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REGIONAL PLANNING NEWS

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Discharges from water softeners to wastewater treatment plants or septic systems are sources of chloride to surface water and groundwater. Credit: salt-series.com

PROPOSED CHLORIDE STUDY

There is a growing public concern over the environmental impact of the use of road salt in winter street and highway maintenance. This growing concern was discussed at a Commission meeting held on March 19, 2014. The discussion focused on the effects of the use of road salt on the surface water and groundwater resources of the Region, and particularly on the inland lakes of the Region. At the conclusion of the discussion, the Commission directed the staff to prepare a Prospectus for a study of the environmental impact of the use of road salt in winter road maintenance within the Region. ***The Prospectus***, upon its completion and approval by the Commission, will be made available to the seven constituent county boards for consideration and potential action.

The Commission direction to the staff recognized that public concern over the effects of the growing use of road salt has heightened in recent years as evidenced by a number of national, state, and local study reports issued on the topic. The Commission direction further recognized that the issue affects all of the Counties and all of the local units and agencies of government within the Region, as well as certain State agencies and private enterprises. The Commission intended that the Prospectus provide a focus for consideration of this issue by the interests concerned.

The Commission subsequently acted to create a Technical Advisory Committee to assist in the preparation of the Prospectus – the membership of that Committee is given as an attachment to this article. The Committee working with the Commission staff completed the Prospectus in March of 2016. The completed Prospectus[1] constitutes the recommendations of the Committee and the Commission to the seven constituent county boards, the local units of government within the Region, and the concerned State agencies.

The Committee in its work on the development of the Prospectus noted that road salt is only one of a number of significant sources of chloride[2] contributed to the environment. In addition to salt applied for the anti-icing and de-icing of roadway pavements, sidewalks, and parking lots, other sources of chloride include: water softener systems discharging to sanitary sewerage systems or to on-site sewage treatment systems, salt storage areas, landfills, large agricultural feedlots, fertilizers, and certain manufacturing operations. The proposed study

[1] *SEWRPC, Prospectus for a Chloride Impact Study for the Southeastern Wisconsin Region, March 2016.*

[2] *Road salt, which typically is largely sodium chloride, is an example of an ionic compound. In the solid form, the atoms in ionic compounds are held together by electrical attractions between the positively charged sodium ions and the negatively charged chloride ions. When road salt dissolves in water, these ions separate from each other and become surrounded by water. The concentration of chloride in water may be determined through laboratory chemical tests of a water sample, or in situ through determination of the specific conductance of the water, knowing the specific relationship between specific conductance and chloride concentration. In chemical analyses made to assess water quality, it is the chloride ion that is measured. When considering the adverse effects of road salt on pavements and bridges, the amount of chloride applied for winter maintenance is the chemical of interest relative to the potential for corrosion and independent of the other chemical in the compound.*

REGIONAL CHLORIDE IMPACT STUDY TECHNICAL ADVISORY COMMITTEE

Thomas M. Grisa, Chairman	Director, Department of Public Works, City of Brookfield
Robie Anson	Nutrient and Regional Water Quality Standards Coordinator, U.S. EPA Region 5
Roger Bannerman	Liaison to Wisconsin Department of Natural Resources, U.S. Geological Survey
Benjamin Benninghoff[1]	Natural Resource Basin Supervisor, Wisconsin Department of Natural Resources
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Peter Chladil	Manager, Highway Operations, Waukesha County Highway Department
Steve Corsi	Research Hydrologist, Chemistry, U.S. Geological Survey
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Cheryl Nenn.	Riverkeeper, Milwaukee Riverkeeper
David Nguyen	SE Region Systems Operations Chief, Wisconsin Department of Transportation
Eric Nitschke[2]	Director of Central Services, Walworth County Public Works Department
David Prott	Superintendent, Highways and Parks Division Racine County Public Works and Development Services Department
Scott M. Schmidt	Highway Commissioner, Washington County Highway Department
David Simpson	Director of Public Works/City Engineer, City of Muskego
David Strifling	Director, Water Law and Policy Initiative, Marquette University Law School
John Walker	Center Director, U.S. Geological Survey
Thomas A. Wiza	Director, Engineering and Public Works, City of Cedarburg

[1]Prior to October 2015, Maureen A. McBroom, former Wisconsin Department of Natural Resources Stormwater Specialist, served on the Technical Advisory Committee.

