

Annex O Sacramento Regional County Sanitation District

O.1 Introduction

This Annex details the hazard mitigation planning elements specific to Sacramento Regional County Sanitation District (SRCSD, Regional San, or District), a previously participating jurisdiction to the 2016 Sacramento County Local Hazard Mitigation Plan (LHMP) Update. This Annex is not intended to be a standalone document, but appends to and supplements the information contained in the Base Plan document. As such, all sections of the Base Plan, including the planning process and other procedural requirements apply to and were met by the District. This Annex provides additional information specific to Regional San, with a focus on providing additional details on the risk assessment and mitigation strategy for this District.

O.2 Planning Process

As described above, Regional San followed the planning process detailed in Chapter 3 of the Base Plan. In addition to providing representation on the Sacramento County Hazard Mitigation Planning Committee (HMPC), the District formulated their own internal planning team to support the broader planning process requirements. Internal planning participants, their positions, and how they participated in the planning process are shown in Table O-1. Additional details on plan participation and District representatives are included in Appendix A.

Table O-1 Regional San – Planning Team

Name	Position/Title	How Participated
Steve Nebozuk	Senior Civil Engineer	HMPC: collect data, draft text, review documents, attend meetings
Vyomini Upadhyay	Associate Civil Engineer	HMPC: collect data, draft text, review documents, attend meetings
Piper Crawford	Assistant Civil Engineer	HMPC: collect data, draft text, review documents, attend meetings
Bryan Young	Natural Resource Supervisor	Natural Resource Updates: draft text, review documents
Roger Jones	Senior Natural Resources Specialist	Natural Resource Updates: draft text, review documents
Jack Naves	GIS Analyst 3	GIS data collection
William Yu	Senior Civil Engineer	Information on EchoWater costs
Raul Rodriguez	GIS Analyst 2	Update Hazard tables based on new hazard layers

Coordination with other community planning efforts is paramount to the successful implementation of this LHMP Update. This section provides information on how the District integrated the previously approved

2016 Plan into existing planning mechanisms and programs. Specifically, the District incorporated into or implemented the 2016 LHMP through other plans and programs shown in Table O-2.

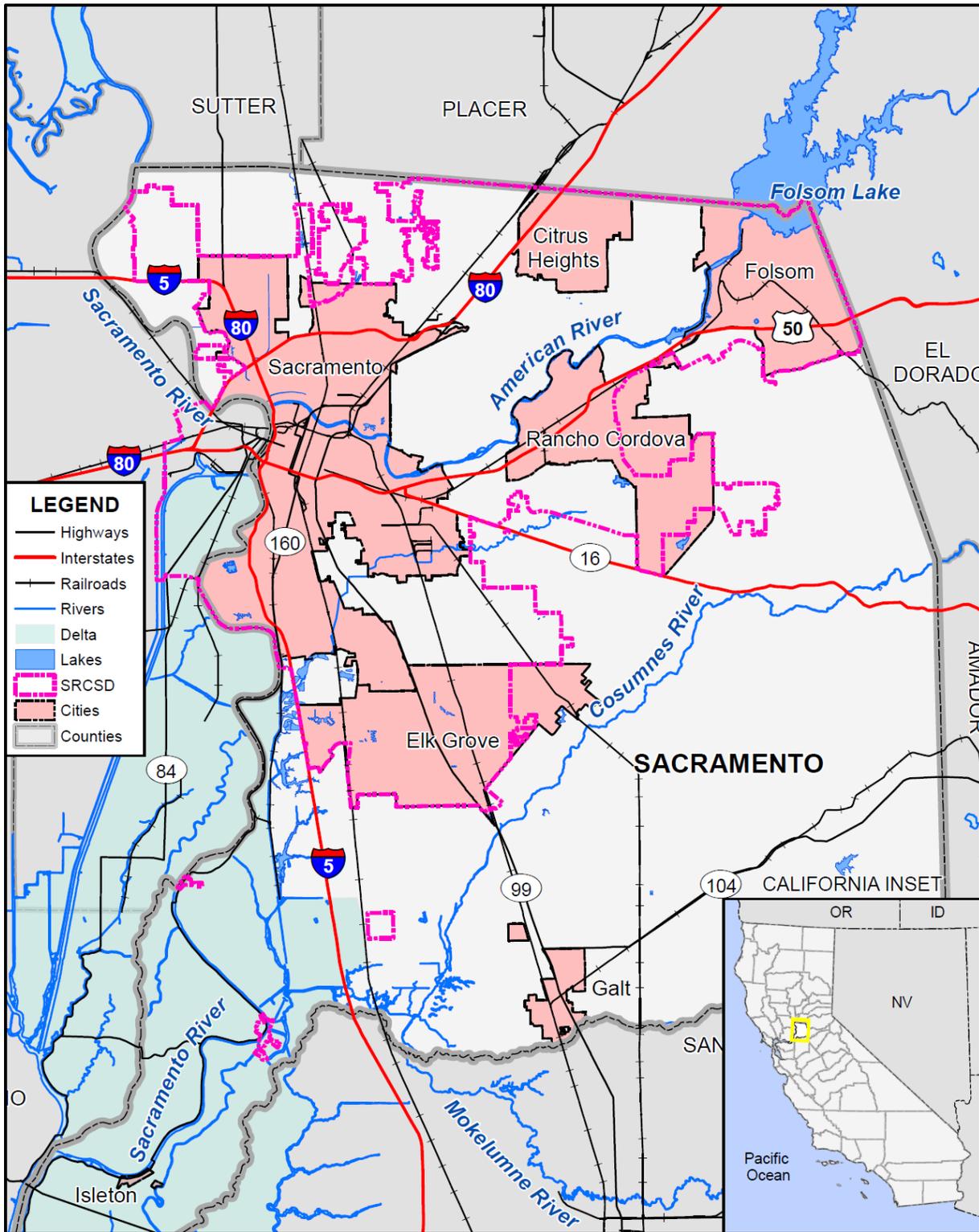
Table O-2 2016 LHMP Incorporation

Planning Mechanism 2016 LHMP Was Incorporated/Implemented In.	Details: How was it incorporated?
N/A	No mitigation related planning mechanisms have been completed since 2016.

O.3 District Profile

The District profile for Regional San is detailed in the following sections. Figure O-1 displays a map and the location of the District within Sacramento County.

Figure O-1 Regional San



FOSTER MORRISON
CONSULTING

SACRAMENTO
COUNTY

Data Source: Sacramento Regional County Sanitation District, Sacramento County GIS, Cal-Atlas; Map Date: 09/2020.

O.3.1. Overview and Background

The following is a brief history about the Sacramento Regional County Sanitation District.

Following World War II, the Sacramento region grew, and wastewater treatment plants were built along the Sacramento and American Rivers to accommodate the population increase. In the early 1970s, 22 separate wastewater collection and treatment systems collected and treated the wastewater for the 600,000 residents of the Sacramento region. All of the plants discharged into local waterways, and many discharged into the American River.

In 1973, the County of Sacramento and the City of Sacramento joined forces and, together with the City of Folsom, formed the Sacramento Regional County Sanitation District. The Regional San assumed responsibility for wastewater treatment facilities, which were operated by the County's Water Quality Division. As a result, \$460 million was invested in development of a regional wastewater collection and treatment program. A regional system of interceptor pipelines gathered sewage flow from various areas and conveyed the flow to the County Central Plant in Elk Grove.

In 1976, with one of the largest single grants in the nation under the Federal Water Pollution Control Act Amendments of 1972, commonly known as the Clean Water Act, the District upgraded the County Central Plant and entered into construction contracts to build the Sacramento Regional Wastewater Treatment Plant (SRWTP), the City Interceptor and the Emergency Storage Basins. Construction of the SRWTP was completed in 1982 and the facility began treating 136 million gallons per day. The SRWTP was designed to be a pure oxygen activated sludge treatment plant that provided secondary treatment and disinfection.

Regional San provides wastewater service to the cities of Sacramento, Citrus Heights, Folsom, Ranch Cordova and Elk Grove, and the unincorporated area of Sacramento County. In 2007, the City of West Sacramento, in Yolo County, connected to the Regional San system. In 2010, the Delta communities of Courtland and Walnut Grove were connected to the Regional San system.

December 9, 2010, the Central Valley Regional Water Quality Control Board adopted a new NPDES permit for the SRWTP. This permit mandates strict new standards for the SRWTP requiring nutrient removal and filtration. Regional San has initiated the EchoWater Project. Per the terms of the permit, the EchoWater Project has to be constructed and operational beginning in 2021 for nutrient removal and by 2023 for filtration. The estimated cost for the EchoWater Project is \$1.7 billion.

Today, as the only regional provider of sewer collection and treatment services for the greater Sacramento area, Regional San continues to maintain its status as a leader in environmental stewardship through quality service and efficient projects and programs.

Regional San provides sewer service to the cities of Citrus Heights, Elk Grove, Folsom, Rancho Cordova, Sacramento, West Sacramento, the unincorporated areas of Sacramento County and portions of Yolo County.

O.4 Hazard Identification

Regional San identified the hazards that affect the District and summarized their location, extent, frequency of occurrence, potential magnitude, and significance specific to District (see Table O-3).

Table O-3 Regional San—Hazard Identification Assessment

Hazard	Geographic Extent	Likelihood of Future Occurrences	Magnitude/Severity	Significance	Climate Change Influence
Climate Change	Extensive	Likely	Negligible	Low	–
Dam Failure	Significant	Unlikely	Catastrophic	High	Medium
Drought & Water Shortage	Extensive	Likely	Limited	Low	High
Earthquake	Extensive	Occasional	Catastrophic	Low	Low
Earthquake Liquefaction	Limited	Occasional	Critical	Low	Low
Floods: 1%/0.2% annual chance	Significant	Unlikely	Negligible	Low	Medium
Floods: Localized Stormwater	Extensive	Highly Likely	Negligible	Low	Medium
Landslides, Mudslides, and Debris Flow	Limited	Unlikely	Negligible	Low	Medium
Levee Failure	Extensive	Unlikely	Critical	High	Medium
Pandemic	Extensive	Likely	Negligible	Medium	Low
Severe Weather: Extreme Cold and Freeze	Extensive	Highly Likely	Limited	Low	Medium
Severe Weather: Extreme Heat	Extensive	Highly Likely	Negligible	Low	High
Severe Weather: Heavy Rains and Storms	Extensive	Highly Likely	Negligible	Low	Medium
Severe Weather: Wind and Tornado	Extensive	Highly Likely	Negligible	Low	Low
Subsidence	Significant	Highly Likely	Negligible	Low	Medium
Volcano	Extensive	Unlikely	Negligible	Low	Low
Wildfire	Significant	Highly Likely	Negligible	Medium	High
Geographic Extent Limited: Less than 10% of planning area Significant: 10-50% of planning area Extensive: 50-100% of planning area		Magnitude/Severity Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid			
Likelihood of Future Occurrences Highly Likely: Near 100% chance of occurrence in next year, or happens every year. Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less. Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years. Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.		Significance Low: minimal potential impact Medium: moderate potential impact High: widespread potential impact			
		Climate Change Influence Low: minimal potential impact Medium: moderate potential impact High: widespread potential impact			

O.5 Hazard Profile and Vulnerability Assessment

The intent of this section is to profile the District’s hazards and assess the District’s vulnerability separate from that of the Sacramento County Planning Area as a whole, which has already been assessed in Section 4.3 Hazard Profiles and Vulnerability Assessment in the Base Plan. The hazard profiles in the Base Plan discuss overall impacts to the Sacramento County Planning Area and describes the hazard problem, hazard location and extent, magnitude/severity, previous occurrences of hazard events and the likelihood of future occurrences. Hazard profile information specific to the District is included in this Annex. This vulnerability assessment analyzes the property and other assets at risk to hazards ranked of medium or high significance specific to the District. For more information about how hazards affect the County as a whole, see Chapter 4 Risk Assessment in the Base Plan.

O.5.1. Hazard Profiles

Each hazard vulnerability assessment in Section 0, includes a hazard profile/problem description as to how each medium or high significant hazard (as shown in Table O-3) affects the District and includes information on past hazard occurrences and the likelihood of future hazard occurrence. The intent of this section is to provide jurisdictional specific information on hazards and further describes how the hazards and risks differ across the Sacramento County Planning Area.

O.5.2. Vulnerability Assessment and Assets at Risk

This section identifies the District’s total assets at risk, including values at risk, populations at risk, critical facilities and infrastructure, natural resources, and historic and cultural resources. Growth and development trends are also presented for the District. This data is not hazard specific, but is representative of total assets at risk within the District.

Assets at Risk and Critical Facilities

This section considers the Regional San’s assets at risk, with a focus on key District assets such as critical facilities, infrastructure, and other District assets and their values. With respect to District assets, the majority of these assets are considered critical facilities as defined for this Plan. Critical facilities are defined for this Plan as:

Any facility, including without limitation, a structure, infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in severe consequences to public health and safety or interrupt essential services and operations for the community at any time before, during and after the hazard event.

A critical facility is classified by the following categories: (1) Essential Services Facilities, (2) At-risk Populations Facilities, (3) Hazardous Materials and Solid Waste Facilities.

Table O-4 lists critical facilities and other District assets identified by the District Planning Team as important to protect in the event of a disaster. Regional San’s physical assets, valued at over \$5.8 billion, consist of the buildings and infrastructure to support the District’s operations.

