MARKETING AND FINANCING A WATER BANK: "FIRST GET YOUR HOUSE IN ORDER"

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ABSTRACT

Water banks entail the recharge of periodically available excess surface water for storage underground and recovery when needed. Properly formulated, these projects are one of the most cost-effective water supply tools available. These projects are frequently located in rural areas due to availability of land and water. However, projects with capital programs of more than $10 million typically need to be funded with financing. Traditional financing mechanisms such as raising customer fees, bonding and state/federal grants are increasingly difficult to obtain. Therefore, many rural agencies pursue partnerships with urban water utilities that typically have more available capital. This approach, pioneered by Semitropic Water Storage District and Arvin-Edison Water Storage District in the 1990s, entails upfront payments (and annual operating fees) by the utilities in exchange for long-term leases of project capacity. The decision to use this funding approach must be made early in the project formulation because it requires that the project be sized and configured to meet both local and utility partner needs. Water utilities are only willing to enter into these partnerships if the project can increase their water supply reliability at a lower cost than other alternatives and only if three critical criteria have been met: 1) Lack of controversy as evidenced by tangible benefits to, oversight from and support by local stakeholders; 2) proven technical, regulatory and economic viability; and 3) operational flexibility and modularity, enabling construction in phases. A project should not be marketed before each element is in place. These requirements typically take several years and several million dollars to achieve.

INTRODUCTION AND BACKGROUND

Western Development and Storage (WDS) is a consultant to the Semitropic Rosamond Water Bank Authority (SRWBA), a joint power authority (JPA) that manages 800,000 acre-feet (AF) of water banking projects in the Central Valley and the Antelope Valley of California. The SRWBA program includes over $300 million in capital projects that are in various stages of planning, construction and operation. WDS works with GEI Consultants (GEI) to help the JPA fund these projects through a variety of means that include marketing of capacity to third parties; grants; and contributions by JPA members. This paper summarizes key lessons learned from these efforts.

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The SRWBA was formed by Semitropic Water Storage District (Semitropic), Rosamond Community Services District (RCSD) and Valley Mutual Water Company (Valley Mutual) in 2007 as a Joint Powers Authority to construct, manage and operate a portion of the Semitropic Stored Water Recovery Unit (SWRU) near Bakersfield, CA and the Antelope Valley Water Bank (AVWB) near Rosamond, CA. These projects provide 800,000 AF of storage, up to 330,000 AF/year of recharge and 200,000 AF/year of recovery. The JPA is also participating in other projects that will create over 200,000 AF/year of new water supplies. Figure 1 depicts the locations of SRWBA projects.

