

# **Agenda**

## **Sacramento Suburban Water District Facilities and Operations Committee**

3701 Marconi Avenue, Suite 100  
Sacramento, CA 95821

Wednesday, October 2, 2013  
5:30 p.m.

Public documents relating to any open session item listed on this agenda that are distributed to the Committee members less than 72 hours before the meeting are available for public inspection in the customer service area of the District's Administrative Office at the address listed above.

The public may address the Committee concerning any item of interest. Persons who wish to comment on either agenda or non-agenda items should fill out a Comment Card and give it to the General Manager. The Committee Chair will call for comments at the appropriate time. Comments will be subject to reasonable time limits (3 minutes).

In compliance with the Americans with Disabilities Act, if you have a disability, and you need a disability-related modification or accommodation to participate in this meeting, then please contact Sacramento Suburban Water District Human Resources at 679-3972. Requests must be made as early as possible and at least one-full business day before the start of the meeting.

### **Call to Order**

### **Roll Call**

### **Public Comment**

This is an opportunity for the public to comment on non-agenda items within the subject matter jurisdiction of the Committee. Comments are limited to 3 minutes.

### **Items for Discussion and Action**

- 1. Arden Oaks Main Replacement Project**  
Review report on customer service line sizes.
  
- 2. Outsourcing/Insourcing Study**  
Review status of study staffing recommendations.
  
- 3. Antelope Pump Back Project**  
Review status of pre-design study findings.

### **Adjournment**

\*\*\*\*\*

**Upcoming Meetings:**

Monday, October 7, 2013 at 3:00 p.m., Finance and Audit Committee Meeting

Monday, October 14, 2013 at 5:00 p.m., Board Workshop – 2014 Budget

Tuesday, October 15, 2013 at 6:30 p.m., Joint Board Meeting with San Juan Water District

Monday, October 21, 2013 at 6:30 p.m., Regular Board Meeting

\*\*\*\*\*

I certify that the foregoing agenda for the October 2, 2013, meeting of the Sacramento Suburban Water District Facilities and Operations Committee was posted by September 27, 2013 in a publically-accessible location at the Sacramento Suburban Water District office, 3701 Marconi Avenue, Suite 100, Sacramento, California, and was made available to the public during normal business hours.

---

Robert S. Roscoe  
General Manager/Secretary  
Sacramento Suburban Water District



## Facilities and Operations Committee

### Agenda Item: 1

**Date:** September 25, 2013

**Subject:** Arden Oaks Main Replacement Project

**Staff Contact:** Dave Jones, Associate Engineer

**Recommended Committee Action:**

Informational item. No recommended action at this time.

**Discussion:**

The District is preparing to begin the first phase of the Arden Oaks Main Replacement Project (Project). In the design preparation of the Project (see Exhibit 1), the diameter of the existing service size for the large residential lots was questioned when several of them indicated a recorded service size of ¾". This was unusual since the new homes being built, or existing homes being remodeled, had a typical service size of 1" to 2".

The Engineering Department, in coordination with the Distribution Department, prepared a Service Size Verification Plan to verify the service size to each of the parcels in the upcoming Project, which is anticipated to begin construction in early 2014. The Service Size Verification Plan looked at 118 parcels and found 98 service size discrepancies between actual field verified services and the service size currently being billed. The current billing rate, mostly flat rate services, indicated as ¾" was found to be from 1", 1-¼", 1-½", or 2". One parcel was identified as having two 1 ½" services, each being billed a ¾" flat rate.

The Service Size Verification Plan only included properties in Phase 1 of the Project. Service Size Verification is underway in Phase 2, which includes approximately 120 properties. Data from Phase 2 is anticipated to be available in mid to late November 2013.

Staff believes this anomaly occurred when the former Arcade and Northridge water districts consolidated. Each agency had its own independent billing software system. The billing software system of the former Northridge Water District was utilized as the primary billing system, therefore, the billing system of the former Arcade Water District was mass merged into that software system.

District staff has prepared a presentation for the Board of Directors of the Arden Oaks Homeowners Association to be presented on October 2, 2013. The presentation will discuss the

Project and will also explain how the water meters will be installed with emphasis on the in-tract line construction. Staff will also discuss the service size discrepancies and billing changes necessary to match water service size to the billing rate and when the changes will become effective. Residents of both Phase 1 and Phase 2 will be notified by mail of the billing discrepancy found and a description of how the billing will be corrected.

