

**MINUTES OF THE FIRST MEETING  
SEWRPC REGIONAL WATER SUPPLY PLANNING ADVISORY COMMITTEE**

DATE: September 21, 2005

TIME: 9:00 a.m.

PLACE: Lower Level Conference Room  
Regional Planning Commission Offices  
W239 N1812 Rockwood Drive  
Waukesha, Wisconsin

**MEMBERS PRESENT**

Kurt W. Bauer, Chairman	Executive Director Emeritus, SEWRPC
Robert P. Biebel, Secretary	Special Projects Environmental Engineer, SEWRPC
Julie A. Anderson	Director, Racine County Division of Planning and Development
Kenneth R. Bradbury	Hydrogeologist/Professor, Wisconsin Geological and Natural History Survey
Douglas S. Cherkauer	Professor of Geology, University of Wisconsin-Milwaukee
Lisa Conley	Representative, Town and Country Resource Conservation and Development, Inc.
Michael P. Cotter	Director, Walworth County Land Use and Resource Management Department
Charles A. Czarkowski	Regional Water Program Expert, Wisconsin Department of Natural Resources, Southeast Region
Daniel S. Duchniak	General Manager, Waukesha Water Utility, City of Waukesha
Charles P. Dunning	Hydrologist, U.S. Geological Survey
Franklyn A. Ericson	Manager, Environmental Operations & Central Services, S.C. Johnson & Son, Inc.
David Ewig	Water Superintendent, City of Port Washington
Thomas M. Grisa	Director of Public Works, City of Brookfield
Jeffrey A. Helmuth	Hydrogeologist Program Coordinator, Wisconsin Department of Natural Resources, Madison
Andrew A. Holschbach	Director, Ozaukee County Planning, Resources, and Land Management Department
Roger C. Johnson	Manager, North Shore Water Commission
Terrence H. Kiekhaefer	Director of Public Works, City of West Bend
Carrie M. Lewis	Superintendent, Milwaukee Water Works, City of Milwaukee
Mark Lurvey	Agricultural Business Operator
Patrick T. Marchese	Member, Water Policy Advisory Panel, Public Policy Forum
George E. Melcher	Director, Kenosha County Department of Planning and Development
Matthew Moroney	Executive Director, Metropolitan Builders Association of Greater Milwaukee
Paul E. Mueller	Administrator, Washington County Planning and Parks Department
Michael P. Rau	General Manager, We Energies-Water Services
Edward St. Peter	General Manager, Water Utility, City of Kenosha
Dale R. Shaver	Director, Waukesha County Department of Parks and Land Use
Steven N. Yttri	General Manager, Water and Sewer Utility, City of Oak Creek

## **GUESTS**

Terry R. Heidmann Utilities Superintendent, Town of Brookfield Sanitary District No. 4

## **STAFF**

Catherine D. West Planner, Southeastern Wisconsin Regional Planning Commission  
Kenneth R. Yunker Deputy Director, Southeastern Wisconsin Regional Planning Commission

## **CALL TO ORDER AND ROLL CALL**

Chairman Bauer called the meeting to order at 9:03 a.m. Roll call was taken by circulating an attendance signature sheet, and a quorum was declared present.

Chairman Bauer welcomed the members of the Committee to the Commission offices. He thanked them on behalf of the Commission for their willingness to serve on the Committee and thereby assist the Commission with its work.

Chairman Bauer noted that the Committee was a reconstitution of the Commission Advisory Committee on Regional Water Supply Planning originally created in June of 2002 to prepare a Prospectus for the conduct of a regional water supply plan. He noted that of the 33 voting members of the reconstituted Committee, 14 had served on the original Committee, and graciously indicated a willingness to continue to serve on the reconstituted Committee.

Chairman Bauer then introduced Kenneth R. Yunker, Commission Deputy Director, who will be providing overall staff direction for the planning effort; and Robert P. Biebel, for many years Commission Chief Environmental Engineer, and now Commission Special Projects Engineer, who is to serve as the staff project manager and lead staff for the planning effort. Mr. Biebel will also serve as Secretary to the Committee.

## **BACKGROUND AND CHARGE TO COMMITTEE**

Chairman Bauer noted that the Committee had been charged by the Commission with guiding the conduct of the regional water supply planning program proposed in the Prospectus prepared by the original Committee and approved by the Regional Planning Commission in March 2003 upon the recommendation of that Committee.

In accordance with long standing Commission practice, the Committee's work is to be conducted through the review of preliminary drafts of pertinent Commission staff memoranda and of all technical and planning reports to be produced under the planning effort. Importantly, the Committee is charged with submitting to the Commission, a recommended long-range water supply plan for the seven-county Southeastern Wisconsin Region for consideration and action by the Commission. He indicated that he believed that the water supply planning effort was one of the most important planning efforts to be currently undertaken by the Commission, since an adequate sustainable water supply is essential to the social and economic well being of the Region.

Chairman Bauer indicated that under the procedure to be followed, Committee members would, prior to each meeting, receive copies of the preliminary drafts of the materials to be considered at the pending meeting concerned. Chairman Bauer indicated further that the Committee would be asked to review all materials submitted to it on a page by page basis in a collegial manner. Committee members, prior to each meeting, received copies of the draft materials for their review in preparation for the meeting. It was intended, he said, that Committee members, based upon their review of the draft materials, would in the

Committee deliberations raise questions and offer recommended additions, deletions, expansions or other changes to the materials submitted for review and approval by the Committee. In this way the Committee was being asked to help assure the completeness and reliability of the inventory data to be assembled under the planning effort; the validity of the analyses, forecasts and allocation plans to be prepared; and the technical, financial, and environmental soundness of the recommended plan. A great deal indeed was expected of the Committee and the Committee members. Chairman Bauer indicated that he hoped that any controversial issues raised could be resolved by consensus. If necessary, however, he would ask in accordance with Robert's Rules of Order for a motion, second, and vote to resolve the issues raised. Such formal action, he said, would in any case be required with respect to Committee approval of all staff memoranda, and of all chapters of technical and planning reports submitted to the Committee.

Chairman Bauer indicated that following Committee action on each memorandum or report chapter, the material would be revised as necessary, and the revisions included within or appended to the minutes of the Committee meeting concerned, with the Committee directed changes being noted in the revised materials. In this way, he said, the Committee would always be provided with a second opportunity to address needed changes and the Committee would be assured that the changes made reflected the intent of the Committee's action, all as part of the formal approval of the Minutes in accordance with Robert's Rules of Order.

Chairman Bauer indicated that Committee members would receive notices and a proposed agenda for each meeting, together with the draft materials to be reviewed at the meeting concerned. He then asked if there were any questions or comments on the proposed procedure. Hearing none, he noted that copies of the latest Annual Report of the Commission were available for any Committee members that might desire a copy. The Annual Report, he said, contained background information relating to the Regional Planning Commission; including on the composition, statutory functions and duties of the Commission, and on the Commission's comprehensive planning efforts to date. He indicated that this information should be familiar to the "old" Committee members, but may be of particular interest to the "new" members. He then asked each of the members to introduce themselves.

