

# 4 UTILITIES

This Chapter addresses utilities within the Policy Area including: sewer and storm drain systems, wastewater treatment, reclaimed water, solid waste, electricity, natural gas, and telecommunications.

## 4.1 Sewer/Storm Drainage

### *Introduction*

Wastewater collection in the Policy Area is provided by both the City and the County, depending on location. The City provides wastewater collection to about two-thirds of the area within the city limits. Within the city, there are two distinct areas: areas served by a separate sewer system, and an area served by a combined sewer system, which is described in more detail later in this section.

The Sacramento Regional County Sanitation District (SRCSD) and the Sacramento Area Sewer District (SASD) [formerly County Services District CSD-1)] provide both collection and treatment services within their service area for the portions of the city served by the separate sewer system. Wastewater generated in this area is collected by trunk facilities in the Sacramento Area Sewer District and then conveyed via interceptors to the Sacramento Regional Wastewater Treatment Plant (SRWTP). The SRCSD has prepared and is implementing its master plan related to wastewater conveyance – the Interceptor Master Plan 2000 – and the SASD is implementing its master plan – the Sewer System Capacity Plan 2010 Update.

The Sacramento Area Sewer District serves the community plan areas of South Natomas, North Natomas, and portions of Arcade-Arden, portions of East Sacramento (e.g. College/Glen), portions of South Sacramento (e.g. Valley Hi Parkway, Woodbine, Brentwood), and Southeast Sacramento (e.g. Glen Elder, Depot Park, Avondale). The service area is divided into ten trunk sheds, which are based on the collection systems of the individual sewer districts from which CSD-1 was originally formed. For the most part, each trunk shed consists of several hydraulically independent systems, each discharging into the SRCSD interceptor system. According to the District's Sewer System Capacity Plan 2010 Update, there are no existing capacity deficiencies within the Sacramento city limits.

The community plan areas served by the City's separate sewer system include North Sacramento, and portions of Arden-Arcade, most of South Sacramento (e.g. Pocket, Airport, Meadowview, South Land Park), and most of East Sacramento. The areas served by the City's separate sewer systems are divided into 54 sewer basins, and wastewater from the basins is conveyed to the SRWTP via gravity flow or one of the 40 pumping stations located throughout the city. Twenty-seven of the pumping facilities were constructed between the 1950s and 1970s, with most of them being rebuilt in the past 15 years. The remaining 13 pumping stations were constructed between 1985 and 2004.

## *Existing Conditions*

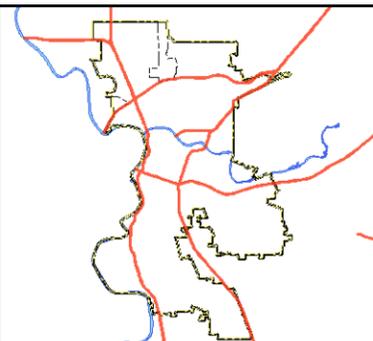
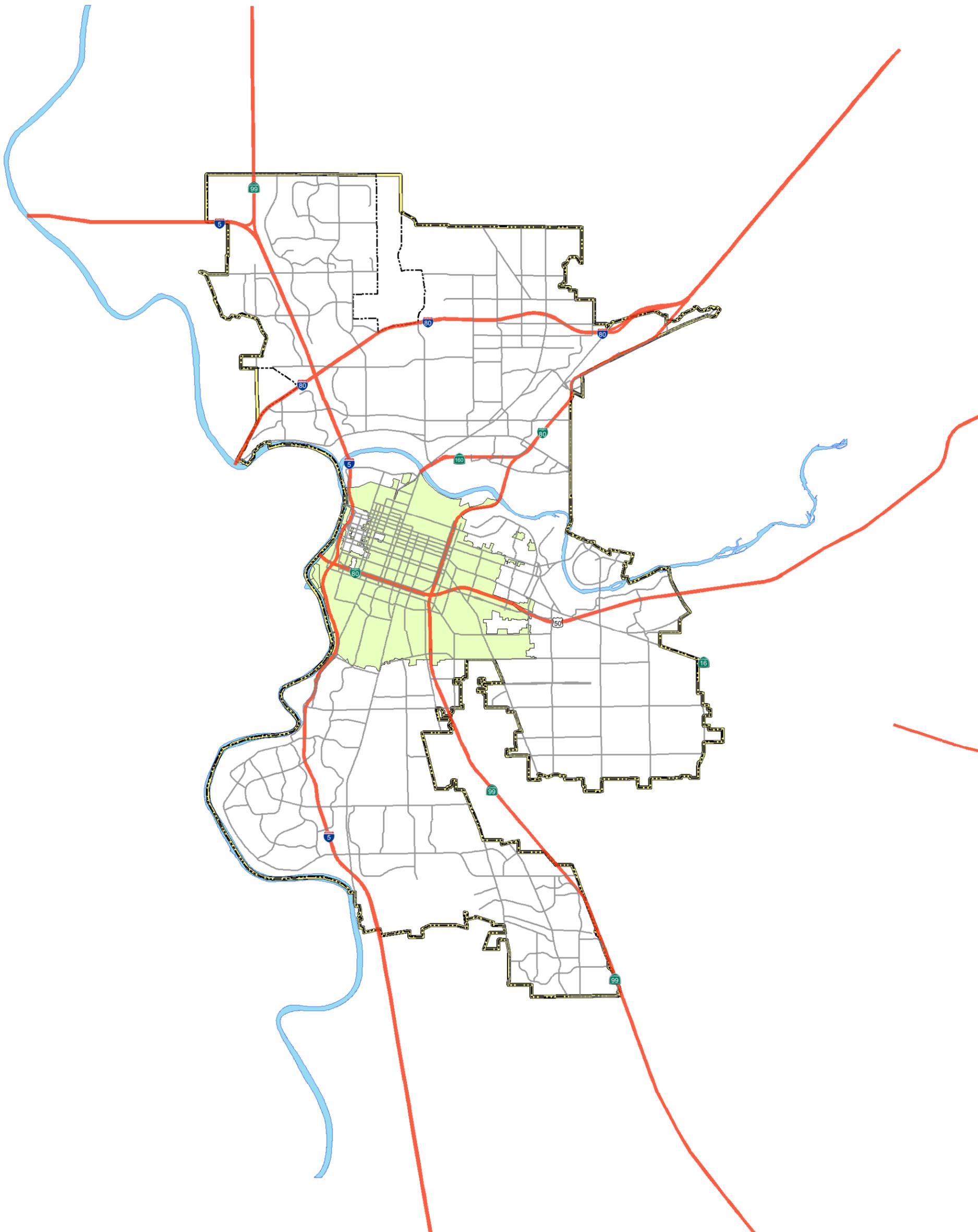
### **Combined Sewer/Storm Drain Area**

The older Central City area is served by a system in which sanitary sewage and storm drainage are collected and conveyed in the same system of pipelines, referred to as the Combined Sewer System (CSS). The area served by the CSS extends from the Sacramento River on the west, to the vicinity of Sutterville Road and 14th Avenue on the south, to about 65th Street on the east, and to North B Street and the American River on the north (see Figure 4-1) and constitutes approximately 7,545 acres or 12 percent of the total area within the current city limits. There are some local areas within this larger area that have separate sewer and storm drainage systems, but the bulk of the area is served by the combined system. Additionally, there are some peripheral areas that have separate sewer and storm drainage that contribute sewage to the CSS.

Currently (2012), all flows into the CSS are conveyed westerly to two pumping stations (Sump 2/2A and 1/1A) located near the Sacramento River. For secondary treatment and disinfection of the flow, the City has entered into an agreement with the Sacramento Regional Wastewater Treatment Plant (SRWTP) to convey up to 60 mgd. This treatment capacity is sufficient for the current dry weather flows of 18 mgd. The remaining capacity is reserved for stormwater. During heavy storms where the flows exceed this amount, the Combined Wastewater Treatment Plant (CWTP) at South Land Park Drive and 35th Avenue is used to provide primary treatment of an additional 130 mgd. Excess flows beyond 190 mgd are diverted to the Pioneer Reservoir storage and treatment facility that has a capacity of 350 mgd. When all three treatment facilities (SRWTP, CWTP, and Pioneer) have reached capacity, excess flows are directly discharged into the Sacramento River from Sump 2 without treatment. These are called combined sewer overflows (CSOs). In the Central City, when the pipeline system capacities are surpassed, the excess flows flood local streets through maintenance holes and catch basins. The last CSO occurred in 2012 during a large storm with over two and a half inches of rain falling in a 48-hour period (Armijo 2013).

Several projects are planned to improve the operation of the combined system. Projects initiated by the City to address existing deficiencies are system improvements, while major land development projects often include specific measures to mitigate the additional sewage and drainage flows created by the specific development. The following is a summary of currently (2012) proposed improvements and mitigation projects:

1. The Oak Park Regional Storage Facility project is designed to hold 500,000 cubic feet (cf) of combined sewage to reduce the potential for flooding and combined sewer outflows. Combined sewage would be piped to the facility and temporarily stored during heavy rainfall periods..



## Legend

-  Major Roads
-  Highways
-  Waterways
-  Policy Area
-  City Limits
-  Combined Sewer System



0 1.5 3 Miles



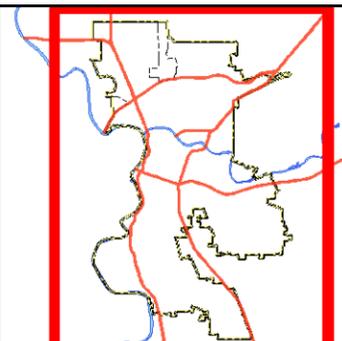
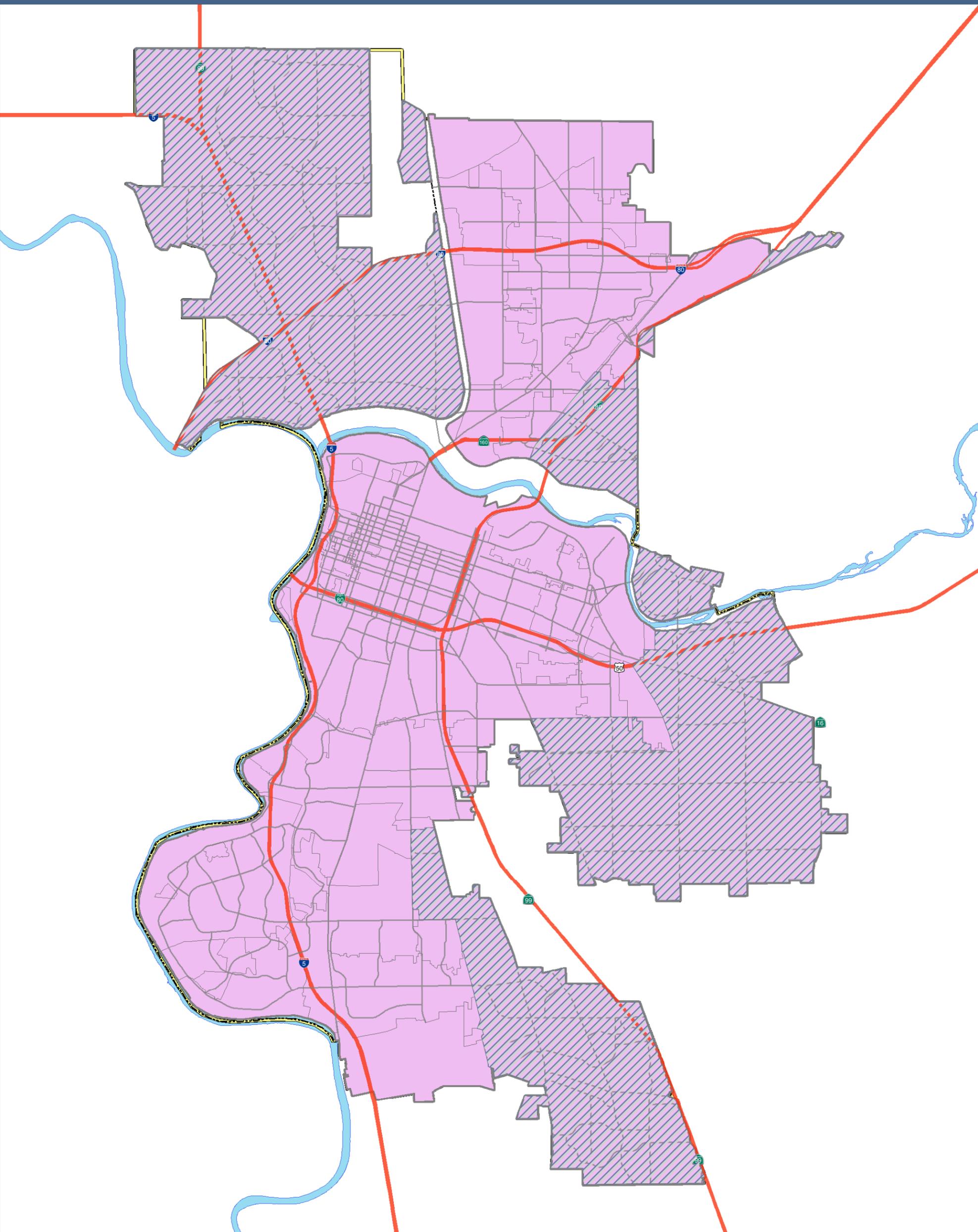
2. The Sacramento Railyards is an approved, but not-yet-built, 240-acre infill development project adjacent to the downtown business district, which would include separate sewer and storm drain systems. Storm drainage from the site would be diverted to a drainage detention structure for water quality treatment and peak attenuation, a portion of this volume would be metered into a proposed 3rd Street relief sewer and eventually into the combined system after the storm peak has passed. Extremely large storm flows are planned to be diverted to the Sacramento River. For the adjacent Richards area development, the Railyards Specific Plan proposes to divert the existing separate sanitary sewage from the Richards Boulevard area to the Railyards, and convey the sewage flow south into the proposed 3rd Street relief sewer to U Street, as a joint project with the City.
3. The Capitol Area Plan is a master plan of proposed state facilities in the greater downtown area. The State Department of General Services has agreed to mitigate the additional sewage flows from State facilities by funding certain new pipeline construction in the combined system as new State facilities are constructed.
4. The Downtown Combined Sewers Upsizing Project is a 15-year program to upsize downtown sewers which will provide significant reductions of street flooding and combined sewer outflows when complete. Upsizing the 7th Street Sewer from K to P Street from 24 inches to 60 inches is one of the final legs of the project and will provide the downtown combined system with additional capacity. Major development projects within the combined sewer area are required to mitigate the additional sewage flows and the added impervious surface, which increases drainage runoff, or to pay the new CSS Development Fee, which funds this project. (City of Sacramento 2012)
5. Peak-shaving, underground detention facility improvements are being planned by the Department of Utilities in various locations where outflows have been a problem.

In addition, the City is required to comply with the State Water Resources Control Board Order No. 2006-0003, Statewide General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems that along with amendment Order No. 2008-0002-EXEC prohibits sewer overflows and requires implementation of a management plan. The plan must include systemwide cleaning, inspection and rehabilitation. It also requires a fats, oils and grease control program, root control program, enforcement, training and a capital improvement program with certified funding levels.

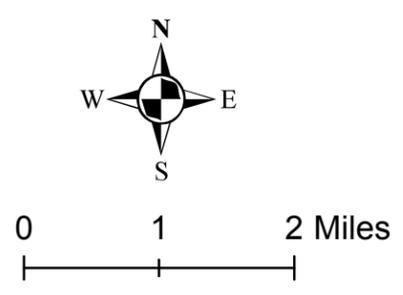
The City's Combined Sewer System is also regulated by the Central Valley Regional Control Board's Waste Discharge Requirements/Monitoring & Reporting Program/NPDES Permit No. CA0079111 (Order No. R5-2010-0004). The Permit prohibits dry weather discharges to the river and limits wet weather discharges to the river. The Permit requires treatment for discharges to the river; extensive monitoring and data analysis; systemwide cleaning and inspection; a fats, oils and grease control program; an approximately \$10 million dollar annual capital improvement program and various other specific minimum control measures.

## Wastewater Treatment

Wastewater treatment within the Policy Area is provided by the Sacramento Regional County Sanitation District (SRCSD). SRCSD operates all regional interceptors and wastewater treatment plants serving the city except for the combined sewer and storm drain treatment facilities which are operated by the City of Sacramento. Local and trunk wastewater collection in the Policy Area is provided by the Sacramento Area Sewer District (SASD) and the City of Sacramento. Within this area, SASD serves the community plan areas of South Natomas, North Natomas, and portions of Arcade-Arden, East Broadway, East Sacramento, Airport Meadowview and South Sacramento. The City provides wastewater collection to about two thirds of the area within the city limits, which includes two distinct areas; the area served by the combined sewer system (CSS) described previously, and the areas served by a separated sewer system. The community plan areas served by the City include the Central City, Land Park, Pocket, North Sacramento, and portions of Arden-Arcade, South Sacramento, East Sacramento, East Broadway and Airport Meadowview. Figure 4-2 shows wastewater infrastructure within the City's Policy Area.



- Legend**
- Major Roads
  - Highways
  - Waterways
  - Policy Area
  - City Limits
  - Sacramento Area Sewer District
  - Sewer Basins



A north arrow is located in the bottom-right corner, with 'N' at the top, 'S' at the bottom, 'W' on the left, and 'E' on the right. Below the north arrow is a scale bar showing 0, 1, and 2 miles.

