIFORM BACTERIA IN THE MENOMONEE RIVER WATERSHED



PRELIMINARY DRAFT

Map H-19

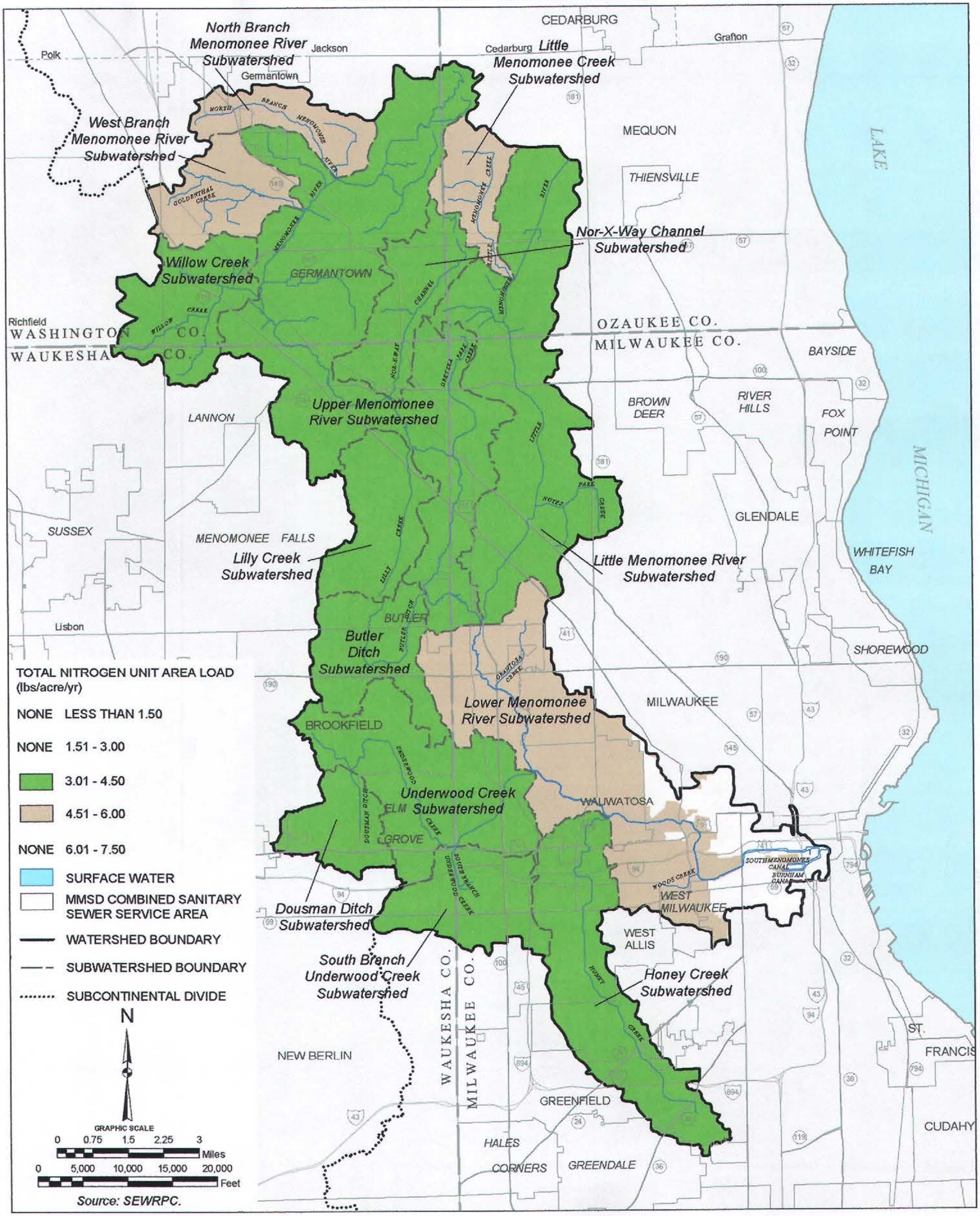
ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF TOTAL NITROGEN IN THE MENOMONEE RIVER WATERSHED



PRELIMINARY DRAFT

Map H-20

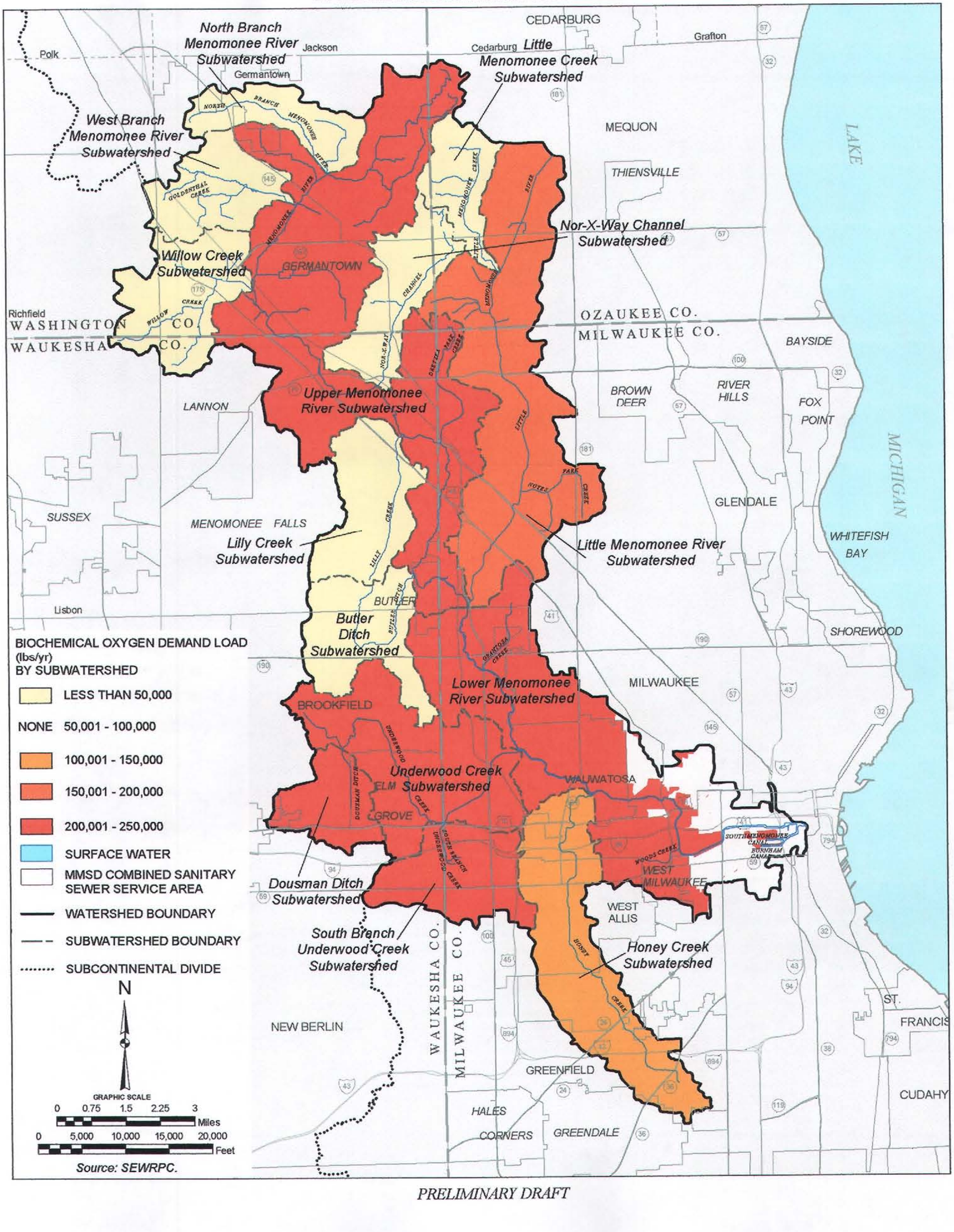
ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF TOTAL NITROGEN IN THE MENOMONEE RIVER WATERSHED



PRELIMINARY DRAFT

Map H-21

ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF BIOCHEMICAL OXYGEN DEMAND IN THE MENOMONEE RIVER WATERSHED

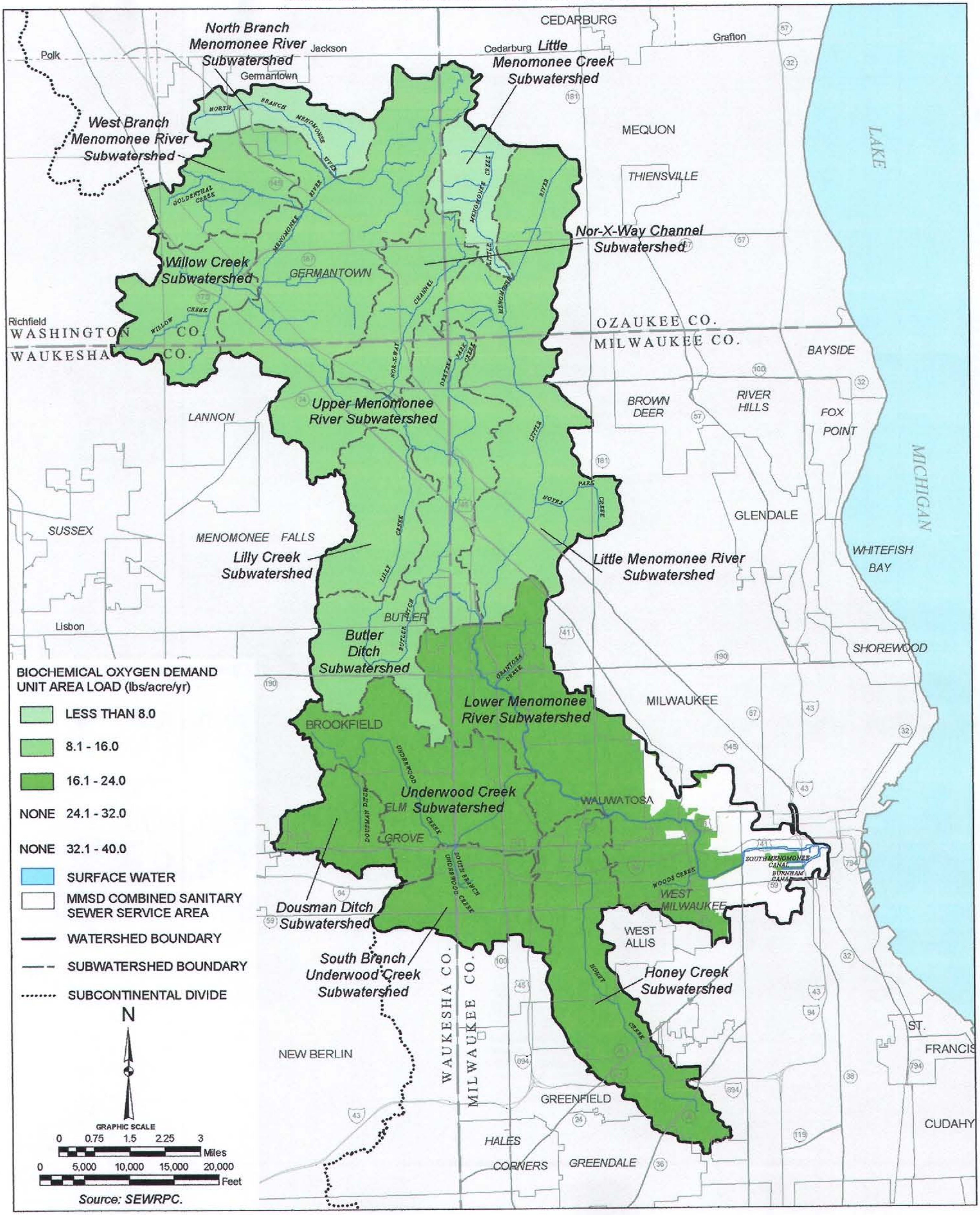


Source: SEWRPC.

