

ARIZONA WATER RESOURCES NEWS BULLETIN

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PHOENIX URBAN STUDY

Approval has been received on the Plan of Study developed by the U.S. Army Corps of Engineers' Phoenix Urban Study office. The program plan identifies the scope and objective of the water resources study, and also serves as an interagency agreement between the participants in the study. The approval of this report in January gave the green light for the development of alternative plans to address the problems surfaced during the initial problem identification phase.

One problem being addressed by the Urban Study is that of utilizing flood runoff for ground-water recharge. Representatives from the Corps' Hydrologic Engineering Center and the Los Angeles District office, together with members of the Water Conservation Technical Committee, met on 25 February. The meeting centered on various aspects of computer simulation modeling of transmission losses (infiltration) during flood runoff events, and the resultant effect on ground-water recharge.

For further information about this, or other aspects of the Corps' water resources study, please contact the Phoenix Urban Study office, 2721 N. Central Ave., Phoenix, Arizona 85004.

AN ANALYSIS OF THE 1974 WATER REGISTRATION ACT

by
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Arizona State Land Commissioner

"Under the 1974 Water Rights Registration Act should I register the waters I am using?"

The answer to that question must come from the person who claims the water.

That question is being asked by hundreds of persons as a result of the Registration Act that was passed in 1974 by the Arizona Legislature.

That law, this office believes, was created to bring together in one State office all claims to water rights that cannot be proven by either of the following:

A permit or certificate issued by the Arizona State Land Department or its predecessors, rights acquired to the use of the mainstream waters of the Colorado

River or to rights acquired or validated by contract with the United States of America, court decree or other adjudication (see A.R.S. 45-186).

The State Land Department believes the law says this:

If you are using "public water," and if you have a "water right" to the waters you are using, and if you cannot prove that water right by a permit or certificate issued by the Arizona State Land Department or its predecessors, rights acquired to the use of mainstream waters of the Colorado River or to rights acquired or validated by contract with the United States of America, court decree, or other adjudication, then you must register that "water right" by June 30, 1977, or lose it.

The person who wants to know if certain waters are required to be registered under the 1974 Water Registration Act might be assisted in making his decision by finding the correct answer to these three questions:

Question 1. "Is the water I claim 'public water'?" A.R.S. 45-180-3 defines "public water" as follows:

"Public waters" or "water" means waters of all sources flowing in streams, canyons, ravines or other natural channels or in definite underground channels, whether perennial or intermittent, flood, waste, or surplus water, and of lakes, ponds and springs on the surface.

If the answer to Question 1 is "no," then the Registration Act does not apply.

Question 2. "If that water is 'public water,' can I prove my right to it by a permit or certificate issued by the Arizona State Land Department or its predecessors, rights acquired to the use of the mainstream waters of the Colorado River, or to rights acquired or validated by contract with the United States of America, court decree or other adjudication?"

If the answers to Question 1 and Question 2 are both "yes" then the law excuses those waters from the need to be registered by June 30, 1977 (see A.R.S. 45-181 B).

If the answer to Question 1 is "yes" and to Question 2 is "no" then you must determine whether, in fact, you have a "water right" to the waters you claim.

Question 3. "If that water is 'public water' and I cannot prove it by one of the methods in A.R.S. 45-181 B, do I, in fact, own a 'water right' to that water?"



ARIZONA WATER COMMISSION • WATER RESOURCES RESEARCH CENTER
OFFICE OF ARID LANDS STUDIES



**EXECUTIVE SUMMARY OF CRITICAL WATER
PROBLEMS FACING THE ELEVEN WESTERN STATES,
WESTWIDE STUDY, U.S. DEPARTMENT
OF THE INTERIOR, APRIL 1975***

A "water right," in the sense used in this analysis, might be defined as a legally established priority for the use of "public waters," which priority has been determined by the laws or court cases that govern that water.

In some cases, only an expert can answer these questions, and often an expert is proven to be wrong in court.

If you have a "water right" to "public waters" and you cannot prove it by the methods covered in A.R.S. 45-181 B, *the Registration Act does apply*, and the Act provides that if such a right is not registered by June 30, 1977, it will be lost (see A.R.S. 45-181 A).