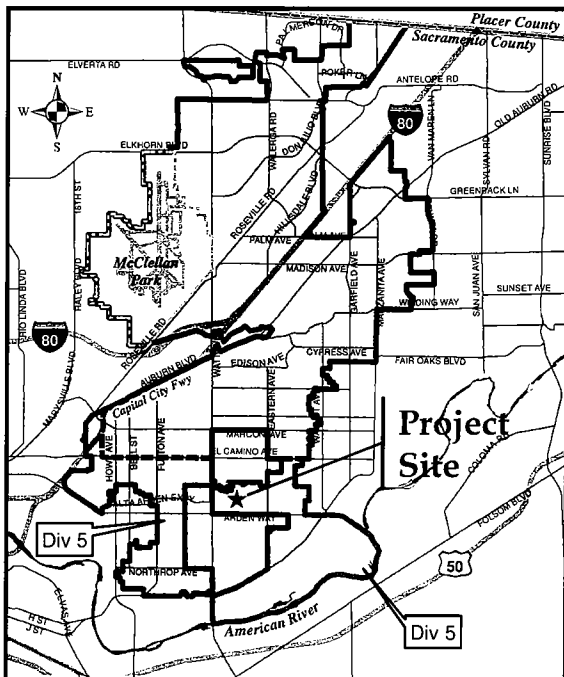
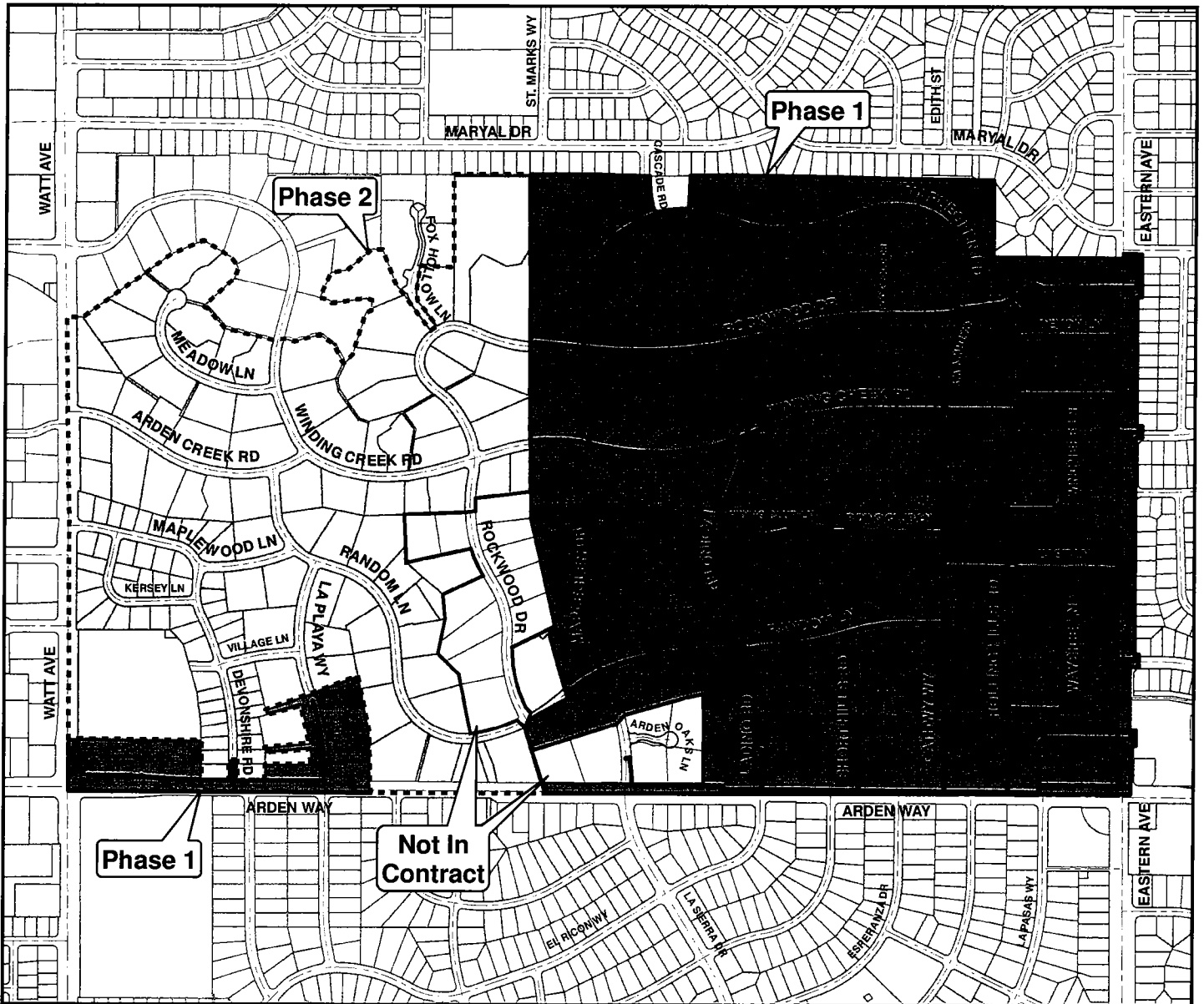
The District is going to take this opportunity to conduct a very thorough public relations process with the affected homeowners of this service area. There is a potential for major billing increases. Therefore, it is vital that staff interacts with the customers to determine if the current service line is sufficient to supply their daily functions. It may be necessary to conduct flow tests and assessments to determine the correct service line size to accommodate the customer's needs.

