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REFLECTIONS ON THE GREAT LAKES

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Although I spent more than half my life living within the Great Lakes Basin – having grown up in Chicago, and then taught for 20 years in Ann Arbor – my work for last 15 years or so has concentrated on the water problems of our most arid region, in particular the Colorado River Basin.

While in some respects the settings could hardly be more different—in one case, a vast, largely intact, freshwater chain of lakes; and in the other, an over-appropriated river that commonly trickles into nothingness before reaching its mouth at the Gulf of California-- there are also some parallels that may offer useful insights to you who wisely want to think ahead about avoiding the mistakes other regions have made. Like the Great Lakes the Colorado is both an interstate and an international resource. Each region experiences demand from growing urban centers. Each faces the challenge of incorporating modern environmental concerns into an existing pattern of uses, and learning to accommodate concerns that were unknown or ignored in an earlier period.

Surely you are prudent in thinking about the basin and its needs as the primary focus for the uses of Great Lakes water. The acknowledgment at last of the ecological and social damage wreaked by a century of unconstrained removals of California's waters to distant places has demonstrated the wisdom inherent in traditional riparian thinking, with its focus on the watershed of origin. That idea, I believe, sets an appropriate baseline for water management. However, as I shall suggest in a few minutes, it can be imprudent to exalt this fundamentally sound precept into an inflexible rule—the 'not one drop' school of thought that one

sometimes encounters in the water world.

To a distant observer of Great Lakes issues, it appears that the dominant concern of those who live in the Great Lakes States is demand from outside the region creating a draft on the Lakes that would be harmful, or at the least set a precedent that could become harmful if withdrawals from the system grew to substantial levels. Several decades ago, there was concern about tapping Lake water to serve proposed coal slurry pipelines in the upper great plains. A perennial topic of discussion is moving water down the Mississippi to recharge the Ogallala aquifer to serve western irrigated agriculture. More recently I have read of proposals (not currently active, it appears) to take water in tankers or perhaps with ships towing giant balloons, to be shipped to water-short regions, in Asia or in the Middle East.

It might comfort you to know that you are not alone in having such ideas put before you. Just this year, a company filed an application with the California Department of Water Resources to remove 30,000 acre-feet of water each winter from the Albion and Gualala Rivers in Northern California, pump it into what the newspapers called "battleship-size plastic bags", and tow it to San Diego.¹

While such a "baggie" project could be viable (Turkey reportedly ships water this way to Cyprus), it is very small potatoes compared to California's current shortfall from the Colorado River (30,000 acre-feet versus 800,000 acre-feet). In any event, more grandiose export plans usually founder on economic feasibility grounds long before they encounter legal or policy reservations. Back in the 1960's we regularly heard of schemes such as tapping the Yukon River in Alaska to increase flows in the Colorado Basin; or running water in plastic pipes from the mouth of the Columbia to Southern California. Suggestions are periodically

¹ Santa Rosa (CA) Press Democrat, Sept. 1, 2002, 2002 WL 24684477. Under a law signed by the Governor in September of 2002, the project has been put on hold for as much as five years, while a study is made of its potential adverse impacts on fish populations. See A.B. 858, Ch. 985, Laws of 2002, added to Cal. Fish & Game Code, § 6930.

made to tow icebergs from the polar region down south and—I guess—leaving them just offshore Los Angeles where local officials would presumably chip off chunks as needed.

Such schemes have not simply been the dreams of self-appointed visionaries. In 1947, a study known as the United Western Investigation was begun by the U.S. Bureau of Reclamation pursuant to a House of Representatives resolution to examine the prospects for diverting surplus water from other basins to Southern California and the Colorado River Basin. One suggestion made by the study was to divert from the Columbia River system a minimum of ten million acre-feet per year. A gigantic series of pumps, lifts, canals, tunnels, and reservoirs would deliver the water to the Sacramento Valley. This and similar plans were considered technically feasible and economically justifiable under then-applicable Reclamation principles.²

I doubt very much that any such giant-size engineering schemes are where the action is likely to be—either for the arid west or the Great Lakes--within any planning horizon for this or the next several generations, both because of economic feasibility and because of the environmental compliance hurdles that such projects would have to surmount. (the Chicago diversion is, both because of the infrastructure in place and its court-controlled legal status, an exceptional case, but, putting that aside, similar constraints still would have to be addressed).

