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### The Arizona Solution to Allocation and Use of Groundwater

Betsy Rieke

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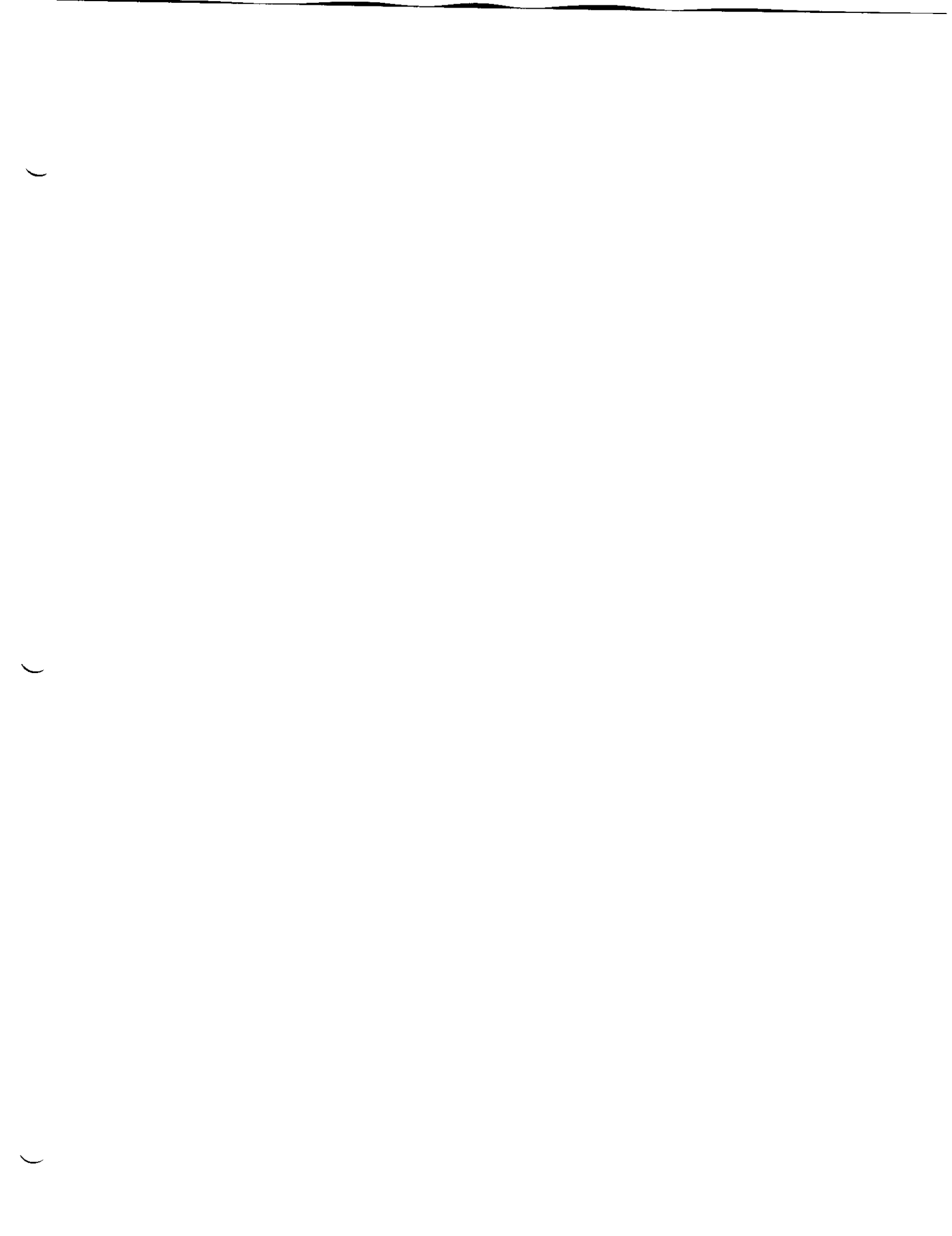
THE ARIZONA SOLUTION TO ALLOCATION  
AND USE OF GROUNDWATER

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Western Water: Expanding Uses/Finite Supplies

Seventh Annual Summer Program  
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## I. INTRODUCTION

A. For years, regulation of groundwater in Arizona lagged behind regulation of surface water. Arizona has a sophisticated system to allocate surface water supplies and regulate their use that dates back to territorial days. But until 1980 the allocation and use of groundwater in Arizona was governed by court cases that often failed to recognize the physical realities of the resource and frequently proved inflexible and by a decidedly inadequate statutory scheme dating back to the late 40's.

Then, on June 12, 1980, Arizona enacted a comprehensive groundwater management code governing the allocation and use of groundwater. Almost 6 years later it is still unique in the United States in its ambitious approach to groundwater management.

Today I want to briefly explain why Arizona, a state with a long history of resistance to government regulation, passed such a pioneering law. I will describe the major provisions of that law and the key components of the groundwater management program the Department has undertaken in response to the new law. I will also discuss some of the major water management issues that have arisen over the past

six years. I will begin with a brief history of the circumstances leading to adoption of the 1980 Code.

**B. Reference Sources**

**1. Statutes**

- a. Critical Groundwater Act of 1948, 1948 Ariz. Sess. Laws, 18th Legis., 6th Spec. Sess., ch. 5, at 600-08 (codified as amended at Ariz. Rev. Stat. Ann. §§ 45-301 to -324 (1956 & West Supp. 1979-1980) (repealed 1980)).
- b. 1977 Amendments to the Critical Groundwater Code, 1977 Ariz. Sess. Laws, 33rd Legis., 1st Reg. Sess., ch. 29, at 67-82.
- c. Groundwater Management Act of 1980, 1980 Ariz. Sess. Laws, 34th Legis., 4th Spec. Sess., ch. 1, at 1339-494 (codified as amended at Ariz. Rev. Stat. Ann. §§ 45-401 to -637 (West Supp. 1985-1986)).

**2. Management Plans**

- a. Arizona Department of Water Resources, Management Plan for the First Management Period (1980-1990) for the Phoenix Active Management Area (Dec. 1984).\*
- b. Arizona Department of Water Resources, Management Plan for the First Management Period (1980-1990) for the Pinal Active Management Area (Dec. 1985).\*

c. Arizona Department of Water Resources,  
Management Plan for the First Management  
Period (1980-1990) for the Prescott Active  
Management Area (Dec. 1984).\*

d. Arizona Department of Water Resources,  
Management Plan for the First Management  
Period (1980-1990) for the Tucson Active  
Management Area (Dec. 1984).\*

\* The management plans listed above are avail-  
able from the Public Information Officer  
of the Arizona Department of Water  
Resources, 99 East Virginia Avenue, Phoenix,  
Arizona 85004.

## II. ARIZONA'S WATER PROBLEM

A. Arizona's major water problem is the imbalance between  
consumption and supply. The annual, renewable water  
supply for the state is only 2.8 million acre-feet  
(maf). Yet, Arizonans use 5.3 maf annually.