**Fiscal Impact:**

Informational item only.

**Strategic Plan Alignment:**

Customer Service – 3.C. Operate in an open and public manner.



NO SCALE

Portion of Sacramento Suburban Water District



## EXHIBIT 1

# Arden Oaks Phase 1 & 2 Location Map

(Voting Division 5)



Base Data: Sacramento County Gis Base Map  
 Projection: CA State Plane 2, NAD83  
 Scale: No Scale  
 Prepared by: DAV, SSWD  
 Sacramento, CA - September 2013  
 Arden\_Oaks\_Loc1&2.mxd



## Facilities and Operations Committee

### Agenda Item: 2

**Date:** September 25, 2013

**Subject:** Outsourcing/Insourcing Study

**Staff Contact:** John E. Valdes, Engineering Manager - CIP

#### **Recommended Committee Action:**

Approve staff recommendation to add two positions as the Outsourcing/Insourcing Study recommends for the CY2014 Budget.

#### **Discussion:**

The District outsources many different tasks ranging from landscape maintenance to design of main replacement projects. The District has outsourced a number of work tasks or services because there is a need for specific expertise, special equipment not available in-house, and due to the volume of work relative to staff availability. The District also outsources because of the need to complete work assignments that are of limited duration and are not an ongoing program. Members of the Board of Directors requested, and staff concurred, that an Outsourcing/Insourcing Study (Study) be performed to evaluate what work functions and tasks are currently being contracted out and whether it would be cost effective to perform some of these tasks or functions in house with either existing or new District staff.

A draft Request for Proposals (RFP) was presented to the Facilities and Operations Committee at their meeting on February 6, 2013. On February 25, 2013, the final RFP was mailed to a select group of consultants asking them to provide a proposal for the desired Study. The consulting firm of Municipal Consulting Group (MCG) was selected for the Study. The project kickoff date was April 3, 2013.

As part of this Study, MCG met with key staff members to solicit input on work being performed in house and work being outsourced by non-District staff. MCG also prepared a department by department list of key work activities with pertinent information such as the level of task complexity, whether the activity is reoccurring, its status as a core service, the repetitive nature of the work, whether specific skills or certification are required to perform the activity, etc. During this process, MCG conducted multiple meetings with individual department managers and other key staff. At these meetings, MCG discussed specific work being outsourced by each department and explored what work activities should remain in-house and what work activities should be outsourced.

The final Study was presented to the Directors at the August 19, 2013 Board Meeting. Staff received an Executive Summary of the Study on August 22, 2013.

Upon consolidation of the former Arcade and Northridge Water Districts, the decision was made to conduct the Administrative/CIP Engineering functions at the Marconi facility and the Operations/Developer Engineering functions at the Walnut facility. Currently, 19 staff persons report to the Marconi facility and 42 staff persons report to the Walnut facility.

Following completion of the Study and evaluating engineering services, two new positions, Associate Engineer and Administrative Assistant, are being recommended to add to the District's organization to meet overall needs of daily functions. Listed below are the recommendations and justification for the Associate Engineer and Administrative Assistant positions:

#### Administrative Assistant I/II

Currently there is an Administrative Assistant who reports to the Marconi facility. This position performs administrative and office support activities for multiple management and supervisory staff at the Marconi facility.

There is no administrative support at the Walnut facility. Management and supervisory staff conduct their own administrative support functions while performing their responsibilities to ensure staff obtains required training, assigning work functions, evaluating work performance, resolving customer complaints, overseeing department budget/projects, and mentoring.

To assist in allowing management and supervisory staff to support their staff, administrative support tasks to be conducted is listed below:

- Relieve management of administrative detail on particular projects
- Coordinate work flow
- Update and monitor delegated tasks to ensure progress toward deadlines
- Keep projects on schedule
- Assists in maintaining procedures manual to ensure consistent performance of routines
- Research, draft or abstract reports
- Improve/tighten storage/retrieval systems
- Set up "exception reporting" system to handle routines without supervision
- Assist in maintaining electronic filing system
- File, label, organize and respond to requests for files from their supervisors or other departments

#### Associate Civil Engineer (Registered)

Engineering functions cover research, development, design, construction, and operations. These types of functions are covered at both the Marconi and Walnut facilities. However, one area that needs to be addressed is engineering functions pertaining to the District's groundwater

production facilities. The District's Board of Directors adopted a Groundwater Well Facility Asset Management Plan (GWFAMP) in principle on January 26, 2009. The District currently operates 88 active groundwater wells that vary in age from 7 to 69 years. Because the groundwater wells are relied upon either partially when surface water is available or entirely when surface water is unavailable, the wells are considered to be one of the District's most valuable and important assets. A groundwater well is often the most expensive facility component, the most hidden, and the most difficult to repair and/or replace. As referenced in the GWFAMP, 36% of the District's groundwater wells are in excess of 50 years.