*Data Source: City of Sacramento, 2012.*



The Sacramento Regional Wastewater Treatment Plant (SRWTP), which is located just south of the city limits, is owned and operated by SRCSD and provides sewage treatment for the entire Policy Area. Sewage is routed to the wastewater treatment plant by collections systems owned by SASD and the cities of Sacramento, Citrus Heights, Elk Grove, Rancho Cordova, West Sacramento and Folsom. SRWTP is a high purity oxygen-activated sludge facility, and is permitted to treat an average dry weather flow (ADWF) of 181 million gallons per day (mgd) and a daily peak wet weather flow of 392 mgd. Currently (2012), the facility's ADWF is approximately 150 mgd. SRCSD's long-term planning effort, the SRWTP 2020 Master Plan, projects a population-based flow of 218 mgd ADWF (SRCSD 2008). After secondary treatment and disinfection, a portion of the effluent from the plant is further treated in SRCSD's Water Reclamation Facility and then used for landscape irrigation within the city of Elk Grove. The majority of the treated wastewater is dechlorinated and discharged into the Sacramento River. The SRCSD maintains the regional interceptors that convey sewage to the treatment plant. Improvements have been made to the system in anticipation of future growth and to help relieve the existing interceptor system. The Lower Northwest Interceptor (LNWI), completed in 2007, and Upper Northwest Interceptor (UNWI) completed in 2010 convey flows from the Northeast, Gibson Ranch, Rio Linda, McClellan, Natomas, and a portion of the North Highlands drainage basins. These projects provide relief for the existing interceptor system as well as provide capacity for future growth.

The SASD service area is divided into ten trunk sheds which are based on the collection systems of the individual sewer districts from which SASD was originally formed. For the most part, each trunk shed consists of several hydraulically independent systems, each discharging into the SRCSD interceptor system. The area served by the City's separated system is delineated into dozens of sewer basins. Wastewater from the basins is pumped into the City's combined system or to the SRWTP.

### ***SCRSD Buildout Wastewater Treatment and Conveyance Assumptions***

The identification of appropriate type, capacity, and scheduling of wastewater conveyance and treatment facilities required over a long-term planning period necessitates an integrated, master planning process for both the treatment and conveyance systems. The SWRTP 2020 Master Plan, Interceptor Master Plan 2000, and the SASD Sewer System Capacity Plan 2010 Update have designated planning horizons of 2020 and buildout. These planning horizons, in conjunction with the proposed land uses for areas within the SRCSD service area, are used to determine the projected wastewater flows and timing of flow increases over the planning horizon. SRCSD is also in the process of finalizing an Interceptor Sequencing Study (ISS) that will aid in planning and implementing regional conveyance projects. The ISS is in the process of undergoing environmental review and is expected to be adopted in early 2013 (Moore 2012).

Existing and proposed treatment facilities were designed to be expanded gradually in incremental units as future wastewater flows and loads increase. Consequently, some existing facilities have available capacity for future flows and loads, while other facilities (capacity limiting facilities) are at their existing capacity and would need to be expanded to accommodate any increase in flows or loads. Master plan facilities would be constructed in phases as flow and load demands require. Generally, facility expansion would be phased in five- to ten-year increments over the planning period. These increments are large enough to provide reasonable economy of scale and small enough to minimize the size of potentially idle facilities. By constructing the Master Plan facilities in phases, SRCSD can control the rate of facility expansion if actual growth rates are slower or faster than projected (SRCSD 2004a).

The SRWTP Master Plan notes "flows can be expected to continue to increase above the projected 218 mgd ADWF for year 2020. ... The treatment plant has been master planned for a "mirror image"

buildout of the existing facilities of 350 mgd ADWF of conventional and advanced treatment capacity.” (SRCSD 2004c) The SRWTP site is approximately 900 acres surrounded by 2,600 acres of bufferlands owned by the SRCSD. The bufferlands provide a buffer between the SRWTP process facilities and adjacent areas. The “mirror image” refers to the SRWTP secondary process facilities. Potential future advance treatment facilities would occur to the west of the existing secondary treatment facilities within the current 900-acre SRWTP site (Seyfried 2008).

In December 2010, the Central Valley Regional Water Quality Control Board issued a new Discharge Permit for SRCSD to address possible effects on public health and the Delta ecosystem from pathogens and ammonia contained in the discharge from the SRWTP. This Discharge Permit contains strict requirements resulting in the need for the SRWTP to move to a ‘tertiary’ treatment process. SRCSD is conducting efforts to remain in compliance with its Discharge Permit and Time Schedule Order, but is also considering legal options due to the expense of implementing the required treatment process. These improvements to the SRWTP would be in addition to the improvements already planned in the SRWTP Master Plan.

Design and construction of wastewater treatment and collection facilities require substantial capital investment that must be planned and approved by the SRCSD Board of Directors. Wastewater facilities are generally designed and constructed in phases over the planning horizon. The phased improvements usually coincide with the timing of projected flow increases, which are based on increases in population and buildout of proposed land uses. Typically, the phased improvements would accommodate flow increases for a specified time period (e.g., 5 years, 10 years).

In some cases, it is more practical to design facilities for flows projected for the entire planning horizon because construction activities and overall costs would be reduced. This is particularly true for an interceptor system, which requires substantial construction activities. When the system is initially constructed, it must be designed to accommodate projected wastewater flows for the lifetime of the system. If interceptors were constructed and expanded on an as-needed basis (e.g., like the modular expansions of the SWRTP), existing facilities would need to be paralleled with new facilities constructed in the same area. It is standard engineering practice to design interceptor facilities to accommodate flows for the entire planning horizon (in this case, full buildout of local general plans) to avoid unnecessary construction and capital costs (SRCSD 2004b; SRCSD 2002).

Table 4-1 shows the planning assumptions that were used by the SRCSD in the master planning documents summarized above.

**Table 4-1 Summary of SRCSD Planning Criteria, Sacramento County Sanitation District, 2002**

Plan/Design	Planning Condition				
	Type of Facility and Planning Area	Method of Building and Sizing Facilities	Flow Condition for Sizing	Base Flow Year 2020	Buildout
SRWTP 2020 Master Plan	Wastewater treatment plant handling flows that come to it. Not focused on specific geographic areas	Built in incremental steps, as flows into plant increase. Looks at 20 years of growth (and related wastewater) in the Urban Policy Area, based on March 2001 SACOG population projections. Uses 132.4 gallons per capita per day for average flow. <sup>1</sup>	Population-based flow projections over a 20-year planning period. Sized primarily for average pollutant loads that will come into the plant 20 years from now (because plant can be expanded incrementally).	218 mgd	350 mgd <sup>2</sup>
SRWTP 2020 Master Plan	Interceptor pipelines serving the entire SRCD planning area, which corresponds to the Urban Services Boundary.	Each interceptor is built once to serve build-out of entire geographic service area (Urban Services Boundary). Sized for build-out density of 6 ESDs/acre, 310 gallons of average flow per ESD per day, plus an allowance for rainfall infiltration.	Sized for highest flows in wet weather at buildout to keep flow inside pipes.	214 mgd	517 mgd
SASD Sewer System Capacity Plan 2010 Update	Smaller “trunk” sewers serving unincorporated Sacramento County, the cities of Citrus Heights and Elk Grove, and portions of the cities of Sacramento and Folsom.	Built once to serve SASD service area within the Urban Services Boundary. Sized for buildout density of 6-30 ESDs/acre and 310 gallons per day per ESD plus an allowance for rainfall infiltration.	Sized for highest flows in wet weather at buildout to keep flow within the pipes.	--	--

Notes:

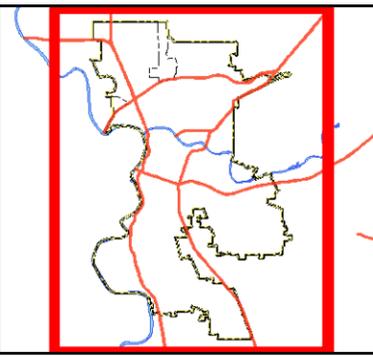
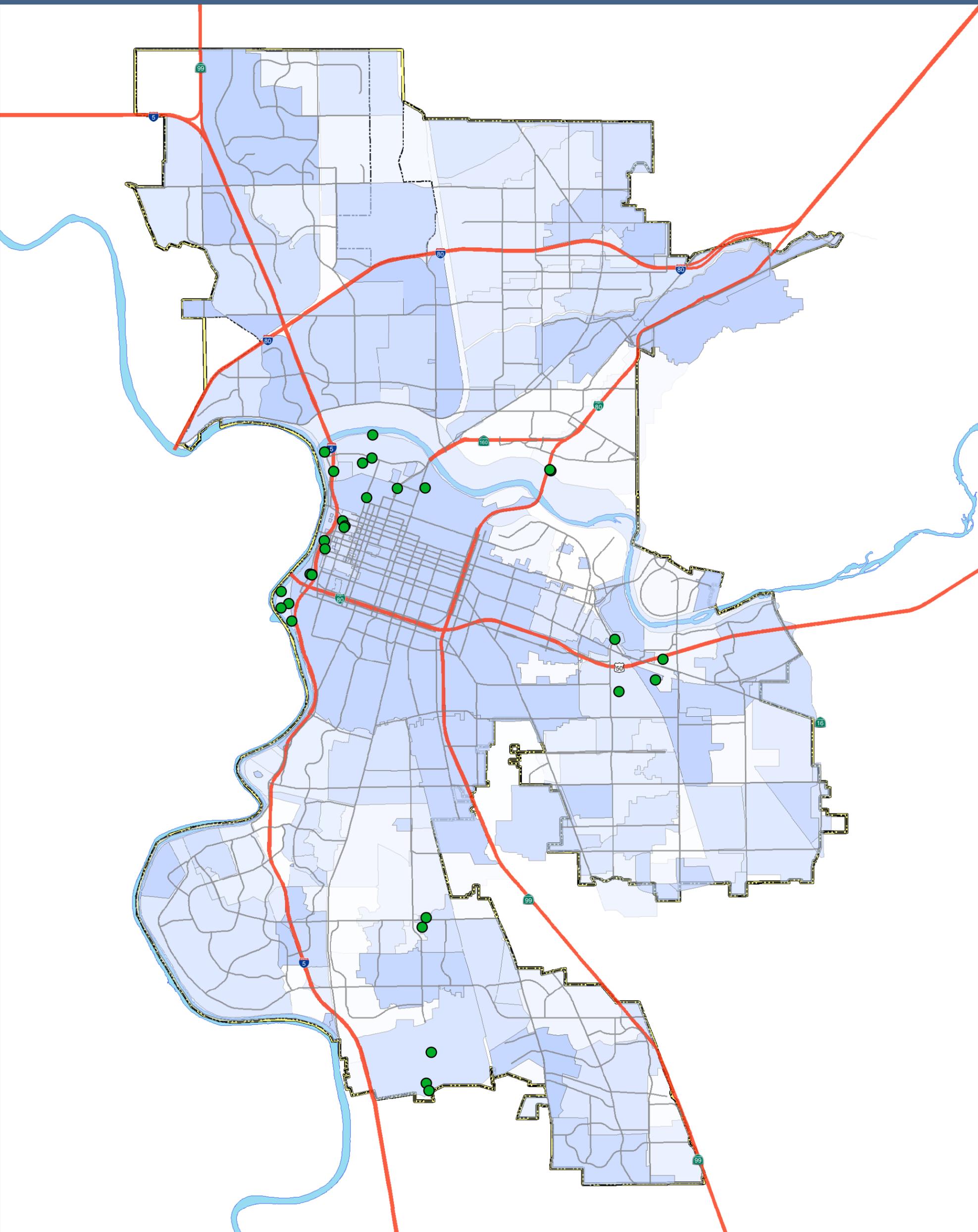
1. Calculated by average historical plant influent flow from 1996 through 2000.
  2. Assumes mirror image buildout of SRWTP facilities only. Additional space will most likely be available to incrementally expand beyond 350 mgd.
- Source: Sacramento Regional Sanitation District. May 2001. 2020 Master Plan. Revised Final Draft Executive Summary. Final Technical Memorandum: Relationship Between SRWTP 2020 Master Plan, Interceptor Master Plan 2000, and SASD Sewer System Capacity Plan 2010 Update

### Storm Drainage

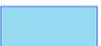
As discussed above, portions of the older area of the city are currently served by a combined storm water and sewer system. The area served by this system extends from the Sacramento River on the west, to the vicinity of Sutterville Road and 14th Avenue on the south, to about 65th Street on the east, and to North B Street and the American River on the north. Information on the combined system was discussed previously in Section 4.1 of this report. The remainder of the city is served by a separated drainage system.

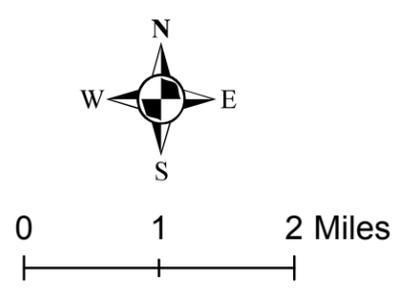
The city is divided into approximately 120 drainage basins. Drainage from most of these basins flows to local rivers or creeks or drainage channels through pumping. The City owns and operates 105 storm drainage pumping stations throughout the city. The drainage canals and local creeks eventually drain into the Sacramento and American Rivers (see Figure 4-3).

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**Legend**

 Major Roads	 Policy Area
 Highways	 City Limits
 Waterways	 Pump Stations
	 Drainage Basins



A north arrow is located in the top right of the legend area, with 'N' at the top, 'S' at the bottom, 'W' on the left, and 'E' on the right. Below it is a scale bar marked with 0, 1, and 2 Miles.



In certain portions of the city, existing drainage facilities are inadequate (according to current design standards) for the areas they serve. Current City design standards state that drainage systems are to provide streets with 10-year flood protection, and property with 100-year protection from flood damage. The City has ranked basins according to flooding severity and criticality. Based on these rankings, the City has completed master plans for all critical areas and has designated infrastructure that would need to be improved to eliminate flooding in these areas. In addition to these critical areas, as new and infill areas of the city are developed, additional drainage facilities will be needed to adequately service these areas. Issues in the Central City are covered in the portion of Section 4.1, which addresses the City's combined sewer system.

Drainage issues in the Airport-Meadowview area range from street flooding to issues identified as public safety hazards. Facility improvements that have been suggested to improve these problems include upgrading existing pump stations and pipelines, and constructing new detention basins and pipelines.

The south Land Park area suffers from street flooding and property flooding. Facility improvements that have been suggested to improve these problems include upgrading existing pump stations and pipelines, and constructing new detention basins and pipelines.

East Sacramento drainage issues vary from public safety hazards to street flooding. New and upgraded pumping stations, new and upgraded detention basins and new pipelines have all been identified as ways to solve the area's drainage issues.

The East Broadway area suffers from street flooding and property flooding. Facility improvements that have been suggested to improve these problems include upgrading existing pump stations and pipelines, and constructing new detention basins and pipelines.

The North Sacramento area has drainage issues ranging from street and property flooding to possible future flood hazards and public safety hazards. This area has a history of flooding issues due to the inadequate capacity of Magpie, Arcade and Hagginwood Creeks.

North Sacramento existing systems are inadequate (according to current City design standards) to convey runoff from the area to the creeks and canals. Another issue is that some areas within North Sacramento are served by a rural "style" drainage system utilizing roadside ditches and culverts and are not adequate according to the City's design standards. Master Plans have been developed for many basins in North Sacramento identifying these issues and proposing appropriate mitigations to address these issues. Facility improvements that have been suggested to improve these problems include flood proofing, upsizing mains, new pipelines, pump station improvements, and new detention basins.

## *Regulatory Context*

### **Federal and State**

With regard to wastewater, the Federal Clean Water Act (CWA) and regulations set forth by the California Department of Health Services (DHS) and State Water Resources Control Board (SWRCB) are aimed primarily at discharges of effluent to surface waters. Title 40 of the Code of Federal Regulations (CFR) Part 503, Title 23 California Code of Regulations, and standards established by the Central Valley Regional Water Quality Control Board regulate the disposal of biosolids generated by wastewater treatment plants.

Under the CWA, the Regional Water Quality Control Board issues both general and individual permits for discharges to surface waters, including for both point-source and non-point-source discharges. The CWA mandates permits for municipal stormwater discharges. The city of Sacramento has coverage under an area-wide Municipal Separate Sewer System (MS4) Permit. This permit requires that controls be implemented to reduce the discharge of pollutants in stormwater discharges to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and other measures as appropriate. As part of permit compliance, the City has prepared a Stormwater Quality Improvement Plan (SQIP), which outlines the requirements for municipal operations, industrial and commercial businesses, illegal discharges, construction sites, planning and land development, public education and outreach, and watershed stewardship. These requirements include multiple measures to control pollutants in stormwater discharge. New development under the proposed project would be required to follow the development standards contained in the SQIP. See section 6.3 Water Resources and Quality for additional information.

#### ***Clean Water Act (CWA) / National Pollutant Discharge Elimination System Permits (NPDES)***

The CWA is the cornerstone of water quality protection in the United States. The statute employs a variety of regulatory and nonregulatory tools to sharply reduce direct pollutants discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

The CWA regulates discharges from "non-point source" and traditional "point source" facilities, such as municipal sewage plants and industrial facilities. The CWA makes it illegal to discharge pollutants from a point source to the waters of the United States. Section 402 of the Act creates the NPDES regulatory program. Point sources must obtain a discharge permit from the proper authority (usually a state, sometimes EPA, a tribe, or a territory). NPDES permits cover industrial and municipal discharges, discharges from storm sewer systems in larger cities, storm water associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than one acre, mining operations, and animal feedlots and aquaculture facilities above certain thresholds.