## **REVIEW OF STUDY DESIGN**

Chairman Bauer then asked the Committee to consider agenda item No. 2. He noted that a copy of the staff memorandum setting forth the proposed study design had been provided to all Committee members for review prior to the meeting. He then asked Mr. Biebel to review the study design concerned with the Committee.

Mr. Biebel then commenced to review the study design on a page-by-page basis. He noted that the study design included sections on the purpose of the planning project, the study area to be considered, and on each of the major elements of the study, along with the staffing and organizational structure envisioned for the planning project.

With regard to technical staffing, he noted that the Commission staff had concluded that the most efficient way to conduct the planning work would be through a cooperative team arrangement involving the Commission staff; a consulting engineering firm; a law firm; the hydrogeology staffs of the Wisconsin Geological and Natural History Survey (WGNHS) and the U.S. Geological Survey (USGS); and a member of the faculty of the University of Wisconsin-Milwaukee. The lead agency for the planning effort, he said, would be the Commission. He noted that the State and Federal agencies noted had been partners, along with the Wisconsin Department of Natural Resources, in conducting the groundwater inventories and in developing the simulation models under a cooperative effort with the Commission, which inventories and models provide a foundation for that planning effort, and the participation by the staffs of these agencies was important to the ongoing planning effort. He indicated that a meeting was

scheduled to be held on Thursday, September 22, 2005, to finalize the proposed hydrogeologic component of the planning effort, and reach interagency agreement on the conduct of that work. Mr. Biebel also noted that following a qualification-based selection process, the Commission has contracted with the firm Ruekert & Mielke, Inc., for the conduct of selected engineering-related elements of the study. The specific work elements to be conducted by the consultant will be determined by the Commission staff as the work proceeds.

Mr. Grisa suggested, and the Committee concurred, that the wording of the second paragraph on page 2 be changed to highlight the importance of Lake Michigan as a water supply source.

[Secretary's Note: A copy of the revised study design is attached. The Committee directed changes as made by the staff are indicated in red.]

Mr. Marchese referred to the study area description on page 2 and asked if groundwater recharge area delineation would be done in the entire area noted as the model "nearfield area" which includes areas beyond the southeastern Wisconsin seven-county area. He noted that these areas in Dodge, Jefferson, and Rock Counties could have impacts on the aquifer system in the Southeastern Wisconsin Region. Mr. Biebel replied that the project scope and study design currently envisioned mapping of recharge areas within the seven-county Southeastern Wisconsin Region. He indicated that the point Mr. Marchese raised could be addressed to a degree by potentially considering the need for such delineation and mapping in the plan recommendations, and, if deemed appropriate, to include the recommendation as a plan component.

Ms. Conley reported that the Rock River Coalition had proposed a project for groundwater modeling within the Rock River watershed. The project may be initiated next year and could provide a means for delineating groundwater recharge areas in the nearfield area.

Mr. Bradbury called attention to the differences conceptually between the shallow and deep aquifer recharge areas. He noted that recharge areas beyond the proposed study area were of most importance for performance of the deep sandstone aquifer in southeastern Wisconsin. After further discussion, it was agreed to note this issue in the study design for consideration as part of the plan recommendations.

[Secretary's Note: Section 6, "Recommended Plan Selection and Documentation," now of page 15 of the study design has been revised to reflect this comment.]

Mr. Moroney referred to Figure 1 and asked if the amounts of recharge within the area noted as the model "nearfield" area would be determined. Mr. Bradbury indicated that such data had already been determined and were available for use in the study. Mr. Cherkauer then called attention to certain differences between the "nearfield" and "farfield" groundwater model areas, noting that within the nearfield area detailed modeling data were available, while only limited data were available within the "farfield" area.

With respect to the second paragraph on page 4, Mr. Cherkauer suggested, and the Committee agreed, that the term "alternative water supply practices" be added to the practices to be considered in developing water supply planning objectives and standards. Ms. Conley noted that one of these alternative practices should be changes in water use rate structures.

[Secretary's Note: The phrase "consideration of alternative water supply practices," including water use rate policies, was added to the fifth line of the first full paragraph now on page 6 following the word "practices." ]

Mr. Marchese commented on the importance of integrating water resources management planning with comprehensive planning. Mr. Shaver agreed, and noted the preparation of a number of new County comprehensive plans was underway in the study area, and these plans were to include a utilities element. He questioned whether or not the planned 2035 land use assumptions to be used in the water supply planning effort would reflect the plans under development. Mr. Yunker noted that the 2035 regional land use plan, which is being used as the basis for the water supply planning, had been developed with careful consideration of county and local land use plans which were in place at the time. He noted that the recently developed design year 2035 regional land use plan had been reviewed and recommended for adoption by the Commission land use planning advisory committee. Moreover, he said, the Commission was directly involved in the preparation of the new county plans referred to by Mr. Shaver. Mr. Yunker added that the water supply plan could identify issues that would warrant reevaluation of the regional land use plan.

Mr. Cherkauer referred to the proposed water use data inventories on page 9 and suggested that low-capacity nonmunicipal well water use data, and trends in water use over time be included in the inventories. Mr. Biebel responded indicating that the inventory of water uses would indeed include nonmunicipal well water use based upon the number of private wells in place. He also noted that available data on water use trends would be included.

[Secretary's Note: The text of the bulleted paragraph now on page 10 entitled "Water Use Data" was revised to reflect these comments.]

Ms. Conley called attention to the issue of leakage from water systems, and to the issue of wetland losses as factors that should be considered in the inventories related to water supply. She also suggested that it would be desirable to document the changes in the use of low-flow household plumbing fixtures. Mr. Biebel noted that it was intended to document the water system "losses," that is, the differences between water produced and water specifically accounted for in municipal systems. He noted that this issue was to be considered further under Item 4 of the agenda. He noted that wetland losses over time within the Region could also be documented. Ms. Lewis cautioned that the data available from the Public Service Commission on unaccounted for water could be misleading, and she suggested such data be used with caution. It was agreed to address that issue in consideration of Item 4 of the agenda.

Mr. Biebel noted that with regard to wetlands, it was an accepted tenet that wetlands serve important environmental functions and, accordingly, there are recommendations in the adopted regional plans, and a number of regulations and program policies in place intended to preserve and protect wetlands. However, he said, wetlands, in many cases, are not good groundwater recharge areas, but, rather, are groundwater discharge areas. Thus, the relationship of wetland loss and groundwater recharge or depletion should not be inferred.

[Secretary's Note: Data on changes in wetland areas within the study area have been added to Chapter II and are reported in these minutes under that agenda item.]

A discussion ensued on the availability of data on the extent of the application of low-water-use plumbing fixtures in the planning area, and it was concluded that there were too many variables to make an inventory of trends on such application meaningful. It was noted that this was a management measure, however, which would be considered as part of the water conservation element of the proposed plan.

Mr. Czarkowski noted that land uses, related imperviousness, and the types of stormwater management practices being installed were important factors in groundwater recharge. Mr. Biebel indicated that information on the extent of impervious areas within the Region and changes over time in such areas could be estimated based upon changes in land uses over time. He indicated that a rigorous inventory of

the current stormwater management practices and facilities was, however, beyond the scope of the proposed planning effort. Mr. Marchese asked if data on stormwater management practices was being developed as part of the ongoing update of the regional water quality management plan. Mr. Biebel indicated that such data were, indeed, being developed, but that the study area concerned covered only selected watersheds and less than one-half of the Region.