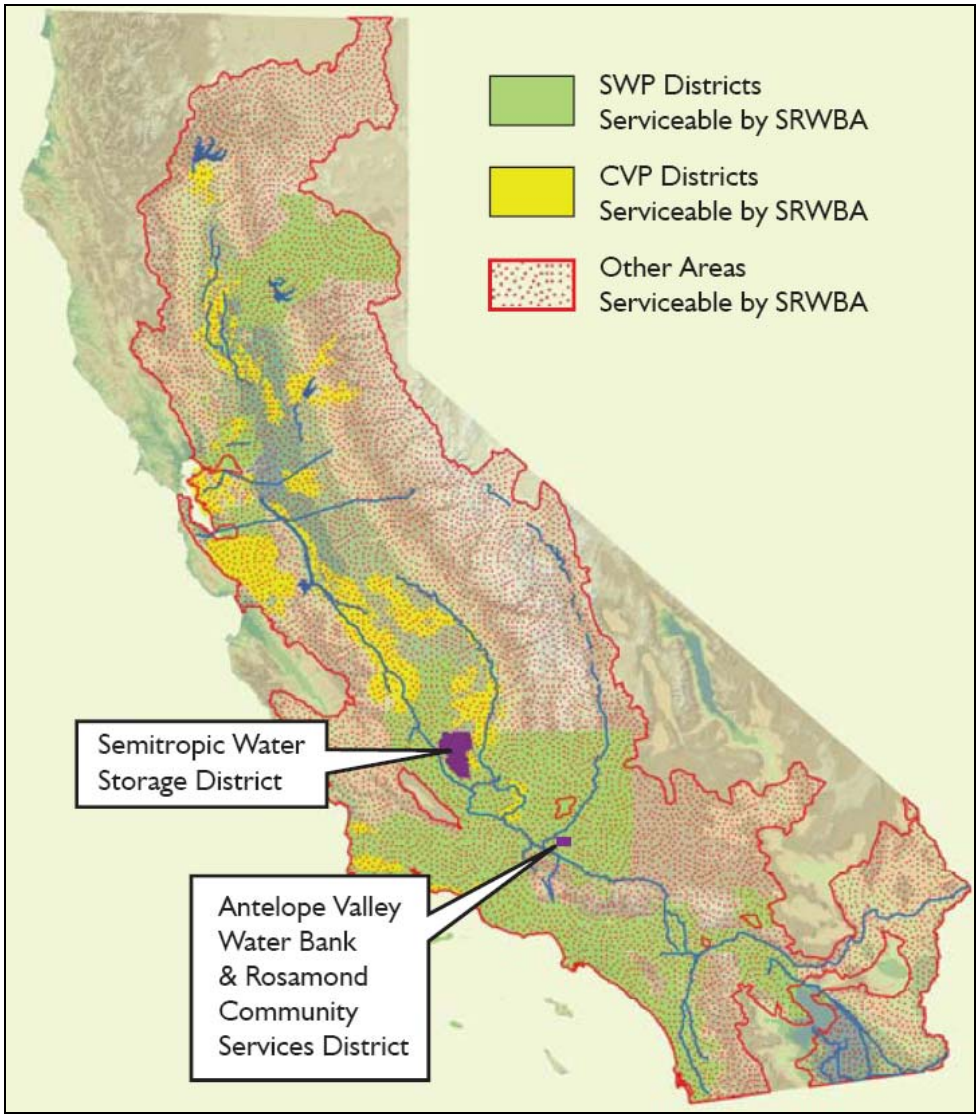

Figure 1. SRWBA Location Map

Water banks are inexpensive relative to other storage alternatives. Peterson (2009) and Hanak (2005) indicate that conservation, reservoirs, wastewater recycling and desalination can respectively be 5, 9, 12 and 18 times more expensive. As with most water banks, the JPA's projects recharge periodically excess surface water into partially depleted aquifers for storage underground until needed. Recharge is performed using percolation basins and the in-lieu method (delivery of surface water to farmers in-lieu of

normal groundwater pumpage) that was pioneered by Semitropic in the 1990s. Water is recovered using a combination of new and existing wells that pump into new and existing conveyances. The first phases have been constructed and work is proceeding on the next phases. The JPA has designed the projects to serve local needs, but has sized them to also enable participation by out-of-basin entities that are willing to make payments that help fund construction. Over the last 18 years Semitropic, an agricultural entity, has successfully used this approach to finance facilities that have banked over 1.2 million AF, mostly for urban agencies. For marketing purposes, capacity in the SRWBA water banks have been allocated into 200,000 "shares", with one share defined as follows:

- 0.33 AF/year (SWRU) to 1 AF/year (AVWB) of recharge capacity;
- 3 AF (SWRU) to 5 AF (AVWB) of storage space;
- 1 AF/year of recovery capacity; and
- Access to additional capacity when it is not being used by others.

The JPA is not issuing bonds and JPA members are not raising rates. Rather, the capital program is being successfully funded through three means: 1) Direct payments by JPA members from cash reserves; 2) Various grants; and 3) Upfront capital payments by contract participants. There is considerable uncertainty in the timing of these funding sources. Therefore, the JPA's projects are modular (i.e. fully operational units) so they can be constructed in phases that match the flow of funds. Capacity is offered to contract participants under the following terms:

- Upfront capital fee for facilities construction (fee reduced for larger share blocks);
- Annual management fees (escalated with the consumer price index, CPI);
- Recharge fee (escalated with CPI);
- Recovery fee (escalated with CPI) plus actual energy costs;
- Access to additional project capacity when it is not being used by others;
- 10% of all recharged water left behind to benefit the local aquifers;
- Term: through 2035 (expiration date of State Water Project Contracts, which are expected to be renewed); and
- Costs to procure and convey water to/from the project carried by the participant.

