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**Meeting of the  
Water Withdrawal and Use Technical Sub-  
committee  
*Great Lakes-St. Lawrence Water Resources  
Management Decision Support System***

September 10-11, 2001  
Michigan State University - East Lansing, Michigan

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**FINAL**

Prepared by:  
Staff of the Great Lakes Commission

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## **Introduction**

On Monday September 10, 2001, the Water Withdrawal and Use Technical Subcommittee (TSC3) of the project titled *A Water Resources Management Decision Support System for the Great Lakes/St. Lawrence*, met at Michigan State University's Institute of Water Research in East Lansing, Michigan to discuss and evaluate a series of water resources management scenarios focusing on withdrawal, diversion and consumptive use of Great Lakes-St. Lawrence water.

This exercise was designed to provide the participants with an opportunity to review a mock water use proposal for the following purposes:

- to evaluate the level of information provided in the proposal;
- to consider the types of information that might be required of any applicant submitting a similar proposal to withdraw, divert or expert Great Lakes water;
- to discuss overall data needs; and
- focus discussion on gaps and needs related to state/provincial water use data collection and reporting programs.

The convening of a water use scenario exercise was first discussed at an in-person meeting of the Water Withdrawal and Use Technical Subcommittee (TSC3) on June 14 in Chicago. This idea was presented to the project management team (PMT) at its June 27 meeting and enthusiastically endorsed. The PMT recommended that TSC3 consider at least three different scenarios; a withdrawal, a consumptive use and a diversion. It was also recommended that the scenarios address different climatological, hydrologic and demographic regimes and that at least one of the scenarios be set in the future to allow the TSC to address issues related to demand forecasting and water conservation.

Great Lakes Commission staff developed the scenarios during the second half of July and verbally presented them to TSC3 during a conference call on August 15. The scenarios were then revised and mailed to the TSC during the week of September 3 in preparation for the September 10 meeting.

Scenario one is a consumptive use proposal from a group of farmers interested in establishing an irrigation district in southern Arenac County, Michigan. The scenario is set in the year 2025 and is based in part on the actual Mud Creek, Michigan irrigation district proposal that was considered by the Great Lakes states and provinces in 1993.

Scenario two is a diversion proposal for public water supply from the community of Westville, Indiana. This scenario is set in 2006 and is based on the Lowell, Indiana proposal from the early 1990s.

Scenario three is withdrawal proposal from Peterborough County, Ontario for the establishment of a pulp and paper mill. It is a current year proposal.

Detailed maps of the proposals showing the project area, watershed boundaries and other pertinent information were also developed and provided to TSC3 to assist them in their evaluation. The maps for

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scenarios one and two were developed in-house by Great Lakes Commission staff; the map for scenario three was developed with assistance from Environment Canada.

Following are the full descriptions of the scenarios and associated maps. The remainder of this summary will focus on the review of the scenarios and identified data needs necessary to support the evaluation of similar proposals should they arise.

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## **SCENARIO #1: CONSUMPTIVE USE**

A group of a dozen farmers in southern Arenac County, Michigan, has proposed forming an irrigation district that would remove water from the Pine River, which feeds into Lake Huron (Saginaw Bay), for use on their nearby farms. Based on Michigan law, an irrigation district can be formed so that farmers whose land does not border a lake can have access to lake water resources. The proposal, which has been sent to the state Department of Natural Resources, is needed to help meet the area's increasing demand for agricultural products. Demand for U.S. crops has increased because many nations with large populations are unable to meet their needs with their resources. And climatic shifts over the past 25 to 30 years (it is now 2025) have lengthened the growing season in areas further north, including Michigan. Because of these trends, the farmers expect to receive a solid return for their crops.

Although annual rainfall has increased, the amount of rainfall during the summer growing season has decreased by about 15 percent from historic levels. Historically, any irrigation done by the farmers in this area has been done with groundwater, but wells have been drawn down by competing uses, such as new industrial complexes a few miles away in Standish. Continual redrilling of wells is becoming prohibitively expensive and there is no guarantee that groundwater resources will be reliable in the future because the rate of recharge has slowed. Irrigation will ensure that the farmers can consistently produce high yields from their land. Also, the timing of irrigation efforts at points critical to plant growth is projected to increase yields by at least 50 percent.

Each farmer grows slightly different mixes of crops, but they mostly include corn, wheat, sugar beets, and varieties of beans. Some hay production will likely occur, and if the project is successful, some farmers could attempt to grow some riskier crops that provide higher returns. Collectively, the farmers who will have access to the irrigation water own about 2,000 acres (810 hectares), or approximately 3 square miles (8 square kilometers).