[Secretary's Note: Based upon the discussion and apparent consensus, the text of the study design now on page 12 under Section 4, "Analysis and Forecasts," has been revised.]

Mr. Duchniak noted that the importance of private onsite sewage disposal systems on groundwater recharge and quality. Mr. Holschbach noted that the use of holding tanks for sewage disposal was another factor in groundwater recharge since for such systems there is no return of water to the local groundwater system.

[Secretary's Note: In consideration of the comments on private water supply and onsite sewage disposal systems, a section on onsite sewage disposal systems and private water supply systems was added to the inventory section of the report. The text of the study design now on page 8, following public utility service areas, and on page 12 under "Analyses and Forecasts" was supplemented.]

Mr. Dunning suggested, and it was agreed, to change the word "capacities" to "yields" in the first paragraph under the heading "Groundwater Resources Inventory" now on page 8.

Mr. Czarkowski referred to the section of the study design on inventory of groundwater recharge areas, and noted that groundwater discharge areas were also important. Mr. Biebel indicated that the details and procedures being considered for mapping groundwater recharge areas was still under consideration by the interagency staffs concerned.

[Secretary's Note: A meeting was held on Thursday, September 22, 2005, attended by U.S. Geological Survey and Wisconsin Geological and Natural History Survey staff, University of Wisconsin-Milwaukee faculty, and SEWRPC staff to consider the groundwater hydrogeologic analysis to be conducted under the planning effort, including groundwater recharge area delineation. However, the details of how the groundwater recharge and discharge component are to be developed were not finalized. It is envisioned that the groundwater recharge areas will be defined, and that the associated text will indicate the importance of considering recharge areas in conjunction with discharge. There will be text and associated mapping delineating areas in which groundwater is discharged to the surface water system and mapping of important surface waters where groundwater discharge is likely to be important, such as streams which support a coldwater fishery.

The text of this study design under the bulleted heading "Groundwater Resources Analysis" now on page 13 was revised to reflect the consideration, given these issues to date.]

Ms. Lewis referred to the water supply facility inventory section on page 9 and noted that there were system security issues concerned. Mr. Biebel suggested, and it was agreed, to consider those issues under Item 4 of the agenda.

[Secretary's Note: The security issue was subsequently discussed under Item 4 of the agenda. It was agreed to expand the section on water supply facility inventory. Ms. Lewis

subsequently recommended text additions to the bulleted paragraph now on page 9 entitled “Water Supply and Related Facilities.” That text has been revised in accordance with that recommendation.]

Mr. Czarkowski noted that the study design and draft of Chapter II typically categorized water supply systems into public and private. He indicated that for purposes of the water supply plan that was appropriate. However, he pointed out that the Wisconsin Department of Natural Resources classifies some nonmunicipal water supply systems as community systems, which can serve a public need, such as water supply for a subdivision. He also noted that the Department classification of noncommunity water systems include systems which serve schools, commercial establishments, campgrounds, and other uses.

Ms. Conley referred to the section on page 10 relating to the inventory of unit costs for water supply facilities. She asked if that inventory would also identify saving through avoided costs due to conservation efforts. Mr. Biebel responded that the cost and benefits of conservation efforts would be addressed under the water conservation management measures noted to be developed in the state-of-the-art report. He cautioned that direct cost savings from the use of conservation measures was difficult to estimate, since most water supply utilities have a large fixed capital costs, with the operating costs related directly to use being much lower. He noted that potential major savings might occur if system-specific expansion of facilities could be avoided or deferred.

Mr. Shaver asked if water reuse would be considered as a management measure. Mr. Biebel indicated in the affirmative, noting the list of measures to be included in the proposed state-of-the-art report attached as Exhibit A to the study design.

Mr. Melcher noted a wastewater treatment plant effluent reuse system which was being planned by the Village of Richmond located just south of the Wisconsin border in Lake County, Illinois. A presentation on that system, he said, had been made at the most recent Tri-State Water Supply Consortium meeting. Messrs. Melcher, Bradbury, and Biebel regularly attend meeting of that Consortium. Mr. Marchese cited examples of such reuse in other parts of the country.

Mr. Marchese asked if the report would include information on design standards. Mr. Biebel indicated in the affirmative, noting that the proposed state-of-the-art report would include a section on design standards applicable to system-level planning.

Mr. St. Peter asked if the proposed state-of-the-art report would include information on surface water treatment plants. Mr. Biebel indicated that information on such plants would be included in the proposed report at a level of detail adequate for system-level planning.

Mr. Rau suggested that the Commission staff review water supply system plans that may have been prepared in other areas of the country to consider approaches that may be applicable in southeastern Wisconsin. Mr. Biebel indicated that this would be done.

Mr. Czarkowski, referring to the water law inventory on page 10, suggested, and the Committee agreed, that the 2003 groundwater legislation included in Wisconsin Act 310 and the related groundwater advisory committee activities be specifically addressed.

[Secretary’s Note: The text of the first partial paragraph now on page 11 was revised to include specific references to the 2003 groundwater legislation.]

Mr. Cherkauer referred to the second paragraph under the bulleted heading “Technical Analyses of Existing Water Supply Facility Data” on page 12 and asked if the term “water supply capacities” meant

well capacities or aquifer capacity. Mr. Biebel replied the intent was to evaluate the water supply facility capacity to meet existing and future needs. Those facilities could be wells or surface water treatment plants and related infrastructure.

Mr. Cherkauer referred to the section of the study design entitled “Preparation, Test, and Evaluation of Alternative Plans” on page 13 and asked about the procedures for developing the alternatives, and—particularly—if the Committee would be involved. Chairman Bauer indicated that the Committee would be specifically asked to review and approve the alternative plans conceptualized by the staff.

Ms. Conley asked if rainwater would be considered as a potential source of supply. Mr. Biebel indicated that it would in two ways: the first being options for maintaining or enhancing infiltration of rainwater; the second being onsite storage options.

Mr. St. Peter referred to the section of the study design entitled “Recommended Plan Selection and Documentation” on page 14 and noted that the 2001 Great Lakes Charter Annex would likely not be approved by the end of the study. He asked how that was proposed to be accounted for. Mr. Biebel indicated that the extent of the Annex 2001 would have to be considered at the time that the plan recommendation and implementation strategies are developed. He noted that the plans would have to be developed to be consistent with the status and content of the Annex.

[Secretary’s Note: Based upon Mr. St. Peters comment and other comments on the water law inventory, the first partial paragraph and the last paragraph on page 14 were revised to specifically indicate the recommended plan selection process to include the water supply management law inventory findings and any subsequent related developments.]

Ms. Conley referred to the section of the study design entitled “Plan Implementation Recommendations” on page 15 and asked if sources of funding would be considered. Mr. Biebel indicated in the affirmative.

[Secretary’s Note: The first full paragraph now on page 16 was revised to add funding sources as an implementation item to be considered.]