It is true, of course, that demand in the west is growing and supply is, at least for the present, essentially fixed and—with global warming, even shrinking (or at least changing in seasonality, which with the limited capacity of reservoirs can be tantamount to reduced supply). The most arid part of the country is also the fastest-growing in terms of population. The three fastest growing places in the country are Nevada, Idaho, and Arizona. Western states are growing at nearly

² This and other such plans are described in Chapin D. Clark, Northwest-Southwest Water Diversion—Plans and Issues, 3 Willamette L.J. 215 (1965).

double the national average. Colorado, for example, expects a 40% increase in the next 18 years, from about 4 million to 6 million people. California anticipates an additional 15 million people in about the same time span. There are also important unmet demands to restore instream flows to serve fish and riparian ecological needs, and some Indian water claims that still need to be honored.

Where will those new needs, especially urban and suburban residents, get their water? Almost certainly the bulk of it will come from agriculture through voluntary sales. Urban residents can pay to install more efficient irrigation technologies on farms, and thereby obtain the saved water. There will be movement to less water-consuming, higher value crops, and there will be fallowing of some agricultural land (some land, notably in California's agricultural heartland, the Central Valley, needs to be retired simply because it has become non-arable through mineralization caused by many decades of irrigation).

Though agricultural use of water has been diminishing somewhat in recent decades, it still constitutes more than 80% of consumption in the arid states. The U.S. Bureau of Reclamation estimates, for example, that about 20 percent of the current agricultural use in the lower Colorado basin (AZ, CA and NV), or about 1 million acre-feet, will be reallocated in this way in this century. At an average use-rate of 175 gallons per person per day, 1 million acre-feet can serve about 5 million people, which is the equivalent of the projected growth of 5.5 San Diego's over the next two decades.

In other words, even in water-stressed southern California, we are finding that water to support urban and industrial demand is available in the market from agricultural sellers at relatively modest prices, far below the current cost of desalted water, for example, or what water transported long distances over newly-built facilities would cost. It is worth keeping in mind that a great deal of water in the arid west is still in economically-low-value forage crops, such as alfalfa, bermuda grass, and sudan grass, as well as cotton. In the Imperial Irrigation District, a desert area which gets about 3 inches of rain a year, and

which may be the largest agricultural water user in the world, using over 1 trillion gallons per year, of the nearly 500,000 acres in cultivation, about 300,000 are in forage crops, not in fruits and vegetables.

Just to give you a casual sense of the economics of western water supply-and-demand, in the Imperial Valley, farmers pay \$.04/1000 gallons for Colorado River water, while urban users in Los Angeles pay \$1.40/1000 gallons (treated), 35 times as much. While desalting of sea water or brackish groundwater, whose full real cost is not easy to determine (because published figures do not always include salt disposal or transportation costs), is not likely to be important except as an emergency supply for the foreseeable future (its price now is at least 2 times, and probably closer to 4 times, the current retail cost, and three to ten times what agricultural water sells for), there are other promising sources. There are still considerable opportunities for conservation in urban areas. The California Water Plan (the official publication of the State Department of Water Resources) says that reductions in outdoor landscape use—lawn watering and related uses—is where the greatest urban conservation savings can come; and in Southern California that involves a lot of water, though there are no good statistics on exactly how much of urban use that is. Some such uses, of course, such as golf course and city park irrigation, is already being done with non-potable recycled water. Some important additional supplies at reasonable costs will also be achieved through conjunctive use (storing water from high flow years underground, rewatering depleted aquifers), and by raising existing dams somewhat to increase their storage capacity (which can also help in adapting to the seasonal flow changes that climate warming will bring).

The point is simply that western agriculture can't afford Great Lakes water under even the most optimistic cost estimates of shipping it, and urban/industrial users west of the 100th meridian, in the arid regions, can find, and will continue to find, cheaper and less environmentally disruptive sources.