If the irrigation district is approved, it plans to deepen the channel of the Pine River for about a mile upstream, allowing for a level of water that is static with the lake level. Although intake pipes could be installed that would allow the farmers to remove water directly from Lake Huron, the economic and ecological analyses show pulling the water directly from the Pine River would be most effective. The dredging involved would be minimal, mostly at a depth of no more than 5 to 10 feet (1.5 to 3 meters). From a point one mile (1.6 kilometers) upstream from the lake, about 6 million gallons/day (9.28 cfs, 22.72 mld, 0.263 cms) of water would be pumped through approximately 500 feet (150 meters) of 24-inch (61-cm) pressure transmission main and discharged to several open ditches and drainage canals. From these waterways, the farmers belonging to the irrigation district would have easy access to the water. Any excess water would be able to flow back into Saginaw Bay through drainage canals and the Pine River. The water will be used for irrigating cropland by both surface irrigation and subirrigation, which regulates the groundwater table in the crop root zone. These irrigation techniques should help conserve the water so the farmers get the maximum amount of use from it. Pumping would occur during about 100 days each year, during the summer months, making for a total of 600 million gallons (2272 liters) per year.

The proposed water use is not extremely large, but would involve a withdrawal of more than half the water that normally flows into the lake from the Pine River during the summer months, and 90 percent of this water would be lost to consumptive use. However, because the river will be dredged to create a level static with the lake, the amount of water in the river should remain fairly stable at the point of withdrawal.

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The Pine River has a minimum flow of about 9 MGD (13.92 cfs, 34.08 mld, 0.394 cms), which occurs during the summer. Maximum flows for the river are 25 MGD (38.68 cfs, 94.63 mld, 1.095 cms), and mean flows are 16 MGD (24.75 cfs, 60.57 mld, 0.691 cms). The project should have a very limited impact on lake levels even though Lake Huron levels are extremely low. Even with increased rainfall, higher average temperatures have led to a permanent drop in lake levels of about 2 feet (0.6 meters) so that what was considered the historic minimum water level 20 years ago now is closer to the mean. Experts believe levels will not rise significantly again unless another dramatic climate shift occurs, which is not believed to be probable for at least 50 years.

If the irrigation district is approved, the farmers have agreed to adopt several best management practices designed to protect the environment. New tillage practices would almost eliminate erosion and timed irrigation would make the best use of water. All of the farmers have already adopted organic farming, installed vegetative buffers to minimize water pollution, and are applying new, natural-based pesticides that were developed in 2020. To verify that water quality standards are being maintained, monitoring will occur with gauges along drainage canals and the river that will transmit data to the state Department of Environmental Quality.

In addition to these practices, the farmers are proposing to pull out an extra 1 MGD (1.55 cfs, 3.79 mld, 0.044 cms) to replenish wetlands in the Wigwam Bay Wildlife Area south of the river that are deteriorating with falling lake levels. If desired, the state of Michigan could pay pumping costs for the entire 7 MGD (10.83 cfs, 26.51 mld, 0.307 cms) that could be directed toward the wetlands during the part of the year when irrigation water is not needed. The state has already tried pumping water into the wildlife area, but efforts have been inadequate to date and some of the wetland areas no longer receive any water. Although some open water has become marsh, the total amount of habitat has decreased for waterfowl. Once there were tens of thousands of waterfowl that migrated through the wildlife area, but the numbers have dropped by at least half due to the deteriorating habitat.

Studies have been done on the economic, environmental and engineering aspects of the project. Economic studies show that the irrigation can yield a good investment return after seven years because of increased agricultural demand, even though the startup costs for the project will be about \$1.5 million. Deepening the Pine River will likely impact some aquatic species, but protective measures will prevent fish from getting sucked into intake pipes. Aquatic experts believe that water contributions to the wildlife area will outweigh any negative effects to the river system. All the species that would be affected in the Pine River exist in several other tributaries of Saginaw Bay and Lake Huron.

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**SUMMARY**

**Location:** Arenac County, Michigan

**Type of Water Use:** Agricultural irrigation district

**Water Source:** Pine River, a tributary of Lake Huron

**Water Discharge:** Pine River and existing agricultural drainage canals

**Time Period:** 2025

**Lake Levels:** Average of past five years is 2 feet (0.6 meters) below average levels in 2001.

**Consumptive Use Coefficient:** 90%

**Percent of Minimum Flow Used:** 66.6%

**Percent of Minimum Flow Consumed:** 59.9%

	MGD	cfs	mld	cms
Quantity of Withdrawal	6	9.28	22.72	0.263
Quantity of Water Used	5.4	8.35	20.45	0.237
Mean River Flow	16	24.75	60.57	0.691
Maximum River Flow	25	38.68	94.63	1.095
Minimum River Flow	9	13.92	34.08	0.394