Before June 12, 1919, a person could establish a "water right" merely by taking the water and putting it to beneficial use. Such a "water right" did not have to be recorded anywhere and possibly many were not recorded. A "water right" established by that method probably cannot be proven by one of the methods listed in A.R.S. 45-181 B. That kind of a right may and should be registered by June 30, 1977.

Whether or not there are justifications for claiming of water rights other than through the bases of A.R.S. 45-181 B, or by a claim of continuous use beginning before June 12, 1919, must be a decision arrived at by the prospective claimant and by such private advice that he decides to seek.

If the answer to Question 3 is "no," then the Registration Act does not apply. If it is "yes," you should file to protect your "water right."

The user or his advisor should make a full reading and analysis of the law and of the facts surrounding the waters.

The analysis is intended only to raise some basic questions that the water user should answer for himself. The Land Department cannot and does not have the authority to make the decision to file or not file. The Land Department must accept a properly completed registration statement which is accompanied by the \$5.00 registration fee.

It is anticipated that the registrations will run into many thousands; the filings already exceed several thousand, and the inquiries perhaps exceed a thousand.

The Arizona State Land Department stresses that the individual must make the decision to file or not on his own or with such private assistance as he might decide to seek.

SALINE WATER CONVERSION RESEARCH PROJECT PROPOSALS

The Office of Water Research and Technology (OWRT), U.S. Department of the Interior, has recently formulated a statement of its research program to serve as a guideline in the selection of projects for funding during the balance of fiscal year 1976 (through September 30, 1976). Within this research program, the OWRT proposes to negotiate for experimental, bench scale, or research work in the field of water conversion technology in accordance with the provisions of the Saline Water Conversion Act of 1971.

The OWRT desires to encourage and support research investigations which hold promise of contributing to the solution of important water conversion problems of national interest, and any technical approach or idea which does so will be given every consideration. Proposals for this program may be submitted to OWRT for consideration for support at any time.

Additional information regarding the program is available from the Director, Water Resources Research Center, University of Arizona, Tucson, Arizona 85721.

Introduction

In September of 1968, the Congress, as part of the legislation authorizing the Colorado River Basin project, directed that the Secretary of the Interior shall "conduct full and complete reconnaissance investigations for the purpose of developing a general plan to meet the future water needs of the Western United States." The act defined Western United States as the 11 coterminous Western States. A final reconnaissance report to be submitted to the President, the Congress, and the Water Resources Council no later than June 30, 1977, was specified. This report is in response to these directives.

Investigations leading to this report were initiated in 1970. The Westwide Study was carried out under the direction of a full-time management group in Denver, Colorado, headed by the Bureau of Reclamation. In this group, all affected Federal interests were represented. Close cooperation with the States was maintained at all times and much of the planning activity was accomplished by State-Federal study teams which were established for each State. An advisory committee composed of representatives from many related fields of natural resources provided a forum for exchange of ideas and public involvement in the conduct of the study.

The Westwide Study was designed initially (1) to produce a general plan to meet the future water needs of the 11 coterminous Western States, (2) to be interdisciplinary in character, reflecting views and objectives of economic, engineering, social, and environmental concerns, and (3) to be interagency in participation and direction involving all affected Federal agencies, the 11 States, and private and local interests. The schedule called for completion of investigations and submission of a final report in June of 1977.

Arizona Outlook

Arizona has about 1,800,000 people, 75 percent of whom are concentrated in the metropolitan centers of Phoenix and Tucson. The desirable southwest climate, abundant recreation, and scenic attractions, and the strong retirement appeal of the land have led to a tremendous surge in population expansion, and in commercial and industrial development since World War II. In the past generation, the State has undergone a transition from basically a mining and agricultural economy to one much more diversified. Today, the leading sources of income are manufacturing, mining, agriculture, and tourism. Forty-nine percent of Arizona is in Federal ownership. Another 27 percent is in Indian Trust lands. Arizona is a water-short state whose current water use far exceeds its available long-term supply. A large portion of today's uses is being met by the mining of ground water. The more critical water and related resources problems of Arizona, other than those discussed under Westwide and Regional Problems, are as follows:

Municipal Water Supply—In northern Arizona there are 15 small communities with a total population of 51,000 that have critical water problems. The problems appear about equally divided between those of quality and quantity. Remedial measures, in most cases, will be costly.