PRELIMINARY DRAFT

Map H-22

ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF BIOCHEMICAL OXYGEN DEMAND IN THE MENOMONEE RIVER WATERSHED

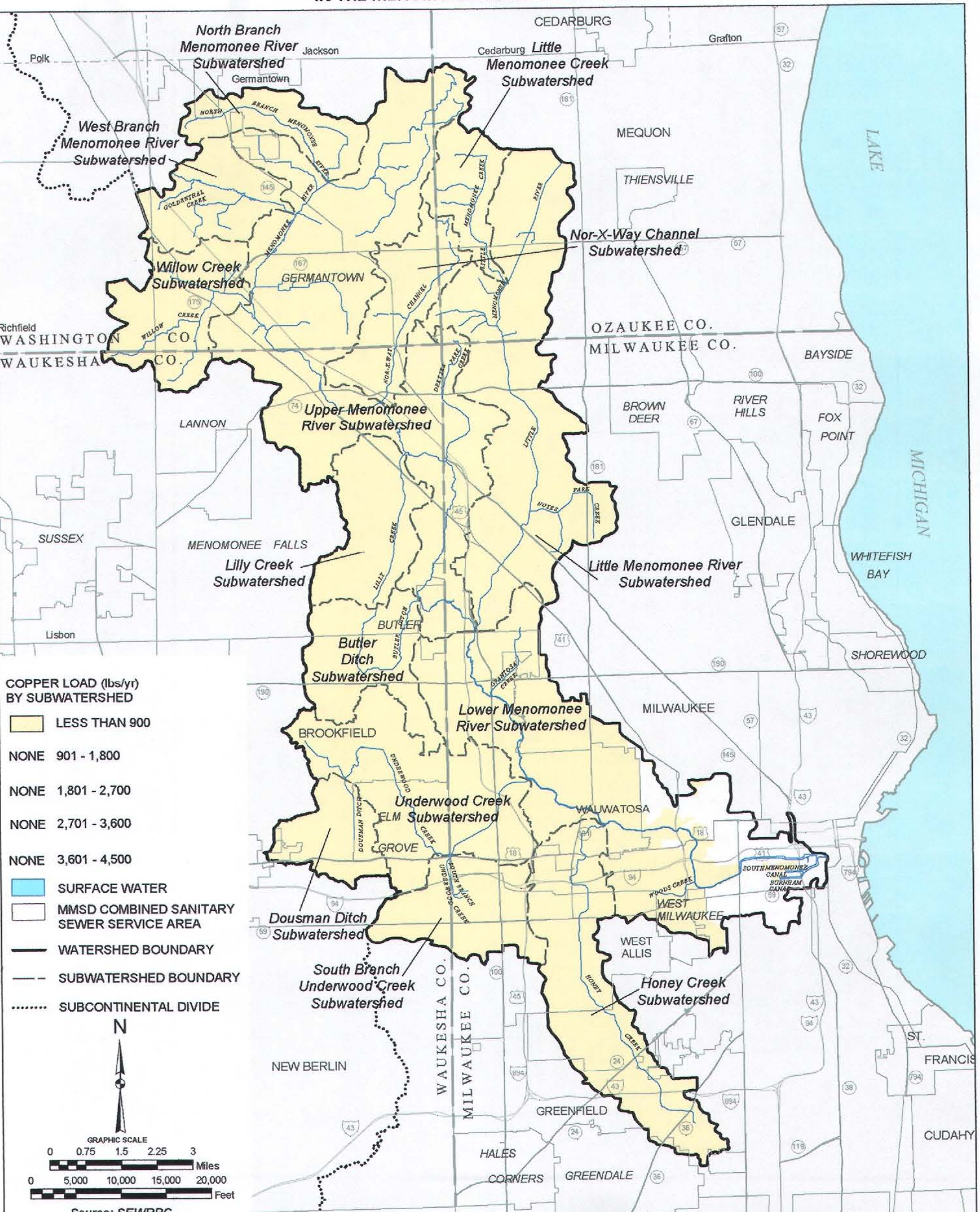


Source: SEWRPC.

PRELIMINARY DRAFT

Map H-23

ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF COPPER IN THE MENOMONEE RIVER WATERSHED

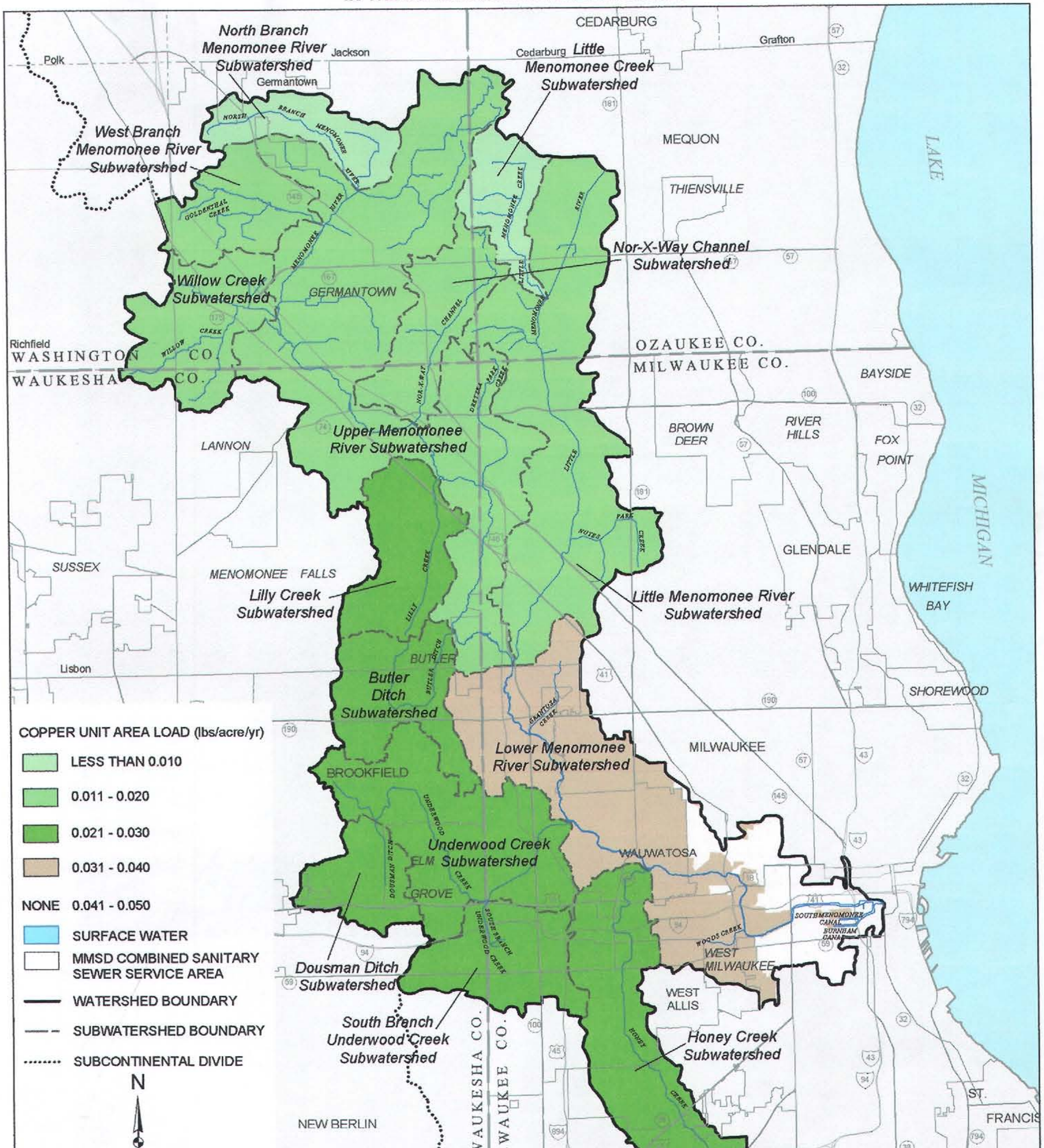


Source: SEWRPC.

PRELIMINARY DRAFT

Map H-24

ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF COPPER IN THE MENOMONEE RIVER WATERSHED



PRELIMINARY DRAFT

Exhibit J

POWERPOINT PRESENTATION ON SCENARIOS AND CONCEPTUAL ALTERNATIVE PLANS

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE

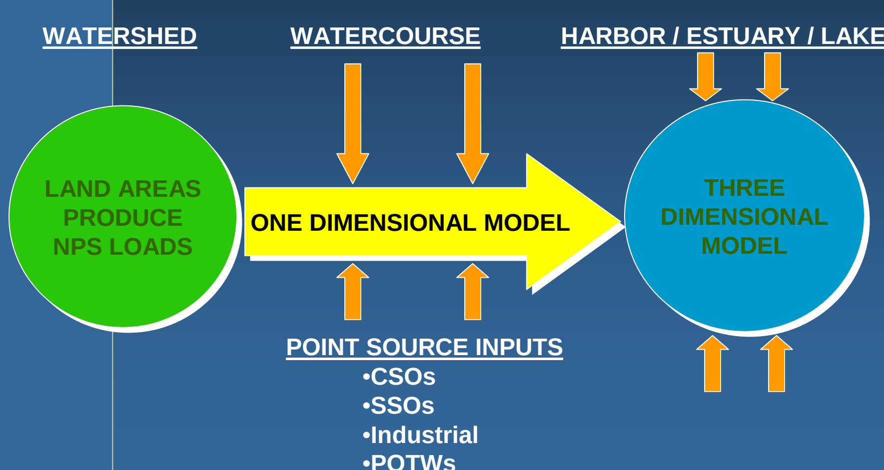
OVERVIEW OF SCENARIOS AND CONCEPTUAL ALTERNATIVE PLANS

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE
FOR THE GREATER MILWAUKEE WATERSHEDS

Advisory Committee Meeting
October 12, 2005

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

ELEMENTS OF RECEIVING WATER QUALITY MODELING



REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

BASELINE AND FUTURE CONDITIONS TO BE EVALUATED

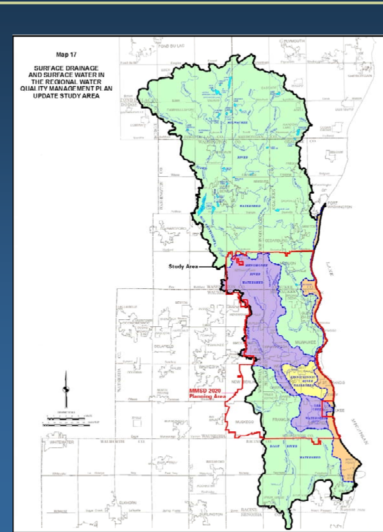
Technology Analysis – all FPOP's considered