What, then, are likely to be the most pressing real problems facing Great Lakes

decision makers insofar as quantity issues are at stake?³ My sense is that the issues that will predominate are localized impacts on in-basin tributary sources; and what to do about out-of-basin demands for water by relatively nearby basin-state communities that are experiencing significant growth, and how to deal with important localized adverse impacts caused by drafts on other water resources if those demands are prevented from being met by access to the waters of the Great Lakes. I want particularly to emphasize this second concern. It is important to keep in mind that the Great Lakes are by far the biggest water resource in the region, and that insofar as their waters are ruled out as a source for nearby, but out-of-basin economically realistic demand, the risk arises of those needs being met by smaller, and more vulnerable out-of-basin sources, so that what is designed as a protective scheme ends up being a means of increasing damage to a basin state's other water resources.

Under the Water Resources Development Act of 1986⁴, as well as the approach taken in several recent out-of-basin diversions that have been made, you have a system that sets up a quite strong obstacle that must be overcome to allow out-of-basin uses. That is, the existing system, in the U.S. at least, is pretty much designed to discourage such uses. I have to say, as an outside observer, that this strikes me as very limiting, at least if one gives significant weight to (1) the importance of growing demand in the urban/industrial sector; (2) to the fact that for several basin states the area within the watershed boundary is very small; and (3) the realistic alternatives available to meet such demand.

While the federal Water Resources Development Act wisely embraces both the lakes and their tributaries (as contrasted with the Boundary Waters Treaty), it

³ I put aside questions such as lake level fluctuations caused by natural variations in wet and dry periods, and issues of shoreline land-use, important as those issues are.

⁴ 42 U.S.C. § 1962d-20 ("No water shall be diverted from any portion of the Great Lakes within the United States, or from any tributary within the United States of any of the Great Lakes, for use outside the Great Lakes Basin unless such diversion is approved by the Governor of each of the Great Lakes States").

does not take account of the alternative sources, vulnerable non-tributary waters near, but not within, the Great Lakes basin. Apparently it is not clear whether it covers tributary groundwater⁵; if not, the problem I am noting is especially to be attended to. In short, one must be alert to the fundamental fact that restrictions of one sort always drives demand to the next available unrestricted source. If a nearby out-of-basin demand cannot be met from Great Lakes basin water, it is likely to be met from a lower-visibility, higher-impact, non-tributary source.

I would like to underline the indisputable but often-ignored fact that problems don't go away simply by making a law. If, for example, a growing urban area needs additional water, and drafts from the Great Lakes are denied it, it will search out other sources to meet its needs. (To be sure, denying water as a means of controlling growth is eminently familiar in the arid West, but I believe any detached observer would have to conclude that such efforts have almost always failed. Urban growth is a powerful force, and places that are, for whatever reasons, experiencing growth, seem to find water one way or another. Interestingly, a just-issued draft opinion by the California State Water Resources Control Board, involving a proposed transfer of agricultural water to San Diego, made the following statement: "To the extent that historic patterns indicate future trends, reduced water availability is unlikely to affect growth in urban areas. Water is one of many factors that may influence growth in a region but does not, by itself, cause the growth of a region. Economic, legal, and societal factors all play a role in growth, and water shortages have rarely done more than slow the progress of adequately financed development proposals."⁶ One excellent example of this point is Clark County, Nevada, where Las Vegas is located, and which is a real desert by any definition. Though Nevada has used up its full allotment of Colorado River water, that hasn't slowed growth a bit; instead it has generated an aggressive (and ultimately successful) search for additional water.

⁵ IJC Report, Protection of the Waters of the Great Lakes, Feb. 22, 2000, at 37.

⁶ In the Matter of Amended Joint Petition of the Imperial Irrigation District and San Diego C.W.A. for Approval of a Long-Term Transfer (Draft, Order WRO 2002-????, Sept. 26, 2002). at 57-58).

