ARIZONA WATER BANKING AUTHORITY

WEDNESDAY, SEPTEMBER 16, 1998
ARIZONA DEPARTMENT OF WATER RESOURCES

PLEASE PRINT

	NAME	REPRESENTING
1	Harry Ruzgerian	MWDSC
2	Alan Forrest	Community Water Co. - G.V.
3	FRANK SAUNO	Town of Parker
4	Mark Myers	MDWID
5	Sharon E Megdal	MegEon Consulting for Pima Co. FCD
6	Greg Bustner	HydroSystems, Inc.
7	G.L. EDWARDS	CRC-NV
8	KURT FRITSCH	CRC-NV
9	Don Pope	Yuma County Water Users Assn (Study Commission)
10	Barbara Herbert	BOB LYNCH (EEDA)
11	DOROTHY TILLMAN-PALMER	VIDLER WATER COMPANY
12	Richard Siegel	SRP
13	Eric Swanty	SUNWEST HOLDINGS
14	Ray Roestel	BIA PAO
15	Bill Chase	Phoenix
16	Larry Dozier	CAP
17	John Newmen	CAP
18	ROCK CRAMER	VICKSBURG FARMS
19	Floyd Marsh	City of Scottsdale
20	Cynthia Stefanovic	AZ State Land Dept.
21	David M. Johnson	USBR
22	Mary Quinn	Ellis Baker & Porter
23	Jim Standring	ADWR - Legal Division
24	Bill Sullivan	Martinez & Curtis
25	Dennis Rule	Tucson
26	Paul Orme	MSDDD/CADDD
27	Brian Betchan	MSDD
28	DENNIS KIMBERLIN	ADWR
29	DAVID IWANSKI	ABC

ARIZONA WATER BANKING AUTHORITY

PLEASE PRINT

WEDNESDAY, SEPTEMBER 16, 1998
ARIZONA DEPARTMENT OF WATER RESOURCES

	NAME	REPRESENTING
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31	Rhonda Clark	B-E
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ARIZONA WATER BANKING AUTHORITY

E-MAIL ADDRESS - UPDATE

PLEASE PRINT

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Summary of September 16, 1998 AWBA Meeting[1]

I. Welcome/Opening Remarks

II. Minutes: The Authority approved the minutes from the August 19, 1998 Authority meeting.

III. Plan of Operation and Other Staff Activities

Deliveries for the Month of August

Tim Henley, Manager of the AWBA, explained that AWBA August deliveries were low and reiterated his comments from last month's meeting that a combination of wet weather and CAP pool water issues make it unlikely that the AWBA will meet its recharge goals for 1998. The Bank will probably only recharge 250,000 acre feet of water in 1998.

Other Issues

Kim Kunasek of the AWBA described the progress of the CAWCD-U.S. Bureau of Reclamation lawsuit. The first phase of the trial (contract interpretation) is complete, and both parties are awaiting disposition of this first phase before the trial proceeds to the next phase. Judge Carroll is working on the ruling at this time, and an order should be forthcoming soon.

The Upper Santa Cruz Water Users Group completed its feasibility study in August. The USCWUG was formed to explore the feasibility of augmenting existing groundwater supplies with CAP water in the Sahuarita-Green Valley area. The USCWUG consists of representatives of water users, government agencies, and other stakeholders in the area. The project generally identified alternatives and costs for delivering CAP water to potential users. The group conducted preliminary investigations, performed route studies and conceptual designs, perfomred preliminary design of optimal alternatives, performed financial feasibility analyses of optimal routes, and prepared the final report. It is available if anyone would like to review it, though it is voluminous.

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[1]Please note that these are not formal minutes but a summary of discussion and action of the meeting. Official minutes are prepared prior the next month's Authority meeting and are approved at that meeting.

IV. Tucson AMA Facility Plan

Mr. Henley walked the AWBA members through the Facility Plan for the Tucson AMA. Some changes from last month's meeting include expanded comments on the "ranking" of certain facilities based on the degree to which they can acheive the AWBA's goals. Another chart contains refined criteria for ranking each facility and the goals the facility can achieve as excellent, good, minimal, and not likely.

Mr. Henley explained that certain funds can only be used for certain purposes, which builds in an institutional limit on recharge spending in Tucson. The AWBA may need to spend more general fund monies in the Tucson AMA.

Tom Griffin, Vice-Chairman, believes the Authority should consider earmarking the general fund monies in the future. Mr. Griffin is concerned that without direction regarding proportion of funds that may be used for specific purposes, some potential recipients of general fund monies could be shortchanged. Tim Henley responded that the Study Commission has examined this issue indirectly and will make recommendations encompassing this concept in its report to the Legislature in November.

Mr. Henley also mentioned that the Bank will need to consider different ways of approaching groundwater savings facilities in Tucson to meet its goals.

V. Vidler Water Company Presentation

Dorothy Timian-Palmer, Chief Operating Officer of Vidler Water Company, made a short presentation to the Authority. She explained that Vidler has a pilot project permit to store up to 10,000 af of water over two years at its MBT Ranch site and is currently in the process of obtaining a full-scale permit to store 20,000 af annually. Vidler would like the AWBA to store water at its facility. Ms. Palmer asked the Authority to authorize the AWBA staff to begin negotations to store water at MBT Ranch as soon as end-1998.

Chairman Pearson asked AWBA staff to prepare a policy paper detailing the implications of storing water outside of the AMA and storing water with privately owned companies and addressing recovery issues.

VI. Study Commission Activities

Herb Dishlip, Assistant Director of ADWR, updated the Authority on upcoming activities of the Study Commission. Mr. Dishlip explained that the full report from the Study Commission will be forthcoming in November 1998, and the AWBA intends to recommend legislation to give the AWBA additional powers and duties.

VII. Interstate Discussions

Federal Rule Governing Interstate Water Banking

The federal rule governing interstate water banking has not yet been released.

California 4.4 Plan

The financial component of the deal between the San Diego County Water Authority and the Imperial Irrigation District has been finalized. The agreement allows water saved through farm irrigation conservation techniques to be transferred through the MWD canal to San Diego County. This will help California get closer to its 4.4 maf allocation, which is has been exceeding by almost 800,000 acre feet annually for years now.

VIII. Call to the Public

The next meetings are scheduled for **October 21 and November 18.**

The meeting was adjourned at 11:00 a.m.

Arizona Water Banking Authority

500 North Third Street, Phoenix, Arizona 85004
Telephone 602-417-2418
Fax 602-417-2401

FINAL AGENDA

Wednesday, September 16, 1998
9:30 a.m.

Arizona Department of Water Resources
Third floor conference room

I. Welcome / Opening Remarks

II. Adoption of Minutes of August 19 Meeting

III. Discussion of the 1998 Annual Plan of Operation and Staff Activities

IV. Approval of the Draft Tucson Facilities Plan

V. Presentation by Vidler Water Company

VI. Update on Study Commission Activities

VII. Update on Interstate Issues

VIII. Call to the Public

IX. Adjournment

Future Meeting Dates:
Wednesday, October 21, 1998
Wednesday, November 18, 1998

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting the Arizona Water Banking Authority at (602) 417-2418 or (602) 417-2455 (T.T.Y.). Requests should be made as early as possible to allow time to arrange the accommodation.

ARIZONA WATER BANKING AUTHORITY
Draft Minutes

August 19, 1998
Arizona Department of Water Resources

Welcome / Opening Remarks
Vice Chairman, Tom Griffin chaired the meeting in Chairman Pearson's absence. All other Water Banking Authority members (Authority) were present except the two *ex officio* members.

Adoption of Minutes of July 15 Minutes
The July 15 minutes were adopted as submitted.

Discussion of the 1998 Annual Plan of Operation and Staff Activities
Tim Henley, Manager of the Arizona Water Banking Authority (AWBA), discussed operation of the AWBA and monthly water deliveries for July. Mr. Henley explained that July deliveries were low (around 9800 af) due to a number of circumstances, mostly financial considerations and wet weather conditions. The AWBA has been informed that RWCD will not take any AWBA water for the rest of 1998. MWD may begin in-lieu recharge with the cities, and the AWBA may need to give up some MWD storage capacity. Tonopah Irrigation District will not be using the AWBA water it planned for the remainder of 1998. Several months of low deliveries combined with some irrigation districts' decision to rely on groundwater make it unlikely that the AWBA will meet its recharge goals for 1998. Mr. Henley stated that he will continue to work to develop other potential partners.

Mr. Henley explained that the purpose for creating the AWBA was to maximize Arizona's use of its 2.8 million acre foot allotment of CAP water, and the AWBA should not impede efforts to accomplish this goal by other methods (e.g., if irrigation districts or cities find ways to accomplish this goals without the direct involvement of the AWBA). The public policy of the state can still be served even if the AWBA falls below its goals for one year. Some additional recharge may result from increased GRUSP deliveries and deliveries to the Pima Mine Road USF in the Tucson AMA. In addition, the AWBA is currently holding meetings with other potential partners: Vicksburg Farms and Vidler Water Company.

Other Issues
Kim Kunasek of the AWBA stated that she was informed that Judge Carroll has accepted the Report and Recommendation of the Special Master to deny the U.S. Bureau of Reclamation's (Bureau) motion to amend their counterclaim to include counts that pertain to the AWBA, specifically that the CAWCD was not legally entitled to sell its excess water to the AWBA. Larry Dozier explained that the first phase of the trial has concluded and that Judge Carroll will probably rule on the issues from the first phase of the trial before proceeding to the second phase. Phase II of the trial is scheduled to begin in October.

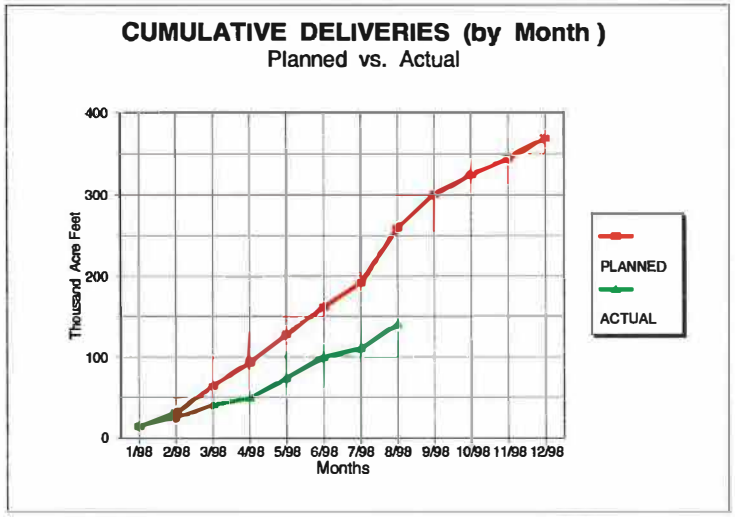
Grady Gammage, Jr., President of the CAWCD Board, explained that the State is waiting for the Interior Department's response to the State's last proposal on Indian water settlements. The Department is formulating a response that will address Gila River claims settlements.

