Recommendations

Technically, many opportunities exist to increase the inflow of water to Walker Lake and to reduce the concentration of total dissolved solids in the lake, thus improving the habitat for the lake's threatened fish (see table 1). Some opportunities could be implemented without penalizing the water usage of any stakeholders; other opportunities would require the sacrifice of some water (although not necessarily significant amounts) on the part of one or more stakeholders, usually irrigators; still other opportunities might call for significant sacrifice on the part of certain groups and would likely be vigorously resisted. The costs to implement these opportunities have not been evaluated, but some would be less expensive than others. In its cursory investigation, OTA noted several problems that need to be addressed in order to lay the groundwork to take advantage of available opportunities.

First, the various interest groups in the watershed need to begin talking with one another 1) to develop a common understanding of the problem, 2) to more precisely identify areas of agreement and disagreement, 3) to promote development of information that can reduce factual disputes, and 4) to identify solutions and seek ways to implement them. A Walker River Task Force has been formed, but its structure and composition do not appear to be ideal for fostering trust among stakeholders. A principal concern is the fact that the chairman of the task force is the manager of the Walker River Irrigation District rather than a neutral party.

One possibility to make progress in addressing Walker Lake's problems would be to convene a workshop or forum at some neutral location in Nevada, bringing together representatives of all stakeholders and technical agencies. Ideally, the workshop should be convened, sponsored, and chaired by a neutral, mutually acceptable third party. Among those who should be included are representatives of: 1) Hawthorne and Yerington, 2) the Walker

River Irrigation District, 3) the Walker River Paiute Tribe, 4) environmental groups such as the Nature Conservancy and the Sierra Club, 5) the Nevada State Engineer, 6) the Nevada Department of Wildlife, 7) U.S. Geological Survey, 8) U.S. Soil Conservation Service, 9) U.S. Bureau of Land Management, 10) U.S. Army, 11) California Department of Water Resources, 12) U.S. Board of Water Commissioners, and 13) any others with a stake in resolving the problem. A minimal goal would be to clarify any misunderstandings among stakeholders and to share and jointly assess relevant information about the river's water budget.

If a workshop (or series of workshops) is deemed desirable, one possibility would be to utilize the services of the newly established Environmental Conflict Resolution program at the University of Arizona's Udall Center for Studies in Public Policy. Managing this program is one function of a new national foundation established by the "Morris K. Udall Scholarship and Excellence in National Environmental and Native American Public Policy Act of 1992" (P.L. 102-259). Among the foundation's purposes are to foster greater recognition and understanding of the role of the environment, public lands, and resources in the development of the United States. Congress has recently appropriated $10 million to endow the foundation, but the conflict resolution program has not yet begun operations. Among the advantages of convening a workshop under the auspices of this new foundation would be its neutrality and the substantial expertise on western water problems that currently exists at the Udall Center.

It would be prudent to hold a workshop at the earliest possible date (e.g., in late 1993 or early 1994), since the stress on the fishery is steadily increasing, and, according to the Nevada Department of Wildlife, the fishery may collapse in 5 years or less if changes are not made soon in how the water resources in the basin are managed.

Second, some of the differences of perceptions of the problem and possible solutions that currently exist among interest groups can be accounted for by lack of good streamflow data. The State of Nevada's Department of Conservation and Natural Resources has used what data are available to estimate a budget for water inflow and outflow at various points in the watershed. 10 However, lack of streamflow gauges at key points along the river and deterioration of at least one key gauge make it impossible to know with precision what is happening in the system. Better understanding of how much water is being diverted at particular points and how much water is reentering the river after diversion is essential in order to identify and assess the best measures for managing the river.

Three data problems seem especially important to address. First, estimating inflow to Walker Lake is problematic because the nearest streamflow gauge is more than 30 miles upstream at Wabuska and significant irrigation diversions and channel losses occur along the river below this last gauge. 11 A gauge much nearer the lake would be desirable--if, given the meandering nature of the river along this stretch, a suitable location can be found.

