AGENDA ITEM: Report on CAGRD Water Supply Acquisition Study

LINKAGE TO STRATEGIC PLAN, POLICY, STATUTE OR GUIDING PRINCIPLE:
2004 CAGRD Plan of Operation
2010 CAWCD Strategic Plan:
  • Reevaluate water supply acquisition program in Plan of Operation
  • Aggressively acquire water supplies as outlined in Plan of Operation

PREVIOUS BOARD ACTION/ACTIVITY:
  o September 2010 CAGRD Committee: Discussion regarding water supply activities
  o February 2011 CAGRD Committee: Recommendation that Board approve the contract with Montgomery and Associates for water supply consulting services
  o March 2011 Board Meeting: Award of contract to Montgomery and Associates for water supply acquisition consulting services

ISSUE SUMMARY/DESCRIPTION:
The CAGRD is required by law to replenish excess groundwater delivered to member lands and member service areas within the three-county service area. The actual replenishment obligation in 2011 was about 32,000 AF; however, the annual replenishment obligation for members enrolled through 2015 is projected to increase to about 136,500 AF/yr by 2035. An estimated 125,000 AF/yr of new water supplies will be needed by CAGRD in addition to its existing water rights to meet statutory obligations. In order to update the existing water supply acquisition plan and expand its water supply portfolio, the CAGRD commissioned Montgomery and Associates and WestWater Research to conduct an analysis of the Arizona Water market. The study involved updating and expanding existing inventories of potentially available water supplies, estimating their economic value, developing an acquisition strategy and a plan to implement the strategy. The attached presentation summarizes the purpose, approach, methodology and general conclusions that resulted from the analysis.
SCHEDULED FOR BOARD ACTION:
No specific Board action is necessary for the CAGRD Water Supply Acquisition Study; however, individual water supply contracts will be scheduled for Board discussion and action.

Attachment.
CAGRD Water Supply Acquisition Study

CAWCD Board of Directors
April 5, 2012

Tom Harbour, Senior Analyst - CAGRD
This study was not intended to replace the water supply acquisition plan described in the approved 2004 CAGRD Plan of Operation. The primary goal of the acquisition study was to provide the best available information on the types and volumes of potentially available water supplies and the estimated market values. Information developed during this study will support decision making for ongoing acquisition activities and provide the basis for the acquisition program for the next plan of operation.
Disclaimer

- Study intended exclusively for CAGRD water supply planning purposes (not part of ADD Water)

- Funded entirely with CAGRD funds.

- Results and Recommendations are Confidential
  - Constrained by confidentiality provisions in consulting contract to protect the financial interests of CAGRD customers

- Discussion of study results and strategy to follow in Executive Session
The CAWCD Board of Directors 2010 Strategic Plan directed staff to update the water supply acquisition program outlined in the 2004 CAGRD Plan of Operation. A competitive selection process was used to solicit and evaluate proposals to identify the most qualified consulting firm to provide technical assistance. In 2011 a consulting contract was awarded to Montgomery and Associates to provide technical assistance to staff.

A multi-disciplinary teaming approach was used for this project which included subject-matter experts from a wide cross-section of CAWCD Departments to provide guidance, expert advice and decision support to the CAGRD project manager and consultants.

The consulting team was comprised of the top experts in water resources planning and policy, economics, water market transactions, water valuation and Colorado River entitlements.
Before discussing the study approach, it is useful to review the CAGRD’s projected replenishment obligation which defines the volume of water supplies needed by the CAGRD.

The table and bar chart illustrate the build-up in replenishment obligation over time. CAGRD needs to acquire sufficient water supplies to meet its replenishment obligations in order to stay in compliance with the Plan of Operation. The primary objective of the water supply acquisition program is to purchase sufficient water supplies to cover the replenishment obligations by 2015 and then synchronize the timing of additional acquisitions with the increase in obligations.

The projected obligations are based on the October 2011 – CAGRD Mid-Plan Review reflecting reduced member enrollment and construction activity. In 2011 the actual reported obligation was 32,572 AF – this contrasts with 70,500 AF projected in the current Plan of Operation. The most recent projected obligation of 136,000 AF/yr in 2035 is about 90,000 AF/yr less than the 2004 Plan of Operation projection of 227,000 AF/yr.
CAGRD’s current water supply portfolio includes CAP M&I Subcontract water, long-term storage credits and temporary reliance on excess CAP water currently available through the 2009 Access to Excess Policy.

In 2015 we include the White Mountain Apache Tribe (WMAT) lease of NIA priority water and eliminate reliance on excess CAP water. This results in a gap between supply and obligation of approximately 25,000 AF/yr in 2015. (Note that the WMAT lease volume is 2,500 AF/yr, however, the water under the lease is CAP Non-Indian Agricultural priority water with an assumed availability of about 70% over the next 100 years. Therefore, the 100-year normalized volume for the 2,500 AF NIA lease is reduced to 1,750 AF/yr.)
For the purpose of this study, staff defined the “target acquisition volume” as the volume of long-term water supply that would need to be acquired to bridge the shortfall between the current annual supply and the projected annual replenishment obligation. The CAP Steering Team established the near-term acquisition target of 25,000 AF by 2015 to eliminate the current shortfall by the beginning of the next CAGRD Plan of Operation. The longer-term target of 100,000 AF by 2035 is aimed at synchronizing acquisitions with build up in obligation. Refinements to the obligation projections will be developed during preparation of the next plan of operation which may result in adjustments to the target volumes.