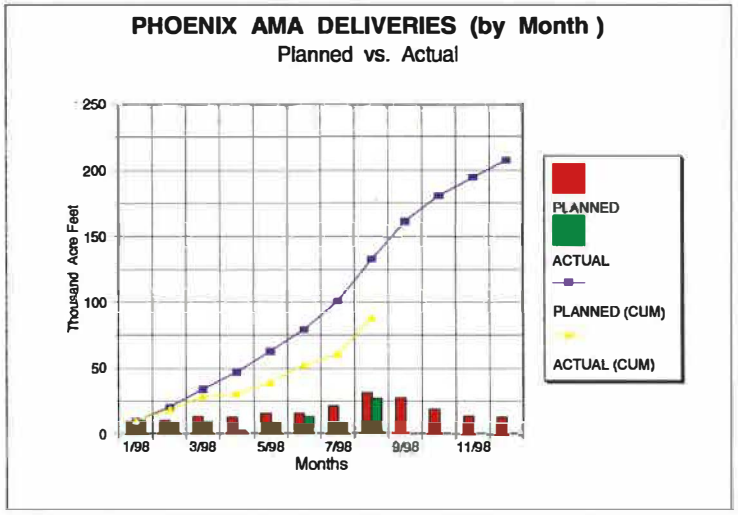
The Gila River Indian Community claims are being actively negotiated. The federal government (in trust relationship with Indian communities) may respond to the most recent State offer in early September. The CAWCD-USBR lawsuit settlement negotiations are unlikely to proceed without a resolution of the Gila issues.

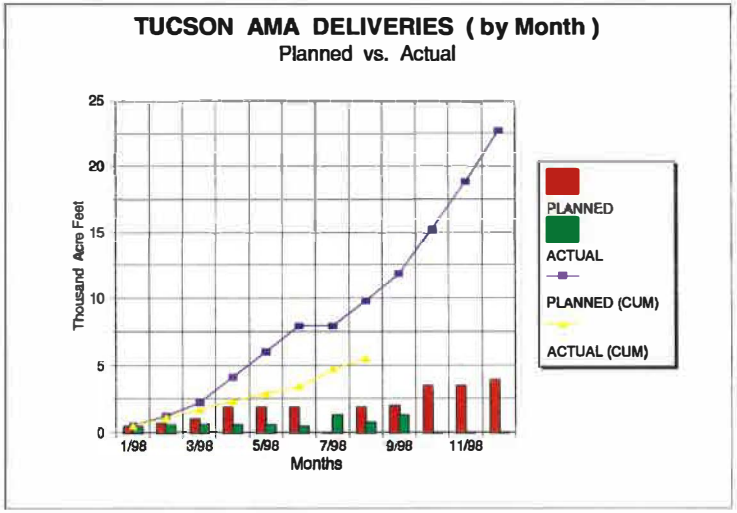
4¢ Tax Revenues
The CAWCD has formally notified the AWBA that it will make funds collected from the 4¢ ad valorem tax available to the AWBA.

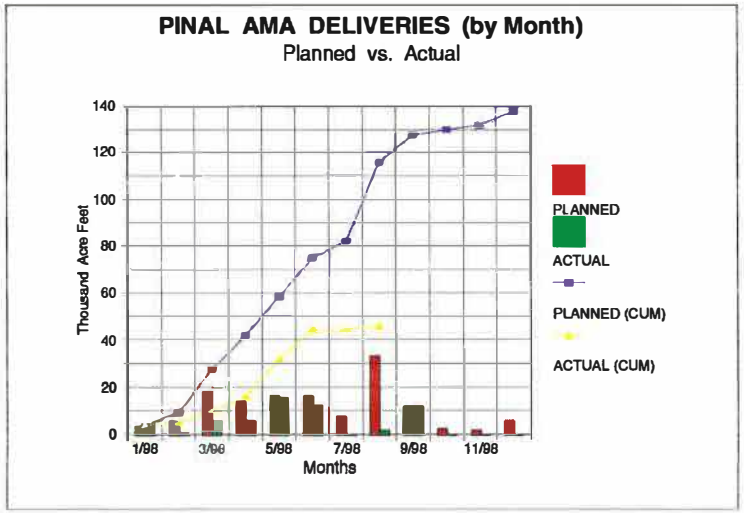
Update on the Draft Facilities Plan
Mr. Henley walked the AWBA members through the Facility Plan for the Tucson AMA. AWBA staff will present the plan at the Tucson GUAC meeting on September 3 as part of the public notice process that is required by law. Mr. Henley stated he is hoping that the Plan will be approved at the upcoming AWBA meeting in September.

1998 PLAN OF OPERATION









1998 PLAN OF OPERATION BY ENTITY

Actual deliveries updated 14-Sep-98

		jan	feb	mar	apr	may	jun	jul	aug	sep	
Phoenix AMA											
	GRUSP	8,032	8,551	5,284	0	5,237	5,904	5,595	6,324	7,200	GRUSP
	RWCD	0	0	0	0	0	0	0	0	0	RWCD
	NMIDD	2,233	286	2,247	0	0	4,959	271	12,811	9,600	NMIDD
	QCID	0	0	0	0	0	0	0	5,884	9,384	QCID
	MWD	0	0	2,373	2,399	2,701	2,604	2,665	2,866	1,412	MWD
	CHCID	0	0	0	0	22	0	0	50	100	CHCID
	TID	0	0	0	0	0	0	0	0	250	TID
Subtotal		10,265	8,837	9,904	2,399	7,960	13,467	8,531	27,935	27,946	
Pinal AMA											
	CAIDD	0	0	0	0	0	0	0	0	9,384	CAIDD
	MSIDD	2,430	0	0	0	8,792	3,247	0	1,799	620	MSIDD
	HIDD	1,819	708	5,284	5,905	6,901	9,302	0	0	2,000	HIDD
Subtotal		4,249	708	5,284	5,905	15,693	12,549	0	1,799	12,004	
Tucson AMA											
	Avra Valley	0	0	0	0	0	0	675	374	300	Avra Valle
	CAVSARP	531	579	576	597	600	537	652	420	420	CAVSARF
	Pima Mine	0	0	0	0	0	0	0	0	900	Pima Mine
	Lower Santa Cruz	0	0	0	0	0	0	0	0	0	L. Santa C
Subtotal		531	579	576	597	600	537	1,327	794	1,620	
TOTAL		15,045	10,124	15,764	8,901	24,253	26,553	9,858	30,528	41,570	

Arizona Water Banking Authority

Facility Plan

Tucson Active Management Area

September 1998

Table of Contents

I. Introduction

The Arizona Water Banking Authority (AWBA) was created in 1996 to provide the necessary resources and organization to take currently unused Colorado River water and store it for future use. Key benefits of the AWBA include:

Shortage Protection - protecting central Arizona communities dependent on the CAP by providing a stored reserve of water that can be tapped during times of shortage or drought on the Colorado River.

Enhanced Water Management - replenishing depleted groundwater aquifers with CAP water, thereby helping the State meet its groundwater management goals and objectives.

Indian Water Rights Settlements - providing another pool of water to be used in settlements.

Statewide benefit - assisting Arizona communities along the Colorado River by protecting their Colorado River supply against shortage or drought. Cities could acquire credits through the AWBA for water stored in central Arizona and redeem those credits by diverting water directly from the Colorado River through an exchange with the Central Arizona Project (CAP).

Interstate Water Transfers - contracting with similar authorities in California and Nevada to allow these states to annually recharge unused Colorado River water, including surpluses. The contracting state would pay to store water in Arizona, helping to replenish Arizona's aquifers, and in the future, these states could exchange the credits they have developed with the Central Arizona Water Conservation District (CAWCD) for water that can be pumped directly from the River. The program does not involve the sale of any future rights to water, only a specific quantity of currently unused water.

Under the AWBA's enabling legislation, the AWBA was required to complete a Facilities Inventory ("Inventory") of water storage facilities in the state by March 1997. *See* A.R.S. § 45-2452.A. The Inventory was conducted to determine whether existing storage facilities were available to meet the AWBA's needs for the following ten-year period.

The Inventory examined the three Active Management Areas ("AMAs") and the remaining regions of the state. Each of the AMAs was examined for existing storage facilities that are physically capable of storing CAP water. That capacity was then compared to estimated AWBA storage needs for each area. The AWBA assumed that reevaluations of the storage facility inventory would be necessary more frequently than the statutory minimum of every five years, particularly in the early years of the AWBA's operation.

To ascertain the quantities of water the AWBA needs to recharge in order to protect Arizona

municipal and industrial (M&I) water supplies against the shortages that will occur in their Colorado River supplies, the AWBA used information developed by the Arizona Water Banking Authority Study Commission[1] Planning and Modeling subcommittee. The subcommittee examined municipal growth, water supplies and demand assumptions. Using these assumptions, the subcommittee created a model which was used to examine future Colorado River operating scenarios. The subcommittee used this model to estimate potential water supply available from the Colorado River and the shortages associated with that supply for the next hundred years. Based on the information developed by the subcommittee, the AWBA concluded that it would need to recharge approximately 700,000 to 750,000 acre feet (af) of water in the Tucson AMA to create sufficient long-term storage credits to protect CAP M&I supplies for the next 100 years or approximately 35,000 to 40,000 af per year for the next eighteen years .

Based upon a review of available facilities and consideration of certain institutional issues, the Inventory concluded that additional storage facilities are necessary to meet the needs of the AWBA for the next ten years in the Tucson AMA. Based on this determination, the AWBA is required by statute to develop a plan ("Facility Plan") for additional storage facilities that specifies the type, location, date needed, and capacity of storage facilities necessary to meet the AWBA's needs. *See* A.R.S. § 45-2453.A.

[1] The AWBA's enabling legislation established a Water Banking Authority Study Commission ("Study Commission") to examine potential future opportunities for the AWBA.

II. Facility Plan Development

By law, the AWBA must follow a specific process prior to developing its Facility Plan. The AWBA has completed several of these requirements but must complete them all prior to approving a final plan. In accordance with A.R.S. § 45-2453, the AWBA must do all of the following:

1) consider the amount of additional storage capacity needed to meet the AWBA's needs;
2) consult with ADWR with respect to where water storage would most contribute to meeting the water management objectives;
3) consider the advice of CAWCD regarding the feasibility of delivering and storing CAP water at any proposed storage facility;
4) seek the advice of the ADEQ regarding any potential adverse impacts from a proposed storage facility;
5) consider the potential costs to the AWBA of facilitating construction or development of a proposed storage facility and cost-effectiveness of any proposed storage facility;
6) ask the CAWCD whether it or other entities would be willing to construct, maintain, and operate any proposed storage facility;
7) consider the way in which water stored at a proposed storage facility could be used by the Authority to achieve policy goals; and
8) consider any other relevant factors.