## Local

### *City of Sacramento General Plan*

The City's 2030 General Plan Update contains policies and implementation measures relevant to the provision of wastewater and storm drainage service. For wastewater and storm drainage services, some of the policies relevant to this issue include providing adequately sized sewer and drainage facilities where they are needed, developing plans for sewer line extensions to developed areas where service is lacking, and developing and implementing appropriate funding mechanisms.

### *Sacramento City Code, Chapter 13.08*

Sacramento City Code, Chapter 13.08 outlines the requirements for permitted discharges to the sewer service system. Article V of the chapter establishes charges and fees for customers receiving sewer service and storm service from the City.

### *Combined Sewer System Development Fee*

The City of Sacramento adopted a sewer ordinance for the CSS in 2005, which requires payment of a development fee for projects that add sewer flows within the CSS service boundary. Key aspects of the CSS development fee include: a fee per equivalent single-family dwelling unit that will be subject to periodic adjustments; CSS development fees may be fully or partially offset by constructing or cost sharing in the construction of a mitigation project approved by the City Department of Utilities; the fee approximates the cost to construct local storage to mitigate downstream impacts; and fees will be collected and deposited in a fund for the City to construct larger projects to mitigate multiple developments.

### *Sacramento Regional County Sanitation District and Sacramento Area Sewer District*

The SRCSD and the Sacramento Area Sewer District (SASD) are both separate political subdivisions of the State of California formed under the State of California Health and Safety Code. As such, the districts' policies must conform to the statutes of the State Health and Safety Code. Additionally, the Districts are separately-funded entities that do not depend upon Sacramento County for funding capital improvements, maintenance, or operations. User fees provide for the systems' operation and maintenance, while hookup fees provide most of the funding for new trunks and interceptors.

The SRCSD requires a regional connection fee be paid to the District for any users connecting to or expanding sewer collection systems (SRCSD Ordinance No. SRCSD-0043).

### *Stormwater Quality/Urban Runoff Management*

The County of Sacramento and the Cities of Sacramento, Folsom, Citrus Heights, Elk Grove, Rancho Cordova, and Galt have a joint NPDES permit (No. CAS082597) that was originally granted in 1990, and was most recently reissued in 2008. The permittees listed under the joint permit have the authority to develop, administer, implement, and enforce storm water management programs within their own jurisdiction. The permit is intended to implement the Basin Plan through the effective implementation of BMPs to reduce pollutants in stormwater discharges to the maximum extent practicable (MEP). Additional discussion of stormwater quality is included in section 6.3 Water Resources and Quality.

## 4.2 Domestic Water

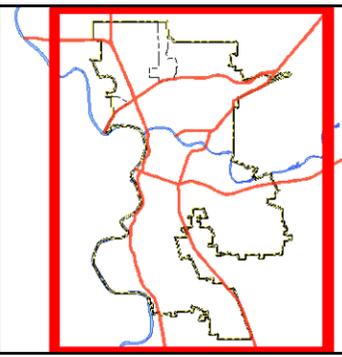
### *Introduction*

The water supply section discusses the existing condition of the city's water supply and treatment and distribution systems.

Domestic water services within the Policy Area are provided by the City of Sacramento and other water purveyors. The City of Sacramento provides domestic water service to the area within the city limits, as these limits change from time to time, and to several small areas within the County of Sacramento. A small area in the northeastern portion of the city (Swanston Estates) is served by the Sacramento Suburban Water District, although City and District staff have held discussions relative to the City taking this service area over at some point in the future. Areas outside of the city limits are served by the Natomas Central Mutual Water Company, Rio Linda Elverta Community Water District, Sacramento County Water Agency, Sacramento Suburban Water District, California-American Water Company, Tokay Park Water District, Fruitridge Vista Water Company, Elk Grove Water Service, and the Florin County Water District.

The City supplies domestic water from a combination of surface water and groundwater sources. Two water treatment plants supply domestic water by diverting water from the American River and Sacramento River. In addition to the surface water diverted from the two rivers, the City operates groundwater supply wells. Along with supplying domestic water to retail customers, the City also has agreements in place to supply water on a wholesale and wheeling basis to other districts and water purveyors including Sacramento Suburban Water District, California-American Water Company, Fruitridge Vista Water Company, and the Sacramento County Water Agency. In order to comply with the State's Urban Water Planning Management Act, the City of Sacramento has developed an Urban Water Management Plan to pursue the conservation and efficient use of available water supplies and to ensure an appropriate level of reliability in its water service sufficient to meet the needs of its customers (City of Sacramento 2011).

The City's water facilities also include water storage reservoirs, pumping facilities, and a system of transmission and distribution mains. These facilities are depicted on Figure 4-4 along with the authorized Place of Use (POU) for the Sacramento River and the American River water rights.



**Legend**

-  Major Roads
-  Highways
-  Waterways
-  Policy Area
-  City Limits
-  Sacramento River Water Treatment Plant
-  Reservoir



0 1 2 Miles

Data Source: City of Sacramento, 2012.



## *Existing Conditions*

The City owns and operates the potable water distribution system that supplies potable water throughout the city. There are 18 high lift service pumps at the Sacramento River Water Treatment Plant (SRWTP) and the E.A. Fairbairn Water Treatment Plant (FWTP), as well as 27 groundwater wells that deliver potable water to the distribution system. The City also maintains pumping facilities at ten of the city's storage reservoirs. These pump stations are of varying sizes and capacities.

The City separates water mains into two distinct categories: distribution mains and transmission mains. Water distribution mains are typically four inches to 12 inches in diameter and used to supply water for domestic and commercial use, fire suppression, and for fire hydrants. As a policy, the City requires new commercial areas to install 12-inch mains in order to maintain fire flow capacity. Transmission mains are 18 inches and larger and are used to convey large volumes of water from the treatment plants to selected points throughout the distribution system. They are also used to transfer water to and from the storage reservoirs to meet fluctuating daily and seasonal demands. The City determines placement of new water distribution facilities as development plans are formulated.

There are areas of the city where the transmission mains have been identified with specific deficiencies, outlined in the City's Distribution Masterplan (City of Sacramento 2005). Projects to overcome the deficiencies include the construction of reservoirs and pipelines throughout the city. Portions of the Central City system are deficient due to the poor condition of the aging water mains. The City is systematically replacing these old sections of pipe to alleviate the problem. In the North Sacramento area, there is a general lack of facilities in the area due to limited development. The City has stated that new transmission mains will need to be constructed to upgrade the system. In South Sacramento, pressure problems are a result of the distance that water needs to be transmitted from the treatment plants and a lack of storage reservoirs in the area. The City has nearly completed the Draft 2010 Water Master Plan, but few changes are anticipated from the 2005 Water Master Plan (Grant 2013).

The FWTP and the SRWTP divert water from the American and Sacramento rivers, respectively. The location of the treatment plants is identified in Figure 4-4. In 2003, the City finished an expansion of the SRWTP increasing its maximum capacity from 110 million gallons per day (mgd) to 160 mgd, although according to the 2010 Urban Water Management Plan (City of Sacramento 2011), the reliable capacity is only 135 mgd. Additional improvements are scheduled to be completed in 2016 that will restore the reliable capacity to 160 mgd. The 2003 expansion also included the construction of a new intake structure on the Sacramento River to comply with current fish screen requirements. Expansion of the FWTP completed in 2005 increased the maximum capacity of the FWTP from 90 mgd to 200 mgd, but it only has a permitted capacity of 160 mgd, and a reliable capacity of 100 mgd during peak demand times due to Hodge constraints (see Regulatory Context).

In 2011-2012, the FWTP treated an average of 42 mgd of water, while the SRWTP treated an average of approximately 64 mgd (Armijo 2013).

During low flows in the American River, diversions at the FWTP can be limited. The City of Sacramento along with the Placer County Water Agency (PCWA), the Sacramento Suburban Water Agency, and the City of Roseville have joined together to address the need for future water supply facilities to serve the region. The Sacramento River Water Reliability Study (SRWRS) includes a feasibility study to construct a new Sacramento River diversion and treatment plant along the Sacramento River located in Sacramento County which would provide additional water supply reliability

and assist in meeting the future water demand of the Cities of Sacramento and Roseville as well as PCWA and Sacramento Suburban (BOR and PCWA 2005). Public Law 106 – 554 authorized the SRWRS in 2002, but at this point in time, the SWRSR project has been placed on hold indefinitely (Armijo 2013). The US Bureau of Reclamation (USBR) is the Federal lead agency and PCWA is the local lead agency for the SWRSR project.

The City currently operates 27 active municipal groundwater supply wells within the city limits. Twenty-five of these wells are located north of the American River in the communities of North Sacramento, South Natomas and Arcade-Arden. The City wells supply the City with a maximum total capacity of about 20.7 mgd. In 2010, the groundwater supply wells pumped approximately 21.1 mgd. The City also operates 14 wells for the irrigation of parks. Although the City relies predominantly on surface water as its primary source of water supply, the groundwater well system provides flexibility in providing domestic water to the City, especially in years when there are low river flows, as well as providing water that can be delivered on a retail or wholesale basis outside the area authorized to receive delivery of the City's surface water supply.

The City operates 11 storage reservoirs, each with a capacity of three million gallons (MG) except for the Florin Reservoir, which has a capacity of 15 MG. In addition to the reservoirs, the treatment plants together maintain an on-site storage of over 44 million gallons. This water is used to meet the water demand for fire flows, emergencies, and peak hours. The current (2012) storage capacity in the city is currently adequate to serve emergency situations, but projected 2030 build out will require an additional 3 MG. A new 4 MG storage tank is currently in design and is scheduled to be completed by 2016 (Armijo 2013).

The City operates pumping facilities throughout the city. There are 18 high lift service pumps at SRWTP and FWTP. The City also maintains pumping facilities at ten of the City's storage reservoirs, and each of the groundwater wells. These pump stations are of varying sizes and capacities.

## *Regulatory Context*

### **Federal**

The Safe Drinking Water Act (SDWA) of 1974 gave the United States Environmental Protection Agency (EPA) the authority to set standards for contaminants in drinking water supplies. The EPA was required to establish primary regulations for the control of contaminants that affect public health and secondary regulations for compounds that affect the taste, odor, or aesthetics of drinking water. Under the provisions of the SDWA, the California Department of Public Health (DPH) has the primary enforcement responsibility. Title 22 of the California Administrative Code establishes DPH authority, and stipulates State drinking water quality and monitoring standards.

## State

### *Urban Water Management Planning Act*

In 1983, the California Legislature enacted the Urban Water Management Planning Act (Water Code Sections 10610 – 10656). The Act requires that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet of water annually shall prepare and adopt an urban water management plan. Water suppliers are to prepare an urban water management plan within a year of becoming an urban water supplier and update the plan at least once every five years. The Act also specifies the content that is to be included in an urban water management plan.

It is the intention of the Legislature to permit levels of water management planning commensurate with the number of customers served and the volume of water supplied. The Act states that urban water suppliers should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The Act also states that the management of urban water demands and the efficient use of water shall be actively pursued to protect both the people of the State and their water resources.

The State Department of Water Resources (DWR) has designed its urban planning assistance program to assist urban water suppliers to meet the requirements of the Act. Program staff assists urban water suppliers with preparing comprehensive and useful water management plans, implementing water conservation programs, and understanding the requirements of the Act.

DWR staff reviews all of the urban water management plans that are submitted to DWR in accordance with the Act. Results are provided to local and regional water suppliers through a review letter and compiled into a Legislative Report provided to the California Legislature one year after plans are due to DWR. See Section 6.3 Water Resources and Quality for Drinking Water Quality Regulations.

### *20x2020 Water Conservation Plan*

In February 2010, the 20x2020 Water Conservation Plan was released as part of an effort to reduce stress on the environment of the Sacramento-San Joaquin Delta. The plan sets forth a statewide road map to maximize the state's urban water efficiency and conservation opportunities. The draft of this plan served as the basis for Senate Bill X7-7, which set a goal to achieve a 20 percent reduction in urban per capita water use in California by the year 2020. The law requires urban water suppliers to establish water conservation targets for the years 2015 and 2020.

The plan recommends nine categories of action to contribute to a statewide strategic approach of achieving the goals of the plan. These categories are (1) to establish a foundation for a statewide conservation strategy, (2) reduce landscape irrigation demand, (3) reduce water waste, (4) reinforce efficiency codes and related BMP's, (5) provide financial incentives, (6) implement a statewide conservation public information and outreach campaign, (7) provide new or exercise existing enforcement mechanisms to facilitate water conservation, (8) investigate potential flexible implementation measures, and (9) increase the use of recycled water and non-traditional sources of water.

The 20x2020 Plan was developed through a collaborative effort consisting of State and Federal agencies including the Department of Water Resources, State Water Resources Control Board, California Energy Commission, Department of Public Health, California Public Utilities Commission, Air Resources Board, California Bay-Delta Authority, and the US Bureau of Reclamation (State of California 2010).

### ***Assembly Bill 1465***

In 2009, the State Legislature passed Assembly Bill 1465 requiring urban water suppliers to include their water demand management measures in the Urban Water Management Plan. Suppliers are required to describe opportunities to offset potable water use by utilizing water that is already available through stormwater recapture or recycled water use.

### **Local**

The City's surface water diversions at the FWTP are subject to limitations specified in the City's Water Forum Purveyor Specific Agreement. In extremely dry years, the City would limit its diversions of city water at the FWTP to not greater than 155 cubic feet per second (cfs) and not greater than 50,000 AFA. In all other years, the City may divert city water at the FWTP up to the full capacity of the expanded FWTP (310 cfs) so long as the flow bypassing the diversion at the FWTP is greater than the Hodge Flow Criteria. When flow bypassing the diversion at the FWTP is less than the Hodge Flow Criteria, City diversions may not be greater than 120 cfs January through May, 155 cfs June through August, 120 cfs in September, and 100 cfs October through December. The City's Purveyor Specific Agreement also includes provisions regarding potential future revision of these limitations if it can be determined that doing so would not adversely impact instream resources.

The Hodge Flow Criteria is based on flow levels established by Judge Richard Hodge in a lawsuit filed by Sacramento County, the Environmental Defense Fund, and the Save the American River Association over concern about how increased diversions by East Bay Municipal Utility District (EBMUD) could impact the Lower American River fishery. The Hodge decision applies only to diversions of water by EBMUD, but criteria based on the Hodge flow levels were utilized as a surrogate for flow levels that would not adversely impact instream resources in the City's Water Forum Purveyor Specific Agreement.

### ***Findings***

- The City's water entitlements are sufficient to serve the entire city (including future expansions of the city limits) and also provide water to other local water purveyors in need of additional water supply.
- The capacity of the City's water treatment plants currently is being expanded to approximately 360 mgd. Further expansion will occur as needed to meet projected future water demands.
- The City has identified a new conjunctive use program that will develop additional groundwater supplies for increased use during dry periods. These wells would be used less frequently during periods where the surface water supply is robust. The groundwater well system provides the City with needed flexibility in providing domestic water. To enhance this flexibility, the City anticipates expanding its groundwater pumping capacity in the future.
- Within the water system, noticeable deficiencies have been identified in portions of the community plan areas of the Central City, North Sacramento and South Sacramento.

### 4.3 Water Supply

#### Introduction

The City’s water supply comes from the American and Sacramento rivers and groundwater pumped from the North and South American Subbasins. On average, groundwater use has consisted of 15 to 20 percent of the city’s supply between 2006 and 2012. Historical deliveries are shown in Table 4-2, below.

<b>Table 4-2 Historical Water Deliveries, City of Sacramento, 2007</b>								
Year	Surface Water and Groundwater Supplies			Total Water Delivered				
	Population	Annual Surface Water Delivered (acre-ft/year)	Annual Groundwater Delivered (acre-ft/year)	Maximum Day Water Delivered (mgd)	Maximum Day to Average Day Ratio	Total Annual Water Delivery (acre-ft/year)	Average (mgd)	Percent change
2006	449,658	120,150	18,522	239.9	1.21	138,671	123.5	
2007	455,760	127,747	19,159	N/A	N/A	146,906	131.1	6.2%
2008	461,036	126,965	20,880	N/A	N/A	147,845	132.0	0.7%
2009	466,676	111,856	19,260	N/A	N/A	131,117	117.0	-11.0%
2010	467,575	98,855	19,216	N/A	N/A	118,071	105.4	-9.9%
2011	472,178	97,103	18,218	N/A	N/A	115,321	102.9	-2.4%
2012	N/A	102,963	17,418	N/A	N/A	120,381	107.5	4.5%

Notes:

N/A = Not available.

Source: Adapted from City of Sacramento, Department of Utilities, Water Production Summary, 2012.

#### Existing Conditions

##### Surface Water

The City possesses surface water rights to divert both Sacramento and American river water. In addition, the City entered into a water rights settlement contract with the USBR in 1957. The essence of the City/USBR settlement contract is that the City agreed (1) to limit its combined rate of diversion under its American River water rights permits to a maximum of 675 cubic feet per second (cfs), up to a maximum amount of 245,000 acre-feet per year (AFA) in the year 2030, and (2) to limit its rate of diversion under its Sacramento River water rights permit to a maximum of 225 cubic cfs and a maximum amount of 81,800 AFA. This limits the City’s total diversions of Sacramento and American river water under its water right permits to 326,800 AFA in the year 2030, as shown in Table 4-3.

