

6.0 OPERATIONAL AND INFRASTRUCTURE ASSESSMENT

The following Operational and Infrastructure Assessment for the NCWD and SCWD facilities provides a summarized compilation for key assets. **Appendix C** of this Study should be referenced for a comprehensive list of facilities. It is important to catalog and assess the major assets of each entity in order to account for the condition of the assets and the potential of improved operational efficiency. This section is divided into four (4) main categories; Sources of Supply, Distribution Facilities, Pipeline and Appurtenances, and Other Assets. The assets for both suppliers are of similar size, age, and condition. Ongoing maintenance and capital improvements and replacements for these assets are required regardless if the new district is formed.

Challenge: *Maintain high level of operations and infrastructure management.*

Opportunity: *Improve on current level of operations and infrastructure management by fully integrating distribution networks and resources.*

Summary: In a community such as Santa Clarita Valley, with multiple water suppliers, where service area boundaries boarder and overlap each other, water system integration can provide unique opportunities for improving service reliability, redundancy, efficiency, and quality to customers. Also, each supplier currently provides both preventative and corrective maintenance on its facilities. In addition, each supplier has its own expertise in different areas and also uses a variety of different outside vendors and contractors. Capitalizing on using shared resources would improve efficiency and reduce costs.

6.1 Sources of Supply

Source of supply is a critical component of urban water suppliers. Having multiple sources of supply provides operational flexibility and increases reliability to more readily accommodate scheduled maintenance and replacement activities, emergency shutdowns and repairs, and allows for blending of supplies to improve water quality.

6.1.1 Groundwater Wells

Both NCWD and SCWD have groundwater wells completed within the two groundwater aquifer systems (Alluvial and Saugus Formation) in the Santa Clarita Valley. On average, NCWD produces approximately 60% of its supply and SCWD approximately 50% of its supply from local groundwater. Both NCWD and SCWD have ongoing replacement and rehabilitation programs to ensure their groundwater well facilities operate in an efficient and reliable manner. Local groundwater supplies currently meet all state and federal drinking water regulations. **Table 6-1** is a summary of wells for both suppliers.

Table 6-1 Summary of NCWD and SCWD Groundwater Wells		
	NCWD	SCWD
Number of Groundwater Wells*	9	16
Total Capacity* (gpm)	9,300	16,800
Age Range (years)	1951 - 2009	1940 – 2009
Average Age (years)	1975	1971
Condition	Average – Good	Average - Good

Note: *This capacity is reflective of active wells only and it should be noted that the pumping capacity of groundwater wells on the east end of the SCV have historically fluctuated in relation to weather conditions.

6.1.2 Turnouts

Both NCWD and SCWD purchase imported water from CLWA. Imported water diversifies the water supply of both NCWD and SCWD. Some turnouts are located where they require pumps to supply water to a higher elevation grade to the supplier. Other turnout locations supply water through gravity without the need for pumping. On average, NCWD purchases approximately 40% of its supply and SCWD approximately 50% of its supply from CLWA. CLWA has an allocation of 95,200 acre-feet per year of Table A State Water Project water and has a variety of supplies in various banking and exchange programs. CLWA provides treatment of the imported supplies through two surface water treatment plants (Earl Schmidt and Rio Vista). All water provided by CLWA consistently meets both state and federal drinking water regulations. In areas where multiple turnouts are located, there is the potential to integrate facilities and reduce duplicative maintenance costs. Integrating facilities also would provide additional reliability and flexibility during routine or emergency outages for maintenance and repair. **Table 6-2** is a summary of turnouts for both NCWD and SCWD.

Table 6-2 Summary of NCWD and SCWD Turnouts		
	NCWD	SCWD
Number of Turnouts	4	13
Total Capacity (gpm)	25,000	46,800
Number of Pumps	8	20
Number Gravity Supply	1	7
Condition	Good – Excellent	Good – Excellent

6.1.3 Water Quality

Local groundwater and imported supplies consistently meet all state and federal drinking water quality regulations. However, in 1997 it was discovered a portion of the Saugus Formation was contaminated with perchlorate. In 2007, CLWA and the local water suppliers reached a settlement with the polluter and in 2010 a perchlorate treatment system was put online to treat two existing wells. Although all groundwater supplies meet state and federal drinking water quality regulations, local groundwater is characterized as being moderately to very hard from the presence of naturally occurring calcium and magnesium. Hard water contributes to aesthetic water quality issues including spots on glasses and dishes, scale build-up, and dry skin. Imported supplies typically have lower levels of calcium and magnesium and therefore the water is characterized as having relatively low hardness levels.