Water Supply in the Lower Salt-Gila River Basin Area—The growth of irrigated agriculture in the central Arizona area, par-

*Sections taken directly from the Summary.

ticularly since World War II, has led to an increasingly serious ground-water overdraft situation. The growing population and rapidly expanding manufacturing industries also have contributed to the problem. At present, the rate of overdraft is estimated at 2.5 million acre-feet per year. Ground-water levels are at an average of 250 feet below the surface and are declining steadily. The Central Arizona Project, now under construction, will for several decades import an average of 1.2 million acre-feet of water annually into the area, and thus relieve the overdraft to some extent.

Taking into account the present ground-water overdraft of 2.5 million acre-feet in the central Arizona area, together with constantly increasing demands for water, it is evident that the central Arizona area will continue to face the situation where water demands are greater than long-term water supplies. The only way such full demands could be met is by importing additional water into the area. Inasmuch as the water supply available is far in excess of foreseeable demands for municipal and industrial purposes, the justification for such additional imports would have to rely on the value of water for irrigation even though this may require some changes in Arizona water law to effect transfers of water rights. It is doubtful if such justification can be demonstrated in the foreseeable future. Thus, it appears that the future of the central Arizona area, insofar as water supply is concerned, should be planned on the basis of present water supplies enhanced by whatever additional conservation practices are feasible, possible augmentation of the Salt and Gila Rivers by weather modification, plus the potential imports from the Central Arizona Project.

Water for Energy Production—Large thermal plants are expected to meet the bulk of future in-State electricity demands which are rising rapidly in the Phoenix metropolitan area. By the year 2000, some 22,600 megawatts of additional capacity are projected as required to meet needs. Associated water demands are estimated to be 274,000 acre-feet per year, of which 224,000 acre-feet could possibly come from irrigation drainage water and municipal return flows. These thermal power water requirements will constitute one more demand for water in a critically water-short area. With rapid growth in central Arizona, the recycling of sewage effluent for power generation is destined to become an important practice.

Water for Indian Reservations—There are 19 Indian reservations in Arizona, totaling nearly 20 million acres or 27 percent of the State. The Indian population in 1970 was 114,000. Under court-decreed water rights, Indian reservations along the lower Colorado main stem have secured water allocations sufficient to fully develop their irrigation potential. This irrigation hopefully will occur in the near future.

The Indian tribes residing in the Central Arizona Project service area will receive significant new water supplies from the Central Arizona Project, although the exact quantities have not yet been determined. The Fort McDowell and Salt River Indian Tribes also will receive substantial benefits other than water supply from construction of the Central Arizona Project.

Accelerated programs are needed to permit the Indians to use the water supplies available from the lower Colorado River. Also, plans should be advanced as soon as practical for the Indians' use of their share of Central Arizona Project water. Water requirements for other reservations should be determined.

Chronic Flooding in Developed Areas of the State—Although Arizona is one of the most arid areas in the nation, it has been constantly plagued by damaging floods. These are caused by general low-intensity winter storms of long duration, by general high-intensity summer storms over wide areas, and by local thunderstorms. Many proposed and authorized remedial projects have been delayed because local entities did not have sufficient resources to fulfill local obligations required under Federal programs. To resolve the delay of construction, the Arizona Water Commission prepared a consolidated 15-year program of 47 projects which would provide needed flood control. Of those selected, 25 have been planned by the Soil Conservation Service, 19 by the Corps of Engineers, and 3 by the Bureau of Reclamation. Total estimated costs, as of 1972, were \$390 million, of which \$77 million were local costs. In the 1973 legislative session, the State authorized \$64 million in assistance to local entities for these flood-control projects. This should remove the primary obstacle of the past in advancing flood-control programs. As local assurances are provided, the Federal agencies should seek funds to move their programs as expeditiously as practicable.

Insufficient Water Supplies for Anticipated Outlying Urban Growth—Several northern Arizona communities' population growth and economic expansion are taxing limited water supplies. The conditions have been magnified through national promotion by land developer and land speculation operations offering land in "Sun Country."