To alleviate potential failures due to lack of preventative maintenance of the well casings and appurtenances, it is very important to schedule rehabilitation processes for groundwater wells on a consistent and rotational basis. This type of groundwater well maintenance is an ongoing issue. The District has been attempting to conduct rehabilitation processes on a scheduled parameter, typically during the winter months when system demands are low. There is a notable backlog of well rehabilitation and well replacement for the unforeseeable future.

During the past several years the District has been conducting engineering services related to the production wells internally. However, staff's expertise is not related to engineering hydrology. Therefore, the District has chosen to outsource this type of engineering services. During the period of August 2012 to present, the District has expensed \$240,000 for external consulting services pertaining to groundwater well rehabilitation and analysis.

**Fiscal Impact:**

The following information is the pay range, excluding benefits, for each position:

Administrative Assistant I/II: \$3,001.00-\$4,452.93 per month

Associate Civil Engineer (Registered): \$5,893.00-\$7,969.87 per month

**Strategic Plan Alignment:**

The District's Strategic Plan outlines measures to improve operational efficiencies. Conducting the Outsourcing Study is in alignment with the overall mission of the District, which is: *"To deliver a high quality, reliable supply of water and superior customer service at a reasonable price."* Elements 2.B and 2.C of the District's Strategic Plan further emphasize the need to continually look for ways to improve how the District operates and maintains water system infrastructure through developing cost-effective strategies to optimize delivery of water to our customers.

Alignment between the Board, management, administrative staff and field crews is critical for obtaining maximum results from this study. MCG and District staffs have frequently checked in to ensure that data collection and interpretation is correct.





## Facilities and Operations Committee

### Agenda Item: 3

**Date:** September 25, 2013

**Subject:** Antelope Pump Back Project

**Staff Contact:** John E. Valdes, Engineering Manager - CIP

**Recommended Committee Action:**

Receive report on status of Antelope Pump Back project and provide direction to staff as appropriate.

**Discussion:**

There are three separate grant funded projects located at the District's Antelope Pressure Reducing Valve (PRV) station. These three projects are the steel security building over the PRV station (a Proposition 50 grant project), the in-conduit hydropower project (a USBR grant funded project) and the pump back project (a Proposition 84 grant project). Construction of the steel security building has been completed. As previously reported, the estimated payback period for the in-conduit hydro project is in excess of 25 years; therefore, staff is not recommending proceeding with that project at this time. This staff report provides a detailed update only on the status of the Antelope Pump Back project.

The proposed pump back project would construct a booster pump station to pump groundwater from the District's North Service Area (NSA) into the Antelope and Cooperative Transmission Pipelines for conveyance to the various San Juan Water District (SJWD) retail customers. Currently, surface water from SJWD's Peterson Water Treatment Plant is transmitted to Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water Company, SSWD and SJWD through these pipelines. All of these districts, with the exception of SSWD, rely on surface water for the majority of their supply with the remaining small portion of supply coming from local groundwater wells. This pump back project would provide for the reversal of flow in the Antelope and Cooperative Transmission Pipelines, thereby allowing SSWD to export conserved and banked groundwater to the other agencies connected to the pipeline. As a result, this project would expand conjunctive use opportunities in the SJWD service area, enabling the retail surface water customers to use more groundwater during dry years and in times of emergency, and greatly expanding regional opportunities for conjunctive use and water transfers both inside and outside of the Sacramento Groundwater Authority's (SGA) area of authority. It is still anticipated that SSWD would enter into some sort of water transfer or water shortage emergency agreement with the SJWD family for the delivery of this water. The agreement could include either a capacity buy-in fee and/or a unit rate for the water actually delivered.

In addition to the above benefits, this project would allow SSWD production operators to move water from the District's North Service Area (NSA) to the Arvin Area located south of I-80. Moving water in this direction would help improve water quality in the Arvin Area. Because of this benefit, staff previously recommended moving ahead with this project regardless of whether any agreement is finalized with the SJWD family.

A decision was made to sole source Domenichelli & Associates (D&A) for the pre-design of this project based on the firm's experience and expertise in this type of project. Findings during the pre-design phase of the project will allow for final decisions to be made regarding number and size of pumps, etc. The pre-design phase is well underway. To date, D&A has completed review of recent demand data, the District's 2009 *Water System Master Plan* and 2010 *Urban Water Management Plan* to help estimate the available capacity for pumping back to the SJWD family. They have also run various water system modeling scenarios to determine the ability of current District infrastructure to deliver the available flow. A copy of their draft Technical Memorandum is attached as Exhibit 1 to this staff report.