The creation of a new water district provides a unique opportunity for removing barriers to improving water quality and reliability. This includes the opportunity to further blend groundwater and surface water supplies. This kind of operating scenario also allows for conjunctive use and centralized and decentralized treatment as needed.

6.2 Distribution Facilities

Storage and pumping facilities allow for urban water suppliers to provide customers a reliable supply of water at acceptable pressures throughout their service areas. These facilities also provide for adequate fire flow protection and emergency storage. Combining service areas with similar hydraulic grade elevations allows for improved operating efficiencies. This includes enhancements in reliability for scheduled maintenance and replacement. Also, integrated pumping and storage facilities can provide additional fire protection and emergency storage.

6.2.1 Storage Facilities

Both NCWD and SCWD have storage facilities ranging in size from 0.05 MG to 3.75 MG. The storage facilities of both suppliers are of similar capacity and age. Both suppliers have a proactive maintenance program for the storage facilities including periodic inspection and recoating. Several tanks have similar pad elevations which can allow for combining system pressure zones of tanks within similar geographic areas. A summary of the tanks and reservoirs for both suppliers is provided in **Table 6-3**.

Table 6-3 Summary of NCWD and SCWD Storage Facilities		
	NCWD	SCWD
Number of Storage Facilities	22	48
Total Storage (in million gal)	24.7	75.7
Age Range	1962 – 2007	1974 – 2013
Average Age	1995	1993
Condition	Good - Excellent	Good - Excellent

6.2.2 Booster Facilities

Both NCWD and SCWD serve water to areas requiring pumping. Due to the topography of the NCWD service area, more substantial pumping per service connection is required. Both suppliers' booster facilities are of similar age and require ongoing investments to maintain reliable service. Due to the age of the facilities, both suppliers will have growing capital needs for replacement of older booster facilities. A summary of the booster facilities for each supplier is provided in **Table 6-4** below.

Table 6-4 Summary of NCWD and SCWD Booster Facilities		
	NCWD	SCWD
Number of Pump Stations	13	30
Flow Rate Range (gpm)	500 – 4,600	60 – 5,000
Total Capacity (gpm)	25,840	48,310
Total Number of Pumps	36	67

6.3 Pipeline and Appurtenances

6.3.1 Pipeline

Both NCWD and SCWD have a mixture of pipeline materials including; steel, asbestos cement, PVC and ductile iron. NCWD standardized to ductile iron pipe in the late 1980's and for future installations. SCWD standardized to PVC pipe in the 1980's and for future installations. The useful lifespan of pipelines varies by material and can range anywhere from 60 – 100 years. Pipeline replacement programs are based on a variety of factors including but not limited to age, material, leak frequency, and location. A summary of pipeline statistics is provided in **Table 6-5** below.

Table 6-5 Summary of NCWD and SCWD Pipelines		
	NCWD	SCWD
Pipe (miles)	147	311
Age Range (years)	1960 – 2016	1958 – 2016
Size Range (inches)	2 - 30	2 - 24
Feet of Pipe per Connection (feet)	80	55

6.3.2 Appurtenances

Appurtenances is a generic term for “belonging to and connecting to” something. It references various items in a distribution system including, meters, valves, and fire hydrants. These items all require ongoing routine maintenance. Efficiencies in these maintenance activities can be realized by combining maintenance crews and expanding coverage areas.

Both NCWD and SCWD have thousands of system valves throughout their respective service areas. Valves are designed to start and stop the flow of water. Routine operation of system valves improves and prolongs the useful operating life and also helps to identify failure so replacement can be planned. Fire hydrants are also a common appurtenance in distribution systems. They provide fire protection and a source of water for various miscellaneous uses. They also require proper maintenance in order to ensure proper operation.