B. Agricultural users in central and southern Arizona  
have historically pumped vast quantities of ground-  
water. Although conversion of agricultural lands  
to municipal uses is occurring at a dramatic pace,  
agriculture still accounts for almost 90% of the  
annual water use in Arizona. The state's rapid popula-  
tion growth in recent years has resulted in a corres-  
ponding increase in the use of groundwater for

municipal and industrial purposes. To satisfy the demand for water, Arizonans annually consume approximately 2.5 million acre-feet more groundwater than is replenished. In some areas groundwater is used thirty times faster than it is replaced.

- C. The Central Arizona Project (CAP), a Federal Reclamation Project designed to bring the remaining portion of Arizona's Colorado River entitlement to central and southern Arizona, is one part of the solution to the groundwater overdraft problem. When the CAP is completed, 60% of the state's renewable supply will come from the Colorado River.
- D. But the CAP alone will not solve Arizona's groundwater overdraft problem. The estimated annual overdraft in the three central and southern Arizona counties that will receive CAP water is 1.8 million acre-feet. The estimated long-term CAP water supply is 1.2 million acre-feet per year or only 2/3 of the overdraft problem.

### III. REGULATION OF GROUNDWATER PRIOR TO 1980

- A. Arizona's overdraft problem is not a recent phenomenon. It dates back to the early 30's. It is rooted in decades of inadequate state regulation of groundwater withdrawals.
- B. Prior to 1948, there were no statutory controls on the use of groundwater. Arizona groundwater law evol-



ed primarily through court rulings in individual disputes. Beginning in 1904, the Arizona Supreme Court repeatedly stated that "percolating water" is not subject to appropriation but rather belongs to the overlying landowner. (Howard v. Perrin, 8 Ariz. 347, 353, 76 P. 460, 462 (1904), aff'd, 200 U.S. 71 (1906); McKenzie v. Moore, 20 Ariz. 1, 5, 176 P. 568, 569 (1918); Maricopa County Municipal Water Conservation District No. 1 v. Southwest Cotton Co., 39 Ariz. 65, 84, 4 P.2d 369, 376 (1931), modified on other grounds, 39 Ariz. 367, 7 P.2d 254 (1932); Campbell v. Willard, 45 Ariz. 221, 224, 42 P.2d 403, 404 (1935)). But the Supreme Court did not face the question of the extent of the rights of overlying landowners to percolating water until the early 50's.

- C. In 1948, the Secretary of the Interior warned Arizonans that a groundwater law was a prerequisite to authorization of the Central Arizona Project. After several special sessions called for the purpose of adopting groundwater controls, the Legislature enacted the Critical Groundwater Code. (1948 Ariz. Sess. Laws, 18th Legis., 6th Spec. Sess., ch. 5 (codified as amended at Ariz. Rev. Stat. Ann. §§ 45-301 to -324 (1956 & West Supp. 1979-80) (repealed 1980)). The Critical Groundwater Code prohibited the drilling of new wells to irrigate land not previously irrigated in critical groundwater areas. The Code did not limit

the amount of water that could be pumped from existing irrigation wells nor did it place any restrictions on non-irrigation users.

- D. Because the Legislature failed to adopt a comprehensive groundwater code, Arizona groundwater law continued to evolve through court decisions. In 1953, the Supreme Court adopted the rule of reasonable use. (Bristor v. Cheatham, 75 Ariz. 227, 236, 255 P.2d 173, 178-79 (1953)). Under the rule of reasonable use, a landowner was permitted to withdraw from beneath his land as much groundwater as necessary to make reasonable, beneficial use of the land.
- E. In the late 60's and 70's the Supreme Court struggled with the determination of the meaning of reasonable use, especially where groundwater was being transported away from the overlying land. (See Jarvis v. State Land Dep't., 104 Ariz. 527, 456 P.2d 385 (1969); Jarvis v. State Land Dep't., 106 Ariz. 506, 479 P.2d 169 (1970); Neal v. Hunt, 112 Ariz. 307, 541 P.2d 559 (1975); Jarvis v. State Land Dep't., 113 Ariz. 230, 550 P.2d 227 (1976); Farmers Investment Co. v. Bettwy, 113 Ariz. 520, 558 P.2d 14 (1976)).
- F. In 1976, the Arizona Supreme Court handed down a decision that threatened the water supplies of the City of Tucson, the second largest city in the state, and several major copper mines. (Farmers Investment Co. v. Bettwy, 113 Ariz. 520, 558 P.2d 14 (1976) (FICO)).

1. The FICO Court held that the Anamax mining company could not pump groundwater and transport it for use to a different location if another person's wells or lands were damaged. (Id. at 527, 558 P.2d at 21). The decision authorized the plaintiff, a large pecan farming corporation, to enjoin the groundwater withdrawals of the mining company. (Id.)
2. The Court based the plaintiff's right to injunctive relief on the presumption of injury to the plaintiff because the wells at issue were located in a critical groundwater area and the mining company was transporting water away from the critical groundwater area. (Id. at 526, 558 P.2d at 20). The mill site where the water was being used was just outside the critical groundwater area and the wells and the mill site overlay the same groundwater basin. (Id. at 523, 558 P.2d at 17).
3. The FICO court also upheld an injunction prohibiting the City of Tucson from increasing its pumping in the critical groundwater area and transporting the groundwater away from the area. (Id. at 529-30, 558 P.2d at 23-24).
4. The FICO decision raised a great hue and cry from the mines and the cities and provided the

necessary catalyst for the 1980 Groundwater Code.

- G. In 1977, a coalition of mines and municipalities persuaded the Legislature to amend the Critical Groundwater Code to allow certain transportations of water to continue free from the threat of an injunction. A landowner who claimed damage due to those transportations could resort only to a damage remedy. (1977 Ariz. Sess. Laws, 33rd Legis., 1st Reg. Sess., ch. 29, § 4, at 69-72 (adding Ariz. Rev. Stat. Ann. §§ 45-317.01 to .04) (repealed 1980)). At the same time, the Legislature established the Groundwater Management Study Commission to recommend a comprehensive groundwater management code to the Legislature. (1977 Ariz. Sess. Laws, 33rd Legis., 1st Reg. Sess, ch. 29, § 7, at 80-82).
- H. The Groundwater Management Study Commission, composed of legislators and representatives of the major water users met for 2½ years. A draft report of tentative recommendations that generally presented the consensus of the municipal and mining representatives was adopted in July 1979 and bitterly denounced by the agricultural community in a minority report and in subsequent hearings on the draft report. After the hearings, several Commission members expressed a desire to develop final recommendations that all major water users could support.