Table O-4 Regional San Critical Facilities, Infrastructure, and Other District Assets

Name of Asset	Facility Type	Replacement Value	Which Hazards Affect the Asset?
Underground Pipeline, Structures, Equipment and Appurtenances ⁽²⁾	Essential	\$2,221,657,200	Dam failure, Levee failure, Flood
S94 – Regional Wastewater Treatment Plant	Essential	\$2,826,033,042 ⁽⁴⁾	Dam failure, Levee failure, Flood, Severe Weather
SRWTP Perimeter Levee	Essential	\$11,445,347	Dam failure, Levee failure, Flood, Earthquake
SRWTP Outfall Facility	Essential	\$16,737,266	Dam failure, Levee failure, Flood, Earthquake?
N50 – South River Pump Stn	Essential	\$125,925,748	Dam failure, Levee failure, Flood, Severe Weather
N51 – New Natomas Pump Stn	Essential	\$109,050,972	Dam failure, Levee failure, Flood, Severe Weather
N40 – Iron Point Pump Stn	Essential	\$15,831,075	Dam failure, Levee failure, Flood, Severe Weather
N52 – Power Inn Pump Stn	Essential	\$9,595,578	Dam failure, Levee failure, Flood, Severe Weather
N19 – Arden Pump Stn	Essential	\$43,650,971	Dam failure, Levee failure, Flood, Severe Weather
N53 – Van Maren Pump Stn	Essential	\$26,557,887	Dam failure, Levee failure, Flood, Severe Weather
N27 – Sump 55 Facility	Essential	\$18,500,755	Dam failure, Levee failure, Flood, Severe Weather
N28 – Sump 119 Facility	Essential	\$17,777,768	Dam failure, Levee failure, Flood, Severe Weather
N29 – Sump 2/2A Facility	Essential	\$10,103,210	Dam failure, Levee failure, Flood, Severe Weather
N35 – Sump 76 Facility	Essential	\$4,024,703	Dam failure, Levee failure, Flood, Severe Weather
N43 – Roseville/Watt Liquid Waste Disposal Facility	High Potential Loss	\$4,350,180	Dam failure, Levee failure, Flood, Severe Weather
S33 – Cordova Pump Stn	Essential	\$18,663,866	Dam failure, Levee failure, Flood, Severe Weather
S55 – Northeast Pump Stn	Essential	\$1,329,255	Dam failure, Levee failure, Flood, Severe Weather
N15, N16 – Northeast Siphon	Essential	\$10,361,710	Dam failure, Levee failure, Flood, Severe Weather
Bufferlands and Environmental Mitigation Lands	Natural Resource	\$12,200,900	Fire, Dam failure, Levee failure, Flood, Severe Weather
Sims Ranch	Historic Resource	145,961	Fire, Dam failure, Levee failure, Flood, Severe Weather

Name of Asset	Facility Type	Replacement Value	Which Hazards Affect the Asset?
Nicolaus Dairy	Historic Resource	1,333,666	Fire, Dam failure, Levee failure, Flood, Severe Weather
Regional San Archeological Site CA-SAC-83	Cultural Resource	(3)	Fire, Dam failure, Levee failure, Flood, Severe Weather
Real Property, Land and Easements	Essential	\$71,051,726	
Buildings	Essential	\$223,987,995	
TOTAL		\$5,800,316,781	

Source: Regional San Finance, Engineering, and Policy and Planning Offices

(1) Asset value includes facility, site structures, site equipment, mobile equipment, miscellaneous items that may have soft cost components, some associated adjacent pipeline components. Values taken from Regional San 2010 Comprehensive Annual Financial Report, and engineering project reports. Values from the 2011 LHMP have been escalated 4% per year for inflation.

(2) Pipelines include gravity and force mains ranging in size from 36-inch to 144-inch. Structures and appurtenances include valves, vaults, junction structures, flow meters, and roller gates, etc.

(3) Costs for these sites have not been estimated.

(4) EchoWater costs are included in the Sacramento Regional Wastewater Treatment Plant value.

An inventory of facilities in the Regional San is summarized in Table O-5 and shown in Figure O-2.

Table O-5 Regional San Facilities: Summary Table

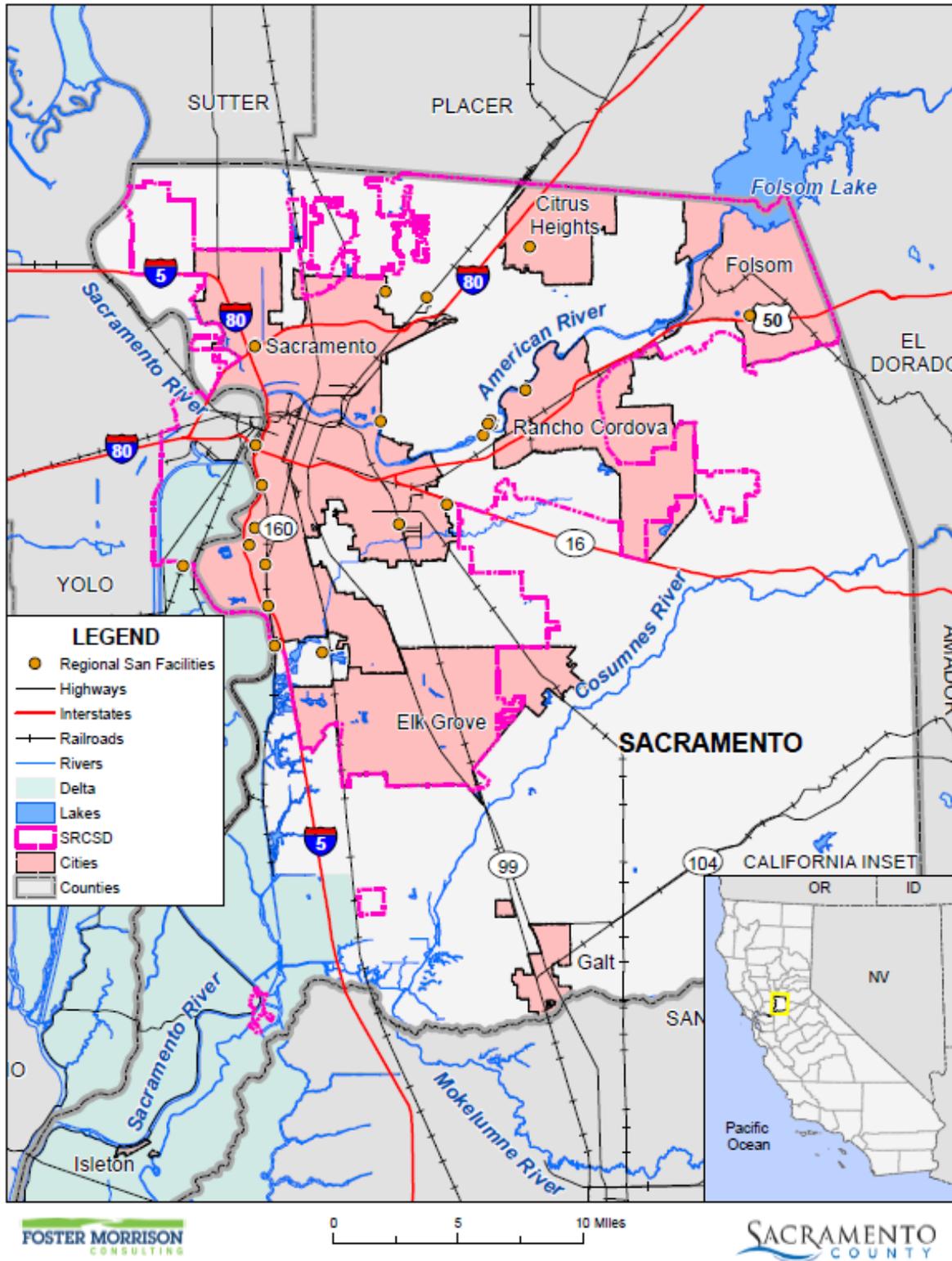
CF Definition Category	Type	Total by Location
Essential Services Facilities	Sewer Pipelines (1)	169 miles
Essential Services Facilities	Pipe Structures & Appurtenances (2)	27
Essential Services Facilities	Sewer Pump Stations	11
Essential Services Facilities	Siphon	1
Essential Services Facilities	Regional Wastewater Treatment Plant	1
Essential Services Facilities	SRWTP Perimeter Levee	1
Essential Services Facilities	SRWTP Outfall Facility	1

Source: Regional San

(1) Pipelines include gravity-flow pipes and force main pipes and range in size from 36-inch to 120-inch.

(2) Appurtenances include underground valves, vaults, junction structures, flow meters, and roller gates.

Figure O-2 Regional San Key Assets



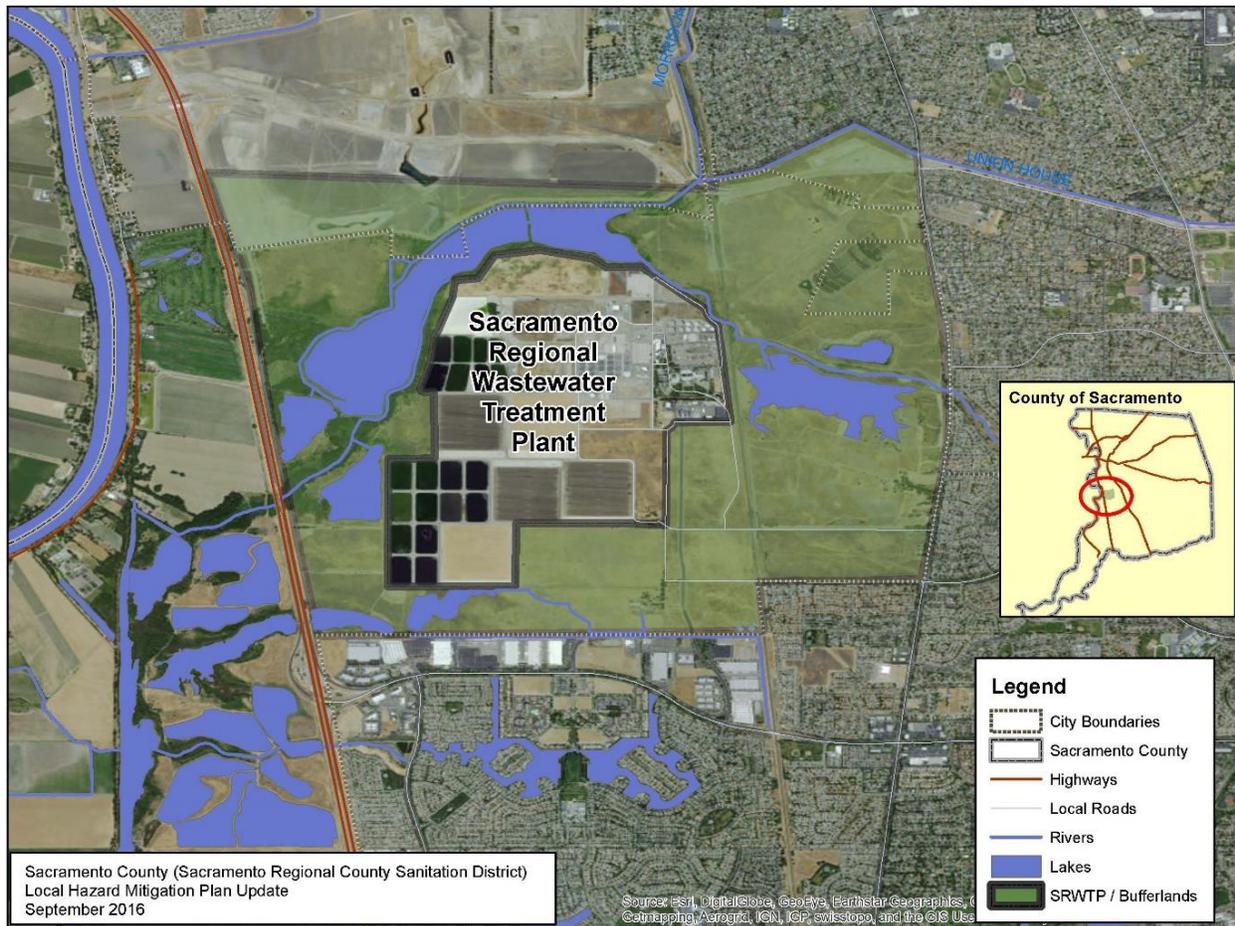
Natural Resources

Regional San has a variety of natural resources of value to the District. It is important for Regional San to operate its regional wastewater treatment facility in a manner so as to provide efficient and reliable service while minimizing impacts of the facility to the adjacent communities. In the 1970s, the District planned a large undeveloped buffer area between the Sacramento Regional Wastewater Treatment Plant and the surrounding residential neighborhoods in southern Sacramento County. That farsighted decision led to conservation of increasingly scarce wetlands, grasslands and riparian forest habitats on Regional San's 2,150 acres of Bufferlands. The District has the following natural resources of value to the local communities;

Regional San Bufferlands: Surrounding the Sacramento Regional Wastewater Treatment Plant in Elk Grove is the Bufferlands. This 2,150-acre expanse, shown in Figure O-3, of open space minimizes the potential for odor and other nuisances that could impact the surrounding neighborhoods. The Bufferlands has been developed into an important natural area that provides a large contribution of high quality wildlife habitat, farmland and open space. It provides a varied mix of upland and wetland habitats and important wildlife area, supporting over 240 species of birds, 25 species of mammals and several dozen native fish, amphibians and reptiles. The Bufferlands is also home to more than 20 species of rare plants (Table O-6) and animals (Table O-7) including several threatened and endangered species such as Swainson's hawks, burrowing owl, vernal pool fairy shrimp and giant garter snakes.

Through grant funding and mitigation efforts, Regional San has restored or created approximately 250 acres of managed seasonal wetlands, 100 acres of open water and emergent marsh, 350 acres of native grasslands, and the establishment of over 35,000 trees in restored riparian forests and oak woodlands covering nearly 250 acres. These restoration efforts augment the upland, wetland, and forest habitat that previously existed on the Bufferlands, including Laguna, Unionhouse, and Morrison Creeks, four small lakes, nearly 25 acres of vernal pools, approximately 50 acres of mature riparian forest, and hundreds of acres of annual grassland. Approximately 700 acres of the Bufferlands is leased for agricultural production. Row crop, hay crop, and rangeland leases are all managed to be compatible with conservation efforts occurring throughout the Bufferlands.