Baseline (Current) Situation → Future Situation → Scenarios "bookends built on Future" → Combination Alternatives → Final Draft Plan → Final Approved Plan

- Baseline (Current) Situation ← Current Data Current I/I & Existing FPOP's
- Future Situation ← 2020 Land Use 2020 Population & Committed FPOP's I/I = Existing & Future allowance
- Scenarios "bookends built on Future" ← Technology Analysis – all FPOP's considered; Eliminate SSO & CSO or High level BMP's I/I = Existing & Future allowance
- Combination Alternatives ← Stakeholder Input DNR Criteria Gap Analysis I/I Reduction
- Final Draft Plan ← Stakeholder Input & Analysis of all Conditions

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

- Baseline Year 2000 and Future Year 2020 Conditions
  - Point Sources of Pollution
  - Nonpoint Sources of Pollution
  - Within and Outside MMSD Planning Area



REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

BASELINE AND FUTURE CONDITIONS TO BE EVALUATED

Point Sources within MMSD Planning Area	Baseline Condition—Year 2000 Land Use	Future Conditions—2020 Land Use
WWTP	Actual or Modeled Existing	Same As Existing, But with 2020 Flow Increase
SSO & CSOs	Modeled Existing	Modeled Condition with Projected Flow Increase
Sewerage System Facilities	Existing Completed Facilities	Include All Facilities under Construction or Agreed to Under Permit
I/I Assumptions	Existing	Same As Existing with Future I/I Allowance

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

BASELINE AND FUTURE CONDITIONS TO BE EVALUATED

Point Sources Outside of MMSD Planning Area	Baseline Condition—Year 2000 Land Use	Future Conditions—2020 Land Use
Public STP	Existing	Effluent Same As Permit Conditions (or existing), Flow Increase for Development
Private STP	Existing	Existing
SSO	Existing	Existing

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

BASELINE AND FUTURE CONDITIONS TO BE EVALUATED

Nonpoint Sources	Baseline Condition—Year 2000 Land Use	Future Conditions—2020 Land Use
Urban	Modeled to Account for Existing Stormwater Management System	Existing Practices, Plus Estimated Impact of NR 151 and Chapter 13
Rural	Modeled to Account for Existing Practices	Existing, Plus Estimated Impact of NR 151

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

BASELINE AND FUTURE CONDITIONS TO BE EVALUATED

	Baseline Condition—Year 2000 Land Use	Future Conditions—2020 Land Use
Watercourse and Stream System	Existing Channel Conditions, Including Recent Construction (Lincoln Creek, Valley Park, Menomonee River Drop Structure Removal, Little Menomonee River)	Same As Existing, Plus Adopted Plan Projects Included in Capital Improvements Program
Instream Measures	Continued Dredging of Bottom Sediments for Navigation Purposes	Same As Existing

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

BASELINE AND FUTURE CONDITIONS TO BE EVALUATED

Baseline Condition—Year 2000 Land Use	Future Conditions—2020 Land Use
Modeled Condition to Establish Calibration/Validation	Future Conditions Based on Modeled Results Provide Second Basis of Comparison for Scenarios and Alternative Plans
Form One Basis of Comparison for Future Condition, Scenarios, and Alternative Plans	Scenarios and Alternatives Will Be Built Based upon Future Conditions

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

SCENARIOS: "BOOKEND" CONDITIONS BUILT ON THE FUTURE SITUATION

- 1A: No SSOs and No CSOs with CSSA Sewer Separation
- 1B: No SSOs and No CSOs – No CSSA Sewer Separation
- 1C: No SSOs, No CSSA Sewer Separation, Increased LOP for CSOs Based on Elimination of SSOs
- 1D: No SSOs Based on I/I Reduction with Increased LOP for CSO
- 2: High Level BMP's, No Change in SSOs & CSOs

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

- Assumptions Common to All Scenarios
  - Future 2020 Land Use Conditions
  - Implementation of MMSD Chapter 13 Rule Within District Service Area
- Assumption Common to Scenarios 1A through1D
  - NR 151 Implementation: Complete Urban, Partial Rural
- Assumption Common to Scenarios 1A through 1C
  - I/I is Same as for Future Situation

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

FUTURE CONDITION ALTERNATIVE PLANS

- To Be Developed Based Upon Technology Analysis and Analysis of Conditions and Scenarios Previously Described

REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE/ MMSD 2020 FACILITIES PLAN

CONCEPTUAL ALTERNATIVE PLANS

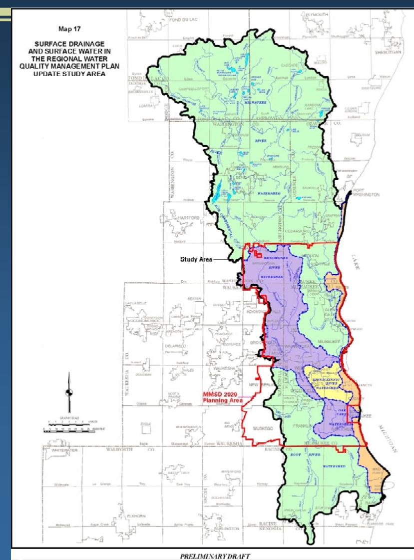
- No Action – Future 2020 Condition
- Regulatory Alternatives
  - B1 - Meet Point and Nonpoint Source Discharge Regulations
  - B2 – Operate MMSD System to Minimize Overflows, Meet Nonpoint Source Discharge Regulations
- Watershed-Based Alternatives
  - C1 – Goal is Compliance with Receiving Water Quality Standards
  - C2 – Goal is Compliance with Receiving Water Quality Standards Plus "Green" Facilities, Policies, Operational Improvements, and Programs (FPOPs) Directed Toward Water Quality Improvement

CONCEPTUAL ALTERNATIVE PLANS

- **"Common Package"**
  - **Features Common to All Alternatives**
    - **MMSD System Upgrades for Sewage Conveyance and Treatment and Biosolids**
    - **Ongoing Programs that Benefit Water Quality (household waste collection)**
    - **Education**
    - **Water Conservation**
    - **Basic Urban Stormwater Quality Measures**
    - **Stormwater and Floodland Management Measures to Prevent Basement Backups and Overland Flooding of Buildings During a Ten-Year Event**

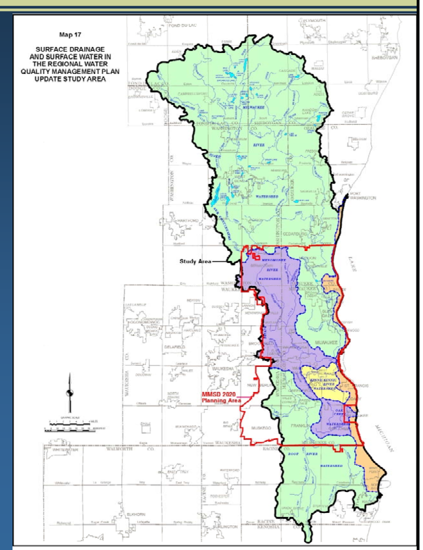
CONCEPTUAL ALTERNATIVE PLANS: REGULATORY ALTERNATIVES

- B1 - Meet Point and Nonpoint Source Discharge Regulations
  - Comply with Regulations Calling for No SSOs and a Maximum of Six CSOs a Year (MMSD and Outside MMSD)
  - Comply With WDNR NR 151 “Runoff Management” Standards for Urban and Rural Nonpoint Source Pollution Control



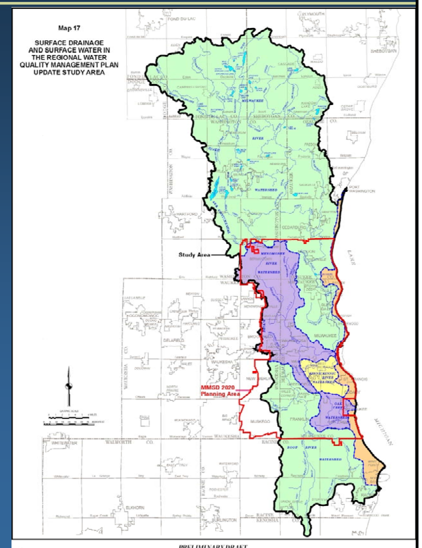
CONCEPTUAL ALTERNATIVE PLANS: REGULATORY ALTERNATIVES

- B2 - Operate MMSD System to Minimize Overflows
  - Operate MMSD System to Minimize Overflows, Drawing No Distinction Between CSOs and SSOs
  - Outside MMSD Service Area Comply with Regulations Calling for No SSOs
  - Comply With WDNR NR 151 “Runoff Management” Standards for Urban and Rural Nonpoint Source Pollution Control



CONCEPTUAL ALTERNATIVE PLANS: WATERSHED-BASED ALTERNATIVES

- C1- Goal is Compliance with Receiving Water Quality Standards
  - Combination of CSO and SSO Control and Urban and Rural NPS Control
  - Cost Effectively Meet Quality Standards



CONCEPTUAL ALTERNATIVE PLANS: WATERSHED-BASED ALTERNATIVES

- C2- Goal is Compliance with Receiving Water Quality Standards
  - Combination of CSO and SSO Control and Urban and Rural NPS Control
  - Adds Best Management Practices and Habitat and Aesthetic Measures Directed Toward Improvement of Water Quality
  - Cost Effectively Meet Quality Standards

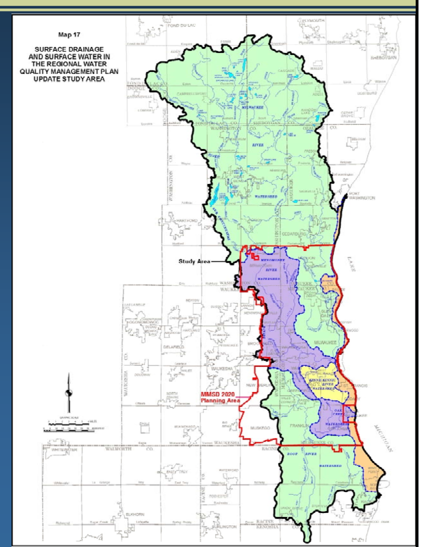


Exhibit K

NOVEMBER 16, 2005, CORRESPONDENCE TO CHERYL NENN

COPY

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

W239 N1812 ROCKWOOD DRIVE • PO BOX 1607 • WAUKESHA, WI 53187-1607•

TELEPHONE (262) 547-6721
FAX (262) 547-1103

Serving the Counties of: KENOSHA MILWAUKEE OZAUKEE RACINE WALWORTH WASHINGTON WAUKESHA

November 16, 2005

Ms. Cheryl Nenn
Riverkeeper/Project Director
Friends of Milwaukee's Rivers
1845 N. Farwell Avenue, Suite 100
Milwaukee, WI 53202

Dear Ms. Nenn:

We are writing to clarify our November 7, 2005, letter to you regarding the conceptual alternative plans that have been formulated for the ongoing SEWRPC regional water quality management plan update (RWQMPU) and the Milwaukee Metropolitan Sewerage District (MMSD) 2020 facilities plan.