[2]Prior to January 2016, Kevin M. Brunner, former Walworth County Director of Central Services, served on the Technical Advisory Committee.

is to consider the relative magnitude of the chloride loads on the environment from all significant sources. This comprehensive approach will permit identification of the importance of each of the various sources of chloride, and provide a basis for identifying priorities in the abatement of the sources.

The Prospectus sets forth in detail the need for and purpose of the study, a proposed scope and content of the study, identifies the most feasible means for organizing and accomplishing the study, recommends a practical time sequence and schedule for the conduct of the study, and recommends a budget and source of funding for the study. The proposed study is intended to address the significant problems created by the widespread discharge into the environment of a chemical pollutant that is destructive of motor vehicles, roadway pavements, and bridges; is destructive of soil structure and fertility; toxic to aquatic and terrestrial plants; and, at high enough concentrations in drinking water, constitutes a threat to human and animal health and life. Moreover, this pollutant is not removable from water by the usual treatment processes, is not biodegradable, and, therefore, accumulates in the environment. A study of the long term trends in its use and effects on the receiving environment, and particularly on inland lakes and on groundwater, is an important step toward protecting the surface water and groundwater resources of the Region.

Historical Note

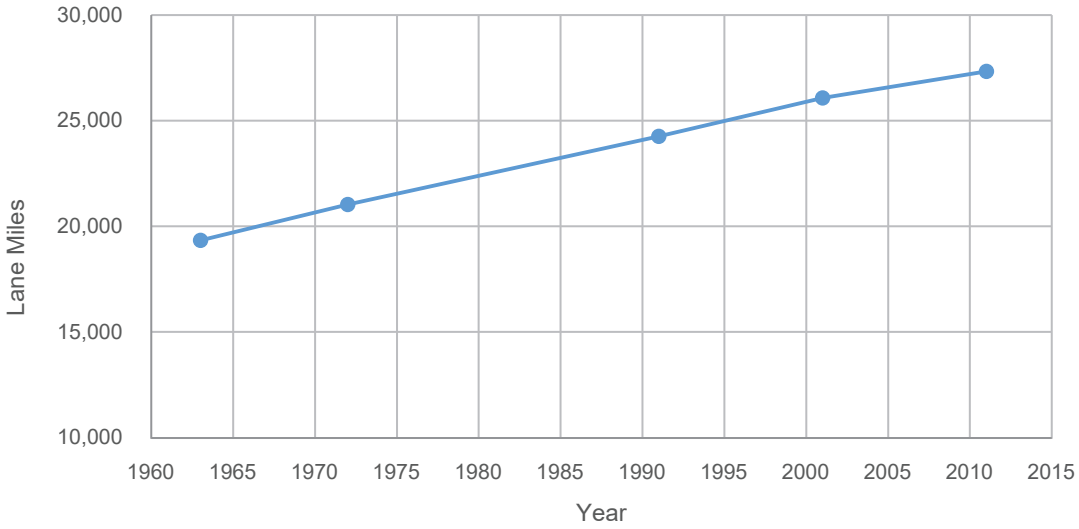
The now widespread practice of providing snow and ice-free, dry pavement surfaces through enhanced winter road maintenance came into being in the mid-1950s. Prior to World War II, snow pack was generally permitted to accumulate on pavement surfaces, and it was common practice to utilize chains and later studded tires on automobile and truck wheels to provide traction. Some urban residents placed their automobiles into winter storage and utilized the then extensive streetcar, electric interurban railway, and steam railway systems of the Region for their daily transportation. The shift to dry pavement winter road maintenance practices required the use of road salt to facilitate snow and ice removal from pavement surfaces. As the number of lane miles of public streets and highways expanded within the Region (see Figure 1), as public expectations of safe, high-quality winter road operating conditions grew, and as the attendant use of road salt in winter road maintenance practices increased, public concern developed over the environmental impacts of the use of road salt.