Figure O-3 Regional San Bufferlands



Source: Regional San, 2016

Table O-6 Special Status Plant Species that Occur or that May Occur on the Bufferlands

Species	Status*Federal/ State/CNPS	Habitats	Flowering Period
Dwarf downingia <i>Downingia pusilla</i>	X/X/2	Vernal pools and vernal wet areas in annual grasslands	March–May
Stinkbells <i>Fritillaria agrestis</i>	X/X/4	Clay depressions or other areas with heavy soils in chaparral, cismontane woodland, and annual grassland	March–April
Bogg's Lake hedge-hyssop <i>Gratiola heterosepala</i>	X/E/1B	Shallow water and margins of vernal pools	April–June
Ahart's dwarf rush <i>Juncus leiospermus var. abartii</i>	X/X/1B	Margins of vernal pools	March–May
Legenere <i>Legenere limosa</i>	X/X/1B	Vernal pools and other vernal wet areas	May–June
Pincushion navarretia <i>Navarretia myersii</i>	X/X/1B	Vernal pools	May

Species	Status*Federal/ State/CNPS	Habitats	Flowering Period
Slender orcutt grass <i>Orcuttia tenuis</i>	T/E/1B	Vernal pools	May–June
Sacramento orcutt grass <i>Orcuttia viscida</i>	E/E/1B	Vernal pools	May–June
Sanford's arrowhead <i>Sagittaria sanfordii</i>	X/X/1B	Ponds, ditches, marshes, and other shallow freshwater habitats	May–August

Source: Regional San, 2016

* Status explanations

Federal

E = listed as endangered under the federal Endangered Species Act.

T = listed as threatened under the federal Endangered Species Act.

SC = species of concern (species for which existing information may warrant listing but for which substantial biological information to support a proposed rule is lacking).

X = no status definition

State

E = listed as endangered under the California Endangered Species Act

X = no status definition

California Native Plant Society

1B = List 1B species (rare, threatened, or endangered in California and elsewhere).

2 = List 2 species (rare, threatened, or endangered in California but more common elsewhere).

4 = List 4 species (plants of limited distribution).

Table O-7 Special Status Wildlife Species that Occur or that May Occur on the Bufferlands

Species	Status* Federal/State	Habitats	Potential for Occurrence
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	T/X	Common in vernal pools; also found in sandstone rock outcrop pools.	Present
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	E/X	Vernal pools and ephemeral.	Present
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	T/X	Riparian and oak savanna habitats with elderberry shrubs; elderberries are host plant.	Present
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SC/SSC	Woodlands, grasslands, and open forests; occupies ponds, marshes, rivers, streams, and irrigation canals that have muddy or rocky bottoms and contain watercress, cattails, water lilies, or other aquatic vegetation	Present
Giant garter snake <i>Thamnophis gigas</i>	T/T	Sloughs, canals, and other small waterways where there is a prey base of small fish and amphibians; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter	Present
White-tailed kite <i>Elanus leucurus</i>	X/FP	Low foothills and valley areas with valley or live oaks, riparian areas, and marshes; requires access to open grasslands for foraging	Present

Species	Status* Federal/State	Habitats	Potential for Occurrence
Northern harrier <i>Circus cyaneus</i>	X/SSC	Grasslands, meadows, marshes, and seasonal and agricultural wetlands providing tall cover	Present
Swainson's hawk <i>Buteo swainsoni</i>	X/T	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields.	Present
Ferruginous hawk <i>Buteo regalis</i>	SC/SSC	Open terrain in plains and foothills where ground squirrels and other prey are available.	Present
Golden Eagle <i>Aquila chrysaetos</i>	X/FP	Forages in grasslands, deserts and other open terrain.	Present
Bald Eagle <i>Haliaeetus leucocephalus</i>	X/E	Forages near lakes, rivers, and coastlines where prey is abundant.	Present
American peregrine falcon <i>Falco peregrinus anatum</i>	E/E	Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes that support large populations of other bird species	Present
Greater sandhill crane <i>Grus canadensis tabida</i>	X/T	Summers in open terrain near shallow lakes or freshwater marshes; winters on plains and in valleys near bodies of fresh water.	Present
Lesser sandhill crane <i>Grus canadensis tabida</i>	X/SSC	Summers in open terrain near shallow lakes or freshwater marshes; winters on plains and in valleys near bodies of fresh water.	Present
Least Tern <i>Chlidonias niger</i>	E/E	Nests on gravel roads around wastewater treatment ponds.	Present
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	X/E	Wide, dense riparian forests with a thick understory of willows for nesting; prefers sites with a dominant cottonwood overstory for foraging; may avoid valley-oak riparian habitats where scrub jays are abundant	Low
Western burrowing owl <i>Athene cunicularia hypugea</i>	SC/SSC	Rodent burrows in sparse grassland, desert, and agricultural habitats	Present
Long-eared owl <i>Asio otus</i>	X/SSC	Dense riparian stands of willows, cottonwoods, live oaks, or conifers; uses adjacent open lands for foraging. Nests in abandoned crow, hawk, or magpie nests	Present
Short-eared owl <i>Asio flammeus</i>	X/SSC	Freshwater and salt marshes, lowland meadows, and irrigated alfalfa fields; needs dense tules or tall grass for nesting and for daytime roosting	Present

Species	Status* Federal/State	Habitats	Potential for Occurrence
Little willow flycatcher <i>Empidonax traillii brewsteri</i>	SC/E	Riparian areas and large, wet meadows with abundant willows for breeding; usually found in riparian habitats during migration	Present
Purple martin <i>Progne subis</i>	X/SSC	Nests in abandoned woodpecker holes in valley oak and cottonwood forests; also nests in vertical drainage holes under elevated freeways and highway bridges. Requires open areas for feeding	Low
Bank swallow <i>Riparia riparia</i>	X/T	Nests in bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam that allows digging	Present
Loggerhead shrike <i>Lanius ludovicianus</i>	X/SSC	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches	Present
Least Bell's vireo <i>Vireo bellii pusillus</i>	E/E	Riparian thickets either near water or in dry portions of river bottoms; may also be found using mesquite and arrow weed in desert canyons. Nests along margins of bushes and forages near the ground	Present
California yellow warbler <i>Dendroica petechia brewsteri</i>	X/SSC	Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral; may also use oaks, conifers, and urban areas near streamcourses.	Present
Yellow-breasted chat <i>Icteria virens</i>	X/SSC	Nests in dense riparian habitats dominated by willows, alders, Oregon ash, tall weeds, blackberry vines, and grapevines	Present
Tricolored blackbird <i>Agelaius tricolor</i>	SC/C	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or at upland sites with blackberries, nettles, thistles, and grainfields; nesting habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony. Requires large foraging areas where insect prey is abundant, such as marshes, pastures, agricultural wetlands, dairies, and feedlots	Present
Pallid bat <i>Antrozous pallidus</i>	X/SSC	Rocky outcrops, cliffs, and crevices for roosting; requires access to open habitats for foraging	Low

Source: Regional San, 2016

* Status explanations

Federal

E = listed as endangered under the federal Endangered Species Act.

T = listed as threatened under the federal Endangered Species Act.

C = species for which U.S. Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded.

SC = species of concern (species for which existing information may warrant listing but for which substantial biological information to support a proposed rule is lacking).

X = no status definition.

State

E = listed as endangered under the California Endangered Species Act.

T = listed as threatened under the California Endangered Species Act.

C = Candidate species for listing under California Endangered Species Act.

FP = fully protected under the California Fish and Game Code.

SSC = species of special concern in California.

X = no status definition.

South River Pump Station Habitat Area: To the north and west of the South River Pump Station in Yolo County, Regional San owns approximately 26-acres of open space. This property was previously used as a private hunting and fishing reserve. The property contains approximately 10 acres of wetlands including the northern tip of Glide Lake, consisting primarily of open water with emergent marsh on the margins. Additionally, there are several acres of mature valley oak woodland and several mature elderberry shrubs on the site.

Regional San Parkway Site: A 29-acre site within the American River Parkway in the vicinity of William B Pond is owned by Regional San. This site is predominately landscaped with irrigated turf grass. Mature native and non-native trees within the landscape provide habitat for the wide variety of wildlife that utilize the parkway.

Historic and Cultural Resources

Regional San has a variety of historic and cultural resources of value to the District. The Sacramento Regional County Sanitation District has several significant historic and cultural resources on the Bufferlands surrounding the Sacramento Regional Wastewater Treatment Plant.

- Regional San Archeological Site CA-SAC-83: An archeologically significant prehistoric and archeological site designated CA-SAC-83 exists in the Bufferlands west of the SRWTP. Artifacts including beads, shell, obsidian, slate, baked clay, charcoal, and human bone provide evidence that a Plains Miwok village once existed in this area.
- Nicolaus Dairy and Sims Ranch: Two post-European settlement resources are located on the Bufferlands. The historic Sims Ranch is located on the eastern side of the Bufferlands. This large ranch was established in 1850. While none of the original structures remain on this property, two houses built by the grandsons of the original property settler, Joseph Sims, remain at the site. These houses are regarded as excellent examples of Minimal Tradition style construction that speak to the frugal, no-frills era of the Great Depression. Both houses meet the criteria for listing in the National and California Register of Historic Places. The Nicolaus Dairy occurs in the southern portion of the Bufferlands. The Craftsman-style residence on this property dates back to 1914. While no longer in operation, the Nicolaus Dairy retains elements of a small scale 1949 dairy which contributes to its importance to local history. The historic core of this ranch also meets the criteria for listing within the National and California Register of Historic Places. The District is in process of repurposing the Nicolaus Dairy for educational outreach program for regional elementary schools.

Figure O-4 Bufferlands in the Vicinity of Historic Sims Ranch



Source: Regional San

Growth and Development Trends

Growth and development trends within the contributing agencies including the cities of Citrus Heights, Elk Grove, Folsom, Rancho Cordova, Sacramento, West Sacramento (in Yolo County), and the unincorporated portions of Sacramento County may result in increased flows to the Sacramento Regional Wastewater Treatment Plant, owned and operated by the Regional San. The District's growth and development trends typically mirror those of Sacramento County, portions of Yolo County, and the surrounding communities served by Regional San as described in the base plan. Based on the Sacramento Area Council of Governments (SACOG) 2008 projections, the Sacramento Regional Wastewater Treatment Plant service area population is expected to increase by approximately 80 percent between 2020 and 2070. The influent average dry weather flow (ADWF) is expected to increase proportionally (Biosolids Management Plan, 2021).

Development since 2016

Since 2016, various EchoWater improvements have come online, including the Biological Nutrient Removal (BNR) and Nitrifying Sidestream Treatment (NST) projects. The constructed improvements are located at the Sacramento Regional Wastewater Treatment Plant and do not add any identifiable hazards. Regional San has also switched the disinfection process from gaseous to liquid chlorine. As such, a change in vulnerability is unlikely.

Future Development

Though the District has no influence on future development in the service area the District reviews development plans and addresses sewer service timelines. Future development in these areas parallels that of the cities of Citrus Heights, Elk Grove, Folsom, Rancho Cordova, Sacramento, West Sacramento (in Yolo County), and the unincorporated portions of Sacramento County. More general information on growth and development in Sacramento County as a whole can be found in “Growth and Development Trends” in Section 4.3.1 Sacramento County Vulnerability and Assets at Risk of the Base Plan and in each City’s Annex to this Plan Update.

The Sacramento Regional Wastewater Treatment Plant will see the EchoWater project completed by the end of 2023, which will produce cleaner water for discharge to the Sacramento River as well as for potential reuse for recycled water (regionalsan.com/echowater-project.com). Regional San is also in early stages of design on a recycled water program called Harvest Water, which will deliver up to 50,000 acre-feet per year of recycled water to the south county for agricultural irrigation and habitat lands creation and protection. Similarly, Regional San has recently began the Biogas Cogeneration project which will pursue an alternative use for its biogas as well as finding exemption from “covered” process regulations.

O.5.3. Vulnerability to Specific Hazards

This section provides the vulnerability assessment, including any quantifiable loss estimates, for those hazards identified above in Table O-3 as high or medium significance hazards. Impacts of past events and vulnerability of the District to specific hazards are further discussed below (see Section 4.1 Hazard Identification in the Base Plan for more detailed information about these hazards and their impacts on the Sacramento County Planning Area). Methodologies for evaluating vulnerabilities and calculating loss estimates are the same as those described in Section 4.3 of the Base Plan.

An estimate of the vulnerability of the District to each identified priority hazard, in addition to the estimate of likelihood of future occurrence, is provided in each of the hazard-specific sections that follow. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Extremely Low**—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
- **Extremely High**—Very widespread with catastrophic impact.

Depending on the hazard and availability of data for analysis, this hazard specific vulnerability assessment also includes information on values at risk, critical facilities and infrastructure, populations at risk, and future development.

Power Outage/Power Failure

An impact of almost all hazards below relates to power outage and/or power failures. The US power grid crisscrosses the country, bringing electricity to homes, offices, factories, warehouses, farms, traffic lights and even campgrounds. According to statistics gathered by the Department of Energy, major blackouts are on the upswing. Incredibly, over the past two decades, blackouts impacting at least 50,000 customers have increased 124 percent. The electric power industry does not have a universal agreement for classifying disruptions. Nevertheless, it is important to recognize that different types of outages are possible so that plans may be made to handle them effectively. In addition to blackouts, brownouts can occur. A brownout is an intentional or unintentional drop in voltage in an electrical power supply system. Intentional brownouts are used for load reduction in an emergency. Electric power disruptions can be generally grouped into two categories: intentional and unintentional. More information on types of power disruptions can be found in Section 4.3.2 of the Base Plan. Regional San is connected to the backbone of the Sacramento Municipal Utility District (SMUD) 69kV distribution system with dual redundant feeds. In addition, Regional San has the ability to power their facilities with a direct connection from SMUD's Carson Energy Plant which is located on Regional San's property. Therefore, Regional San's risk to power outages is low.

