

**SUMMARY NOTES OF THE JUNE 28, 2023, MEETING OF THE  
TECHNICAL ADVISORY COMMITTEE FOR  
A CHLORIDE IMPACT STUDY FOR THE SOUTHEASTERN WISCONSIN REGION**

**INTRODUCTION**

The June 28, 2023, meeting of the Technical Advisory Committee (TAC) for *A Chloride Impact Study for the Southeastern Wisconsin Region* (Study) was convened online at 10:02 a.m. The meeting was called to order by Committee Chair Thomas M. Grisa, Director of the City of Brookfield Department of Public Works. Mr. Grisa welcomed the attendees to the meeting. Attendance was taken using the online software.

**Members Present**

Thomas M. Grisa, Chairman.....Director, Department of Public Works, City of Brookfield  
Laura K. Herrick, Secretary ..... Chief Environmental Engineer, SEWRPC  
Mandy Bonneville.....Deputy Director/County Conservationist, Walworth County  
Karl Buck .....Community Planner, FHWA Wisconsin Division  
Brian Cater.....Interim Director of Public Works/City Engineer, City of Kenosha  
Cody Churchill..... Winter Maintenance Engineer, Wisconsin Department of Transportation  
Steven Corsi..... Research Hydrologist, Chemistry, U.S. Geological Survey  
David J. Hart .....Hydrogeologist, WGNHS  
Bryan Hartsook ..... Natural Resources Basin Supervisor, Wisconsin Department of Natural Resources  
Richard Hough ..... Director of Public Works, Walworth County  
Samantha Katt.....Wastewater Specialist, WDNR  
Scott Kroeger ..... Director of Public Works, Walworth County  
Matthew T. Magruder .....Environmental Research Manager, MMSD  
Neal O’Reilly ..... Director, Conservation and Environmental Science Program, UWM  
David Striffling..... Director, Water Law and Policy Initiative, Marquette University Law School

**Guests and Staff Present**

Joseph Boxhorn.....Principal Planner, SEWRPC  
Dale Buser..... Principal Specialist, SEWRPC  
Christopher Cieszynski .....Environmental Planning Technician, SEWRPC  
Karin Hollister ..... Principal Engineer, SEWRPC  
Zijia Li .....Engineer, SEWRPC  
James Mahoney.....Engineer, SEWRPC  
Nicklaus Neureuther ..... Specialist Biologist, SEWRPC  
Aaron Owens .....Senior Planner, SEWRPC  
Justin Poinatte..... Senior Specialist, SEWRPC  
Thomas Slawski.....Chief Biologist, SEWRPC

Mr. Grisa asked Ms. Herrick, Chief Environmental Engineer of the Southeastern Wisconsin Regional Planning Commission (SEWRPC), to begin the agenda discussion items. Ms. Herrick introduced the presenters and the agenda for the meeting to review Chapters 1, 2, 3 and 4 of SEWRPC Technical Report No. 61 *Field Monitoring and Data Collection for the Chloride Impact Study*.

[Secretary’s Note: The agenda for this meeting is attached herein as Exhibit A.]

## **REVIEW OF THE SUMMARY NOTES FROM THE APRIL 26, 2023, TECHNICAL ADVISORY COMMITTEE MEETING**

At Ms. Herrick's request, Mr. Boxhorn reviewed the summary notes from the April 26, 2023, TAC meeting. There were no questions or comments from TAC members.

### **REVIEW OF PRELIMINARY DRAFT CHAPTER 1, "INTRODUCTION," OF SEWRPC TECHNICAL REPORT NO. 61, *FIELD MONITORING AND DATA COLLECTION FOR THE CHLORIDE IMPACT STUDY***

At Ms. Herrick's request, Mr. Owens reviewed the preliminary draft of Chapter 1 of SEWRPC Technical Report No. 61 (TR-61). Mr. Owens stated that he, Nicklaus Neureuther, and Karin Hollister were the main authors of this report. He thanked other staff for their contributions and gave special thanks to the graphic artists, Megan Deau and Alexa Carzoli for their work on the figures and to Justin Poinsette for help with analysis. Mr. Owens reviewed the preliminary draft of Chapter 1 and TAC members offered no comments or questions.