On the second page of our November 7th letter, we reported on agreements reached on how to incorporate Alternative B-2, or a variation of that alternative formulated during the evaluation process, into the planning process should such an alternative prove to be the most desirable alternative from a water quality and cost-effectiveness basis. The second sentence of the fourth bulleted item on that page refers to the MMSD 2020 facilities plan and states:

> "In addition, a plan which fully meets the regulatory requirements would also be carried through the plan public involvement and technical committee review programs for the 2020 facilities planning program with that plan being held out as the 'recommended plan.' "

This sentence was intended to mirror the agreements reached at a July 14, 2005, intergovernmental meeting convened to discuss the conceptual alternatives. The summary notes from that meeting are attached hereto for your information. Those notes also indicate that a plan which fully meets the regulatory requirements would be carried through the public involvement process. However, the notes do not indicate that such a plan would necessarily be held out as the "recommended plan." Rather, the notes indicate the following:

"• The details of how to present the recommended MMSD 2020 facilities plan will be deferred until after the public involvement and technical committee review during the alternatives plan evaluation. This will allow consideration of input received and will put definition to the alternatives and the potential differences between the alternatives. In any case, the recommended plan strategy will have to be implementable and meet regulations.

• The facility plan and regional water quality management plan update text on this issue will have to be carefully crafted. The public involvement program relating to the alternative and recommended plans would highlight the issue as an important consideration."

The Regional Planning Commission staff intended our November 7, 2005, response letter to be consistent with the summary minutes of the July 14, 2005, meeting which are attached. The method in which this issue is finally addressed in the MMSD facility plan will, of course, be up to the MMSD itself, and will be responsive to the MMSD time schedule, policies, and regulatory setting.

We trusts this clarifies our November 7, 2005, letter.

Sincerely,

Philip C. Evenson
Executive Director

PCE/RPB/pk
#113573 V1 - RWQMPU NENN LTR

Enclosures (#110435, 110436, 113060)

cc: Mr. Kevin L. Shafer, MMSD (w/summary notes)
Mr. Charles G. Burney, WDNR-Madison (w/summary notes)
Mr. Charles J. Krohn, WDNR-Southeast Region (w/summary notes)
Ms. Sharon L. Gayan, WDNR-Southeast Region (w/summary notes)
Mr. Peter G. Swenson, USEPA Region V (w/summary notes)
Mr. Timothy R. Bate, MMSD (w/summary notes)
Mr. William Krill, HNTB (w/summary notes)

bcc: Mr. William J. Mielke, Ruekert & Mielke, Inc. (w/summary notes)

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SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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Serving the Counties of: KENOSHA MILWAUKEE OZAUKEE RACINE WALWORTH WASHINGTON WAUKESHA

November 7, 2005

Ms. Cheryl Nenn
Riverkeeper
Friends of Milwaukee's Rivers
1845 N. Farwell Avenue
Suite 100
Milwaukee, WI 53202

Dear Ms. Nenn:

Thank you for your letter of October 18, 2005, to Mr. Robert P. Biebel of the Commission staff, in which you provided comments on the conceptual alternative plans that have been formulated for the ongoing SEWRPC regional water quality management plan update (RWQMPU) and the Milwaukee Metropolitan Sewerage District (MMSD) 2020 facilities plan. You became familiar with the conceptual alternative plans through presentations that were made at the September 12, 2005, Citizens Advisory Council (CAC) meeting and the October 12, 2005, RWQMPU Advisory Committee meeting.

The comments in your letter were directed toward three of the conceptual alternative plans:

- Alternative B2 – "Minimize Overflows"
- Alternative C1 – "Compliance with Receiving Water Quality Standards"
- Alternative C2 – "Compliance with Receiving Water Quality Standards Emphasizing Non-traditional Facilities, Policies, Operational Improvements, and Programs, "

We offer the following remarks in response to your comments:

General – The preliminary and final recommended plans will likely not be any single one of the alternative plans. The preliminary and final recommended plans are likely to combine certain aspects of more than one of the alternatives in order to cost effectively achieve the desired level of water quality improvement

Alternative Plan B2 – Your letter notes that this alternative would maximize storage and would treat combined sewer overflows (CSOs) and separate sewer overflows (SSOs) the same, rather than reserving volume for SSOs in the inline storage system (ISS), as is done under the current MMSD operating policy. You also note that you "understand that this joint planning process is meant to model and estimate effects of this type of policy on overall water quality, and (you) understand from a scientific perspective, the value of studying this alternative." However you express reservations about comments made at the RWQMPU Advisory Committee meeting to the effect that if such an alternative plan were found to be a cost effective way of improving water quality, it might be appropriate to adopt it as the recommended plan with the condition that it could not be implemented unless the current regulatory framework were changed. Further, you state that Friends of Milwaukee's Rivers (FMR) "can not support the study of an alternative … which will seek to condone or allow … the continuation of illegal SSOs." You do say that FMR would be more supportive of evaluating an alternative that would investigate maximizing ISS storage through changes to the volume reserved for separate sewer flows while complying with the Federal Clean Water Act.

That suggestion is well taken, and such an approach may be applied in developing a preliminary recommended plan. However, the potential impacts of such an approach have to be demonstrated through quantifiable analyses by including an alternative which demonstrates the potential for improvement in water quality. The concept you have suggested will be evaluated in developing a preliminary recommended plan after review of the alternatives and their water quality impacts.

Conceptual Alternative B-2 was discussed by the project Oversight Committee which includes representatives from the Wisconsin Department of Natural Resources, the MMSD, the project consultant team, and the SEWRPC staff. That group agreed that if Alternative B-2, or a variation of that alternative formulated during the evaluation process, proves to be the most desirable alternative from a water quality and cost-effectiveness basis:

- It would be included as the recommended plan for the regional water quality management plan update,

- The RWQMPU report would clearly indicate that the implementation of the recommended plan would be contingent upon any needed changes in the regulatory framework prior to implementation, and

- The RWQMPU recommended plan would include "fall-back" provisions designed to be implemented to meet the facility planning and permitting requirements if the regulatory framework could not be changed by a specified date.

- Alternative Plan B-2 or a variation of that alternative, would be carried through and held out during the planning public involvement and technical committee review phases of the 2020 MMSD facilities planning program. In addition, a plan which fully meets the regulatory requirements would also be carried through the plan public involvement and technical committee review programs for the 2020 facilities planning program with that plan being held out as the "recommended plan."

There is no intent that an alternative be adopted which condones or allows illegal activity. It is the intent of the agencies involved in the RWQMPU/2020Facilities Planning process that an alternative such as B-2 only be promoted if it is found to be a better approach than the alternative that is strictly consistent with the current regulatory framework upon which Alternative B-1 is founded. In that sense a "better" alternative would be one which results in better water quality conditions at an equal or lower cost. It is important to keep in mind that both conceptual Alternatives B-1 and B-2 include the same level of nonpoint source pollution control. Given the relative magnitude of point and nonpoint source pollutant loads that are being documented in the planning process, that level of control would be expected to have a major influence on water quality conditions.

Alternative Plans C1 and C2 – You indicate FMR support for these alternatives, but you note that the September 12, 2005, draft description of the alternatives that was provided to the CAC indicates that implementation of these alternatives would only be expected to result in "insignificant improvement" in

SSO control and “small improvement” in CSO control. You further state that FMR believes these alternatives can be viable only if they comply with the Clean Water Act.

Alternative Plans C1 and C2 will be designed to improve water quality and meet water quality standards through application of control measures and technologies. It is important to note that conceptual Alternatives C1 and C2 consider the same general SSO control measures as Alternative B1 and an expanded set of possible measures for CSO control relative to Alternative B1. The effectiveness of Alternative Plans C1 and C2 will be evaluated through comparison of water quality conditions under alternative plan conditions with the existing regulatory water use objectives and supporting standards. Also, in certain designated stream reaches which have been documented in both the SEWRPC RWQMPU planning and technical reports, compliance with more stringent water use objectives and supporting standards than the current regulatory objectives and standards will be evaluated and the feasibility of implementing the alternative plan components needed to meet those more stringent standards will be considered.

The September 12 draft description of the conceptual alternatives does not attribute “insignificant improvement” in SSO control and “small improvement” in CSO control to these alternative plans. It anticipates “insignificant improvement” in **water quality** due to the level of SSO control achieved and “small improvement” in **water quality** due to the level of CSO control achieved. The anticipated water quality benefits related to SSOs and CSOs are characterized in the same manner for conceptual Alternatives B1, C1, and C2. Those anticipated benefits were listed for each conceptual alternative plan to give all of those involved in the planning process a general idea of the effects of the alternatives on water quality. The actual benefits will be determined through water quality simulation modeling considering the effects of both point and nonpoint source controls.

We trust that the foregoing is responsive to your comments. If you have further comments, please do not hesitate to contact Mr. Biebel or Mr. Michael G. Hahn of the Commission staff.

Sincerely,

Philip C. Evenson
Executive Director

PCE/MGH/mlh
#113060 V1 - RWQMPU FMR ALT COMMENTS LETTERS

cc: Mr. Kevin L. Shafer, MMSD
Mr. Charles G. Burney, WDNR-Madison
Mr. Charles J. Krohn, WDNR-Southeast Region
Ms. Sharon L. Gayan, WDNR-Southeast Region
Mr. Peter G. Swenson, USEPA Region V
Mr. Timothy R. Bate, MMSD
Mr. William Krill, HNTB

Friends of Milwaukee's Rivers

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WATERKEEPER ALLIANCE
Member

October 18, 2005

RECEIVED
OCT 20 2005
SEWRPC

Robert Biebel
SEWRPC
P.O. Box 1607
Waukesha, WI 53187

RE: Comments on Conceptual Alternative Plans for the Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan

Dear Bob,

At our Technical Advisory Committee meeting for the Regional Water Quality Management Plan Update (RWQMPU) on October 12, we briefly discussed an overview of scenarios and conceptual alternative plans to be evaluated for both the RWQMPU and the 2020 MMSD Facilities Plan. Friends of Milwaukee's Rivers (FMR) had also learned about these conceptual plans at an earlier September 12, 2005 Citizens Advisory Council (CAC) Meeting. FMR has some concerns about these conceptual alternative plans and submit the following comments for your consideration.

FMR understands that three types of alternatives are being considered at this time: a "no action" or 2020 baseline alternative (A), several regulatory alternatives (B1 and B2), and several watershed-based alternatives (C1 and C2). While from a scientific perspective, we appreciate the utility of studying and modeling the wide array of alternatives that were presented at the meetings, we have concerns about aspects of Alternatives B2, C1, and C2.

As Kevin Shafer of MMSD pointed out at the Technical Advisory Committee meeting, Alternative B2 should probably not be considered a "regulatory" alternative in its present state, as it is not designed to comply with existing regulations. FMR understands that this alternative essentially maximizes storage and use of existing and committed MMSD facilities by essentially treating combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs) the same (which differs from current practice of saving room in the deep tunnel for SSOs). While this may minimize overall numbers of overflows by reducing the number of CSOs that occur due to the current "reserve policy", this might also increase number of SSOs. We understand that this joint planning process is meant to model and estimate effects of this type of policy on overall water quality, and understand from a scientific perspective, the value of studying this alternative.