Public Safety Power Shutoff (PSPS)

A new intentional disruption type of power outage/failure event has recently occurred in California. In recent years, several wildfires have started as a result of downed power lines or electrical equipment. This was the case for the Camp Fire in 2018. As a result, California's three largest energy companies (including PG&E), at the direction of the California Public Utilities Commission (CPUC), are coordinating to prepare all Californians for the threat of wildfires and power outages during times of extreme weather. To help protect customers and communities during extreme weather events, electric power may be shut off for public safety in an effort to prevent a wildfire. This is called a PSPS. More information on PSPS criteria can be found in Section 4.3.2 of the Base Plan. Though SMUD may need to initiate a PSPS event, Regional San is not likely to be affected by the outage, as it is unlikely SMUD will de-energize their 69kV system. SMUD has not issued a PSPS in the past.

Dam Failure

Likelihood of Future Occurrence—Unlikely
Vulnerability—Medium

Hazard Profile and Problem Description

Dams are manmade structures built for a variety of uses including flood protection, power generation, agriculture, water supply, and recreation. When dams are constructed for flood protection, they are usually engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If

prolonged periods of rainfall and flooding occur that exceed the design requirements, that structure may be overtopped or fail. Overtopping is the primary cause of earthen dam failure in the United States.

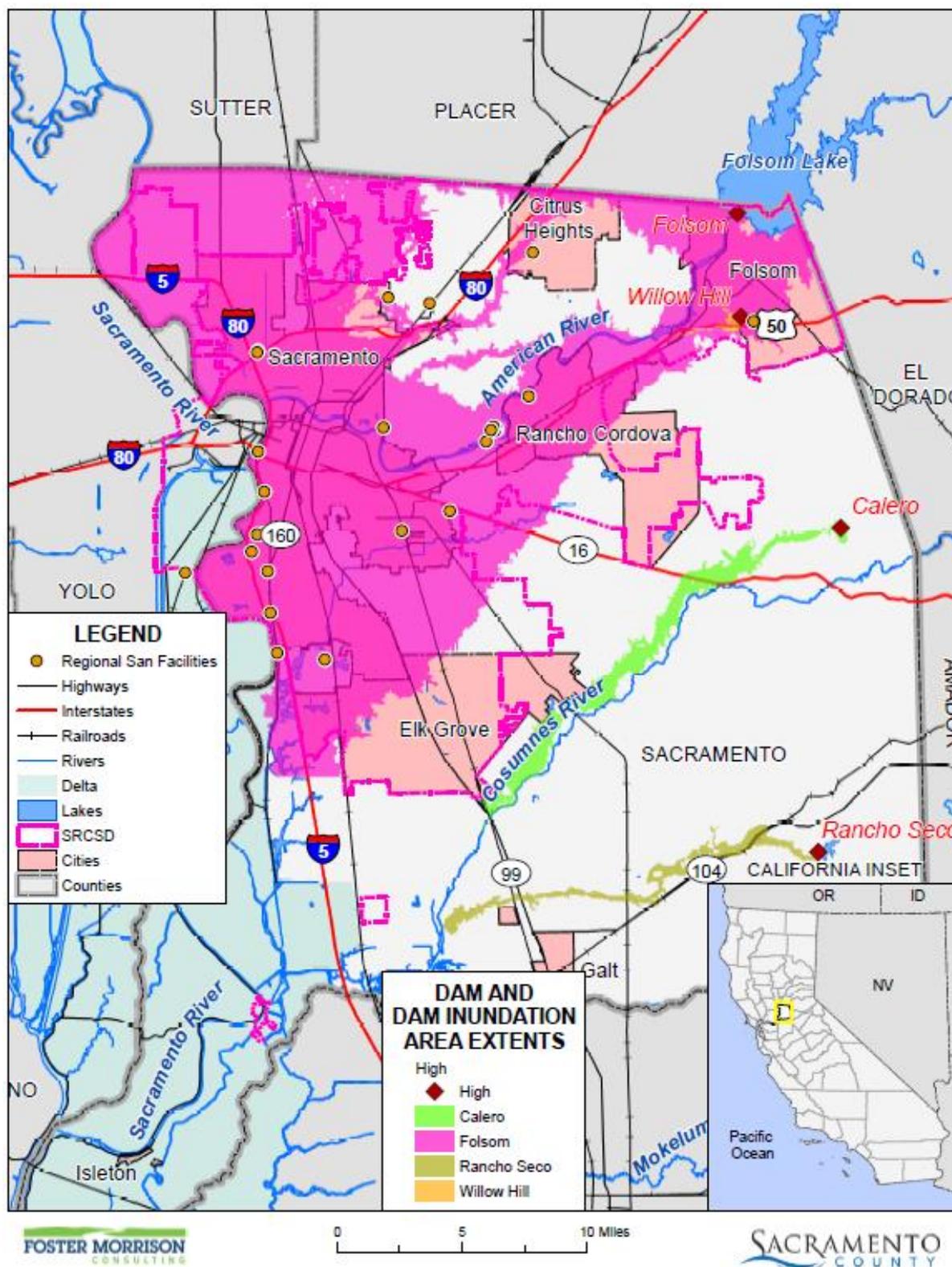
Location and Extent

Dam failure is a natural disaster from two perspectives. First, the inundation from released waters resulting from dam failure is related to naturally occurring floodwaters. Second, a total dam failure would most probably happen as a consequence of the natural disaster triggering the event, such as an earthquake. There is no scale with which to measure dam failure. However, Cal DWR Division of Safety of Dams (DOSD) assigns hazard ratings to dams within the State that provides information on the potential impact should a dam fail. The following two factors are considered when assigning hazard ratings: existing land use and land use controls (zoning) downstream of the dam. Dams are classified in four categories that identify the potential hazard to life and property: Low, Significant, High, and Extremely High. These were discussed in more detail in Section 4.3.7 of the Base Plan.

While a dam may fill slowly with runoff from winter storms, a dam break has a very quick speed of onset. The duration of dam failure is generally not long – only as long as it takes to empty the reservoir of water the dam held back. The District would be affected for as long as the flood waters from the dam failure took to drain downstream.

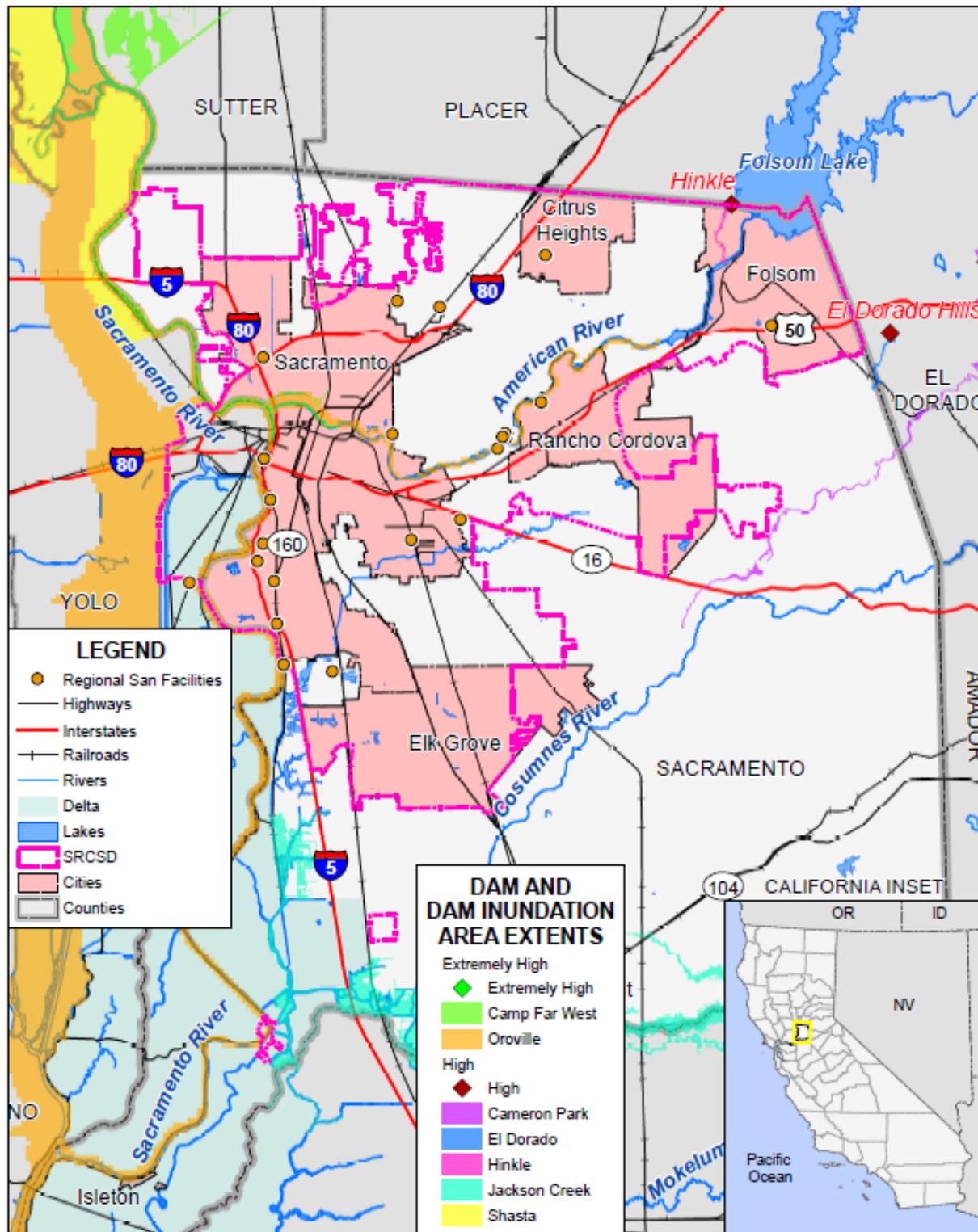
Based on dam inundation data obtained from CA DWR and Cal OES the was discussed in Section 4.3.7 of the Base Plan, dams inside the County that can affect the District can be seen on Figure O-5. Dams outside the County that can affect the District can be seen on Figure O-6. The Folsom Dam 235,000 cfs scenario dam inundation areas can be seen on Figure O-7. While Figure O-5 and Figure O-6 illustrate dam inundation areas from an actual dam failure, Figure O-7, the Folsom 235,000 cfs scenario reflects the likely inundation area associated with a possible “super” release of water from Folsom. This updated Folsom scenario reflects the Folsom dam improvements which make a dam failure unlikely, with any resulting downstream inundation from Folsom associated with an intentional release of water from the dam. It is anticipated that the worst case scenario would be a 235,000 cfs release, which is comparable to a 200-year flood. The area labeled Folsom 235,000 CFS Release Riverine Inundation is the American River corridor and the backwater of the Natomas East Main Drainage Channel (aka Steelhead Creek) to the flood control pump station.

Figure O-5 Regional San – Dam Inundation Areas from Dams Inside the County



Data Source: County-provided dam inundation data (FOLSOM_DAM_INUNDATION_AREA.shp 2016), DWR DSOD Data 2020 and Cal OES Dam Status 10/2017, Sacramento County GIS, Cal-Atlas; Map Date: 2/2021.

Figure O-6 Regional San – Dam Inundation Areas from Dams Outside the County



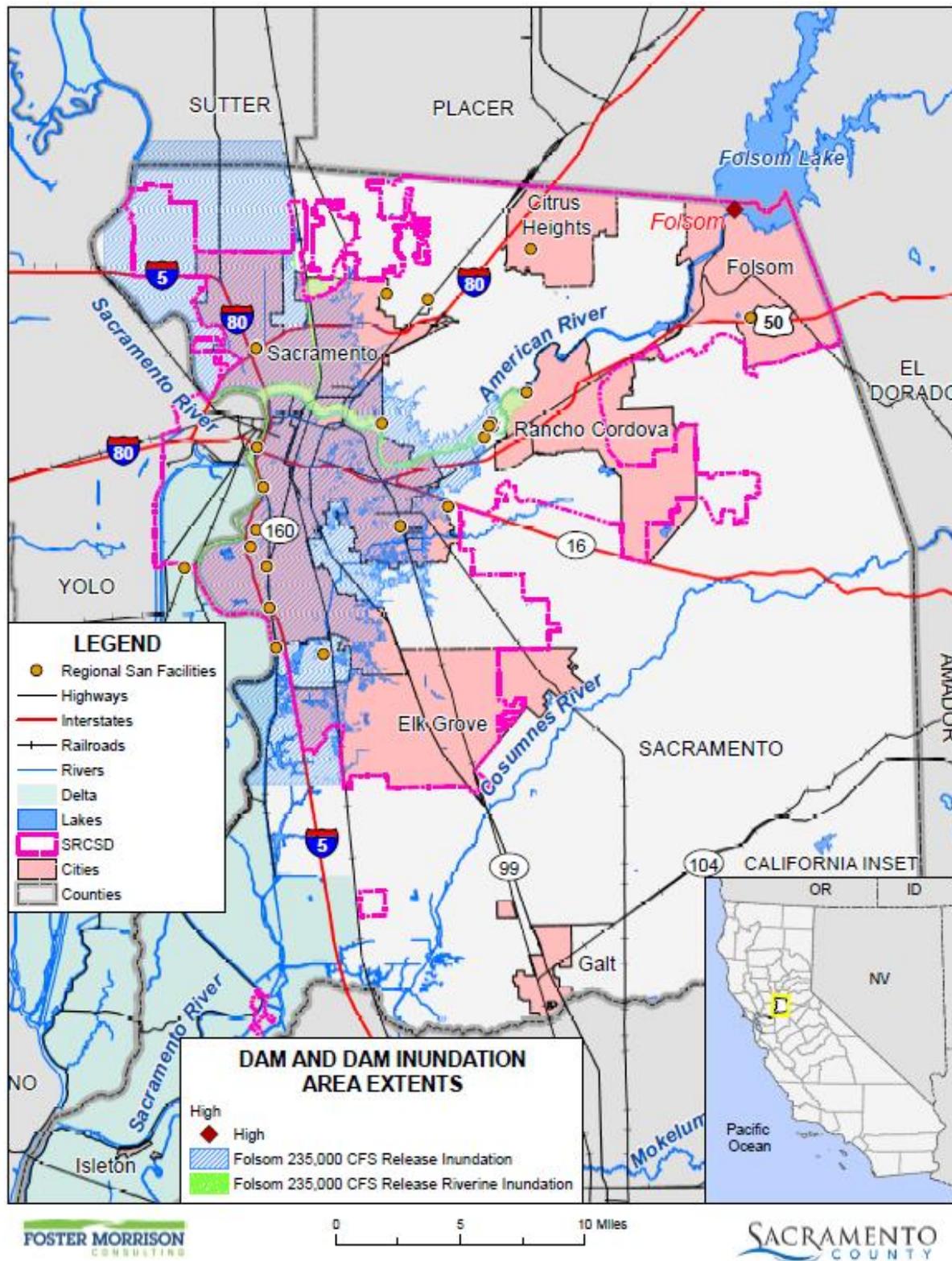
FOSTER MORRISON CONSULTING

0 5 10 Miles

SACRAMENTO COUNTY

Data Source: DWR DSOD Data 2020 and Cal OES Dam Status 10/2017, Sacramento County GIS, Cal-Atlas; Map Date: 9/2020.

