5
FACILITIES DESCRIPTION

5.1 SANTA CLARITA VALLEY SANITATION DISTRICT

The Santa Clarita Valley Sanitation District of Los Angeles County (SCVSD) provides wastewater conveyance, treatment, and disposal services for residential, commercial, and industrial users in the Santa Clarita Valley. The SCVSD sewerage system consists of an interconnected network of approximately 42 miles of trunk sewers, one permanent pumping plant, and two interconnected water reclamation plants (WRPs), the Valencia WRP (VWRP) and the Saugus WRP (SWRP). The system achieves operating efficiencies by diverting solids and excess wastewater from the SWRP to the VWRP for treatment and disposal. The permitted treatment capacity of the SCVSD is 28.1 million gallons per day (mgd), and the average system flow was 20.3 mgd in 2011.

5.2 EXISTING SCVSD WASTEWATER TREATMENT FACILITIES

5.2.1 SWRP

The SWRP was built in 1962 and is located at 26200 Springbrook Avenue, in the Saugus area of the City of Santa Clarita. The SWRP provides primary, secondary, and tertiary treatment to tributary wastewater flows. With the addition of flow equalization facilities in 1991, the permitted discharge capacity was increased to 6.5 mgd. The SWRP site is considered built out since there is no space available for further expansions. Wastewater in excess of the plant capacity and solids produced by the SWRP treatment process are diverted to the VWRP for treatment. The 2011 average influent to the SWRP was 5.7 mgd with an average of 0.4 mgd of primary solids diverted to the VWRP. A simplified flow schematic depicting the SWRP's principal processes is shown on Figure 5-1. Primary treatment consists of comminution, grit removal, primary sedimentation, and flow equalization. Secondary treatment includes activated sludge biological treatment operated in a nitrification-denitrification (NDN) mode and secondary sedimentation. Tertiary treatment includes coagulation, dual inert media filtration, chlorination, and dechlorination. No facilities for solids processing are located at the SWRP. Instead, primary solids and skimmings are conveyed to the VWRP for treatment via trunk sewers and secondary solids are conveyed to the VWRP via a dedicated force main. The design criteria for the major unit processes at the SWRP are listed in Table 5-1.

Table 5-1. Design Criteria for the SWRP and VWRP

Unit Process	Design Criteria	SWRP	VWRP
Plant Flows	Average	6.5 mgd	21.6 mgd
	Peak Sanitary	11.7 mgd	43.2 mgd
	Peak Storm	14.3 mgd	48.6 mgd
	Influent BOD	244 mg/l	283 mg/l
	Influent Suspended Solids	284 mg/l	369 mg/l
Comminuters	Number	2	1
	Capacity	13.0 mgd	1 @ 20.0 mgd
Bar Screens	Number	-	2
	Capacity	-	20 mgd
Grit Chambers	Number	1	4
	Detention Time @ Average Flow	1.8 min	3.1 min
Primary Sedimentation Tanks	Number	4	14
	Length	60 ft	65 ft
	Width	20 ft	20 ft
	Nominal Depth	8 ft	11.4 ft
	Overflow Rate @ Average Flow	1,350 gpd/sf	1,190 gpd/sf
	Detention Time @ Average Flow	1.1 hrs	1.7 hrs
	Overflow Rate @ Peak Sanitary Flow	2,440 gpd/sf	2,370 gpd/sf
	Detention Time @ Peak Sanitary Flow	0.6 hrs	0.9 hrs
Primary Effluent Flow Equalization Basins	Number	2	2
	Usable Volume, Each	0.5 MG	1.1 MG
	Volume as Percentage of Average Flow	15%	20%
Aeration Tanks	Number	4	12
	Length	150 ft	6 @ 135 ft
			6 @ 146 ft
	Width	25 ft	6 @ 26.5 ft
			6 @ 23.8 ft
	Nominal Depth	15 ft	6 @ 15.6 ft
			6 @ 23.7 ft
	Detention Time @ Average Flow	6.2 hrs	6.9 hrs
	Detention Time @ Average Flow + 1/3 RAS	4.7 hrs	5.2 hrs
Final Sedimentation Tanks	Number	4	13
	Length	140 ft	7 @ 135 ft
			6 @ 150 ft
	Width	2 @ 14 ft	7 @ 16 ft
		2 @ 21 ft	6 @ 20 ft
	Nominal Depth	9 ft	7 @ 10 ft
			6 @ 13.3 ft
	Overflow Rate @ Average Flow	660 gpd/sf	580 gpd/sf
	Detention Time @ Average Flow + 1/3 RAS	1.8 hrs	2.7 hrs
Filters	Number	4	14
	Type	Pressure	Pressure
	Maximum Backwash Rate	18 gpm/sf	8 @ 15 gpm/sf
			6 @ 20 gpm/sf
	Backwash Cycle	20 min	12 hrs
	Side Shell Length	24 ft	8 @ 24 ft
			6 @ 28 ft
	Diameter	10 ft	10 ft
	Surface Area	4 @ 240 sf	8 @ 240 sf
			6 @ 270 sf
	Surface Loading Rate @ Average Flow	4.7 gpm/sf	4.2 gpm/sf

Table 5-1 (cont.)