- I. A second warning from the Secretary of the Interior added a sense of urgency to the discussions. In October 1979, Secretary of the Interior Cecil Andrus informed state leaders that the Central Arizona Project would be in jeopardy if the state failed to enact meaningful groundwater reforms by the summer of 1980. Fearing that only a bill with the combined support of municipal, mining and agricultural interests could be enacted by summer, representatives of these interests began informal negotiations aimed at reconciling their differences. Under the personal chairmanship of Governor Bruce Babbitt, the negotiations continued for 6 months and resulted in a draft code.
- J. The Commission approved the draft legislation on June 6, 1980. In a one-day special session on June 11, 1980, the Legislature adopted the bill recommended by the Commission without amendment. Although many legislators were wary of passing such a far-reaching piece of legislation without more time for study and debate, legislative leaders persuaded members of both houses to accept the package unamended, thereby preserving the delicate balance achieved over months of negotiation.

#### IV. MAJOR PROVISIONS OF THE ARIZONA GROUNDWATER CODE

The Arizona Groundwater Code is found in Ariz. Rev. Stat. Ann. §§ 45-401 to -637 (West Supp. 1985-1986). All subsequent statutory references in this section are to the Arizona Groundwater Code.

##### A. Applicability

1. The Groundwater Code generally applies only to the withdrawal and use of groundwater. (A.R.S. § 45-451). The prior appropriation doctrine applies to surface water. Yet some of the specific provisions of the Code apply to "any water," (see, e.g., § 45-452.A), and others expressly apply to the conjunctive use of groundwater and surface water (see, e.g., §§ 45-467.D, -468). The Code, however, shall "not be construed to affect decreed and appropriative water rights." (§ 45-451.A).
2. The Groundwater Code applies to the entire state, but many of the major water management provisions apply only to certain geographic areas that, because of the severe overdraft problem, require more intensive management.
3. The Groundwater Code applies to "persons", and that term is broadly defined to include all water users except Indian tribes. (§ 45-402(24)).

##### B. Goals (§ 45-401)

The Code has two primary goals:

1. To reduce the severe overdraft taking place in many parts of Arizona; and
2. To allocate the state's limited groundwater resources to meet the changing needs of the state.

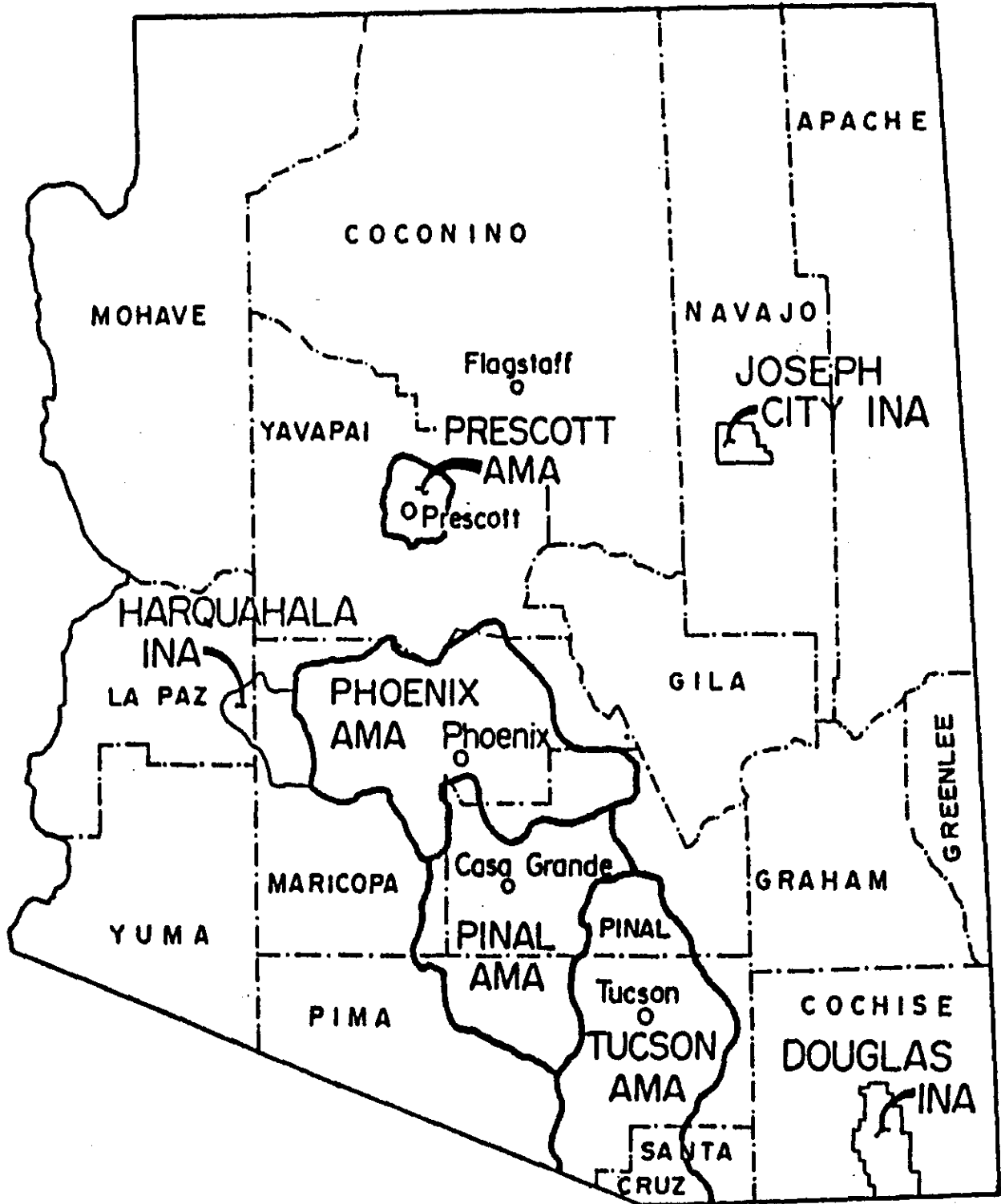
**C. Centralized Administration**

To carry out these goals the Code established a new state agency, headed by a Director appointed by the Governor. (§ 45-102). The Director is responsible for all decisions under the Groundwater Code.

**D. Active Management Areas (§§ 45-411 to -421)**

1. Because groundwater problems are not uniform statewide, the Code continued the "critical area" approach used prior to 1980. The Code establishes geographical areas known as active management areas (AMAs) in which intensive management of groundwater is required.
2. The Code designates 4 initial AMAs: Phoenix, Tucson, Prescott and Pinal whose boundaries follow hydrologic boundaries. (§ 45-411). Figure 1 shows the four initial AMAs. Those AMAs account for approximately 80% of the state's population, 60% of the groundwater pumping and 70% of the groundwater overdraft.
3. Subsequent AMAs may be established either by the Director pursuant to criteria set forth in the Code (§ 45-412) or by local initiation

# ACTIVE MANAGEMENT AREAS AND IRRIGATION NON-EXPANSION AREAS IN ARIZONA





through a petition and election procedure  
(§ 45-415).