Need for and Purpose of Proposed Study

Chloride contributions to surface water and groundwater resources come from a number of significant sources, but the use of road salt in winter street and highway maintenance operations is the most visible of these sources and, thus, receives the most public attention to, and concern over, the environmental impacts of its use. As already noted, road salt damages metal and concrete, thereby affecting the condition of motor vehicles and the structural integrity of roadway pavements and bridges. Road salt can damage roadside vegetation, and can damage soil by changing its structure and fertility. Road salt runoff, along with chloride from other sources, enters streams and water courses and accumulates in lakes, reservoirs, and wetlands, thereby harming aquatic plants and animals. Chloride from multiple sources, including road salt, may also enter and accumulate in groundwater.

Figure 1

LANE MILES OF ROADWAYS WITHIN SOUTHEASTERN WISCONSIN



NOTE: Does not include private roads, some roadways in public parks, or roadways on institutional lands.

Source: SEWRPC

To the extent that chloride accumulates in surface water and groundwater bodies which are sources of drinking water, it may affect human health. Such accumulation may also raise consumer complaints about the taste of drinking water. Wildlife is also subject to ill effects from ingesting chloride by drinking polluted surface water, particularly runoff from snow and ice melt. Some of the additives to road salt used in winter street and highway maintenance such as ferrocyanide – used to prevent caking – contribute to the water pollution problem. Water contaminated by chloride will settle to the deepest parts of lakes and reservoirs, leading to chemical stratification and impedance of annual turnover and mixing, thereby preventing dissolved oxygen from reaching the lower layer of the water body, which may become unable to support aquatic life.

The Prospectus cites several studies that provide evidence that chloride concentrations have been increasing in the surface water resources of the Region. The increases have been documented through long-term water quality monitoring of streams and rivers. Figure 2 displays the long-term increases in chloride concentrations in water samples collected from several of the inland lakes of the Region. Some of the studies indicate that during the winter months concentrations of chloride in some streams of the Region may be reaching levels capable of causing substantial harm to aquatic organisms. Studies have also shown that chloride concentrations in surface waters are increased by urbanization.

Monitoring data also suggest that within the Region chloride may be accumulating in groundwater. Over time, such accumulation may affect the safety of groundwater as a source of drinking water. Contaminated groundwater may also be discharged to some streams as base flow, affecting the chloride concentration in the streams.

The available data indicate that large quantities of chloride from various sources, and particularly from the use of road salt, are being discharged into the environment in a widely dispersed manner. The fact that chloride is not removable from water by the usual treatment methods, is not biodegradable and, therefore, accumulates in the environment, makes the threat posed to the maintenance of a sustainable environment particularly dangerous. A study of the effects of the discharge of chloride to the environment and of the trends in the volume of such discharge deserves careful consideration. The needed study will serve the following purposes:

- Provide accurate data on the historic, current, and probable future[3] use of road salt in winter street and highway maintenance operations and on the attendant contribution of chloride to the environment, and provide similar data for the other significant sources of chloride within the Region. The data would enable determination of the relative significance of the various sources of chloride. The data would be provided by pertinent geographic areas including counties and municipalities, surface watersheds, and areas having a high potential for pollution of the groundwater.

