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WORKPLAN
for
Subcommittee on Water Withdrawal and Use

Project Element Three

A WATER RESOURCES MANAGEMENT DECISION SUPPORT SYSTEM FOR THE GREAT LAKES

Work in Program Year 2001-2002

This document outlines a proposed workplan for the *Technical Subcommittee (TSC) on Water Withdrawal and Use* (Project Element Three) for the project ***A Water Resources Management Decision Support System for the Great Lakes***. Staff support for this implementation of this workplan will be provided by the Great Lakes Commission and will cover the program period from January 1, 2001 to September 30, 2002. The workplan consists of six primary components: Subcommittee Administration and Support; Inventory of Water Withdrawal and Use Information; Management of the Regional Water Use Database; Needs Assessment; Findings, Recommendations and Implementation Plan; and Report on Status of State/Provincial Water Use Programs. Project activities under this element will include the development of an inventory on current water withdrawal, consumptive use and diversion information; an evaluation/prospective redesign of the existing Regional Water Use Database to enhance its value as a decision support tool; database software upgrading; and improving access and use by decision makers and other stakeholders. The inventory and other products under this element will be made available in electronic and hard copy, with the former accessible on the Internet (GLIN). It will be incorporated into the Great Lakes Water Use web site discussed in Project Element Two. A detailed description of the individual workplan elements follows.

A. Subcommittee Administration and Support

Under the direction of Tom Crane, Manager, Resource Management Program, Commission staff will provide:

- 1) **Basic secretariat services.** This will include planning, scheduling and organizing meetings and conference calls, preparing and distributing meeting agendas, summaries and other support materials and additional functions as directed by the TSC.
- 2) **Develop and revise the subcommittee workplan.** Commission staff will develop, write and regularly review the detailed workplan for project element three of the project ***A Water Resources Management Decision Support System for the Great Lakes***.
- 3) **Electronic communication.** In conjunction with secretariat services described above, every effort will be made over the project period to communicate with TSC members electronically to reduce the amount of paper and time required for hard copy mailings.

Timeline and Responsibilities: These activities will be ongoing throughout this project. Staff support will be provided by Tom Crane, Marilyn Ratliff and Dan Blake.

In fulfilling the responsibilities outlined above, Commission staff will also provide the following support and services to advance the goals and objectives of the project and meet the needs of the TSC.

B. Inventory of Water Withdrawal and Use Data and Information

Using the Great Lakes Commission's existing Great Lakes Regional Water Use Data Base as a starting point, the TSC will review and assess the latest available water use data as it relates to withdrawals, in-stream uses, diversions and consumptive use. This data will be compiled from a variety of sources and characterized on the basis of established criteria (e.g., reliability, estimated vs. measured, comprehensiveness). Sources of water use data to be reviewed will include the Great Lakes Regional Water Use Database (managed by the Great Lakes Commission); USGS water use programs (especially the agency's five year water use reporting program); Environment Canada's water use programs including a new initiative designed to gain baseline information on water supply, use and demand at a sub-basin level and to make projections for the future including the potential impacts of climate change. Two reports will play a prominent role in the conduct of this review of water use programs are:

- A 1985 report titled *Survey and Preliminary Evaluation of the Existing Water Use Data Collection Systems in the Great Lakes State and Provinces*. This report was authored by the Great Lakes Commission. The Great Lakes Commission formed a Water Data Collection Task Force in early 1985 to evaluate regional data collection efforts. Through a survey, the Task Force determined the extent of withdrawal, return flow and water consumption data in the Great Lakes states and provinces, along with the assessment, comparability and compatibility of the data.
- A 1986 report titled *Water Use Data Collection Programs and Regional Data Base in the Great Lakes-St. Lawrence River Basin States and Provinces* (U.S. Geological Survey Open File Report 86-546, December 1986). This report examined and compared Great Lakes state and provincial data for nine water use categories and influenced the design of the Regional Water Use Data Base.

Commission staff, with oversight from the TSC, will also review information from several more recent initiatives including the International Joint Commission's recently completed reference study on Great Lakes-St. Lawrence River water export, use and diversion.

Also, the USACE, NOAA's Water Levels Section, and Environment Canada have all conducted studies and/or collected data pertinent to and supportive of the proposed work.