Unit Process	Design Criteria	SWRP	VWRP
Waste Filter Backwash Equalization Tanks	Number	2	1
	Effective Volume, Each	125,000 gal	83,000 gal
Decant Tanks	Number	-	2
	Length	-	135 ft
	Width	-	16 ft
	Nominal Depth	-	10 ft
	Volume, Each	-	162,000 gal
	Overflow Rate @ Average Flow	-	585 gpd/sf
	Detention Time @ Average Flow	-	3.1 hrs
Chlorine Contact Tanks	Number	2	4
	Length	80 ft	178 ft
	Width	25 ft	20 ft
	Nominal Depth	15 ft	14.6 ft
	Volume, Each	478,720 gal	388,780 gal
	Volume, Total	478,720 gal	1,555,120 gal
	Detention Time @ Average Flow	1.7 hrs	1.7 hrs
Dissolved Air Flotation Units	Small Tank		
	Number	-	1
	Diameter	-	16 ft
	Area	-	200 sf
	Large Tank		
	Number	-	2
	Diameter	-	25 ft
	Area	-	490 sf
	Average WAS Flow	-	0.19 mgd
	Average Solids	-	946 lb/hr
	Average Hydraulic Load Rate	-	0.27gpm/sf
	Average Solids Load Rate	-	1.93 lb/hr/sf
Anaerobic Digesters	Number of Digesters	-	8[a]
	Total Liquid Depth	-	38.4 ft
	Side Water Depth	-	26 ft
	Total Conical Depth	-	13 ft
	Diameter	-	65 ft
	Working Volume per Unit	-	86,267 cf
	Total Volume per Unit	-	100,655 cf
	Detention Time (2 out of service)	-	21.5 days
Plate and Frame Filter Presses	Number of Presses	-	2
	Volume, Each	-	330 cf
	Overall Cycle Time	-	2.0 hrs
	Average Sludge Flow	-	126,000 gpd
	Digested Sludge Suspended Solids	-	2.3%
	Daily Solids	-	24,200 lbs
	Average Solids in Cake	-	21%
	Average Solids per Run	-	3,020 lbs
	Cake Tonnage	-	100 tons/d
Sludge Holding Tank	Number	-	1
	Diameter	-	13 ft
	Height	-	19.5 ft
	Volume	-	22,200 gal
Filtrate Equalization Tank	Number	-	1
	Length	-	100 ft
	Width	-	20 ft
	Maximum Water Depth	-	13.5 ft
	Volume	-	200,000 gal

[a] One digester is used for storage of digested sludge.

The recycled water produced at the SWRP is discharged to the Santa Clara River (SCR) at a point approximately 40 feet downstream from the Bouquet Canyon Road overpass. Since the SCR is an aquatic habitat and chlorine can be toxic to aquatic species, the recycled water is dechlorinated prior to discharge. At this time, there is no reuse application for recycled water produced at the SWRP. Figure 5-2 shows an aerial view of the site.

5.2.2 VWRP

Built in 1967, the VWRP is located at 28185 The Old Road in unincorporated Los Angeles County west of the Interstate 5 Freeway between the communities of Valencia and Castaic. The VWRP is a tertiary treatment plant with solids processing facilities. The current permitted discharge capacity of the VWRP is 21.6 mgd, and the 2011 average influent flow was 14.6 mgd excluding primary solids flow from the SWRP. A simplified flow schematic depicting the VWRP's principal processes is shown on Figure 5-3. Primary treatment consists of screening or comminution, grit removal, primary sedimentation, and flow equalization. Secondary treatment includes activated sludge biological treatment operated in an NDN mode and secondary sedimentation. Secondary solids are thickened using dissolved air flotation (DAF). Tertiary treatment includes coagulation, dual inert media filtration, chlorination, and dechlorination. The VWRP processes all wastewater solids generated in the SCVSD (i.e., from the SWRP and the VWRP). The wastewater solids are anaerobically digested and dewatered using filter presses. The dewatered solids, referred to as 'cake' or biosolids, are hauled away for reuse or disposal. Methane gas is produced during the digestion process and is utilized to heat the digesters or flared. The design criteria for the major unit processes at the VWRP are listed in Table 5-1.

The recycled water produced at the VWRP is reused or discharged to the SCR at a point approximately 2,000 feet downstream of The Old Road bridge. In 2012, 301 acre-feet (af) of recycled water was reused and the remainder was discharged to the SCR. The VWRP effluent discharged to the SCR is dechlorinated to protect the river's aquatic species. Figure 5-4 shows an aerial view of the site.

5.3 PREVIOUSLY IDENTIFIED SCVSD WASTEWATER TREATMENT FACILITIES EXPANSION

The 2015 Santa Clarita Valley Joint Sewerage Systems Facilities Plan (2015 Plan) and associated EIR were approved and certified in 1998. The 2015 Plan estimated the site capacity of the VWRP to be 27.6 mgd and recommended two plant expansions (Stages V and VI) to bring the VWRP from its then current capacity of 12.6 mgd to its site capacity. The Stage V facilities, completed in 2005, consisted of additional primary sedimentation tanks, aeration tanks, tertiary filters, a chlorine contact tank, digesters, DAF units, and support facilities. Pumps and other equipment necessary to operate the secondary treatment trains in NDN mode were also added. These facilities brought the VWRP to its current permitted capacity of 21.6 mgd.