This structure is straightforward and if a sufficient number of shares are contracted, it can eliminate the need for construction financing. However, it has been the authors' experience that potential participants will not execute contracts unless the project has met three criteria: 1) Lack of controversy as evidenced by tangible benefits to, oversight from and support by local stakeholders; 2) proven technical, regulatory and economic viability; and 3) operational flexibility and modularity, enabling construction in phases.

THE SRWBA EXPERIENCE

This paper summarizes key lessons learned from the circumstance of a multi-million dollar project in a primarily rural area that will tie new facilities to existing regional conveyances within a basin that has chronic swings in water availability and with numerous stakeholders whose interaction has been marked by on-going controversy and

sporadic consensus. A stakeholder refers to a person or entity that could benefit or be harmed by the project, including: surrounding land owners; nearby water agencies; nearby groundwater pumpers; nearby municipalities; farming interests; county departments, the regional air and water boards; governmental and non-governmental wildlife organizations, and state and federal agencies. Finally, it is assumed that the project requires preparation of an environmental impact report (EIR) under the California Environmental Quality Act (CEQA) or an environmental impact statement (EIS) under the National Environmental Policy Act (NEPA).

STAKEHOLDER OUTREACH: MEANINGFUL, EARLY AND ON-GOING

Following the adage, "first get your house in order," a project should not be marketed to potential out-of-basin participants until local stakeholders have been thoroughly consulted and included in the project. Semitropic was required to give local agencies a first right of refusal for any capacity. Sizable water banks impact groundwater levels and quality beneath large areas that may not be entirely controlled by the proponent. While California case law clearly supports the right of a water bank to recharge and recover water as long as it is not to the detriment of others, the proponent must be sensitive to the fact that underground storage space and groundwater are shared resources. As a consequence, stakeholders must be part of the planning and oversight of these projects. Many water bank proponents make the mistake of limiting stakeholder involvement to the public scoping and review processes that are required under CEQA and NEPA. This is not sufficient and generally generates distrust amongst stakeholders because the distributed materials typically make it clear that significant planning and expenditures have already gone into the proposed project without their involvement.

Stakeholder involvement and support are essential to project funding. Most grant programs and potential utility participants require demonstration of support. These requirements have arisen because past programs became mired in controversy due to lack of meaningful outreach by the project proponent. Stakeholders can prevent a project from proceeding in a variety of ways that include: 1) Raising objections during the CEQA/NEPA processes; 2) Filing law suits; 3) Gaining the support of key board members that vote on project actions; 4) Running opposition candidates during elections for board seats; and 5) Gaining publicity that scares away potential participants.

Meaningful stakeholder outreach not only minimizes opposition, but benefits the project by improving the project formulation and opening up new avenues for marketing.

Include stakeholders in project formulation early: Key stakeholders should be consulted early in project formulation to better define the need and areas of likely controversy. If performed in an open, honest fashion, this consultation benefits the project in two ways: 1) It invariably results in new ideas that influence the project configuration; and 2) It establishes lines of communication that are valuable during later stages of the project when controversies may evolve. For example, several proposed projects included plans for "borrowing" water from the aquifer, with the "borrowed" water to be returned during future recharge operations. While this concept might have been technically sound, it was

opposed by stakeholders to the degree that the proposed projects were halted. If more thorough stakeholder consultation had occurred, the projects might have been reformulated and millions in wasted expenditures may have been avoided.

Provide tangible benefits to the local basin: It is not sufficient to simply prevent harm to surrounding stakeholders. The basin must also gain tangible benefits from use of the shared aquifer. Most water banks donate a portion of imported surface water to the basin (typically from 5% to 15%), resulting in an accumulation of water in the aquifer that would occur only with the presence of the project. There are a variety of additional benefits that can be incorporated into project (several of which can also provide funding opportunities), including: upgrades to existing water and power infrastructure; providing stakeholder access to new pipelines, canals and wells when not required by the project; operation of basins to aid flood control; farming in recharge basins when not being used by the project; stakeholder access to imported water supplies that periodically become available above project needs; broadening of local groundwater monitoring programs; procurement and hiring practices that support woman and minority owned businesses and provide training to locals; and reduction of surface water treatment costs.