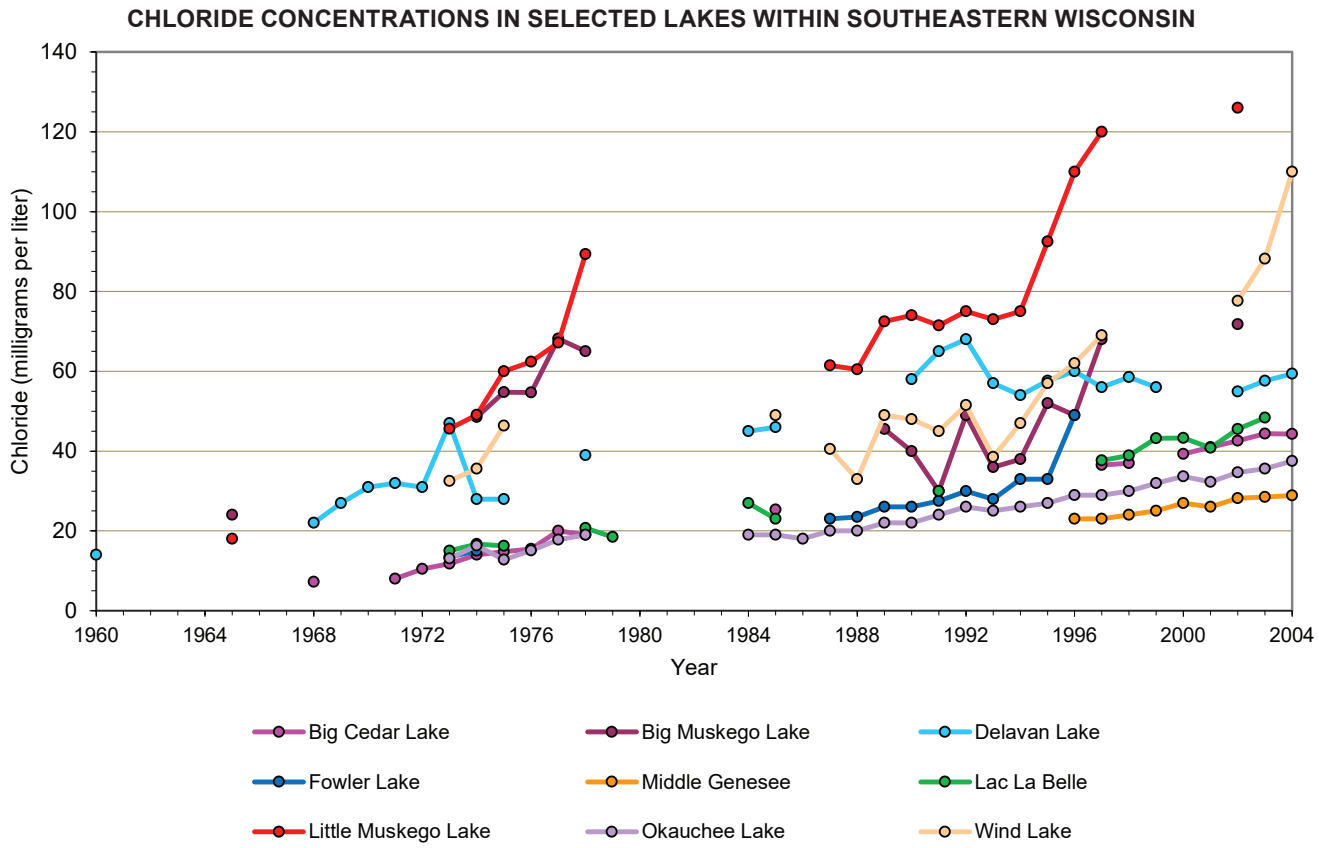
- Provide accurate data on the historic, current, and probable future surface water and groundwater quality conditions with respect to chloride content within defined surface watersheds, and areas having a high potential for pollution of the groundwater;

- Provide surface water and groundwater quality standards related to human health, the health of freshwater aquatic plant and animal communities, to fertile soil conditions and to the health of terrestrial plant and animal communities;

- Identify particular surface water and groundwater resources significantly impacted by the historic, current, and probable future use of road salt and the contributions of other significant sources; and

[3] *Future land use will be determined based on the recommended regional land use plan for the year 2050 as set forth in SEWRPC Planning Report No. 55,* Vision 2050: A Regional Land Use and Transportation System Plan for Southeastern Wisconsin*, publication in progress.*

Figure 2



- Evaluate alternative means for reducing the effects of road salt, and other significant sources of chloride, on the surface water and groundwater resources of the Region.