<b>Table 4-3 Settlement Contract Maximum Diversion Schedule (acre-feet/year), Sacramento/U.S. Bureau of Reclamation Contract, 2007</b>						
Source	2010	2015	2020	2025	2030	2035
American River	170,500	189,000	208,500	228,000	245,000	245,000
Sacramento River	81,800	81,800	81,800	81,800	81,800	81,800
<b>TOTAL</b>	<b>227,500</b>	<b>252,000</b>	<b>278,000</b>	<b>304,000</b>	<b>326,800</b>	<b>326,800</b>

Source: Adapted from City of Sacramento 2010 Urban Water Management Plan, Carollo Engineers.

In return, the contract requires USBR to make available at all times enough water in the rivers to enable the agreed-upon diversions by the City. The City agreed to make an annual payment to USBR for Folsom Reservoir storage capacity used to meet the USBR’s obligations under the contract, beginning

with payment for 8,000 acre-feet of storage capacity in 1963 and building up, more or less linearly, to payment for the use of 90,000 acre-feet of storage capacity in 2030. The settlement contract is permanent and generally not subject to deficiencies. The City's water rights, in conjunction with the USBR contract, provide the city with a very reliable and secure water supply.

### ***Water Forum Agreement***

The City's diversions at the FWTP currently (2012) are subject to limitations specified in the Water Forum Agreement (WFA). The Water Forum was started in 1993 by a group of water managers, local governments, business leaders, agricultural leaders, environmentalists, and citizen groups with two "co-equal" goals: to provide a reliable and safe water supply through the year 2030, and to preserve the wildlife, fishery, recreational, and aesthetic values of the Lower American River. After six years of interest-based negotiations, the Water Forum participants approved the 2000 WFA.

As part of the WFA, each water purveyor signed a purveyor specific agreement that specified that purveyor's Water Forum commitments. The City's purveyor specific agreement limits the quantity and rate of water diverted from the American River at the FWTP during two hydrologic conditions: extremely dry years (i.e., "Conference Years") and periods when river flows are below the so-called "Hodge Flow Criteria" issued by Judge Richard Hodge in the *Environmental Defense Fund v. East Bay Municipal Utility District* litigation. Hodge flow conditions exist when the American River flows are below 2,000 cfs from October 15 through February; 3,000 cfs from March through June; and, 1,750 cfs from July through October 14.

At the time that the City's purveyor specific agreement was developed, there was a common understanding among the Water Forum participants that the existing flow standard applicable to the operation of USBR's water storage facilities above the Lower American River was outdated, and the parties agreed to use the Hodge Flow Criteria as a surrogate for the minimum flows necessary to preserve and protect instream resources. At that time, the Hodge flows provided the most fully developed instream flow criteria available for the Lower American River, even though these criteria were developed in connection with another entity's proposed diversions upstream at the Folsom South Canal, did not apply to Sacramento or the FWTP, and, in view of the updated instream flow management plan currently being developed by the Water Forum and USBR, are now outdated. Implementation of the flow management plan currently being developed may render these limitations at the FWTP unnecessary, and may provide a basis for removing or modifying these limitations.<sup>1</sup> Without these limitations, the City would require a lesser increment of additional capacity in water supply facilities to meet future demands. However, to ensure full compliance with CEQA, this EIR evaluates the City's future water supply capacity needs based on the assumption that the existing Hodge limitations at FWTP will remain in place, so that water supply capacity duplicative of capacity already existing at FWTP will be needed to provide water supply reliability when the city cannot use such FWTP capacity due to the applicability of the Hodge flow limitations.

A "Conference Year" exists when the California Department of Water Resources (DWR) projects an annual unimpaired flow into Folsom Reservoir of 550,000 AFA or less, or the projected March through November unimpaired flow into Folsom Reservoir is less than 400,000 AFA. During Conference

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<sup>1</sup> The City's purveyor specific agreement includes provisions recognizing that the City may seek modification to the FWTP limitations if justified by analysis showing that increased diversions will not have significant adverse effects on the American River below the FWTP, such as might be the case if an updated flow management plan is adopted. This would be subject to separate environmental review and is not part of this project.

Years, the City's purveyor specific agreement limits diversions of water treated at the FWTP to 155 cfs and 50,000 AFA. Conference Years have occurred on the American River only twice during the 72 year period of record historical hydrology.

The Hodge Flow conditions and the Conference Year conditions are collectively referred to as the City's "purveyor specific agreement limitations."

The City's purveyor specific agreement limits the diversion rate at the FWTP when American River flows bypassing the FWTP are less than the Hodge Flow Criteria. Based on the CALSIM II model analysis of the 1922 to 1994 climate data, 59 percent of years will experience flows that are less than Hodge flow conditions at some time during the peak months of June through August. In comparison, when flow passing the FWTP is greater than the Hodge Flow Criteria and Conference Year conditions do not exist, the purveyor specific agreement allows diversions of American River water up to the FWTP's current maximum rate of 310 cfs (or 200 mgd). The Hodge Flow limitations result in peak day limitations but, unlike the Conference Year limitation, do not directly limit the City's annual diversion amount.

When the City's use of the FWTP is limited by the City's purveyor specific agreement limitations (as well as when these limitations are not in effect), the city can use available capacity in the SRWTP to divert water under its American River entitlements. During a Conference Year (drought) condition, assuming a maximum diversion and treatment of 50,000 AFA at the FWTP and a maximum diversion and treatment capacity of 179,400 AFA at the Sacramento WTP, the current drought limiting scenario (Conference Year) using existing facilities allows a surface water production of 229,400 AFA.

## **Groundwater**

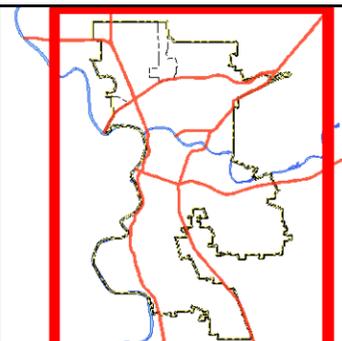
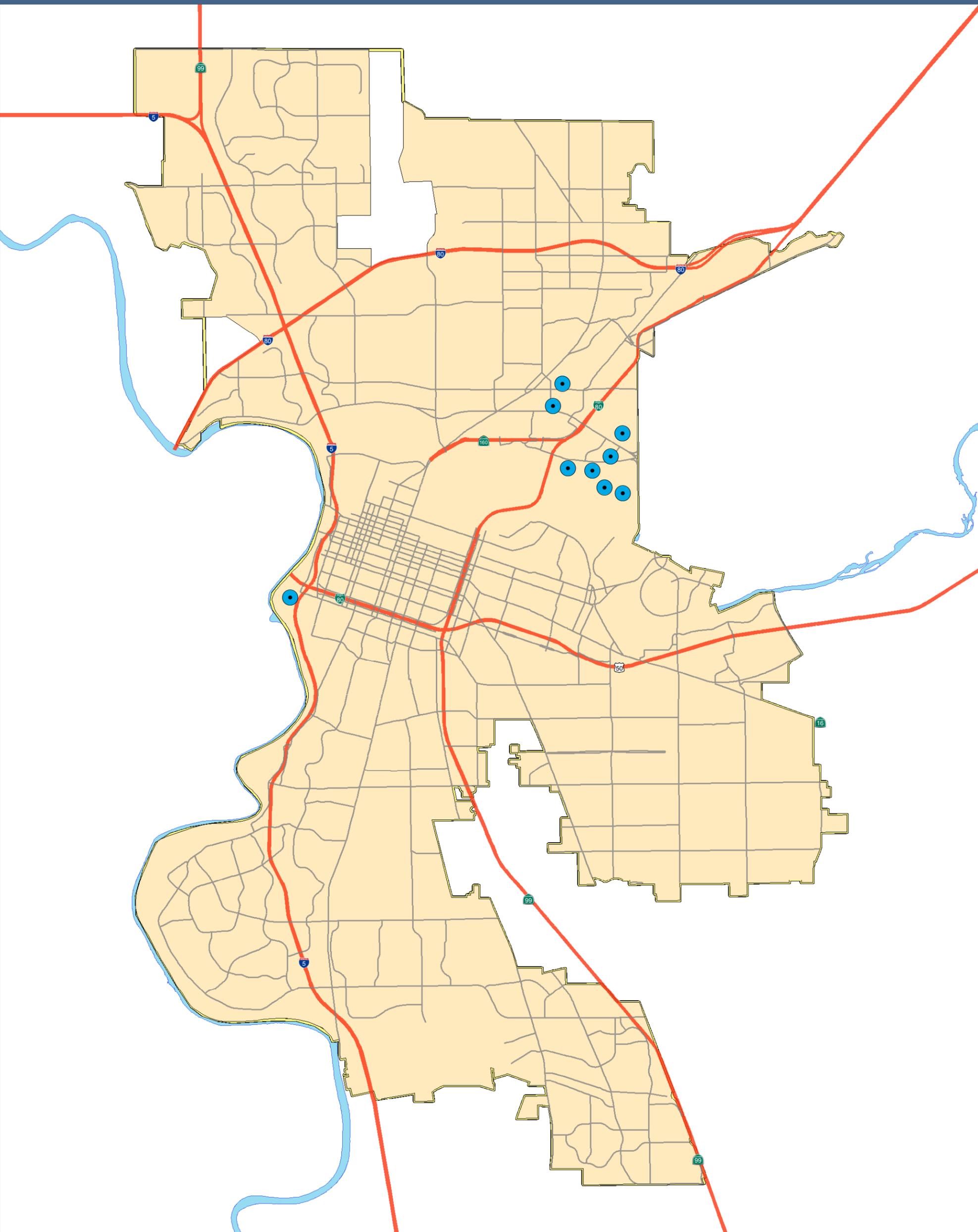
The City currently (2012) operates 27 permitted municipal groundwater supply wells within the city limits that pump from the North American and South American Groundwater basins, as shown in Figure 4-5. The City wells supply the city with about 20,800 AFY (18.8 mgd) of municipal water supply, based on the city's average groundwater deliveries from 2006 to 2010 (see Table 4-2). The City also operates 14 wells for the irrigation of parks.

### ***Groundwater Basin***

The wells pump primarily from the DWR North American Subbasin (5-21.64), with two active drinking water wells pumping from the South American Subbasin (5-21.65).

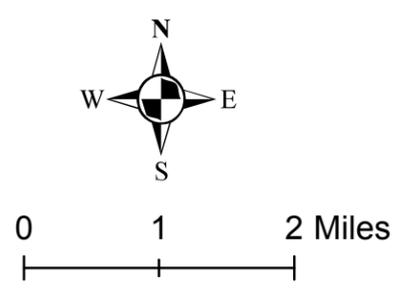
The North and South American Subbasins are described in the 2003 update to the DWR Bulletin 118-3. The underlying geology or hydrostratigraphy of both basins consists of a variety of geologic formations that make up the water bearing units. There are two aquifer systems: an upper unconfined system consisting of the Victor, Fair Oaks, Laguna, Modesto Formations, and a lower, semi-confined system in the Mehrten Formation. These geologic formations are composed of lenses and layers of inter-bedded sand, silt, and clay with coarse-grained stream channel deposits. The groundwater contained in the upper aquifer system of the Victor, Fair Oaks, Laguna, Modesto, Riverbank, and Turlock Lake Formations along with Arroyo Seco and South Fork Gravels is of superior quality compared to that in the lower semi-confined system, mainly because the water in the Mehrten Formation is higher in iron and manganese, and requires more treatment. The upper unconfined system only requires chlorination treatment to be potable (DWR 2003). Please see also the discussion in Section 6.5 Mineral Resources.

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**Legend**

-  Major Roads
-  Highways
-  Waterways
-  Policy Area
-  City Limits
-  Groundwater Well



A north arrow is positioned above a scale bar. The scale bar is marked with 0, 1, and 2 Miles.

Data Source: City of Sacramento, 2012.



In the South American Subbasin, the DWR Bulletin estimates groundwater withdrawals are in balance with recharge for the Subbasin. The conclusion is supported by groundwater levels which have stabilized after recorded declines since the 1960s. As a result of the Water Forum Successor Effort, the Sacramento County Groundwater Forum (SCGF) has developed the Sacramento County Groundwater Management Plan (SCGMP).

The North American Subbasin includes the Policy Area; DWR Bulletin 118 references a 1990 land-use based water balance for the subbasin which estimated groundwater withdrawals in excess of 285,000 AFA above annual recharge. The Sacramento Groundwater Authority (SGA) prepared an updated groundwater management plan (GMP) in 2008 for that portion of the Subbasin north of the American River and up to the Sacramento County line. PCWA prepared a groundwater storage study for the northern half of the North American Subbasin. The groundwater reports by PCWA and SGA document declining groundwater levels prior to 1992. Since 1992 a reduction of groundwater pumping has resulted in stabilized groundwater levels (PCWA 2005; SGA 2008).

The SCGF and the SGA were developed in a consensus-based process, and these included stakeholders throughout both basins. GMPs are adaptive management tools and represent a critical step in establishing a framework for maintaining a sustainable groundwater resource for the various users overlying the basins. The GMPs are consistent with the provisions of California Water Code sections 10750 et seq. Within these programs the SGA and the SCGF will continually assess the status of the groundwater basin and make appropriate management decisions.

The City is a member of both the SGA and SCGF. The SGA and SCGF share a common goal of the responsible management of the groundwater basin through a commitment to not exceed the long-term sustainable yield of the Subbasins. The SGA sustainable yield is estimated to be approximately 131,000 AFA and the SCGF sustainable yield is estimated to be approximately 273,000 AFA according to the WFA and GMPs. The sustainable yields determined through the WFA provide for sufficient groundwater pumping to meet the projected level of groundwater demand through 2030. The process to determine the sustainable yield took into account future pumping by the various groundwater users within the applicable subbasin, water quality, dewatering of wells, groundwater pumping costs, and ground subsidence.

SGA and SCGF members, in accordance with the WFA, are proceeding with a long-term conjunctive use program to responsibly manage and use the groundwater systems. A conjunctive use program accounts for the annual climatic variability of the region, whereby in normal or wet years of precipitation the water providers will divert more surface water and reduce or eliminate groundwater use, allowing the groundwater systems to recharge. This requires facilities for diversion and treatment of surface water with capacity that is sufficient to meet peak day demands with surface water during normal and wet years. In dry years when surface water diversions are reduced to maintain in-stream flows, groundwater pumping would be increased as needed to supplement the reduced diversions from the river systems. The latest version of the City's Draft Water Master Plan envisions a significant increase in maximum groundwater pumping capacity. Due to the flexible nature of a conjunctive use plan, the citywide long term yield is not anticipated to change significantly, however yield in the central basin is expected to increase (Grant 2013).

As part of this groundwater management strategy, the SGA released a Basin Management Report (BMR) for 2011 that updates the current SGA uses of the North American Subbasin. The BMR calculated groundwater pumping by SGA signatories at 65,649 AFA in 2010; this is below the agreed-

upon sustainable yield of 131,000 AFA. This is also the lowest reported purveyor pumping in the SGA area since 1983. Notably, the BMR shows that between 1997 and 2004 a cone of depression near the central part of the SGA area has rebounded by approximately five feet as a result of less groundwater pumping and utilizing more surface water by the members of the SGA.

## Recycled Water

The City is participating in an advisory committee to develop a Water Recycling Master plan with the Sacramento Regional County Sanitation District (SRCSD). The advisory committee had its first meeting in December 2005. Recycled water, if used within the city, would likely be used for irrigation purposes only. Recycled water is considered safe when appropriately used and meets State and Federal regulations for its intended purposes, which, in this case, is for non-potable uses such as landscape irrigation. Financial incentives, such as subsidized water pricing, may encourage recycled water use within the city. Target areas for subsidized recycled water may include the Bartley Cavanaugh Golf Course, and public green spaces near the Regional Wastewater Treatment Plant, or other scalping plants/recycled water facilities in the future. The City is currently (2012) working with the SRCSD to explore potential future usage. No recycled water is currently included in the City of Sacramento supply projections.

## Water Conservation

Even though the City possesses a reliable long-term water supply, the City is committed to reducing the demand for potable water through conservation. This is done through implementation of Demand Management Measures (DMMs); participation in the Sacramento Water Forum, which includes conformance with the Water Forum Agreement (WFA) and implementation of Best Management Practices (BMPs); and, participation in the Regional Water Authority (RWA), which includes participation in the Water Efficiency Program. The majority of the following information is provided in the City's Urban Water Management Plan (UWMP). As of 2009, the City is also required by Senate Bill X7-7 to set water conservation goals to help achieve a 20 percent reduction in urban per capita water use in California by the year 2020. Water conservation targets are to be set for the years 2015 and 2020.

In 1991, the City became a signatory to the California Urban Water Conservation Council's (CUWCC) Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California. The purpose of the MOU was to expedite implementation of reasonable water conservation measures in urban areas and to establish appropriate assumptions for use in calculating estimates of reliable future water conservation savings. The 1991 MOU originally listed 16 BMPs for water conservation. In 1999, the MOU was revised to include 14 BMPs. These 14 BMPs are substantially similar to the fourteen DMMs listed in the Urban Water Management Planning Act.