### Acquisition Needs

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Annual Supply (AF/yr)</th>
<th>Projected Annual Obligation (AF/yr)</th>
<th>Target Acquisition Volume (AF/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>10,351</td>
<td>35,249</td>
<td>25,000</td>
</tr>
<tr>
<td>2035</td>
<td>10,351</td>
<td>136,329</td>
<td>100,000</td>
</tr>
</tbody>
</table>
These are the four primary tasks that were accomplished for the study. The following slides provide additional details regarding the approach and methods used to accomplish each task and some general conclusions resulting from the study.
Task 1: Water Supply Inventory

- Identified the “universe” of water supplies potentially available for acquisition including the following:
  - Effluent
  - CAP water
  - Colorado River water
  - Imported groundwater
  - Long-term storage credits

- Collected detailed descriptive data on each individual supply to support analysis and decision-making.
  - Volume
  - Location
  - Ownership
  - Regulatory
  - Etc.
Task 1: Water Supply Inventory

- Developed custom proprietary water supply database to help maintain up-to-date information on water supplies and acquisition activities.

- Populated database
  - More than 450 individual supplies
  - Cumulative volume of all supplies – 3.8 million AF

- Filtered the data to determine "potentially available supplies" -- this volume is considerably less
This is a screen-shot of the CAGRD Water Supply Database. It shows the results of a query for effluent in the Tucson AMA. The map on the left side of the page is an interactive GIS interface mapping the geographic location of the wastewater treatment plants in the Tucson Active Management Area. The data table on the right side of the page provides the descriptive attributes of each of the water supplies.
The study conducted for the 2004 Plan of Operation estimated the universe of supplies potentially available for acquisition to be approximately 900,000 AF.

This study took a harder look at individual supplies, their ownership, existing and expected future uses, potential terms of acquisition, expected costs, potential third party impacts, and other barriers associated with transferring water to CAGRD. The more detailed analysis resulted in a lower expected total potentially available volume.

One important note is that different transactions will have different time scales associated with them. For example, permanent acquisition would be appropriate for some Colorado River supplies, whereas a multi-year lease would be the appropriate acquisition method for others. Long-Term Storage Credits (LTSCs) are one-time use only.

Note that the potentially available volumes for each supply class were intentionally redacted to retain confidentiality.
We estimate that more than 570,000 AF/yr of long-term supplies are potentially available for acquisition, and we will need less than one-quarter of that to meet projected obligations in 2035. This suggests that even with conservative assumptions about the supply potentially available for acquisition, CAGRD’s water supply needs are manageable.
Task 2: Estimate of Water Costs

- Conducted market analysis to determine the fair market values of different water supply types
- Utilized multiple methods to determine economic values
- Water acquisition costs vary by supply type and are influenced by factors that impact marketability including reliability, regulatory constraints, location, volume, etc.
Task 2: Estimate of Water Costs

- Total acquisition costs for an individual supply may include some or all of the following:
  - Water right acquisition cost
  - Costs to develop supply (infrastructure, regulatory permits)
  - Delivery costs (wheeling, energy, annual operation and maintenance)

- Estimated all applicable cost components for all supplies potentially available for acquisition

<table>
<thead>
<tr>
<th>Supply Type</th>
<th>Acquisition Cost</th>
<th>Delivery Charges</th>
<th>Recharge Cost</th>
<th>Wheeling Charges</th>
<th>Infrastructure</th>
<th>Annual O&amp;M</th>
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<tbody>
<tr>
<td>CAP Water</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term Storage Credits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Groundwater</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tbody>
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Task 3: Acquisition Strategy

- Results from Task 1 & 2 provided the market intelligence to inform the strategy.

- Developed a multi-criteria evaluation system to identify individual supplies that appear to be a good match for CAGRD’s acquisition efforts, based on analysis of:
  - Suitability of the supply with respect to CAGRD’s goals and objectives
  - The potential of achieving an efficient transaction that would be regarded as successful by all parties

- This evaluation system maximizes the efficiency of our acquisition efforts by identifying the individual supplies that will receive priority attention.
Some of the CAGRD water supply acquisition objectives that were considered for the acquisition strategy included:

• Seek a diversified portfolio of supplies – CAGRD is flexible in the types of supplies it can use. Consider a variety of water supply types to avoid over-reliance on a single source.

• Seek to acquire supplies only from willing sellers.

• Evaluate concerns of third parties and avoid third party impacts.

• Cost of a water supply is an important consideration and should be based on market data, not unsupported expectations.

• Seek supplies with a high probability for a successful transaction and a clear regulatory process.
The potentially available supply estimate decreased from 900,000 AF in the 2004 Plan of Operation to 570,000 in the current analysis; however, at the same time the obligation projections have also decreased. Therefore, the ratio of CAGRD’s demands to available supply has remained virtually unchanged at about 22-24%
Results / Conclusions

- **Transaction Complexity** – CAGRD is flexible in the supplies it can use, but most acquisitions will be complex, labor intensive, and will likely involve numerous small acquisitions rather than a few large ones.

- **Simultaneous Approach** – CAGRD plans to pursue multiple supplies simultaneously – resources permitting.

- **Rapid Decisions** – To maintain an effective acquisition program, CAGRD must be able to make decisions quickly. Individual purchase agreements will be brought back for Board consideration.