Ms. Conley referred to the section of the study design entitled “Recommended Plan Selection and Documentation” on page 14 and asked if agricultural water uses would be included. Mr. Biebel indicated in the affirmative.

[Secretary’s Note: The work element description under the heading “Recommended Plan Selection and Documentation” now on page 15 was revised to indicate the inclusion of water supply components for uses beyond the public water supply service areas.]

Ms. Conley asked if the public trust doctrine would be considered in the water law inventory. Mr. Biebel indicated that the public trust doctrine relates primarily to navigable surface waters. However, because of the interrelationships of surface and groundwater, there now are questions being raised by Ms. Conley and others regarding the applicability of the public trust doctrine to groundwater. Thus, the issue is proposed to be addressed in the water law inventory. Chairman Bauer indicated that the public trust doctrine was described in previously prepared Commission Technical Report No. 2, *Water Law in Southeastern Wisconsin*.

Mr. Grisa referred to the section of the study design entitled “Public Involvement Program” on page 15 and asked how the plan would be conveyed to the counties and municipalities. Chairman Bauer replied, indicating that upon recommendation of the Advisory Committee, the Regional Planning Commission

would act to formally adopt the recommended plan. The plan would then be formally certified to the counties and local units of government, and to any special-purpose units of government and State and Federal agencies concerned requesting adoption. Mr. Grisa also referred to the text on the schedule and noted that given the current status, some minor changes may need to be made.

[Secretary's Note: The section entitled "Schedule" now on page 17, was revised with regard to the date for the consultant initiation of work and minor changes were made to the schedule shown in Figure 2.]

There being no further questions or comments, on a motion by Mr. Marchese, seconded by Mr. Ericson, and carried unanimously, the staff memorandum entitled "Study Design for a Regional Water Supply Plan for Southeastern Wisconsin," dated September 2, 2005, was approved as amended.

### **REVIEW OF OUTLINE OF SEWRPC PLANNING REPORT NO. 52, A REGIONAL WATER SUPPLY PLAN FOR SOUTHEASTERN WISCONSIN**

Chairman Bauer then asked the Committee to consider Agenda Item 3. He noted that a copy of the proposed documentation summary including the planning report outline had been provided to all members for review prior to the meeting. He then asked Mr. Biebel to review the report documentation summary.

Mr. Biebel noted that three reports were prepared to be developed documenting the findings and recommendations of the water supply planning effort. He called particular attention to the outline of the planning report, consisting of a list of the report chapters, and a detailed outline of the proposed content of each chapter.

[Secretary's Note: A copy of the revised documentation summary is attached hereto indicating all of the changes made in response to the Committee comments.]

Mr. Dunning referred to the outline of Chapter III and recommended that the chapter include a section on the interdependence of groundwater and surface waters.

[Secretary's Note: A section has been added under Chapter III of the outline on the interrelationships of surface waters and groundwater.]

Mr. Biebel referred to the outline of Chapter IV and noted that, based upon earlier comments, it was proposed to add a section on the 2003 groundwater legislation and the related groundwater Advisory Committee actions.

[Secretary's Note: A reference to the 2003 groundwater law and related actions was added under Chapter IV of the outline.]

Ms. Conley referred to the section on surface water in Chapter III and asked if that included rainwater. Mr. Biebel indicated that there was, of course, a relationship between rainwater and surface water. However, the chapter was intended to present inventory information on existing water supply sources and conditions which would relate only indirectly to rainwater.

Mr. Moroney referred to the initial topics to be considered in developing objectives listed under Chapter V and suggested stormwater management objectives be included.

[Secretary's Note: "Stormwater Management" was added to the list of topics to be considered in developing objectives under Chapter V.]

Mr. Moroney referred to the outline of Chapter VII and suggested that "Land Use Development Practices" be included in the potential topics list of issues to be addressed. Ms. Conley suggested that "Economic Drivers or Policies" be added to the same list.

[Secretary's Note: The topics of "Land Use Development Practices" and "Economic Considerations" were added to the listing of potential issues to be addressed under Chapter VII.]

Mr. Dunning recommended, and it was agreed, to change the word "Interrelationships" to "Interdependence" following the phrase "Groundwater-Surface Water" under Chapter VII.

Mr. Marchese suggested that that section of the report include a reference of the stormwater infiltration requirements set forth under Chapter NR 151 of the *Wisconsin Administrative Code*.

Mr. Moroney referred to the term "nonmonetary factors" in the listing under the heading "Evaluation of Alternative Water Supply Plans" in Chapter VIII on page 5 and questioned if that included implementability. Mr. Biebel indicated in the affirmative and stated that it would also include environmental impacts.

[Secretary's Note: The terms "Implementability," "Environmental Factors," and "Others" were added as subheadings under the heading "Nonmonetary Factors" under Chapter VIII.]

Mr. Czarkowski asked if the Implementation section of the plan in Chapter X would potentially include changes in the current water supply law and/or new organizational structures. Mr. Biebel indicated that new laws, or institutional or organizational structures would only be recommended if there was a clear need for such. Typically, the plan implementation recommendations would rely on the current structure, to the maximum extent possible.

With reference to Chapter V, "Water Supply System Development Objectives and Standards," he noted that the design and planning design standard section was proposed to be presented in the state-of-the-art report and would be covered in Chapter V of the planning report by reference.

There being no further questions or comments, on a motion by Mr. Ewig, seconded by Mr. Cherkauer, and carried unanimously, the staff memorandum entitled "Documentation Summary for the Regional Water Supply Planning Program," including the detailed outline of SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin*, was approved, as amended.

## **DISCUSSION OF WATER SUPPLY FACILITIES INVENTORY PROCEDURES**

At Chairman Bauer's request, Mr. Biebel then reviewed a municipal water supply system inventory data request form proposed to be used for verifying and expanding needed information about the existing water supply systems in the Region. He noted that it was proposed to conduct the inventory by mail using the proposed forms, with backup telephone requests as may be necessary. The sample, he noted, was made up for the City of Cedarburg system, and indicated that the inventory request was proposed to include a map of the public water supply service area; the location of wells, treatment plants, and storage facilities; and three inventory data sheets. The three data sheets, he said, included: 1) a basic system data summary sheet listing the additional information that was being requested; 2) a well or treatment plant data sheet; and 3) storage system data sheet. Mr. Biebel indicated that the data sheets would be completed

by the Commission staff to the extent possible with available information, and that the utilities would be asked to verify or revise those data and to provide missing data to the extent possible.

Mr. Biebel then reported that the issue of water supply system security which was raised by Ms. Lewis, was an important consideration in the inventory process. He reported that the Commission was requesting from the Wisconsin Department of Natural Resources copies of the source water assessment reports prepared for each water utility. These source water assessment reports included maps of well locations and areas of contribution to each well. He indicated that the source water assessment reports would be valuable in describing the existing systems and would be referenced as part of the recommended plan. The Department has been hesitant to release the source water assessments because of security issues regarding well locations. He noted that the utility well locations had historically been available on the Department web site, but had been recently removed. He indicated that the Commission staff could map the wells by generalized location, which should not constitute a security concern. He noted that the Commission could keep the information obtained from the Wisconsin Department of Natural Resources and the communities confidential and only use it for the plan preparation.