However, at the meeting, several parties justified the study of this alternative by saying that it could be a cost-effective way to improve water quality despite not complying with the law, and was worthwhile to study because regulations could always be changed in the future. These types of comments are premature in this stage of the planning process, and raised some concerns. While certain water quality regulations could *possibly* be changed in the future (e.g. MMSD Chapter 13 rules, NR216 etc.), and ideally to be MORE and not LESS protective of water quality, we should be clear that the likelihood of changing the Federal Clean Water Act that bans illegal SSOs is both extremely unlikely and undesirable. After listening to discussions at the last meeting and contemplating the science on this, we really need to question whether it is a good use of taxpayer money to study such an alternative, if it is not done in a way to produce a *viable* strategy for improving our region's water quality. From FMR's perspective, we can not support the study of an alternative, academic exercise or not, which will seek to condone or allow illegal activity as a result, or namely the continuation of illegal SSOs. That said, if this alternative could be altered to study the possibility of maximizing storage due to changing the existing "reserve" policy while still complying with the Clean Water Act, then we would be more supportive of its continued evaluation.

Likewise, FMR conceptually understands and is supportive of Alternatives C1 and C2, which are "bottom-up" as opposed to "top-down" alternatives that first and foremost consider water quality, and compliance with receiving water quality standards. We are especially supportive of Alternative C2, which adds additional "green" facilities, policies, operational improvements and programs directed at addressing our very serious non-point pollution issues. However, while these alternatives are anticipated to produce measurable improvements in water quality from a non-point perspective, they are anticipated, according to MMSD CAC documents (DRAFT 2020 Facilities Plan/RWQMPU Preliminary Alternatives, 9/12/2005), to have insignificant improvements in SSO control and small improvements in CSO control. FMR believes, similar to Alternative B2, that Alternatives C1 and C2 can both be viable alternatives, as long as they are designed to comply with the Clean Water Act.

While we realize that we are still in the very beginning of planning efforts for both the RWQMPU and 2020 Facilities Plan, we are hopeful that one of these conceptual alternatives or a combination of these alternatives will culminate in a plan that improves water quality, brings our surface waters in compliance with receiving water quality standards, and brings MMSD and all local governments in the Milwaukee River Basin in compliance with Clean Water Act regulations that prohibit discharge of SSOs and minimize or eliminate CSOs in all but the most extreme circumstances.

Thank you for your consideration of these comments.

Sincerely,

Cheryl Nenn
Riverkeeper, Friends of Milwaukee's Rivers

cc: Kevin Shafer, MMSD
Charles Krohn, WDNR
Sharon Gayan, WDNR
Peter Swenson, U.S. EPA

COPY

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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MEMORANDUM

TO: All Participants at the July 14, 2005, Intergovernmental Meeting Convened to Discuss Approaches to Development of Alternative Plans for the Regional Water Quality Management Plan Update and MMSD 2020 Facilities Plan

FROM: SEWRPC Staff

DATE: August 11, 2005

SUBJECT: MEETING SUMMARY NOTES

Please find enclosed a copy of summary notes prepared by the Commission staff for the abovereferenced meeting. These were developed to document the meeting conclusions for SEWRPC purposes. The summary notes also reflect e-mail comments received from Messrs. Burney (and Gerald Novotny), Krill, and Mielke. Copies of correspondence received since the July 14th meeting are attached.

* * *

#110435 V1 - RWQMP UPDATE MINUTES 07/14/05 TRANSMIT
RPB/pk

Enclosure (#110436)

SUMMARY NOTES OF THE JULY 14, 2005, INTERGOVERNMENTAL MEETING TO DISCUSS OPERATIONAL ASSUMPTIONS RELATING TO THE MMSD SEWERAGE SYSTEM FOR PURPOSES OF ALTERNATIVE PLAN DEVELOPMENT FOR THE REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE AND THE MMSD 2020 FACILITIES PLAN (revised August 11, 2005)

INTRODUCTION

The July 14, 2005, intergovernmental meeting was convened in the Commissioners' Conference Room of the Southeastern Wisconsin Regional Planning Commission at 10:15 a.m.

In attendance at the meeting were the following individuals:

Timothy R. Bate	Milwaukee Metropolitan Sewerage District
Robert P. Biebel	Southeastern Wisconsin Regional Planning Commission
Charles G. Burney	Wisconsin Department of Natural Resources
Philip C. Evenson	Southeastern Wisconsin Regional Planning Commission
James F. Fratrick	Wisconsin Department of Natural Resources
Michael G. Hahn	Southeastern Wisconsin Regional Planning Commission
William Krill	HNTB Corporation
Michael J. Martin	Milwaukee Metropolitan Sewerage District
William J. Mielke	Ruekert & Mielke, Inc.
Kevin L. Shafer	Milwaukee Metropolitan Sewerage District

Mr. Shafer opened the meeting by summarizing the initiation of the MMSD 2020 facilities planning and how that planning evolved to utilize the watershed approach involving the WDNR and SEWRPC. It was noted that there had recently been an issue raised regarding the approach to be taken in developing the alternative plans to be considered in the 2020 facility plan and the regional water quality management plan update. The issue related to the assumptions to be made regarding the need for strict compliance with the present regulatory framework for control of separate sewer overflows. Two different options were discussed with regard to this issue. Correspondence relating to the issue is attached hereto as Exhibit A.

Option 1: Assume that the current regulatory framework for the control of separate sewer overflows was to be held inviolate in developing all the alternatives for the planning programs. The present framework requires that storage capacity be reserved for potential separate sewer overflows, leading to—at times—combined sewer overflows which could have been prevented or reduced under a different operating framework.

Option 2: Assume that the current regulatory framework for the control of separate sewer overflows could potentially be revised if it were demonstrated that such actions would be consistent with improved water quality and cost-effectiveness. Because the MMSD sewerage system is integrated with both separate and combined sewers, the potential exists to better control sewage overflows if flexibility were allowed for storing the maximum amount of potential overflow from either the separate or combined sewer system. This could provide a higher level of pollutant control and/or a reduced cost of facilities.

Under both of these options, it is an underlying assumption that management measures to reduce other pollution sources, including urban and rural nonpoint source controls and point sources other than SSOs and CSOs, will be considered in the alternative plan development. This inclusion has the concomitant result of involving multiple designated management agencies in plan implementation. The designated management agency issues will have to be considered as part of the plan implementation phase once the initially recommended plan is defined.

DISCUSSION SUMMARY

The two options were discussed at length with the following observations and comments being made, among others:

1. Because of the integrated sewerage system model and the water quality models being developed for the planning programs, it would be possible to quantitatively define the water quality and facility sizing impacts of alternatives under either assumption.

2. It was noted that the difference between options in terms of instream water quality may not be discernible.

3. Maintenance of the facilities plan schedule for completion is essential.

4. The alternative evaluation and selected recommended plan may lead to alternative designated management agency options under the implementation portion of the plans. However, this cannot be determined until the physical system plan is selected. In addition, the use of current designated management agencies is considered desirable, if implementation can be accomplished within those agencies.

5. The MMSD must have a plan which meets the current regulatory framework. However, there could be an auxiliary preferred plan presented which would be dependent upon changes in the regulatory framework.

6. Consideration of an alternative based upon Option 2 could be included in both the MMSD 2020 facility plan and the regional water quality management plan update or only the regional water quality management plan update, with the 2020 facility plan potentially being amended during the plan implementation period, if appropriate.

7. The alternative plans for the MMSD 2020 facility plan are being developed conceptually over the next two months. Details of the alternative plans will be available about the end of February 2006.

8. Due to workload considerations, it is not desirable to consider both Options 1 and 2 as subalternatives for all alternatives. Rather, it would be best to incorporate Option 2 only into one alternative plan which can best illustrate the utility of the option.

CONCLUSIONS

Subsequent to the July 14, 2005, meeting, a July 18, 2005, letter from Mr. Kevin L. Shafer provides related information and July 28, 2005, e-mails from Mr. Charles G. Burney and Mr. William J. Mielke provide related comment on the initial summary note conclusions. These items of correspondence are attached hereto as Exhibit B. After considerable discussion, as well as some comments received based upon meeting afterthought, the following actions are agreed to by the July 14, 2005, meeting attendees:

- An alternative or alternatives based upon Option 2 will be considered in both the regional water quality management plan and the MMSD 2020 facilities plan. The alternatives will be consistent for both plans.

- If an alternative based upon Option 2 proves to be desirable from a water quality and cost-effectiveness basis, it would be included as the recommended plan for the regional water quality management plan update. That plan would clearly indicate that the recommendation in the RWQMPU was contingent upon any needed changes in the regulatory framework prior to implementation. In addition, the recommended plan would include “fall-back” provisions designed to be implemented to meet the facility planning and permitting requirements if the regulatory framework could not be changed by a time certain.

- If an alternative based upon Option 2 proves desirable from a water quality and cost-effectiveness basis, it would be carried through and held out during the planning public involvement and technical committee review phases of the 2020 MMSD facilities planning program. In addition, the best alternative based upon Option 1 would be carried through the plan public involvement and technical committee review programs for the 2020 facilities planning program. (See the August 8, 2005, comments from Gerald Novotny and Chuck Burney in Exhibit B for further clarification on the WDNR position. These comments can be accommodated by a carefully written report recommendation section)

- The details of how to present the recommended MMSD 2020 facilities plan will be deferred until after the public involvement and technical committee review during the alternatives plan evaluation. This will allow consideration of input received and will put definition to the alternatives and the potential differences between the alternatives. In any case, the recommended plan strategy will have to be implementable and meet regulations.

- The facility plan and regional water quality management plan update text on this issue will have to be carefully crafted. The public involvement program relating to the alternative and recommended plans would highlight the issue as an important consideration.

* * *

#110436 V1 - RWQMP UPDATE MINUTES 07/14/05
300-4002
PCE/MGH/RPB/pk
08/11/05

Exhibit A

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JUN 03 2005
SEWRPC

DATE: May 31, 2005

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

FROM: William J. Mielke, P.E. WJM

RE: Recommended Regulatory Change Governing Operation of MMSD Integrated Conveyance, Storage, Treatment System

This is to acknowledge receipt of and to thank you for your letter of May 6, 2005 responding to our memorandum of January 27, 2005, addressed to you and concerning recommended regulatory change governing the operation of the MMSD integrated conveyance, storage, and treatment system. We were, of course, disappointed in your response to the memorandum in which you indicated that preparation of the MMSD design year 2020 Facilities Plan will be based upon the assumption that the existing fragmented regulatory structure will remain in place.

We would again call your attention to our memorandum of January 27, 2005 setting forth the need to assess the performance of the integrated system now in place under varying weather and attendant flow conditions in the separated and combined sewer areas, and to identify the most effective means for minimizing pollutant loadings on the streams and watercourses of the area, on the Milwaukee Harbor Estuary and on Lake Michigan, and to thereby achieve agreed upon water quality objectives. The means for the needed technically sound assessment exist in simulation modeling.