Both NCWD and SCWD meter water usage to their customers. NCWD uses automatic meter reading (AMR) technology. SCWD currently uses meters with a “touch-read” system. This system has the capability to migrate to AMR. Both suppliers have active meter replacement programs with investment taking place over a number of years to smooth out cost impacts.

6.3.3 Water System Integration

In a community such as the Santa Clarita Valley, with multiple water suppliers, where service area boundaries boarder and overlap each other, water system integration can provide unique opportunities for improving service reliability, redundancy, efficiency, and quality to customers. Water system integration is realized by strategically connecting distribution systems in hydraulically compatible areas. This assessment of identifying areas of integration to provide for efficiencies, supply redundancy and overall operational improvement is specifically between NCWD and SCWD.

The existing interconnections were established for emergency purposes to assist a neighboring supplier in time of need. Permanently opening these connections and fully interconnecting other portions of the water systems would allow the integrated system to realize supply redundancy and in many cases improved fire flow, storage and water quality. The following areas are locations with existing interconnections that can be easily converted to permanent connections.

Intersection of Alderbrook Drive and Hacienda Lane, Newhall:

Currently, approximately 50 homes are served by SCWD within an area isolated from the main portion of SCWD's distribution system. It is at a similar hydraulic grade as existing NCWD customers. In this example permanently opening this interconnection would allow water to be served mutually by both water systems, providing improved reliability and service. See **Figure 6-1** in **Appendix D** for a detailed map.

Intersection of Soledad Canyon Road and Oak Springs Canyon Road, Canyon Country:

A community of several hundred homes is located in an area adjacent to NCWD's service area boundary in Canyon Country. Permanently opening this interconnection and adding additional interconnections would improve reliability and service to these customers. **Figure 6-2** in **Appendix D** shows the areas where an existing interconnection could be activated.

In addition to the existing connections, there are several other areas where adjacent service area boundaries exist and would provide additional opportunities for integration to support supply reliability, redundancy, quality and improved efficiency. Below is a description of two specific examples of areas where hydraulic grade elevations are similar and would permit system integration. A complete engineering analysis is recommended to identify all areas and to adequately qualify and quantify all the potential benefits and challenges.

Potential Interconnection – Newhall

A portion of SCWD's service area supplying approximately 400 customers is adjacent to a section of NCWD's Newhall distribution system. These neighboring service areas could be interconnected at several locations, providing customers with improved service and reliability. **Figure 6-3** in **Appendix D** shows this area in detail.

Potential Interconnection – Pinetree

NCWD and SCWD serve a community of several hundred customers in adjoining service boundaries in an area of Canyon Country (Pinetree). Current infrastructure exists enabling these areas to be interconnected, resulting in improved service reliability. **Figure 6-4** in **Appendix D** shows this area in detail.

6.4 Other Assets

Real Estate Assets: NCWD and SCWD both have an administration office building and associated warehouses to house staff, equipment, and material. Customer service is a primary function of all water suppliers. Having strategically located facilities is important for rapid field service response and for customer convenience for things such as, paying bills, opening or closing accounts, and other in person customer service opportunities. Having multiple large office facilities is not practical from a financial standpoint and does not promote a collaborative office environment. Therefore, a centralized main headquarters would be an optimal solution. In addition, satellite customer service “payment” centers would be recommended to provide convenience and enhance the customer service experience.

Currently both NCWD and SCWD have a warehouse and operational facility. SCWD’s operations center is located offsite from its main administration building. It is important for key operational and administrative staff to work closely together in order to provide constant feedback on critical operational strategies. However, since much of the day-to-day operations involves routine maintenance activities as well as responding to customer service requests, it is important for certain field staff to be situated in areas to maximize efficiency and rapid response. Reference **Figure 6-5** on the following page for photos of current real estate assets.

Figure 6-5 Photos of Current Real Estate Assets



Clockwise from top left: NCWD Administration, CLWA Rio Vista, CLWA Water Resources, SCWD Old Administration, CLWA Earl Schmidt, SCWD New Administration

Creating a new district would allow for the opportunity to sell or sublease certain facilities while integrating others to provide for strategically located facilities to improve customer service and operational efficiency. It is not yet known which facilities could be sold or leased as part of a new district, however assets to be considered total several million dollars. To be conservative the additional revenue that would be realized has not been included in the financial benefits summarized in the MF Whipple Report. **Table 6-6** on the following page catalogs the existing square footage of the existing real estate assets.