Mr. Grisa suggested, and it was agreed, that a statement indicating that the preparation of the water supply plan had been approved by the counties involved would be an important addition to the cover letter.

[Secretary's Note: A revised copy of the cover letter and the three data sheets is attached hereto.]

Ms. Lewis referred to the request for a water supply system plan and asked what the purpose was for obtaining that. Mr. Biebel indicated that it would be a verification of the storage facility location and that, in some cases, it will be necessary to consider the availability and capacity of water transmission mains to evaluate the existing water supply systems and develop alternative plans. Ms. Lewis indicated that in most cases, there will be much more information on the system plan than needed and that the data needs described could be handled specifically when identified. Mr. Biebel agreed, but noted that it was thought to require less effort by the utilities to simply provide the system maps rather than have to potentially be asked to respond to subsequent data inquiries for selected data. Ms. Lewis agreed, but indicated the desirability of limiting the data provided to that which is truly needed for system security.

Mr. Biebel indicated that, in many cases, system maps had been obtained from the communities in the past. Thus, the provision of a new system map would only be a means of updating that previous inventory. Ms. Lewis indicated she recognized that there was a lot of water supply facility information which had been previously provided to various parties. However, she stated that this should now be limited for security reasons and that over time the outstanding data would become obsolete or be discarded.

Ms. Lewis asked why the request was being made for the Wisconsin Department of Natural Resources sanitary survey. She noted that the survey typically identified issues which would be addressed in a relatively short timeframe and would not typically be of a nature which would be addressed in the regional water supply plan. Mr. Biebel indicated that it was thought that, in some cases, the sanitary survey would provide information which could be useful, recognizing that in other cases, it would not. He suggested that the utility managers make that judgment and respond accordingly.

[Secretary's Note: In response to this comment, a phrase was added to Item 6 on Data Sheet I which indicates the sanitary survey only be sent if it contains information useful in the regional water supply system plan.]

Mr. St. Peter asked if the water treatment plant intakes were going to be mapped. Mr. Biebel indicated that, based upon the previous security discussion, they probably would not be. However, he indicated that

it would be important to know basic information on the intakes, such as length, depth, size, and material. He noted that the intakes are shown on the published U.S. Geological Survey quadrangle maps.

[Secretary's Note: In order to deal with the security issue, as discussed, it is proposed that the following three commitments be made by the Commission staff:

1. The Commission staff will commit to keeping the water supply facility information confidential. A paragraph has been inserted as the third to the last paragraph of the cover letter indicating that and including statements that the materials will only be used for the plan development purposes and that all of the materials provided in response to the information request will, upon the request of the providers, be destroyed or returned following completion of the study.
2. All mapping to be used in the water supply plan document will be kept generalized. That mapping will be reviewed with the Regional Water Supply Planning Advisory Committee prior to finalization. Any security issues raised by the Committee will be dealt with appropriately.
3. The confidentiality statements would be made to also apply to the Wisconsin Department of Natural Resources source water assessment reports.]

Mr. St. Peter asked who would be receiving the data request. Mr. Biebel responded that it would be submitted to all public water supply utility managers. He noted that other inventories would be needed for nonmunicipal water supply systems and that separate procedures would be developed for those inventories.

Mr. Grisa referred to Data Sheet 3 and asked if storage tank evaluation data was needed. Mr. Biebel responded that it may not be necessary to develop information on pressure zones, but that he would rethink the need for that data.

[Secretary's Note: Upon reflection, Data Sheet 3 has been revised to request data on water depth and overflow evaluation.]

Ms. Conley asked if an inventory of the wastewater discharge system would be conducted. Mr. Biebel indicated that such an inventory was not planned to be carried out. However, he did note that there was information available in the Commission files on the public sewage treatment plant capacities. He noted that, in general, adequate existing and planned public sewage treatment plant capacity was in place or being planned.

Chairman Bauer concluded the review of the inventory procedures noting that the inventory forms would be revised as recommended and a revised copy provided to the Committee with the minutes. Mr. Biebel indicated that the revised data request forms would be sent out to the utilities prior to the next meeting. (A copy of proposed forms as revised for a sample—City of Cedarburg—system are attached to these minutes. However, the map with well and storage tank locations has not been included in order to respect the agreements reached on the security sensitivity of such data.)

## **REVIEW OF CHAPTER I, "INTRODUCTION AND BACKGROUND," OF SEWRPC PLANNING REPORT NO. 52**

Chairman Bauer then asked the Committee to consider Agenda Item 5. He noted that all Committee members had received a copy of the preliminary draft of Chapter I, "Introduction and Background," of

SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin*, for review prior to the meeting he then asked Mr. Biebel to review the chapter with the Committee on a page-by-page basis.

Mr. Moroney referred to Figure 1 and asked if there would be a quantification of water uses and recharge in the Southeastern Wisconsin Region and the area defined as the “nearfield area.” Mr. Biebel indicated that detailed estimates of water use and recharge would be developed for the Region. He noted that such data would also be developed for the “nearfield area” based upon the groundwater modeling.

Mr. Grisa suggested, and it was agreed, to revise the fourth principle on page 6 to address groundwater constraints.

[Secretary’s Note: The fourth principle on page 6 has been revised to read as follows:

“4. Water Supply System Planning in Southeastern Wisconsin Must Recognize the Constraints of Regulations and Policies Relating to the Ability of Obtain Water from the Great Lakes Basin and from the Groundwater System. The current and potential future regulatory framework, including the 2001 Great Lakes Charter Annex being put forth by the Council of Great Lakes Governors and the recent State of Wisconsin groundwater legislation and the related activities of the Groundwater Coordinating Council, are important factors which will impact the framework of the regional water supply plan.”]

Mr. Moroney noted that other planning programs that he was involved in included a statement regarding minimizing the costs of the plan and asked if that should be included in the basic principles. Mr. Biebel indicated that the cost minimization concept was typically included under the plan objectives and standards. These, he said, were to be prepared and presented to the Committee for review and approval.

It was suggested, and generally agreed, to change the word “municipal” to “local” in the sixth line of the first paragraph under the heading “Relationship to Other Planning Programs” on page 6.

Mr. Shaver referred to pages 7 and 8 where comprehensive planning was noted as a related planning program. He suggested, and it was agreed, that the intergovernmental cooperation element be added to the list of directly related elements.

[Secretary’s Note: The following bulleted item was added to the comprehensive plan elements on page 8:

“• Intergovernmental Cooperation: The intergovernmental cooperation element is intended, as the name implies, to promote cooperation between the various levels and units of government operating within an area, including the general purpose units of government and such special-purpose units of government as school and sewerage and water utility districts; with particular emphasis upon coordination in the siting and construction of public facilities and sharing of public services.”]

Mr. Helmuth recommended, and the Committee agreed, to add the State Groundwater Advisory Committee activities to the section entitled “Relationship to the Planning Programs” on page 8.

[Secretary’s Note: The following paragraph has been added ahead of the heading “Organizational Structure and Public Involvement for the Water Supply Planning Program.”