We believe that consideration of the development and application of a new regulatory structure governing the operation of the MMSD integrated conveyance, storage and treatment system is imperative at this time. We believe that a change in the operational procedures for the integrated system can, in a highly cost effective manner, minimize pollutant loadings and achieve higher levels of in stream and in Lake water quality conditions. If the District is unwilling to pursue such potential operational changes in the form of an alternative facilities plan warranting consideration prior to formulation of a recommended plan, then we are hereby asking that the Southeastern Wisconsin Regional Planning Commission (SEWRPC) as a part of the comprehensive water quality management planning effort concurrently underway with the MMSD facilities planning effort consider this alternative.

It is our understanding that, in accordance with Section 208 of the Federal Clean Water Act, the official areawide planning agency for the greater Milwaukee area—SEWRPC—has the responsibility for recommending water use objectives, supporting water quality standards, and the most cost effective means of achieving those objectives and standards to operating agencies

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such as the MMSD, and to regulatory agencies such as the Wisconsin Department of Natural Resources and the U.S. Environmental Protection Agency.

We would suggest that the cooperative areawide water quality management planning and facilities planning processes currently underway, indeed consider an alternative plan based upon the assumption that the current regulatory structure will remain in place to the plan design year; but that an alternative areawide water quality management and facilities plan also be prepared that considers changes in the regulatory structure and in the operation of the MMSD integrated system. These two alternative plans should then be evaluated on the basis of performance, cost and environmental impacts, and that the most cost effective elements of each plan be incorporated in a final recommended revised areawide water quality management plan and attendant new facilities plan.

WJM:lfc

Attachments

cc: Neil Palmer, Village President-Village of Elm Grove
David DeAngelis, Village Manager-Village of Elm Grove
Charles Hargan, Village President-Village of Germantown
Christine Nuernberg, Mayor-City of Mequon
Jeff Speaker, Mayor-City of Brookfield
John Ehlinger, Village President-Village of Butler
Rick Rechlicz, Village President-Village of Menomonee Falls
Charles Damaske, Mayor-City of Muskego
Jack Chiovatero, Mayor-City of New Berlin
Donald Molyneux, Village President-Village of Thiensville

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Kevin L. Shafer, P.E.
Executive Director

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MAY 12 2005

RUEKERT & MIELKE, INC.

May 6, 2005

Mr. William J. Mielke, P.E.
President
Ruekert Mielke
W233 N2080 Ridgeview Parkway
Waukesha, WI 53188-1020

Dear Mr. Mielke:

Thank you for your January 27, 2005 letter concerning the Milwaukee Metropolitan Sewerage District's (District) 2020 Facilities Plan. I apologize in taking so long to respond to you, but as you know my staff and I have been very busy with implementation of our $900 million capital improvement program and planning for 2020.

First, and most importantly, the District appreciates your support of the watershed planning approach that we are undertaking along with the Southeastern Wisconsin Regional Planning Commission (SEWRPC) through the Water Quality Initiative (WQI). As you know, the District's planning effort is ongoing and is focused on the assessment of point and non-point discharges and their relative impacts on water quality, as well as the determination of the most cost-effective manner to address these stressors and to improve water quality.

As you mention, the regulatory regime that currently exists does not require watershed planning, even though the overall trend for the future is definitely toward this approach. For example, as far back as 1996, the United States Environmental Protection Agency (EPA) has supported the watershed planning concept. EPA's proposed watershed rule is summarized in Attachment A to this letter. Clearly, EPA recognizes that the watershed approach is the best way to determine the necessary level of sanitary sewer overflow (SSO) control. In addition, the Wisconsin Department of Natural Resources (DNR) and SEWRPC have both acknowledged their support for watershed planning by co-signing the Memorandum of Understanding (MOU) with the District as part of the WQI.

milwaukee metropolitan sewerage district
260 W. Seeboth Street, Milwaukee, WI 53204-1446
414-225-2088 • email: KShafer@mmsd.com • www.mmsd.com

The Association of Metropolitan Sewerage Agencies (AMSA), of which the District is a participating member, is developing a proposed approach for SSO control that is similar to the Combined Sewer Overflow (CSO) long term control plan approach. AMSA intends to present this proposal to EPA later this year. The District supports this effort and is actively participating in it. The basic approach under development by AMSA is summarized in Attachment B to this letter.

While these future regulatory trends and proposals are consistent with the scientific watershed approach the District is using under the current 2020 Facilities Planning effort as well as the ideas you have expressed in your letter, the existing regulation of SSOs and CSOs is materially different than this trend and is unlikely to change before the 2020 Facilities Plan is completed in 2007. Because the overriding goal of the 2020 Facilities Planning project is protection and improvement of water quality, we are using the current regulatory reality concerning SSOs and CSOs as the baseline in our planning, a necessity in order to have the plan approved by the DNR and EPA. The District deals with the reality of water quality each and every time it rains in that all efforts are focused on elimination of any SSO and minimization of CSO. Due to the District's current discharge permit requirements, the District must prioritize the prevention of SSO, and control CSOs to meet the current permit limit of six CSO events per year. It is unclear whether the results of your suggested "first in – first out" approach would be the best operating mode to protect water quality and protect the health and welfare of the public in the District's service area due to the proximity of the combined sewer system to the tunnel and the fact that combined sewer flows would too often fill the tunnel and result in increased SSO's. Both water quality and the protection of public health must be considered as we develop options to improve the existing District system. This evaluation will be done during our 2020 planning effort.

We trust that you will continue to participate in the development of the alternatives for the 2020 Plan, and be persistent in continuing the dialog on this important issue. As the alternatives for 2020 are developed, the issues you raise will certainly be considered. The District's focus on an open planning effort and a high level of public and community involvement will be the ideal forum for public debate in full view of the relevant agencies (DNR and EPA). We look forward to continued discussion and debate on these important issues with you and all interested stakeholders. Thank you for your continuing input.

Very truly yours,

Kevin L. Shafer, P.E.
Executive Director

Enclosures

cc: Neil Palmer, Village President-Village of Elm Grove
David DeAngelis, Village Manager-Village of Elm Grove
Charles Hargan, Village President-Village of Germantown
Christine Nuernberg, Mayor-City of Mequon
Jeff Speaker, Mayor-City of Brookfield
John Ehlinger, Village President-Village of Butler
Richard Farrenkopf, Manager/Clerk/Treasurer-Village of Menomonee Falls
Charles Damaske, Mayor-City of Muskego
Jack Chiovatero, Mayor-City of New Berlin
Donald Molyneux, Village President-Village of Thiensville

KS/MM:lj/Mielke_050605.ltr

Attachment A

EPA Proposed Watershed Rule

EPA is developing a Watershed Rule that is a Proposal to Redesign the TMDL Program. EPA (Chuck Sutfin) presented the following at a 2002 AMSA meeting:

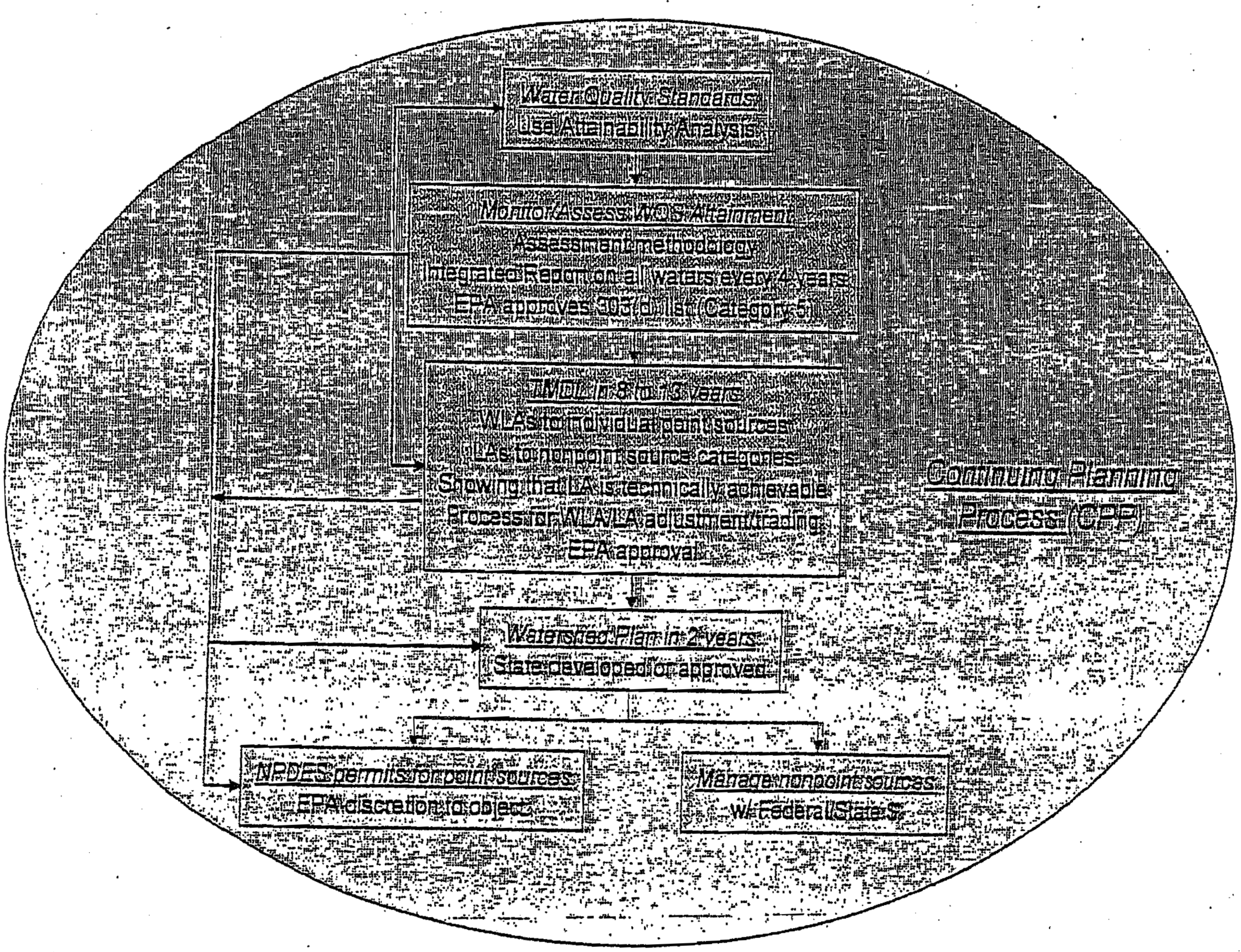
- *Watershed Rule Vision: A framework to advance state and local efforts to achieve the highest attainable uses of waters of the United States by promoting flexible, effective watershed approaches.*
- *Our Most Important Objectives:*
  - *Achieve steady reasonable progress towards achieving water quality standards (WQS)*
  - *Encourage planning and management on a watershed basis*
  - *Support adaptive implementation, trading, and pre-TMDL voluntary efforts*
  - *Trust States to do planning and implementation*
  - *Improve accountability for results*
  - *Improve monitoring and listing*
  - *Leverage funding from non-EPA programs*
- *Watershed Plans*
  - *To achieve WQS and other planning objectives of CWA planning requirements: §303, §319, §117, §118, §119, §120, §201, §205(j), §208, §320, §404, and §604(b)*
  - *Many USDA programs*
  - *States and watershed groups*
  - *Will ultimately replace multiple existing water planning processes*
  - *State or locally developed*
  - *Must be public noticed*
  - *EPA will not review, approve or backstop*
  - *Required to use §319 funding for implementation*

- *EPA and USDA will issue "program neutral" watershed planning guidance this summer to provide overall framework*

EPA's proposed Watershed Approach can be summarized in Figure 1 shown on the next page. This schematic represents the whole water quality framework as modified by the proposal that EPA has drafted. This whole concept of a watershed rule indicates that EPA is coming to the realization that the best way to regulate water pollution is through a watershed approach which integrates all current programs and funding under an integrated planning and regulatory system.

