LOS ANGELES DEPARTMENT OF WATER AND POWER OPERATIONS IN THE MONO BASIN*

I APPRECIATE THIS OPPORTUNITY TO COMMENT ON THE DEPARTMENT'S WATER GATHERING OPERATIONS IN THE MONO BASIN AND THE RESULTING IMPACT ON MONO LAKE.

Since 1940 Los Angeles has been diverting local streams in the Mono Basin for export and beneficial use in Los Angeles (see attached map). These diversions have decreased the surface flow to Mono Lake causing a gradually declining water level in the lake. The declining water level in Mono Lake has become a subject of increasing concern in recent years.

THERE ARE NO ENVIRONMENTALLY OR ECONOMICALLY EASY SOLUTIONS TO STABILIZING THE PRESENT LEVEL OF MONO LAKE. TODAY, I WILL BRIEFLY SUMMARIZE SOME OF THE IMPORTANT ISSUES WHICH MUST BE CONSIDERED IN EVALUATING THE MONO LAKE SITUATION.

* STATEMENT PRESENTED BY DUANE L. GEORGESON, ENGINEER-IN-CHARGE OF THE LOS ANGELES AQUEDUCT, TO THE CALIFORNIA WATER COMMISSION MEETING IN SAN FRANCISCO, APRIL 7, 1978.

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DEVELOPMENT OF MONO BASIN PROJECT

IN 1920, THE CITY OF LOS ANGELES BEGAN STUDYING THE FEASIBILITY OF DIVERTING MONO BASIN WATER FOR DOMESTIC WATER SUPPLY AND POWER GENERATION PURPOSES. DURING THE 1930S, THE CITY NEGOTIATED THE PURCHASE OF MUCH OF THE PRIVATE LANDS AND RIPARIAN WATER RIGHTS IN THE BASIN. IN ADDITION, THE CITY COMPENSATED ALL PRIVATE PROPERTY OWNERS WITH LAKESHORE PROP-ERTY FOR FUTURE DAMAGES AS A RESULT OF THE ANTICIPATED DECLINE IN THE LAKE LEVEL. ALL PUBLIC LANDS IN THE MONO BASIN WERE WITHDRAWN FROM ENTRY BY THE U. S. CONGRESS IN 1931 IN ORDER TO PROTECT THE CITY'S WATER RIGHTS.

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Construction of the Mono Basin Extension of the Los Angeles Aqueduct System was begun in 1934 and completed in 1940 at a total cost of more than \$50 million. This project included the construction of Crowley Lake Reservoir, Grant Lake Reservoir, and the 11-mile Mono Craters Tunnel. The project diverts the flows of Lee Vining, Walker, Parker, and Rush Creeks through the Mono Craters Tunnel to the Owens River. The water is used for municipal purposes, primarily domestic water supply, and for hydroelectric generation. The City's Mono Basin water rights were Licensed by the State Water Resources Control Board in 1974.

MONO BASIN PROJECT BENEFITS

CONSTRUCTION OF THE MONO BASIN PROJECT HAS RESULTED IN THE FOLLOWING SIGNIFICANT BENEFITS:

- Mono Basin diversions provide nearly
 20 percent of the City of Los Angeles'
 water supply (100,000 AF/year).
- 2. The export of 100,000 acre-feet of Mono water generates clean, reliable electric energy from hydroelectric plants along the Aqueduct System equivalent to burning 500,000 barrels of fuel oil at thermal generating plants in the Los Angeles area.
- 3. PROJECT FACILITIES INCLUDE CROWLEY LAKE AND GRANT LAKE RESERVOIRS WHICH ARE USED FOR WATER STORAGE AND RECREATIONAL PUR-POSES. CROWLEY LAKE IS RECOGNIZED AS ONE OF AMERICA'S OUTSTANDING FISHING LAKES AND CONTRIBUTES SUBSTANTIALLY TO THE RECREATIONAL ECONOMY OF INYO AND MONO COUNTIES.
- 4. DURING DRY YEARS, MONO DIVERSIONS ARE BENEFICIAL TO THE NATURAL BROWN TROUT FISHERY IN THE OWENS RIVER BELOW PLEASANT VALLEY DAM BY HELPING TO MAINTAIN MINIMUM FLOWS.