### **REVIEW OF PRELIMINARY DRAFT CHAPTER 2, "WATER QUALITY MONITORING SITE SELECTION AND CHARACTERIZATION," OF SEWRPC TECHNICAL REPORT NO. 61, *FIELD MONITORING AND DATA COLLECTION FOR THE CHLORIDE IMPACT STUDY***

Mr. Owens next described how water quality monitoring sites on streams and rivers were selected for the Study. Several factors were considered including geographic distribution of sites among watersheds and counties; land use in areas draining to the monitoring sites; the presence of wastewater treatment plants, food processing plants, agricultural feedlots, landfills, municipal separate sewer systems, and salt storage areas in the areas draining to the monitoring sites; the proximity of monitoring sites to USGS stations; and the stream size. Commission staff investigated 55 locations for safety and suitable conditions and selected 41 sites to install monitoring stations.

Mr. Owens summarized how lakes were selected for monitoring for the Study. He noted that six lakes were selected to include a variety of lake types and to ensure geographic distribution throughout the study area. Two maps were created for each monitoring site describing the drainage area and their characteristics. Mr. O'Reilly asked why lakes were not selected that have historical data collected by the U.S. Geological Survey (USGS). Mr. Owens replied that data collected by the USGS is available for four of the lakes that were monitored.

TAC members offered no further questions or comments on this chapter.

### **REVIEW OF SEWRPC PRELIMINARY DRAFT CHAPTER 3, "MONITORING SITE INSTALLATION, FIELD EQUIPMENT, AND DATA COLLECTION PROCEDURES," OF SEWRPC TECHNICAL REPORT NO. 61, *FIELD MONITORING AND DATA COLLECTION FOR THE CHLORIDE IMPACT STUDY***

At Mr. Owen's request Mr. Neureuther reviewed the preliminary draft of Chapter 3 of SEWRPC TR-61.

Mr. Neureuther described the installation of continuous monitoring devices (CTD sensors) that measured specific conductance at stream monitoring sites. He noted that the devices included telemetry units that allowed staff to conduct troubleshooting from the office. Mr. Neureuther described the procedures that were used to maintain this equipment.

Mr. Neureuther described the procedures used for water sampling from rivers and streams. He noted that samples were collected every month at each site. He added that an additional 111 samples were collected during winter storm and snow melt events. He explained that these water quality samples were analyzed by the Wisconsin State Laboratory of Hygiene (WSLH) for chloride, sulfate, hardness, and several metals.

Mr. Neureuther noted that staff measured streamflow at some sites where USGS discharge data was not available. This was done to help in the interpretation of the continuous conductance monitoring data.

Mr. Neureuther described the procedures used to monitor lakes. He noted that staff measured water temperature and specific conductance and collected water samples at various depths in each lake. He added that water samples were analyzed for chloride by the WSLH.

The TAC offered no questions or comments on Chapter 3.

#### **REVIEW OF SEWRPC PRELIMINARY CHAPTER 4, “DATA MANAGEMENT AND DOCUMENTATION,” OF SEWRPC TECHNICAL REPORT NO. 61, *FIELD MONITORING AND DATA COLLECTION FOR THE CHLORIDE IMPACT STUDY***

Mr. Neureuther next reviewed the preliminary draft of Chapter 4 of SEWRPC TR-61. Mr. Neureuther described the quality assurance and quality control procedures for the Study. He explained that these procedures included collection of field blanks and replicate samples, creation of workflow schedules, and creation and maintenance of documentation including field logbooks, weather logbooks, equipment logs, and master tables of all field datasets.

Mr. Neureuther described the post-processing of the continuous specific conductance dataset. He noted that these data were visually inspected to identify problems. One issue that was identified was dampening of the specific conductance signal. He explained that such dampening can be caused by fouling of the sensor. Instances of dampened data were further investigated using the data record, field notes, meteorological data, water level data, and streamflow data. When dampening was confirmed to be due to sensor fouling, the data for the dampened period were adjusted using methods developed by the USGS. After adjustments to the data were made, further review took place to see how well adjustments matched unaffected data. Mr. Grisa asked if an assessment was made to estimate how much of the data was adjusted. Mr. Owens responded that Table 4.1 included an adjustment period for each site and Ms. Hollister added that a percentage could be calculated for the data in the table.

[Secretary’s Note: Table 4.1 was revised to include the percentage of the data record that was adjusted at each site. Adjustments were made to data records from 32 sites. The percentages of data records adjusted varied among sites, ranging between 0 percent and 46.6 percent of the record. Overall, about 8 percent of the entire dataset was adjusted. A footnote regarding this will be added to Table 4.1 as well. A copy of the revised Table 4.1 is attached herein as Exhibit B.]