**E. Irrigation Non-Expansion Areas (§§ 45-431 to -439)**

1. The Code establishes a second type of critical area known as an irrigation non-expansion area (INA) in which the expansion of irrigated agriculture is prohibited. (§ 45- 437). The Code designates two initial INAs: Douglas and Joseph City. (§ 45-431). Figure 1 shows the INAs.
2. Subsequent INAs may be established either by the Director pursuant to criteria set forth in the Code (§ 45-432) or by local initiation through a petition and election procedure. (§ 45-433). The Director has designated one subsequent INA: Harquahala. (See Figure 1).

**F. Groundwater Rights in AMAs**

Within AMAs, the Code abolishes the doctrine of reasonable use and replaces it with specific statutory limitations on existing and future groundwater rights. The Code establishes four types of groundwater rights within AMAs:

- Grandfathered rights.
- Service area rights.
- Withdrawal permits.
- Exempt wells.

Without one of those rights, a person may not withdraw or use groundwater in an AMA. (§ 45-451.A).

1. Existing Rights (as of June 12, 1980) - Grandfathered Rights (§§ 45-461 to -482)
  - a. As the term implies, a grandfathered right generally permits a person who was legally withdrawing or using groundwater in an AMA prior to adoption of the Code to continue to do so. (§§ 45-402.11, -462). However, a grandfathered right does not necessarily guarantee a person a right to the same quantity of water the person was using prior to adoption of the Code. The Code establishes three types of grandfathered rights: (1) irrigation grandfathered rights, (2) Type 1 non-irrigation grandfathered rights and (3) Type 2 non-irrigation grandfathered rights. (§ 45-462.D).
  - b. A person who was eligible for a grandfathered right had to apply for a certificate of grandfathered right by a statutory deadline (§ 45-476.A), or forever lose that groundwater right (§ 45-477).
  - c. Irrigation Grandfathered Rights (§ 45-465)  
A person who irrigated land in an AMA with groundwater between January 1, 1975 and January 1, 1980 and had not retired the land was eligible for an irrigation grandfathered right. (A.R.S. § 45-465). An irri-

gation grandfathered right is a right to irrigate land with groundwater. The right, however, does not specify the amount of water that may be used on the irrigated acreage. Rather, the amount of groundwater that may be used is set by the Director in the management plans which are described below. Generally, an irrigation grandfathered right is appurtenant to specific acres of land and may not be transferred to another location. (§ 45-465.C; but see §§ 45-452.B, -465.01, -465.02).

d. Type 1 Non-Irrigation Grandfathered Rights  
(§§ 45-463, -469)

A Type 1 non-irrigation grandfathered right is based on the retirement of land legally entitled to be irrigated with groundwater. Such a right may be acquired due to retirement of land for a non-irrigation use between January 1, 1965 and June 12, 1980 (§ 45-463) or after June 12, 1980

(§ 45-469). A Type 1 right generally allows a right-holder to pump annually up to three acre-feet of groundwater per acre from the retired land. (§§ 45-463.A, -469.F).

Type 1 rights are appurtenant to the retired land and may not be transferred to another location. (§§ 45-463.E, -469.G).

e. Type 2 Non-Irrigation Grandfathered Rights  
(§ 45-464)

A person who owned land from which groundwater was being withdrawn for non-irrigation use as of June 12, 1980 was eligible for a Type 2 non-irrigation grandfathered right. (§ 45-464.A). Generally, the annual amount of the right equals the maximum amount of groundwater withdrawn and used for non-irrigation purposes in any one of the five years before June 12, 1980. (§ 45-464.A). A Type 2 right may be transferred to a new location within the same AMA. (§ 45-464.G).

2. Existing Rights (as of June 12, 1980) - Service Area Rights (§§ 45-492 to -498).

Existing uses of groundwater are also permitted to continue in accordance with "service area rights." A city, town or private water company has the right to withdraw as much groundwater from within its service area as it needs to serve the residents and landowners within the service area. (§ 45-492.A). Irrigation districts that were withdrawing and delivering groundwater as of January 1, 1977 also have the right, with some restrictions, to serve the needs of landowners within their service areas. (§§ 45-494.1, -497). Irrigation districts that were not with-

drawing and delivering groundwater as of January 1, 1977 have more limited rights to withdraw and deliver groundwater. (§ 45-494.2).

3. Existing Rights (as of June 12, 1980) -  
Exempt Withdrawals (§ 45-454)

Withdrawals of groundwater for non-irrigation uses from a well with a pump capacity of not more than 35 gallons per minute are exempt from many provisions of the Code.

4. Future Rights (after June 12, 1980)

A person may obtain the right to initiate a new non-irrigation groundwater use or expand an existing use in four ways.

a. Purchase of a Grandfathered Right (§§ 45-472 to -474)

The Code allows a holder of a grandfathered right to sell the right. Although the Code limits the amount of groundwater that may be conveyed with a grandfathered right and the circumstances in which conveyance is possible, it provides many incentives for the transfer of water rights.

b. Groundwater Withdrawal Permits (§§ 45-511 to -528)

Those who are not eligible for grandfathered rights or service area rights may obtain the right to withdraw and use groundwater for non-irrigation purposes by applying

for a groundwater withdrawal permit. If certain criteria are met, the Director may issue permits for new or expanded non-irrigation uses of groundwater. Groundwater withdrawal permits specify limits on both the duration and amount of withdrawals. There are eight types of groundwater withdrawal permits:

- Dewatering permits (§ 45-513).
  - Mineral extraction and metallurgical processing permits (§ 45-514).
  - General industrial use permits (§ 45-515).
  - Poor quality groundwater withdrawal permits (§ 45-516).
  - Temporary permits for electrical energy generation (§ 45-517).
  - Temporary dewatering permits (§ 45-518).
  - Drainage water withdrawal permits (§ 45-519).
  - Hydrologic testing permits (§ 45-519.01).
- c. Service from a City, Town or Private Water Company (§ 45-492)

A person seeking to initiate or expand a non-irrigation use may seek service from a city, town or private water company.

d. Exempt Withdrawals

G. Groundwater Rights Outside AMAs

Outside of AMAs a person may "withdraw and use groundwater for reasonable and beneficial use," except

that in INAs new lands may not be brought into irrigation. (§ 45-453, -437).

H. Transportation of Groundwater (§§ 45-541 to -545)

The Code includes specific provisions governing the transportation of groundwater. Groundwater may be transported within sub-basins without payment of damages. (§§ 45-541 to -544). The transportation of groundwater between sub-basins is permissible but it is generally subject to payment of damages. (§§ 45-542 to -544).

I. Groundwater Management Plans for AMAs (§§ 45-561 to -575)

1. In addition to establishing methods for preserving existing rights and obtaining new rights to use groundwater, the Code mandates the Director to develop a series of 5 management plans for each AMA designed to achieve a statutory goal. The 5 management plans cover the period 1980-2025. (§§ 45-564.A, -565.A, -566.A, -575.A, -568.A).
2. The goal for the three urban AMAs, Phoenix, Tucson and Prescott, is safe-yield no later than the year 2025. (§ 45-562.A). This means that by 2025, groundwater withdrawals may not exceed the amount of natural and artificial groundwater recharge. (§ 45-561.6). In the Pinal AMA, which has a primarily agricultural economy, the goal is to preserve that economy as long as feasible consistent with the need to preserve

water supplies for future non-agricultural use.  
 (§ 45-562.B).