The City is also a member of the Sacramento Water Forum, described previously in this section. The WFA contains seven elements which all signatories to the WFA agreed to endorse and, where appropriate, participate in. One of the elements in the WFA is related to water conservation. The Water Conservation Element of the WFA was negotiated among all stakeholders and published in August 1997 and was updated and approved by the Water Forum membership in 2009. The Water Conservation Element requires the development and implementation of a water conservation plan which includes fourteen BMPs.

The City is also a member of the RWA, which is a joint powers authority that serves and represents the interests of 22 water providers and associated agencies in the greater Sacramento area. The RWA has a Water Efficiency Program, which is a large-scale effort designed to help participating agencies fulfill commitments to implement their Water Forum water conservation plans. The program provides services with oversight via an advisory committee. Through this regional effort, purveyors are better able to manage BMP implementation projects through coordination and training of staff, regional marketing of services to customers and leveraging resources. Program components include regional public outreach and school education programs, large landscape irrigation efficiency and leak detection programs, commercial, industrial, and institutional rebate programs, and partnerships with other agencies and organizations for toilet replacement rebates and distribution of water-efficiency products targeting the restaurant and food service industry.

Water conservation in the city is accomplished through implementation of DMMs, the CUWCC's BMPs, and the WFA BMPs. The CUWCC MOU includes 14 BMPs that are substantially similar to the DMMs. The WFA includes fourteen BMPs, which are similar to the DMMs and CUWCC BMPs. The primary difference between the DMMs/CUWCC's BMPs and the WFA BMPs is that the WFA BMPs do not include high efficiency washing machine rebate programs or wholesale agency programs.

A brief description of the City's activities with respect to each DMM is provided below. Specific data was obtained from the City's Water Conservation Coordinator, the City's CUWCC Annual Reports for 2009 and 2010, and the Water Forum Annual Reports. Additional information is included in Chapter 6 of the City's 2010 UWMP.

***DMM A: Water Survey Programs for Single Family and Multi-Family Residential Customers***

Corresponding BMPs:

- CUWCC Residential BMP 3.1: Residential Assistance Program;
- CUWCC Residential BMP 3.2: Landscape Water Survey; and
- Water Forum BMP 1: Interior and Exterior Water Audits and Incentive Programs for Single Family and Multi-Family Residential and Institutional Customers.

The City began offering single-family and multi-family residential customers water surveys in 2002. Water survey programs typically involve residential interior and exterior water use reviews, whereby staff assists homeowners in identifying potential leaks and areas for water savings. Interior fixtures are checked and leak tested, and irrigation systems and timers are evaluated. Residents are generally provided with recommendations for improvements, plumbing retrofit kits and water conservation literature. The program is ongoing; offers are made annually to customers and advertised using bill inserts and a water conservation newsletter.

***DMM B: Residential Plumbing Retrofit***

Corresponding BMPs:

- CUWCC Residential BMP 3.1: Residential Assistance Program; and
- Water Forum BMP 2: Plumbing Retrofit of Existing Residential Accounts.

Under this program, water-conserving devices such as high-quality low-flow showerheads, toilet-displacement devices, toilet flappers and faucet aerators are distributed to customers. Although the City's residential plumbing retrofit program is offered to all customers, the City's program targets neighborhoods built before 1991 and low or moderately low income areas. The program is ongoing.

***DMM C: System Water Audits, Leak Detection and Repair***

Corresponding BMPs:

- CUWCC Utility Operations-Metering BMP 1.2: Water Loss Control; and
- Water Forum BMP 3: Distribution System Water Audits, Leak Detection and Repair

The City's approach for implementation of this DMM is different for the City's unmetered connections and metered connections. The City's infrastructure that delivers water to retail customers is the same as the infrastructure that delivers water to wholesale customers.

For unmetered connections, the City's program includes the following:

- An annually updated system map of type, size and age of pipes, pressures and leak history;
- Installation of devices or use of other methods designed to identify areas with greater than 10 percent losses;
- An on-going meter calibration and replacement program for all production and distribution meters;
- An on-going leak detection and repair program focused on high probability leak areas identified by the system map (based on pipe age and material type); and
- A complete system-wide leak detection program, repeated no less often than every ten years, unless there are special circumstances, such as age of system or planned main replacement.

For metered connections, the City's program includes the following:

- An annual system water audit, determining the difference between production and sales (to determine quantity of unaccounted-for water);
- An annually updated system map of type, size and age of pipes, pressures and record of leaks and other historic data;
- An on-going meter calibration and replacement program;
- An on-going leak detection/repair program focused on high probability leak areas identified by the system map (based on pipe age and material type); and

- A complete system-wide leak detection program, repeated when the system water audit determines losses to be greater than 10 percent, or when the losses are less than 10 percent if the program is determined to be cost effective.

Water system audits are conducted annually for areas with metered connections, the leak detection and repair program is on-going for both unmetered and metered connections, and the system-wide leak detection/repair program is implemented when water system audits determine losses to be greater than 10 percent, or when determined to be cost effective.

***DMM D: Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections***

Corresponding BMPs:

- CUWCC Utility Operations-Metering BMP1.3: Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections; and
- Water Forum BMP 4: Non-Residential Meter Retrofit & Residential Meter Retrofit.

Most of the City's residential water service accounts are unmetered and are billed at a graduated flat rate based on the number of rooms in the residence receiving the water service. Approximately 90 percent of the City's commercial water service connections are metered, and the City has an ongoing large meter replacement program for meters three inches and greater.

Historically, Section 11 of the Sacramento City Charter prohibited the installation of water meters on residential water service pipes, and did not allow the City to require residential meter retrofits. However, Section 11 of the City Charter has now been completely superseded by State law, specifically the passage of SB 229 and AB 2572. Under SB 229 (Water Code Section 525), all new residential connections installed after January 1, 1992 have been provided with a meter.

In 2004, AB 2572 enacted Water Code Section 527, that now requires an urban water supplier to: (1) install water meters on all service connections located within its service area on or before January 1, 2025; and (2) charge metered rates to customers that have water service connections for which meters have been installed, beginning no later than January 1, 2010 (provided that metered billing may be delayed for one annual seasonal cycle of water use for services being converted from flat rate to metered billing). AB 2572 became effective January 1, 2005. To meet this requirement, the City has initiated a program to retrofit approximately 98,000 residential water service connections with water meters. The estimated cost of the residential meter retrofit program is approximately \$214 million, which has been and will be funded on an ongoing basis by increases in the City's water service rates and grant funding, when available.

Wholesale water deliveries are metered and wholesale customers pay for water based on the amount they receive.

Programs for retrofitting and billing on a commodity basis are ongoing. The meter installation program will be completed by 2025, in compliance with AB 2572. The metered billing rate program was implemented in 2010, in compliance with AB 2572.

### ***DMM E: Large Landscape Conservation Programs and Incentives***

Corresponding BMPs:

- CUWCC Landscape BMP 5: Landscape;
- Water Forum BMP 5: Large landscape water audits and incentives for commercial, industrial, and institutional (CII) and irrigation accounts;
- Water Forum BMP 6: Landscape water conservation requirements for new and existing commercial, industrial, institutional and multi-family developments; and
- Water Forum BMP 12: Landscape water conservation for new/existing single family homes.

In 2003, the City started a large landscape conservation program. The City's program for large landscape conservation includes: conducting landscape surveys for customers with large landscapes (primarily parks, schools and golf courses), including irrigation system checks and review and development of irrigation schedules; providing landscape irrigation training; offering financial incentives to improve landscape water use efficiency; and providing information to customers regarding watering guidelines and regulations, and tips on landscape design, plant selection and other free programs.

The City has adopted water conserving landscape requirements which are specified in the City Municipal Code (Title 15 Building and Construction, Chapter 15.92 Landscaping Requirements for Water Conservation). These requirements define standards and procedures for the design, installation and management of landscapes in order to utilize available plant, water, land and human resources to the greatest benefit of the people of the city.

### ***DMM F: High-Efficiency Washing Machine Rebate Programs***

Corresponding BMPs:

- CUWCC Residential BMP 3.3: High-Efficiency Washing Machine Financial Incentive Program;
- WFA: No corresponding BMP.

High-efficiency washing machines use about 50 percent less water than conventional machines, using only 20 to 30 gallons of water per load, compared to 40 to 45 gallons for conventional top-loading washers. The estimated annual savings for a typical household is about 5,000 gallons per year.

In the past, the City has participated in CUWCC's LightWash Program, which offered washing machine rebated of up to \$400 for qualifying washing machines for multi-family or institutional common area laundry facilities, businesses with on-premise laundries or coin laundry stores. California energy utility ratepayers under the auspices of the California Public Utilities Commission primarily fund the program. The City provided partial funding. In fiscal year 2004, 20 commercial washing machine rebates were issued. In fiscal year 2005, 65 rebates were issued. Participation in this program ended in December 2005. In 2009, the City joined the local energy utility, Sacramento Municipal Utility District (SMUD), through a Memorandum of Understanding (MOU) to jointly implement a regional clothes washer

rebate program. The program is administered by SMUD, and co-funded by the City through the Project Agreement with the Regional Water Authority (RWA) for funding awarded by DWR for the Proposition 50 Urban Drought Assistance Grant Agreement Water Efficiency Acceleration Program. Since 2009, the rebate program has distributed 517 rebates to City customers.

### ***DMM G: Public Information Programs***

Corresponding BMPs:

- CUWCC Education-Public Information Programs BMP 2.1: Public Information Programs; and
- Water Forum BMP 7: Public Information.

The City participates in the RWA Water Efficiency Program (RWEF) Public Information Campaign. The RWEF has a regional outreach program coordinated with Support from a Public Outreach and School Education Committee comprised of RWEF member conservation coordinators and Public Information Officers. The overall goal of the RWEF is to maximize customer participation in water conservation programs. In 2010 the RWA launched a new public outreach and awareness campaign called “Blue Thumb”. The goals for this campaign are to raise awareness about the need to use water efficiently outdoors and to motivate the target audience to undertake key behaviors that are most likely to reduce outdoor water use. The target audience is residential water customers and women over age 50.

Marketing strategies to meet the 2011 and future goals of the new Public Information Campaign include a campaign website (BeWaterSmart.info), a statistically valid telephone survey, creating a unique campaign graphic identity, media outreach to announce the campaign, television and radio advertising, Public Service Announcements (PSAs), a promotional partnership with Watersense and regional Home Depot stores for Water Awareness Month, a partnership with the Sacramento River Cats and Save our Water for advertisements and promotional flyers, and collateral materials such as garden gloves, lawn signs, pledge banner and T-shirts. RWA also hosts a Speakers Bureau promoting water efficiency and training. The schedules for implementation of all events related to public information programs are ongoing.

### ***DMM H: School Education Programs***

Corresponding BMPs:

- CUWCC Education-School Information Programs BMP 2.1: School Education Programs; and
- Water Forum BMP 8: School Education.

In 2002, the City’s Water Conservation staff launched a school outreach program designed to teach children in second through sixth grades about the importance of water conservation. The hour-long program includes a water conservation video, various interactive activities and free materials such as activity booklets, stickers, pencils and water bottles.

The City participates in the RWA Water Efficiency Program (RWEF) Public Information Campaign. The RWEF has a regional outreach program coordinated with Support from a Public Outreach and School Education Committee comprised of RWEF member conservation coordinators and Public Information Officers. The overall goal of the RWEF is to maximize customer participation in water conservation programs. The RWEF program has focused mainly on K-8 programs. RWEF has continued to use the legacy Sacramento Bee NIE, now called Media in Education (MIE) program that originated in 1995 as part of the Sacramento Area Water Works Association (SAWWA) program in order to meet the baseline requirements for school education outreach. It includes an annual Water Conservation Pledge and Quiz Contest. It is estimated that a total of 33,932 have been educated since inception.

In fiscal year 2011, RWEF embarked on a new program, in partnership with the BuRec's American River Water Education Center, and the Water Education Foundation to include sponsorship of Project WET schoolteacher workshops. A total of 25 teachers attended the first workshop in April 2011. RWA is currently evaluating whether a more effective school program that will reach more students is warranted.

Implementation of all programs is ongoing.

***DMM I: Conservation Programs for Commercial, Industrial and Institutional Accounts.***

Corresponding BMPs:

- CUWCC Commercial, Industrial, and Institutional BMP 4: Commercial, Industrial and Institutional;
- Water Forum BMP 9: Commercial, Industrial (CI) Water Conservation; and
- Water Forum BMP 16: Ultra-low Flush Toilet Replacement Program for Non-Residential Customers.

Since 2003, the City has offered and performed water use surveys for its commercial, industrial and institutional customers. The surveys include a site visit, evaluation of all water-using apparatus and processes and a report identifying recommended efficiency measures. The City has also participated in RWA's "Rinse and Save" program. Under this program, high-velocity, high-performance pre-rinse nozzles are installed free of charge in restaurants. Use of these nozzles reduces the amount of hot water needed to pre-rinse dishes for the dishwasher. Implementation of all programs is ongoing.

In 2003, the City began a CII ultra-low flow toilet (ULFT) replacement program which involved rebates from both the City and the County Sanitation District. In 2004, 90 toilets were replaced and 570 toilets were replaced in 2005.

In 2011, the City was awarded funding from the Proposition 50 Drought Assistance Grant expanding CII rebates to include the replacement of: ultra-low flow toilets, urinals, irrigation controllers, pre-rinse spray valves, and ice machines. The City will increase promoting these rebates in 2013.

Implementation is ongoing.

***DMM J: Wholesale Agency Programs***

Corresponding BMPs:

- CUWCC Utility Operations-Operations BMP 1.1.3: Wholesale Agency Assistance Programs;
- WFA: No corresponding BMP.

Currently (2012), the City has four wholesale agreements with other purveyors within the American River place of use. The City provides these purveyors with assistance in meeting their BMPs/DMMs, serving as a liaison with the Water Forum Successor Effort, helping customers accept BMP/DMM assistance, and improving awareness in water conservation.

The City's wholesale water service agreements have a built-in conservation incentive since the wholesale water charges are determined based on the amount of water delivered at a metered rate. In addition, all of the City's wholesale customers administer their own retail water conservation programs as noted above. The City provides conservation assistance to its wholesale customers via participation in the RWA's Regional Water Efficiency Program. The City pays annual dues to the RWA; a portion of the dues goes to funding the Program.

***DMM K: Conservation Pricing***

Corresponding BMPs:

- CUWCC Utility Operations-Pricing BMP 1.4: Retail Conservation Pricing; and
- Water Forum BMP 11: Conservation Pricing for Metered Accounts.

Only about seven percent of the City's total customer accounts are metered and billed based on usage. This is primarily because the City Charter has, until recently been superseded by State law (as discussed above), prohibited the metering of residential accounts. For the City's unmetered customers (primarily single-family and multi-family residential), the City currently bills a graduated flat monthly water rate based on the number of rooms in the residence. Non-residential unmetered customers are currently billed a flat monthly water rate depending on the type and size of establishment, although 90 percent of the City's nonresidential accounts currently receive metered service. For the City's metered customers (including commercial, industrial, institutional and irrigation), the City has a uniform water rate structure which includes a monthly basic service charge based on water meter size and a monthly water use charge based on actual monthly water use.

Sewer service rates also have a similar structure. Unmetered residential and other customers are billed based on a flat monthly sewer rate based on the number of rooms in the residence or type and size of establishment. Metered customers are billed based on a uniform sewer rate structure based on water meter size and actual monthly water use.

As described in DMM 4, State law requires installation of water meters on all new connections (Water Code Section 525), as well as the retrofit of all existing unmetered connections not later than January 1, 2025 (Water Code Section 527). Section 527 also requires that urban water suppliers charge metered rates to customers that have water service connections for which meters have been installed, beginning not later than January 1, 2010 (provided that metered billing may be delayed for one annual seasonal cycle of water use for services being converted from flat rate to metered billing).

Customers with meters installed prior to January 1, 2009, were switched to meter billing in 2010. Those with meters installed after January 1, 2009, will receive one calendar year of comparative billing before being switched to a metered rate. The City anticipates developing some form of tiered water rate structure within the next five years. While moving metered customers from flat rates to metered rates provides a financial incentive for water conservation, tiered rates may provide further incentive. As more meters are installed, the City will monitor water usage characteristics of residential customers to ensure any new water rate structure is fair to customers and adequately recovers costs.

### ***DMM L: Water Conservation Coordinator***

Corresponding BMPs:

- CUWCC Utility Operations-Operations BMP 1.1.1: Conservation Coordinator; and
- Water Forum BMP 14: Water Conservation Coordinator.

The Department of Utilities Water Conservation Administrator manages the City's water conservation program and supervises a water conservation program staff of eight people, including administrative and field personnel. The City provides conservation assistance to its wholesale customers via participation in the RWA Regional Water Efficiency Program (Program) Advisory Committee. Implementation of this program is ongoing.

### ***DMM M: Water Waste Prohibition***

Corresponding BMPs:

- CUWCC Utility Operations-Operations BMP 1.1.2: Water Waste Prevention ; and
- Water Forum BMP 13: Water Waste Prohibition.

The Sacramento City Code (Title 13 Public Services, Chapter 13.04 Water Service System, Article XI Water Conservation) prohibits the waste or runoff of water, establishes various limits on outdoor water use, and specifies applicable penalties. The City originally adopted this ordinance in 1990 (Ordinance No. 90-017) and most recently revised it in 2009 (Ordinance No. 2009-050 and 2009-026).