The Stage VI expansion would bring the VWRP's capacity to the site capacity of 27.6 mgd. New facilities planned for the Stage VI expansion consist of headworks, primary treatment facilities, and secondary treatment facilities designed to operate in an NDN mode. The filtration, disinfection, and solids processing facilities would be incrementally expanded to handle the additional flow. The existing outfall to the SCR has sufficient capacity to discharge the increased flow rates. Operationally, the headworks, primary treatment, and secondary treatment facilities would operate independently from the existing system. The secondary effluent from Stage VI would be mixed with that from the rest of the plant before further treatment.

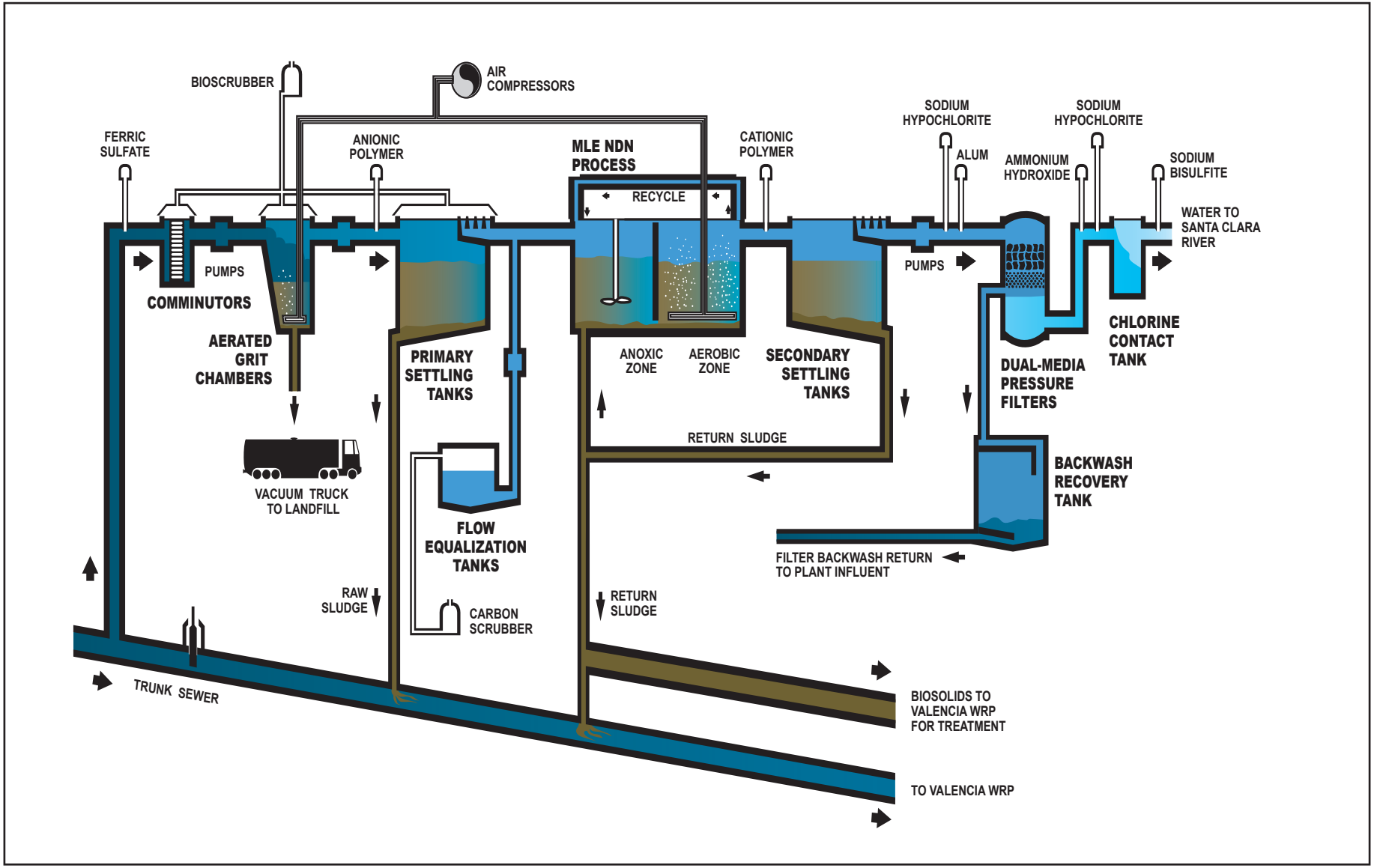


Figure 5-1

Saugus WRP Process Schematic

Santa Clarita Valley Sanitation District Chloride Compliance Facilities Plan and EIR

