Senate Fiscal Agency

State Notes

TOPICS OF LEGISLATIVE INTEREST

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SKIMMING THE SURFACE: GREAT LAKES WATER DIVERSION

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Introduction

The Great Lakes basin covers approximately 95,000 square miles and contains five of the largest freshwater lakes in the world. The Great Lakes system and its bays and tributaries contain 20% of the world's supply of freshwater and 95% of North America's supply of surface freshwater. They provide a vast array of benefits including water for drinking, recreation, agricultural and industrial needs, energy production, economical and efficient transportation, and environmental balance.

According to the U.S.-Canada International Joint Commission (IJC), established by the Boundary Waters Treaty of 1909, all of the water in the Great Lakes basin is currently being used in some way. There is in effect no surplus resource, but rather competition among users. The National Wildlife Federation reports that within the next 25 years, the number of countries facing chronic water shortages will increase to 50. That, coupled with a constant rise in world population and the need for freshwater, poses a serious threat to the Great Lakes resource. Therefore, it is necessary to review existing and potential activities that have or could have a substantial impact on the supply and sharing of the Great Lakes water resource. Because of the subject's complexity, this article simply provides a brief overview for those unfamiliar with the issue. It explains the background of the issues concerning Great Lakes water diversion; discuses its potential impacts; and reviews current water management policies.

Background

The Michigan Department of Environmental Quality (DEQ) states that Great Lakes diversion is a man-made transfer of water into or out of the Great Lakes basin or between the basins of two Great Lakes. Consumptive water use is the withdrawal from the Great Lakes basin of water that is not returned to the original source because it is consumed by people, plants, or animals; incorporated into products (such as bottled water); or lost through evaporation or leakage.

There are currently five major diversions in the Great Lakes basin, which are used for commercial navigation, energy generation, and municipal water purposes. The Canadian Long Lac and Ogoki diversions transfer water into Lake Superior and are important for hydroelectric power generation. The Chicago diversion from Lake Michigan transfers water out of metropolitan Chicago through the Illinois waterway. The New York State Barge Canal and the Welland Canal are intrabasin diversions that transfer water from Lake Erie to Lake Ontario. Reportedly, excluding the New York State Barge Canal diversion, these major diversions and consumptive uses have produced some changes in Great Lakes levels and outflows.

Moreover, recent public concern has been focused on the potential movement of freshwater in bulk beyond the Great Lakes basin. In 1998, a Canadian company proposed a plan to export 158 million gallons of water from Lake Superior to Asia. The plan was rescinded after public objection. In February 2002, three northern Michigan Indian tribes sued to prevent groundwater diversion from the Great Lakes by a Perrier water bottling plant, which received DEQ permits in August 2001. The Mecosta County plant is expected to produce more than 260 million gallons of bottled water annually. According to an article in the *Detroit Free Press* (3-1-02), the tribes are concerned about the potential impacts on Great Lakes water levels.

Impacts

According to the Michigan Environmental Council, the annual rainfall, surface water runoff, and inflow from groundwater sources renew only 1% of the water in the Great Lakes. Most of the freshwater source is a result of glacial disposition. The water level of each of the Great Lakes depends virtually on the balance between the amount of water entering and the amount of water leaving the basin. Therefore, large-scale water diversion and consumptive use could have various impacts on the Great Lakes.

Essentially, the magnitude of the net effect on the water level of each Great Lake depends on the location and diversion in the system. Reportedly, the combined effect of the existing diversions has raised water levels in Lake Superior and Lake Ontario by less than one inch; dropped water levels in Lake Huron and Lake Michigan by more than two inches; and dropped levels in Lake Erie by five inches. These changes are small compared with the annual range of natural lake level fluctuations, but the combined effect of one or more large-scale diversions and increased consumption could have a significant potential impact on the water supply. According to an article on Great Lakes Diversion and Consumptive Water Use published by the Legislative Service Bureau's Science and Technology Division, diversions and consumptive uses could potentially have more dramatic local effects on smaller lakes and streams in the Great Lakes basin.

Since the water depth in navigational channels dictates the amount of cargo and loading capacity of a vessel, commercial navigation could experience large economic losses from a drop in lake levels caused by diversion. The capacity of several major hydroelectric power plants in the connecting channels of the Great Lakes is directly proportional to the volume of water available to flow through the system. Therefore, a drop in lake levels would have an effect on pumping costs. The diversion of Great Lakes water also could influence beach use, alter fish and wildlife resources, and affect coastal interests. There is also a possibility that an out-of-basin diversion could increase pollutant concentrations and provide a passage for the unintentional introduction and spread of aquatic nuisance species.

According to the IJC, however, there is insufficient information available to draw any cumulative or substantial basin-wide economic or environmental implications.

Water Management Policies

Presumably, most people would agree that diversions and large consumptive uses should not be allowed without thorough regulatory review, comprehensive analysis, adequate communication, and unanimous approval. The following is a brief description of several major Great Lakes water management policies that are currently in effect.

The Boundary Waters Treaty of 1909 is a binding agreement that prohibits the consumptive use, obstruction, and diversion of boundary waters (waters intersected by the international boundary between United States and Canada, which excludes tributaries and Lake Michigan) that affect the natural level or flow of boundary waters without the approval of the U.S.-Canada International Joint Commission created under the treaty.

The Great Lakes Charter of 1985 is a nonbinding agreement between the Great Lakes state governors and Canadian premiers to conserve the levels and flows of the Great Lakes and tributaries, to protect and conserve the Great Lakes basin's ecosystem resources, and to facilitate cooperation between the two countries. The Charter requires the approval of any diversion of water greater than 5 million gallons per day average in any 30-day period. A state or province, however, may approve plans over other jurisdictions' objections. The Annex 2001, an amendment to the Great Lakes Charter that was signed in June 2001, directs the states and provinces to develop a new binding agreement to manage the waters of the Great Lakes, develop a standard for new or increased water withdrawals, and make further commitments to continue to improve the Great Lakes water management system.

The Federal Water Resources Development Act of 1986 requires the approval of all Great Lakes states' governors on any proposed diversion of water from the Great Lakes system outside of the basin. The Act, however, does not address consumptive uses of Great Lakes water within the basin.

Part 327 (Great Lakes Preservation) of Michigan's Natural Resources and Environmental Protection Act (MCL 324.32701-324.32714) prohibits new diversions of water out of the Great Lakes basin from Michigan's portion of the Great Lakes. It establishes a State water use registration and reporting program, requires the Department of Environmental Quality to cooperate and exchange information with other states and provinces, and creates the Water Use Protection Fund. The Act, however, does not restrict consumptive uses of Great Lakes' waters.

Through a variety of permit and/or approval requirements, the other Great Lakes states also regulate diversions and consumptive uses of water in the Great Lakes basin.