After review of the existing information from the above mentioned sources as well as others, a report will be prepared in the form of an inventory, highlighting the relevant programs and available data. Project activities under this section will include an evaluation/prospective redesign of the existing data base to enhance value as a decision support tool, software upgrading, and improving access and use by decision makers and other stakeholders. The inventory will be made available in electronic and hard copy form and will be incorporated into the Great Lakes Water Use web site discussed in Project Element Two.

Timeline and Responsibilities: Tom Crane shall serve as lead staff person on this activity with the assistance from Dan Blake as necessary. This activity will begin in the second project quarter with an interim report prepared by the fifth quarter to coincide with interim findings and recommendations from project element two (Status Assessment of Water Resources) and project element four (Inventory on Ecological Impacts). The interim report will be reviewed by the TSC and the PMT and finalized in the sixth quarter.

C. Management of the Regional Water Use Data Base.

The Commission staff will continue to manage the Great Lakes Water Use Data Base established under the Great Lakes Charter of 1985. This Data Base will be used as a starting point for the committee to conduct its needs assessment on water use data and to discern where gaps in data exist and whether the data base needs to be expanded and redesigned to meet state/provincial and regional needs. Efforts will be made to develop sessions or activities related to the Great Lakes Basin Program to coincide with regional workshops, conferences, symposia and other events.

- 1) **Water Use Data Reports** Water use data reports will be prepared by the Commission under the guidance of this subcommittee. While this is not an activity specifically mandated by the Great Lakes Protection Fund under this project, the production of these reports will provide the incentive for the states/provinces to critically review their data collection and reporting programs and will also be used to support the water withdrawal and use needs assessment under this project element. The reports will be much expanded versions of the water use reports previously produced for the Great Lakes states and provinces by the Great Lakes Commission serving as the repository for the Great Lakes Regional Water Use Database. The expanded reports will be available both in hard copy and electronic format and will include descriptions of the state/provincial data collection and reporting programs as well as an assessment of detailing emerging issues

Timeline and Responsibilities: Marilyn Ratliff will serve as lead staff person on this activity. A draft 1998 water use report will be completed by the Fall of 2001, with a final report by the end of the calendar year. The 1999 water use report will be completed by mid-year of 2002, with the 2001 water use report anticipated by the end of the third calendar quarter of 2002. A plan for producing back reports 1994-97 will be developed by the TSC and added to this work plan at a future date.

- 2) **Database Population** The original categories of use for the Great Lakes Regional water use database were established by the Water Resources Management Committee in consultation with input from the Great Lakes states and provinces and the U.S. Geological Survey. These categories were revisited and affirmed several years later by the Committee's Technical Work Group. The water use reports described above will provide data for the current nine categories. Once a full report is produced using the upgraded software. The TSC will conduct a thorough review of the categories to make sure that they are sufficient to meet state/provincial and regional needs.
 - a) *Review and Evaluation of Consumptive Use Coefficients for water use categories.* The TSC has been asked by the Project Management Team (PMT) to review and evaluate the consumptive use coefficients that were previously prepared by the Technical Work Group of the Water Resources Management Committee. This will include a review of coefficients used by USGS, Environment Canada and others, and will factor in any site-specific or category-specific studies that have been conducted by the states/provinces.

Timeline and Responsibilities: Tom Crane shall serve as lead staff person on this activity with the assistance from Marilyn Ratliff, as necessary. This activity will begin in the second project quarter with an interim report prepared by the fourth quarter after the completion of the 1998 water use report. The Review of the consumptive use coefficients will begin in the third project quarter and be completed by the fifth project quarter. Final recommendations from the TSC regarding this activity will be included as part of the overall project report.

- 3) **Database Refinement and Testing** Along with reviewing the water use categories, the TSC will also critically evaluate the database to ensure that it has the capability, flexibility and adaptability that is required by the region. The TSC will review all report functions, data display functions, data import

and export functions and different ways in which data can be categorized and manipulated. The TSC will then evaluate these functions related to the needs of the Great Lakes states/provinces and the region.

Timeline and Responsibilities: Tom Crane shall serve as lead staff person on this activity with the assistance from Marilyn Ratliff, as necessary. The refinement and testing of the upgraded database will begin in project quarter four and continue through project quarter five after the completion of the 1998 water use report. This activity will be an integral part of the database redesign (see item C-4 below) and will include outcomes associated with project element two (Status Assessment of Water Resources) and project element four (Ecological Impacts) into the database.