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## SCENARIO #2: DIVERSION

Westville, Indiana is a growing bedroom community located three miles outside the Great Lakes Basin. The majority of working residents commute to Chicago and other nearby communities. The 2000 Census showed the population of the town at 5,120 people and projections of growth are 4 percent a year. Currently, the town is using surface water for its public supply, but because of its growing population, this source will soon be used to its capacity. Westville proposes diverting 500,000 gallons per day (.774 cfs, 1.89 mld, 0.022 cms) from the Little Calumet River, which flows into Lake Michigan. The water would be withdrawn at an existing intake pipe at Chesterton, about 6 miles (9.6 kilometers) northwest. From Chesterton, the water would be treated and a pipeline would carry it to Westville. Since Westville already has its own wastewater treatment plant, it makes sense economically to treat the water there and discharge the remainder into Crooked Creek, which is within the Kankakee Watershed in the Upper Mississippi River Basin.

The town has looked for other sources, but groundwater supplies are relatively nonexistent because of contamination and the geology of the area while other surface water sources of an adequate size are too far away to consider for this small community. The city relies heavily on conservation efforts that currently enable it to make do with its limited surface water supply. These efforts would continue if the diversion is approved, and the city has committed to look for new ways to conserve water as well. Projections for continued growth show the city could run short of water within the next 3 years and the timeline for pipeline construction is about a year and a half.

Water levels in the Great Lakes have risen substantially over the past four years and record highs were broken during part of last year. Short-term projections show there may be new record highs in the next few months. Lake Michigan, which had experienced nearly historic low levels a few years ago, also is experiencing high water levels. The high water levels have caused damage to real estate along the shoreline and experts are looking into how to deal with these new record highs. The latest climate change projections show that water levels may drop over the long-term, but contrary to what was once believed, an increase in precipitation will not allow levels to drop to record lows. Because of the high lake levels, regional concerns over water leaving the Great Lakes Basin have died down compared to the past.

The Little Calumet River is a cold water salmonid river that is popular for trout fishing and there are concerns from some public interest groups that the proposed use could have some affect on water levels in the river. Flow levels are quite variable in the river, ranging from 150 cfs (97 MGD, 367 mld, 4.25 cms) during peak winter flows to a minimum of 20 cfs (12.9 MGD, 48.9 mld, 0.565 cms) during the summer. Average flows are about 50 cfs (32.3 MGD, 122.3 mld, 1.42 cms). About 2 MGD (3.1 cfs, 7.6 mld, 0.088 cms) of water is lost to consumptive use based on current water uses. Although the additional loss of 0.5 MGD (.774 cfs, 1.89 mld, 0.022 cms) would not place significant new stresses on the river, several groups, such as Trout Unlimited, have expressed their concern that the diversion could impact recreational fishing. Such groups are worried that the approval of the diversion will open the floodgates for more water to leave the river. In particular, they believe the town of Westville will continue growing and need to request additional water within 10 years.

The discharge after use will lead to an increase in flow for Crooked Creek, which has an average flow of about 10 cfs (6.5 MGD, 24.5 mld, 0.285 cms). However, there are no projections for significant impacts on the receiving system. A few concerns have been expressed for the potential transmission of aquatic

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nuisance species, but treatment of the water before and after use by the town of Westville should prevent this from occurring.

To alleviate concerns over the diversion, the town of Westville has agreed to pay about \$200,000 per year into a trust fund designed to protect the Little Calumet River and the Lake Michigan watershed. This trust fund is designed to provide for resource restoration efforts in a number of identified areas. The actual dollar amount will be linked to the amount of water consumed by Westville and will show up as a charge on monthly water bills.

If the diversion is not approved, Westville has a couple of options for dealing with its water shortage. It could pass a law that sets strict limits on new development. This would cap the number of homes served by the Westville water system at 7000, or a total of 800 new homes. This option is not palatable because it would place limits on the use of land and property rights advocates have threatened lawsuits in the past if such restrictions are imposed. The other option is to force new developments to find their own sources of water. However, this could also disrupt the relationship between landowners and Westville. This second option could prompt many developers to look toward the Great Lakes Basin for water anyway.