Figure 1:

Proposed New Watershed Rule



Attachment B

AMSA Wet Weather Survey Final Report, May 2003 (excerpt)

Results from this survey showed that conveyance systems are sized using a variety of standards. Often the sizing decisions and designs are shaped or affected by local, state or EPA regional statutory requirements or guidance. A national SSO policy should be developed that recognizes the risk posed by SSOs nationally and is modeled after the CSO Control Policy. It would thereby provide the flexibility necessary to address adverse impacts when manifested at a local level and to direct resources to those areas that pose the greatest risk. The CSO Control Policy clearly acknowledges that a zero tolerance policy for CSOs is not appropriate. AMSA believes that the same approach should apply to SSOs. AMSA has stated the following with regard to national SSO Policy:

1. A national SSO policy be developed that enables the use of holistic, watershed-based approaches that will ensure that available, limited resources can be used to provide controls for the wet weather overflow problem — whether CSO, SSO, and/or storm water — that is having the greatest impact, thus maximizing environmental and public health benefit.
2. AMSA looks forward to working with EPA to develop regulatory policies and enforcement strategies that will ultimately help municipalities make further progress on sewer overflow control. To aid in this effort, AMSA is working on a model SSO policy that will contain the specific language that municipalities believe is critical for a workable SSO program. AMSA plans to share this proposal when it is completed in early 2005 with EPA and Congress.

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DATE: January 27, 2005

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

FROM: William J. Mielke, P.E.

RE: Recommended Regulatory Change Governing Operation of the MMSD Integrated Conveyance, Storage, Treatment System

INTRODUCTION

We have since 1998 expressed concerns about the operation and regulation of the Milwaukee Metropolitan Sewerage District (MMSD) sewerage system, particularly as related to the reservation of storage capacity in the deep tunnel conveyance and storage facility for separated sewer flows. This concern was first expressed in January, 1998, as the District was completing its design year 2010 Facilities Plan. The District is now engaged in the preparation of a new design year 2020 Facilities Plan. It is important that these concerns be addressed in the preparation of that new plan. That plan is to guide the design, construction and operation of the area-wide sewerage system which serves the greater Milwaukee area over the next two decades. The plan should also serve to guide the regulation of that system by the state and federal agencies concerned. Importantly the new plan is intended to be focused on determining the most cost effective means for achieving desired surface water quality conditions in the District service area.

In this respect, it should be noted that the greater Milwaukee area is one of the few major metropolitan areas of the United States that has an integrated conveyance, storage and treatment system that serves both separated and combined sewer service areas. In order to achieve the most cost-effective operation of this system to minimize pollutant loadings and achieve desired water quality conditions, the U.S. Environmental Protection Agency should be urged to work with the Wisconsin Department of Natural Resources to develop new regulations tailored to an integrated system.

ISSUE

The major elements of the MMSD sewerage system consist of two large treatment plants which discharge treated effluent to Lake Michigan; a network of large trunk and intercepting sewers serving both separated sewer and combined sewer service areas; and, importantly, a system of deep tunnel conveyance and storage facilities intended to abate bypassing of raw sewage during wet weather conditions in both the separated and combined sewer service areas. These elements are designed and must be operated as an integrated system which should have as one of its principal objectives minimization of pollutant loadings on the streams and watercourses of the greater Milwaukee area, on the Milwaukee Harbor Estuary, and on Lake Michigan; thereby, meeting agreed upon water quality objectives and supporting standards.

Major sewage overflow and attendant water quality problems exist, however, because operation and performance of this integrated system is governed by a fractured regulatory structure. The regulatory agencies concerned--the Wisconsin Department of Natural Resources and the U.S. Environmental Protection Agency—together impose separate regulations on the treatment plants; on the collection, main, and trunk sewers serving the separated sewer service area; and on the intercepting sewers serving the combined sewer service area. These regulations impose effluent and bypass limitations on the treatment plants; prohibit any bypassing in the separate sanitary sewer service areas; and limit bypassing in the combined sewer service area to six overflows per year. These separate regulations are not related in a technically sound manner to the operation of the deep tunnel conveyance and storage system, nor do they minimize pollutant loadings on the surface waters from the system as a whole in order to meet desired water quality objectives.

Because of this fractured regulatory structure, the deep tunnel conveyance and storage system is operated during wet weather conditions so as to reserve capacity for excess flows from the separate sanitary sewer service areas, excess flows which may not in fact occur given the unique characteristics of any given rainfall or snowmelt event. This reservation often results in unnecessary overflows of raw sewage from the combined sewer service area while leaving unused capacity in the tunnels. Operation of the deep tunnel conveyance and storage system on a "first come-first served" basis regardless of the origination of the excess flows concerned would result in improved surface water quality conditions in the greater Milwaukee area.

RECOMMENDATION

Significant improvement in the performance of the existing MMSD system could be achieved at little or no cost by changing the regulatory structure so that it focuses on the operation of the integrated system with the objective of minimizing pollutant loadings to the surface waters of the area. The specific regulations and attendant operating procedures should be determined and specified in the design year 2020 Facilities Plan presently under preparation by the MMSD. The facility planning program provides an opportunity for the development and application of the simulation modeling needed to assess the performance of the integrated system under varying weather and attendant flow conditions in the separated and combined sewer service areas, and to identify the most effective means for minimizing pollutant loadings on the streams and watercourses of the area, on the Milwaukee Harbor Estuary and on Lake Michigan, and to thereby achieve agreed upon water quality objectives. The water quality objectives should also be determined as a part of the facility planning process since that process is being carried out in a fully coordinated manner with an update of the federally mandated water quality management plan for the greater Milwaukee area. The planning process will, therefore, consider both point and non-point sources of pollution in the watersheds tributary to the Milwaukee Harbor Estuary and Lake Michigan. With identification of maximum allowable pollutant loadings under various size storms, a set of regulatory standards can be applied that will meet the desired water quality objectives.

We believe that the development and application of a new regulatory structure governing the MMSD integrated conveyance, storage, treatment system is imperative at this time. We believe that the current MMSD design year 2020 facilities planning process represents the first time in the United States that a major facilities planning process will address the further development, operation and maintenance of an integrated conveyance, storage treatment system serving both separated and combined sewer service areas; is to consider non-point as well as point source pollution abatement, and is specifically designed to achieve agreed upon instream water quality objectives and standards. A new approach to regulation of the performance of the MMSD system is now required if pollutant loadings are to be minimized and water quality objectives obtained in the most cost-effective manner possible.

The MMSD Contract Communities are willing to assist the District in educating State legislature and congressional delegations toward achieving the needed new regulatory structure.

WJM:lfc

cc: Susan Freedy, Village President-Village of Elm Grove
David DeAngelis, Village Manager-Village of Elm Grove
Charles Hargan, Village President-Village of Germantown
Christine Nuernburg, Mayor-City of Mequon
Jeff Speaker, Mayor-City of Brookfield
Walter Woloszyk, Village President-Village of Butler
Richard Farrenkopf, Manager/Clerk/Treasurer-Village of Menomonee Falls
Mark Slocomb, Mayor-City of Muskego
Telesfore Wysocki, Mayor-City of New Berlin
Donald Molyneux, Village President-Village of Thiensville

Exhibit B

MMSD
Preserving The Environment • Improving Water Quality

Kevin L. Shafer, P.E.
Executive Director

July 18, 2005

Mr. William Mielke
Ruekert-Mielke
W23 N2080 Ridgeview Parkway
Waukesha, WI 53188-1020

Dear Bill:

At your request, I am writing this letter to summarize recent and various conversations we have had concerning alternatives approaches for the Regional Water Quality Management Plan and the 2020 Facilities Plan. The primary goal of the cooperative Water Quality Initiative approach to our 2020 Facilities Plan is to improve water quality in the waterways by identifying all sources of pollutants and then finding the most cost-effective approach to reducing these pollutants. As I have said a number of times, we agree with you that there may be some existing regulations that might not allow us to implement the most cost effective approach. In order to address this gap in our 2020 analysis, SEWRPC and MMSD have agreed to perform a set of alternative analyses that would determine what impacts on our future water quality we might realize if current regulations were to change.

If a more cost-effective alternative to achieve a higher level of water quality improvements were possible under a revised regulatory framework, SEWRPC has agreed that their Regional Water Quality Management Plan Update would include recommendations for changes to the regulations. Due to the protracted timeframe that could be expected to change such regulations, MMSD's Facilities Plan would present this as an alternative that should be pursued with state and federal regulators as a high priority component of the implementation of MMSD's Facilities Plan. However, due to our schedule constraints, MMSD staff must ask our Commission to approve a Facilities Plan that is consistent with federal and state law. If the regulations change following the adoption and approval of the Facilities Plan, MMSD would then petition the DNR for an amendment to the 2020 Facilities Plan to implement the most cost-effective plan that results in the greatest improvement to water quality.

I hope this clarifies this important issue. If I can help in any manner on this issue, please let me know.

Sincerely,

Kevin L Shafer

Kevin L. Shafer, P.E.
Executive Director

bc: Phil Evenson, SEWRPC
Bob Biebel. SEWRPC
Chuck Burney, DNR
Jim Fratrick, DNR
Mike Martin, MMSD
Tim Bate, MMSD
Karen Sands, MMSD

ED/bim/y/correspondence 2005/william mielke 071805

milwaukee metropolitan sewerage district
260 W. Seeboth Street, Milwaukee, WI 53204-1446
414-225-2088 • email: KShafer@mmsd.com • www.mmsd.com

Robert P. Biebel

From: Burney, Charles G. [Charles.Burney@dnr.state.wi.us]
Sent: Thursday, July 28, 2005 1:59 PM
To: Robert P. Biebel; Bate, Tim ; Fratrick, James F.; Bill Krill; Martin, Michael; Mielke, William; Shafer, Kevin
Cc: Philip C. Evenson; Michael G. Hahn
Subject: RE: RWQMP UPDATE MINUTES 071405_v1.DOC

Bob, I think the minutes do not accurately reflect the conclusion reached. I believe Kevin's letter of July 18th reflects my understanding of the conclusion reached. The facilities plan submitted by MMSD must have a recommended plan that complies with current regulations and would be approval, but may also include alternates that would require changes to regulations. If the regulations were subsequently changed, then MMSD could modify it's recommended plan and submit for reapproval. Chuck

-----Original Message-----
From: Robert P. Biebel [mailto:RBIEBEL@SEWRPC.org]
Sent: Monday, July 25, 2005 10:07 AM
To: Bate, Tim ; Burney, Charles G.; Fratrick, James F.; Bill Krill; Martin, Michael; Mielke, William; Shafer, Kevin
Cc: Philip C. Evenson; Michael G. Hahn
Subject: RWQMP UPDATE MINUTES 071405_v1.DOC

We would like to finalize the staff notes this week. If anyone has any comments please let me know by Wednesday, July 27, 2005. THANKS.