- 4) **Database Redesign** An initial redesign of the Great Lakes water use database was completed in late 2000 under a previous and separate contract between the Great Lakes Commission and Eastern Michigan University. This redesign was reviewed in advance by the Great Lakes States and Provinces in 1999. Based upon outcomes of this project, additional modifications to the database may occur and be implemented by the Great Lakes Commission. The TSC will consider how to incorporate outcomes associated with project element two (Status Assessment of Water Resources) and project element four (Ecological Impacts) into the database.

Timeline and Responsibilities: Tom Crane shall serve as lead staff person on this activity with the assistance from Marilyn Ratliff, as necessary. This activity will begin in quarter one and will be continue through quarter five. This element was originally slated to be completed in quarter three. Completion in quarter five allows for the incorporation of outcomes associated with project element two (Status Assessment of Water Resources) and project element four (Ecological Impacts) into the database. These outcomes are expected in quarter four.

- 5) **Software Upgrading** Revised software for the Great Lakes Water Use Database was provided to the sub-committee in late 2000. This software has been successfully installed in all jurisdictions except Illinois. As with the database redesign, the software may be modified later in the project period based upon the needs assessment and project outcomes. A second contract with Eastern Michigan University may be established at that time to fulfill this project element task.

Timeline and Responsibilities: Marilyn Ratliff shall serve as lead staff person on this activity with the assistance from Tom Crane, as necessary. As with item C-4 above, this activity will begin in quarter one and will be continue through quarter five. This element was also originally slated to be completed in quarter three. Completion in quarter five allows for the incorporation of outcomes associated with project element two (Status Assessment of Water Resources) and project element four (Ecological Impacts) into the database. These outcomes are expected in quarter four.

- 6) **State/Provincial approval of software and new report format** State/provincial approval of the new database design, software and report format will be sought through the project management team, working with the water resources agency directors in their jurisdictions. This activity will follow a thorough evaluation of the results from activities C-1 through C-4. Since the PMT and TSC both have representation from all ten Great Lakes jurisdictions, the recommended approval to state/provincial officials should be made with a very high level of comfort.

Timeline and Responsibilities: Tom Crane shall serve as lead staff person on this activity with the assistance from Mike Donahue, as necessary. State/provincial approval of the new database design, software and report format will be sought beginning in quarter five through quarter eight.

D. Data Needs Assessment

Project Element Three activities will address unmet data needs through the updated, enhanced and detailed inventory of Great Lakes water withdrawals, consumptive uses and diversions described in sections B and C above. This data needs assessment will occur throughout all of the project work plan elements described above. Input from the PMT and the stakeholders advisory committee (SAC) will be solicited throughout the project.

This information will be presented in the form of an “**Action Agenda**” for Great Lakes water withdrawal, diversion and consumptive use information. The data needs assessment will feature findings and recommendations to include: additional recommended upgrades to the water use database; recommended software improvements; improving access to and use of data for both water resources managers and the general public; improving the ability to use data for trend analysis; state/provincial funding and programmatic needs; and other aspects of water resources management (e.g, forecasting, demand management, water conservation activities).

Timeline and Responsibilities: Tom Crane shall serve as lead staff person on this activity with the assistance from Dan Blake and Marilyn Ratliff, as necessary. This activity will begin in quarter one and will be continue through quarter eight. This element will integrate outcomes from project elements two (Status Assessment of Water Resources) and four (Ecological Impacts) and to allow for full and complete input from the PMT and the SAC, this assessment will be presented along with all of the project outcomes as part of the final project report.

E. Project Element Three Findings, Recommendations and Implementation Plan

- 1) **Final Report on the Status of State/Provincial Data Collection and Reporting Programs, Jurisdictional and Regional Needs and Emerging Issues .** A final project on project element three activities will be prepared and included as part of the overall project report. Jurisdictional needs and emerging issues will be summarized in the final report and presented in full detail in the needs assessment described in Section D above.

Timeline and Responsibilities: Tom Crane shall serve as lead staff person on this activity with the assistance from Marilyn Ratliff, as necessary. This activity will begin in quarter six and will be continue through quarter eight.