A relevant question, therefore, as to out-of-basin, basin-state, communities seeking additional water, is what alternative is available to drafting on the Great Lakes, and what the relative adverse impacts are. It is commonly true, if not universally the case, that the smaller the source, the greater the impact of a draft upon it. Thus, if demand is thrown upon groundwater aquifers or smaller streams (particularly those sources not tributary to the Great Lakes, which are likely to be the path of lesser resistance the more Great Lakes use is restricted), one needs to ask what stresses will be put upon those sources, compared to the stresses that would be put upon the alternative of a draft upon the Great Lakes basin. Certainly it is an appropriate general approach, in the face of any proposed use of water, to ask what alternatives are available, and whether those alternatives will be less harmful. It may well be in many situations that removals from one of the lakes itself is preferable either to an out-of-basin (in-basin-state) diversion from a smaller source, or from an in-basin tributary, surface or underground. So it is not simply a question of whether a request is from an in-basin or out-of-basin source, but how much adverse impact filling that need will have on the various locations from which the water could (and likely would) be taken. Such an approach, I would suggest, is likely to be more productive and more protective for a basin state than a flat rule prohibiting or strongly discouraging, *a priori*, out-of-basin uses.

To emphasize the concern I am noting, I would call your attention to the recommendations regarding removals (that is, out of basin uses) found at page 47 of the IJC Report of February 22, 2000. Among its five protective provisions, none speak to consideration of adverse impacts on out-of-basin resources.⁷ Indeed, it sets as a condition that “there are no practical alternatives for obtaining the water”, which seems to invite applicants to look to non-tributary sources. An alternative formulation, which would be less inward-looking (and more in the

⁷ There is a rather ambiguous statement in the Recommendations on removals (at p. 47) that “consideration should be given to the possible interrelationships between aquifers and ecosystems in the requesting communities and aquifers and ecosystems in the Great Lakes Basin.” I am not at all sure what this means.

statewide interest of the states), would say the condition is that “there are no *less harmful* practical alternatives. I must say I am also dubious about the “no net loss” standard, which strikes me as very rigorous, doubtless justifiable in some circumstances, but harsh as a fixed limit on consumptive use.

With these concerns in mind, I would like to turn to the legal status of out-of-basin, in-basin-state uses. It is an interesting but little-noted fact that the law of interstate rivers in the United States grants entitlement to all uses within basin states, and not just to in-basin uses. At the same time, it does not grant any use rights in such waters to out-of-basin, non-riparian, states. Thus, to take an example (but it is the same on every interstate river), the water of the Colorado River has been allocated among all the seven riparian states, but each such state may use its allocated share anywhere within the state, even out-of-basin. In fact, the biggest uses are almost all out-of-basin. All the California southern coastal cities which use Colorado River water, such as Los Angeles and San Diego are out-of-basin, as are most of the agricultural users. So too are Phoenix and Tucson in Arizona, and Denver in Colorado. Thus, it would be consistent with American interstate water law if the water of the Great Lakes was to be allocated for use anywhere within the basin states (and Provinces), and denied to any uses in non-basin states. This fact may come as a surprise to many people, who are focused on the Dormant Commerce Clause principle that there may be no discrimination against out of state uses. Interstate water law has been a dramatic exception to this principle. Interstate water law (which of course is federal law, and thus trumps the Dormant Commerce Clause) allows all the water of a system to be apportioned among the riparian jurisdictions, which necessarily excludes any non-riparian, or out-of-basin, states from using the water.

To be sure, this point has never been explicitly tested in the courts, in a suit by a non-riparian state. Any such apportionments must be made by the national government (either in a Supreme Court case, in a congressional statute, or through a congressionally-approved interstate compact). The interesting legal question is whether the riparian states are legally entitled to have such an

apportionment, as against the claim of a non-riparian state. The fact that Congress enacted the WRDA of 1986 provides some evidence that it is supportive of such a view, and all the existing interstate apportionments seem to make the same assumption. I see no reason, in light of equitable apportionment law, why it couldn't extend such a law from protection of the basin to protection of the basin states. To be sure, the basin states would presumably have to make some showing that they need, or will at some time need, all the water, and in the Great Lakes context such a showing would presumably rest in significant part on issues such as navigation and ecosystem protection, and not just on abstractions.