### **“State Groundwater Advisory Committee Activities**

The Groundwater Advisory Committee was created by *2003 Wisconsin Act 310* to make recommendations to the State Legislature regarding future groundwater management needs in Wisconsin. In this regard, two reports are due to the environmental and natural resources standing committees of the Legislature on December 31, 2006, and December 31, 2007. These reports will: 1) provide recommendations on how to manage areas of the State with existing groundwater problems; and 2) report on how the scope of the current groundwater law is working to protect the groundwater resources. The first charge to complete by the end of 2006 specifically relates to the regional water supply planning in that it is to include recommendations for strategies for addressing groundwater management issues and areas designated as “groundwater management areas” which includes all, or portions, of each of the counties in the Southeastern Wisconsin Region. Ideally, the regional water supply plan for southeastern Wisconsin would serve as the model for developing management recommendations in the groundwater management areas.”]

Mr. Yunker reminded the Committee that the recommendations developed under the regional water supply planning program could identify issues which would warrant reevaluation of the regional land use plan and, potentially, result in changes to that plan. In addition, the water supply plan could include recommendations which would impact on county and local land use and comprehensive planning. Mr. Shaver responded that such an eventuality was expected.

There being no further questions or comments, on a motion by Mr. Melcher, seconded by Mr. Grisa, and carried unanimously, Chapter I, “Introduction and Background,” of SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin*, was unanimously approved as amended.

### **REVIEW OF CHAPTER II, “DESCRIPTION OF THE STUDY AREA,” OF SEWRPC PLANNING REPORT NO. 52**

Chairman Bauer then asked the Committee to consider Agenda Item 6—review of Chapter II, “Description of the Study Area,” of SEWRPC Planning Report No. 52. He noted that all Committee members had received a copy of the preliminary draft of this chapter for review prior to the meeting, and asked Mr. Biebel to review the chapter on a page-by-page basis.

Mr. Rau referred to the section of the chapter on civil divisions and special-purpose units of government with water supply management responsibilities beginning on page 1. He asked if the other special-purpose units of government, such as lake districts, in the Region should also be mentioned. Mr. Biebel responded that these other special-purpose units of government did not have direct responsibilities for water supply and that there were a relatively large number of such units of government. Mr. Biebel suggested, and there was no objection, to describing the other types of special-purpose units of government which would be indirectly related, but not to specifically list and map these units of government.

[Secretary’s Note: In response to Mr. Rau’s comment, the following two paragraphs were added to the last paragraph on page 11:

“In addition to the special-purpose units of government with water supply management responsibilities, there are a number of other special-purpose units of government which could be indirectly related to water supply planning. These special-purpose units of government include the legally established town sanitary and utility districts created to provide various urban-related services, such as sanitary

sewerage, water supply, and solid waste collection and disposal, to designated portions of rural towns with urban service needs. A number of these districts exist within the planning area, but do not currently provide water supply management services.

In addition to the special-purpose units of government noted above, there are a number of inland lake protection and rehabilitation districts within the study area. These districts are special-purpose units of government created pursuant to Chapter 33 of the *Wisconsin Statutes*. Lake protection and rehabilitation district powers include 1) study of existing water-quality conditions to determine the causes of existing or expected future water-quality problems, 2) control of aquatic macrophytes and algae, 3) implementation of lake rehabilitation techniques, including aeration, diversion, nutrient removal or inactivation, dredging, sediment covering, and drawdown, 4) construction and operation of water-level-control structures, 5) control of nonpoint source pollution, and 6) creation, operation, and maintenance of a water safety patrol unit.”]

There was some discussion regarding the quality of the maps and the relative location of text and maps and figures. Chairman Bauer indicated that those issues would be addressed in the final report production process.

Ms. Conley referred to the section of the chapter on historic urban growth and asked if information would be obtained on the age of household plumbing fixtures. She noted this information could provide insight into the level of water-conserving fixtures in places. Mr. Biebel replied that an inventory of plumbing fixture ages was not intended, given the uncertainty regarding the replacement of fixtures which has occurred in structures constructed prior to fixture water conservation requirements.

Mr. Cherkauer referred to the section of the chapter on water supply service beginning on page 32. he recommended the addition of data on the amounts of water used of the groundwater and surface water. Mr. Biebel agreed, but indicated that was to be included in Chapter III.

Mr. Grisa referred to Map 6 on page 36 and questioned the interspersed white areas indicating no sewer service was provided. Mr. Grisa recalled that the sewer service area maps were typically more generalized. Mr. Biebel indicated the white areas in question typically being open space uses, such as parkways. After further discussion, it was agreed that Map 7 on page 41 did show the desired more-generalized planned sewer service areas, as opposed to the existing areas actually provided with sanitary sewer service shown on Map 6.

Ms. Conley suggested that Map 6 on page 36 be revised to indicate if the discharge is to the surface waters leaving the study area or the groundwater system.

[Secretary’s Note: The triangular symbols for the public sewage treatment plans have been color coded to illustrate three different discharge conditions:

- Discharge to surface water east of the subcontinental divide.
- Discharge to surface water west of the subcontinental divide.
- Discharge to the groundwater system under most conditions and surface water west of the subcontinental divide under certain high-flow conditions (only one plant—City of Lake Geneva).]

Ms. Conley noted that the Village of Lac La Belle should be added to Table 12 as a public sewerage system. This change was duly noted.

[Secretary's Note: Following the meeting, Mr. Czarkowski provided additional information on the number of private community water systems in the Region as of 2005. The provided information indicating that the current number of such systems is currently 187 versus the 223 systems in existence in 2000. Mr. Czarkowski indicated that most of the systems which represented the reduction were absorbed by adjacent municipal systems, with the remainder being the result of additional private well development which would reduce the number of people served below the 25 person threshold which qualifies as a private community system.

Based upon Mr. Czarkowski's information, a footnote has been added to the heading of Table 16 and the related text on page 33. Each of the footnotes reads as follows:

"The number of private community systems shown on Map 8 and listed in Table 16 is 223 for the plan base year 2000. As of 2005, there were 187 such systems. The reduction in the number of such systems is due primarily to the absorption of systems into adjacent public water utilities. In addition, some of the systems have constructed additional private wells, thereby, reducing the number of people served by the private community system to below the 25 year-round person threshold which classifies the system as a 'other than municipal community system'."]

[Secretary's Note: Based upon the comments received on the study design as reported previously in the minutes under agenda item 2, text has been added to discuss private onsite sewage disposal systems and private domestic wells as follows:

A new paragraph was added on page 32 at the end of the section entitled "Sanitary Sewer Service" which reads as follows:

"As of the year 2000, about 218,000 persons, or about 11 percent of the regional population, were served by private onsite sewage disposal systems. In addition, there were numerous such systems serving nonresidential uses located outside the current public sanitary sewer service areas. Most such systems return most of the water used in the household or other establishment to the groundwater system after onsite storage and treatment through the soil. The exception to this is the holding tank system which does not contribute spent wastewater to the local groundwater system. The impact of private onsite sewage disposal systems on groundwater recharge and on groundwater quality is an important factor in water supply planning."

In addition, a new paragraph has been added on page 33 as the second to last paragraph in the section entitled "Water Supply Service" which reads as follows:

"As of the year 2000, there were about 314,000 persons, or about 16 percent of the total resident population of the Region, were served by private domestic wells. In addition, there were numerous private wells serving nonresidential uses located outside the current public sanitary sewer service areas. It is important to consider private wells as an important factor in water supply planning."]