- 2) **Recommendation to Institutionalize the Water Use Data Collection and Reporting Process**
Following state/provincial approval of the redesigned database, upgraded software and water use data report format a recommendation will be made to the Great Lakes governors and premiers to institutionalize the water use data collection and reporting process. This was previously done as part of the Great Lakes Charter process back in the late 1980s and had great initial value because it provided a consistent and uniform approach to water use data collection and reporting. The process under this project element will provide for a consistent approach necessary to ensure greater confidence in the quality of data at both the individual jurisdiction and regional levels.

Timeline and Responsibilities: Tom Crane shall serve as lead staff person on this activity with the assistance from Marilyn Ratliff, as necessary. This activity will begin in quarter six and will be continue through quarter eight.

- 3) **Communication and Dissemination Strategy.** The Great Lakes Commission staff will take the lead on developing and expanding communication tools for the project. The centerpiece of this effort will be the development of a Great Lakes Water Use web site that consolidates and greatly expands existing online information. Results of the work accomplished under project element three will be displayed in tabular, chart, graph and narrative format on the project web-site. Data and data sources will be able to be retrieved via clickable maps on the basis of jurisdiction, lake basin, and/or use category. The narrative portion of the inventory will characterize and assess all data sources. The “Action Agenda” for water withdrawal, diversion and consumptive use information (see item D-1) will also be provided on the web-site. End of project communications activities related to project element three will be coordinated with the PMT and Commission staff involved in projects elements two, four and five. A detailed dissemination plan is provided in the overall project workplan.

Timeline and Responsibilities: Tom Crane shall serve as lead staff person on this activity with the assistance from Marilyn Ratliff, as necessary. This activity will begin in quarter seven and will be continue through quarter eight.

F. Report on Status of State/Provincial Water Use Programs and Emerging Issues

In quarter three, Commission staff with oversight from the TSC began a process for compiling detailed information on state/provincial water resources management programs and activities. This information is being gathered through a survey process implemented in the summer of 2001. The survey was developed by Commission staff and reviewed and modified by the TSC. The survey was designed to capture information on general water use programs as well as information on water conservation activities and drought contingency plans. Important information on legislative authority, regulatory programs and staff resources is also being compiled. The Great Lakes Protection Fund along with the Great Lakes states and provinces will receive at the end of the project period a report on these above mentioned items. A draft report, expected in quarter five, will be reviewed by Commission staff, the PMT and the SAC and followed up by interviews and additional research necessary to complete the survey and report.

Timeline and Responsibilities: Dan Blake will serve as lead staff person on this activity with the assistance from Tom Crane and Marilyn Ratliff, as necessary. The draft report on state/provincial water use programs will be completed in quarter five with the final report completed by quarter eight.

G. Water Conservation

The PMT has directed the Water Withdrawal and Use TSC to further develop and define “environmentally sound and economically feasible water conservation” as listed in the first bullet of Directive #3 of the Great Lakes Charter Annex. Historically, water conservation programs in the Great Lakes-St. Lawrence region have been developed and implemented at the local level including such activities as watering bans, public water system upgrades to reduce leakages, metering, low flow toilets and shower fixtures, etc. A regional or basin-wide approach has never been instituted in the Great Lakes-St. Lawrence as it has the Western States.

Questions and approaches to a basin-wide uniform and consistent approach to water conservation are just now being developed. The work under this element of the plan may include the following:

- Assessing and recommending the appropriate level of water conservation for different categories of use or across the board.
- Reviewing approaches such as targeting the largest diverters and consumptive users for focused conservation efforts.

- Reviewing and assessing education and communications strategies for promoting conversation.

Background information on state and provincial water conservation activities is being compiled through the survey and report on water use programs described above in **Section F**. State and provincial drought contingency plans may provide a good framework for a consistent basin-wide approach for developing policies or the legislative mandates to effectively implement uniform and consistent regional water conservation measures at the state/provincial level. A review of typically implemented local water conservation practices in the basin will also be performed possibly presented in the form of “case studies”. In addition, other efforts and experiences from outside the basin and North America will be reviewed. The PE 3 TSC will prepare a detailed report that will be incorporated into the final project report.

Timeline and Responsibilities: This work plan element is being reviewed by the TSC and Commission and recommendations on the timeline and responsibilities will be provided to the PMT prior to its winter 2002 meeting.