3. The statutory goals are to be achieved by a combination of mandatory conservation programs, augmentation and, if necessary, purchase and retirement of grandfathered rights.
4. Prior to each management period, the Department must develop a management plan for each AMA, including conservation requirements for all agricultural, municipal and industrial water users and distributors. Beginning with the second management plan, the Director must develop a program to augment each AMA's water supply through importation of water, storage of water, artificial groundwater recharge or other means. (§§ 45-561.1, -565.A.4). Beginning with the third management plan, the Director may include a program to purchase and retire grandfathered rights, and actual purchase and retirement by the Department may begin in the year 2006.  
(§ 45-566.A.6).

#### H. Other Management Tools

In addition to the management plans, the Code provides other significant management tools.

##### 1. Ban on New Irrigated Acreage

In adopting the Code, the Legislature invoked "its police power to prescribe which uses of



groundwater are most beneficial and economically effective." (§ 45-401.A). It banned new irrigated acreage in AMAs. (A.R.S. § 45-452). In initial AMAs, only land which was irrigated between January 1, 1975 and January 1, 1980 may be irrigated with "any water." (§ 45-452.A).

**2. Assured Water Supply**

Another major management tool is the prohibition of new residential developments in AMAs in areas without an assured water supply. Before a person may offer land in an AMA for sale or lease for residential development, the person must show that the land has an assured water supply, i.e., a continuously and legally available water supply of sufficient quantity and quality to meet the needs of the development for 100 years.

(§ 45-576.A, -576.L). Additionally, the proposed water use must be consistent with the management plan for the AMA in which the development is located and with achievement of the AMA goal.

(§ 45-576.L.2).

**3. Withdrawal Management**

Several provisions of the Groundwater Code give the Department authority to analyze proposed new withdrawals, and withdrawals in new locations, to determine whether the withdrawals are consistent with the management plan or the

management goal, or both. (§§ 45-515, -516, -518, -519, -576.L.2). Other provisions authorize restrictions on certain new withdrawals and on the pumping patterns from multiple wells to protect existing well owners and property from damage. (§§ 45-598, -601).

4. **Monitoring of Groundwater Withdrawals, Deliveries and Uses**

Various provisions of the Code enable the Department to acquire needed information on water use and to evaluate compliance with the Code and Department rules, permits and management plans. Almost all persons withdrawing groundwater in an AMA from a well with a pump capacity in excess of 35 gallons per minute must use a measuring device approved by the Department. (§ 45-604). Persons who withdraw or use groundwater in an AMA, except exempt well owners and most non-irrigation customers of cities, towns, private water companies and irrigation districts, are required to keep groundwater records and to file annual reports on groundwater withdrawals, deliveries and use. (§ 45-632). The Department has authority to perform inspections and investigations of facilities for the withdrawal, transportation or use of groundwater. (§ 45-633.A,.B). Additionally, the Department may require persons who are required to keep

groundwater records to bring in their records for an audit. (§ 45-633.C,.D).

**5. Groundwater Withdrawal Fee**

The Code requires the Director to levy and collect an annual groundwater withdrawal fee from each person who withdraws groundwater in an AMA. (§§ 45-611 to -615). The Director may levy:

- Up to \$1 per acre-foot to offset the costs of administering and enforcing the Code. (§ 45-611.1).
- Up to \$2 per acre-foot to fund the augmentation program. (§ 45-611.2).
- Up to \$2 per acre-foot for the purchase and retirement of grandfathered rights. (§ 45-611.3).

**6. Enforcement**

The Code contains stringent enforcement provisions. The Department has authority to institute show cause hearings and issue cease and desist orders to stop violations of the Code.

(§ 45-634.A-.C). If a violation continues after issuance of a cease and desist order the Department may go to Court to obtain an injunction.

(§ 45-634.D). Violations may result in civil penalties up to \$10,000 per day of violation (§ 45-635) and criminal penalties ranging from misdemeanors to felonies. (§ 45-636).

V. THE GROUNDWATER MANAGEMENT PROGRAM: THE FIRST SIX YEARS

A. Gaining the Acceptance of the Regulated Community

1. For years Arizona landowners believed that groundwater belonged to the overlying landowner and that the landowner could generally use the groundwater as he saw fit. And the Arizona courts had confirmed that belief by adopting the rule of reasonable use.
2. In 1980, the Arizona Legislature drastically changed the rules of the groundwater game -- imposing restrictions on both existing and future rights to use groundwater in the Active Management Areas. Consequently, the newly formed Arizona Department of Water Resources was faced with the challenge of gaining the acceptance of the regulated community for the new law.
3. The Department approached the task of gaining acceptance for the new law on the assumption that most persons would comply with the Code if they understood the Code and the reasons for its enactment. Accordingly, the Department embarked on a program of dissemination of information and contact with groundwater users. Many of our water management programs -- verification of grandfathered rights, collection and analysis of data on groundwater supplies and groundwater

uses, development of the first management plans and inspection of water measuring devices -- brought Department staff into one-on-one contact with groundwater users. Additionally, in developing the first management plans the Department consulted regularly with groundwater users -- either individually or through task forces -- to give them an opportunity to review the proposed conservation requirements.

4. That effort has paid off. Most people appear willing to live with the Code's restrictions. Many of them do not want to lose the benefits the Code has brought.
5. Acceptance of the new Code has not been unanimous.
  - a. One annual report was submitted with "Communist Conspiracy" scrawled in red across the form. In another case, a doctor took what appeared to be a scalpel to his annual withdrawal report and carved "NONE" into the first page.
  - b. And more serious resistance has occurred in the form of challenges to the constitutionality of the Code. One of the most novel provisions of the code is its non-severability clause. This clause states that if any portion of the Code is declared unconstitutional, the entire Code will

be null and void. (1980 Ariz. Sess. Laws, 34th Legis., 4th Spec. Sess., ch. 1, § 172 at 1494). This provision emphasizes the delicate nature of the compromises made by the negotiators and their desire to see the losses and gains of all water users stand or fall as a whole.

- c. Because of the non-severability clause, constitutional challenges to the Code were quick in coming. Such a clause allows a person to challenge all provisions of the Code even if the person is not directly impacted by those provisions.
- d. Two cases challenging the Code are most significant. In the first case, several landowners alleged that under previous Arizona law, they owned the groundwater beneath their land and that the Code therefore took property without compensation in violation of due process. (Town of Chino Valley v. City of Prescott, 131 Ariz. 78, 638 P.2d 1324 (1981), appeal dismissed, 457 U.S. 1101 (1982)). In an historic decision, a unanimous Arizona Supreme Court held that "there is no right of ownership of groundwater in Arizona prior to its capture and withdrawal from the common

supply." (Id. at 82, 638 P.2d at 1328). Since a landowner does not own the water under his land, the Court ruled that the Code does not effect "a taking of property without due process or just compensation." (Id.). Chino Valley appealed the this decision to the U.S. Supreme Court. In 1982, the Supreme Court dismissed the appeal for want of a substantial federal question. (457 U.S. 1101).