Figure O-7 Regional San – Dam Inundation Areas for Folsom 235,000 cfs Scenario



Data Source: County-provided dam inundation data (FOLSOM_DAM_INUNDATION_AREA.shp 2016 and CA_DWR_200YEAR_FLOODPLAIN.zip 2020), DWR DSOD Data 2020, Sacramento County GIS, Cal-Atlas; Map Date: 02/2021.

Regional San Owned Dams

Emergency Storage Basins A, B, C, D and E. The Emergency Storage Basins (ESBs) are structures at the Sacramento Regional Wastewater Treatment Plant that are used for “emergency” or occasional use. These basins normally do not have liquids stored in them, and on the occasion when they are used the fluid levels are typically only one to two feet deep. Operational use allows a minimum of 5.5 feet of freeboard. A constructed spillway is designed to direct any excess fluid volume back into the wastewater treatment plant. During review of these basins, DSOD engineers concurred with Regional San engineers that there were no risk factors for downstream property or human life in the event of structure failure, and that a study was not required to determine the extent of property damage and/or risk to life resulting from a hypothetical facility failure. Thus, this facility meets the “Low Hazard” classification in that a failure would result in minimal property damage and loss of life is unlikely. As part of the EchoWater upgrades, emergency storage basins were deepened and lined to provide additional volume for storage. Emergency storage basin C was subdivided into three sub-basins and lined with roller compacted concrete floors and shotcrete walls. Additional valves, pipelines, inlet and outlet, gates and drains were installed to aid in dual use of the basins – storage of untreated and treated wastewater.

Solids Storage Basin (SSB) Battery III Ponds CA01421. The SSB ponds operate with a minimum 3 feet of freeboard. The SSBs are also provided with an emergency overflow that directs any excess fluid volume back into the SRWTP. Any fluid volume that escaped the SSB structure would be contained within the SRWTP perimeter levee system (discussed in the Levee Failure section below). Thus, a dam failure for this asset meets the “Low Hazard” classification in that a failure would result in minimal property damage and loss of life is unlikely.

Past Occurrences

There has been no federal or state disaster declarations for dam failure in the County. The District noted no other dam failure occurrences that have affected the District.

Vulnerability to and Impacts from Dam Failure

Dam failure flooding would vary by community depending on which dam fails and the nature and extent of the dam failure and associated flooding. Impacts to the District from a dam failure flood could include loss of life and injury, flooding and damage to property and structures, damage to critical facilities and infrastructure, loss of natural resources, and all other flood related impacts. Additionally, mass evacuations and associated economic losses can also be significant.

Folsom Dam, owned by the US Bureau of Reclamation, is the major dam, which affects the Regional San and the populations in the inundation areas. The flood waters from a dam failure would likely affect the Sacramento Regional Sanitation District’s service area. Flood waters could inundate sewer pump stations, regional collector pipes, underground structures, and equipment, resulting in the inability to access or operate Regional San’s facilities within the flooded areas. A severe flood could jeopardize the operation of the regional sewer treatment plant. Access to the regional sewer treatment plant, affected pipe systems and pump station facilities to assess and restore operation could be limited until such time that the flood waters receded.

Assets at Risk

Regional San has identified the following assets in Table O-8 as being potentially affected if the listed dams in Figure O-5 inside the county were to fail. Table O-9 identifies Regional San assets that may be affected if the Folsom Dam were to have a catastrophic failure.

Table O-8 Regional San Assets and Values at Risk in the Sacramento County Dam Inundation Zone

Facility #	Facility Name	2021 Asset Value
N11	City Interceptor Valve Structure	\$2,960,489
N13	City Interceptor Air Intake Structure	\$2,220,366
N52	Power Inn Sewage Pumping Station & Force Main	\$9,595,578
N51	New Natomas Sewage Pumping Station & Force Mains	\$109,050,972
N41	City Water Line to the SRWTP	\$518,086
N19	Arden Sewage Pumping Station & Force Mains	\$43,650,971
S33	Cordova Sewage Pumping Station & Force Main	\$18,663,866
N29	Sump 2A Sewage Pumping Station & Force Main	\$10,103,211
N20	Arden Force Main Oxygen Structure	\$3,404,562
N15&N16	Northeast Siphon Inlet & Outlet Structure	\$10,361,710
N53	Van Maren Sewage Pumping Station & Force Mains	\$26,557,887
N27	Sump 55 Sewage Pumping Station & Force Mains	\$18,500,755
N12	City Interceptor Oxygen Structure	\$2,960,489
N28	Sump 119 Sewage Pumping Station & Force Main	\$17,777,767
N40	Iron Point Sewage Pumping Station & Force Mains	\$15,831,075
S94	Sacramento Regional Wastewater Treatment Plant	\$2,826,033,042
X009	SRWTP Outfall	\$2,433,306
Total		\$3,120,624,131

Source: Regional San

Table O-9 Regional San Assets and Values at Risk in the Folsom Dam Inundation Zone

Facility #	Facility Name	2021 Asset Value
N11	City Interceptor Valve Structure	\$2,960,489
N13	City Interceptor Air Intake Structure	\$2,220,366
N51	New Natomas Sewage Pumping Station & Force Mains	\$109,050,972
N41	City Water Line to the SRWTP	\$518,086
N19	Arden Sewage Pumping Station & Force Mains	\$43,650,971
N29	Sump 2A Sewage Pumping Station & Force Main	\$10,103,211
N15&N16	Northeast Siphon Inlet & Outlet Structure	\$10,361,710
N27	Sump 55 Sewage Pumping Station & Force Mains	\$18,500,755
N12	City Interceptor Oxygen Structure	\$2,960,489

Facility #	Facility Name	2021 Asset Value
N28	Sump 119 Sewage Pumping Station & Force Main	\$17,777,767
S94	Sacramento Regional Wastewater Treatment Plant	\$2,826,033,042
X009	SRWTP Outfall	\$2,433,306
Total		\$3,046,571,163

Source: Regional San

Flood: 1%/0.2% Annual Chance

Likelihood of Future Occurrence–Occasional/Unlikely
Vulnerability–High

Hazard Profile and Problem Description

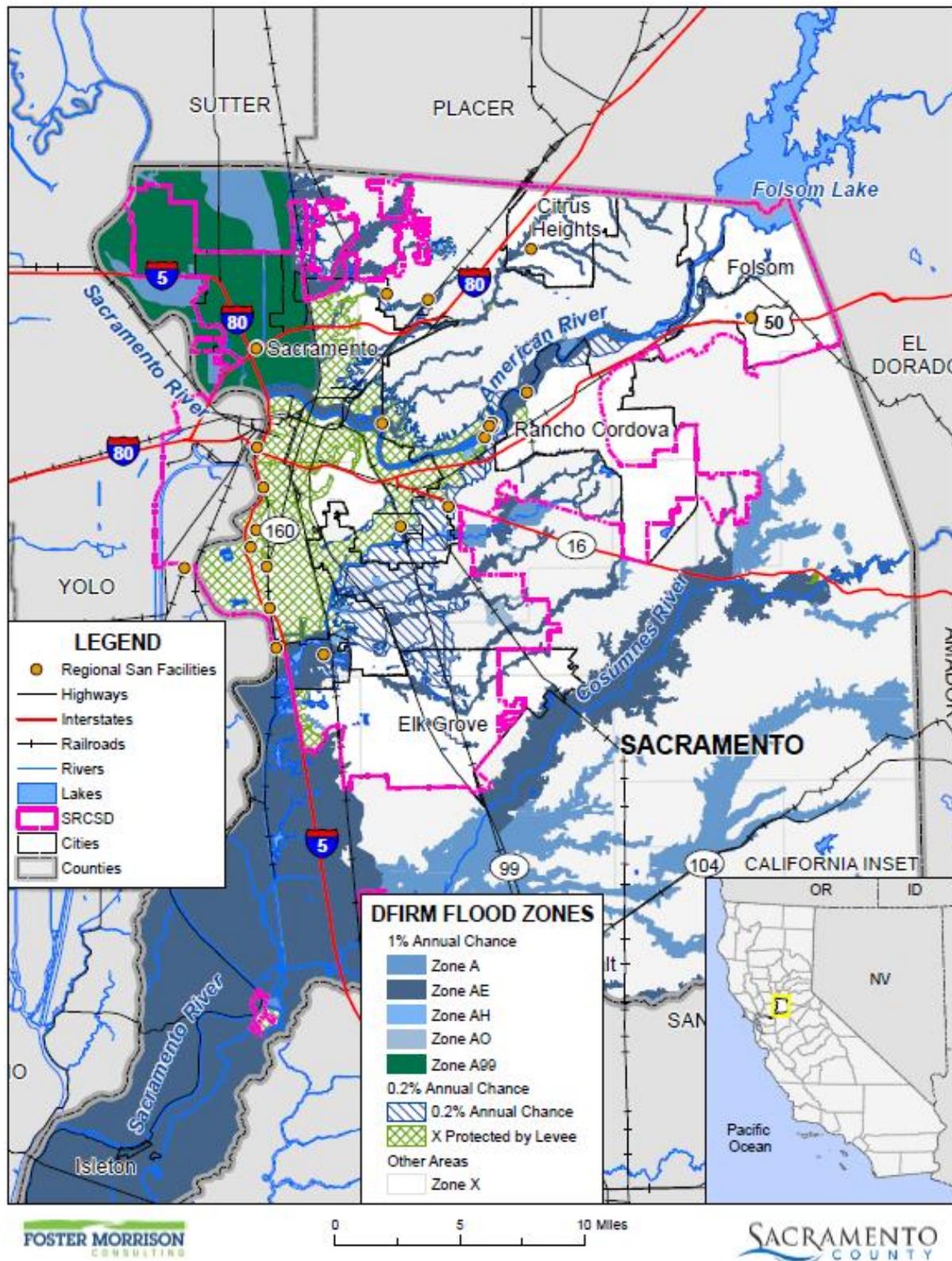
This hazard analyzes the FEMA DFIRM 1% and 0.2% annual chance floods. These tend to be the larger floods that can occur in the County or in the District, and have caused damages in the past. Flooding is a significant problem in Sacramento County and the District. Historically, the District has been at risk to flooding primarily during the winter and spring months when river systems in the County swell with heavy rainfall and snowmelt runoff. Normally, storm floodwaters are kept within defined limits by a variety of storm drainage and flood control measures. Occasionally, extended heavy rains result in floodwaters that exceed normal high-water boundaries and cause damage.

As previously described in Section 4.3.11 of the Base Plan, the Sacramento County Planning Area and the Regional San have been subject to historical flooding.

Location and Extent

Major surface waters in the vicinity of the Regional San service area include the American River, Nimbus Reservoir, Folsom Reservoir, Lake Natoma, the Sacramento River, and the Cosumnes River. In the Regional San service area, the potential for flood damage would occur in the floodplains of the American River, Sacramento River, Cosumnes River, Mokelumne River, Laguna Creek, Morrison Creek, Dry Creek and Strawberry Creek. The Regional San has areas located in the 1% and 0.2% annual chance floodplain. This is seen in Figure O-8.

Figure O-8 Regional San – FEMA DFIRM Flood Zones



Data Source: FEMA NFHL 07/19/2018, Sacramento Regional County Sanitation District, Sacramento County GIS, Cal-Atlas; Map Date: 09/2020.

Table O-10 details the DFIRM mapped flood zones within the 1% and 0.2% annual chance flood zone as well as other flood zones located within the District.

Table O-10 Regional San– DFIRM Flood Hazard Zones

Flood Zone	Description	Flood Zone Present in the District
A	100-year Flood: No base flood elevations provided	X
AE	100-year Flood: Base flood elevations provided	X
AH	An area inundated by 1% annual chance flooding (usually an area of ponding), for which BFEs have been determined; flood depths range from 1 to 3 feet	X
AO	Areas subject to inundation by 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet	X
A99	Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones	X
Shaded X	500-year flood the areas between the limits of the 1% annual chance flood and the 0.2-percent-annual-chance (or 500-year) flood	X
X Protected by Levee	An area determined to be outside the 500-year flood and protected by levee from 100-year flood	X
X (unshaded)	Outside of flood zones	X

Source: FEMA

Additionally, flood extents can generally be measured in volume, velocity, and depths of flooding. Expected flood depths in the District vary, depending on the nature and extent of a flood event; specific depths are unknown. Flood durations in the District tend to be short to medium term, or until either the storm drainage system can catch up or flood waters move downstream. Flooding in the District tends to have a shorter speed of onset, due to the amount of water that flows through the District.

Past Occurrences

A list of state and federal disaster declarations for Sacramento County from flooding is shown on Table O-11. These events also likely affected the District to some degree.