The last item, reduction of treatment costs, deserves some explanation. Over 30% of surface water treatment cost is associated with removal of suspended solids from the raw water. Water banks located near utilities that operate these treatment plants are presented with an opportunity to dramatically reduce the utility's treatment costs by substituting water recovered from the water bank for raw surface water. This is because water banks typically percolate raw water into storage through sands and gravels that remove the majority of suspended solids and the projects then recover the water from wells that have been constructed to meet health standards. As a consequence, water recovered from a bank requires significantly less treatment than raw water usually received by the utilities. While the recovered water is typically not yet potable and still requires treatment, this de-facto "pre-treatment" can be of significant benefit to the surrounding water utilities.

Perform meaningful CEQA and NEPA analysis before expending significant funds on land and detailed design: Stakeholders justifiably distrust any effort in which the proponent agency has already "locked-in" the project before the environmental analysis has been performed.

Have reliable, open and on-going representation at all major stakeholder functions: Water banks permanently change the way a groundwater basin is managed. Therefore, stakeholders deserve regular availability of a knowledgeable project representative who can provide progress reports, answer questions and obtain invaluable feedback. This is essential in basins where there are nearby groundwater pumpers and other water banks. Simply holding periodic "open houses" or devoting a portion of each board meeting to the project is not sufficient. The project must go out into the community and provide recognizable faces that can be approached in a variety of forums on a regular basis. This can easily become a full time job. SRWBA representatives attend dozens of regularly scheduled meetings that include: stakeholder board meetings, farm bureau meetings, various industry association meetings, town hall meetings and various open houses.

Recognize that there is uncertainty, provide meaningful local oversight and pre-defined mechanisms for prevention of and response to unacceptable impacts: By their nature, water banks have uncertain performance and impacts. While modeling and pilot testing are essential parts of project planning, the proponent should not try to convince stakeholders that they will not be impacted based on model or pilot test results. In fact, all water banks have potential impacts that cannot be fully assessed until the project has been built and there have been several recharge and recovery cycles. A great deal of goodwill, time and money can be wasted if the project devolves into a fight with stakeholders over the interpretation of model and pilot test results. Conversely, stakeholders embrace an approach in which uncertainty is recognized and addressed through a monitoring and operational constraint program (MOCP) developed by a committee that includes stakeholders. A typical MOCP includes: monitoring locations and parameters; protocols for dissemination of information to stakeholders; protocols for constraint of operations if data indicate an unacceptable impact may occur; a process for filing and objectively reviewing complaints; and a process for determining appropriate mitigation measures in the event it is concluded that an unacceptable impact has occurred. The key is to provide stakeholders with a clearly defined process through which problems can be fairly resolved. This process is simplified by the fact that unacceptable impacts are most likely to occur near recovery wells and nearby stakeholder wells – which are clearly defined locations that are easily monitored.

PROVEN TECHNICAL, REGULATORY AND ECONOMIC VIABILITY

Potential project participants and grant agencies are increasingly requiring the following work before they will invest in a project.

Proof of Performance: Potential participants consistently require site specific investigations that demonstrate there are no fatal flaws and that the marketed capacity can be achieved. Commonly required testing includes: trenching, borings, percolation tests, leaching tests, surface water and groundwater compatibility tests, geophysical surveys and long-term recharge tests. As previously mentioned, there must be a MOCP to mitigate unacceptable impacts. Depending on the size of the project, this work can take several years and usually costs from $500,000 to $2 million.

Regulatory Compliance: Potential participants and grant agencies frequently require CEQA and NEPA compliance prior to making project payments. The proponent is usually required to carry these regulatory compliance costs. Potential participants impose this requirement not only to ensure that the project can be executed promptly, but also because they know that the CEQA and NEPA processes spotlight any stakeholder opposition or flaws that could cripple the project. Depending on the complexity of the project, this work typically takes several years and costs from $250,000 to $2 million.