The analysis of SSWD's capacity versus built-out (2035) demands shows that there is excess capacity in the District's NSA groundwater supply for the pump back project. A meeting was held with SJWD on September 19, 2013, to discuss the pre-design findings including potential pump back quantities, uncertainties in the future demand and supply forecasts and related flow limitations for the proposed pump back facility. D&A's analysis has shown that 11,900 gpm (17.1 mgd) and 2,200 gpm (3.2 mgd) would potentially be available during dry years and during built-out maximum day and peak hour conditions, respectively. It was also discussed at this meeting that this project could allow for groundwater substitution transfers using SJWD water rights. Funds obtained from the water transfer sales could be significant and could help pay for the pump back project in a relatively short period of time.

The attached drawing (see Exhibit 2) shows a current preliminary layout of the pump back facilities. As indicated, a series of proposed pumps are shown and the facility would be located to the west of the new security building. These facilities could be designed for an outdoor environment or they could be placed into a separate building. In the scenario depicted, one proposed in-line turbine is also shown.

**Fiscal Impact:**

Based on earlier preliminary engineering, the total estimated cost of the pump back project by itself is \$1,725,000. However, this estimate is in the process of being updated by D&A. A Proposition 84 Implementation Grant was awarded in June 2011 for a pump back project at the Antelope Reservoir. The Proposition 84 grant is for \$264,000. Per the Grant Agreement, the grant funds must be spent by June 1, 2016.

**Strategic Plan Alignment:**

Facilities and Operations – 2.B. Monitor and improve the District's efficiencies in operating and maintaining system infrastructure.

Facilities and Operations – 2.C. Develop cost-effective strategies utilizing appropriate technology and other available resources to achieve optimization in delivery of water and enhance service.

This item aligns with these goals because in-conduit hydro has the potential to generate electricity which could reduce the District's operating costs.

# Antelope Pump-Back Booster Station Capacity Analysis TM (DRAFT)

*September 25, 2013*

PREPARED BY: Joe Domenichelli, P.E.

REVIEWED BY: Sara Rogers, P.E.

---

## **INTRODUCTION**

Domenichelli & Associates has been tasked by the Sacramento Suburban Water District (SSWD) to estimate the available capacity of their system to pump domestic water back into the San Juan Water District's (SJWD) Cooperative Pipeline. The purpose of "pumping back" to the San Juan system would be to supply water to users during dry water years when their primary supply (which is surface water) becomes limited. The excess groundwater supply capacity from the SSWD system will be the major source of the pumped-back water, with some excess storage available for peak use periods. This type of transfer is consistent with conjunctive use strategies using more groundwater during dry years and switching to greater surface water in the wetter years, allowing the groundwater to replenish.

The Antelope Pressure Reducing Valve (PRV) Station is a major connection between SSWD and SJWD at the end of the Cooperative Pipeline which provides surface water from the SJWD Hinkle Water Treatment Plant (treating water from Folsom Lake) to several local water purveyors. The Antelope site will be the location of the Pump-back Booster Station. Figure 1 provides a map of SSWD's system showing the different service areas and potential pump-back booster station location.

To determine the supply capacity available from the SSWD system, D&A has relied on recent water system studies, water use records and the District's water system (H2OMap) hydraulic model as sources of information. The review of the latest system master plan documents and water use data have helped establish excess available groundwater supply in the SSWD network of wells. The District's current hydraulic model was run to identify hydraulic impacts, if any, to the SSWD system resulting from the delivery of various flow rates to the SJWD pipeline.