Mr. Grisa asked what would happen if the data from time periods with sensor dampening were ignored rather than being adjusted. Mr. Boxhorn asked whether Mr. Grisa meant to ignore the data adjustments or to omit the affected data from analyses. Mr. Boxhorn noted that either of these options would reduce the accuracy of the monthly chloride load estimates. Ms. Hollister stated that the raw data are being preserved so either raw or adjusted data could be used as needed. She added that removing data would affect estimates of chloride concentrations and instream loads.

The TAC offered no further questions or comments on Chapter 4.

### **NEXT STEPS FOR THE PLAN**

Ms. Herrick reviewed the next steps for the Study. Work will continue with research and report writing, developing regression and loading analyses, and gathering information on state-of-the-art practices.

Ms. Herrick announced that comments for Technical Report No. 61 Chapters 1, 2, 3 and 4 are due by July 31, 2023. The next TAC meeting is anticipated to be in late 2023 and consist of review of either Chapters 3 and 5 of TR-62 which address impacts of chloride or the entirety of TR-67 which addresses legal and policy options for managing chloride. She indicated that meeting presentations and summary notes along with draft chapters will all be posted on the SEWRPC project website at [www.sewrpc.org/chloridestudy](http://www.sewrpc.org/chloridestudy).

### **ADJOURNMENT**

There being no further business, the meeting was adjourned by unanimous consent at 11:32 a.m.

Respectfully submitted,

Laura Herrick  
Recording Secretary

### **ATTACHMENT**

Exhibit A - Meeting Agenda (268403)  
Exhibit B – Revised Table 4.1 (267927)

#269110 – TR-61 SUMMARY NOTES CHLORIDE TAC June 28, 2023  
200-1100  
LKH/JEB/NJN  
7/20/23, 7/25/23, 8/11/23

Southeastern Wisconsin Regional Planning Commission

**Notice of Meeting and Agenda**

**TECHNICAL ADVISORY COMMITTEE FOR  
A CHLORIDE IMPACT STUDY FOR THE SOUTHEASTERN WISCONSIN REGION**

DATE: Wednesday June 28, 2023

TIME: 10:00 am to Noon

GOTO LINK: <https://meet.goto.com/729286341>

You can also dial in using a phone

United States: (408) 650-3123

Access Code: 729-286-341

AGENDA:

1. Roll call
2. Review of summary notes from the April 26, 2023, TAC meeting
3. Review preliminary draft **SEWRPC Technical Report No. 61, Field Monitoring and Data Collection for the Chloride Impact Study**
  - a. Chapter 1 – Introduction
  - b. Chapter 2 – Water Quality Monitoring Site Selection and Characterization
  - c. Chapter 3 – Monitoring Site Selection, Field Equipment, and Data Collection Procedures
  - d. Chapter 4 – Data Management and Documentation
  - e. Appendices
4. Next steps
5. Adjourn

Laura K. Herrick  
Chief Environmental Engineer

The summary notes and preliminary draft chapters can be found on the Study webpage at [www.sewrpc.org/chloridestudy](http://www.sewrpc.org/chloridestudy)