Table O-11 Sacramento County – State and Federal Disaster Declarations from Flood 1950-2020

Disaster Type	Federal Declarations		State Declarations	
	Count	Years	Count	Years
Flood (including heavy rains and storms)	19	1950, 1955, 1958 (twice), 1963, 1969, 1982 (twice), 1983, 1986, 1995 (twice), 1996, 1997, 1998, 2008, 2017 (three times)	14	1955, 1958, 1964, 1969, 1983, 1986, 1995 (twice), 1997, 1998, 2006, 2017 (three times)

Source: Cal OES, FEMA

Regional San facilities are impacted by wet weather and flood events that affect the Sacramento Region including localized and regional flooding. Historical large rainfall events have been noted in 1986, 1995, 2005/06, and 2016/17. More information regarding these events can be found in Table O-12.

Table O-12 Regional San Historical Flood Events

Date	Facility	Performance Comments
1986 storm, a 100-year storm event	SRWTP Perimeter Levee	No overtopping of the perimeter levee with peak water surface elevation predicted at 15.3 to 15.8-feet NVGD
December 2005 / January 2006 storm events	SRWTP and local construction projects.	SRWTP operations were impacted by high inlet flows. These flows plus localized flooding at on-site construction project(s) resulted in the discharge of a mixture of fully treated and partially treated wastewater for two days. Effluent sampling demonstrated that the discharge was in compliance with NPDES permit limits.
December 2005 / January 2006 storm events		Heavy rains impacted construction sites and caused four sanitary sewer overflows in the regional sewer collection system. Some reimbursements received from FEMA for flood-related damages.
1986, Spring 1995, and December 2005 / January 2006, December 2016 / January 2017 storm events	SRWTP Perimeter Levee	No impacts

Source: Regional San

Vulnerability to and Impacts from Flood

Floods have been a part of the District’s historical past and will continue to be so in the future. During winter months, long periods of precipitation and the timing of that precipitation are critical in determining the threat of flood, and these characteristics further dictate the potential for widespread structural and property damages. Predominantly, the effects of flooding are generally confined to areas near the waterways of the County. As waterways grow in size from local drainages, so grows the threat of flood and dimensions of the threat. This threatens structures in the floodplain. Structures can also be damaged from trees falling as a result of water-saturated soils. Electrical power outages happen, and the interruption of power causes major problems. Loss of power is usually a precursor to closure of governmental offices and community businesses. Roads can be damaged and closed, causing safety and evacuation issues. People may be swept away in floodwaters, causing injuries or deaths.

Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. Floods can cause substantial damage to structures, landscapes, and utilities as well as life safety issues. Floods can be extremely dangerous, and even six inches of moving water can knock over a person given a strong current. During a flood, people can also suffer heart attacks or electrocution due to electrical equipment short outs. Floodwaters can transport large objects downstream which can damage or remove stationary structures. Ground saturation can result in instability, collapse, or other damage. Objects can also be buried or destroyed through sediment deposition. Floodwaters can also break utility lines and interrupt services. Standing water can cause damage to crops, roads, foundations, and electrical circuits. Direct impacts, such as drowning, can be limited with adequate warning and public education about what

to do during floods. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, loss of environmental resources, and economic impacts.

In Regional San’s case, floods can have large consequences on the treatment plant. Water and debris can inundate the plant, damaging equipment and structures. These impacts can lead to disruptions of services and the inability to adequately treat wastewater. Floods also cause large spikes in influent, which can be difficult to predict. If unable to predict the flows received and properly divert, the plant could flood causing major safety and health risks to the surrounding community.

Assets at Risk

Regional San has identified the following assets as being potentially affected by a 100-year (Table O-13) or a 500-year (Table O-14) flood event.

Table O-13 Regional San – Assets at Risk in the 100-year Floodplain

Facility #	Facility Name	2021 Asset Value
N51	New Natomas Sewage Pumping Station & Force Mains	\$109,050,972
N19	Arden Sewage Pumping Station & Force Mains	\$43,650,971
N15&N16	Northeast Siphon Inlet & Outlet Structure	\$10,361,710
S94	Sacramento Regional Wastewater Treatment Plant	\$2,826,033,042
Total		\$2,989,096,694

Source: Regional San

Table O-14 Regional San Assets at Risk in the 500-year Floodplain

Facility #	Facility Name	2021 Asset Value
N52	Power Inn Sewage Pumping Station & Force Main	\$9,595,578
S33	Cordova Sewage Pumping Station & Force Main	\$18,663,866
N20	Arden Force Main Oxygen Structure	\$3,404,562
N53	Van Maren Sewage Pumping Station & Force Mains	\$26,557,887
Total		\$58,221,893

Source: Regional San

Levee Failure

Likelihood of Future Occurrence—Occasional

Vulnerability—High

Hazard Profile and Problem Description

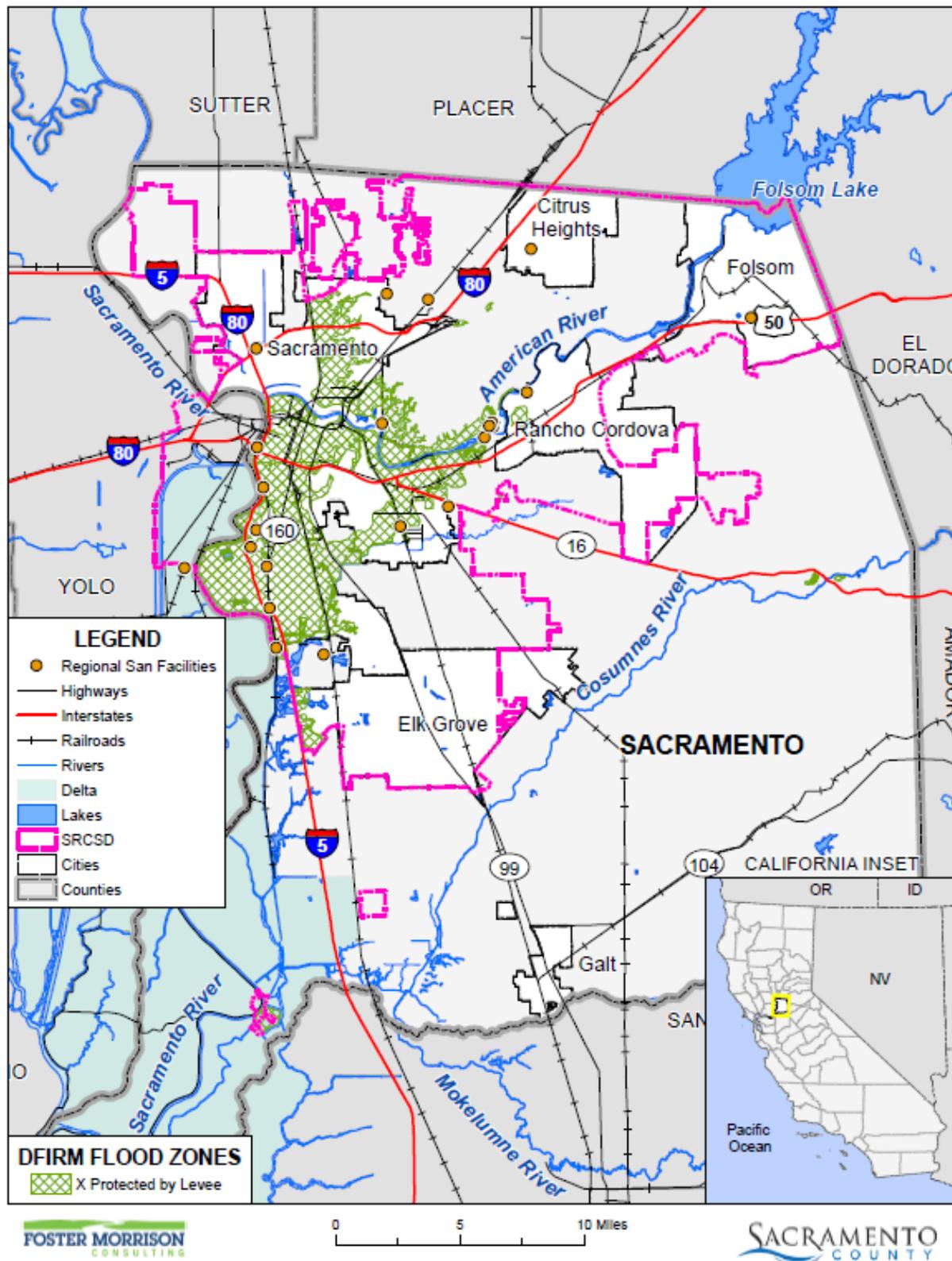
A levee is a raised area that runs along the banks of a stream or canal. Levees reinforce the banks and help prevent flooding by containing higher flow events to the main stream channel. By confining the flow to a narrower stream channel, levees can also increase the speed of the water. Levees can be natural or man-made.

Levees provide strong flood protection, but they are not failsafe. Levees are designed to protect against a specific flood level and could be overtopped during severe weather events or dam failure. For example, levees can be certified to provide protection against the 1% annual chance flood. Levees reduce, not eliminate, the risk to individuals and structures located behind them. A levee system failure or overtopping can create severe flooding and high water velocities. Levee failure can occur through overtopping or from seepage issues resulting from burrowing rodents, general erosion, excessive vegetation and root systems and other factors that compromise the integrity of the levee. No levee provides protection from events for which it was not designed, and proper operation and maintenance are necessary to reduce the probability of failure.

Location and Extent

There is not a scientific scale or measurement system in place for levee failure. Expected flood depths from a levee failure in the District vary by event and location. The speed of onset is slow as the river rises, but if a levee fails the warning times are generally short for those in the inundation area. The duration of levee failure risk times can be hours to weeks, depending on the river flows that the levee holds back. When northern California dams and reservoirs are nearing maximum capacity, they release water through the river systems, causing additional burdens on County levees. Levees in the District are shown on Figure O-9.

Figure O-9 Regional San – Levee Protected Areas



Data Source: FEMA NFHL 07/19/2018, Sacramento Regional County Sanitation District, Sacramento County GIS, Cal-Atlas; Map Date: 09/2020.

Regional San Owned Levees

SRWTP Perimeter Levee. The Sacramento Regional Wastewater Treatment Plant is protected by an earthen perimeter levee system that is owned by Regional San. The Perimeter Levee was originally designed to mitigate the risk of immediate failure of a local levee along the Sacramento River while the river is at flood stages (elevation 25 ft – 33 feet above mean sea level). Recent levee improvement efforts along the Sacramento River and the American River reduced the risk of levee failure throughout all of the urban areas of Sacramento County. However, Sacramento River levee systems located along the east side at all points south of the Freeport area are still considered to present a risk of failure potential. Should one or more levees fail from Freeport south into the Delta area, it could contribute some water at elevations that could approach the SRWTP levee. In 1998, the perimeter levee was raised to an elevation that provides flood protection for 100, 200 and 400-year flood events based on recent studies within the Sacramento River floodplain which increased the predicted 100-year floodplain elevation approximately 2 feet above previous studies. The current SRWTP Perimeter Levee provides 100- and 200-year flood protection with approximately 3 feet of freeboard. The levee provides 400-year flood protection with no freeboard, which complies with US Army Corps of Engineers standards to ensure protection from a 400-year flood event with no overtopping.

Past Occurrences

There have been no federal or state disaster declarations from levee failure. The District Planning Team noted no past occurrences of levee failures.

SRWTP Perimeter Levee. During the 1986 storm, a 100-year storm event, there was no overtopping of the perimeter levee with peak water surface elevation predicted at 15.3 to 15.8-feet NVGD. During the 1995 series of storm events which lead to flooding in both the Sacramento and American River floodplains, Interstate 5 was temporarily closed in close proximity to the SRWTP due to flooding. During this event, none of the storm water in the combined floodplain reached the levee at the SRWTP.

Vulnerability to and Impacts from Levee Failure

A levee failure can range from a small, uncontrolled release to a catastrophic failure. Levee failure flooding can occur as the result of prolonged rainfall and flooding. The primary danger associated with levee failure is the high velocity flooding of those properties outside and downstream of the breach.

Should a levee fail, some or all of the area protected by the levees would be at risk to flooding. Impacts from a levee failure include property damage, critical facility damage, and life safety issues. Business and economic losses could be large as facilities could be flooded and services interrupted. School and road closures could occur. Road closures would impede both evacuation routes and ability of first responders to quickly respond to calls for aid. Other problems connected with levee failure flooding include erosion, sedimentation, degradation of water quality, losses of environmental resources, and certain health hazards.

In the case of a levee failure, similar impacts as those of a flood could occur. The Sacramento Regional Wastewater Treatment Plant could become inundated with water if the perimeter levee failed. Damaged equipment and flooding of facilities could lead to inadequate treatment of influent and unsafe discharge to

the Sacramento River. If surrounding levees fail, the collection system could surcharge, leading to sewer system overflows and a peak influent at the treatment plant.

Assets at Risk

Regional San has identified the following assets as being potentially affected from a levee failure event in Table O-15.

Table O-15 Regional San – Assets at Risk in the X Protected by Levee Zone

Facility #	Facility Name	2021 Asset Value
N50	South River Sewage Pumping Station & Force Mains	\$125,925,747
N52	Power Inn Sewage Pumping Station & Force Main	\$9,595,578
N51	New Natomas Sewage Pumping Station & Force Mains	\$109,050,972
N19	Arden Sewage Pumping Station & Force Mains	\$43,650,971
S33	Cordova Sewage Pumping Station & Force Main	\$18,663,866
N20	Arden Force Main Oxygen Structure	\$3,404,562
N15&N16	Northeast Siphon Inlet & Outlet Structure	\$10,361,710
N53	Van Maren Sewage Pumping Station & Force Mains	\$26,557,887
N40	Iron Point Sewage Pumping Station & Force Mains	\$15,831,075
N43	Roseville/Watt Liquid Waste Disposal Facility	\$4,350,180
S94	Sacramento Regional Wastewater Treatment Plant	\$2,826,033,042
FM692	McClellan Flow Meter	\$13,756,812
Total		\$3,207,182,402

Source: Regional San

Pandemic

Likelihood of Future Occurrence–Likely
Vulnerability–High

Hazard Profile and Problem Description

According to the World Health Organization (WHO), a disease epidemic occurs when there are more cases of that disease than normal. A pandemic is a worldwide epidemic of a disease. This disease spreads easily person-to-person, causes serious illness, and can sweep across the country and around the world in a very short time. The U.S. Centers for Disease Control and Prevention has been working closely with other countries and the WHO to strengthen systems to detect outbreaks of which might cause a pandemic and to assist with pandemic planning and preparation. An especially severe pandemic could lead to high levels of illness, death, social disruption, and economic loss.