Antelope Pump-back Project Capacity Analysis

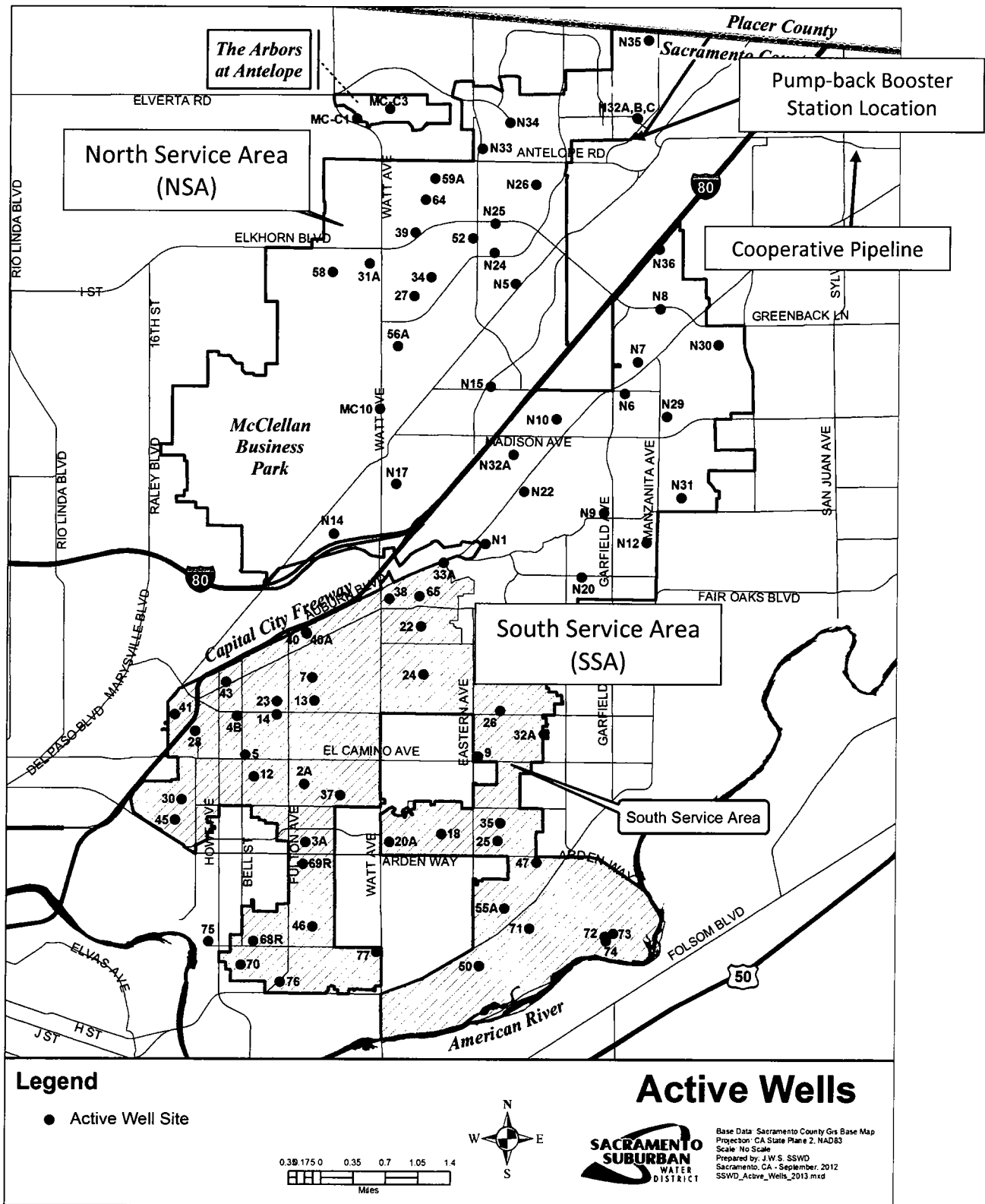


Figure 1. SSWD Facility Map (Taken from 2009 Water System Master Plan)

**AVAILABLE GROUNDWATER SUPPLY**

Groundwater supply information for SSWD was taken from the Sacramento Suburban Water District Water System Masterplan, Brown & Caldwell, July 2009 and the more recent Urban Water Management Plan, Brown & Caldwell, July 2011. These documents provide supply and demand estimates for the entire SSWD system. In addition, the Water System Masterplan breaks down this information for the two major north and south service areas. The pump-back project is located in the North Service Area (NSA). Although the NSA and the South Service Area (SSA) have interconnections, they are essentially two separate zones of supply and demand. Therefore, the available supply to the Pump-back Project will come from the NSA. The information on available well capacity was updated to include recent well abandonments at MC-C2 (Capehart) and N27 (Jamestown) which are not planned to be replaced or rehabilitated. Table 1 shows the current groundwater well capacity for the SSWD, NSA.

**Table 1. Groundwater Well Capacity –North Service Area**

NSA -Number of Active Wells*	Total Design Capacity(gpm)	Total Reliable Capacity (gpm)**
40	47,590	43,000

\*As of September 2013.

\*\*At 10% off-line

Note that the well capacity is based on the number of wells and design capacity in the NSA as of September 2013. The SSWD plan for groundwater capacity is to maintain this value by adding wells as existing wells in the system near the end of their useful life or are taken off-line due to water quality concerns. The capacity will fluctuate and probably slightly exceed the amount in Table 1 at times, but the target should remain the same for the study period over the next 20-years.

**STORAGE AND BOOSTER STATION CAPACITY**

The well capacity of 43,000 gpm is the target figure for meeting or exceeding maximum day demand flows for the SSWD. The District’s storage facilities in the NSA must be sufficient to supplement the wells for meeting fire flows and diurnal (peak hour) demands during high water use days.