Financial Viability: Potential participants will only invest in a project if it will be more cost effective than other alternatives such as competing water banks, surface reservoirs, periodically buying water on the “spot” market, acquiring new water rights, wastewater reuse, conservation and desalination. This is a complicated comparison that must take

into account variations in reliability, cash flow and costs outside of the project such as water procurement and wheeling of water to and from the project. Potential participants are typically not sufficiently familiar with water banks to adequately evaluate project life cycle costs. Conversely, project proponents are usually not sufficiently familiar with the potential participant's costs or financial criteria to prepare a useful analysis. Taken together, the project proponent should be prepared for a multi-month process in which they will submit capital and operating cost estimates to the potential participant, which will then perform the cost-benefit analysis. This is an iterative process that can become frustrating, but it affords an opportunity to build working relationships and trust.

MODULARITY AND OPERATIONAL FLEXIBILITY

As previously indicated, no matter how much investigative work has been performed, there is always significant uncertainty regarding water bank performance. There is additional uncertainty with the operations that surround a water bank, including: timing, volumes and quality of water to be banked and recovered; availability of wheeling capacity in 3rd party conveyances; and power costs at the time of recovery. In the face of these uncertainties, it is unwise to fully build out a recharge and recovery system in one phase. Experience has shown that these projects should be built adaptively, with the performance of each phase evaluated to determine how the design of future phases should be adjusted to attain the required capacities. Because a recharge and recovery cycle can span several years, this adaptive approach results in construction programs that can spread over 5 to 15 years with operational cycles and design adjustments interspersed. In anticipation of inevitable unexpected operational results, potential participants look for water bank projects with the following characteristics:

- At least two alternate ways in which water can be conveyed to and recovered from the facility;
- Complete project control of at least one pipeline or canal that ties to regional conveyances;
- At least 25 percent excess land (or in-lieu pumper demand) for recharge; and
- An ability to build fully functional modules in phases.

In short, potential participants are hesitant to invest in projects that unduly rely on a single facility could be shut down by operational, political or regulatory developments.

PROJECT DEVELOPMENT FUNDING GAP

As detailed in previous sections, most sizeable water banks require years, thousands of man hours and millions of dollars before they can have a reasonable chance of securing financing. Assuming that they do not raise rates, most rural water agencies lack the cash flow, time and expertise to pursue these efforts. Planning grants are increasingly difficult to obtain. As a result, good projects languish and poorly thought out projects are prematurely marketed. There is no single solution to this funding gap, but the following are some examples of how it is being addressed.

Use of cash flow and available staff: Most districts have discretionary cash reserves. If the need for a water bank is sufficiently acute, some districts have funded early efforts from these reserves. Most districts that serve farmers have reduced demand on staff time during the non-irrigation months. Some districts use these staff and district equipment to perform early work and investigations. The results of this approach are mixed, depending on the available expertise.

Increased new customer connection fees: Several districts have imposed significant fees on new customers, with the generated funds used to pursue water bank initiatives.

In-kind contributions by consultants: Some districts enter into agreements with consulting firms that contribute their expertise at reduced rates in exchange for future project work. These arrangements require careful consideration of competitive bidding requirements.

Investment by private developers: Some districts enter into agreements with developers (power, real estate, dairy, biofuels and others) that contribute funds in order to reserve capacity for their needs should the project succeed.

Monetization of excess land controlled by the district: Many districts hold land that is not required for normal operations or the project. Some districts have sold or leased these lands to various solar, wind, biofuels and real estate developers.

KEY LESSONS LEARNED

In summary, the key project components that are inexorably linked to successful marketing and financing of a water bank include:

- Projects that propose to “borrow” water from the aquifer before recharge has occurred and projects that export native water from the basin are usually, “dead on arrival”;
- Decide on the financing approach early because it impacts project formulation;
- Be open, inclusive and provide benefits to stakeholders;
- Confront operational uncertainty head-on by putting in place response procedures, redundancy and optionality;
- Do not market outside the basin until local stakeholder support is obtained;
- Do not market capacity until adequate testing has been performed; and
- Be prepared to carry upfront investigative and permitting costs for several years.

Finally, a project proponent should not underestimate the amount of time it takes to market, negotiate and contract water banking agreements. In most cases, at least a year is required from the initial expression of interest through the execution of contracts.

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