### **SUMMARY**

**Location:** Westville and Chesterton, Indiana

**Type of Water Use:** Public water supply

**Water Source:** Little Calumet River, tributary of Lake Michigan

**Water Discharge:** Crooked Creek, tributary of Upper Mississippi River Basin

**Time Period:** 2006

**Lake Levels:** New record high levels recorded in 2005 and projections for fairly high levels into the future.

**Consumptive Use Coefficient:** 100% (diversion)

**Percent of Minimum Flow Used:** 1.5%

**Percent of Minimum Flow Consumed:** 1.5%

	MGD	cfs	mld	cms
Quantity of Diversion	0.5	0.774	1.89	0.022
Mean River Flow	97	150	367	4.25
Minimum River Flow	12.9	20	48.9	0.565
Maximum River Flow	32.3	50	122.3	1.42

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### **SCENARIO #3: WITHDRAWAL**

In 2000, the environmentally conscious residents of Peterborough County, Ontario were recycling an average of 55 percent of their waste. Within five years, the amount of waste recycled is projected to reach 65 percent. Because a large percentage of the recycled material is paper-based products and the nearest paper mill using recycled pulp is more than 100 kilometers (62 miles) away, members of the Peterborough Waste Recovery Board have deemed it more economical to solicit proposals for a new pulp mill to be developed in Peterborough County rather than ship the paper to its current destination. The Board solicited proposals from paper mill companies interested in building a mill in Peterborough County and has accepted a proposal by Chevreji Mills, Inc., which has a reputable environmental ethic. The company uses 25 percent to 40 percent recycled pulp in their manufacturing of most types of paper. Chevreji Mills will utilize elemental chlorine free bleaching, the byproducts of which are more water soluble and less fat soluble and therefore much more likely to degrade in the water and sediment of treatment facilities and natural ecosystems. In addition, Chevreji Mills will incorporate several water conservation practices into their daily operations, such as reusing effluent from the bleaching process in previous bleaching stages.

The new pulp and paper mill will produce an average of 1000 air-dried tonnes (adt) of paper per day. The average water usage per adt is approximately 70,000 litres (0.018 million gallons) Therefore, the average water usage for the new plant will be approximately 70 million litres/day (0.810 cms, 18.49 MGD, 28.61 cfs). Chevreji Mills has located a site along the Otonabee River, from which it proposes to withdraw an average of 75 mld (0.868 cms, 19.81 MGD, 30.66 cfs) during any 30-day period. The amount of water used by the proposed paper mill would overwhelm Peterborough's public water supply as well as the capacity of Peterborough's existing wastewater treatment plant (104 mld, 1.20 cms, 27.47 MGD, 42.51 cfs). Because of the large quantity of water required for the mill operation, using groundwater is also unreasonable. The Board and Chevreji Mills have located a suitable site on the Otonabee River just downstream from the city of Peterborough and 10 kilometers (6.2 miles) upstream from the small community of North Monaghan, whose public water supply will not be endangered by the use and subsequent discharge of water by Chevreji Mills.

The Otonabee River flows south and east into Rice Lake, which eventually flows via the Trent River into Lake Ontario. The Otonabee River is of good quality with moderately colored water of low turbidity. It has a mean stream flow of 10,000 mld (115.7 cms, 2,642 MGD, 4,087 cfs). The minimum and maximum stream flows are 1,800 mld (20.8 cms, 476 MGD, 736 cfs) and 50,000 mld (578.7 cms, 13,209 MGD, 20,437 cfs) respectively. The levels of Lake Ontario are fairly close to the historic average. Over the long-term, there are concerns that climate change may lead to a permanent drawdown of water levels throughout the system. Because the proposed consumptive use of the Otonabee River by the mill is only 0.26 percent of the minimum flow of the Otonabee River, the withdrawal should not have a significant impact on the levels of the Otonabee River or Lake Ontario.

Since consumptive use for paper mills is approximately 6.3 percent, the average discharge of the wastewater treatment plant is estimated at 70.3 mld (0.813 cms, 18.56 MGD, 28.73 cfs). When pulp mill effluents are released to the environment, they can affect many parts of an aquatic ecosystem. For example, some discharged organic solids (e.g. cellulose fibers, wood fragments) do not degrade very rapidly, and can form fiber mats that smother bottom-dwelling communities and reduce fish habitat. Suspended solids can irritate fish gills and restrict the penetration of sunlight. Reduced light penetration can affect growth and activity of aquatic life forms.

Concerned citizens in Peterborough County formed a public advisory committee to research the possible

environmental impacts of the proposed pulp mill and have concluded that many of the adverse environmental impacts can be avoided if the new pulp mill employs Best Available Technologies, such as elemental chlorine free bleaching (ECF) and secondary treatment of wastewater.

Employing elemental chlorine free bleaching decreases chlorinated organics in mill wastewater by 90 percent over traditional chlorine gas methods – virtually eliminating dioxin and reducing the environmental effects of chlorinated organics to the point of insignificance. Pulp mills employing only ECF in all stages of the bleaching process, utilizing secondary treatment, and discharging into receiving waters with dilution factors typical of most North American mills present an insignificant risk to the environment from organochlorine compounds.