This Facility Plan identifies the facilities in the Tucson area that could be available to the AWBA to meet its statutory objectives. When developing its annual Plan of Operation, the AWBA will determine through a public notice process which facilities will actually be used and the quantity of water to be stored at those facilities in any given year. In the Tucson area, longer-term commitments or partnerships for the annual storage of certain quantities of water at specific facilities may be required so that those facilities can be developed. Based upon available funding, supply, long-term commitments, and public comments, some facilities described in this Facility Plan may not be included in the AWBA's annual Plan of Operation.

III. Institutional and Financial Considerations

A. *The Regional Recharge Plan*

After the AWBA's March 1997 Facilities Inventory concluded that the Tucson AMA had insufficient recharge capacity for fulfillment of the AWBA's goals, the Tucson AMA Institutional and Policy Advisory Group (IPAG) and the Regional Recharge Committee (RRC) (a group of technical experts in fields related to recharge) completed a Regional Recharge Plan and in November 1997 presented its findings to the AWBA. The Regional Recharge Plan outlined recharge demand, potential project participants, circumstances that will affect water demand, sources of recharge water, and site assessment and capacity analysis. The Regional Recharge Plan then categorized recharge projects by feasibility, capacity, and groundwater management goals and included models showing varying demand scenarios. The Regional Recharge Plan did not contain specific recommendations to the AWBA but provided an overview of some of the benefits and drawbacks of recharging water in certain facilities (existing and planned) in different areas of the AMA.

In January 1998, the AWBA amended the Inventory and set forth the following approximate time line for completion of the Tucson AMA Facility Plan:

February 1998:	Initiate discussions with ADWR
March 1998:	Initiate discussions with CAWCD
June 1998:	Draft Facility Plan available
August - September 1998:	Facility Plan ready for Authority approval

In June 1998, the RRC and the IPAG updated the Regional Recharge Plan to include recharge project assessments. The Plan identified possible candidates for the development of additional capacity in the AMA and ranked those candidates based on feasibility, capacity, and ability to achieve groundwater management goals. The specific objectives identified by the Regional Recharge Plan process include maximizing use of renewable water supplies in the Tucson AMA, optimizing sharing of recharge, pumping and transmission facilities, expediting selection, testing, and construction of groundwater recharge facilities, and providing a background document for the Facility Plan that the AWBA must complete. The AWBA has incorporated those findings into this Facility Plan.

The Tucson AMA presents some unique issues for the AWBA. In 1995, Tucson citizens approved Proposition 200, the Water Consumer Protection Act, which limits the ways in which the City of Tucson's CAP allocation can be used. Proposition 200 prohibits delivery of CAP water to potable water customers unless the CAP water is treated to the same quality as Avra Valley groundwater (i.e., the same levels of water hardness, salinity, and dissolved organic material).

The City of Tucson is pursuing a recharge strategy that would allow it to comply with the provisions of Proposition 200 and meet the various water supply goals. This strategy would replace pumping from the City's Central Well Field with water recovered from the Central Avra Valley

Storage and Recovery Project (CAVSARP), a large direct recharge facility. Because the quantity of water Tucson needs to recharge in light of the legal requirements imposed by Proposition 200 is uncertain, the AWBA was required to investigate sites to accomplish its recharge without impinging upon Tucson's need to recharge water for current and future use. Both existing and planned sites are being considered, but only those which offer potential storage opportunities for the AWBA were included in this report.

In addition to CAVSARP, two other direct recharge facilities in the Tucson AMA (the Avra Valley Recharge Project (AVRP) and the Pima Mine Road facility (PMR)) are on-line and will help the AMA achieve its water management goals. The AWBA is recharging as much water as possible at these three facilities. As other facilities become available, the AWBA will utilize those facilities if they are cost-efficient and meet some or all of the groundwater management objectives.

B. *Financial Considerations*

In addition to determining where to recharge water for maximum benefit to the AMA and to fulfill the state's groundwater management objectives, the AWBA must also take into consideration the limited funding and the cost to recharge water in the Tucson AMA. Much of the AWBA's money comes from existing revenue sources and from fees that are charged to those benefiting directly from the stored water. The three sources of funding include:

- Fees for groundwater pumping are currently collected within the Phoenix, Pinal, and Tucson Active Management Areas (AMAs). For the Tucson AMA pumping fees for water banking purposes are $2.50 per acre foot. The long-term credits developed by these fees may be distributed or extinguished to implement Indian settlements or to meet water management objectives. *Money from this source must be used for the benefit of the Active Management Area in which it was collected.*

- The CAP is authorized to levy a four-cent *ad valorem* property tax through 2016 in the CAP service area to pay for water storage. The long-term credits developed by the property tax must be distributed to CAWCD to meet the demands of CAWCD's municipal and industrial users during times of shortages to or disruptions of the Central Arizona Project. *Money from this source must be used to benefit the county in which it was collected.*

- A general fund appropriation in the amount the Arizona Legislature and Governor believe will allow the AWBA to fulfill its objectives. The 1997 appropriation amounted to $2 million but none was expended in the Tucson area. The long-term credits developed with these funds may be used to assist communities along the Colorado River, meet the demands of CAWCD's municipal and industrial users during times of shortages to or disruptions of the Central Arizona Project, to help the State meet its water management objectives, or as a component of an Indian water rights settlement.

Based on the funds collected for the Tucson AMA in 1997, the AWBA estimates that approximately $1.9 million will be available annually for recharge see **Table 1**. The AWBA estimates that recharge in the Tucson AMA will cost approximately $60 per acre foot annually see **Table 2**. For purposes of determining annual estimated recharge capability based on the expected funds developed in the area, it is estimated that approximately 32,000 acre feet could be recharged annually in the Tucson AMA see **Table 3**.

Table 1

Available Arizona Water Banking Authority Funds	
Four-Cent Tax	$1.2 million
Groundwater Withdrawal Fees	.7 million
Total	**$1.9 million**

Table 2

Average Cost of Recharge in Tucson Area	
CAP Delivery Rate	$45 per acre foot
Average Direct Recharge Facility Rate	$15 per acre foot
Total	**$60 per acre foot**

Table 3

Annual Capacity Capability	
Funds Available Four cent tax Withdrawal Fee	$1.9 million $1.2 million $0.7 million
Average Cost of Recharge in Tucson AMA	$60 per acre foot
Total **From Four cent tax** **From Withdrawal Fee**	**32,000 acre feet annually** **20,000 af annually** **12,000 af annually**

Based on the need to recharge approximately 35,000 to 40,000 af annually to protect against CAP shortages and the fact that the four cent tax collected in the Pima County is only sufficient to accomplish about half that amount, some general fund monies must be expended in the Tucson area if the M&I supplies are to be fully protected. As much as one million dollars in general fund appropriations may be required

IV. Available Facilities

In order to evaluate the need for additional facilities in the Tucson area, AWBA staff consulted CAWCD and Tucson AMA staffs and representatives from the Tucson IPAG. The AWBA staff then utilized the Regional Recharge Plan as its source of information for existing and potential recharge facilities including current estimates of recharge capacity, and how the each facility could achieve the various goals of the AWBA.

Table 4 contains a description of the recharge facilities that have some potential to meet the AWBA's goals. It also includes a description of the facilities' opportunity to meet those goals based on seven factors: capacity, cost, shortage protection, groundwater management, Indian water rights settlement opportunities, Interstate storage opportunities, and ability to recover water.

Table 4

Project-by-Project Analysis of Water Storage Facilities

Project/Description	Status	Participants	Opportunity for Water Bank Participation
Lower Santa Cruz Replenishment Project (USF) *(State Demonstration Project)* Located south of the Santa Cruz River between Sanders Road and Avra Valley Road. Direct recharge facility consisting of off-channel constructed shallow spreading basins. Facility life 20 years.	Permit found complete and correct and is being drafted. Phase 1 capacity is 12,000-13,000 acre feet (af). Full-scale design capacity is 30,000 acre feet per year (afa). Available for storage in 2000 for up to 12,000 af a year. The AWBA is not competing with other entities at this location.	Pima County Flood Control District (PCFCD) CAWCD (Operator) Town of Marana ADWR (funding) USBR (funding) Metropolitan Water District (Metro) (funding) Operating IGA CAWCD PCFCD Town of Marana	Capacity: Most of the Phase 1 capacity would be available to the AWBA (12,000 af in 2000) Cost: Development costs in part State Demo funds. Annual use fee estimated $20/af Shortage Protection: This facility is a good site for long-term storage because water is likely to continue to be available for recovery in the future. Water Management: Because of its location in the AMA this facility does not rank as high as others in its potential for addressing water management concerns. Indian Settlement: Minimal opportunity for this facility to be used in Indian settlement Interstate: Facility could be used for interstate banking. However, recovery could be an issue. Recovery: Recovery most likely by direct pumping back to the aqueduct with minimal opportunity for exchange.
Cañada del Oro Recharge and Recovery Project (USF) Located in the vicinity of the confluence of the Cañada Del Oro and Big Wash. Direct recharge facility using spreading basins and a managed facility utilizing in-channel recharge. The project is one element of a Northwest Tucson AMA Replenishment Program. It would require CAP water to be pumped to two recharge areas and for direct use by golf courses. This project involves significant capital investment Facility life unknown.	Ongoing feasibility studies No permit application pending Pilot testing studies funded Funding required for construction Estimated capacity 30,000 af annually Available 2005	Town of Oro Valley (study funding) Metro (study funding) ADWR (study funding) USBR (study funding) PCFCD (land) Town of Marana (study funding)	Capacity: Most of the capacity would be available in early years of project prior to sponsors' need to use facility (30,000 af in 2005). Could require funding assistance. Cost: High initial cost (infrastructure construction) May need partnership with AWBA to develop. Annual use fee unknown but participants willing to negotiate Shortage Protection: This is a good facility because participants will be have CAP subcontracts. Water Management: The facility is rated in the highest grouping for ability to meet water management objectives. Indian Settlement: Because of its location minimal opportunity for this facility to be used in Indian settlement. Interstate: Sponsors are interested in interstate participation especially in the ramp-up years when the facility capacity is much greater than expected demand. Recovery: Can directly recover to protect M&I supplies through existing wells. In addition, sponsors may be willing to exchange up to 10,000 af of CAP allocations and recover credits. Direct pumping to the aqueduct is unlikely.