Figure 5-2

Saugus WRP Aerial View

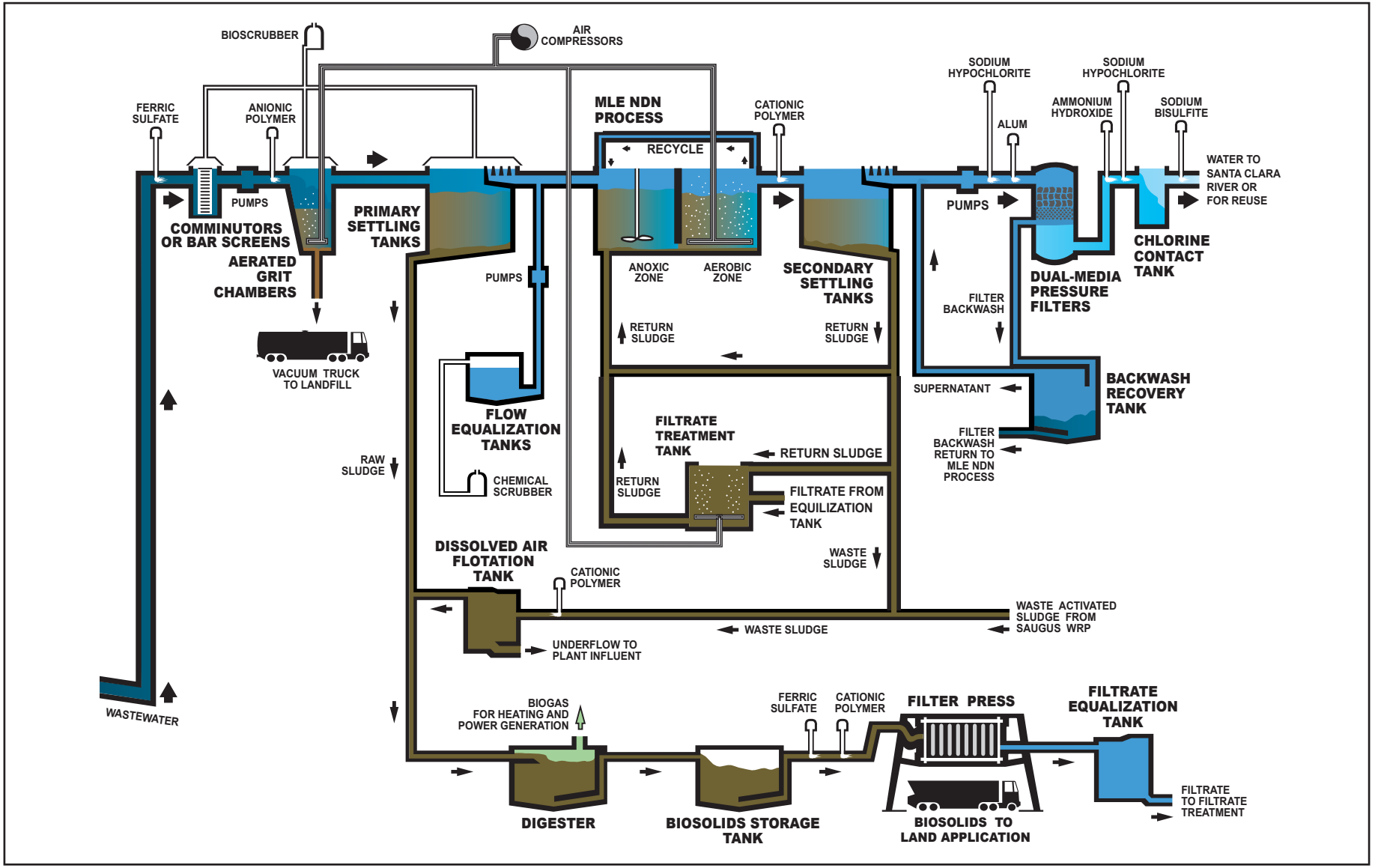


Figure 5-3
Valencia WRP Process Schematic

Santa Clarita Valley Sanitation District Chloride Compliance Facilities Plan and EIR

Figure 5-4

Valencia WRP Aerial View

Construction of Stage VI has not occurred because the need for the additional capacity has not yet materialized. The Stage VI expansion facilities are expected to be needed in approximately 2036 based on the current wastewater flow projections described in Section 4.6 of this document. The anticipated Stage VI facilities were laid out in the 2015 Plan and received CEQA coverage through the accompanying EIR. Consequently, facilities that would expand the SCVSD treatment capacity are not part of the recommended project in this Facilities Plan.

5.4 SCVSD CONVEYANCE SYSTEM

The wastewater conveyance system for the SCVSD consists of an interconnected network of trunk sewers, local lines, one permanent pumping plant/force main system, an interceptor, and a WAS force main. The system conveys wastewater and wastewater solids to and between the treatment plants of the SCVSD. Recycled water produced by the WRPs is discharged via separate outfalls into the SCR. Figure 5-5 shows the major components of the SCVSD conveyance system.

5.4.1 Trunk Sewers

The backbone of the SCVSD conveyance system is formed by an approximately 42-mile long network of trunk sewers. The trunk sewers range in size from 10 to 48 inches in diameter. Trunk sewers with diameters less than 24 inches are generally made of vitrified clay pipe (VCP). Larger diameter sewer lines are typically built with reinforced concrete pipe (RCP), but some older sewer lines are built with non-reinforced concrete pipe (NRCP). With the exception of one permanent pumping plant/force main system, all sewers in the SCVSD are designed to convey wastewater via gravity flow.