The City also has Waste Water reporting method through customer service 3-1-1 or (916) 264-5011, and responded to 1,460 waste water calls in 2009 and 2,584 calls in 2010. Water waste prohibitions are ongoing. Additional drought restrictions would be enacted by the City if water supply conditions required additional conservation measures.

***DMM N: Residential Ultra-Low Flush Toilet Replacement Program***

Corresponding BMPs:

- CUWCC Residential BMP 3.4: WasteSense Specification (WSS); and
- Water Forum BMP 16: Ultra-Low Flush Toilet Replacement Program For Residential Customers.

In 2003, the City started a residential ultra-low-flush toilet replacement program in coordination with RWA. This program encourages the installation of ultra-low-flush toilets in older homes by offering a rebate for each replaced toilet. Up to a \$100 rebate is available, \$50 from the City and \$50 from the Sanitation District. The program requires a pre-inspection and a post-inspection. From 2008 to 2010, the City has provided rebates for 3,900 ultra-low flush toilets and high-efficiency toilet replacements. 74 high-efficiency urinals were also replaced through the rebate program. Implementation of the program is ongoing.

***Regulatory Context*****Federal*****U.S. Environmental Protection Agency (EPA)***

The EPA established primary drinking water standards in the Clean Water Act (CWA) Section 304 and states are required to ensure that potable water for the public meets these standards. Standards for 81 individual constituents have been established under the Safe Drinking Water Act, as amended in 1986. The U.S. EPA may add additional constituents in the future.

**State*****Water Management Planning Act***

California Water Code Section 10610 (et seq.) requires that all public water systems providing water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 AFA, must prepare an Urban Water Management Plan (UWMP). DWR provides guidance to urban water suppliers in the preparation and implementation of UWMPs. UWMPs must be updated at least every five years on or before December 31, in years ending in five and zero. The City adopted its most recent UWMP on November 14, 2006.

***Senate Bill 610 - Water Supply Assessments***

Senate Bill (SB) 610 was adopted in 2001 and reflects the growing awareness of the need to incorporate water supply and demand analysis at the earliest possible stage in the land use planning process. SB 610 amended the statutes of the Urban Water Management Planning Act, as well as the California Water Code section 10910 et seq.

A water supply assessment (WSA) is required for projects of a certain size and must include a discussion with regard to whether the total projected water supplies are available during normal, single dry and multiple dry water years during a 20-year projection.

The foundation document for compliance with SB 610 is the UWMP, which provides an important source of information for cities and counties as they update their general plans. Likewise, planning documents such as general plans and specific plans form the basis for the demand information contained in an UWMP, as well the water supply assessment.

### ***Senate Bill 221- Written Verification of Water Supply***

Government Code Section 66473.7(a)(1) requires an affirmative written verification of sufficient water supply prior to approval of a tentative map for projects meeting a certain size threshold. This verification, like the SB610 water supply assessment, must include documentation of historical water deliveries for the previous 20 years, as well as a description of reasonably foreseeable impacts of the proposed subdivision on the availability of water resources of the region.

### ***Drinking Water Quality***

The California Department of Public Health (DPH) is responsible for implementing the Federal Safe Drinking Water Act of 1974 and its updates, as well as California statutes and regulations related to drinking water. As part of their efforts, the DPH inspects and provides regulatory oversight for public water systems within California. In addition, in the Sacramento area the Central Valley Regional Water Quality Control Board (CVRWQCB) has the responsibility for protecting the beneficial uses of the state's waters, including groundwater, and these include municipal drinking water supply, as well as various other uses.

Public water system operators are required to regularly monitor their drinking water sources for microbiological, chemical, and radiological contaminants to show that drinking water supplies meet the regulatory requirements listed in Title 22 of the California Code of Regulations as primary maximum contaminant levels (MCLs). Primary standards are developed to protect public health and are legally enforceable. Among these contaminants are approximately 80 specific inorganic and organic contaminants and six radiological contaminants that reflect the natural environment, as well as human activities. Examples of potential primary inorganic contaminants are aluminum and arsenic, while radiological contaminants can include uranium and radium.

Public water system operators are also required to monitor for a number of other contaminants and characteristics that deal with the aesthetic properties of drinking water. These are known as secondary MCLs. Secondary standards are generally associated with qualities such as taste, odor, and appearance, but these are generally non-enforceable guidelines. However, in California secondary standards are legally enforceable for all new drinking water systems and new sources developed by existing public water suppliers. The public water system operators are also required to analyze samples for unregulated contaminants, and to report other contaminants that may be detected during sampling.

### ***20x2020 Water Conservation Plan***

In February 2010, the 20x2020 Water Conservation Plan was released as part of an effort to reduce stress on the environment of the Sacramento-San Joaquin Delta. The plan sets forth a statewide road map to maximize the state's urban water efficiency and conservation opportunities. The draft of this plan served as the basis for Senate Bill X7 7, which set a goal to achieve a 20 percent reduction in urban per capita water use in California by the year 2020. The law requires urban water suppliers to establish water conservation targets for the years 2015 and 2020.

The plan recommends nine categories of action to contribute to a statewide strategic approach of achieving the goals of the plan. These categories are (1) to establish a foundation for a statewide

conservation strategy, (2) reduce landscape irrigation demand, (3) reduce water waste, (4) reinforce efficiency codes and related BMP's, (5) provide financial incentives, (6) implement a statewide conservation public information and outreach campaign, (7) provide new or exercise existing enforcement mechanisms to facilitate water conservation, (8) investigate potential flexible implementation measures, and (9) increase the use of recycled water and non-traditional sources of water.

The 20x2020 Plan was developed through a collaborative effort consisting of State and Federal agencies including the Department of Water Resources, State Water Resources Control Board, California Energy Commission, Department of Public Health, California Public Utilities Commission, Air Resources Board, California Bay-Delta Authority, and the US Bureau of Reclamation.

### ***Assembly Bill 1465***

In 2009, the state legislature passed Assembly Bill 1465 requiring urban water suppliers to include their water demand management measures in the Urban Water Management Plan. Suppliers are required to describe opportunities to offset potable water use by utilizing water that is already available through stormwater recapture or recycled water use.

## **Local**

### ***City of Sacramento General Plan***

The City's 2030 General Plan Update contains policies and implementation measures relevant to the provision of water service. For water resources, some of the policies relevant to this issue include adopting a water policy for the city consistent with a long range adopted plan, developing and implementing financing strategies and arrangements, prioritizing funding infrastructure in depressed or infill areas, and providing water service that meets or exceeds State and Federal standards.

### ***City of Sacramento Design Standards***

Section 13 of the City's Design Standards sets forth requirements regarding the design and operation of water distribution facilities. Those requirements include standards for pipe design, fire hydrants, and specific requirements for residential, commercial and industrial water service.

## 4.4 Solid Waste

### *Introduction*

This section discusses the solid waste service providers operating within the Policy Area, local solid waste facilities (as shown in Figure 4-6), and Sacramento's solid waste generation rates.

As of September 1994, the City of Sacramento closed its landfill to the acceptance of municipal solid waste. The City is working with Conergy, a solar panel manufacturer and distributor, to create a solar park at the closed landfill site (City of Sacramento 2012b).

The City collects all residential solid waste for customers within the City. Refuse from the south region of the city is transported to the Sacramento Recycling and Transfer Station (SRTS) at 8491 Fruitridge Road and refuse collected in the north region is transported to the Sacramento County North Area Recovery Station (NARS). Refuse is then hauled from both locations to the Sacramento County Kiefer Landfill. Commercial solid waste is collected by private franchised haulers and disposed of at various facilities including the SRTS, the Sacramento County Kiefer Landfill, the Yolo County Landfill, L and D Landfill, Florin Perkins Landfill, Elder Creek Transfer Station, and the Sacramento County North Area Recovery Station. In addition to collecting municipal refuse every week, the City collects garden refuse on a weekly basis, which is delivered to the SRTS and the Elder Creek Transfer Station; collects curbside recycling every other week (as of July 1, 2013), which is brought to the SRTS; and offers a neighborhood cleanup collection and one dump coupon a year to each household.

### *Existing Conditions*

The waste stream generated in the city of Sacramento is over 420,000 tons per year, and includes everything from recycling to construction demolition material to garden refuse (City of Sacramento 2012c). The City collects approximately half of this waste (232,000) and the remainder is collected by private parties including franchised haulers and individual residents (City of Sacramento 2012c). Fifty percent of waste in the city is diverted from landfills (Thoma 2012).

In 2011, the City collected approximately 217,000 tons of refuse from residential sources, and almost 15,000 tons of refuse from commercial sources (Thoma 2012). Residential sources include all residences of one to four attached units (e.g., single family homes, duplexes, triplexes and fourplexes) and all condominiums, regardless of number of units. Multifamily residences with five units or more are considered commercial, and thus served by private haulers franchised by the Sacramento Solid Waste Authority (SWA). Just over half of the residential waste and 13,000 tons of the commercial waste were transported to landfills. (Thoma 2012) The remainder of the waste was diverted to alternative uses. The City also collected approximately 35,000 tons of residential curbside recycling, 1,200 tons of commercial recycling and 72,000 tons of garden refuse (Thoma 2012; City of Sacramento 2012c; City of Sacramento 2012f). Other sources of solid waste include scheduled pickups, neighborhood cleanup, and street sweeping. The City of Sacramento has met or exceeded the State's annual per capita disposal rate per resident (6.9 pounds per person per day) and per employee (10.8 pounds per person per day) since 2007 when the State established the targets (set at 50 percent of the 2006 disposal rate; CalRecycle 2012a). In 2011 the annual per capita disposal rate was at a low of 5.0 pounds per resident per day and 8.1 pounds per employee per day (CalRecycle 2012a). In the Sacramento Climate Action Plan adopted in 2012, the City of Sacramento committed to the goal of achieving 75 percent waste diversion by 2020

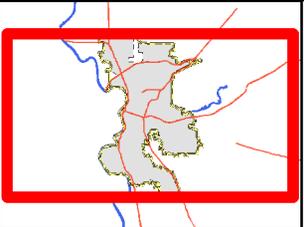
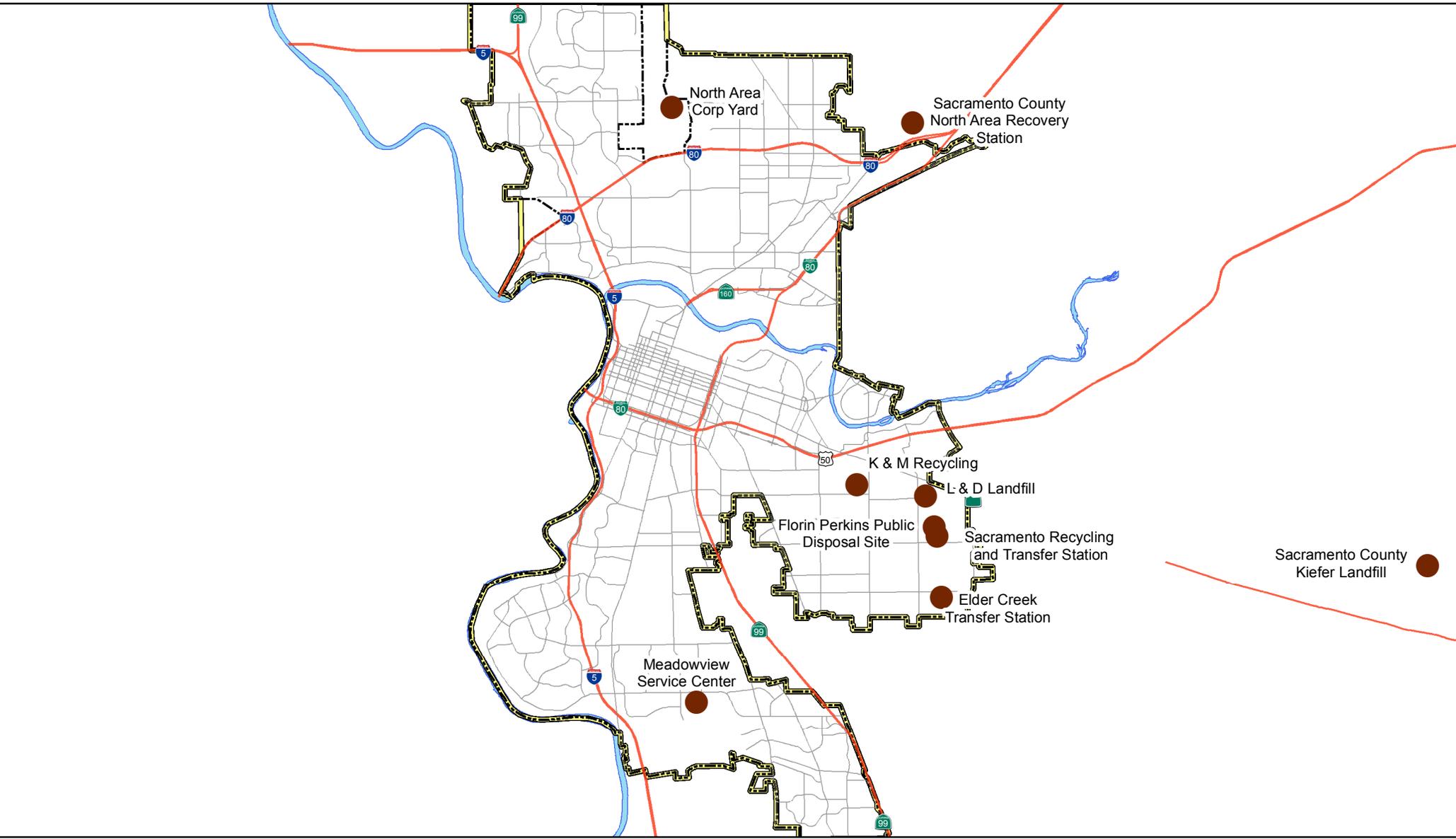
and zero waste to landfills by 2040 (City of Sacramento 2012a). To help reach this goal, the City of Sacramento committed to using 100 percent recycled paper, reducing paper use by printing and copying double-sided and using electronic documents where feasible, and reducing toner use by printing in draft mode. The City also adopted policies to recycle as many waste materials as possible and to restrict the purchase of bottled water.

On June 26, 2012, the City of Sacramento Recycling and Solid Waste Division presented the 2012 Business Plan to the City Council (SWRD 2012). Staff recommended that the Recycling and Solid Waste Division discontinue commercial waste collection and recycling services in order to focus on residential services and to avoid a 37 percent rate increase. The City discontinued commercial waste services on August 3, 2012. The Business Plan recommended reducing curbside recycling from weekly to biweekly collection, implementing year-round containerized yard waste collection (Measure T passed on November 6, 2012), providing loose-in-the-street (LITS) yard waste collection service during leaf season, increasing staffing and equipment for the illegal dumping cleanup program, and adding a pilot “dump coupon” program allowing residents to deliver up to five cubic yards of waste to the Sacramento Recycling and Transfer Station at no charge. The Business Plan also recommended restoring the Appointment Based Neighborhood Cleanup Program which allows residents to schedule one appointment per year between February and October for the collection of large refuse items. The City anticipates adopting the changes as part of the City’s Municipal Code in mid-2013, with service changes scheduled to go into effect July 1, 2013. The proposed changes will reduce carbon emissions generated by the City’s solid waste fleet by an estimated five percent, reduce fuel consumption by 83,000 gallons, and reduce truck miles traveled on City streets by 87,000 miles annually.

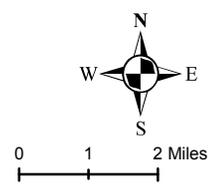
The City of Sacramento also operates a street sweeping service which sweeps more than 150,000 miles of public right-of-way every year, provides information and resources for residents interested in backyard composting, and offers household hazardous waste drop-off at the Sacramento Recycling and Transfer Station at no charge for most materials (City of Sacramento 2012d). The City provides public outreach for recycling through presentations at schools, clubs, church groups, and community groups.

The Sacramento County Kiefer Landfill is the primary location for the disposal of waste by the City of Sacramento. The landfill accepts municipal waste and industrial waste and is permitted to accept up to 10,815 tons per day, averaging 6,300 tons per day (CalRecycle, Solid Waste Facility Permit 34-AA-0001). This is further limited, however, by Section 17, Condition 26 and Table 2 of Kiefer’s Solid Waste Permit, which limits the 2013 peak to 5,928 TPD and average to 3,487 TPD. The landfill received over 658,000 tons in 2012 (Sacramento County). It is the only landfill facility in Sacramento County permitted to accept household waste from the public. Current peak and average daily disposal is much, much lower than the current permitted amounts. As of 2012, 305 acres of the 660 acres contain waste (County of Sacramento 2012d). As a result, the Kiefer Landfill should be able to serve the area until the year 2065. The landfill facility sits on 1,084 acres.

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- Legend**
- Major Roads
  - Highways
  - - - City Limits
  - ▭ Policy Area
  - ▭ Waterways
  - Solid Waste Facilities



Data Source: City of Sacramento, 2012;

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## *Regulatory Context*

### **Federal and State**

#### ***Title 40 of the Code of Federal Regulations***

Title 40 of the Code of Federal Regulations (CFR), Part 258 (Resource Conservation and Recovery Act RCRA, Subtitle D) contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the Federal landfill criteria. The Federal regulations address the location, operation, design, groundwater monitoring, and closure of landfills.