Project-by-Project Analysis of Water Storage Facilities

Project/Description	Status	Participants	Opportunity for Water Bank Participation
Avra Valley Recharge Project (USF) *(State Demonstration Project)* Located to the northeast of the Avra Valley Airport, less than one mile south of Tangerine Road and about one mile east of Sanders Road. Direct recharge facility utilizing shallow spreading basins. Project life unknown.	Permit for a full scale project has been issued Permitted capacity is 11,000 afa Facility is fully operational and currently available	CAWCD (operator) Metro BKW Farms (conveyance system)	Capacity: Metro has an agreement to store water at this facility. Approximately 50% of the facility capacity could be available (5,500 af in 1999). GRD will use this facility in the future. Cost: Constructed with State Demo Funds. Annual use fee of $15/af Shortage Protection: This facility is a good site for long-term storage because water is likely to continue to be available for recovery in the future. Water Management: Because of its location in the AMA, this facility does not rank as high as others in potential for addressing water management concerns. Indian Settlement: Because of its location, minimal opportunity for this facility to be used in Indian settlement. Interstate: Minimal opportunity because of competing interest at this facility (GRD & other AWBA). Recovery: Recovery most likely by direct pumping back to the aqueduct with minimal opportunity for exchange (potentially Marana). Facility is close to the aqueduct.
Pima Mine Road (USF) *(State Demonstration Project)* Located to the north of Pima Mine Road along the Old Nogales Highway east of the Santa Cruz River and south of Tucson. Located near the end of the main CAP aqueduct. Direct recharge facility utilizing shallow spreading basins. Project life unknown.	Currently permitted as pilot project for 10,000 af over two years. Pilot facility is fully operational and currently available. As a full scale project existing facility capacity 15,000 af annually Full scale existing facility available in 2000 Potential full scale permit capacity is 30,000 af annually with additional construction. Full scale facility funded and should be available in 2001	CAWCD (operator) Tucson Water (50% of capacity with first right of refusal for other 50%)	Capacity: Currently 50% of the facility capacity is available. (7,500 af in 1999) Potential for additional capacity in 2003 with additional construction. GRD will use this facility in the future. Cost: Constructed in part with State Demo Funds. Annual use fee $10/af Shortage Protection: Because of its location up-gradient of the major M&I subcontractor in the Tucson area, it is an excellent facility for firming. Water Management: This project rated good for meeting water management objectives, it is in a critical overdraft area, and could mitigate pumping in Central Well Field if the Santa Cruz Well field used for recovery. Indian Settlement: Because of its location, it could be useful from the perspective of the SAWRSA settlement. Interstate: While suitable for interstate banking because of its location at the end of the CAP and competing interest in its capacity, minimal opportunity to be used for interstate banking. Recovery: Recovery most likely through exchange. The City of Tucson may build well fields in the vicinity in the future to recover water in compliance with the SAWRSA settlement. Direct pumping back to the aqueduct not an option at this facility.

Project-by-Project Analysis of Water Storage Facilities

Project/Description	Status	Participants	Opportunity for Water Bank Participation
Upper Santa Cruz Phase 1 Extension of the main aqueduct into Green Valley, located near the end of the main CAP aqueduct. Sahuarita GSF proposes using CAP water in lieu of pumping groundwater at the FICO-Sahuarita farm located east of the CAP terminus at Pima Mine Road. Potential for a direct recharge of CAP water in the Santa Cruz River channel. Project life unknown.	The project is not currently funded, though ADWR has funded a feasibility study that is near completion as of August 1998.	ADWR USCWUG FICO	Capacity: Possible capacity of 20,000 afa at the FICO-Sahuarita GSF and 10,000 afa in the in-channel component. Cost: High initial cost (Feasibility Estimate). May need partnership with AWBA to develop. High annual use fee (Feasibility Estimate). Shortage Protection: This is a good facility because potential participants have CAP subcontracts. Potential could be limited by size of subcontracts. Water Management: Ranks in second highest grouping for water management benefits with potential to positively impact groundwater declines. Indian Settlement: Potential to positively impact SAWRSA settlement. Interstate: Because of its location near the end of the CAP aqueduct, minimal opportunity to be used for interstate banking Recovery: Local CAP subcontractors could recover, also an exchange with Tucson Water may be possible if a well field is built in the vicinity in the future. Direct pumping back to the aqueduct not an option at this facility. Endangered Species Act limitations could limit recharge and recovery. Recovery will likely take place downstream of actual recharge facility.
Central Avra Valley Storage and Recovery Project (CAVSARP) USF stores CAP water in off-channel shallow spreading basins. Located north of Mile Wide Road and one mile west of Sanders Road. Project life unknown.	Pilot phase of this facility is operating and is permitted for storage of 10,000 af over two years. An application for an extended pilot phase of five years for 15,000 afa has been submitted to the ADWR. Full scale capacity expected to be 60,000 afa in 2002. Facility is fully funded, but expansion to the 15,000 afa project and the full-scale project is dependent on results of pilot studies Recovery well field not yet permitted.	Tucson Water (facility, storage)	Capacity: Pilot phase permitted for storage of 10,000 af over two years. Extended pilot phase 15,000 afa. Full scale capacity expected to be 60,000 afa. AWBA could recharge up to 7,500 afa for three years. Cost: Construction funded by Tucson Water. Annual use fee of $14/af Shortage Protection: Excellent site for firming. Tucson is a major CAP M&I user. Water Management: Highest ranking for water management objectives, contingent upon development of a full-scale project to offset the use of groundwater wells in the central well field. Indian Settlement: Minimal potential for assistance with Indian water rights settlements. Would require a water exchange mechanism. Interstate: While some opportunity may exist there are currently no plans. Because of competing interest in its capacity, opportunities may be minimal. Recovery: Highest ranking for recovery -- both recharge and recovery takes place on-site and can be accomplished with minimal disruption to Tucson Water.

Project-by-Project Analysis of Water Storage Facilities

Project/Description	Status	Participants	Opportunity for Water Bank Participation
San Xavier Arroyos USF stores CAP water by recharging through arroyos to the west of Interstate 10 and the main channel of the Santa Cruz River. The main purpose is to restore and create riparian habitat area on the Reservation. Project life unknown.	A short-term pilot was conducted at this facility in summer 1997. The project is partially funded, in that Tucson has supplied treated CAP water and CAWCD prepared blowouts.	San Xavier District (Water Protection Fund grant-funded study) CAWCD, Tucson, USBR (prepared blowouts)	Capacity: Capacity is estimated at 9,000 afa for the four arroyos, but because the project is primarily for habitat restoration, actual recharge capacity is unknown Cost: Cost unknown Shortage Protection: Ranks low for long-term drought protection because of capacity and location. Water Management: Good potential for providing water management benefits. Indian Settlement: Potential for participation in SAWRSA settlement. Interstate: Because of location and need for an IGA, not useful for interstate banking. Recovery: For anything other than settlement, an IGA would be required for the State to recognize water stored on the Reservation.
San Xavier Santa Cruz River USF proposes to recharge CAP water in the main channel or on adjacent terraces of the Santa Cruz River from where it crosses Pima Mine Road, extending north to Valencia Road. Turnout facility currently exists. Project life unknown.	The San Xavier District Council has considered and approved this project, but the Tohono O'odham Nation has not formally considered this project or endorsed it. Facility is not funded.	San Xavier District Tucson Water	Capacity: Proposed facility has a possible capacity of 10,000 afa. Cost: Cost unknown Shortage Protection: Because it is located up-gradient of Tucson, there is an opportunity for firming. Could require additional IGA and exchange agreements with Tucson Water. Water Management: Because of its location, excellent potential For providing water management benefits. Indian Settlement: Because of location on Reservation, strong potential for participation in the SAWRSA settlement. Interstate: Some opportunity may exist, but because of location and need for an IGA, interstate banking not likely. Recovery: For anything other than settlement, an IGA would be required for the State to recognize water stored on the Reservation. Because of location on Reservation, Tucson Water would need to locate wells in the vicinity.

Project-by-Project Analysis of Water Storage Facilities

Project/Description	Status	Participants	Opportunity for Water Bank Participation
Cortaro Marana Irrigation District (CMID) Groundwater Savings Facility (GSF) receives CAP water in lieu of pumping groundwater. This facility is roughly located from Tangerine Road north to the Pima/Pinal county border and southwest of Interstate 10 to one mile west of Trico Road. Project life unknown.	Facility is currently operating. Facility is fully funded. For the AWBA to use this facility the AWBA needs to develop a new pricing concept.	CMID (facility) CAWCD (storage) Spanish Trail Water Co. (storage) Community Water Co. Of Green Valley (storage) City of Tucson (storage)	Capacity: A permit to expand from 10,000 afa to 20,000 afa has been issued. Potential that all or some of expanded capacity may be available to AWBA. Cost: Facility developed by operator. Because it is a GSF, operator pays use fee to AWBA. AWBA fee currently too high for operator. Shortage Protection: This facility is a good site for long-term storage because water is likely to continue to be available for recovery in the future. Water Management: Somewhat low value for groundwater management objectives because of location in north end of AMA. However, potential benefits for the Marana area. Indian Settlement: Because of location, not useful for Indian water rights settlement purposes. Interstate: Facility could be used for interstate banking but opportunity minimal. Recovery: Water could be pumped directly into the CAP canal.
BKW Farms GSF receives CAP water in lieu of pumping groundwater. Roughly located south of the Santa Cruz River to Emigh Road between Trico Road and Silverbell Road. Project life unknown.	Currently operating. Permitted to store 8,800 afa. Application for expansion to 16,614 afa has been submitted and found incomplete and incorrect. Facility is fully funded. Tucson Water intends to store water here in 2002. For the AWBA to use this facility the AWBA needs to develop a new pricing concept.	CAWCD (facility, storage) Metro (storage) City of Tucson (storage) Community Water Co. of Green Valley	Capacity: Existing storage capacity of 8,800 afa already committed to other participants; potential capacity for AWBA if facility expanded. Cost: Facility developed by operator. Because it is a GSF, operator pays use fee to AWBA. AWBA fee currently too high for operator. Shortage Protection: While the facility is a good site for long-term storage because water is likely to continue to be available, but it is minimally useful because of recovery concerns. Water Management: Somewhat low value for groundwater management objectives because of location. Potential benefits to Marana area Indian Settlement: Minimal opportunity for this facility to be used in Indian settlement. Interstate: Facility could be used for interstate banking, but because of recovery concerns, opportunity minimal. Recovery: Minimal opportunity for recovery because an exchange with CAP subcontractors would be required. Direct pumping back to the aqueduct not likely.

Project-by-Project Analysis of Water Storage Facilities

Project/Description	Status	Participants	Opportunity for Water Bank Participation
Avra Valley Irrigation District (AVID) GSF receives CAP water in lieu of using groundwater between Trico and Sanders Roads on either side of Avra Valley Road west of the Santa Cruz River. Project life unknown.	Facility is permitted to store 12,513 afa. Facility (conveyance ditch) not yet constructed or funded. For the AWBA to use this facility the AWBA need to develop a new pricing concept.	Herb Kai (facility) Metropolitan (Storage) (Others will participate in constructing the conveyance ditch)	Capacity: 8,000 af available to AWBA in 1999. Cost: Approximately $1 million to construct. AWBA would need to be partner for facility to be developed. Annual use fee would have to be negotiated. Shortage Protection: This facility is a good site for long-term storage because water is likely to continue to be available for recovery in the future. Water Management: Does offer some benefit because it is located in an area of overdraft. Indian Settlement: Minimal opportunity for this facility to be used in Indian water rights settlements. Interstate: Facility could be used for interstate banking but opportunity is minimal. Recovery: Recovery most likely by direct pumping back to aqueduct with minimal opportunity for exchange.
ASARCO GSF proposes delivery of CAP water to the ASARCO water recycling pond at Pima Mine Road in lieu of pumping groundwater Project life unknown.	This project to store 5,000 afa is currently under investigation through an ADWR contract. Previously reviewed as part of ADWR study on CAP water use in mines. Facility is not funded		Capacity: 5,000 af available to AWBA. Cost: Cost unknown. Annual use fee expected to be high because of pumping requirements.. Shortage Protection: Not a likely candidate. Water Management: Minimal opportunity for water management objectives. Indian Settlement: Possibility for contribution to Indian water rights settlements. Interstate: Minimal opportunity for interstate water banking. Recovery: Would have to be accomplished by water exchanges.