- e. The second constitutional challenge attacked virtually every provision of the Code.

(Cherry v. Steiner, 543 F.Supp. 1270 (D. Ariz. 1982), aff'd, 716 F.2d 687 (9th Cir. 1983), cert. denied, 104 S.Ct. 1719 (1984)). The District Court held that the Code "is a permissible exercise of the state's police power and does not offend the Constitution." (543 F.Supp. at 1273). In 1983, the Ninth Circuit affirmed the decision of the District Court. (716 F.2d 687). In April 1984, the U.S. Supreme Court denied the Cherry Plaintiffs' petition for a writ of certiorari. (104 S.Ct. 1719).

#### B. Certification of Grandfathered Rights

As the challenges to the constitutionality of the Code were making their way through the courts, the

Department was preoccupied with the certification of grandfathered rights. Except for a handful of thorny cases, that process has been completed. The Department received over 16,000 applications for grandfathered rights, investigated each application and issued approximately 11,000 certificates. The certification process provided the Department with an enormous amount of data about groundwater use patterns and provided the rightholder with certainty about the nature and extent of his right to use groundwater.

C. **Development and Adoption of the First Management Plans**

The Department has adopted the first management plans for the AMAs covering the period through 1990. The plans embody several far-reaching approaches to conservation.

1. **Water Duties (§ 45-564.A.1)**

The first management plans set a water duty for each farmer in the AMA who has a right to use groundwater. The water duty is the per acre amount of water the Department has determined is reasonably required to grow the crops the farmer historically grew assuming the farmer implements certain conservation practices (e.g., lined ditches and pump-back systems). The water duty determines how much groundwater the farmer may legally apply to his land.



2. Municipal Uses (§ 45-564.A.2)

- a. For municipal users -- cities, towns, private water companies and irrigation districts that deliver water for non-irrigation use (municipal providers) -- the plans set reasonable reductions in per capita use. Per capita use rates in the AMAs range from less than 100 to over 1,000 gallons per person per day. The range of required reductions in the first management plan is from 0 to 21% of the base per capita use rate.
- b. The plans also impose other conservation requirements on municipal providers. After January 1, 1987 a municipal provider:
- May not serve groundwater for new scenic or recreational lakes or pools larger than olympic size unless the lake or pool is part of a public facility or filled with effluent.
  - May not serve groundwater to newly planted roadside or median areas unless they are planted with low water using plants.
  - Must restrict deliveries of water to turf-related facilities, such as parks and golf courses, to a specified amount.

3. **Industrial Uses (§ 45-564.A.2)**

The plans require industrial users to use the latest commercially available conservation technology consistent with reasonable economic return. The plans prescribe specific conservation requirements for the turf, metal mining, electric power, sand and gravel and cattle feedlot sectors. For the remaining industrial users, the plans prescribe general conservation requirements.

4. **Distribution Systems (§ 45-564.A.3)**

The management plans also require owners or operators of municipal and irrigation distribution systems with unacceptably high levels of lost and unaccounted for water to submit water loss surveys to the Department and to develop water loss reduction plans.

5. **Compliance Date**

Water users in the Phoenix, Tucson and Prescott AMAs must be in compliance with the plans by January 1, 1987. Water users in the Pinal AMA must be in compliance by January 1, 1988.

D. **Response to the First Management Plans**

1. The Department is generally pleased with the response to the first management plans. Although almost 500 persons subject to the management plans requested either a modification of the

applicable water duty or conservation requirement(s) or more time to comply, the Department has been able to resolve most of those requests by stipulation. Many of the cases involved data entry errors by the Department resulting in incorrect water duties. Many others involved new data not previously brought to the Department's attention that justified a change in a water duty. Others involved unusual circumstances that made a particular conservation requirement unreasonable as applied to that person.

2. To date, one court case has resulted from the adoption of the management plans. The central issue in the case is whether the conservation requirements imposed by the Department's plans on private water companies conflict with the companies' duty to serve on demand asserted to be mandated under the statutes and rules of the Arizona Corporation Commission. The case is in the Arizona Superior Court, and briefing on the merits has not yet occurred.
3. One major public controversy is an indirect outgrowth of the management plans. As discussed, the management plans generally prohibit municipal providers from serving groundwater to fill new large private lakes used for scenic or recreational purposes. The plans, however, do not

attempt to regulate such lakes if they are filled with surface water or with groundwater withdrawn by individuals pursuant to grandfathered rights.

4. Unfortunately, such lakes have proliferated in industrial parks and residential subdivisions. In the Phoenix AMA, development lakes presently cover 800 acres of land, and over 1,200 more acres of lakes are now under construction or planned. The evaporation rate from lakes is six acre-feet per surface acre per year. While the lake may be attractive now, will it be as attractive years from now if it becomes too expensive to continue to refill the lake?
5. Consequently, the Department had a bill introduced in the 1986 legislative session to prohibit the use of any water, except effluent, to fill large private scenic or recreational lakes located in AMAs. The bill became a cause celebre. Developers, realtors and some farmers were outraged by the attempted incursion on "private property rights." Other farmers, most newspapers, most major cities and 90% of the public supported the bill. It became the subject of cartoons (see Figure 2) and talk shows. The controversy continued to the last day of the legislative session, and in the end the bill went down.