The SCVSD is responsible for the construction, operation, and maintenance of trunk sewers. Flow monitoring is performed periodically for all trunk sewers. Closed circuit television (CCTV) and physical inspections are performed at varying periods depending on the sewer material and condition. Details of the operation, maintenance, and repair of the trunk sewers are contained in the Sewer System Management Plan (SSMP). Recommendations as to whether relief, repair, or replacement of the sewers is required are based on the monitoring results. Because the SCVSD's conveyance system is relatively young (the first sewers were constructed in the early 1960s), most sewers are in fair or good condition. Table 5-2 provides a summary of capacity utilization as of 2012 for the trunk sewers within the service area of the SCVSD. Section 5.4.5 describes projected capacity utilization for 2015, 2025 and 2030.

Two projects were completed during 2012: one provided a redundant force main for the Castaic Pumping Plant and the other provided relief to a portion of the Castaic Trunk sewer.

Table 5-2. Capacity Utilization for Trunk Sewers within the SCVSD (2012 Flows)

Trunk Sewer	Percent of Capacity Utilized[a]
Avenue Scott Trunk	3 – 39
Avenue Tibbitts Trunk	2 – 29
Bouquet Canyon Trunk	2 – 50
Bouquet Canyon Relief Trunk	35 – 50
Castaic Trunk	30 – 60
Castaic Relief Trunk	28 – 40
District 26 Interceptor Trunk[b]	20 – 100
District 26 Interceptor Relief Trunk	25
District 32 Main Trunk[c]	15 – 100
District 32 Main Relief Trunk	30 – 45
Newhall Trunk	40
Rye Canyon Trunk	6 – 26
San Fernando Road & Extension Trunk	8 – 19
Soledad Canyon Trunk	12 – 82
Soledad Canyon Relief Trunk	30 – 72
Valencia Trunk[c]	46 – 100

[a] The range of percentages indicates the variations in utilized capacity at different locations within a given trunk sewer due to pipe diameter and slope.
[b] Sewer is intentionally operated at capacity under conditions controlled by the SCVSD.
[c] Sewer is monitored annually to determine if a relief project is needed.

5.4.2 Local Lines

Local lines are sewers that convey wastewater from lateral lines (located on individually owned parcels) to the SCVSD trunk sewers. Most local lines in the SCVSD range from 8 to 18 inches and are constructed with VCP. The City of Santa Clarita owns the local lines within its borders, and Los Angeles County owns the majority of the local sewers located in unincorporated areas. The County Consolidated Sewer Maintenance District (CSMD) operates and maintains the local lines owned by the City of Santa Clarita and Los Angeles County. Local lines typically convey wastewater from a user's property line to the trunk sewers, and it is the responsibility of the user to connect to the local line.