**Table 4.1**  
**Summary of Data Adjustments**

| Site ID | Site Name                             | Adjustment Start (CDT) <sup>a</sup> | Adjustment End (CDT) <sup>a</sup> | Specific Conductance Difference <sup>b</sup> (µS/cm) | Adjustment Span (days) | Percent of Total Record Adjusted <sup>c</sup> |
|---------|---------------------------------------|-------------------------------------|-----------------------------------|--|------------------------|---|
| 3       | Mukwonago River at Mukwonago          | 2019-03-14 12:00:00                 | 2019-04-09 10:50:00               | 86   | 26.0                   | 3.4   |
| 4       | Sugar Creek                           | 2018-10-01 00:00:00                 | 2018-10-19 11:00:00               | 122  | 18.5                   | 7.4   |
|         |                                       | 2019-03-12 18:00:00                 | 2019-04-10 11:10:00               | 80   | 28.7                   |   |
|         |                                       | 2019-09-10 07:00:00                 | 2019-09-19 10:20:00               | 169  | 9.1                    |   |
| 8       | Pewaukee River                        | 2019-05-23 15:55:00                 | 2020-05-12 11:10:00               | 262  | 354.8                  | 46.6  |
| 9       | Oak Creek                             | 2020-08-02 15:20:00                 | 2020-10-08 15:55:00               | 397  | 67.0                   | 7.6   |
| 10      | Pike River                            | 2018-10-30 18:05:00                 | 2018-11-12 13:10:00               | 127  | 12.8                   | 7.9   |
|         |                                       | 2019-04-15 12:30:00                 | 2019-06-11 11:55:00               | 109  | 57.0                   |   |
| 11      | Bark River Upstream                   | 2019-03-13 12:40:00                 | 2019-04-09 13:55:00               | 134  | 27.1                   | 10.3  |
|         |                                       | 2019-04-22 23:20:00                 | 2019-06-13 11:50:00               | 107  | 51.5                   |   |
| 13      | Ulao Creek                            | 2020-03-28 22:20:00                 | 2020-04-07 09:55:00               | 435  | 9.5                    | 3.6   |
|         |                                       | 2020-05-17 09:35:00                 | 2020-06-15 13:35:00               | 185  | 29.2                   |   |
| 14      | Sauk Creek                            | 2019-06-12 19:40:00                 | 2019-06-14 13:00:00               | 180  | 1.7                    | 11.4  |
|         |                                       | 2019-09-13 17:35:00                 | 2019-09-20 14:10:00               | 170  | 6.9                    |   |
|         |                                       | 2020-07-09 20:25:00                 | 2020-10-09 09:20:00               | 104  | 91.5                   |   |
| 15      | Kilbourn Road Ditch                   | 2018-10-10 17:00:00                 | 2018-12-12 13:00:00               | 103  | 62.8                   | 14.2  |
|         |                                       | 2019-03-14 04:45:00                 | 2019-04-15 11:25:00               | 344  | 32.3                   |   |
|         |                                       | 2020-09-08 16:20:00                 | 2020-10-08 11:45:00               | 290  | 29.8                   |   |
| 16      | Jackson Creek                         | 2018-10-06 01:35:00                 | 2018-10-12 12:00:00               | 72   | 6.4                    | 0.8   |
| 18      | Oconomowoc River Upstream             | 2019-02-01 01:30:00                 | 2019-04-09 14:25:00               | 101  | 67.5                   | 17.2  |
|         |                                       | 2020-03-09 16:55:00                 | 2020-05-12 10:15:00               | 185  | 63.7                   |   |
| 20      | Oconomowoc River Downstream           | 2020-03-08 23:25:00                 | 2020-07-16 12:40:00               | 203  | 129.6                  | 17.0  |
| 21      | East Branch Milwaukee River           | 2019-03-17 07:15:00                 | 2019-06-03 11:25:00               | 119  | 78.2                   | 10.3  |
| 23      | Milwaukee River Downstream of Newburg | 2019-03-13 17:00:00                 | 2019-04-08 12:00:00               | 59   | 25.8                   | 3.4   |
| 25      | Root River Canal                      | 2018-10-01 00:20:00                 | 2018-10-24 14:50:00               | 376  | 23.6                   | 3.9   |
|         |                                       | 2018-12-01 18:00:00                 | 2018-12-12 13:35:00               | 121  | 10.8                   |   |
| 28      | East Branch Rock River                | 2018-10-30 16:30:00                 | 2018-12-07 11:50:00               | 135  | 37.8                   | 11.9  |
|         |                                       | 2019-07-20 12:25:00                 | 2019-09-11 11:25:00               | 97   | 53.0                   |   |
| 30      | Des Plaines River                     | 2019-10-27 06:20:00                 | 2019-11-20 11:40:00               | 235  | 24.2                   | 2.7   |

Table continued on next page.