Scope of Work

The prospectus outlines the general scope and content of the proposed study of the effects of the introduction of chloride into the environment of the Region. To provide accurate baseline and trend data, the study will include the conduct of a number of inventories. These include inventories of:

- **State, county, and municipal winter road maintenance practices**
  Including historical and current quantities of road salt used; the distribution of the salt loadings throughout the Region as determined by the lane miles of street and highway facilities located in delineated analysis areas;

- **Private facility salt use**
  Including private roadways, pedestrian walks, and parking areas;

- **Other sources of salt contamination of surface water and groundwater**
  Including wastewater treatment plants, on-site sewage treatment and disposal facilities, landfills, large agricultural feed lots, fertilizers, and industrial facilities.

- **Climatological data**
  Including data on winter ambient air temperatures and precipitation patterns, snowfall accumulations, and seasonal precipitation frequencies;

- **Surface water quality data**
  Including current and historic stream, inland lake, and groundwater chloride concentrations.

  Past Commission studies have verified that there are few data available on instream, or in-lake, chloride concentrations during the winter. Under the proposed study, "data loggers" would be deployed at 30 to 40 lake and stream locations and operated continuously for a specified period of time to measure specific conductance[4] and, thereby, chloride concentration. The data collected by the data loggers will establish an existing baseline condition regarding the chloride content of representative streams and lakes.

  The collection of new chloride concentration data will be targeted to those lakes and streams which might be expected to be most directly affected by chloride from road salt application or other potential sources, but it will also include some waterbodies that are judged to be less susceptible to chloride pollution, enabling the

[4] Specific conductance can be readily measured at a relatively low cost, and can be converted to estimates of chloride concentration through establishing empirical, mathematical relationships between specific conductance and chloride concentration. The collection of new specific conductance data will be supplemented by collection of water samples at the same locations as the conductance data. Those water samples will be analyzed for concentrations of chloride and of the constituent chemicals that comprise specific conductance. Collection of these data will enable the validation and refinement of mathematical regression relationships between specific conductance and chloride on a site-specific basis.

establishment of a baseline condition that is representative of a range of chloride impacts on the surface water resources of the Region.

- **Groundwater quality data**
  Including historic and current chloride concentrations in the shallow and deep aquifers underlying the Region. The data would be collated and collected by delineated analysis areas.

- **Land use data**
  Including historic and current amount, type, intensity, and spatial distribution;

- **Natural resource base**
  Including historic and current extent and quality of wetland, woodland, and wildlife habitat areas with particular attention to natural and critical species habitat areas;

- **Mapping**
  Base Maps
  General planning base maps of the Region will be required for the conduct of the study which permit information collected in the study inventory operations to be spatially located and displayed. Such base maps are maintained by the Commission and will be available for use in the study. The base maps show, among other information, all streams, lakes, and reservoirs; major watershed divides; public streets and highways; railways; U.S. Public Land Survey System township, range, and section lines; and civil division boundary lines.

  Large-Scale Topographic Maps, Cadastral Maps, Ratioed and Rectified Aerial Photographs, and Orthophotographs
  Large-scale topographic maps, cadastral maps, ratioed and rectified aerial photographs, and orthophotographs prepared to Commission standards and obtained by the Commission and the counties and municipalities of the Region provide more detailed information than that provided by the general base maps. Those large-scale maps, which have been prepared periodically since the Commission was established in 1960, will be used to obtain information on such natural features as relief, location of watershed and subwatershed boundaries, location of streams and water courses, lakes, reservoirs, and wetlands; upon such manmade features as civil division boundaries, real property boundaries, street and highway pavements, and connected impervious areas such as driveways and parking lots; and on the location and configuration of principal buildings.

  Land Information Systems
  The Commission survey control network and the topographic and cadastral maps based upon that network provide the essential foundational elements for the creation of computerized, parcel based, land information, and public works management systems within the Region. Such systems have been prepared and are maintained by all seven of the counties comprising the Region and by a number of municipalities. These systems contain important spatial information useful in this study, such as land use and soils, and will be used throughout the study in the conduct of the inventories and in the preparation of needed analyses and forecasts.