Table 6-6 Summary of NCWD, SCWD & CLWA Existing Buildings		
	Address	Building Space (sqft)
<u>CLWA</u>		
<i>Earl Schmidt Filtration Plant</i> Control Building & Laboratory	32700 Lake Hughes Road	6,700
<i>Rio Vista Filtration Plant</i> Administration, Engineering, Laboratory & Board Room Operations	27234 Bouquet Canyon Road	35,000
<i>Water Resources Department</i>	26521 Summit Circle	4,400
<u>SCWD</u>		
<i>Old Office (leased space)</i>	22722 Soledad Canyon Road	5,564
<i>Main Office</i> Administration & Engineering	26521 Summit Circle	12,000
<i>Field Office</i> Operations & Warehouse	21110 Golden Triangle Road	8,940
<u>NCWD</u>		
<i>Main Office</i> Administration, Engineering & Board Room Operations & Warehouse	23780 North Pine Street	15,920 5,920

Fleet Management: Both NCWD and SCWD operate and maintain a fleet of vehicles ranging from light-duty trucks, full-service heavy duty trucks, and a variety of heavy equipment. Economies of scale can be realized by managing the fleet to achieve the right number and type. Integration of the fleet would provide for a consistent maintenance program and the ability to allow for repairs while avoiding “down-time”. While some reduction of the fleet size would be realized, the savings have not been projected resulting in a more conservative projection of cost savings. **Table 6-7** lists a summary of both suppliers’ fleet inventory.

Table 6-7 Summary of NCWD and SCWD Vehicles and Equipment		
	NCWD	SCWD
Light/Heavy Duty Trucks, Cars, Vans	22	39
Heavy Duty and Misc Equipment	15	10
Large/Small Generators	3	5

6.5 Technology

Technology is an important asset to any modern water supplier. Mobile solutions, remote operations and monitoring, data collection and processing provide opportunities to improve efficiencies and reduce costs. Several technology areas of importance involve Supervisory Control and Data Acquisition (SCADA), Geographic Information Systems (GIS), and Asset Management.

Both NCWD and SCWD have a robust SCADA system in order to operate and monitor their facilities and the flow of water. Currently, both suppliers use the same SCADA integrator and use the same hardware and software components. This should allow for seamless integration. Utilizing the same vendors and integrators can have the potential of limiting increased costs and also improve efficiency and reliability.

NCWD has had a GIS system for over ten (10) years. All horizontal and vertical distribution system assets are integrated in a geodatabase. While SCWD does not currently have a GIS system, NCWD staff could be used to assist the set up and population of a similarly robust system.

Asset Management is an important part of any water supplier’s operation, maintenance, and capital improvement programs. Understanding the costs associated with maintaining a water utility is important to the reliability and efficiency of the utility’s response. Both suppliers manage their assets by examining a number of different criteria including; operation, maintenance, age, location, reliability, redundancy, and cost. Currently, NCWD is in the process of implementing a computerized maintenance management system to streamline preventative and corrective maintenance and capital improvement programs. A single vendor solution could provide the new district with a streamlined option for managing assets.

6.6 Conclusions and Recommendations

Overall NCWD and SCWD are similar in terms of amount, type and condition of infrastructure. SCWD has a large part of its water service area that is denser, which results in less capital infrastructure per customer account. Both suppliers have completed substantial capital improvements to maintain and replace facilities. The majority of assets are buried water pipelines that are reaching the end of their predicted useful life which will require increased capital rehabilitation and replacement funds. The assessment above identifies several opportunities for improved reliability and efficiency which can be realized by creating a new district.

The new district would need to consolidate similar assets and systems to achieve economies in operations and infrastructure management. At the top of the list for recommendations is to fully interconnect portions of the NCWD and SCWD water systems to allow the integrated system to realize supply redundancy and in many cases improved fire flow, storage and water quality. Another opportunity is integrating NCWD and CLWA real estate holdings to most efficiently provide service. This provides for sublease and selling opportunities which would result in additional income.