Before returning the water to the Otonabee River, Chevreji Mills will send the mill effluent to their soon-to-be developed wastewater treatment plant. The plant will consist of a primary clarifier and an effluent treatment secondary plant, which will significantly reduce the Biological Oxygen Demand (BOD), as well as the level of suspended solids, nitrogen and phosphorus in the wastewater before it is discharged into the Otonabee River at a site 300 metres (0.2 mi) downstream from the intake pipe.

The Peterborough Waste Recovery Board has concluded that the development of a paper mill that is cost effective, produces high quality pulp and does not cause significant adverse impacts to the quantity or quality of the water or water-dependent resources of the area, will provide a much needed market for the increasing amounts of recycled paper being recovered in Peterborough County. An application is being submitted for the use of 75 mld (0.868 cms, 19.81 MGD, 30.66 cfs) from the Otonabee River, of which 4.7 mld (0.055 cms, 1.25 MGD, 1.93 cfs) will be consumed.

**SUMMARY**

**Location:** Peterborough County, Ontario

**Type of Water Use:** Industrial (paper mill)

**Water Source:** Otonabee River, a tributary of Lake Ontario

**Water Discharge:** Otonabee River, 300 metres (0.2 miles) downstream from intake

**Time Period:** 2001

**Lake Levels:** Slightly below average; expected to decrease slightly due to climate change

**Consumptive Use Coefficient:** 6.3%

**Percent of Minimum Flow Used:** 4.17%

**Percent of Minimum Flow Consumed:** 0.26%

	mld	cms	MGD	cfs
Quantity of Withdrawal	75	0.868	19.81	30.66
Quantity of Water Used	4.7	0.055	1.25	1.93
Mean River Flow	10,000	115.7	2,642	4,087
Maximum River Flow	50,000	578.7	13,209	20,437
Minimum River Flow	1,800	20.8	476	736

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## **Scenario Evaluation Methodology**

Dan Blake, Research Associate, Great Lakes Commission, introduced the three scenarios and provided the participants information on how the scenarios were developed. The participants were given the chance to ask questions of clarification and then the scenarios were addressed in the order in which they are presented in this report.

Comments specific to the three scenarios are presented below. In addition to these comments, there were general comments related to the larger water use issues and lively discussion centered on these larger issues for much of the day. This was exactly the intent of the exercise, to help the participants focus on the most relevant aspects of the issues to help them discern what is important when evaluating a withdrawal, diversion or consumptive use proposal.

There were also a few items that the TSC discussed related to the authenticity of the scenarios and the need to make them as realistic as possible in order to simulate what might be expected in a real world proposal. If this type of an exercise is to be undertaken again under this project, Commission staff will revise the scenarios based on the comments received.

### **Scenario #1 - Arenac County Irrigation District consumptive use proposal**

- The TSC felt that there was a need for this proposal to include better and more descriptive flow data. There needs to be a basis for the flow data (i.e., using reference gages) and a time frame needs to be included. That is, is the flow data presented for an average year, one year average, five year average, twenty year average, etc.? Many of the participants suggested that the 7 day/10 year low flow data would be fairly standard. Also, the value of mean flow data was questioned; it was suggested that median flow might be more valuable information to have.
- The TSC suggested that it would be important to know the drainage area at the withdrawal point.
- The TSC suggested that they might request an applicant to conduct more research on the issue of groundwater recharge versus precipitation, especially focusing on precipitation during the recharge season. This scenario suggested that “annual rainfall has increased but the amount of rainfall during the summer growing season has declined by 15 percent from historic levels” and “there is no guarantee that groundwater resources will be reliable in the future because the rate of recharge has slowed.” The TSC questioned this assumption and felt that since average annual rainfall has increased under the scenario and that increase is occurring during the recharge season (e.g., winter, early spring) that recharge rates might be expected to increase rather than decrease.
- The TSC suggested that there would be a need for increased information on the dredging impacts and the frequency of dredging necessary to maintain this proposal.

### **Scenario #2 - Westville, Indiana diversion proposal**

- Rather than suggesting that Westville is drawing water directly from a surface water source, the TSC suggested that the scenario include a reservoir which will make the exercise more realistic.

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- It was suggested that normally, water would be treated closer to the point of use to avoid transmission losses of treated water. For this scenario, this means that the water would probably be treated at Westville rather than in Chesterton.
  - The TSC stated that it would require that the applicant evaluate the feasibility of a return flow of water to the basin. In the real case of Akron, Ohio, there was a return flow available using water from the Ohio canal system. It was acknowledged that the fact that a community is asking for the water in the first place probably means that establishing a return flow to the basin would be difficult.

### **Scenario #3 - Peterborough County, Ontario withdrawal proposal**

- It was suggested that a pulp and paper mill would be an industry scrutinized very heavily and the TSC thought it was unrealistic for the County to be soliciting proposals to build such a plant in their community.
- The TSC thought that a resource improvement would be insisted upon with this proposal. It was acknowledged that with industrial facilities a resource improvement may be more complicated because of additional water quality concerns.
- The TSC suggested that more information will be required of what is “reasonable water conservation” for this type of facility.