April 18, 1986

ARIZONA REPUBLIC

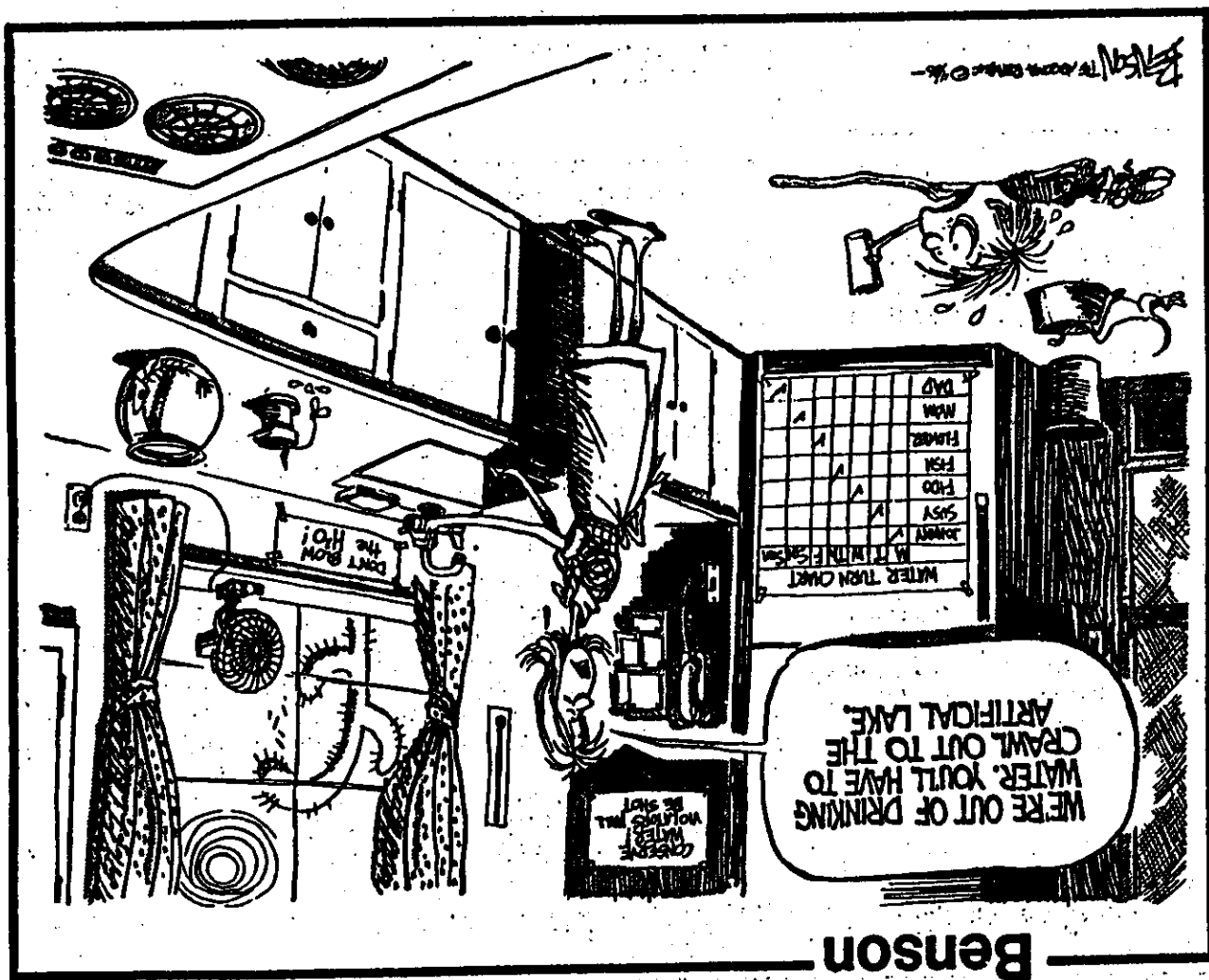


FIGURE 2

E. Development of the Second Management Plans

1. The Department has begun the planning process for the second management plans which must be proposed no later than January 1, 1988.
2. The management plans are an example of an iterative approach to achieving a set goal. The planning process for the second management plans replicates in large measure that for the first management plans. The steps in the planning process are: development of proposed conceptual approaches, collection and analysis of data, selection of preferred alternatives, evaluation by the regulated community, evaluation of water management impacts, final selection of approaches, drafting of the management plans, public hearings and adoption of the management plans.
3. The iterative process has many advantages. It gives the Department an opportunity to learn what works and what doesn't work -- to revise the conservation requirements based on feedback from the regulated community and the general public and based on projected and observed water management impacts. It also gives the Department an opportunity to set increasingly stringent conservation requirements in each successive plan.

4. The second management plans must require additional increments of conservation by agricultural, municipal and industrial users.  
(§ 45-565.A).
5. The second management plans must also include a program for augmentation of the water supply of each AMA, including incentives for artificial groundwater recharge. (§ 45-565.A.4). Many entities are already moving forward with plans to construct artificial groundwater recharge projects. And this year the Arizona Legislature enacted a comprehensive statutory framework for regulation of artificial recharge projects. The Department of Water Resources is charged with administration of the program. The legislation was an outgrowth of 6 months of negotiations among major water interests. Appendix 1 is a summary of the legislation.

F. **Development of a Groundwater Withdrawal Management Program**

1. While generally restricting access to groundwater, the Groundwater Code authorizes the Director to approve new groundwater withdrawals and withdrawals in new locations, subject to certain conditions relating to groundwater management. The Department is currently developing a with-

drawal management program designed:

- to contribute to the achievement of safe-yield in the urban AMAs.
- to protect existing water users and property owners from unreasonable damage.
- to prevent water quality degradation.
- to reduce and eventually eliminate land subsidence.

2. The program will be set forth in regulations which will establish four basic criteria to evaluate proposed withdrawals: change in water level; well interference; water quality impacts and land subsidence impacts. The latter 3 criteria are self-explanatory. The first criterion, change in water level, stems from the safe-yield goals for the urban AMAs.
3. The attainment of safe-yield requires gradual reduction, and elimination by 2025, of the groundwater overdraft. Change in water level is the single most important indicator that overdraft is occurring. To prevent acceleration of the overdraft rate in the Phoenix and Tucson AMAs, the Department must restrict new withdrawals in areas with excessive decline rates. The Department must also impose such restrictions



to protect existing wells and surrounding lands from unreasonable damage and to implement the assured supply requirements for certain new withdrawals.

4. For the first management period, the Department will determine a maximum allowable rate of decline for the Phoenix and Tucson AMAs and may establish different maximum rates of decline for some sub-basins within the AMA. The allowable rate of decline will be determined on the basis of the safe-yield goal and pertinent water resources data, including historic decline rate, thickness of the saturated material, amount of overdraft and projected water demand.

**G. Assured Water Supply**

1. As previously discussed, a person may not sell or lease subdivided land in an AMA unless the person can show that the land has an assured water supply. If the proposed source of water for a development is groundwater, the groundwater must be available at a reasonable depth. The present assured water supply criteria allow a 10 foot annual decline in the water table. The Groundwater Code establishes safe-yield as the goal for the Phoenix, Prescott and Tucson AMAs. Safe-yield means the achievement and maintenance of a long term balance between the annual

amount of groundwater withdrawn in an AMA and the annual amount of natural and artificial groundwater recharge in the AMA. Since a proposed water use that is subject to the assured water supply provisions must conform to the water management goal of the AMA, the Department plans to tighten the annual decline criteria to help achieve the safe-yield goal for the Phoenix, Prescott and Tucson AMAs.

2. In some cases, the assured water supply provisions of the Groundwater Code have caused residential growth to decline in areas without sufficient water supplies for additional development.
3. In the case of some cities in central Arizona, the assured water supply provisions have caused the cities to look for ways of obtaining additional water supplies from outside the AMA to meet the needs of their rapidly expanding populations. Several cities have recently purchased agricultural land with the intent of retiring that land and transporting the water which would have been used for agricultural purposes to the city for municipal purposes.
4. The practice of purchasing agricultural land for its water rights has become an issue of great concern in Arizona's rural areas. Many people in the Pinal AMA (where the city of Mesa,

a neighbor of Phoenix, has recently purchased over 11,000 acres of farm land) fear the retired farmland will become a wasteland - an eyesore good only for growing tumbleweed. Additionally, since the Arizona Constitution exempts municipal property from property taxes, the rural communities are concerned that this practice will erode their tax base.