Project-by-Project Analysis of Water Storage Facilities

Project/Description	Status	Participants	Opportunity for Water Bank Participation
KAI Farms at Picacho GSF receives CAP water in lieu of pumping groundwater. This facility is located in Pinal County east of the Town of Red Rock, south of Neuman Peak to Park Link Road, and between the Interstate 10 and Pecan Road. Project permitted through 2006.	The facility is operating and is permitted to store 11,231 afa. For the AWBA to use this facility the AWBA need to develop a new pricing concept.	Metro (storage) CAWCD (storage) Spanish T rail Water Co. (storage) Oro Valley (storage) Green Valley (storage) Tucson Water (storage)	Capacity: 11,231 afa would be available to AWBA. Cost: Facility developed by operator. Annual use fee would have to be negotiated. Shortage Protection: This facility is a good site for long-term storage because water is likely to continue to be available for recovery in the future. Water Management: Because of location, ranks low for addressing water management concerns. Indian Settlement: Minimal opportunity for this facility to be used in Indian settlement Interstate: Facility could be used for interstate banking, but opportunity is minimal. Recovery: Recovery most likely by direct pumping back to aqueduct with minimal opportunity for exchange.
Pascua Yaqui USF proposes to store CAP water west of the CAP canal alignment in the western portion of the Pascua Yaqui Reservation using spreading basins. Project life unknown.	Proposed capacity if 10,000 afa. Potential for AWBA participation in this facility, but project is conceptual at this time. Facility is not funded.		Capacity: 5,000 af available to AWBA. Cost: Cost unknown. Shortage Protection: Not a likely candidate. Water Management: Minimal opportunity for water management objectives. Indian Settlement: Possibility for contribution to Indian water rights settlements. Interstate: Minimal opportunity for interstate water banking. Recovery: Would have to be accomplished by water exchanges.

Project-by-Project Analysis of Water Storage Facilities

Project/Description	Status	Participants	Opportunity for Water Bank Participation
BKW Farms at Mile Wide GSF proposes to store CAP water in lieu of groundwater west of the CAP canal between Fort Lowell and Mile Wide Roads. Project life unknown.	Proposed capacity of this facility is 627.2 afa. An application has been received and is currently incomplete and incorrect. Facility is fully funded. For the AWBA to use this facility the AWBA need to develop a new pricing concept.		Capacity: Existing storage capacity may already be committed to other participants. Cost: Facility developed by operator. Because it is a GSF, operator pays use fee to AWBA. AWBA fee currently to high for operator. Shortage Protection: Because of limited capacity minimal opportunity for firming. Water Management: Because of its location in the vicinity of CAVSARP this facility does offer some benefit. Indian Settlement: Minimal opportunity for this facility to be used in Indian settlement Interstate: Facility could be used for interstate banking. Recovery: Minimal opportunity for recovery because exchanges with CAP subcontractor would be required. Direct pumping back to aqueduct not likely.

For AWBA purposes, the facilities described in **Table 4** can be grouped into three general categories; those that are currently available or have funding available for construction, those that could be available to the AWBA but currently unfunded, and groundwater saving facilities. The differences between the categories is important. Those that are funded or have funding available can be used by the AWBA either immediately or in the near term. Unfunded projects may need some financial assistance from the AWBA to become a reality. This assistance could take many forms, such as long-term commitments by the AWBA to use the facility or up-front funding agreements with long-term capacity guaranties from the facility operator. While funding may be a problem at groundwater savings facilities, they also present a different problem: groundwater use is generally less expensive in the Tucson area, which makes the AWBA's in-lieu cost recovery prohibitive to the producer. In order to utilize the groundwater saving facilities in the Tucson area, the AWBA would have to modify its cost recovery for the area. In addition to the cost recovery problems at the AVID facility, a conveyance canal would have to be constructed, and this may require some assistance from the AWBA similar to the as yet unfunded facilities.

Table 5 provides a shorthand chart showing the facilities' relative ability to meet the AWBA goals. Each of the goals was evaluated based on the following criteria.

Shortage Protection

- *Excellent*: potential to meet all drought protection needs for all Municipal and Industrial (M&I) subcontractors in the region. Recovery through direct pumping.
- *Good*: potential to meet all drought protection needs for some subcontractors. Recovery through direct pumping.
- *Minimal*: potential to meet all drought protection needs for some subcontractors. Recovery through water exchanges.
- *Not Likely:* does not meet water shortage protection goals.

Groundwater Management

- *Excellent*: potential for project to contribute substantially to meeting the water management goals of the region.
- *Good:* potential for project to meet some of the water management goals of the region.
- *Minimal:* potential for project to meet a few of the water management goals of the region.
- *Not Likely*: no potential for project to contribute to meeting the water management goals of the region.

Indian Settlements

- *Excellent*: potential to directly contribute to settlement of Indian water rights claims. Facility located on reservation. Direct recovery possible.
- *Good*: potential to directly contribute to settlement of Indian water rights claims. Facility located off-reservation. Direct recovery possible.
- *Minimal*: potential to directly contribute to settlement of Indian water rights claims. Facility located off-reservation. Recovery through water exchanges.
- *Not Likely:* no potential to directly contribute to settlement of Indian water rights claims.

Interstate Storage

- *Excellent*: does not interfere with existing facility uses.
- *Good:* potential for agreement between parties to forebear to create additional water supplies. Recovery through direct pumping.
- *Minimal*: potential for agreement between parties to forebear to create additional water supplies. Recovery through water exchanges.
- *Not Likely:* no potential for agreement between parties to forebear to create additional water supplies. recovery through direct pumping.

Recovery

- *Excellent*: direct, on-site recovery
- *Good:* direct, off-site recovery
- *Minimal:* recovery would be accomplished through water exchanges
- *Not Likely:* no potential for recovery

Table 5

Opportunity to Meet AWBA Goals ● Excellent ◗ Good ⊙ Minimal ○ Not likely					
FACILITY	**GOAL**				
	Shortage	**Water**	**Indian**	**Interstate**	**Recovery**
Available or Funded					
Lower Santa Cruz	◗	⊙	⊙	⊙	◗
Avra Valley	◗	⊙	⊙	⊙	◗
Pima Mine Road	●	◗	◗	⊙	◗
Central Avra Valley	●	●	⊙	⊙	●
Unfunded					
Cañada del Oro	◗	●	⊙	◗	◗
Upper Santa Cruz	⊙	◗	◗	◗	⊙
ASARCO	○	⊙	◗	⊙	⊙
San Xavier Arroyos	○	◗	●	○	○
San Xavier SCR	⊙	●	●	○	⊙
Pascua Yaqui	○	⊙	◗	⊙	⊙
Groundwater Savings					
CMID	◗	⊙	○	○	◗
BKW Farms	◗	⊙	⊙	⊙	⊙
AVID	◗	⊙	⊙	⊙	◗
Kai @ Picacho	◗	○	⊙	⊙	◗
BKW Mile Wide	⊙	⊙	⊙	⊙	⊙

V. Facility Plan

Table 6, which is based on the recharge capacity information contained in **Table 4** shows the potential recharge capacities available to the AWBA for the next ten years. For several of the unfunded facilities no information is available on the capacities available to the AWBA. It is likely these facilities would only be available to the AWBA under special circumstances such as an Indian settlement.

Table 6

Storage Available to AWBA *in acre feet/year*							
Facility	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005 -**
Available or Funded							
Avra Valley Recharge Project [2]	5,000	5,000	5,000	5,000	5,000	5,000	5,000
CAVSARP [2]	7,500	7,500	7,500	15,000	15,000	15,000	15,000
Pima Mine Road [2]	7,500	7,500	7,500	15,000	15,000	15,000	15,000
Lower Santa Cruz	0	5,000	12,000	12,000	12,000	12,000	12,000
Sub-total	20,000	25,000	32,000	47,000	47,000	47,000	47,000
Unfunded							
Cañada del Oro [3]							30,000
Upper Santa Cruz [3]				10,000	10,000	10,000	10,000
ASARCO [4]							
San Xavier Arroyos [4]							
San Xavier SCR [4]							
Pascua Yaqui [4]							
Sub-total				10,000	10,000	10,000	40,000
Groundwater Savings							
CMID [5]	10,000	10,000	10,000	10,000	10,000	10,000	
BKW Farms [5]							
AVID [3, 5]	8,000	8,000	8,000	8,000	8,000	8,000	
Kai @ Picacho [5]	11,000	11,000	11,000	11,000	11,000	11,000	
BKW Mile Wide [5]							
Sub-total	29,000	29,000	29,000	29,000	29,000		
Total Potential	**49,000**	**54,000**	**61,000**	**86,000**	**86,000**	**87,000**	**87,000**

[2] Conservative estimate, partner participation unknown, any capacity remaining would be available.

[3] To ensure facility availability may require financial assistance from AWBA.

[4] Facility not yet planned available. Capacity for next ten years unknown.

[5] Appropriate facility for near-term storage while other longer-term facilities are being developed. Availability will require a modification to AWBA's in-lieu cost recovery.

As discussed earlier, to provide the required shortage protection and to expend the funds available to meet potential water management goals, the AWBA will need approximately 50,000 acre feet of recharge capability annually. Based on the data in **Table 6,** in the early years, the AWBA will have to rely on groundwater saving facilities in addition the existing direct recharge facilities to fully meet its goals. The AWBA could utilize these facilities by modifying the way it participates in GSFs for the Tucson area and by investigating mechanisms to help finance the development of the infrastructure. In the later years, there probably will be adequate capacity to meet shortage protection and water management goals. However, to fully utilize that capacity to meet the goal of shortage protection, general funds monies will have to be expended in the Tucson area.

Based on this analysis, the AWBA will not have to develop a specific plan for developing additional facilities for its purposes. The AWBA must, however, develop additional partnerships to ensure that the planned expansion of existing facilities and construction of new facilities continues.