Mr. Grisa referred to Map 9 on page 53 and asked what was meant by the legend by the term "established stormwater fee program," as opposed to a stormwater utility. Mr. Biebel indicated that there were

communities, such as Village of Elm Grove, which had a charge for stormwater and/or flood control, but did not have a utility *per se*. He indicated that this issue would be investigated by the staff and clarified as may be found necessary.

[Secretary's Note: Upon checking, it was found that there were no communities where special stormwater fees were levied outside of those with a utility district. The Village of Elm Grove has a stormwater utility. Map 9 has been changed accordingly.]

Mr. Shaver referred to Map 9 on page 53 and noted that all of the towns in Waukesha County either were covered by the County stormwater management and erosion control ordinance, or had their own ordinance(s). Mr. Cotter indicated that the same was true of the towns in Walworth County.

[Secretary's Note: Map 9 was revised to reflect that all the towns in Waukesha and Walworth Counties as being covered by stormwater management and construction erosion control ordinance(s).]

Mr. St. Peter referred to Table 22 on page 63 and asked why the analysis was limited to the Waukesha and Milwaukee weather stations. Mr. Biebel indicated that these stations had been historically utilized to adequately represent conditions within the Region. He indicated that staff would consider revising the table to provide a broader coverage of the study area.

[Secretary's Note: Table 22 has been revised to include data from six weather stations covering the Region. A copy of the revised table is attached hereto as Exhibit A. The related text was also changed.]

Mr. Shaver referred to Map 13 on page 67 and reminded the Committee that the slope analysis provided was based upon the soils characteristics. He noted that large-scale topographic mapping is available for most of the study area, which mapping can be used to more precisely determine land slopes.

[Secretary's Note: After discussion of Mr. Shaver's comment, it was agreed to add additional text to discuss the topographic mapping availability in the study area. A section has been added to the section entitled "Topographic and Physiographic Features" following the fourth full paragraph on page 65 to discuss this topic. That text is shown in Exhibit B attached hereto.]

Mr. Cherkauer recommended that a map of the water table be included in either Chapter II or Chapter III. Mr. Biebel agreed, and indicated that it was planned to be in Chapter III.

Ms. Conley referred to the text covering vegetation, woodlands, and wetlands on pages 83 and 84. She suggested, and it was agreed, that the impact of vegetation on groundwater infiltration be discussed. She also suggested that the issue of wetland losses over time be raised. Mr. Biebel agreed.

[Secretary's Note: In response to Ms. Conley's recommendation, the following sentences were added following the heading "Vegetation" on page 83:

"Vegetative characteristics have a direct impact on the amounts of stormwater runoff and infiltration which may be expected from sewer service areas. Thus the type of vegetation which is in place is an important consideration in water supply planning. It is important to note, however, that it is difficult to isolate the relative hydrologic effects of changes in vegetation from other accompanying activities, such as urban

land development and associated stormwater management facility development or construction of agricultural land drainage features.”

In addition, the following paragraph has been added under the heading “Wetlands” following the last full paragraph on page 84:

“The wetland area in the study area declined by 5.6 square miles, or about 2 percent, between 1963 and 1990, however, between 1990 and 2000 there was an increase in wetland area of about 7.0 square miles, or about 3 percent. These changes in wetland areas, like the changes in all land use categories, represent net changes within the study area. Thus, the changes in the wetland area reported between inventory years are the net result of decreases in certain areas of the Region, due, for example, to drainage or filling activity, and increases in other areas, due, for example, to the abandonment of agricultural drainage systems or to wetland restoration efforts.”]

Ms. Conley referred to the section on the agricultural resource base on page 90 and suggested that the text be expanded to indicate the importance of agriculture for groundwater recharge purposes. Mr. Biebel indicated that such a consideration could be included to the alternative and recommended plans if the planning analyses warrant that. However, it was agreed to generally include this thought in the inventory chapter.

[Secretary’s Note: The following sentence was added at the beginning of the first full paragraph under the heading “Agricultural Resource Base” on page 90:

“Agricultural land is an important factor in groundwater recharge, in that such lands are entirely pervious and can have high recharge characteristics, depending upon the soil and type and cropping practices.”]

There being no further questions or comments, on a motion by Mr. Moroney, seconded by Mr. Rau, and carried unanimously, Chapter II, “Description of the Study Area,” of SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin*, was unanimously approved as amended.

## **DATE AND TIME OF NEXT MEETING**

The next meeting of the Advisory Committee was tentatively scheduled for November 30, 2005, at 9:00 a.m. at the same location.

## **ADJOURNMENT**

The September 21, 2005, meeting of the Regional Water Supply Planning Advisory Committee was adjourned at 12:10 p.m. on a motion by Mr. Melcher, seconded by Mr. Grisa, and carried unanimously by the Committee.

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## Exhibit A

### Table 22

#### COMPARISON OF THE TOP 10 DRIEST AND WETTEST YEARS RECORDED AT SELECTED NATIONAL WEATHER SERVICE LOCATIONS IN SOUTHEASTERN WISCONSIN: 1945-2004

Year	Driest Years								
	Kenosha (LTA = 33.17)			Lake Geneva (LTA = 35.50)			Milwaukee (LTA = 32.01)		
	Total Precipitation in Inches	Percent of Long-Term Average	Rank	Total Precipitation in Inches	Percent of Long-Term Average	Rank	Total Precipitation in Inches	Percent of Long-Term Average	Rank
1946	21.35	64.4	2	--	--	--	20.89	65.3	3
1948	--	--	--	27.82	78.4	10	24.62	76.9	8
1949	--	--	--	--	--	--	24.72	77.2	9
1950	--	--	--	--	--	--	--	--	--
1953	25.76	77.7	10	24.76	69.8	3	22.87	71.4	6
1955	--	--	--	25.89	72.9	6	--	--	--
1956	23.25	70.1	5	21.17	59.6	1	--	--	--
1957	--	--	--	--	--	--	24.95	77.9	10
1958	18.68	56.3	1	25.79	72.7	4	20.17	63.0	2
1962	23.11	69.7	4	23.91	67.4	2	21.91	68.4	4
1963	24.57	74.1	7	27.08	76.3	7	19.10	59.7	1
1966	--	--	--	--	--	--	--	--	--
1967	--	--	--	--	--	--	--	--	--
1969	--	--	--	--	--	--	--	--	--
1975	25.07	75.6	8	--	--	--	--	--	--
1976	25.62	77.2	9	--	--	--	--	--	--
1988	--	--	--	25.87	72.9	5	--	--	--
1989	24.46	73.7	6	27.35	77.0	8	--	--	--
1991	--	--	--	--	--	--	--	--	--
1992	23.00	69.3	3	--	--	--	--	--	--
1994	--	--	--	27.52	77.5	9	--	--	--
1996	--	--	--	--	--	--	24.12	75.4	7
2003	--	--	--	--	--	--	22.30	69.7	5