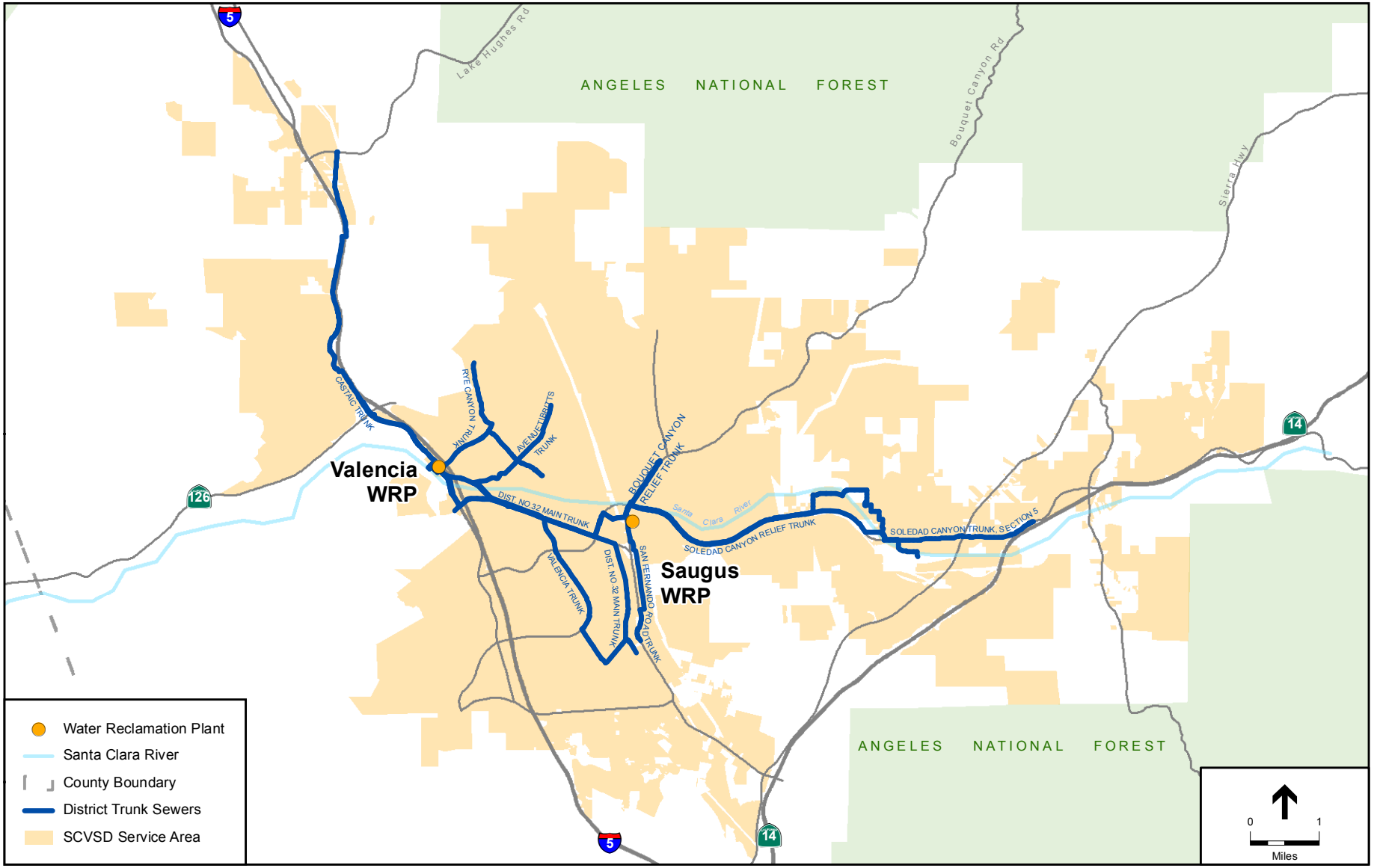
5.4.3 Pumping Plant/Force Main Systems

Ideally, a conveyance system is designed so that wastewater can flow by gravity to the treatment facilities. However, regional topography often requires the operation of pumping plants. There is one permanent pumping plant/force main system in the SCVSD.

In 1971, the Castaic Pumping Plant was built one mile northwest of the VWRP to serve the users in the Castaic area. This pumping plant has a capacity of 6.5 mgd and wastewater is pumped to the VWRP via a 16-inch force main. Construction of a 24-inch redundant force main was completed in October 2011.

5.4.4 Interceptor Trunk Sewer and Activated Sludge Force Main

Recognizing that space limitations at the SWRP would severely limit future expansion, an interceptor trunk sewer was constructed in 1981 to convey excess flow to the VWRP. This 30-inch RCP



Santa Clarita Valley Sanitation District Chloride Compliance Facilities Plan and EIR

Figure 5-5

SCVSD Sewer Conveyance System

interceptor sewer transfers a portion of the flow received at the SWRP to the VWRP. In addition, the SWRP typically diverts solids from the SWRP primary treatment system through the interceptor and has the option of using the interceptor to convey secondary WAS.

A separate force main connecting the SWRP and the VWRP was built in 1984. The 6-inch ductile iron force main conveys WAS from the SWRP to the VWRP for solids processing.

5.4.5 Projected Population Impacts on the Conveyance System

The SCVSD trunk sewers, which were described in Section 4, transport wastewater from local lines to and between the SWRP and VWRP. An analysis of the trunk sewers was performed to project the impacts of future growth in wastewater flow on available trunk sewer capacity. This analysis used Geographical Information System (GIS) software, drainage boundaries developed for SCVSD trunk sewers (Figure 5-6), 2008 SCAG flow projections, and trunk sewer capacities. The results of this analysis are illustrated on Figure 5-7 for four "snapshots" in time: 2008, 2015, 2025 and 2030. Any facilities planning for future sewer relief projects will be handled separately from this Facilities Plan.

5.5 EFFLUENT MANAGEMENT

5.5.1 Recycled Water Reuse

The SCVSD has pursued a program of wastewater reclamation and reuse in the Santa Clarita Valley (SCV) since the first wastewater treatment facilities were installed in 1962. On average, approximately 400 af of recycled water from the VWRP is reused on an annual basis. No recycled water is reused from the SWRP. The recycled water from the VWRP is used to irrigate the Tournament Players Club golf course and street medians within the Stevenson Ranch housing development.

Although the average recycled water reuse from the VWRP is approximately 400 af per year (afy), the SCVSD gained approval in 1993 from the State Water Resources Control Board to divert 1,700 afy for reuse purposes. As the regional water wholesaler, Castaic Lake Water Agency (CLWA) provides recycled water to water purveyors who then provide the water to end users.

It is anticipated that overall water demands in the SCV will continue to increase. Recycled water would provide an additional, reliable water supply to meet projected demands. In 2002, CLWA prepared a Recycled Water Master Plan in which landscape irrigation was identified as the primary potential use of recycled water. Recycled water demand was further refined in the 2010 Urban Water Management Plan prepared by CLWA and three SCV retail water purveyors. Table 5-3 shows the estimated recycled water reuse for the years 2020 through 2050. The projected recycled water reuse by 2050 is 22,800 afy.

Table 5-3. Projected Recycled Water Reuse

	2020	2030	2040	2050
Recycled Water Demand, afy	3,050	9,600	15,600	22,800

Source: 2010 Urban Water Management Plan.

5.5.2 Discharge to Santa Clara River

Effluent management in the SCVSD is primarily accomplished through discharge of recycled water to the SCR. All of the recycled water produced at the SWRP and most of the recycled water produced at the VWRP is discharged to the SCR. This water is suitable for reuse as discussed in Section 4.2.3.