#### ***California Integrated Waste Management Board***

The California Department of Resources Recycling and Recovery (CalRecycle), which replaced the California Integrated Waste Management Board on January 1, 2010, oversees, manages, and tracks waste generated in California. CalRecycle provides limited grants and loans to help California cities, counties, businesses, and organizations meet the State's waste reduction, reuse, and recycling goals. It also provides funds to clean up solid waste disposal sites and co-disposal sites (those accepting both hazardous waste substances and non-hazardous waste).

#### ***California Department of Resources Recycling and Recovery***

CalRecycle also develops, manages, and enforces waste disposal and recycling regulations. CalRecycle requires that the 50 percent diversion requirement established by AB 939 be measured in terms of per-capita disposal and goal measurement to comply with SB 1016.

#### ***Assembly Bill 939***

AB 939 (1989, Public Resources Code 41780) requires cities and counties to prepare integrated waste management plans (IWMPs) and to divert approximately 50 percent of solid waste from landfills. AB 939 also requires cities and counties to prepare Source Reduction and Recycling Elements as part of the IWMP. These elements outline programs to achieve diversion goals, stimulate local recycling in manufacturing, and stimulate the purchase of recycled products.

#### ***Senate Bill 1016***

SB 1016 (2008) requires that the 50 percent solid waste diversion requirement established by AB 939 be measured by pounds per person per day. SB 1016 changed the former California Integrated Waste Management Board review process for the Source Reduction and Recycling Elements. After establishing diversion rates for the calendar year, the Board reviews a jurisdiction's diversion rate compliance in accordance with a specified schedule. On January 1, 2018, CalRecycle will be required to review a jurisdiction's source reduction and recycling element and hazardous waste element once every two years.

### **Local**

#### ***City of Sacramento Zoning Ordinance***

Section 34 of the City's Zoning Ordinance requires multifamily and other nonresidential development projects to incorporate mitigation measures that address the recycling and reduction of solid waste for new land development. Such measures may also require retrofitting of existing development within two years of notification by the City to do so.

### ***City of Sacramento Construction and Demolition Debris Recycling Ordinance***

On March 1, 2009, the City adopted a Construction and Demolition Debris Recycling Ordinance. The ordinance applies to all building permits over \$250,000 in value, as well as all down-to-the-ground demolition permits. As of January 1, 2011, the ordinance was updated to include all new construction per the State's CALGreen building code update. Applicable projects must divert (i.e., recycle or reuse) 50 percent of all generated debris, then provide a waste log showing the 50 percent diversion requirement was met. The Ordinance also institutes a fee for filing the Waste Management Plan required for the City to issue a building permit.

### ***Sacramento Climate Action Plan***

The Sacramento Climate Action Plan, adopted in 2012, includes the goal of achieving 75 percent waste diversion by 2020 and zero waste to landfills by 2040.

## ***Findings***

- The City collects all of the residential waste within the City. This includes all residences of one to four attached units and all condominiums, regardless of number of units.
- All solid waste picked up by the City for landfill is transported to the Sacramento Recycling and Transfer Station and the Sacramento County
- North Area Recovery Station, where it is then hauled to the Sacramento County Kiefer Landfill.
- Kiefer Landfill is the primary municipal solid waste disposal facility for private haulers. The Kiefer Landfill received over 658,000 tons of waste in 2012 and has a permitted capacity of over 17 million cubic yards.
- The City offers multiple programs including biweekly curbside recycling, weekly garden refuse pickup, one appointment-based annual neighborhood cleanup for each household, and a dump coupon for each household as well.
- The City of Sacramento has met or exceeded the State's annual per capita disposal rate per resident and employee since the State established the targets in 2007.

## **4.5 Electricity**

### ***Introduction***

The Sacramento Municipal Utility District (SMUD) is responsible for the acquisition, generation, transmission and distribution of electrical service to customers for the City of Sacramento. SMUD's 900 square mile service territory also includes most of Sacramento County and a portion of Placer County. For the year ending December 2011, SMUD served a population of approximately 1.4 million with a total annual retail load of approximately 10.385 million megawatt-hours.

In 1923, citizens voted to create SMUD as a community-owned electric service. SMUD began service in 1947, once the California Supreme Court denied PG&E’s final petition to halt the sale of the electrical company in March 1946.

SMUD generates 1,745 megawatts (MW) of power and buys 1,192 MW of power to meet the region’s power demands. SMUD supplies power through a distribution grid that is a looped system, which provides for more reliable power.

*Existing Conditions*

**Power Supply Resources**

Table 4-4 shows information concerning SMUD’s power supply resources as of December 31, 2011. Capacity availability reflects rated or nameplate capacities at SMUD’s load center, as well as entitlement, firm allocations and contract amounts.

<b>Table 4-4 Power Supply Resources</b>	
<i>Source</i>	<i>Capacity Available (MW)<sup>1</sup></i>
<b>Generating Facilities</b>	
Upper American River Project (hydroelectric)	684
SMUD-Solano Wind Project <sup>2</sup>	48
Solar Photovoltaic <sup>2</sup>	1
<b>Sub-total:</b>	<b>733</b>
<b>Local Gas-Fired Plants:</b>	
SFA (Cosumnes)	500
SPA (Campbell Soup)	163
SPA (McClellan)	72
SCA (Procter & Gamble)	179
CVFA (Carson-Ice)	101
<b>Sub-total</b>	<b>1,015</b>
<b>Purchased Power</b>	
Western Area Power Administration	443
Iberdrola	130
Pacific Power & Light (“PP&L”)	100
Solano Wind	60
Iberdrola (PPM) Wind	35
Iberdrola (Simpson) Biomass	34
Avista	75
Other Long-Term Contracts	189
Committed Purchases <sup>3</sup>	125
<b>Sub-total<sup>4</sup></b>	<b>1,192</b>
<b>TOTAL<sup>4</sup></b>	<b>2,941</b>

Notes:

1. Available capacity is the net capacity available to serve SMUD’s system peak load.
  2. Solar and wind supply resources are intermittent and are shown at the average historical capacity over the past 3 years between 3:00 p.m. and 8:00 p.m., which SMUD considers its peak period.
  3. Committed Purchases are primarily purchased on a year-ahead to season-ahead basis from various sources.
  4. Totals may not add due to rounding.
- Source: SMUD, 2012.

## Power Resources

SMUD produces power through hydroelectric, thermal (natural gas), wind and solar resources. SMUD prepares an Integrated Resource Plan (IRP) that includes targets for system demand, system energy sales, renewable energy, and greenhouse gasses. The IRP evaluates various methods and options to meet SMUD's long-term needs and evaluates the impacts of various resource portfolios on SMUD's strategic policies.

### *Hydroelectric*

SMUD's Upper American River Project (UARP), a hydroelectric facility on the western slope of the Sierra Nevada, produced the majority of SMUD's generated power. This project is comprised of three relatively large reservoirs (Union Valley, Loon Lake and Ice House), eight small reservoirs, and eight powerhouses. The UARP was granted a 50-year license under the Federal Power Commission (FERC) in 1957. SMUD is currently in the process of renewing this license for an additional 50-year period. The relicensing process is anticipated to be complete in 2013.

### *Renewables*

SMUD operates the Solano Wind Project, two photovoltaic generating facilities, and two geothermal units. The power sources account for a small but important portion of the electricity generated by SMUD, since it is part of an effort to expand SMUD's renewable energy supplies.

### *Solano Wind Project*

In 2012 SMUD completed the third phase of the Solano Wind Project, which more than doubled the project's capacity for energy generation.

### *Solar Photovoltaic*

SMUD has installed approximately 1 MW of solar photovoltaic generating facilities in Placer County and other parts of the service territory, which accounts for less than 1 percent of SMUD's energy resources. SMUD contracts for 98.5 MW of solar resources through its Feed-in Tariff program.

### *Local Gas-Fired Plants*

SMUD currently has five local natural gas-fired plants in its service territory including the CVFA Carson Cogeneration Plant, the SCA Procter & Gamble Cogeneration Plant, the CPA Campbell South Cogeneration Plant, the SPA McClellan Gas Turbine Plant, and the Cosumnes Power Plant. The local gas-fired plants provide SMUD with needed voltage support and the reliability inherent in having power resources located close to demand loads. The cogeneration plants provide for efficient power and utilize waste heat from adjoining business uses. The McClellan Power Plant operates as a peaker power plant, which generally runs only when there is high demand, known as peak demand, for electricity. SMUD has a number of agreements to purchase and transport natural gas to these power plants. Some of the gas supply is from renewable sources such as landfill gas and digester gas, which is converted into usable natural gas and transported to SMUD facilities.

To deliver the natural gas to power plants, SMUD has constructed a natural gas pipeline, purchased an equity interest in two PG&E backbone gas transmission lines, and contracted for capacity on a number of existing interstate natural gas transmission lines.

SMUD has a number of power purchase agreements to help meet its power requirements. These agreements include biomass, small hydro, and wind energy from Pacific Northwest, and small hydro and biogas resources in the service territory and other parts of northern California. SMUD also has a contract to procure geothermal energy from Nevada, from a facility that is currently under construction.

### **Demand Side Management**

SMUD has sufficient resources to provide capacity and energy in the short term. In the long run, SMUD will need new resources to provide both capacity and energy, but energy efficiency and demand response will help meet those needs.

Early this year, SMUD wrapped up the installation of more than 600,000 smart meters throughout the service territory. This smart grid will help SMUD to integrate renewable resources into electrical service, reduce environmental impacts by reducing the number of SMUD vehicles on the road each day, by supporting renewable generation, by providing residents with information on how to reduce their energy consumption and by increasing energy efficiency. Now SMUD is working with the community partners to test smart-grid technologies. Under Smart Sacramento®, SMUD launched several pilot programs to test in-home displays (monitors energy use), Smart thermostats, energy-management systems and dynamic pricing – all of which are designed to help customers manage their energy use and save on electricity costs. Load management programs allow SMUD to reduce the load on the electric system by cycling residential air conditioners, and calling upon customer/industrial customers to curtail energy usage when energy usage is constrained during the summer or for system emergencies. Load management programs are projected to allow SMUD to reduce peak load by about 170 MW, or about 5 percent of SMUD’s maximum system peak demand.

SMUD will be expanding customer loan-program options and streamlining loan origination and servicing to make it easier for our residential customer to invest in energy efficiency.

In 2013, SMUD will expand the outreach to its commercial customers through the Complete Energy Solutions program, providing turnkey energy efficiency solutions for small to mid-sized businesses throughout the service area. The program offers rebates that cover up to 80 percent of project costs for small business and up to 60 percent for mid-sized businesses. Business customers also could save as much as 20 percent on their energy bills.

Automation equipment continued to be added to distribution lines to help control the grid and speed outage restoration work. SMUD completed automation of 40 substations in 2012 to allow for remote monitoring.

In 2012, the City adopted the Sacramento Climate Action Plan which establishes the goals to achieve zero net energy in all new construction by 2030 and achieve an overall 15 percent reduction in energy usage in all existing residential and commercial buildings by 2020 (City of Sacramento 2012c). In addition, the 2030 General Plan includes the goal of reducing energy demand 25 percent by 2030 compared to 2005 levels (City of Sacramento 2009). In 2008 the U.S. Department of Energy designated Sacramento as a Solar America City and in 2011 the City entered the Cool California Challenge to reduce the Sacramento’s carbon footprint. The City has completed several energy efficiency and renewable energy improvements, installing solar panels on four of its existing facilities and completing energy retrofits at all eight City-owned parking garages, the Central Library, and the

Pannell Meadowview Community Center (City of Sacramento 2012a). The City has also established a flat fee for residential and commercial solar projects and has continued to waive permit fees for solar photovoltaic systems and solar water heaters on existing residential developments.

The Sustainability Master Plan outlines the ways that the City of Sacramento will conserve energy (City of Sacramento 2007). The City has instituted policies to turn on lights and computers only when in use, to use only compact fluorescent bulbs, and to regulate the temperature of City facilities. The City also requires that its facilities are designed and operated to achieve the highest level of energy efficiency, with a minimum goal of a LEED silver rating.

## ***Regulatory Context***

### **Federal**

SMUD is not a public utility as defined by the Federal Power Act. Accordingly, FERC does not regulate SMUD's rates or terms and conditions of service. Instead, SMUD's rates are set by its Board of Directors. Although SMUD's rates, terms, and conditions of service are not regulated by FERC, SMUD's Board has adopted an open access transmission tariff that is substantially similar to the pro forma tariff adopted by FERC jurisdictional utilities.

#### ***Federal Energy Regulatory Commission***

The Federal Energy Regulatory Commission (FERC) is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines, and licenses hydropower projects. The Energy Policy Act of 2005 gave FERC additional responsibilities, including: promoting the development of a strong energy infrastructure; open access transmission tariff reform; and preventing market manipulation.

### **State**

#### ***California Public Utilities Commission***

The California Public Utilities Commission (CPUC) is a State agency created by constitutional amendment to regulate privately-owned telecommunications, electric, natural gas, water, railroad, rail transit, passenger transportation, and in-state moving companies. The CPUC is responsible for assuring California utility customers have safe, reliable utility services at reasonable rates. As a local publicly owned electric utility, SMUD does not fall within the jurisdiction of the California Public Utility Commission. Instead, SMUD is regulated by the Municipal Utility District Act (Public Utilities Code of the State of California, Division 6). SMUD's Board of Director establishes it policies and rate through a public process.

SMUD is also subject to the regulatory authority from the California Energy Commission (CEC). The CEC, created in 1974, is California's primary energy, policy and planning agency responsible for developing energy forecasts, developing and recommending state energy policies and managing certain energy research and renewable support mechanisms. The CEC has regulatory authority over SMUD with respect to baseload power plant emission performance standards, provision of energy data necessary for forecasting and planning, establishment of energy efficiency targets, enforcement of the renewable portfolio standard, and solar incentive program protocols. In addition the CEC has siting authority over thermal power plants 50 MW or above in the state, and SMUD's existing thermal power plants need CEC approval for changes in their license conditions.

### ***Senate Bill 1078***

The Renewables Portfolio Standard (RPS) program was established in 2002 by SB 1078 and was recently modified by in SBx1-2 in 2011. This latest bill established a 33 percent RPS requirement by 2020, included three "subcategories" of RPS procurement with specific minimums or maximums for those categories, required publicly-owned utilities (POU) to follow the state's RPS mandates, and established roles for the CEC and the Air Resources Board for enforcement of the mandates on POU's.

SMUD was the first large California utility to have 20 percent of its power supply come from resources classified as renewable and is on track to reach the 33-percent mark by 2020. At the end of 2012, roughly 32 percent of SMUD's power mix came from renewable sources including renewable generation serving 4 percent SMUD's customers from the voluntary Greenergy® program. Greenergy® provides customers the option to offset all or part of their energy usage with energy generated from renewable, natural sources such as the sun, wind, water, biological methane gas. This program enables our customer-owners to take an active role in making a choice for a cleaner, healthier environment, contribute to energy independence, and to reduce their carbon footprint. Factoring in the non-carbon emitting electricity generated in the Upper American River Project and SMUD's share of Western Area Power Administration's hydro, roughly 50 percent of SMUD's power comes from resources that don't emit carbon and increase greenhouse gases.

SMUD provides multiple Green Power programs for residential and commercial customers to help preserve natural resources and reduce pollution.

California Senate Bill 1 (SB 1), enacted in 2006, required a target of 3,000 MW of customer-sited solar energy systems to be installed within 10 years, and established goals to have solar energy systems installed on 50 percent of new residential developments and require funds to be collected and used for incentives for those distributed solar systems. SMUD has a program in place to offer of the required incentives over a 10-year period to achieve 125 MW of these installations, based on SMUD's proportionate share of statewide load. SMUD continues to work with the City of Sacramento and other jurisdictions within its service territory to site additional solar and other beneficial renewable resource projects.

In 2006, the Global Warming Solutions Act (AB 32) was signed into law, which required the California Air Resources Board (CARB) to adopt enforceable greenhouse gas emission limits and emission reduction measures in order to reduce greenhouse gas emissions to 1990 levels by 2020. As a part of this measure, CARB adopted cap-and-trade regulations in 2011. The cap-and trade program covers sources accounting for 85 percent of California's greenhouse gas emissions. Offset credits, obtained from ARB certified projects that reduce GHG emissions outside of the cap-and-trade program, will be allowed for up to 8 percent of entities' obligations. The new cap-and-trade system provides market

incentives for emissions reductions that complement other AB 32 programs, such as the Renewable Portfolio Standard for electric utilities.

SMUD was the first electric utility to support AB 32. As of January 2013, utilities and most of the state's industrial sector must hold "compliance instruments" for every ton of GHG emissions they produce. The state will issue a set- or capped-volume of carbon allowances which will shrink every year. Publicly owned utilities such as SMUD have been allocated allowances intended to cover emissions for serving their retail load and have the option of offering their carbon allowances for sale in quarterly state auctions. SMUD participated in the first and second held auctions held on November 14, 2012 and February 19, 2013. In between auctions there will be daily trading of California carbon allowances on secondary markets.

CARB also adopted a Low Carbon Fuel Standard (LCFS) in 2009. The LCFS seeks to achieve a 10 percent reduction in transportation fuels average carbon intensity by 2020. To address this measure, SMUD is working with SACOG and other local jurisdictions to support increased adoption and usage of plug-in electric vehicles (PEV) and to provide for PEV readiness within the region. This regional collaborative council provides for strategic planning of PEV facilities and public infrastructure, works with the local jurisdiction to streamline processes to enhance PEV infrastructure within the region and educates workforce professionals on rebates, products, and codes/regulations.