CENTRAL ARIZONA PROJECT

P.O. Box 43020 • Phoenix, Arizona 85080-3020 • 23636 North Seventh Street (85024)
(602) 869-2333 • www.cap-az.com

September 8, 1998

Mr. Disque Deane, Jr.
Senior Vice President
Vidler Water Company, Inc.
875 Prospect Street, Suite 301
La Jolla, CA 92037

Subject: Recovery and Transportation of Water Stored at the MBT Ranch Site
(Re: Your letter dated August 25, 1998)

Dear Mr. Deane:

Your August 25, 1998 letter requested confirmation from the Central Arizona Water Conservation District (CAWCD) that if Central Arizona Project (CAP) water is stored at the MBT Ranch recharge site by the Arizona Water Banking Authority (AWBA) that the AWBA may use the CAP canal system to transport any recovered water. First, since the AWBA lacks authority to recover stored water, it would need to work with CAWCD or another entity to develop specific recovery plans. CAWCD and the AWBA have not yet developed recovery plans for any AWBA storage site; however, an AWBA recovery subcommittee will be developing a conceptual plan. In most cases, however, the AWBA will simply make its credits available to CAWCD for recovery and transportation. Regarding your request, a contract with AWBA is sufficient at this point in time to ensure that CAWCD will fully consider any credits stored at the MBT Ranch site as useful.

Sincerely,

John D. Newman
Assistant General Manager

G:\newman\vidler.ltr
cc: Tim Henley, AWBA

VIDLER WATER COMPANY, INC.
www.vidlerwater.com

September 1, 1998

Kim S. Kunasek, Technical Administrator
State of Arizona Water Banking Authority
Park Place
500 North Third Street
Phoenix, Arizona 85004

SUBJECT: AWBA September 16, 1998 Meeting, MBT Recharge Facility

Dear Kim:

First let me take the opportunity to thank you for taking the time to meet with me on June 24, 1998 regarding the issue of the Arizona Water Banking Authority Amending its 1998 Plan of Operation to include storing water at the MBT Ranch site.

Vidler Water Company is requesting to be agendized for the September 16, 1998 Arizona Water Banking Authority Board meeting. As you are aware, Vidler Water Company has applied to and been granted by the Arizona Department of Water Resources a pilot scale constructed underground storage facility permit for the MBT Ranch Recharge Facility. Vidler Water Company is requesting that the Arizona Water Banking Authority direct its staff to begin negotiations on the issue of storing AWBA water at the MBT Ranch site.

The purpose of the pilot scale project is to demonstrate the hydrologic feasibility for a recharge project at the MBT property, located in the Harquahala Valley. The project as conceived will evaluate several different methods of recharge and operating parameters. The pilot scale facility will consist of three recharge basins approximately four acres each. Water flowing into each basin will be metered as will the standing water levels within each basin. Vidler Water Company has been granted a permit to store a maximum of 10,000 acre-feet over the two year life of the pilot permit.

The development of the pilot scale MBT Ranch Recharge Facility will provide the foundation for the full scale facility in the same vicinity as the pilot project site. Following the success of the recharge pilot program it is Vidler's intent to bring on line the full scale project capable of recharging initially 50,000 acre-feet per year. Using the MBT Ranch Recharge Facility, Vidler Water Company intends to develop a facility which it will lease to political subdivisions approved by the Arizona Water Banking Authority. Those entities would purchase excess CAP water for recharge which would be utilized in the future for their needs during water short years. This project, ideally situated south and down gradient of the CAP aqueduct, will facilitate this water storage process.

Please find enclosed a scenario of recharge water recovery. Vidler has applied to the Arizona Department of Water Resources for recovery wells, please find attached copies of the application.

It has also been brought to our attention by AWBA staff that assurance of delivery of the recovery recharge water into the CAP canal is an issue. Please find attached a letter to John Newman requesting that the Central Arizona Water Conservancy District address this issue.

The Vidler Water Company looks forward to addressing our request with the AWBA Board on September 16, 1998 and any other further concerns the Board may have on our recharge project.

Sincerely,

Dorothy A. Timian-Palmer, P.E.
Chief Operating Officer

c: John Hart, CEO
Mike Schlehuber, CFO
Disque Deane Jr., Sr. VP
HydroSystems Inc.

VIDLER WATER COMPANY, INC.
www.vidlerwater.com

August 25, 1998

John Newman
Central Arizona Water Conservancy District
P.O. Box 43020
Phoenix, AZ 85080

Sent via fax: (602) 869-2674

Dear John,

As you are aware the Vidler Water Company is in process of developing a recharge facility at its MBT Ranch site. In accordance therewith we have been asked by the Arizona Water Banking Authority ("AWBA"), to request a letter from your offices, in which the Central Arizona Water Conservancy District ("CAWCD") specifically states that if the AWBA recharges water at the MBT Ranch Recharge Facility that they will be allowed to utilize the CAP canal to transport the recovered water at the time of recovery.

I would therefore appreciate it if you could make sure that this request is given to the appropriate person as soon as possible in order to insure that we receive the requested letter in the most timely manner possible.

I would like to thank you in advance for your assistance in this matter.

Respectfully yours,

Disque Deane/rl

Disque Deane, Jr.
Senior Vice President

cc: Dorothy Palmer
Kim Kusack

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
PHONE (602) 417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES.

Vidler Water Company | 1755 E. Plumb Ln, Ste 151 | Reno | NV | 89502
LAND OWNER'S NAME | CURRENT MAILING ADDRESS | CITY | STATE | ZIP

TELEPHONE NO. (702)329-5022

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

WELL LOCATED IN La Paz COUNTY D.____ E.____ OFFICIAL SEAL OR STAMP
BOOK MAP PARCEL # OF ACRES

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

SW ¼ SW ¼ NW ¼ OF SECTION 28 TOWNSHIP 3 N/S RANGE 11 E/W
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
RECOMMEND APPROVAL____; INSUFFICIENT INFORMATION TO MAKE DETERMINATION____; VARIANCE REQUIRED ____ (EXPLANATION ATTACHED)

DATE____ AUTHORIZED SIGNATURE____ TITLE____

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

Section§45-596(D) provides that the director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling or modification of the well may **not** proceed.

Section§ 45-596(D) provides that the department has 15 days **after** the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.

Please mail **two** original notices with original signatures, a site plan in **duplicate**, and a **check or money order (no cash) in the amount of $10.00** to P O Box 458, Phoenix Arizona, 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona. Please **use black or blue ink, and print legibly.**

If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.

Construction standards for wells, including abandonment, shall be in accordance with department rules.

OWNER OF WELL:
Vidler Water Company
NAME
1755 E. Plumb Ln, Ste 151
CURRENT MAILING ADDRESS
Reno NV 89502
CITY STATE ZIP

TELEPHONE NUMBER (702)329-5022

ACTION REQUESTED:
DRILL NEW WELL XX DEEPEN____
MODIFY____ REPLACE ____

DRILL REGISTRATION NO 55-____

FOR A REPLACEMENT WELL PROVIDE:
MAXIMUM CAPACITY OF THE ORIGINAL WELL
____ GALLONS PER MINUTE;
DISTANCE FROM THE ORIGINAL WELL:
____ FEET

CONSTRUCTION WILL START ABOUT:
MONTH Jan YEAR 1999

DESCRIPTION OF PROPOSED WELL:
DIAMETER: 18 5/8 INCHES
DEPTH: 850 FEET
TYPE OF CASING: steel

DESIGN PUMP CAPACITY:
1,500 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP

TELEPHONE: ____

7. PRINCIPLE USE OF WATER: (BE SPECIFIC).
Recovered CAP Water

8. OTHER USES OF WATER: (BE SPECIFIC).
Any legal purpose the Arizona Water Banking Authority

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: N/A

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-____
DATE FILED____
FILE NO.____
AMA/INA____
W/S____ S/B____
PROCESSED BY____
DATE MAILED____

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
SW ¼ SW ¼ NW ¼ SECTION 28
10AC 40AC 160AC
TWNSHP 3 N/S RNG 11 E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT____ NON-EXEMPT XX

12. CHECK ONE:
RESIDENTIAL____ COMMERCIAL XX

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES ____ NO XX

14. DRILLING FIRM:
To be determined
NAME
MAILING ADDRESS
CITY STATE ZIP
TELEPHONE NO.
DWR LICENSE NUMBER
ROC LICENSE CATEGORY

I CERTIFY THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. §§45-595 & 45-596 AND IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

TIMOTHY A. TIMAN-PALMER — 16. SIGNATURE: LAND OWNER/LESSEE OF WELLSITE — 7/9/98
TYPE OR PRINT NAME AND TITLE — 17. DATE

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
PHONE (602) 417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

LEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH UTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES.

Vidler Water Company	1755 E. Plumb Ln, Ste 151	Reno	NV	89502
LAND OWNER'S NAME	CURRENT MAILING ADDRESS	CITY	STATE	ZIP

TELEPHONE NO. (702) 329-6022

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

WELL LOCATED IN La Paz COUNTY D. _____ E. _____ OFFICIAL SEAL OR STAMP

BOOK MAP PARCEL # OF ACRES

ELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

SW ¼ SW ¼ NW ¼ OF SECTION 28 TOWNSHIP 3 N/S RANGE 11 E/W

10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

HECK ONE:

RECOMMEND APPROVAL ___; INSUFFICIENT INFORMATION TO MAKE DETERMINATION ___; VARIANCE REQUIRED ___ (EXPLANATION ATTACHED)

DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

Section§45-596(D) provides that the director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling or modification of the well may **not** proceed.

Section§ 45-596(D) provides that the department has 15 days **after** the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.

Please mail **two** original notices with original signatures, a site plan **in duplicate**, and a **check or money order (no cash) in the amount of $10.00** to P O Box 458, Phoenix Arizona, 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona. Please **use black or blue ink, and print legibly.**

If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.

Construction standards for wells, including abandonment, shall be in accordance with department rules.

OWNER OF WELL:
idler Water Company
ME
755 E. Plumb Ln., Ste 151
RRENT MAILING ADDRESS
eno NV 89502
TY STATE ZIP

LEPHONE NUMBER (702) 329-6022

ACTION REQUESTED:
ILL NEW WELL XX DEEPEN ___
ODIFY ___ REPLACE ___

LL REGISTRATION NO 55-___

R A REPLACEMENT WELL PROVIDE:
XIMUM CAPACITY OF THE ORIGINAL LL
___ GALLONS PER MINUTE;
TANCE FROM THE ORIGINAL WELL:
___ FEET

CONSTRUCTION WILL START ABOUT:
NTH Jan YEAR 1999

DESCRIPTION OF PROPOSED WELL:
METER: 18 5/8 INCHES
TH: 850 FEET
E OF CASING: steel

ESIGN PUMP CAPACITY:
500 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE: ___

7. PRINCIPLE USE OF WATER: (BE SPECIFIC).
Recovered CAP Water

8. OTHER USES OF WATER: (BE SPECIFIC).
Any legal purpose of the Arizona Water Banking Authority

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: ___ N/A

SIGN HERE

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-___
DATE FILED ___
FILE NO. ___
AMA/INA ___
W/S ___
PROCESSED BY ___
DATE MAILED ___

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
SW ¼ SW ¼ NW ¼ SECTION ___
10AC 40AC 160AC
TWNSHP 3 N/S RNG 11 E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT ___ NON-EXEMPT XX

12. CHECK ONE:
RESIDENTIAL ___ COMMERCIAL XX

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES ___ NO XX

14. DRILLING FIRM:
To be determined
NAME
MAILING ADDRESS
CITY STATE ZIP
TELEPHONE NO.
DWR LICENSE NUMBER
ROC LICENSE CATEGORY

TE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. §§45-595 & 45-596 AND IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Kathy A Tillman-Palmer — Kathy A Tillman — 7/9/98

PE OR PRINT NAME AND TITLE — 16. SIGNATURE: LAND OWNER/LESSEE OF WELLSITE — 17. DATE

ARIZONA DEPARTMENT OF WATER RESOURCES
Groundwater Mgmt. Support - 500 North Third Street
Phoenix, Arizona 85004
Phone (602) 417-2470

APPLICATION FOR A RECOVERY WELL PERMIT (§ 45-834.01)

APPLICATION FEE OF $ 50.00 PER WELL FOR THE 1ST 10 WELLS PLUS $ 10.00 PER WELL THEREAFTER IS DUE UPON FILING.