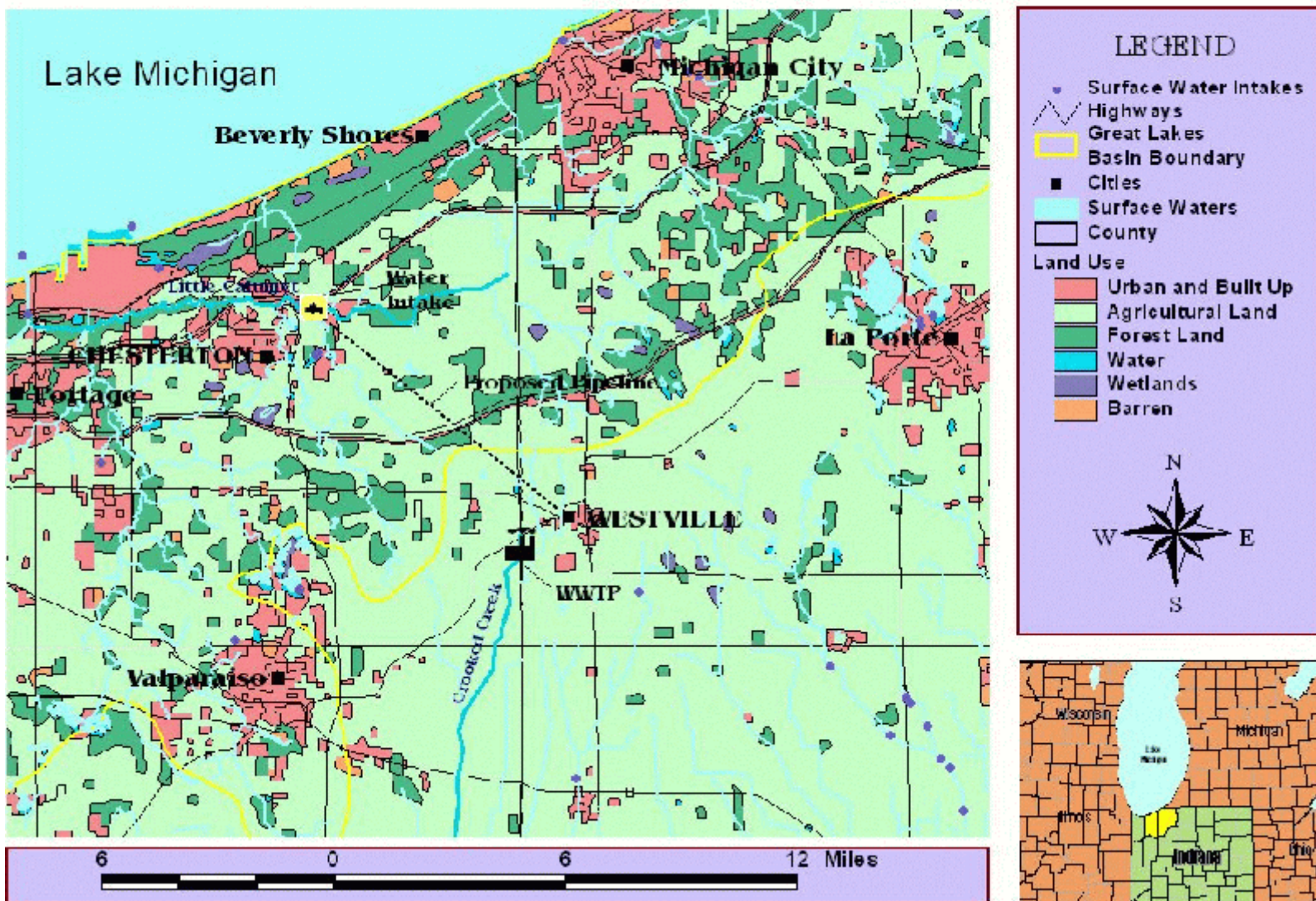
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## **Lessons to Consider**