There are two main water storage tanks within the NSA; the Antelope Tank and the Watt/Elkhorn Tank, each with approximately 5 million gallons of storage. The booster stations at each location can deliver up to approximately 10,000 gpm. Table 2 shows the capacity available from these storage facilities, including the reliable capacity with the largest pump out of service at each site.

**Table 2 Storage and Booster Station Capacity- North Service Area**

Tank Site	Storage Capacity (gallons)	Booster Station Design Flow Capacity (gpm)	Reliable Booster Station Capacity (gpm)*
<b>Antelope</b>	5,000,000	10,000	8,000
<b>Watt/Elkhorn</b>	5,000,000	10,000	8,000
<b>Total</b>	10,000,000	20,000	<b>16,000 gpm</b>

\*Largest pump out of service.

**WATER DEMANDS – SSWD NORTH SERVICE AREA**

To determine the available capacity for the Pump-back Project, the District’s well supply capacity must be compared to NSA demands. Data in the Water System Masterplan (WSMP) breaks down the demands into smaller areas, while the Urban Water Management Plan (UWMP) provides more of a comprehensive representation. The pump-back analysis demand totals for the NSA are derived from the WSMP and are updated by more recent estimates in the UWMP which shows slightly lower (3% reduction) projections for overall demands. The lower projections are based on assumptions that progress towards conservation goals and completion of meter retrofit programs will be continued.

Table 3 provides a summary of the demand projections from the WSMP including the adjustment from the UWMP for the North Service Area.

**Table 3 SSWD North Service Area Demands**

Demand Period	Average Maximum Monthly Demand (July) (gpm)	Maximum Day Demand (gpm)	Peak Hour Demand (gpm)
<b>Current</b>	24,700	26,000	49,900
<b>Build out to 2035</b>	29,600	31,100	56,800

**EXCESS CAPACITY AVAILABLE FOR PUMP-BACK**

The first step in estimating the excess capacity from SSWD for the Pump-back Project would be to subtract the NSA demands from the reliable NSA capacity at the built out study horizon (2035). For the maximum day excess capacity this would be the maximum day demand in Table 3 subtracted from the reliable well capacity from Table 1. For the peak hour condition, the excess capacity could be determined from subtracting the peak hour demand in Table 3 from the sum of the reliable well capacity (Table 1) and the reliable booster station capacity (Table 2). This would be a simple summation of available flow; however it does not take into consideration of the ability of the SSWD system to deliver the flow to the pump-back location. Table 4 provides a summary of the available excess capacity in the NSA system, without consideration of conveyance limitations.

**Table 4 SSWD North Service Area Excess Capacity**

Demand Condition	NSA Well Reliable Capacity (gpm)	NSA Maximum Day Demand (gpm)	NSA Well Plus Booster Sta. Reliable Capacity (gpm)	NSA Peak Hour Demand (gpm)	Excess Capacity (gpm)
<b>Maximum Day Demand</b>	43,000	31,100			11,900
<b>Peak Hour Demand</b>			59,000	56,800	2,200

It should be kept in mind that demands in Table 4 are based on projections out to 2035 and depend on several factors such as conservation and climate change. Also, the supply figures are subject