Location and Extent

During a pandemic, the whole of the District, County, and surrounding region is at risk, as a pandemic is a regional, national, and international event. The speed of onset of a pandemic is usually short, while the duration is variable, but can last for more than a year as shown in the 1918/1919 Spanish Flu. There is no scientific scale to measure the magnitude of a pandemic. Pandemics are usually measured in numbers affected by the pandemic, and by number who die from complications from the pandemic.

Past Occurrences

There has been one state and federal disaster declaration due to pandemic, as shown in Table O-16.

Table O-16 Sacramento County – State and Federal Pandemic Disaster Declarations 1950-2020

Disaster Type	Federal Declarations		State Declarations	
	Count	Years	Count	Years
Pandemic	1	2020	1	2020

Source: Cal OES, FEMA

The 20th century saw three outbreaks of pandemic.

- The 1918-1919 Influenza Pandemic (H1N1)
- The February 1957-1958 Influenza Pandemic (H2N2)
- The 1968 Influenza Pandemic (H3N2)

To date, the 21st century has seen two acknowledged pandemics.

- 2009 Swine Flu (H1N1)
- 2019/2020 COVID 19

Though Regional San was not specifically affected by the 2019-2021 COVID 19 pandemic, the employees of the District were affected. During the entirety of the pandemic, operations staff for Regional San who are considered essential workers continued to report to work but followed safety protocol. On March 18, 2020, Sacramento County Public Health directed employers countywide to implement telecommuting for all employees who do not need to physically come to work to complete their duties. The District enforced this order to the greatest possible extent without compromising the duties of a wastewater entity. To allow employees to work from home, the District improved VPN capabilities, purchased video communication licenses such as GoToMeeting, and allowed the flexibility of bringing computer equipment to employees' households.

As it gradually becomes safer to return to in-person work, the District is beginning to transition to going back into the office. The District is prepared for flexible work schedules to minimize the number of employees in the office at once. The District is also replacing current equipment with touchless technologies to create a more hygienic workplace, such as adding hands-free thermometer stations.

Vulnerability to and Impacts from Pandemic

Pandemics have and will continue to have impacts on human health in the region. A pandemic occurs when a new virus emerges for which there is little or no immunity in the human population; the virus causes serious illness and spreads easily from person-to-person worldwide. There are several strategies that public health officials can use to combat a pandemic. Constant surveillance regarding the current pandemic, use of infection control techniques, and administration of vaccines once they become available. Citizens can help prevent the spread of a pandemic by staying home, or “self-quarantining,” if they suspect they are infected. Pandemic does not affect the buildings, critical facilities, and infrastructure in the District. Pandemic can have varying levels of impact to the citizens of the District and greater County, depending on the nature of the pandemic.

Impacts could range from school and business closings to the interruption of basic services such as public transportation, health care, and the delivery of food and essential medicines. Hospitalizations and deaths can occur, especially to the elderly or those with pre-existing underlying conditions. As seen with Covid-19, multiple businesses were forced to close temporarily (some permanently), and unemployment rose significantly. Supply chains for food and essentials can be interrupted. Prisons may need to release prisoners to comply with social distance standards.

Assets at Risk

Pandemics do not affect District facilities, but can affect District personnel who operate District facilities.

Wildfire

Likelihood of Future Occurrence–Likely

Vulnerability–Medium

Hazard Profile and Problem Description

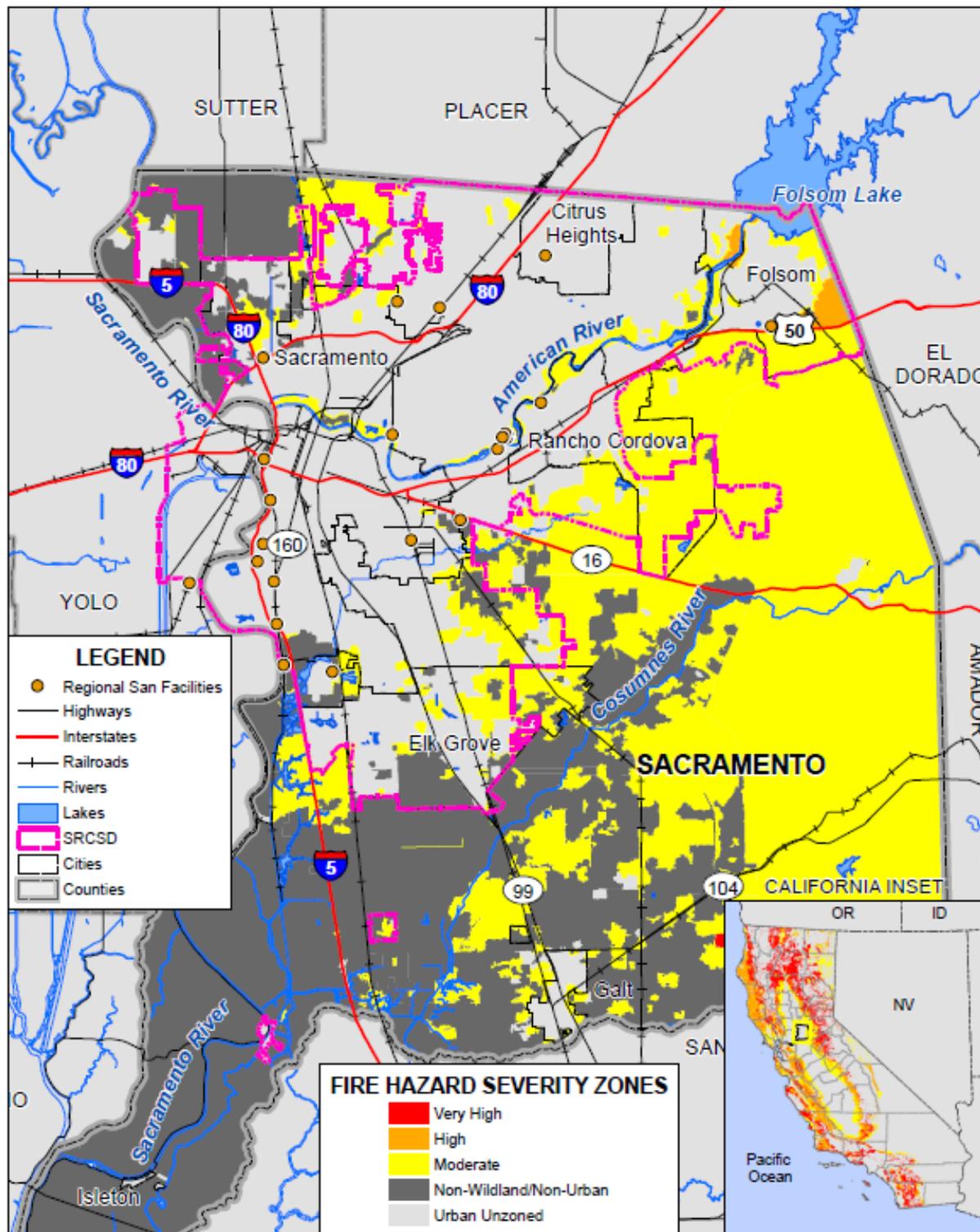
Wildland fire and the risk of a conflagration is an ongoing concern for Regional San. Throughout California, communities are increasingly concerned about wildfire safety as increased development in the foothills and mountain areas and subsequent fire control practices have affected the natural cycle of the ecosystem. Wildland fires affect grass, forest, and brushlands, as well as any structures located within them. Where there is human access to wildland areas the risk of fire increases due to a greater chance for human carelessness and historical fire management practices. Historically, the fire season extends from early spring through late fall of each year during the hotter, dryer months; however, in recent years, the risk of wildfire has become a year around concern. Fire conditions arise from a combination of high temperatures, low moisture content in the air and fuel, accumulation of vegetation, and high winds. While wildfire risk has predominantly been associated with more remote forested areas and wildland urban interface (WUI) areas, significant wildfires can also occur in more populated, urban areas.

Location and Extent

Wildfire can affect all areas of the District. CAL FIRE has estimated that the risk varies across Regional San and has created maps showing risk variance. Following the methodology described in Section 4.3.16

of the Base Plan, wildfire maps for Regional San were created. Figure O-10 shows the CAL FIRE Fire Hazard Severity Zone (FHSZ) in the District. As shown on the maps, fire hazard severity zones within the District range from Urban Unzoned to Moderate. Figure O-11 shows the CAL FIRE Fire Threat Areas in the City. As shown on the maps, fire threat within the District ranges from No Threat to Very High. Regional San has identified areas and District assets at risk to wildfire. The Bufferlands, Nicolaus Dairy, and the Sims Ranch structures are susceptible to wildfire and Regional San has a plan to mitigate those risks.

Figure O-10 Regional San – Fire Hazard Severity Zones

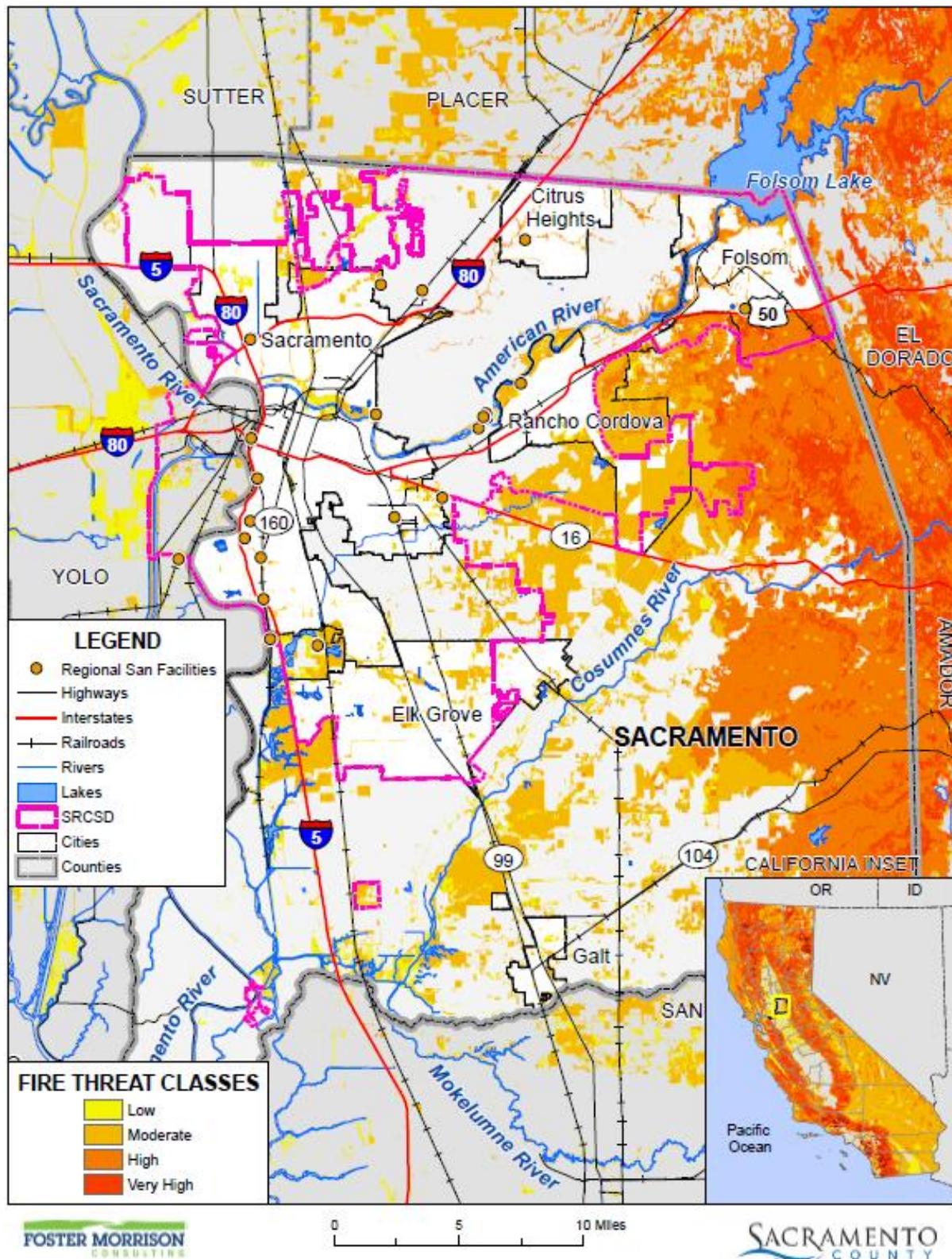


FOSTER MORRISON
CONSULTING

SACRAMENTO
COUNTY

Data Source: Cal-Fire 2017 (Draft 9/2007 - c34fhszl06_1, Adopted 11/2007 - fhsz06_3_34, Recommended 10/2008 - c34fhszl06_3), Sacramento Regional County Sanitation District, Sacramento County GIS, Cal-Atlas; Map Date: 09/2020.

Figure O-11 Regional San – Fire Threat Areas



Data Source: Cal-Fire 2017 Fire Threat Data (fthrt14_2), Sacramento Regional County Sanitation District, Sacramento County GIS, Cal-Atlas; Map Date: 09/2020.

Wildfires tend to be measured in structure damages, injuries, and loss of life as well as on acres burned. Fires can have a quick speed of onset, especially during periods of drought or during hot dry summer months. Fires can burn for a short period of time, or may have durations lasting for a week or more.