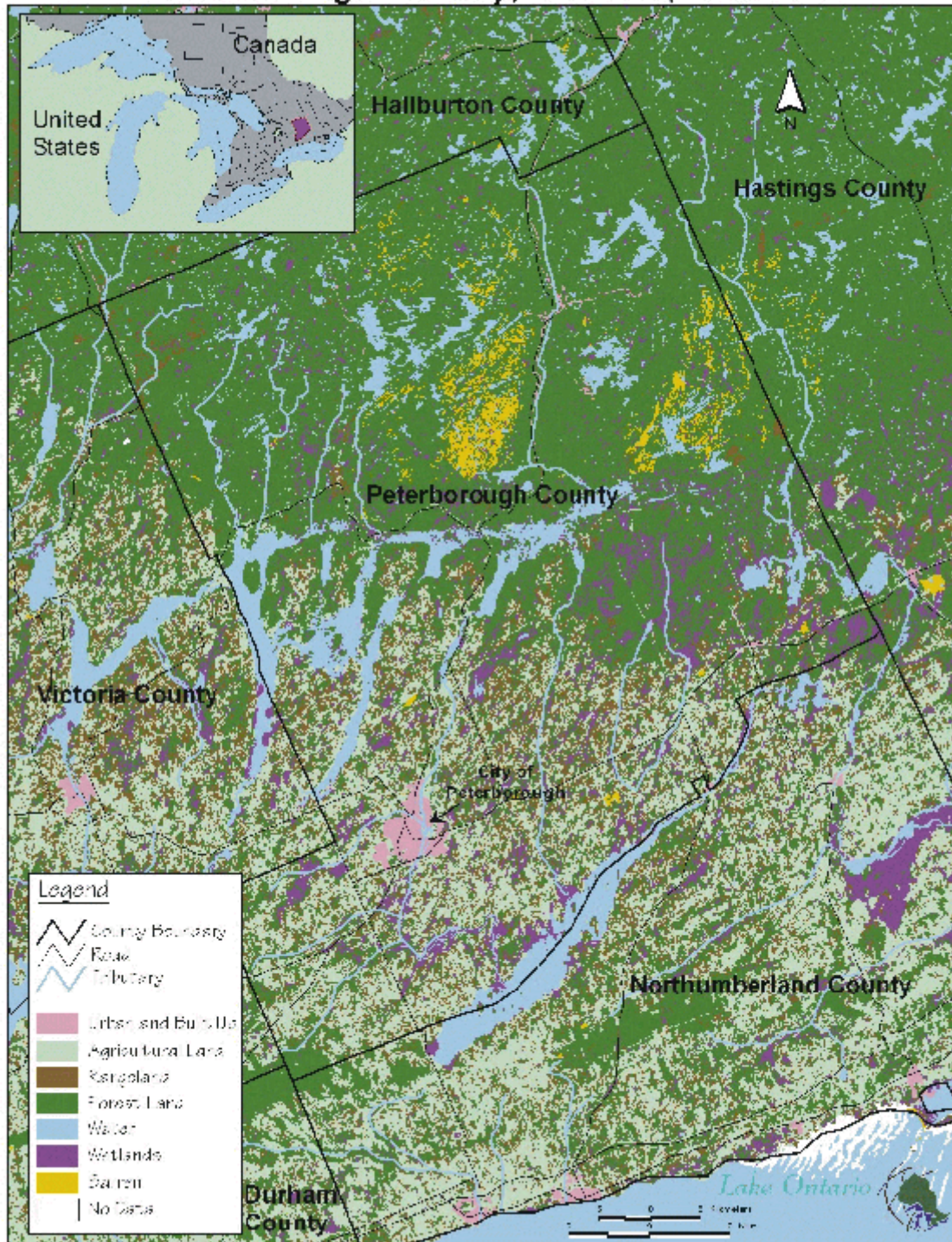
1. To properly evaluate proposals using scenarios, it may be helpful to make some assumptions about the principles and characteristics of the regional agreement that will be established by the states and provinces.
2. The process and criteria used for evaluating proposals at the state/provincial level may be different than for those that undergo a regional review. Any regional agreement should be well defined as to what triggers the regional review versus which proposals can be decided at the state/provincial level.
3. It may be helpful to consider the impacts from in-basin proposals and out-of-basin proposals in the same way (i.e., using the same process).
4. Consumptive use of Great Lakes water should probably be treated as a water loss for both interbasin and intrabasin water withdrawal and use proposals. For instance, a certain percentage of irrigation water that is used in-basin and transpired by plants likely returns to the basin in the form of precipitation, but this cannot be quantified and should not be considered in the evaluation of water withdrawal proposals.
5. Consideration should be given to the issue of whether a decision support system for water withdrawal proposal evaluation will include fixed criteria for all hydrologic regimes or whether stricter criteria will apply during periods of low flow/low lake levels.
6. Permitting programs might include different parameters and time frames for different lake level conditions. For instance, permits might be issued for a shorter period of time during periods of low water levels.
7. Potential impacts for proposals using tributary or groundwater may differ from those that withdraw water from the Great Lakes themselves. Therefore, intake locations in any proposal will be key to the ability to assess potential impacts.
8. It is important to have a better understanding of the Great Lakes water balance in order to properly evaluate the potential impacts for withdrawals from the Great Lakes themselves.
9. It may be important to conduct water budgeting activities at the local watershed level, especially for proposals with non open-lake water withdrawal.
10. It would be valuable to develop a minimum in-stream flow system and a minimum groundwater yield system for evaluating proposals.
11. The TSC recognizes the importance of the work that is being accomplished by the other two project TSCs (status assessment and ecological impacts). Because of the interrelated aspects of the work of all three TSCs, consideration should be given to have all three TSCs participate in a scenario evaluation exercise before the end of the project period