Second, the key Wabuska gauge north of the Walker River Indian Reservation needs upgrading. [12] Over the years, a shifting channel and sedimentation has rendered data acquired from the gauge less and less accurate. The USGS rates the accuracy of this data as only "fair to poor." The readings at the Wabuska gauge are important because it is here that the water allocation for the Indian Reservation is measured. Indeed, the Indians prefer to move the gauge closer to the north end of Weber Reservoir (or to construct an additional gauge) because they believe significant charnel losses occur between the Wabuska gauge and Weber Reservoir

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10 See State of Nevada, Department of conservation and Natural Resources, Water River Basin Water Rights Model, June 1993 (Draft).

11 California Department of Water Resources (DWR), Walker River Atlas (Sacramento, CA: DWR, 1992), p. 32.

12 R Hayes, U S Geological Survey, Carson City, NV., personal telephone communication, August 12, 1993.

for which they are inappropriately being charged. Others believe--even though no streamflow data are available--that substantial losses are occurring on the reservation itself. (Note that the USGS believes that even though a gauge can be installed in this area, the accuracy of the data will be no greater than plus or minus 20 percent, given the shifting nature of the stream).

Finally, it would be extremely helpful to install small gauges at irrigation diversion points. Farmers in the Walker River Irrigation District have not been concerned with irrigation operating efficiencies and hence do not have good information about where adjustments might be made to improve efficiency. Installation of gauges would help identify where blocks of water are unnecessarily being lost. 13

The cost of new gauges could be substantial relative to available funds. The USGS notes that upgrading the Wabuska gauging station could cost several hundred thousand dollars. It seems likely that the cost of installation of additional gauging stations on the main stem of the river would also be in this range. Installation of gauges to measure irrigation diversions would cost on the order of 3 thousand dollars each, and several dozen would likely be needed. The USGS has a small amount of money available for matching State funds budgeted for installing gauging stations. The USGS has indicated, however, that all available "co-op" funds for this program have already been committed. If new gauges are to be installed, additional funds may need to be appropriated for the USGS's Nevada district's gauging program. The State would, of course, have to come up with matching funds. Also, if a workshop is held, one topic of discussion might be how to pay for additional gauges, especially those needed at diversion sites.

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13 Jim Weishaupt, Walker River Irrigation District, personal communication, August 5, 1993.

It should be noted that it generally takes a number of years to develop good data from a newly installed gauge and that the longer the time series of data available, the more accurate the determination of average flow will be. USGS says, however, that it can begin publishing data 1 to 2 years after installation of a gauge. Given the precarious nature of the Walker Lake fishery, it would be prudent to install additional gauges soon.

Third, negotiations leading to an interstate compact between Nevada and California concerning allocation of water in the Walker River watershed should be reconvened. In 1990, Public Law 101-618 established a framework for an interstate allocation of waters of the Truckee and Carson rivers, the two other rivers with headwaters in California that flow into Nevada. The Walker River was not included in the final legislation, ostensibly because "pressure created by proposed water development projects [in the watershed] had abated by the 1980s. "[14] Indeed, the portion of the Walker River watershed in California has very few people in it, and major increases in water use in that area are not anticipated. Nevertheless, California still has a potential right to use additional water in the Walker River watershed and could some day assert rights to a portion of the water now being used in Nevada. Any agreement concerning Walker River water reached by interest groups in Nevada could potentially be undermined if California some day claims the right to use additional water, and, as the saying goes, "a shovel upstream is better than a decree downstream. " A compact would clarify the water rights of both states and ensure that efforts to protect Walker Lake and the various Walker River stakeholders in Nevada would not later be undermined.

A final comment

Saving Walker Lake, and especially doing so without affecting other longstanding interests in water from the Walker River, is not likely to be easy. In OTA's view, saving the lake will likely require more than just implementation of the relatively easy steps that could be

[14] California Department of Water Resources, op. cit., p. 70.

taken, but saving it does not appear to be a hopeless cause. The problems experienced in the Walker River watershed are similar to those that have been faced with some success in the Carson and Truckee watersheds to the north. That the Walker situation does not appear to be as complex is a hopeful sign. Other recent water rights settlements (e. g., regarding Mono Lake and California's Central Valley) are beginning to firmly estabish the principal that the environment matters, and these precedents make it increasingly difficult for major water users to conduct business as usual. The best solution attainable may well be one that entirely pleases no one--farmers may have to change water use practices more than they are currently willing to do, Indians may have to forego irrigating significantly increased acreage, and environmentalists and residents of Hawthorne may have to be satisfied with a somewhat lower lake level than they would prefer.