Year	Port Washington (LTA = 30.37)			Waukesha (LTA=32.55)			West Bend (LTA = 31.54)		
	Total Precipitation in Inches	Percent of Long-Term Average	Rank	Total Precipitation in Inches	Percent of Long-Term Average	Rank	Total Precipitation in Inches	Percent of Long-Term Average	Rank
1946	21.89	72.1	4	25.87	79.5	8	24.36	77.24	4
1948	--	--	--	26.85	82.5	10	--	--	--
1949	--	--	--	--	--	--	25.63	81.27	8
1950	24.21	79.7	8	--	--	--	--	--	--
1953	23.59	77.7	7	--	--	--	24.44	77.50	5
1955	--	--	--	24.58	75.5	5	25.25	80.07	7
1956	--	--	--	--	--	--	--	--	--
1957	23.52	77.4	6	--	--	--	--	--	--
1958	22.85	75.2	5	24.77	76.1	6	21.22	67.29	1
1962	21.75	71.6	3	22.29	68.5	3	22.72	72.04	3
1963	19.7	64.9	1	21.36	65.6	1	22.62	71.73	2
1966	--	--	--	23.88	73.4	4	--	--	--
1967	24.99	82.3	10	26.10	80.2	9	--	--	--
1969	24.40	80.3	9	--	--	--	25.67	81.40	9
1975	--	--	--	--	--	--	--	--	--
1976	21.51	70.8	2	--	--	--	24.63	78.10	6
1988	--	--	--	--	--	--	--	--	--
1989	--	--	--	--	--	--	--	--	--
1991	--	--	--	22.08	67.8	2	--	--	--
1992	--	--	--	--	--	--	26.15	82.92	10
1994	--	--	--	--	--	--	--	--	--
1996	--	--	--	--	--	--	--	--	--
2003	--	--	--	24.91	76.5	7	--	--	--

NOTE: LTA indicates long-term average over period of analysis.

**Table 22 (continued)**

Year	Wettest Years								
	Kenosha (LTA = 33.17)			Lake Geneva (LTA = 35.50)			Milwaukee (LTA = 32.01)		
	Total Precipitation in Inches	Percent of Long-Term Average	Rank	Total Precipitation in Inches	Percent of Long-Term Average	Rank	Total Precipitation in Inches	Percent of Long-Term Average	Rank
1951	--	--	--	42.89	120.8	8	--	--	--
1952	--	--	--	--	--	--	--	--	--
1954	41.84	126.1	5	43.20	121.7	7	41.84	126.1	5
1959	--	--	--	45.17	127.2	4	37.68	117.7	10
1960	--	--	--	--	--	--	40.71	127.2	5
1965	43.76	131.9	4	47.00	132.4	2	38.49	120.2	8
1972	46.12	139.0	2	49.97	140.8	1	--	--	--
1973	--	--	--	42.54	119.8	9	--	--	--
1977	--	--	--	--	--	--	--	--	--
1978	40.24	121.3	9	43.57	122.7	6	40.74	127.3	4
1979	--	--	--	41.42	116.7	10	--	--	--
1982	--	--	--	46.42	130.8	3	--	--	--
1984	--	--	--	--	--	--	39.87	124.6	6
1985	41.06	123.8	7	--	--	--	--	--	--
1986	--	--	--	--	--	--	42.17	131.7	2
1987	45.34	136.7	3	--	--	--	39.14	122.3	7
1990	--	--	--	--	--	--	40.86	127.6	3
1993	--	--	--	--	--	--	--	--	--
1996	--	--	--	--	--	--	--	--	--
1998	40.03	120.7	10	--	--	--	--	--	--
1999	40.45	122.0	8	--	--	--	40.45	122.0	8
2000	46.99	141.7	1	44.52	125.4	5	44.37	138.6	1
2001	--	--	--	--	--	--	--	--	--
2004	--	--	--	--	--	--	--	--	--

Year	Port Washington (LTA = 30.37)			Waukesha (LTA=32.55)			West Bend (LTA = 31.54)		
	Total Precipitation in Inches	Percent of Long-Term Average	Rank	Total Precipitation in Inches	Percent of Long-Term Average	Rank	Total Precipitation in Inches	Percent of Long-Term Average	Rank
1951	37.60	123.8	5	39.69	121.9	4	--	--	--
1952	--	--	--	38.00	116.7	7	--	--	--
1954	--	--	--	40.73	125.1	3	37.04	117.5	8
1959	--	--	--	37.47	115.1	9	--	--	--
1960	37.50	123.5	6	--	--	--	--	--	--
1965	39.27	129.3	3	40.96	125.8	2	37.64	119.4	5
1972	--	--	--	38.41	118.0	5	37.74	119.7	4
1973	--	--	--	--	--	--	37.22	118.0	6
1977	--	--	--	--	--	--	36.90	117.0	9
1978	37.34	122.9	8	--	--	--	--	--	--
1979	--	--	--	--	--	--	--	--	--
1982	--	--	--	--	--	--	--	--	--
1984	--	--	--	37.50	115.2	8	41.43	131.4	1
1985	45.24	149.0	1	--	--	--	38.59	122.4	2
1986	--	--	--	--	--	--	--	--	--
1987	37.38	123.1	7	--	--	--	--	--	--
1990	--	--	--	--	--	--	--	--	--
1993	--	--	--	38.02	116.8	6	--	--	--
1996	37.81	124.5	4	--	--	--	--	--	--
1998	--	--	--	--	--	--	--	--	--
1999	35.82	117.9	10	--	--	--	38.00	120.5	3
2000	41.93	138.1	2	44.73	137.4	1	36.65	116.2	10
2001	--	--	--	37.32	114.7	10	--	--	--
2004	36.82	121.2	9	--	--	--	37.18	117.9	7

NOTE: LTA indicates long-term average over period of analysis.

Source: National Climatic Data Center and SEWRPC.



## **Exhibit B**

Text to be Added to the section of Chapter II entitled “Topographic and Physiographic Features” following the fourth full paragraph on page 65.

The drainage and groundwater recharge pattern of an area is a particularly important consideration in water supply planning. As already noted, the planning area is traversed by a subcontinental divide that separates the Great Lakes-St. Lawrence River drainage basin from the Mississippi River drainage basin. This divide has important implications for water supply, sanitary sewerage, and stormwater management system planning in that legal constraints, in effect, prohibit the diversion of any substantial quantities of Lake Michigan water across this divide. Therefore, areas east of the divide can utilize Lake Michigan as a source of water supply, with the spent water being returned to that lake via the sanitary sewerage system. Areas west of the divide must utilize the groundwater reservoir as the source of supply, with the majority of the spent water conveyed to the Illinois-Fox River via the sanitary sewerage system. The divide is, thus, a major determinant of the configuration of the water supply, sanitary sewerage, and stormwater management systems serving the study area.

Drainage basins and recharge area determination can best be made based upon data such as real property boundaries, existing stormwater infrastructure, and public street locations and configurations. As of the end of 2004, large-scale topographic maps had been or were being prepared to Commission-recommended standards for 2,181 square miles, or about 81 percent of the total area of the study area. These maps were prepared under county-sponsored programs administered by the Southeastern Wisconsin Regional Planning Commission. In most cases, the large-scale topographic mapping program include acquisition of digital terrain model files.