# Westville - Porter and LaPorte Counties, Indiana



# Peterborough County, Ontario, Canada



**Meeting of**  
***A Water Resources Decision Support System for the Great Lakes-St. Lawrence***  
**Water Withdrawal and Use Inventory Sub-Committee (TSC-3)**

September 10-11,2001  
**Institute of Water Resources-Michigan State University**  
**Room 105, Manly Miles Building**  
**1405 S. Harrison Road, East Lansing, MI 48823-5243**

**Monday, September 10; 11:00 a.m. - 5:00 p.m. (EDT)**

11:00 a.m.	Welcome and Introductions	Thomas Crane, Great Lakes Commission
11:10 a.m.	Meeting Objectives	T. Crane
11:15 a.m.	Status Report of: <i>A Water Resources Management Decision Support System for the Great Lakes-St. Lawrence</i> project a. Preparation for September 20-21 Meetings	T. Crane
11:30 a.m.	Introduction to Water Use Scenario Discussion: a. Consumptive Use Scenario b. Diversion Scenario c. Withdrawal Scenario	T. Crane and Dan Blake, Great Lakes Commission
12:00 Noon	Lunch	A box lunch will be provided
12:45 p.m.	Scenario #1: Consumptive Use Proposal in Arenac County, Michigan	T. Crane and D. Blake; all participants
2:00 p.m.	<b>Break</b>	
2:15 p.m.	Scenario #2: Diversion Proposal in Westville, Indiana	T. Crane and D. Blake; all participants
3:30 p.m.	Scenario #3: Withdrawal Proposal in Peterborough County, Ontario	T. Crane and D. Blake; all participants
4:45 p.m.	Day One Wrap-up and Introduction to Day Two	T. Crane and D. Blake; all participants
5:15 p.m.	Adjourn for Day	Dinner will be on your own, but a group dinner at a nearby restaurant might be arranged

**Tuesday, September 11, 2001- 8:30 a.m.- 2:00 p.m. (EDT)**

8:30 a.m.	Process for Assessing Needs for Great Lakes Water Use Data Collection and Reporting	T. Crane; all participants
8:50 a.m.	Introduction to Nominal Group Process for Identification and Prioritization of Ideas	T. Crane
9:15 a.m.	<i>Session I: Current Status of Water Use Data Collection and Reporting Programs and Identified Gaps</i>	All participants
10:30 a.m.	<b>Break</b>	
10:45 a.m.	<i>Session II: Identification of Priority Future Needs for Water Use Data Collection and Reporting</i>	All participants
12:00 Noon	Lunch	A box lunch will be provided
12:45 p.m.	<i>Session III: Building Future Water Use Data Needs into a Regional Water Use Data Base and a Water Resources Management Decision Support System</i>	All participants
1:30 p.m.	Prioritization of Ideas and Nominal Group Process Wrap-Up	T. Crane; all participants
2:00 p.m.	Water Resources Program Survey Update	D. Blake
2:30 p.m.	1998 Water Use Data Report Update	T. Crane
2:50 p.m.	Other Business and Announcements	All Participants
3:00 p.m.	Adjourn	

**Meeting of  
Water Withdrawal and Use Technical Subcommittee (TSC3)  
Great Lakes-St. Lawrence Water Resources Management Decision Support System**

**September 10-11, 2001**

**Institute of Water Research  
Michigan State University  
East Lansing, Michigan**

**Attendees**

<u>Name</u>	<u>Agency/Affiliation</u>	<u>Telephone</u>
Jeff Edstrom	Council of Great Lakes Governors	312-407-0177
Terry Lohr	Wisconsin DNR	608-267-2375
Scott Christilaw	Ontario MNR	705-755-1870
Ron Van Til	Michigan DEQ	517-335-9045
Tom Denslinger	Pennsylvania DEP	717-772-5679
Leonard Black	Ohio DNR	614-265-6758
Mike Holt	New York DEC (via conference call)	518-402-8099
Jim Casey	Illinois DNR (via conference call)	312-793-3123
Sean Hunt	Minnesota DNR (via conference call)	651-296-0509
Carol Luukkonen	USGS-Michigan (9-11 only)	517-887-8920
Tom Crane	Great Lakes Commission	734-665-9135
Dan Blake	Great Lakes Commission	734-665-9135