5. Farmers in the rural areas have mixed views. The right to sell land with irrigation grandfathered rights for non-irrigation uses was a hard-fought victory for the farmers in the negotiation of the Groundwater Code. The farmers do not want to see this right eroded.
6. The ability to transport water is essential for successful water management and the Department is concerned about any attempt to prohibit the transportation of groundwater across AMA boundaries. At the same time, the Department is sympathetic to the concerns of rural communities whose future growth may be jeopardized by the cities' ability to lock up portions of the rural water supply.
7. The "transportation" issue cropped up in the Legislature in 1985 and again this year. This year the Legislature enacted bills that give the cities permissive authority to pay in lieu

taxes on rural land purchased for the appurtenant water rights and mandating a study of the economic and hydrologic impacts of transporting water from one area of the state to another.

The Department will conduct the hydrologic portion of the study.

#### H. Monitoring and Enforcement

1. As with all regulatory laws, widespread voluntary compliance is the key to the success of the Department's groundwater management program. Voluntary compliance by the public is dependent on the general perception that the law is being fairly and reasonably implemented and enforced.
2. In order to build trust and credibility with the public the Department has instituted a progressive program of education, compliance and formal enforcement activities.
3. The first level of the Department's compliance/enforcement effort is education.
4. The second level of the Department's compliance/enforcement effort is designed to achieve voluntary compliance by violators. This stage is handled by the Active Management Area staff. To resolve a violation at this stage a person must sign a stipulation and consent order.
5. The third level of the Department's efforts to insure compliance involves formal enforcement

actions. This stage is handled by the Department's legal staff. If settlement can be reached, a stipulation and consent order is signed. If settlement cannot be reached, the Department holds a show cause hearing and issues a cease and desist order or orders other appropriate relief. If necessary the Department will go to court to obtain civil penalties or injunctions or ask the County Attorney to bring a criminal action.

6. Violations come to the Department's attention through third party complaints, self-disclosure, referrals by other government agencies and private entities, monitoring of Department records, reports from Department field staff, field inspections and remote sensing. The Department has developed a set of standardized procedures and forms for inspections, investigations and audits, for subsequent compliance and enforcement activities and for follow-up activities and status reports.



ARTIFICIAL GROUNDWATER RECHARGE  
AND UNDERGROUND STORAGE PROJECTS

H.B. 2209

BACKGROUND INFORMATION AND SUMMARY  
OF PROPOSED FLOOR AMENDMENT

I. BACKGROUND

A. Purpose of Artificial Groundwater Recharge and Under-  
ground Storage Projects

Artificial groundwater recharge and underground storage projects can help Arizona make full use of all available water supplies. Such projects will provide a means to reduce the groundwater overdraft and to store water for future use.

B. Sources of Water

Potential sources of water for the projects include excess CAP water, other imported surface water, treated effluent and flood waters.

C. Need for Legislation

Although many entities in Arizona are moving forward with plans to construct artificial groundwater recharge projects or underground storage projects, Arizona's present legal framework for artificial recharge and underground storage is unclear. There are no statutes or court cases addressing artificial recharge or underground storage. The proposed floor amendment to H.B. 2209 would establish a comprehensive statutory framework for statewide regulation of artificial recharge and underground storage projects.

II. PROVISIONS OF THE PROPOSED FLOOR AMENDMENT

A. Recharge Projects vs. Underground Storage  
and Recovery Projects

The proposed floor amendment distinguishes between two types of projects:

- Recharge projects. Recharge projects are projects designed to replenish the groundwater supply. The sponsors of a recharge project would not recover the recharged water. Water recharged by a recharge project becomes groundwater.
- Underground storage and recovery projects (storage projects). Storage projects are projects designed

to store water underground for future use by the sponsors of the project. Water stored underground for future use is called stored water. When stored water is recovered, it may be used for any purpose for which the water could have been used before it was stored underground.

#### B. Project Permits

The proposed floor amendment requires a person who seeks to operate a recharge project or a storage project to obtain a permit from the Department of Water Resources. Any person may apply for a permit. A permit may be issued if the Director of the Department determines that certain criteria have been met, including:

1. The applicant has the technical and financial capability to construct and operate the project.
2. The applicant has a right to use the proposed source of water.
3. The project is hydrologically feasible.
4. The project will not cause unreasonable harm to land or other water users within the area of hydrologic impact of the project.
5. The applicant has applied for any water quality permit required by DHS.

A permittee may not proceed to construct or operate a project until the permittee receives any water quality permit required by DHS.

#### C. Storage Projects

##### 1. Recovery Well Permits

The proposed floor amendment establishes a separate permit system for wells used to recover stored water. New recovery wells must comply with DWR regulations designed to protect against damage to surrounding land and other water users.

##### 2. Location of Recovery Wells

Under the proposed amendment, recovery wells must generally be located within the area of hydrologic impact of the storage project. However, in an active management area, a city, town, private water company or irrigation district that operates a project would be allowed to recover the water



from any location outside the area of hydrologic impact of the project but within its service area, if recovery at that location is consistent with the management plan and achievement of the management goal for the active management area.

### 3. Storage Accounts

The proposed amendment establishes a storage account for each project and a system of credits and debits. Under that system, a person recovering stored water would be required to leave in the ground between 0% and 10% of the recoverable amount of stored water. That percentage has been called the "cut for the aquifer." The amount of the cut for the aquifer varies with the type of water stored underground and the location of the recovery wells.

### 4. Service Area

The proposed floor amendment provides that if a city, town, private water company or irrigation district in an active management area locates a storage project or recovers stored water outside its service area, the recovery and transportation facilities are not part of the entity's service area. This provision prevents such an entity from using a storage project to expand its service area. However, if the area of hydrologic impact of a storage project operated by a city, town or private water company is within the exterior boundaries of the entity's service area but not part of the service area of another city, town, private water company or irrigation district, the area would be deemed to be part of the entity's service area. This provision would allow cities, towns and private water companies to locate service area wells in those areas.

### 5. Assured Water Supply

The proposed floor amendment allows a person who has built up credits in a storage account to use the credits in demonstrating that an assured water supply exists for a proposed development or a service area.

### 6. Protection of Stored Water

The proposed amendment prohibits an applicant for a new groundwater permit, a designation or certificate of assured water supply or a designation or letter of adequate water supply from relying on water stored underground by someone else to show that the applicant meets the criteria for issuance of the permit, certificate, designation or letter.

## 7. Other Provisions

The proposed floor amendment requires persons who recover stored water to measure the withdrawals with measuring devices approved by DWR and to pay an annual stored water recovery fee to help offset the costs of administering and enforcing the program. The fee will be deposited in the general fund.

The proposed amendment also includes provisions governing annual reports, inspections, investigations, audits, enforcement hearings, cease and desist orders and civil penalties. Those provisions are modeled on the Groundwater Code.