5.6 SOLIDS PROCESSING AND BIOSOLIDS MANAGEMENT

5.6.1 Solids Processing

Solids are produced at the WRPs as a byproduct of the treatment processes. As mentioned previously, all solids produced in the SCVSD are processed at the VWRP. Solids and skimmings from the primary treatment process at the SWRP are diverted to the interceptor sewer linking the two plants and processed along with VWRP influent. Primary solids and skimmings at the VWRP proceed directly to the digesters without further thickening. WAS, which is generated within the activated sludge process, is conveyed from the SWRP to the VWRP via a force main and combined with VWRP WAS. The combined WAS is thickened using DAF units and then anaerobically digested. Methane gas produced during digestion is utilized in a set of boilers to maintain the proper digester temperature and any excess is flared. The digested solids are conditioned with polymer and ferric sulfate and then dewatered by plate and frame filter presses. The dewatered cake produced by the filter presses averaged 19.2 percent solids in 2011. After treatment and stabilization of the sewage sludge, the resulting nutrient rich organic material is referred to as biosolids.

5.6.2 Biosolids Management

The biosolids produced at the VWRP meet all requirements for Class B biosolids pursuant to Code of Federal Regulations Section 40 Part 503 (Part 503). Accordingly, the biosolids are suitable for beneficial reuse for various purposes, including applying to agricultural land, forest, a public contact site (e.g., public parks, ball fields, cemeteries, etc.), or a reclamation site provided that prudent site restrictions are maintained in accordance with Part 503 (see Section 3.8). Prior to March 20, 1995, all biosolids generated at the VWRP were co-disposed with municipal solid waste at the Chiquita Canyon Landfill. In 2011, the dewatered biosolids were land-applied by Honey Bucket Farms or composted by McCarthy Family Farms for agricultural purposes. With the 2012 closure of Honey Bucket Farms, McCarthy Family Farms currently transports all biosolids produced at the VWRP using trucks, composts the biosolids, and then applies and incorporates the composted material on farmland located in Kings County. After composting at the McCarthy Family Farms composting site (Liberty Composting), the resulting biosolids derived compost meets Exceptional Quality (EQ) standards and is allowed for unrestricted use pursuant to Part 503. Feed and fiber crops are grown on the compost amended farmland.