PERMIT FEE (SAME AS APPLICATION FEES), PLUS NOTICE AND PUBLICATION FEES TO BE DETERMINED, ARE DUE PRIOR TO ISSUANCE OF PERMIT.

FOR OFFICE USE ONLY
Application No. _____
Date Received _____

1. Name of Permittee Vidler Water Company (VWC)

1755 E. Plumb Lane, Ste 151 | Reno | NV | 89502
Mailing Address | City | State | Zip

Contact Person Dorothy Timian-Palmer Telephone (702)329-6022 Fax (702)329-2771

2. Name of Active Management Area or Irrigation Non-Expansion Area if applicable, and name of groundwater basin and subbasin where the facility will be located Harquahala

3. Name of the owner(s) of the land where wellsites are located VWC

Mailing Address Same as above
(If more than one owner, attach a list showing corresponding land owner and well registration number(s)).

4. Legal description of the land where water will be used VWC anticipates the recovered water to be re-introduced into the CAP Aqueduct and delivered to water users within the CAP area.
(quarter/quarter/quarter/section, township and range)

5. The recovered water will be used for VWC anticipates a number of water storers that may use the recovered water for municipal purposes and the Arizona Water Banking Authority (AWBA) who may use the recovered water for any legal purpose of the AWBA.

6. The recovery wells will be used to recover water stored pursuant to Water Storage Permit No. 73-564970

or long-term storage account number. _____

7. Complete the following for each constucted well. If data supplied differs from teh ADWR well registry, please submit a change of well information form (see DWR application packet.) Attach supplement if needed.

Name of Well Owner	Well Registration Number	Location: ¼, ¼, ¼, Section, Township, Range	Design Pump Capacity (GPM)	Well Depth (feet)	Casing Diameter (inches)	Proposed Annual Volume (Acre-feet)	Date Well Constructed
MBT Ranch	603427	SE, SE, NE, 36, 3N, 11W	2,286	915	10	3,687	1975
MBT Ranch	603426	NE, NE, NW, 36, 3N, 11W	1,409	860	20	2,272	1976
MBT Ranch	603424	NW, NW, NE, 34, 3N, 11W	1,500 E	850	12	2,419 E	Unknown
MBT Ranch	603423	NW, NW, NW, 34, 3N, 11W	2,220	855	20	3,580	1975
MBT Ranch	603422	NW, NW, SW, 31, 3N, 10W	2,436	912	20	3,898	1976
MBT Ranch	603421	NW, NW, SW, 36, 3N, 11W	3,007	875	20	4,850	1976
MBT Ranch	603420	SW, SW, NW, 34, 3N, 11W	1,870	855	20	3,016	1976
MBT Ranch	614432	NW, NW, NW, 2, 2N, 11W	2,033	850	20	3,253	1977

E = Estimated

8. Complete the following for each proposed well to be constructed.

Well Registration number	Location: ¼, ¼, ¼, Section, Township, Range	Design Pump Capacity (GPM)	Well Depth (feet)	Casing Diameter (inches)	Proposed Annual Volume (Acre-feet)	Estimated Date of New Well Construction	Estimated Time Required To Complete Well
N/A	SW, SW, NW, 28, 3N, 11W	2500	850	18 5/8	4032	Jan., 1999	45 days

I (We), Vidler Water Company, the applicant(s) named in this application, do hereby certify under the penalty of perjury, that the information contained and statements made herein are to the best of my (our) knowledge and belief true, correct and complete.

(702) 329-6022
Telephone

Signature of owner or authorized agent

Chief Operating Officer
Title

1755 E. Plumb Lane, Suite 151	Reno	NV	89502
Mailing Address	City	State	Zip

STATE OF California)
) ss.
County of San Diego)

Subscribed and sworn to before me this 9th day of July, 19 98.

Notary Public

Dec 26, 2000
My commission expires:

ALICE MAE SWIDERSKI
Commission # 1121004
Notary Public — California
San Diego County
My Comm. Expires Dec 26, 2000

Vidler Water Company
MBT Ranch Recharge Project
Preliminary Recovery Plan

September 1, 1998

INTRODUCTION

The purpose of this document is to provide Vidler Water Company (VWC) with the background information needed to develop a recharge recovery plan for recovering stored water at the MBT Ranch Recharge Facility. This plan will be provided to the Arizona Water Banking Authority (AWBA) for their use in approving the MBT Ranch Recharge Facility as part of the sanctioned water banking facilities in the state of Arizona.

BACKGROUND

VWC has applied for and received pilot underground storage facility and water storage permits from the Arizona Department of Water Resources (ADWR) to recharge and store excess Central Arizona Project (CAP) water at the MBT Ranch Recharge Facility. These permits allow VWC to store up to 10,000 ac-ft of CAP water over a two year period. VWC will use this facility to test the efficiency of recharging water via three different recharge methods including: (1) basin infiltration only, (2) basin infiltration combined with vadose zone recharge well technology, and (3) basin infiltration with maintenance. These recharge methods will be tested to determine the most feasible for the site. Once the pilot scale testing has been accomplished and a recharge method selected, the project will move to the full scale phase and a facility will be designed to recharge 100,000 ac-ft annually.

The full scale project will likely incorporate a phased approach and use the existing pilot recharge facility. This will also apply to the recovery of the stored water. The MBT Ranch Recharge

Project benefits greatly from the existing infra-structure, including two 15" PIP pipelines from the CAP Aqueduct, and the existing MBT Ranch wells. These wells can currently be used to recover the stored water from the pilot recharge facility and initially from the full scale project. Although the focus of VWC's work effort has been to develop the pilot scale facility and determine the best recharge method to use at the site, this document will focus on recovering the water stored at the facility and delivering it back to the CAP Aqueduct for down-canal users.

REGULATORY REQUIREMENTS

The requirements for developing a recovery plan for the MBT Ranch Recharge facility are minimal. The existing wells on the ranch property can be converted for use as recovery wells by making application to the ADWR. This is a simple form with minimal cost that can be accomplished relatively quickly. *Attachment A* provides a copy of the recovery well application for the MBT Ranch Recharge Facility. As part of the application process a well impact analysis will be conducted to determine the impacts to other well users and land owners in the vicinity of the project and that might be affected by the groundwater pumpage. In the case of the MBT Ranch Recharge Facility, there are very few wells in the vicinity of the project that are not owned by VWC. Therefore, the impacts to these well users will be minimal. This will be verified by VWC during the permitting process through site visits to the well locations identified through the ADWR's well registry database.

The well impact analysis will be evaluated under a "worst case" scenario that does not include the water that is artificially recharged. An additional analysis will include the stored water at the project. In addition to the well impact analysis, there will be a small percentage (5%) of the stored water that will never be recovered. This will contribute to the overall water balance of the aquifer and help to mitigate subsidence that is occurring in areas several miles from the project.

This process works well for VWC when storing and recovery their own water. However, should others decide to bank at the MBT Ranch Recharge Facility they would also need to hold both

a Water Storage permit and a Recovery Well permit. This might require the construction of a dedicated well for that particular storer's use.

Along with the water storage permit, the ADWR creates a storage account. It is through this storage account that the department tracks how much water is available for a particular storer and also, how much water would be available for someone to recover. VWC's storage account for the water storage permit for the MBT Ranch Recharge Facility is 73-564970. It is also through this account that the ADWR accounts for water that cannot be recovered per statute. This is the 5% "cut to the aquifer." This is physical water that must be stored at the recharge facility, however it is left as a benefit to the aquifer and cannot be recovered. The ADWR determines how much water has been stored at the facility based on the permittee's annual report and withholds 5% of the total water stored.

EXISTING FACILITIES

The MBT Ranch Project along with the recharge facility is shown on *Figure 1*. This shows the location of the CAP Aqueduct, the existing recharge facility, and all of the MBT Ranch wells. These wells have a total pumping capacity of approximately 27,000 ac-ft/yr based on reported pump capacities (ADWR, 1996, and *Attachment A*). It would be feasible to connect MBT Ranch Well No. 4 (B(3-11)34bbb) to one of the 15" PIP pipelines and create a return for recovered water to the CAP Aqueduct. This would provide the recovery of approximately 3,600 ac-ft/yr of water from storage at the pilot scale facility. In order to recover more water from the pilot scale facility, additional piping would have to be constructed to connect other wells on the MBT Ranch property.

VWC is proposing to drill a new well located adjacent to the CAP Aqueduct specifically for the purposes of providing recovery capacity next to the CAP aqueduct. This well would pump water at a capacity of approximately 4,000 ac-ft/yr bringing the total MBT Ranch capacity to approximately 31,000 ac-ft/yr (*Attachment A*).

FUTURE RECOVERY FACILITIES

The full scale MBT Ranch Recharge project anticipates storing 100,000 ac-ft of excess CAP water annually. In order to provide recovery facilities for this capacity, additional wells will be required. The most feasible full scale recovery plan would be to site wells adjacent to the CAP Aqueduct within the Harquahala Valley. To recovery 100,000 ac-ft/yr would require 33 wells pumping continuously. It would be unrealistic to assume that a well could be run continuously without any maintenance for a full year, therefore at least half the well field should be redundant or a total of 45 wells would actually be required. This also assumes a pumping rate of 3,000 ac-ft/yr per well.

The siting of the recovery wells for the full scale project adjacent to the CAP Aqueduct was done intentionally to minimize power and piping costs associated with the wells. This will also provide ready access to the CAP Aqueduct when needed.

A numerical groundwater flow model is currently being developed to assess the hydrologic conditions within the Harquahala Valley. This model will be used to predict the mounding that will occur due to the operation of the full scale facility. It will also be used to determine the well spacing requirements and groundwater pumping impacts from recovery of water stored at the recharge facility. Once this numerical groundwater flow modeling effort has been completed, it will provide a tool that can be used to assist in determining well spacing requirements, evaluate mounding from the operation of the full scale facility, and it can be used to monitor the hydrologic system during recharge and recovery throughout the life of the permit.