One might thus well imagine a situation in which economic feasibility defined an area well within the basin states and provinces, but to some extent beyond the basin, where there was a practical demand for Great Lakes water, and where the quantum needed could comfortably be met without adverse impact on the system (limited of course by appropriate some regulatory constraints, such as restrictions on locations from which drafts could be made, diminution during low water cycles, arrangements for treated water to be returned to the system, etc.). For the reasons stated above, such uses might well legally be permitted solely to the riparian jurisdictions, and, as I indicated earlier, significant out-of-basin-state uses are probably not practically very threatening anyway.

To extend from a basin to a basin-state approach would also put the basin states on a somewhat more equal footing (than does their in-basin areas) in terms of the usability of Great Lakes water. That would also be more in line with the posture taken by the U.S. Supreme Court in interstate water cases, where allocation reflects state needs, both present and projected, rather than in-basin needs. In saying this, I want to emphasize as strongly as I can that protection of the basin as a hydrological and ecological resource ought, under any management scheme, be the primary concern; and that the question is always what uses are permissible, and under what limitations, consistent with that primary responsibility.

The international dimension has a parallel to the observations I have just made about domestic interstate rivers. Just as water in the Colorado River has been apportioned among the basin states, as a domestic matter, it has been allocated between the U.S. and Mexico by treaty. While I am no expert on the NAFTA and WTO issues that have been raised and, I know, extensively considered by international law experts, note that it has always been assumed that the water in the Colorado River could be allocated entirely between the two riparian nations (the U.S. and Mexico), and that each nation could utilize the water allocated to it solely for its own domestic purposes, and had no obligation to share the water with any other nation. While the Colorado River is not accessible internationally, because passage up through the Delta is not navigable, I don't know of any suggestion that has ever been made that any interstate and/or international river (like the Columbia) might have to be shared with another nation that might come up it, and seek to take some its water away on a tanker, though anticipated WTO restrictions are exactly the concern of local residents who oppose water being taken from California's Gualala River, that I noted above. A strategy to forestall such efforts—assuming they are not so minimal as to be insignificant—is, as I have just observed, apportionment of all the water, whether or not it is currently being “used”, among the riparian jurisdictions.

In observing the longstanding assumption that interstate and international rivers could be entirely apportioned among the riparian jurisdictions, I should add that those apportionments need not reflect existing uses. Water can be (and has been) apportioned to jurisdictions to meet their projected future needs, and the entitlement to that water is held for the riparian jurisdiction as long as need be. The upper basin states on the Colorado, for example, were apportioned 7.5 million acre-feet of water by interstate compact in 1922. Now, three quarters of a century later, the upper basin uses only about 4 million acre-feet; yet the balance of its apportionment is available to it whenever it may need it.⁸

⁸ There are some very complex issues about exactly what would happen on the overappropriated Colorado if the upper basin actually demanded 7.5 maf, since there is not enough reliable annual flow to meet the total that has been apportioned. But that is not a matter

Interestingly, there has never been an apportionment of an interstate or international lake, which doesn't have annual flows that come and go each year, but has a stock of water in place and water movement through the system that is measured in decades or centuries. Nor, equally interestingly, has there ever been an apportionment of an interstate or international groundwater aquifer in American law, which would be more comparable to a lake or chain of lakes. Still, I see nothing in theory to prevent such an apportionment.

In short, I know of nothing in our jurisprudence to prevent having what might be the best of both worlds. The Great Lakes system could be fundamentally managed as an integral basin, with the health and uses within the basin as a primary precept; but at the same time, it could be made available for non-intrusive out of basin uses within the basin states and provinces, thus protecting other potentially vulnerable water resources within those states that might otherwise be threatened by future growth. At the same time the basin would be insulated from unlimited demands around the nation and the globe (even assuming that economic infeasibility isn't a sufficient deterrent). I would think the U.S. and Canada might well find common cause in a program along such lines.

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that need be discussed here. The basic point is that all the available water (even for future use) can be allocated solely to the riparian jurisdictions.