5. THESE DIVERSIONS MAKE THE HIGHEST BENEFICIAL USE OF THE HIGH QUALITY RUNOFF WATER IN ACCORDANCE WITH THE STATE CONSTITUTION.

LAKE DESCRIPTION

Mono Lake presently has a surface area of about 62 square miles and a maximum depth of about 115 feet. The lake has no natural outlet and thus evaporation losses have caused the lake to become twice as salty as the ocean. Because of the poor quality water, the lake is not suitable for recreational use and will not support fishlife other than the minute brine shrimp.

IMPACT OF DIVERSIONS ON MONO LAKE

Based on a continuation of recent hydrologic conditions, the lake level is projected to stabilize in about 80-100 years at an elevation approximately 40 to 60 feet lower than its present level. The lake will then have an area of about 32 square miles, or approximately half its present size. At that time, it will still be about three to four times as large as the normal surface area of Crowley Lake.

The declining water level is expected to have an adverse impact on the use of Negit Island as a nesting area by the California gull and other birds. Eventually, this island will become connected to the mainland by a natural land bridge. This could allow coyotes or other predators to disturb the nesting grounds.

MITIGATION MEASURES

Two significant features of the original Mono Basin Project were the construction of Crowley Lake and Grant Lake Reservoirs. These facilities have provided important recreation benefits to Inyo and Mono Counties.

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IN RECENT YEARS, LOS ANGELES HAS STUDIED SEVERAL POSSIBLE MITIGATING MEASURES TO DETERMINE IF FEASIBLE MEANS ARE AVAILABLE TO HELP STABILIZE THE LEVEL OF MONO LAKE.

IN 1972, THE DESERT RESEARCH INSTITUTE AT THE UNIVERSITY OF NEVADA(RENO) BEGAN A STUDY, FUNDED BY LOS ANGELES TO INVESTIGATE THE FEASIBILITY OF CLOUD SEEDING IN THE MONO BASIN TO INCREASE PRECIPITATION AND WATER SUPPLY. AS A RESULT OF THIS STUDY, A CLOUD SEEDING PROGRAM WAS PROPOSED FOR THE 1974-75 WINTER. HOWEVER, THAT PROPOSED PROGRAM WAS POSTPONED INDEFINITELY DUE TO OBJECTIONS AND CONCERNS OF LOCAL RESIDENTS AND OTHERS WHO REVIEWED THE DRAFT ENVIRONMENTAL IMPACT REPORT. LOS ANGELES DID INITIATE AN EMERGENCY CLOUD SEEDING PROGRAM IN 1977 WITH THE SUPPORT OF INYO AND MONO COUNTY OFFICIALS.

DURING THE SUMMERS OF 1973 AND 1974, EVAPORATION RETARDANT EXPERIMENTS WERE CONDUCTED ON LAKE WATER IN TEST PONDS ADJACENT TO MONO LAKE. THE PURPOSE OF THIS STUDY WAS TO EVALUATE THE EFFECTIVENESS AND FEASIBILITY OF REDUCING WATER LOSSES FROM MONO LAKE BY FREQUENT APPLICATIONS OF A THIN CHEMI-CAL FILM TO THE LAKE SURFACE. BASED ON THAT RESEARCH, IT IS ESTIMATED THAT AN EFFECTIVE EVAPORATION RETARDANT PROGRAM COULD REDUCE EVAPORATION LOSSES BY AS MUCH AS 20 PERCENT. However, it was concluded that a full-scale program would not be feasible at this time due to the high cost (several Million dollars annually) and the technical problems Associated with making frequent chemical applications on a lake the size of Mono. Another problem identified was the adverse impact of the chemical film on the flies which are an important food source for birds on the lake.