**Table 4.1 (Continued)**

| Site ID | Site Name                           | Adjustment Start (CDT) <sup>a</sup> | Adjustment End (CDT) <sup>a</sup> | Specific Conductance Difference <sup>b</sup> (µS/cm) | Adjustment Span (days) | Percent of Total Record Adjusted <sup>c</sup> |
|---------|-------------------------------------|-------------------------------------|-----------------------------------|--|------------------------|---|
| 32      | Turtle Creek                        | 2018-12-21 00:35:00                 | 2019-04-12 11:55:00               | 248  | 112.5                  | 19.5  |
|         |                                     | 2020-03-09 14:40:00                 | 2020-04-14 11:20:00               | 162  | 35.9                   |   |
| 33      | Pebble Brook                        | 2020-06-22 21:45:00                 | 2020-10-07 10:35:00               | 131  | 106.5                  | 14.0  |
| 36      | Honey Creek Downstream of East Troy | 2018-10-01 12:30:00                 | 2018-10-19 11:40:00               | 237  | 18.0                   | 2.4   |
| 38      | North Branch Milwaukee River        | 2019-07-20 12:20:00                 | 2019-09-24 11:00:00               | 83   | 65.9                   | 8.7   |
| 40      | Stony Creek                         | 2019-03-14 06:30:00                 | 2019-04-08 13:00:00               | 86   | 25.3                   | 3.3   |
| 41      | Milwaukee River near Saukville      | 2019-03-13 14:00:00                 | 2019-04-08 11:10:00               | 246  | 25.9                   | 9.3   |
|         |                                     | 2020-08-25 07:00:00                 | 2020-10-09 10:20:00               | 80   | 45.1                   |   |
| 47      | Fox River at Rochester              | 2019-03-14 11:40:00                 | 2019-04-10 10:35:00               | 92   | 27.0                   | 3.5   |
| 51      | Rubicon River                       | 2019-09-10 02:00:00                 | 2019-09-11 12:10:00               | 155  | 1.4                    | 13.1  |
|         |                                     | 2019-10-01 09:20:00                 | 2020-01-14 15:20:00               | 215  | 105.3                  |   |
|         |                                     | 2020-06-20 12:25:00                 | 2020-06-25 11:45:00               | 104  | 5.0                    |   |
| 53      | Honey Creek at Wauwatosa            | 2019-08-26 08:40:00                 | 2019-09-09 09:25:00               | 376  | 14.0                   | 7.3   |
|         |                                     | 2020-05-17 04:00:00                 | 2020-07-06 13:35:00               | 206  | 50.4                   |   |
| 54      | Whitewater Creek                    | 2019-02-03 14:20:00                 | 2019-04-12 10:55:00               | 130  | 67.9                   | 21.8  |
|         |                                     | 2020-07-13 11:05:00                 | 2020-07-22 10:35:00               | 161  | 9.0                    |   |
|         |                                     | 2020-07-22 10:45:00                 | 2020-10-19 11:30:00               | 112  | 89.0                   |   |
| 55      | Bark River Downstream               | 2019-03-09 17:00:00                 | 2019-04-09 12:20:00               | 343  | 30.8                   | 15.7  |
|         |                                     | 2020-07-09 19:15:00                 | 2020-10-06 13:40:00               | 80   | 88.8                   |   |
| 57      | Menomonee River at Wauwatosa        | 2020-05-17 03:50:00                 | 2020-06-15 10:20:00               | 226  | 29.3                   | 8.7   |
|         |                                     | 2020-08-02 21:30:00                 | 2020-08-10 10:35:00               | -80  | 7.5                    |   |
|         |                                     | 2021-04-11 22:50:00                 | 2021-04-15 11:50:00               | 257  | 3.5                    |   |
|         |                                     | 2021-05-04 11:55:00                 | 2021-05-12 11:20:00               | 702  | 8.0                    |   |
| 58      | Milwaukee River at Estabrook Park   | 2021-05-03 20:00:00                 | 2021-05-12 11:55:00               | 76   | 8.7                    | 1.6   |
| 59      | Root River near Horlick Dam         | 2018-10-03 00:00:00                 | 2018-10-16 12:10:00               | 316  | 13.5                   | 6.6   |
|         |                                     | 2020-08-10 22:45:00                 | 2020-10-08 14:05:00               | 266  | 58.6                   |   |
| 87      | Underwood Creek                     | 2021-04-10 17:10:00                 | 2021-04-26 16:55:00               | 464  | 16.0                   | 7.5   |

<sup>a</sup> Central Daylight Time (CDT) or UTC -5:00.

<sup>b</sup> The specific conductance difference is calculated by subtracting the specific conductance value immediately before the sensor was cleaned ( $s_i$ ) from the specific conductance value immediately after the sensor was cleaned ( $s_j$ ).

<sup>c</sup> Considering all 41 stream monitoring sites, approximately 8 percent of the entire specific conductance continuous dataset was adjusted overall.

Source: SEWRPC