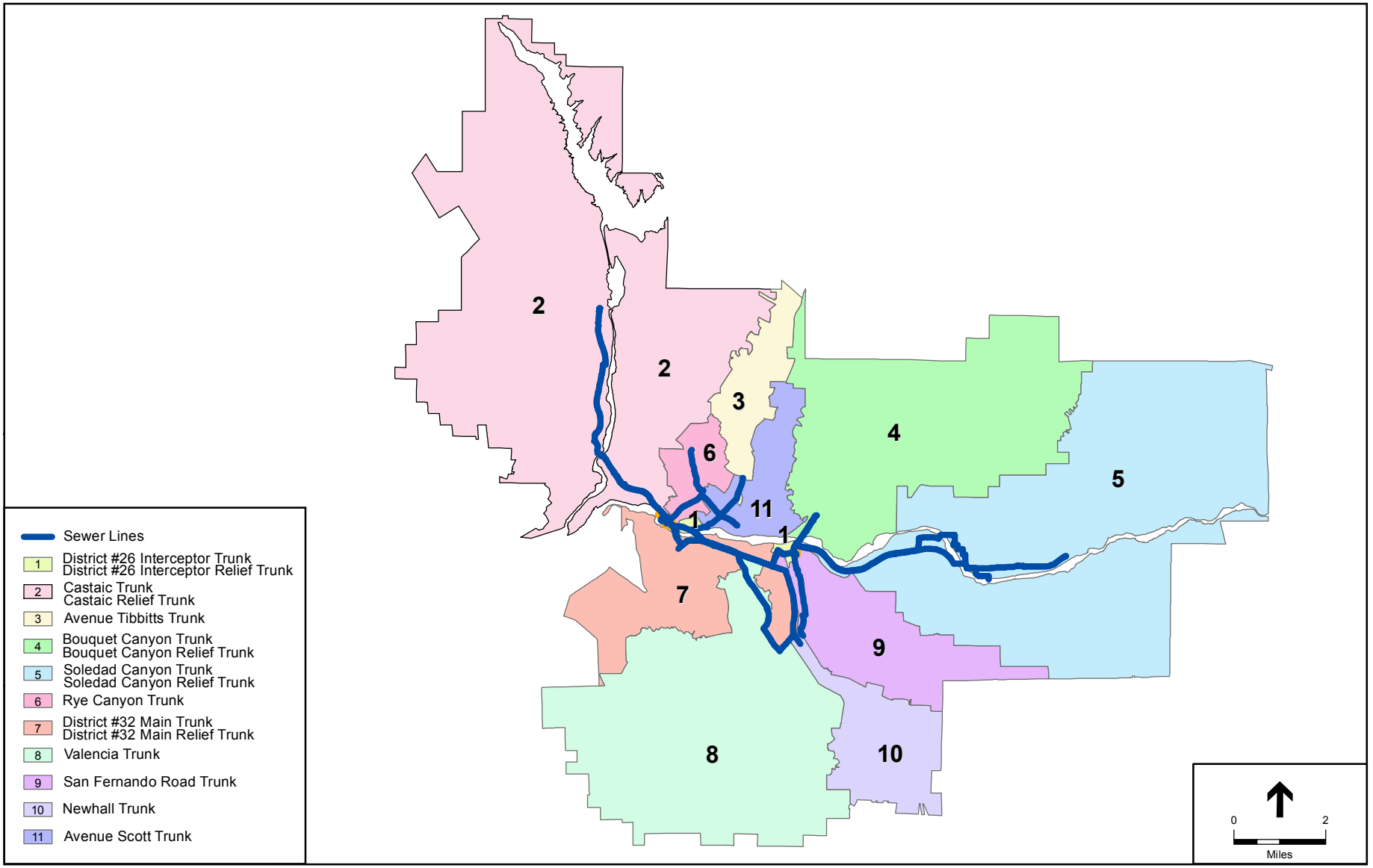


Figure 5-6

Drainage Boundaries Within the Santa Clarita Valley

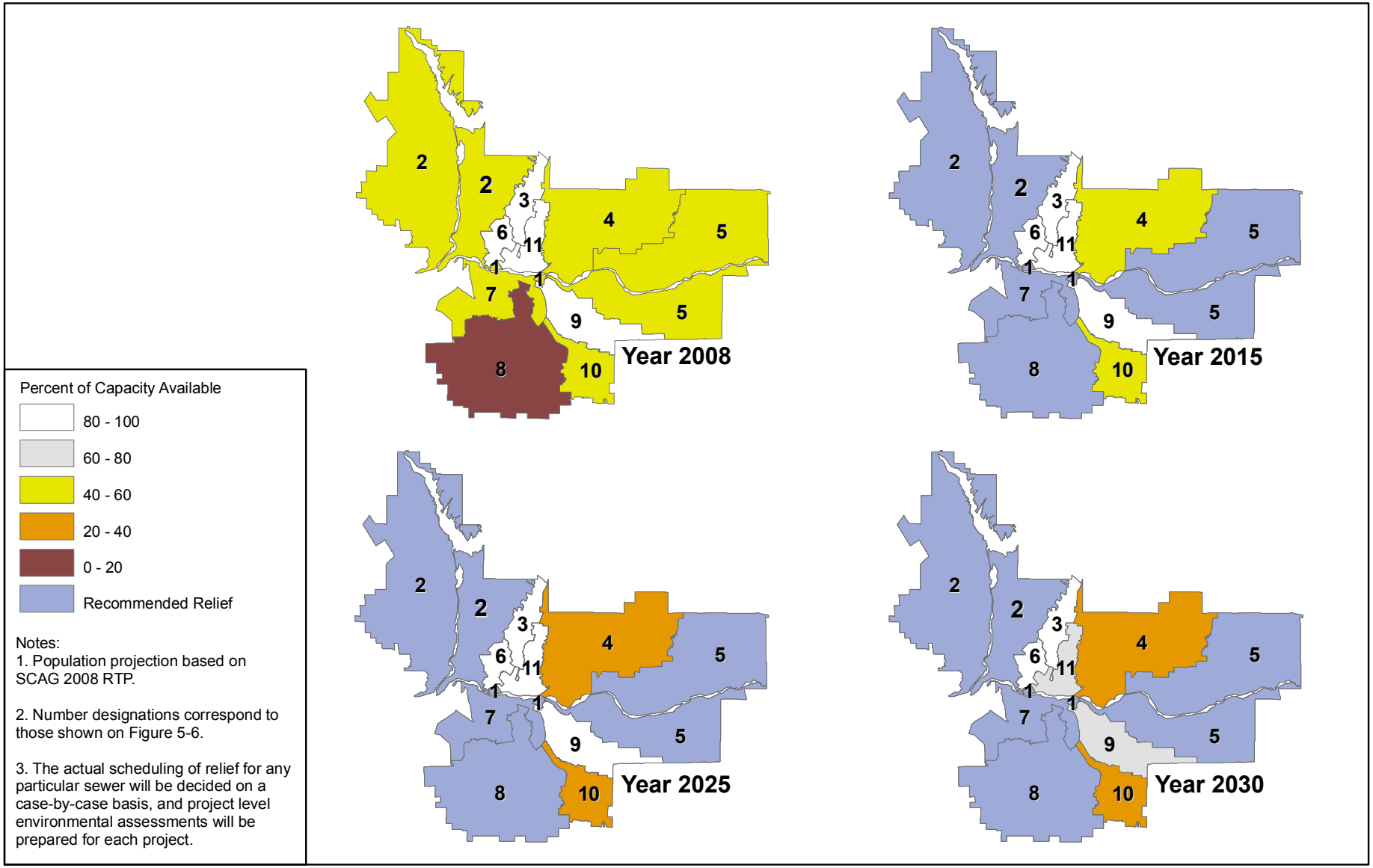


Figure 5-7

Projected Population Impacts on SCVSD Trunk Sewers

In compliance with regulatory requirements and permits, annual biosolids monitoring reports are submitted to various agencies including the United States Environmental Protection Agency and the California Regional Water Quality Control Board-Los Angeles Region. The 2011 report for the VWRP was submitted on February 17, 2012 and contains biosolids treatment, quantity, monitoring, and quality data for 2011. In 2011, the SCVSD generated approximately 25,145 wet tons of biosolids, which was equivalent to approximately 4,828 dry tons. Section 4 provides additional information regarding biosolids characteristics.