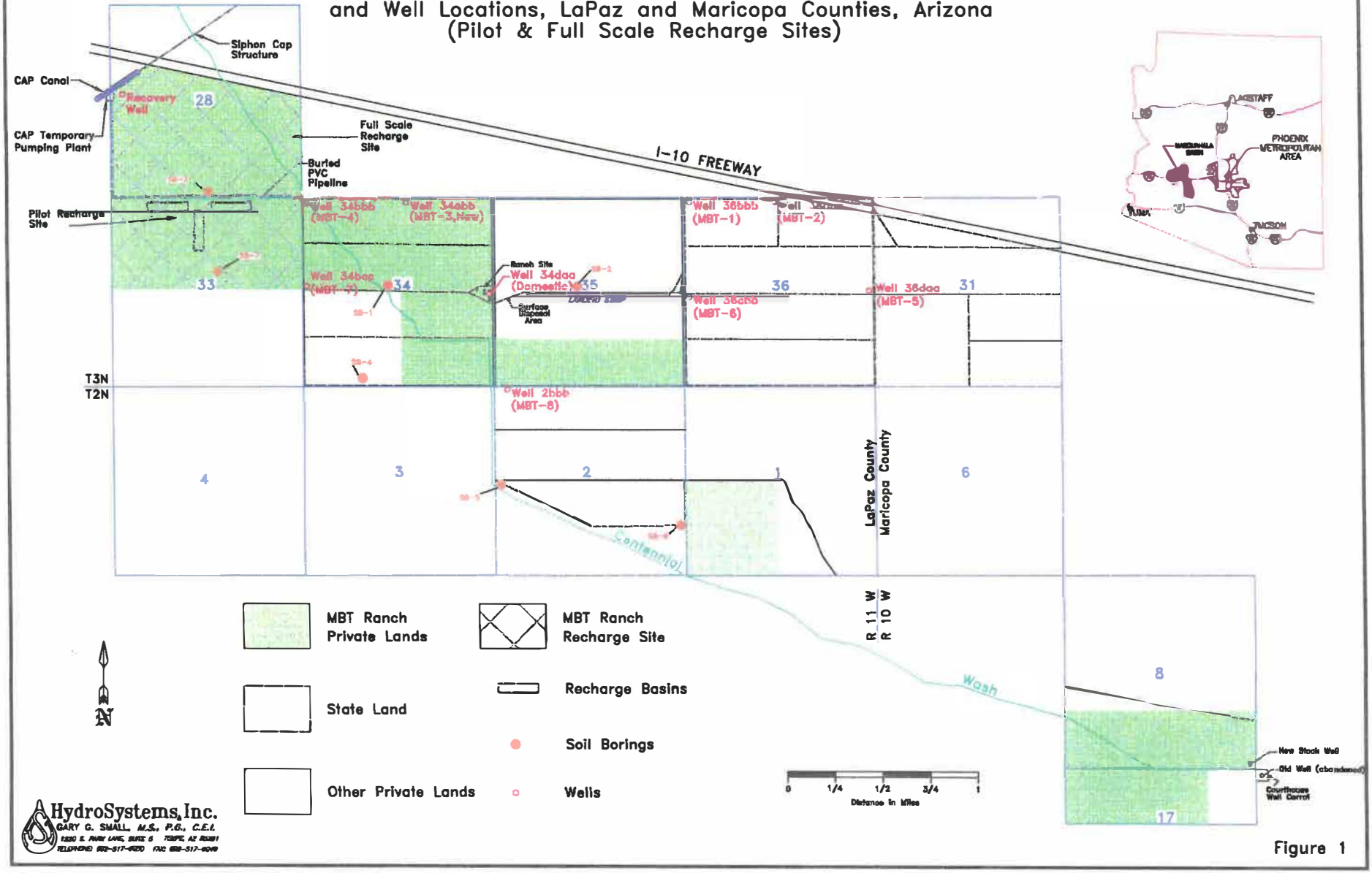
CONCLUSIONS

A recovery plan for the full scale MBT Ranch Recharge Facility would include using the existing MBT Ranch wells in the near future. Strategic wells located on the MBT Ranch can provide 3,600 ac-ft/yr of recovered water currently, and an additional new well will be drilled to provide approximately 4,000 ac-ft/yr of recovered water. For the full scale project a numerical groundwater flow model will be used to evaluate well spacing and aquifer properties to site 45 new wells. These wells will be located adjacent to the CAP Aqueduct to minimize power and piping costs and also to provide the needed well spacing to mitigate well interference.

REFERENCES

Arizona Department of Water Resources, 1996, Groundwater site inventory databases.

Location Map Showing MBT Ranch Properties, Private and State Lands, Soil Borings and Well Locations, LaPaz and Maricopa Counties, Arizona (Pilot & Full Scale Recharge Sites)



HydroSystems, Inc.
GARY G. SMALL, M.S., P.G., C.E.I.

Figure 1

ARIZONA WATER BANKING AUTHORITY
STUDY COMMISSION
Tuesday, August 25, 1998
10:00 a.m. - 2:00 p.m.

Arizona Department of Water Resources
500 North Third Street
Third Floor Conference Room A
Phoenix, Arizona

AGENDA

I. **Review of Indian Issues Subcommittee Findings**

II. **Review of Financial Issues Subcommittee Findings**

III. **Review of Modeling and Planning Assumptions Subcommittee Findings**

IV. **Other items for discussion by committee members**

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting the Arizona Water Banking Authority Study Commission at (602) 417-2440 or (602) 417-2455 (TTY). Requests should be made as early as possible to allow time to arrange the accommodation.

Legislature seals deal on water plans

Will ensure S.D.'s access to Colorado River supply

By Ed Mendel
STAFF WRITER

September 1, 1998

SACRAMENTO -- The Legislature yesterday sent Gov. Pete Wilson a $235 million appropriation that seals a deal giving San Diego a long-sought independent source of Colorado River water, a surplus purchased from conservation by Imperial Valley farmers.

The bill, salvaged from the failure of a water bond in the Legislature last week, sailed out of both houses by a wide margin as Northern and Southern California legislators called a temporary truce in a long and bitter water war.

Ignoring opposition from environmental groups, several Northern California legislators urged their southern counterparts to remember the support for the water transfer when the Legislature is asked to vote for flood-control projects in the north.

Supporters said the measure reduces the demand in Southern California for water from the north and is a shift in state policy, emphasizing conservation and farm-to-urban transfers rather than new dams and canals.

The bill, SB 1765 by Sen. Steve Peace, D-El Cajon, was approved by the Assembly, 64-5, and the Senate, 33-3, after intense behind-the-scenes work by San Diego legislators and aides to Wilson, a former San Diego mayor.

Passage of the bill, only hours before the Legislature adjourned for the year, was eased by an informal link to a $245 million appropriation to help purchase ancient redwoods in Northern California before they are logged by the Pacific Lumber Co.

"It's a win for the entire state and particularly for San Diegans, who can

rest assured they will have more and better quality water," said Sean Walsh, Wilson's press secretary. "We give Sen. Peace a big pat on the back for his hard work on this issue."

The $235 million appropriation will pay for lining the All-American Canal in the Imperial and Coachella valleys and increased underground storage along the Colorado River aqueduct. The projects are expected to save up to 200,000 acre feet of water a year.

An acre foot is nearly 326,000 gallons of water, or the amount used by about two households annually.

State payment for the conservation projects is needed to complete an agreement allowing the San Diego County Water Authority to move water purchased from the Imperial Irrigation District through the canals of the Metropolitan Water District.

"We are elated," said Chris Frahm, chairwoman of the San Diego water agency. "The Legislature has given us the ability to achieve peace on the Colorado river for the next two or three decades."

Frahm said the blessing of Northern California legislators and the pact with MWD is a cease-fire that should make it easier to obtain regulatory and environmental approval of the transfer. She said water may begin flowing from the Imperial Valley as soon as 2002 or 2003.

The San Diego water agency, which currently gets most of its water from MWD, faced severe cutbacks in its water supply during the last drought. San Diego officials also want a stable water supply to aid the growth of high-tech industries.

The San Diego agency signed a long-term agreement in April with the Imperial district to purchase up to 200,000 acre feet of water. The San Diego agency currently imports about 450,000 acre feet annually from MWD.

In addition to aiding San Diego, the water transfer and the conservation steps move California closer to the federal goal of taking no more than 4.4 million acre feet from the Colorado River. The state has been taking about 5.2 million acre feet.

But Arizona plans to begin drawing more of its unused share of Colorado River water. And Arizona and other up-river states fear that California development will be based on surplus Colorado River water, setting the stage for future water wars.

U.S. Interior Secretary Bruce Babbitt has suggested that California's use of surplus Colorado River water will be cut if the state does not develop a plan for reducing its dependence on Colorado River water.

"The Department of Interior as recently as Friday indicated intent to

reduce the amount of water California gets out of the Colorado River," Peace told the Senate yesterday.

But if California develops a plan for conserving Colorado River water, said Peace, the federal government may adopt a new operating agreement that gives California 300,000 acre feet more than its current river allotment.

At first, MWD opposed the San Diego-Imperial transfer and the bid for some independence by its largest member. The giant agency supplies much of Southern California with water from long aqueducts running east to the Colorado River and north to the Sacramento-San Joaquin Delta.

MWD was criticized for a proposed public relations campaign to oppose the water transfer, including a plan to investigate the elected officials supporting the transfer in a search for conflicts of interest.

The fee MWD originally wanted to charge the San Diego agency for using its canal would have made the water transfer financially unworkable. The plan to have the state pay for the water conservation projects in the MWD service area helped close the gap.

The $235 million appropriation for the conservation projects was originally in a proposed $1.7 billion water bond that the Legislature failed to place on the November ballot, scuttled by a dispute over building new dams to store water.

Peace, aided by Wilson's office, quickly amended a bill to make the $235 million appropriation out of the state general fund, which had a surplus this year produced by tax revenue from a strong economy.

Opponents said the $235 million for water conservation projects is a "subsidy" that should be paid by the ratepayers of the San Diego agency and the MWD.

Sen. Tom Hayden, D-Santa Monica, read a long list of environmental groups who oppose the Peace bill, including the San Diego chapter of the Sierra Club.

The Legislature also brushed aside opposition from a few Northern Californians demanding equity on water issues and some conservative Republicans who said the water agencies should pay for the projects.

Assemblyman Bernie Richter, R-Chico, said that the state should help the Marysville-Yuba City area north of Sacramento strengthen levees that have repeatedly failed in floods, causing a number of deaths over the years.

"Shame on me if I voted for this bill, and shame on any other Northern California legislator who votes for it," said Richter.

But several other Northern California legislators said the bill would reduce Southern California's demand on water from the north, a long-standing cause of regional friction, while also helping California prepare for future growth.

Key support came from the Assembly water committee chairman, Mike Machado, D-Linden, who said the bill "will benefit the whole state by capturing water that is now being lost and putting it to beneficial use."

Machado's support for the water transfer helped build support for his bill to provide $21.8 million to match federal funds for strengthening levees in the Stockton area to withstand the worst flood expected over a 100-year period.