In 2009, the Legislature enacted the Sacramento-San Joaquin River Delta Reform Act (DRA). The DRA required the development of a comprehensive long-term management plan to provide a more reliable water supply for California and to protect, restore and enhance the Delta ecosystem. DRA created the Delta Stewardship Council (DSC) to develop a Delta Plan and directed the California State Water Resources Control Board (Water Board) to develop new flow criteria.

The Water Board released its proposed flow requirements in 2010, which proposed Delta outflow requirements of 75 percent unimpaired flow from January through June and unimpaired flow for Sacramento River inflow to the Delta of 75 percent from November to June. The report did not consider any balancing of public trust resources, e.g., effects on upstream fish, water or power interests. SMUD joined with a coalition of water and power users to study the impacts of the flow criteria. The study concluded that the flow criteria would have significant impact on the amount and timing of hydroelectric production for the State Water Project and the Central Valley Project. The study concluded that hydroelectric production from the Central Valley Project would decrease between 50 and 53 percent depending on annual water conditions. In addition, hydroelectric production generation would be increased by 50 percent in the spring months and correspondingly decreased product in the summer and fall months when it has greater value. SMUD's purchase power agreements would also be affected, as there would be a reduction in available power. The Water Board later conducted an informational proceeding to receive input regarding the flow objective report as well as other possible solutions for restoration of the ecosystem. At that proceeding, the Water Board indicated it would not implement the 75 percent solution.

On January 24, 2012, the Water Board noticed a proceeding to update the 2006 Water Quality Control Plan for the San Francisco/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan), which sets forth applicable water quality standards for Bay-Delta water sources. As part of this process, the Water Board held three workshops to receive input on particular topics, including told for evaluating hydropower impacts. At this writing, the Water Board has noticed a comment period on a summary of the workshop input. No water standards have yet been proposed.

The Water Board also has been conducting a separate proceeding on the San Joaquin River to update San Joaquin River flow and southern Delta water quality requirements included in the Bay-Delta Plan. On December 31, 2012, the Water Board released Draft Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the Bay Delta: San Joaquin River Flows and Southern Delta Water Quality for public review and comment.

Because the Water Board will institute water rights proceedings to implement its water quality standards on the Sacramento River and its tributaries once those standards are set, upstream water and power interests will remain involved to ensure impacts on water and power are considered and their interests are protected

### ***California Code of Regulations, Title 24***

Energy consumption of new buildings in California is regulated by State Building Energy Efficiency Standards, Title 24 contained in the California Code of Regulations, Title 24, Part 2, Chapter 2-53. Title 24 applies to all new construction of both residential and nonresidential buildings, and regulates energy consumed for heating, cooling, ventilation, water heating, and lighting. Title 24 is the minimum requirement for energy efficiency. Effective January 1, 2011, CALGreen is California's first green building standards code and a first-in-the-nation State-mandated green building code. It is formally known as the California Green Building Standards Code, Title 24, Part 11, of the California Code of Regulations. CALGreen establishes mandatory minimum green building standards and includes more stringent optional provisions known as Tier 1 and Tier 2. Cities and counties, at their discretion, may adopt Tier 1 or Tier 2 as mandatory or adopt and enforce other standards that are more stringent than the CALGreen Code. The City of Sacramento adopted Tier 1 Building Code standards for all new development, effective January 1, 2014.

## **Local**

### ***Sacramento Green Building Program***

In 2007 the Sacramento City Council adopted a Green Building Program to promote sustainable private development. The program includes previously adopted green building guidelines (i.e., LEED and GreenPoint), voluntary green building checklists for developers, and a Green Building Task Force.

### ***Sacramento Climate Action Plan***

In 2011 the Sacramento City Council adopted the Sacramento Climate Action Plan, which includes the goals to achieve zero net energy in all new construction by 2030 and achieve an overall 15 percent reduction in energy use in all existing residential and commercial buildings by 2020. In addition, the 2030 General Plan includes the goal of reducing energy demand 25 percent by 2030 compared to 2005 levels.

### ***SMUD Transmission Guidelines***

In 2012, the SMUD Board of Directors adopted new Transmission Guidelines. The guidelines are designed to assist developers and engineers through the process of developing property within or adjacent to SMUD's existing electric transmission easements, assists in planning of new transmission lines, minimized potential negative impacts to SMUD's facilities, and increases public safety around transmission lines. The guidelines are an aid to streamline SMUD's plan review process.

## *Findings*

- SMUD provides electrical service to the City of Sacramento. SMUD is a leading utility in procuring renewable power, and has significant large hydro resources. The largest source of SMUD's generated power is from natural gas facilities. In addition, SMUD recently completed 98.5 MW of local solar contracts through a Feed-In Tariff and an addition to the Solar Wind Project.
- In 2007 the City of Sacramento adopted a Green Building Program which includes previously adopted green building guidelines (i.e., LEED and GreenPoint), voluntary green building checklists for developers, and a Green Building Task Force.

## **4.6 Natural Gas**

### *Introduction*

Pacific Gas & Electric Company (PG&E) provides natural gas service to residents and businesses within the Policy Area. This section describes the sources and transmission methods used to provide Sacramento with natural gas.

### *Existing Conditions*

PG&E supplies natural gas to the Sacramento area. During the winter, most natural gas resources are imported from Canada on a supply and demand basis, and the balance is supplied from California production wells.

During the summer, this ratio is reversed. During the summer, when gas prices are lower, gas is stored in underground holders for use during winter peak use periods.

In 2009 PG&E replaced Line 108, an 11 mile long natural gas transmission line, with a 24 inch diameter line, and installed a pressure limiting station at Elk Grove (Walker 2009). PG&E is currently working on additional improvements to this line in the Sacramento area. PG&E also recently installed approximately 25,000 feet of 12 inch transmission main through the former Mather Air Force base to a new Distribution Regulator Station located in Rancho Cordova that will supply power to East Sacramento.

PG&E is currently (2012) working on installing 12 miles of 30 inch pipe from the Placer Vineyard Development to Baseline Road in Roseville and installing 14.3 miles of 30 inch pipe in Yolo (PG&E 2011). PG&E will also replace 6,000 feet of 24 inch pipe from Meadowview to Morrison Creek. These improvements will reduce the overall cost of meeting customer load growth over the next 15 years, avoid stranded assets, and ensure reliable service to customers in Sacramento, El Dorado, South Sutter, and Placer counties.

PG&E created a comprehensive roadmap of natural gas safety actions to comply with the requirements of SB 705 (1998). The safety roadmap includes creating a "safety first" culture within the company; building a new advanced training facility; ensuring the company workforce is highly skilled; hiring additional workers to focus on safety; and increasing system awareness by combining the gas

transmission control center, distribution control center, and dispatch center into one facility for a tightly coordinated front line (PG&E 2012). PG&E has also completed critical gas safety work to validate maximum allowable operating pressure, to automate pipeline valves, to conduct strength testing, and to establish real-time operating data as a trigger for 911 notification. The utility has not identified any major service problems within the city. Additional improvements are generally made as the need arises to meet customer demand.

## *Regulatory Context*

### **Federal**

#### *Federal Energy Regulatory Commission*

The Federal Energy Regulatory Commission (FERC) is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines, and licenses hydropower projects. The Energy Policy Act of 2005 gave FERC additional responsibilities, including: promoting the development of a strong energy infrastructure; open access transmission tariff reform; and preventing market manipulation. State

### **State**

#### *California Public Utilities Commission*

The California Public Utilities Commission (CPUC) is a State agency created by constitutional amendment to regulate privately-owned telecommunications, electric, natural gas, water, railroad, rail transit, passenger transportation, and in-state moving companies. CPUC is responsible for assuring California utility customers have safe, reliable utility services at reasonable rates while also protecting utility customers from fraud. CPUC regulates the physical construction of electric generation, transmission, or distribution facilities, and the local distribution pipelines for natural gas (CPUC Decision 95-08-038). CPUC also regulates rates and charges for basic telecommunication services.

#### *California Energy Commission*

The California Energy Commission (CEC) is California's primary energy policy and planning agency. Created in 1974, it is charged with six major responsibilities:

- Energy forecasting;
- Promoting energy efficiency and conservation through appliance and building efficiency standards;
- Financially supporting public interest energy research ;
- Developing green energy resources and technologies for buildings, industry, and transportation;
- Licensing large thermal power plants; and
- Planning for state response to energy emergencies.

### ***California Energy Action Plan***

To ensure that adequate, reliable, and reasonably-priced electrical power and natural gas supplies are provided, CPUC and CEC prepared an Energy Action Plan in 2005. The goal of the EAP is to secure California's electricity and natural gas supply through policies, strategies, and actions that are cost-effective and environmentally sound. CPUC and CEC intend to achieve the following goals:

- Meet California's energy growth needs while optimizing energy conservation and resource efficiency and reducing per capita electricity demand;
- Ensure reliable, affordable, and high-quality power supply for all regions of the state by building sufficient new generation;
- Upgrade and expand electricity transmission and distribution infrastructure and reduce the time to bring needed facilities on line (it usually takes at least seven years to develop a new transmission facility);
- Promote customer and utility-owned distributed generation; and
- Ensure a reliable supply of reasonably priced natural gas.

### ***Senate Bill 705***

SB 705 (2011) requires California's gas corporations to provide periodic updates on gas system safety actions to CPUC. Gas corporations must prepare and submit a plan including measures to increase commission-regulated gas pipeline facility safety for CPUC review by December 31, 2012. The plan must describe how the gas corporation will implement the policies and achieve the specific objectives outlined in the document.

### **Local**

There are no local regulations directly applicable to natural gas.

### ***Findings***

- PG&E supplies natural gas to the Sacramento area. During the winter, most natural gas is imported from Canada, and the balance is supplied from California production wells.

## **4.7 Telecommunications**

### ***Introduction***

Telecommunication service to the city is provided by AT&T, Sprint, Comcast, Surewest, MetroPCS Wireless, Verizon Communications, Inc., Integra Telecom Holdings, Inc. (ITH), Digital Path, Inc., Frontier Communications Corporation, Level 3 Communications, LLC, and Earthlink Business

## *Existing Conditions*

### **AT&T**

In 2005 SBC acquired AT&T and kept the AT&T company name and branding for the merged entity (AT&T 2012a). AT&T Local Services supplies data communications, 911 service, high-speed local and long distance telephone service to most of the Sacramento Area. AT&T provides broadband technology, fiber optic cable, cable modem, and DSL services (NBM 2011a).

AT&T has already installed the majority of telecommunications facilities needed for service in Sacramento and generally completes additional improvements or relocations as the need arises to meet customer demand. AT&T plans to provide 4G LTE service, which provides faster mobile internet speeds, to Sacramento by the end of 2012 (AT&T 2012b).

### **Sprint**

Sprint supplies wireless and long distance telephone service to most of the Sacramento Area (NBM 2011i). Sprint serves the Sacramento area with a combination of underground facilities and above ground cellular towers. Sprint generally completes additional improvements or relocations as the need arises to meet customer demand.

### **Comcast**

Comcast provides local and long distance phone, high-speed internet, and cable television service to the Sacramento Area. Comcast serves the Sacramento area with a combination of underground and overhead fiber optic cable and copper coaxial cable (NBM 2011b). The signal is generated at a Digital Access Carrier system (DAC) in Denver and distributed to seven main hub sites throughout the service area, from which local service is distributed (Stokes 2012). Comcast generally completes additional improvements or relocations as the need arises to meet customer demand.

### **Surewest**

Surewest supplies local and long distance telephone service, wireless, digital television, and internet to the Sacramento Area (NBM 2011j). Surewest serves Natomas, Arden, East Sacramento, and Downtown Sacramento. Surewest also serves the areas of Carmichael, Fair Oaks, Citrus Heights, Antelope, and Elk Grove.. Services are provided for both commercial and residential customers (NBM 2011j). Types of service provided by Surewest vary throughout the Sacramento area. Surewest generally completes additional improvements or relocations as the need arises to meet customer demand.

### **MetroPCS Wireless, Inc.**

MetroPCS Wireless, Inc. (MetroPCS) provides high speed phone service to the Sacramento area (NBM 2011h). MetroPCS provides residential and commercial 4G LTE wireless services. MetroPCS generally completes additional improvements or relocations as the need arises to meet customer demand.

### **Verizon Communications, Inc.**

Verizon Communications, Inc. (Verizon) provides high speed phone and internet, and cable TV services to the Sacramento area (NBM 2011k). Verizon provides residential and commercial 4G LTE wireless and FiOS broadband internet services. Verizon generally completes additional improvements or relocations as the need arises to meet customer demand.

### **Integra Telecom Holdings, Inc.**

Integra Telecom Holdings, Inc. (ITH) provides data communications, internet feed, and local and long distance voice communication services to the Sacramento area for non-residential customers. ITH serves the Sacramento area with a combination of underground and overhead fiber optic cable and copper cable (NBM 2011f). The company has fiber optic connections to most AT&T switching sites. Some customer sites may be connected to ITH facilities using AT&T's T-1 connections. ITH generally completes additional improvements or relocations as the need arises to meet customer demand.

### **Digital Path, Inc.**

Digital Path, Inc. (DPI) provides high-speed phone and internet services to the entire Sacramento Area (DBM 2011c). DPI provides residential and commercial services through a network of microwave towers and relays running from the Bay Area to the northern edge of California (DPI 2012). DPI generally completes additional improvements or relocations as the need arises to meet customer demand.

### **Frontier Communications Corporation.**

Frontier Communications Corporation (FC) provides high speed phone and internet, and Dish TV services to certain areas in South Sacramento near Meadowview and Elk Grove (NBM 2011e). FC provides residential and commercial services through fiber optic cable and Asymmetric xDSL (NBM 2011d). FC generally completes additional improvements or relocations as the need arises to meet customer demand.

### **Level 3 Communications, LLC.**

Level 3 Communications, LLC (L3C) provides high speed phone and internet services to only a few areas in Natomas and Arden (NBM 2011g). L3C provides commercial broadband technology fiber optic cable, cable modem, and DSL services (NBM 2011g). L3C generally completes additional improvements or relocations as the need arises to meet customer demand.

### **Earthlink Business.**

Earthlink Business (Earthlink) provides high speed internet services to select businesses throughout the Sacramento area. In 2006, Earthlink acquired New Edge Holding Company to provide virtual private network (VPN) services to commercial customers using various broadband access technologies including all types of DSL, Frame Relay, ATM, cable modems, and satellite (NEN 2006; NBM 2011d). Earthlink generally completes additional improvements or relocations as the need arises to meet customer demand.

## *Regulatory Context*

### **Federal**

#### ***Federal Communications Commission***

The Federal Communications Commission (FCC) regulates interstate and international communications by radio, television, wire, satellite, and cable in the United States. It was founded through the Communications Act of 1934 and operates as an independent agency overseen by the United States Congress. The Federal Advisory Committee Act of 1972 put in place a process for establishing, operating, overseeing, and terminating FCC advisory committees for specific aspects of communications. FCC is made up of six separate bureaus: Consumer & Governmental Affairs, Enforcement, Media, Public Safety & Homeland Security, Wireless Telecommunications, and Wireline Competition. Together, these bureaus are responsible for adopting and modifying rules/regulations that govern business practices, including interpretive rules, policy statements, substantive legislative rules, and organizational/procedural rules. State

#### ***California Public Utilities Commission***

The California Public Utilities Commission (CPUC) is a State agency created by constitutional amendment to regulate privately owned telecommunications, electric, natural gas, water, railroad, rail transit, passenger transportation, and in-state moving companies. CPUC is responsible for assuring California utility customers have safe, reliable utility services at reasonable rates while also protecting utility customers from fraud. CPUC regulates the planning and approval for the physical construction of electric generation, transmission, or distribution facilities; and local distribution pipelines of natural gas (CPUC Decision 95-08-038). CPUC also regulates rates and charges for basic telecommunication services.

#### ***California Government Code 4216 4216.9***

The responsibilities of persons excavating in the vicinity of underground utilities are detailed in Section 1, Chapter 3.1 “Protection of Underground Infrastructure,” Article 2 of California Government Code 4216 4216.9. This law requires that an excavator must contact a regional notification center at least two days prior to excavation of any subsurface installation. Underground Service Alert will notify the utilities that may have buried lines within 1,000 feet of the project. Representatives of the utilities are required to mark the specific location of their facilities within the work area prior to the start of project.

### **Local**

#### ***Sacramento City Code***

As outlined in Section 3.76.050 of the City Code, the City of Sacramento issues revocable permits to Telecommunications Wireless Carriers to install and operate wireless telecommunications facilities on properties owned by the City. To obtain this permit, carriers file an application with the City and pay application fees, inspection fees, and an annual rent.

## *Findings*

- There are several areas within the Sacramento Sphere of Influence that satisfy both the parcel density and low income thresholds necessary to be considered a fringe DUC, including Freeport, Rosemont/La Riviera, and Fruitridge Pocket/Lemon Hill/Parkway/Florin Area.
- State law requires that cities and counties assess whether there are infrastructure and service deficiencies within identified DUCs for sewer, water, and structural fire. If deficiencies are identified, cities and counties must identify potential funding sources that could make the extension of services to the identified DUC financially feasible.