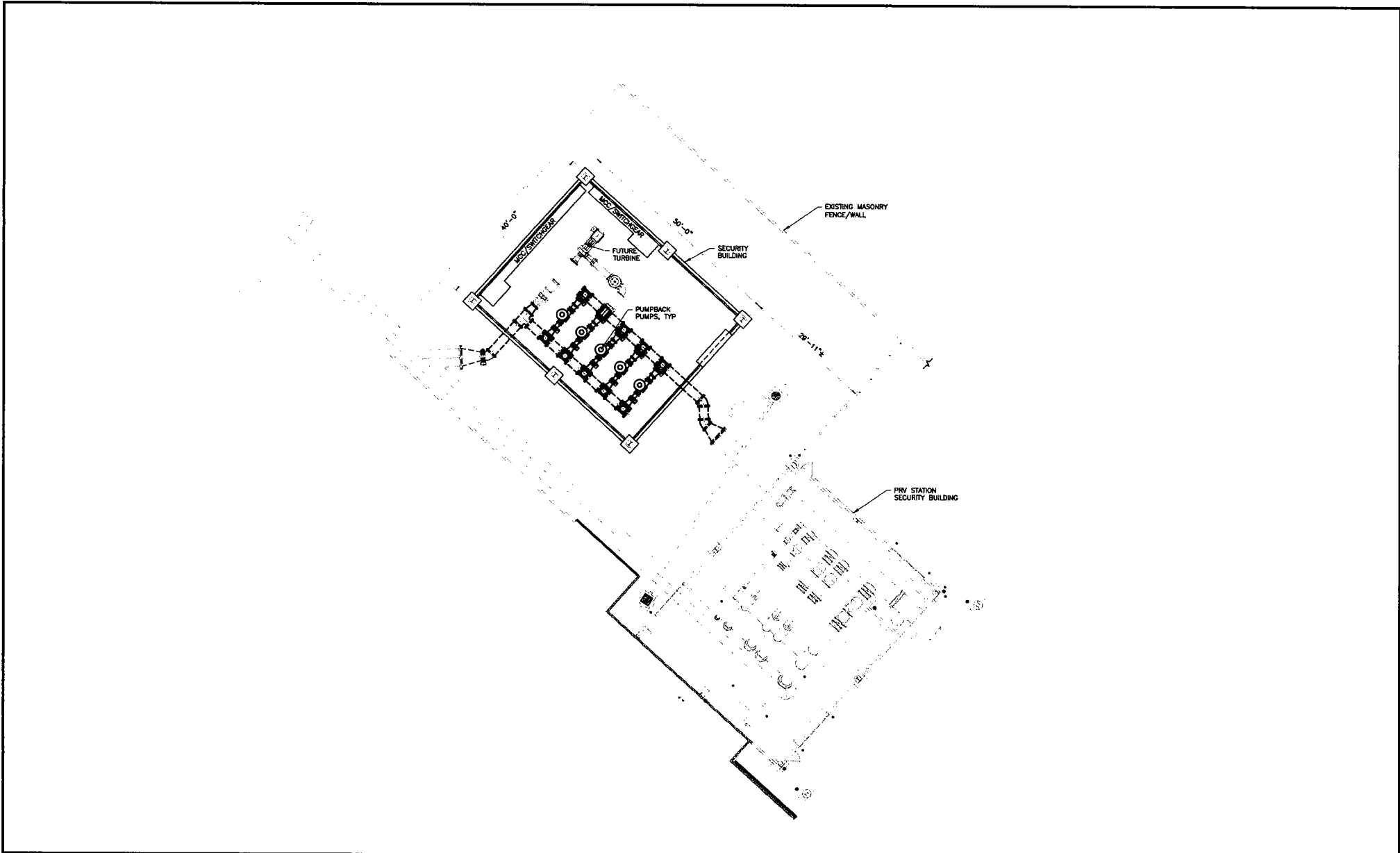
to groundwater level instability, contamination and the life of the equipment. Therefore, it is recommended that a safety factor (reduction) be applied to the excess capacity figures.

As mentioned previously, the ability to convey the excess capacity from the NSA system to the pump-back location is also a factor in sizing the pump-back facility. The latest hydraulic model was run by D&A to determine the effects on the NSA system from placing various pump-back demands at the Antelope site during max-day and peak hour NSA demand conditions. During a max-day condition, the added pump-back demand could be increased up to approximately 8,000 gpm without any adverse impacts. However, during the peak hour scenario, some areas of low pressure in the NSA system were detected as the pump-back flow approached 3,000 gpm. This is mostly due to local wells being charged to deliver more flow than remote wells, dropping pressure near the local wells.

### **CONCLUSIONS & RECOMMENDATIONS**

1. The analysis of the SSWD capacity versus built out (2035) demands shows that there is excess capacity available in the SSWD NSA groundwater supply for the Pump-back Project.
2. Based on current well and storage capacity in the NSA and assuming this level of supply is maintained over the study period (to 2035), maximum day excess capacity is approximately 12,000 gpm and peak hour excess capacity is 2,200 gpm.
3. Due to limitations in the NSA system to deliver the entire excess capacity and the uncertainties in the future demand forecast, a maximum 2,500 gpm pump-back rate is recommended as the design flow available during all demands conditions (including peak hour).
4. A second pump with the same capacity of 2,500 gpm would be provided for non-peak hour conditions (total 5,000 gpm), with an additional headers for a future pumps (for non-peak hour conditions) if over time the demands and reliable capacity are shown to be consistent with predictions in the WSMP and UWMP.
5. SSWD also desires to include a 2,000 gpm pump dedicated to a local area of low pressure in the NSA. All pumps will be metered and controlled by the District's SCADA system to ensure that service to the NSA is not compromised during pump-back operation and that all flow is accounted for to each purveyor.





REV DATE BY DESCRIPTION	SCALE:	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.	DESIGNED D. HEIGHER DRAWN D. HEIGHER CHECKED J. DOMENICHELLI	<b>DOMENICHELLI &amp; ASSOCIATES</b> 1101 Investment Blvd., Suite 115 St. Espirito, Hills, CA 94384 Ph: (916) 323-1997 Fax: (916) 323-4718	SACRAMENTO SUBURBAN WATER DISTRICT 3701 MARCONI AVENUE SUITE 100 SACRAMENTO, CA 95821 PHONE: (916) 972-2171	SSWD - ANTELOPE PUMPBACK STATION	SHEET
	PRELIMINARY SITE PLAN						