Attached hereto is a draft of our SEWRPC staff notes from the July 14, 2005 intergovernmental meeting. These are sent in draft form . If anyone disagrees, or wishes to amend or modify the notes, please let us know as soon as possible.

Robert P. Biebel

From: Mielke, William [WMielke@ruekert-mielke.com]

Sent: Thursday, July 28, 2005 3:24 PM

To: Burney, Charles G.; Robert P. Biebel; Bate, Tim ; Fratrick, James F.; Bill Krill; Martin, Michael; Shafer, Kevin

Cc: Philip C. Evenson; Michael G. Hahn

Subject: RE: RWQMP UPDATE MINUTES 071405_v1.DOC

Bob
I believe the minutes reflect what was discussed. That being the selection of an alternative which achieved the highest degree of water quality improvements in the most cost effective way was our objective. We did agree that if an alternative which came out as the recommended alternative but did not meet the current regulatory approach, an implementation plan would be included to show how the recommended alternative would have to be changed if the regulations could not be revised to meet a water quality based approach within a given amount of time. The water quality based approach is the entire basis for the scope of this facilities planning effort and that is what we have told the public. It would be unfair to the TAT,the communities and the public to even think that the results of this water quality based planning effort to find the best solution for our area would have to be resubmitted for reapproval and not be considered our recommended plan as initially proposed.
Bill

-----Original Message-----
From: Burney, Charles G. [mailto:Charles.Burney@dnr.state.wi.us]
Sent: Thursday, July 28, 2005 1:59 PM
To: Robert P. Biebel; Bate, Tim ; Fratrick, James F.; Bill Krill; Martin, Michael; Mielke, William; Shafer, Kevin
Cc: Philip C. Evenson; Michael G. Hahn
Subject: RE: RWQMP UPDATE MINUTES 071405_v1.DOC

Bob, I think the minutes do not accurately reflect the conclusion reached. I believe Kevin's letter of July 18th reflects my understanding of the conclusion reached. The facilities plan submitted by MMSD must have a recommended plan that complies with current regulations and would be approval, but may also include alternates that would require changes to regulations. If the regulations were subsequently changed, then MMSD could modify it's recommended plan and submit for reapproval. Chuck

-----Original Message-----
From: Robert P. Biebel [mailto:RBIEBEL@SEWRPC.org]
Sent: Monday, July 25, 2005 10:07 AM
To: Bate, Tim ; Burney, Charles G.; Fratrick, James F.; Bill Krill; Martin, Michael; Mielke, William; Shafer, Kevin
Cc: Philip C. Evenson; Michael G. Hahn
Subject: RWQMP UPDATE MINUTES 071405_v1.DOC

We would like to finalize the staff notes this week. If anyone has any comments please let me know by Wednesday, July 27, 2005. THANKS.

Attached hereto is a draft of our SEWRPC staff notes from the July 14, 2005 intergovernmental meeting. These are sent in draft form . If anyone disagrees, or wishes to amend or modify the notes, please let us know as soon as possible.

Sent: Friday, August 05, 2005 12:11 PM
To: Robert P. Biebel; Bate, Tim ; Burney, Charles G.; Fratrick, James F.; Martin, Michael; Mielke, William; Shafer, Kevin
Subject: RE: RWQMP UPDATE MINUTES 071405_v1.DOC

I have one comments - see it on the attached in red...

Bill

-----Original Message-----
From: Robert P. Biebel [mailto:RBIEBEL@SEWRPC.org]
Sent: Friday, August 05, 2005 10:18 AM
To: Bate, Tim ; burnec@dnr.state.wi.us; Fratrick, James F.; Bill Krill; Martin, Michael; Mielke, William; Shafer, Kevin
Subject: RWQMP UPDATE MINUTES 071405_v1.DOC

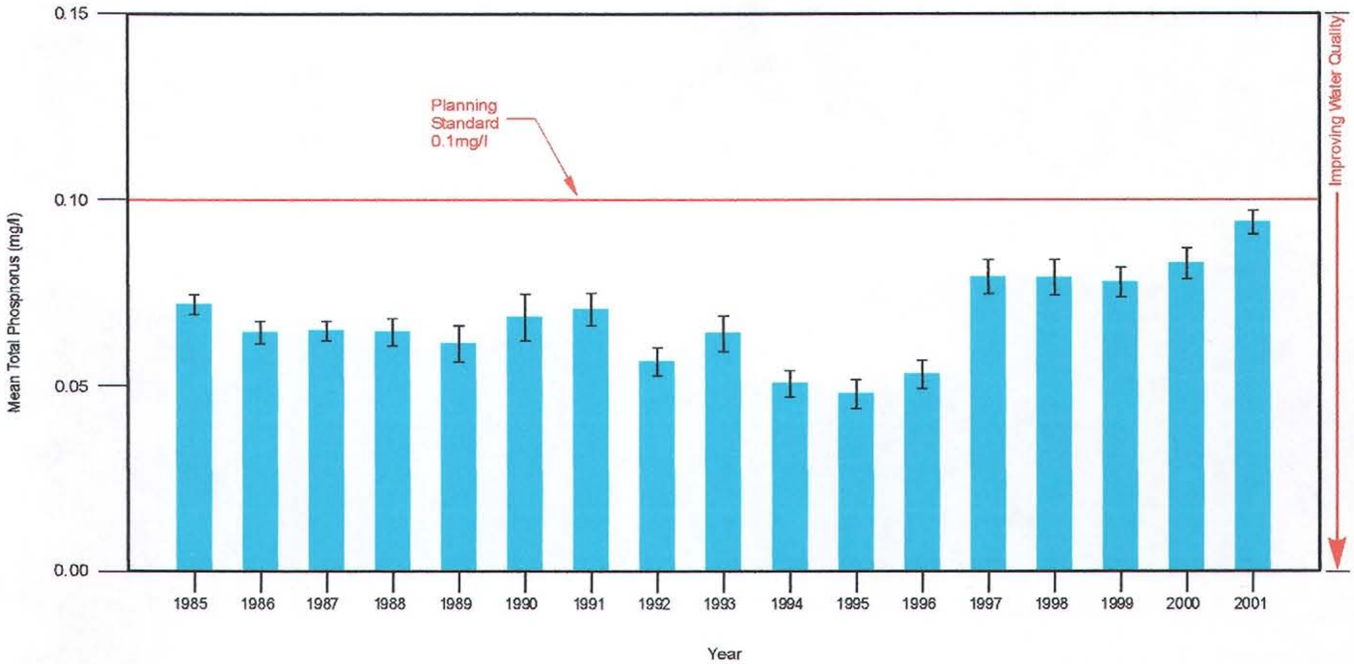
Attached hereto is a revised draft of the SEWRPC staff notes from the July 14 intergovernmental meeting. The summary notes have been revised to reflect comments and correspondence received following the meeting. We would like to finalize the SEWRPC staff notes by Tuesday, 8/16. If anyone has any comments please let us know before then. THANKS

Exhibit L

MEAN ANNUAL CONCENTRATION OF TOTAL PHOSPHORUS IN THE KINNICKINNIC RIVER

Exhibit L

MEAN ANNUAL CONCENTRATION OF TOTAL PHOSPHORUS IN THE KINNICKINNIC RIVER: 1985-2001



NOTE: Error bars (I) represent one standard error of the mean.

Source: U.S. Geological Survey, Wisconsin Department of Natural Resources, Milwaukee Metropolitan Sewerage District, and SEWRPC.

Exhibit M

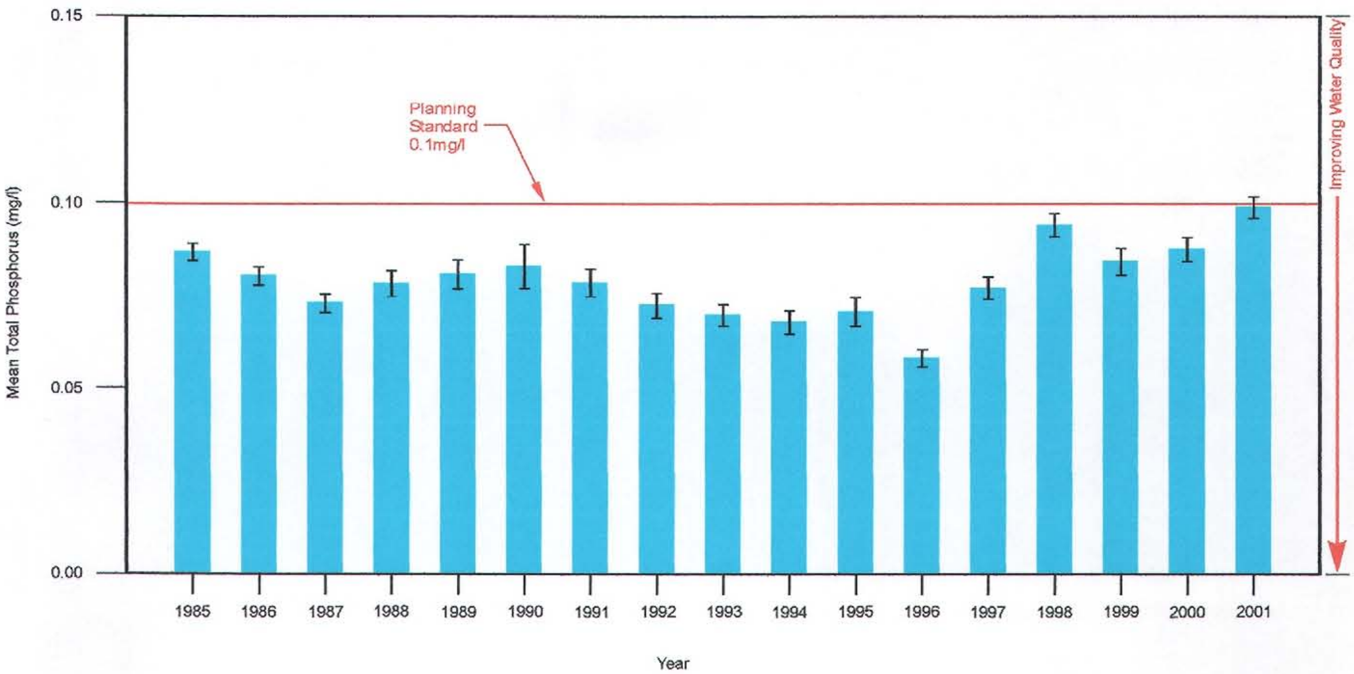
MEAN ANNUAL CONCENTRATION OF TOTAL PHOSPHORUS IN THE MENOMONEE RIVER

Exhibit M

MEAN ANNUAL CONCENTRATION OF TOTAL PHOSPHORUS IN THE MENOMONEE RIVER

Exhibit M

MEAN ANNUAL CONCENTRATION OF TOTAL PHOSPHORUS IN THE MENOMONEE RIVER: 1985-2001



NOTE: Error bars (I) represent one standard error of the mean.

Source: U.S. Geological Survey, Wisconsin Department of Natural Resources, Milwaukee Metropolitan Sewerage District, and SEWRPC.