Such land is often adjacent to small rural communities and not included in existing water service systems. Settlement on these hitherto desert lands would create an immediate crisis to the local community and would generate consumptive uses of water in some instances that would infringe on downstream water rights. These past uncontrolled land speculation schemes led to passage of an Arizona ground-water law in 1973 which required a determination of available water supply, or lack thereof, for such land development by the Arizona Water Commission. Strict application of this law should be made.

HYDROLOGY MEETING DETAILS

The Sixth Annual Joint Meeting of the American Water Resources Association (Arizona Section) and the Arizona Academy of Science (Hydrology Section) will be held in Tucson at the Marriott Hotel, April 29–May 1, 1976. The hydrology program this year is meeting under the sponsorship of the Arizona Academy of Science and the Southwestern and Rocky Mountain Division of AAAS.

The 46 papers will be grouped into five consecutive half-day sessions, beginning at 9:00 a.m. April 29. The tentative program grouping places papers on reservoirs and on ground water into Session I, papers on precipitation, evapotranspiration and surface runoff into Session II, papers on management of water resources into Sessions III and IV, and papers on water quality into Session V.

The keynote address, "Arizona Water Law Reform: The Political Realities," will be presented by Arizona State Senators Lucy Davidson and Morris Farr at 9:00 a.m. April 30.

The printed program will be distributed about April 1. Copies can be requested from SWARM, AAAS, Box 3AF, Las Cruces, New Mexico 88003. Further information can be obtained from Dr. Lloyd W. Gay, School of Renewable Natural Resources, University of Arizona, Tucson 85721 (telephone 884-4580 or 884-2314).

CALL FOR PAPERS

International Conference on Transfer of Water Resources Information

The Second International Conference on Transfer of Water Resources Information, June 30–July 2, 1977, is to be held at Colorado State University, Fort Collins, Colorado. Abstracts of papers for the Conference are now being solicited through May 15, 1976.

The Conference is directed toward action programs for improvement of technology and information transfer. Of particular concern will be the transfer of knowledge to improve conditions for the rural poor; the management of research to provide mechanisms for the transfer of results; and the comparative merits of different computer-based information dissemination systems.

International Conference on Finite Elements in Water Resources

Princeton University is sponsoring an International Conference on Finite Elements in Water Resources, July 12–16, 1976. The meeting will consist of a series of invited papers by recognized experts as well as additional shorter contributions.

Papers are invited in subsurface flow simulation (seepage, transport problems, well hydraulics, multiphase flow, aquifer simulation, geothermal reservoir analysis), surface flow simulation (estuary and lake modeling, ocean dynamics, river and channel flow), hydrodynamics, atmospheric simulation, and basic finite element techniques.

Interested authors should submit a 500-word abstract to Dr. W.G. Gray, Water Resources Program, Princeton University, Princeton, N.J. 08540.

National Drainage Symposium

The National Drainage Symposium sponsored by the American Society of Agricultural Engineers will be held December 13–14, 1976, at the Palmer House in Chicago, Illinois. The objective of the symposium is to exchange technical information and discuss the design, installation, and evaluation of drainage systems for increasing crop production and maintaining a quality environment.

Subjects to be covered at the symposium include new materials and installation requirements for drain tubes; models for drainage design and evaluation; controlled drainage; drainage for salinity and water quality control; drainage requirements for crop growth and farming operations; and physical properties of soils related to drainage.

Those interested in submitting a paper for consideration should send a 250-word abstract immediately to Mr. James Fous, Program Committee Chairman, Coastal Plains Soil and Water Conservation Research Center, USDA-ARS, Box 3039, Florence, South Carolina 29501.

PUBLICATION OF INTEREST

Sediment Transport in Rivers (A Bibliography with Abstracts), 1975, Lehman, Edward J.

This bibliography of Federally-funded research cites reports covering all aspects of river sediment transport. Included are sediment transport studies concerned with stream erosion, scouring, particle size, water quality, flow rate and river mouth processes, and streambed degradation. Research dealing exclusively with lakes, reservoirs, and tidal flow is excluded. (Contains 85 abstracts.)

It is available from the National Technical Information Service, Springfield, Va., as NTIS/PS-75/848/2WN, for \$25.00 in paper copy.

Please address your news items or comments on the News Bulletin to any of the three editors:

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