Wind Lake in Racine County is one of the Region's lakes where increasing chloride concentrations have been measured. Credit: SEWRPC

Analyses and Forecasts

Inventories provide factual information about historic and current situations. Analyses critically examine the inventory information to identify the essential elements of that information and to develop functional relationships that will facilitate conduct of a study and use of the findings of the study. Forecasts, based upon the inventory information and analyses, project the identified critical elements to provide scenarios of probable future conditions. The Region will be divided into analysis areas to facilitate the evaluation of chloride loads from road salt and other significant chloride sources and the impacts of those loads on the surface water and groundwater resources of the Region. Those analysis areas will be delineated based on watershed, subwatershed, and subbasin boundaries, and by groundwater recharge areas, considering the locations of:

- Existing U.S. Geological Survey continuous streamflow gages;
- State, county, and municipal road maintenance jurisdictional areas;
- Potentially impacted lakes, streams, or rivers;
- Wastewater treatment plant discharges; and
- Areas served by municipal separate storm sewer systems.

The following analyses and forecasts are proposed to be conducted under the study:

- **Analyses of historic and possible future climatological data**
  Including analyses of historic winter precipitation data, of the number of snowfall and freezing rainfall events per season, of trends in the number of such events, of historic winter ambient air temperatures, and projections of possible future winter snowfall and rainfall conditions incorporating the potential effects of climate change.

- **Analyses of water quality data**
  Including analysis of existing surface water and groundwater quality data, and collection and analysis of additional data on specific conductance and chloride concentrations for streams, lakes, and groundwater aquifers.

The data must be assembled in a form suitable for use in evaluating trends in concentrations in surface water and groundwater resources throughout the Region; making comparisons to chronic and acute toxicity levels; and correlating the locations where data are available on road salt sources and other chloride sources. The analyses will identify the inland lakes and groundwater recharge areas with a high potential for contamination.

Some of the required analyses have been completed by the Commission under its areawide water quality management and comprehensive watershed planning programs, and will only need to be collated and reviewed for purposes of the proposed study. Other analyses will have to be conducted to account for additional data collected since those planning programs were completed

- **Analyses of land use and related transportation system and related road salt use data**
  Including determination of the various degrees of road salt use under existing and planned land use and related transportation system development.

  The same analysis areas delineated for the conduct of the inventories would be used in these analyses of salt loadings and the impacts of such loadings on the surface water and groundwater resources. Within each of the analysis areas, existing and planned future lane miles of freeway, expressway, standard arterial, collector, and land access streets would be quantified together with impervious areas other than street and highway pavements that are likely to be subject to winter road salt use to control ice and snowpack formation. Road salt volumes applied would be estimated for each analysis area based upon consideration of the lane miles of the various jurisdictional and functional street and highway classifications, road salt application rates utilized by the various agencies responsible for winter street and highway maintenance, the number of anticipated applications events, and the number of passes over each section of street and highway during each event. The total seasonal road salt application volume in each street and highway maintenance jurisdiction for the baseline year will be computed, compared to the actual application volume for that jurisdiction, and the estimation procedure will be adjusted as necessary to obtain good agreement with baseline applications volumes. That estimation procedure will then be used to develop forecasts of application volumes for the year 2050. Projections of road salt applications will be made assuming current application practices applied to the existing and planned lane miles of facilities. The projections will be developed to encompass the anticipated range of conditions representing the seasonal average, minimum, and maximum number of events requiring salt application within each analysis area and each jurisdiction as determined from historic data obtained from counties and municipalities. Projections will also be developed for possible alternative maintenance practices.

  In addition, estimates of deicing salt volumes applied to areas other than roads, will be made for the baseline year and year 2050 using data from the regional land use inventory and estimates of application rates obtained from surveys of organizations responsible for winter maintenance of such areas.

  Those chloride sources other than for anti-icing and deicing for which the relative baseline year contributions of chlorides are found to be significant will also be included in the baseline year and alternative future forecasts and analyses. Future volumes of chloride from those “other significant sources” will be estimated based on current volumes adjusted to reflect incremental changes under 2050 planned land use and population forecasts.