H. Consumptive Use of Great Lakes Water Resources

The Great Lakes Charter of 1985, called for Great Lakes states and provinces to establish a common base of data and information regarding the use and management of Great Lakes water resources. Each state and province was encouraged to collect and maintain in comparable form, data regarding location, type and quantities of water withdrawals, diversions and consumptive uses.

Since the establishment of the Great lakes Regional Water Use Database in 1988, it has been clear to the Great Lakes states and provinces that accurate and reliable information pertaining to consumptive uses of Great Lakes water is not readily available.

Consumptive uses of water for the nine categories of use in the Great Lakes Regional Water Use Database are estimated or calculated using a coefficient based on estimates provided by sector or industrial category or in some few cases, studies that have been conducted. The U.S. Geological Survey has provided much leadership and information pertaining to the use of coefficients for consumption of Great Lakes water.

In 1989, the Technical Work Group of the Water Resources Management Committee, individuals representing the state and provincial water resources management agencies, conducted a series of conference calls to discuss, review and establish common consumptive use coefficients for the Great Lakes Regional Water Use Database. These coefficients developed in consultation with USGS, have been used to estimate the annual consumptive use amounts since 1989.

Recent major initiatives such as, the International Joint Commission’s (IJC), February 2000 reference report to the governments of the United States and Canada on *the Protection of the Waters of the Great Lakes*, the Great Lake Charter Annex, signed by the Great Lakes Governors in June 2001 and the Great Lakes Commission led project to develop a Great Lakes Water Resources Management Decision Support System (GLWRDSS), have all acknowledged the importance of having reliable and defensible consumptive use information for Great Lakes water withdrawals.

The state and provincial water use data managers have acknowledged the need to better define consumptive uses for both agencies and users as well as the need to improve how consumptive uses are reported. With the lack of reliable and defensible consumptive use information for all of the nine categories of use of the Great Lakes Water Use Database, there is concern about potential serious consequences associated with the adoption of principles in any binding agreements between the States and Provinces that arise out of the Great Lakes

Charter Annex that rely heavily upon the current consumptive use coefficients. In addition to traditional consumptive uses, the impacts to local ecosystems of withdrawal and return flow must be considered. Lake water withdrawals returned upstream and into the headwaters may impact stream temperature and have some effects on habitat. Groundwater withdrawals returned to surface water may impact recharge rates.

At its June 2001 meeting, the GLWRDSS project management team (PMT) directed the Technical Subcommittee (TSC) working on water withdrawal and use information, to establish a refined definition of consumptive use to assist in the refinement and improvement of the Great Lakes Water Use Database and related activities. The TSC has also been tasked with refining the current consumptive use coefficients and establishing an enhanced understanding of demand projections and the associated consumptive use implications. The current definition of consumptive use developed in 1987 and modified by the TSC at its March 30, 2001 is: *“That portion of water withdrawn or withheld from the Great Lakes and their connecting channels and assumed to be lost or otherwise not returned to the Great Lakes due to evapotranspiration, incorporation into products or other processes.”*

The PMT also recommends that the TSC conduct an extensive literature search for sources of information in consumptive use, such as: technical guides, circulars, bulletins, and other similar reports. The TSC and Commission staff will consult with USGS staff on consumptive use and request and compile additional documentation on USGS use of consumptive use coefficients. The TSC will then recommend to the PMT, based on the research outcomes, refined coefficients for inclusion into the redeveloped Great Lakes Water Use Database.

Timeline and Responsibilities:

- A revised and more detailed definition of consumptive use that incorporates issues and needs identified by the IJC, the Council of Great Lakes Governors and the PMT of the GLWRDSS project. *To be developed by March 31, 2002.*
- A bibliography of resources on consumptive uses of Great Lakes water to includes full references to the technical guides, circulars, bulletins, and scientific reports cited and relevant information on the findings and outcomes of each item. *To be completed by March 31, 2002*
- Based on the results of the literature search and completion of the bibliography, a review, analysis and status report on consumptive use coefficients for the nine categories of use of the Great Lakes Regional Water Use Database will occur. This will include a thorough evaluation of the current consumptive use coefficients and recommendations regarding the continued use or change of these coefficients. As much documentation as possible, defending the recommendations will be provided. Pennsylvania, for instance, has developed a comprehensive list of industrial consumptive use coefficients available by two and three digit SIC code. *To be completed by June 30, 2002*