Recently, Los Angeles purchased the remaining private ownership of approximately 500 acres on Paoha Island in anticipation that the rookery on Negit Island may relocate to the larger island in the future.

Los Angeles, along with other members of the Interagency Committee on Owens Valley Land and Wildlife, supported the recent efforts to protect the rookery on Negit Island by deepening the shallow channel between the mainland and the island. About one month ago (March 17-18), the California Department of Fish and Game coordinated the blasting of a channel about 700 feet long, 150 feet wide, and 10 feet deep in order to prevent a land bridge from forming. Although this is only a temporary solution, early reports indicate that the blasting operation was successful and could be used again to deepen the channel in the future.

IMPACT OF REDUCING MONO BASIN EXPORTS

It has been suggested that Los Angeles reduce water exports from Mono Basin and allow additional water to flow into Mono Lake in order to stabilize the lake level. This alternative has very high financial and environmental costs associated with purchasing replacement water and energy.

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The direct cost of purchasing 100,000 acre-feet per year of replacement water would be more than \$9 million annually today and would approach \$20 million per year in the future. The California Aqueduct may not be a reliable source of replacement water due to present commitments, continuing legal and environmental problems associated with the Delta, and uncertainties regarding future availability of energy for pumping. In addition, the Colorado River supply to the Metropolitan Water District of Southern California will be reduced by more than half in a few years as the Central Arizona Project develops.

AN IMPORTANT MATTER IN CONSIDERING THE POSSIBLE REDUCTION OF MONO BASIN DIVERSIONS IS THE RESULTING IMPACT ON ELECTRICAL ENERGY SUPPLIES. THE LOS ANGELES AQUEDUCT SYSTEM IS THE ONLY WATER CONVEYANCE FACILITY TO SOUTHERN CALIFORNIA WHICH PRODUCES CLEAN HYDROELECTRIC POWER RATHER THAN CONSUMING LARGE AMOUNTS OF ELECTRIC ENERGY FOR PUMPING AS IS THE CASE WITH BOTH THE COLORADO RIVER AQUEDUCT AND STATE WATER PROJECT. The export of 100,000 acre-feet of water from the Mono Basin to Los Angeles generates energy along the Aqueduct System equivalent to approximately 500,000 barrels of fuel oil per year. The generation of replacement power would cost more than \$8 to \$10 million annually at today's costs and would require the burning of approximately 500,000 barrels of fuel oil in the South Coast Air Basin.

IN ADDITION, OBTAINING 100,000 ACRE-FEET OF REPLACE-MENT WATER FROM THE STATE WATER PROJECT WOULD REQUIRE ENERGY FOR PUMPING THE WATER TO SOUTHERN CALIFORNIA EQUIVALENT TO THE BURNING OF 500,000 BARRELS OF FUEL OIL. THEREFORE, THE SUBSTI-TUTION OF 100,000 ACRE-FEET/YEAR OF WATER FROM THE STATE WATER PROJECT FOR AN EQUIVALENT AMOUNT FROM THE MONO BASIN WOULD REQUIRE THE BURNING OF ONE MILLION BARRELS OF FUEL OIL PER YEAR FOR ENERGY REPLACEMENT AND WATER PUMPING REQUIREMENTS (SEE ATTACHED GRAPH).

The reduction of Mono Basin diversions would have an adverse impact on the water supply available for Crowley Lake. In addition, without Mono water, flows in the Owens River below Pleasant Valley Reservoir would be extremely low during dry years and have an adverse impact on the natural trout fishery in the river.

It is clear that there are no easy solutions to stabilizing the level of Mono Lake. Decisions affecting the lake must be carefully evaluated in terms of environmental and energy trade-offs, costs and considerations of the most beneficial use of the high quality waters of the Mono Basin.

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ENERGY VALUE OF MONO BASIN WATER



MONO BASIN EXTENSION OF LOS ANGELES AQUEDUCT