  The baseline seasonal road salt application volumes and the chloride volumes from other significant sources for each analysis area will be converted to estimates of average seasonal chloride concentrations in the receiving stream reaches and inland lakes.

  The potential effects of chlorides on groundwater will be evaluated through combining analyses of trends in chloride concentrations in groundwater based on historic measurements with estimates of the amounts of chloride transported to the groundwater under baseline and alternative future application scenarios to provide an assessment of the relative impacts on groundwater of the various application scenarios, and of the implications for public health.

- **Analysis of natural resource base**
  Including identification of the natural areas and critical species habitat areas within the Region that may be adversely affected by the use of road salt applied on streets and highways and other paved areas such as parking lots located in proximity to the natural resource elements concerned.

Description of the Current State-of-the-Art of Activities Affecting Chloride in the Environment

A comprehensive description of the current state-of-the-art of winter street and highway maintenance practices, and of the treatment of other significant sources of chloride, will be developed to examine significant chloride sources in the environment, including attendant data on costs and best practices and technologies for reducing chlorides within the environment.

The descriptions will include an evaluation of actions that can be taken to reduce the potential discharge of chlorides to the environment and the impacts of the discharges on the surface water and groundwater resources of the Region.

Study Recommendations

Based upon the findings of the proposed study, recommendations will be presented for the effective reduction of chloride contributions to the environment. With respect to road salt use, the recommendations may consist of guidelines widely applicable to winter street and highway maintenance practices, but may also include specific recommendations relating to facilities located within the watersheds of lakes and streams and groundwater recharge areas determined to be particularly vulnerable to, and affected by, current practices and projected future conditions. A similar set of recommendations will be presented for each of the other significant sources of chlorides. The recommendations will be addressed to the units and agencies of government responsible for the operation of the

Figure 3

FUNDING STRATEGY FOR SOUTHEASTERN WISCONSIN REGIONAL CHLORIDE IMPACT STUDY

Agency	Year 1	Year 2	Year 3	Year 4	Total
SEWRPC	$167,418	$167,418	$119,083	$119,083	$ 573,002
WisDOT	$167,417	$167,416	$119,083	$119,083	$ 572,999
WDNR	$167,417	$167,416	$119,083	$119,083	$ 572,999
Total	$502,252	$502,250	$357,249	$357,249	$1,719,000

Source: SEWRPC

street and highway facilities concerned, and to private sector organizations responsible for the maintenance of facilities such as major parking lots. As is the case for all of the Commission's work, the recommendations will be entirely advisory to the public units and agencies of government and to the private sector organizations concerned.

Conduct of the Study and Presentation of Findings and Recommendations

It is proposed that the study be conducted by the Commission staff under the guidance of a Technical Advisory Committee created for this purpose. The Committee membership would be the same as that of the Technical Advisory Committee created to prepare the prospectus, with some possible additions or deletions for various reasons. The findings and recommendations of the study will be presented in a series of technical memorandums and a Commission technical report.

Cost and Proposed Funding

The study is proposed to be carried out over a four-year period and is estimated to cost $1.7 million. The Prospectus recommends that the necessary funding for the study be provided by three agencies. Because of the importance of road salt use in winter streets and highway maintenance and the potentially adverse effect of such use on the transportation infrastructure and on the surface water and groundwater resources of the Region, and particularly on the inland lakes of the Region, the Prospectus recommends that funding be requested from the Wisconsin Department of Transportation (WisDOT) and the Wisconsin Department of Natural Resources (WDNR). As shown in Figure 3, it is recommended that the cost be shared one-third by WisDOT, the WDNR, and by the Regional Planning Commission. The average annual cost over the four-year study would thus approximate $143,000 per year for each agency concerned.

Concluding Comments

The cost of the proposed chloride study would constitute a sound investment of public monies. The study would provide invaluable baseline data on the relative contribution of road salt and other sources of chloride to the environment within the Region and on attendant effects upon water resources. The proposed study would also address recommendations for abatement of the pollution from chloride sources that may be expected to be considered and acted upon by the cognizant units and agencies of government.

An historical example can be cited to support this claim of potential effectiveness. The Commission in 1979 adopted a regional water quality management plan that was quickly and formally adopted by the Wisconsin Department of Natural Resources, by the U.S. Environmental Protection Agency, by the constituent county boards, and by a number of municipal governments and special purpose agencies operating within the Region. Elements of the plan – such as protection of the environmental corridors of the Region were also recognized by and used to formulate plan implementation policies by agencies such as the U.S. Army Corps of Engineers.

The regional water quality management plan, subsequent to its wide adoption, enjoyed a successful record of implementation. The plan recommended the abandonment of 20 of the 64 public plants and 35 of the 59 private wastewater treatment plants in operation at the time in the Region, and the construction of ten new public plants to serve consolidated service areas at adequate levels of treatment. All of these recommendations were carried out by the local governments concerned over a period of 30 years. Other major recommendations of the plan included the construction of the deep tunnel sanitary sewage and stormwater storage facilities in the Milwaukee area, the abatement of industrial wastewater discharges to surface waters, and the institution of nonpoint pollution abatement programs. Implementation of the plan has resulted in significant, measurable improvements in surface water quality within the Region. This example of the implementation of what was a strictly advisory plan is cited only to indicate that a sound chloride pollution abatement plan—although any recommendations contained in that plan would be strictly advisory—may be expected to be substantially implemented over time.

The regional water quality management plan recommendations addressed the abatement of the conventional pollutants associated with sanitary wastes – primarily suspended solids and biochemical oxygen demand. The Region now faces a need to address the abatement of a form of widespread surface water and groundwater pollution – the contribution of chloride to, and the accumulation in, the surface water and groundwater resources of the Region. This pollutant – unlike the conventional pollutants – accumulates in the environment, and, therefore, presents a threat to the long term sustainability of the current quality of the water resources of the Region and particularly of the quality of the inland lakes and groundwater of the Region. The conduct of the proposed study would constitute an important first step toward the abatement of this form of water pollution and toward the long term protection of the surface water and groundwater resources of the Region.

Watch for Updates

VISION 2050 is SEWRPC's land use and transportation planning effort for Southeastern Wisconsin.

Learn about VISION 2050 at **www.vision2050sewis.org**.

Follow us on Twitter at **@vision2050sewis**.

The **Southeastern Wisconsin Regional Planning Commission** is the official advisory areawide planning agency for land use and infrastructure for the seven counties in the Region.

More information can be found at **www.sewrpc.org.**

Please contact us at **sewrpcnews@sewrpc.org**.

Commission Adopts VISION 2050

The three-year process to prepare VISION 2050 was completed as the ***Regional Planning Commission*** acted unanimously to adopt VISION 2050 at their July 28 meeting. This adoption followed the unanimous approval of VISION 2050 by the Commission's Advisory Committees on ***Regional Land Use Planning*** and ***Regional Transportation System Planning*** on June 29. The full report and summary materials are currently being prepared and will be made available this fall, at which point the Commission will send VISION 2050 to each affected unit and agency of government requesting their consideration and endorsement.

VISION 2050 recognizes that we have reached a pivotal point in the Region's development. A major shift is occurring as the Baby Boomers exit the workforce, and the Region will need to attract new residents to grow jobs. VISION 2050 recommends a long-range vision for land use and transportation in Southeastern Wisconsin, building on the Region's existing strengths and improving areas where the Region does not compete well with its peers, in order to increase the quality of life for residents and businesses and attract new growth to the Region.

Its recommendations to local and State government can help to shape and guide land use development and transportation improvement, including public transit, arterial streets and highways, and bicycle and pedestrian facilities, to the year 2050.

A critical part of implementing VISION 2050 will involve funding. Given current funding levels and restrictions, we cannot expect to fund the significantly improved public transit system recommended under VISION 2050, and transit service is expected to continue to decline across the Region. VISION 2050 identifies possible ways to address this potential funding gap. In addition, funding for streets and highways may need to be addressed given that fuel tax revenues have not kept up with inflation, resulting in a need for significant bonding.

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