Past Occurrences

There has been one state and no federal disaster declarations for Sacramento County from fire. It should be noted that this was from Southern Pacific Railroad Fires and Explosions (Roseville), so it was not truly a wildfire.

Table O-17 Sacramento County – State and Federal Disaster Declarations Summary 1950-2020

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Fire	1	1973	0	–

Source: Cal OES, FEMA

Regional San Bufferlands: The Bufferlands are subject to periodic grassfires which are extinguished by local firefighters. Damage estimates typically range from \$1,000 to \$5,000.

Nicolaus Dairy and Sims Ranch: There have not been any recorded fires affecting these historic structures, but since they are surrounded by native grasses, they are subject to fires during the seasonally dry months.

Vulnerability to and Impacts from Wildfire

Risk and vulnerability to the Sacramento County Planning Area and the District from wildfire is of significant concern, with some areas of the Planning Area being at greater risk than others as described further in this section. High fuel loads in the Planning Area, combined with a large built environment and population, create the potential for both natural and human-caused fires that can result in loss of life and property. These factors, combined with natural weather conditions common to the area, including periods of drought, high temperatures, low relative humidity, and periodic winds, can result in frequent and potentially catastrophic fires. During the May to October fire season, the dry vegetation and hot and sometimes windy weather results in an increase in the number of ignitions. Any fire, once ignited, has the potential to quickly become a large, out-of-control fire. As development continues throughout the County and the District, especially in these interface areas, the risk and vulnerability to wildfires will likely increase.

Potential impacts from wildfire include loss of life and injuries; damage to structures and other improvements, natural and cultural resources, croplands, and loss of recreational opportunities. Wildfires can cause short-term and long-term disruption to the District. Fires can have devastating effects on watersheds through loss of vegetation and soil erosion, which may impact the District by changing runoff patterns, increasing sedimentation, reducing natural and reservoir water storage capacity, and degrading water quality. Fires can also affect air quality in the District; smoke and air pollution from wildfires can be a severe health hazard.

Although the physical damages and casualties arising from large fires may be severe, it is important to recognize that they also cause significant economic impacts by resulting in a loss of function of buildings

and infrastructure. Economic impacts of loss of transportation and utility services may include traffic delays/detours from road and bridge closures and loss of electric power, potable water, and wastewater services. Schools and businesses can be forced to close for extended periods of time. Recently, the threat of wildfire, combined with the potential for high winds, heat, and low humidity, has caused PG&E to initiate PSPSs which can also significantly impact a community through loss of services, business closures, and other impacts associated with loss of power for an extended period. More information on power outage and failure can be found at the beginning of Section 0 above, as well as in Section 4.3.3 of the Base Plan. In addition, catastrophic wildfire can create favorable conditions for other hazards such as flooding, landslides, and erosion during the rainy season.

Though Regional San was not significantly affected by wildfire and its impacts, the employees of the District may be inadvertently affected by the damages wildfires cause in surrounding areas and the resulting poor air quality. There were some limited impacts to construction and outdoor maintenance activities due to dense smoke. Safety protocols were established and followed by staff affected.

Assets at Risk

Regional San has identified the following assets in Table O-18 as being potentially affected from a wildfire event.

Table O-18 Regional San – Assets at Risk in Fire Threat Areas

Facility #	Facility Name	2021 Asset Value
Little or Moderate Fire Threat		
-	Regional San Bufferlands	\$12,200,901
-	Sims Ranch	\$145,961
-	Nicolaus Dairy	\$1,333,666
-	Regional San Archeological Site CA-SAC-83	(1)
Moderate Fire Threat		
N41	City Water Line to the SRWTP	\$518,086
N20	Arden Force Main Oxygen Structure	\$3,404,562
N15&N16	Northeast Siphon Inlet & Outlet Structure	\$10,361,710
N40	Iron Point Sewage Pumping Station & Force Mains	\$15,831,075
FM692	McClellan Flow Meter	\$13,756,812
Total		\$57,552,773

Source: Regional San

(1) Costs for this site have not been estimated.

O.6 Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment is divided into five sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, mitigation education, outreach, and partnerships, and other mitigation efforts.

O.6.1. Regulatory Mitigation Capabilities

Table O-19 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in the Regional San.

Table O-19 Regional San Regulatory Mitigation Capabilities

Plans	Y/N Year	Does the plan/program address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan/General Plan	Y	Regional San Emergency Response Plan (October 2009) SRWTP Flood Response Manual (October 2007) Sanitary Sewer Overflow Response Plan for Interceptor System (September 2007)
Capital Improvements Plan	Y	Rate and Fee Study (2009 and 2011) Capital Funding Needs Projections (Annual) SRWTP 2020 Master Plan 2000 Interceptor Master Plan 2009 Interceptor Sequencing Study
Economic Development Plan	N	
Local Emergency Operations Plan	Y	SRWTP Administrative Operating Procedures (2011)
Continuity of Operations Plan	Y	Regional San Continuity of Operations Plan (November 2017)
Transportation Plan	N	
Stormwater Management Plan/Program	Y	Regional San requires compliance with Sacramento County Standard Construction Specifications Stormwater Compliance sections and State Water Resources Control Board Construction General Permit, Order 2009-0009-DWQ and Industrial General Permit, State Water Board Order No. 97-03-DWQ
Engineering Studies for Streams	N	
Community Wildfire Protection Plan	N	
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)	Y	Regional San Flood Risk Evaluation for the South River Pump Station South River Pump Station Emergency Response Plan Pump Station Protection Plan for the South River Pump Station Flood Protection Project Draft Report
Building Code, Permitting, and Inspections	Y/N	Are codes adequately enforced?
Building Code	Y	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score	N	Score:
Fire department ISO rating:	Y	Rating: 3/9 (urban/rural)

Site plan review requirements	Y	Work in conjunction with the Sacramento Area Sewer District and other local jurisdictional authorities to review site plans to ensure code compliance for building, mechanical, plumbing, etc. and to ensure compliance with local ordinances. County of Sacramento Construction Management and Inspection Division services are utilized during construction to ensure continued compliance.
Is the ordinance an effective measure for reducing hazard impacts?		
Land Use Planning and Ordinances	Y/N	Is the ordinance adequately administered and enforced?
Zoning ordinance	Y	The ordinance is an effective measure for reducing hazard impacts. The ordinance is adequately administered and enforced.
Subdivision ordinance	N	
Floodplain ordinance	N	
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	N	
Flood insurance rate maps	N	
Elevation Certificates	N	
Acquisition of land for open space and public recreation uses	N	
Erosion or sediment control program	Y	Require compliance with Sacramento County Standard Construction Specifications Erosion and Sediment Control Compliance sections State Water Resources Control Board Construction General Permit, Order 2009-0009-DWQ
Other	Y	Use design standards for facilities. These standards include items such as fire protection systems, building alarms, etc. These standards are shown in Sewage Pump Station Design Manual (Feb ;2005); Interceptor Design Manual (October 2003); and SRWTP Guide Specifications (2006/07).
How can these capabilities be expanded and improved to reduce risk?		
The capabilities can be improved upon by continuing to regularly update the plans with respect to the hazards identified as destructive to Regional San operations. We will also work with the County of Sacramento for plans that do not apply specifically to Regional San.		

Source: Regional San

Regional San Emergency Response Plan

The purpose of this Emergency Response Plan (ERP) is to provide Regional San with a response and recovery protocol to prepare for, minimize, and mitigate injury and damage resulting from emergencies or disasters of man-made or natural origin, while ensuring continuity of treatment plant and interceptor sewer collector system operations. This plan assigns roles and responsibilities to individuals for managing emergency response and support services. The ERP documents the steps needed to ensure reliable conveyance and treatment of wastewater during an emergency event. The ERP assists in meeting the following objectives:

- Provide for a safe and coordinated response to emergencies
- Ensure effective communication between local or regional responders to an emergency

- Ensure continuity of the wastewater collection system and treatment process
- Minimize wastewater system damage
- Minimize adverse effects on the environment
- Minimize negative impacts on public health and employee safety

SRWTP Flood Response Manual

The SRWTP Flood Response Manual was created in 1997 and is updated periodically to maintain up-to-date flood response procedures. The document provides recommended actions for possible flood scenarios at SRWTP. The document is meant to provide preventative measures to help prevent flooding of SRWTP as well as response procedures for responding to unavoidable flood situations. The plan contains recommended actions to help prevent the SRWTP from flooding and to minimize damages when preventing flooding is not possible. Each flood alert state has corresponding flood response actions.

Sanitary Sewer Overflow Response Plan

The Sanitary Sewer Overflow (SSO) Response Plan for the Interceptor System identifies measures to protect public health and the environment. It contains important information and resources that will be used during and after an SSO occurrence. The purpose of this plan is to identify the necessary procedures for notification, response, reporting, and clean-up of SSOs that may occur within the Interceptor System. Additionally, the document attempts to improve communication between satellite agencies and Regional San through the development and implementation of the practices described in this report.

Sewage Pump Station Design Manual

This manual was prepared for use as an overall criteria or standard to ensure consistency for pump station design projects. The manual provides guidance for the most effective design practices for new pumping stations and is intended to:

- Establish design guidelines for new pump stations in interceptor conveyance and local trunk collection systems,
- Identify design functions required by a pump station design consultant,
- Provide an acceptable level of quality and uniformity in pump station design,
- Provide design consistency.

Interceptor Design Manual

The Regional San Interceptor Design Manual is used for design and construction of the interceptor system including ancillary components. This manual provides guidelines that are used for interceptor projects such as pipe design criteria, hydraulic analysis, geotechnical reports, right of way recommendations, surveying, construction techniques and materials, inspection, safety, project management and administration, and other topics that are standard to the Districts interceptor pipe projects. The manual provides clear guidance and direction for interceptor projects to set forth working relationships among the parties involved in the projects, establish criteria that will result in acceptable levels of quality and uniformity in procedure and finished project, and obtain cost savings in production of design and construction.

SRWTP Guide Specifications

The guide specifications provide standards for construction projects at the Sacramento Regional Wastewater Treatment Plant (SRWTP). These specifications provide guidance on bidding, contractor experience requirements, equipment and materials, general conditions, coordination with existing operations, etc. The guide specifications ensure that construction projects are completed so as to conform with SRWTP standards.

2000 Interceptor Master Plan/Interceptor Sequencing Study

Long range planning is essential to managing expansion of the regional wastewater system in a cost-effective manner. Construction typically occurs only in response to actual growth and facilities constructed will have a projected 50-100 year service life. The Interceptor Master Plan and subsequent Interceptor Sequencing Study are based on the master plans of surrounding cities, counties and communities within the service area. The planning documents provide long-term guidance for timely investment of resources.

SRWTP Flood Response Manual

This manual provides preventative measures to help prevent flooding of SRWTP as well as response procedures for unavoidable flood situations. The report is updated annually to maintain current flood response procedures.

Flood Risk Evaluation for the South River Pump Station

This study included an evaluation and analysis of the pump station including a comprehensive evaluation of the current level of flood protection at the South River Pump Station and analysis of alternatives for improvements to provide additional flood protection. The study evaluated the impacts of the 100 and 200-year storm events caused by local flooding and levee failure on the Sacramento River in the vicinity of the South River Pump Station. The study also provided an assessment of potential damage to the facility caused by flooding.

South River Pump Station Emergency Response Plan

This plan provides the District with preparation and response procedures to ensure continued operation of the South River Pump Station in the event of major or minor flooding events.

West Sacramento Emergency Flow Plan

This plan provides procedures for operation of the South River Pump Station during flood events to maintain sewer service to the City of West Sacramento.

O.6.2. Administrative/Technical Mitigation Capabilities

Table O-20 identifies Regional San department(s) responsible for activities related to mitigation and loss prevention in Regional San.

Table O-20 Regional San’s Administrative and Technical Mitigation Capabilities

Administration	Y/N	Describe capability Is coordination effective?
Planning Commission	Y	Annual emergency and risk planning. Coordination is effective.
Mitigation Planning Committee	N	
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	N	
Mutual aid agreements	Y	Folsom, City of Sacramento, City of West Sacramento, Sacramento Area Sewer District
Other		
Staff	Y/N FT/PT	Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?
Chief Building Official	N	
Floodplain Administrator	N	
Emergency Manager	Y FT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigation. Coordination is effective.
Community Planner	Y FT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigation. Coordination is effective.
Civil Engineer	Y FT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigation. Coordination is effective.
GIS Coordinator	Y FT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigation. Coordination is effective.
Other		
Technical		
Warning systems/services (Reverse 911, outdoor warning signals)	N	
Hazard data and information	Y FT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigation. Coordination is effective.
Grant writing	Y FT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigation. Coordination is effective.
Hazus analysis	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		
Capabilities can be expanded on by holding regular meetings to alert the staff of any mitigation risks and hazards identified to ensure proper conduct. Capabilities can also be improved by converting any part-time employees to full-time to guarantee consistency and technical improvement in the role.		

Source: Regional San

O.6.3. Fiscal Mitigation Capabilities

Table O-21 identifies financial tools or resources that the District could potentially use to help fund mitigation activities.

Table O-21 Regional San’s Fiscal Mitigation Capabilities

Funding Resource	Access/ Eligibility (Y/N)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Y	This funding resource has been used in the past and could be used to fund future mitigation actions.
Authority to levy taxes for specific purposes	N	
Fees for water, sewer, gas, or electric services	Y	This funding resource has been used in the past and could be used to fund future mitigation actions.
Impact fees for new development	Y	This funding resource has been used in the past and could be used to fund future mitigation actions.
Storm water utility fee	N	
Incur debt through general obligation bonds and/or special tax bonds	Y	This funding resource has been used in the past and could be used to fund future mitigation actions.
Incur debt through private activities	N	
Community Development Block Grant	Y	This funding resource has been used in the past and could be used to fund future mitigation actions.
Other federal funding programs	Y	This funding resource has been used in the past and could be used to fund future mitigation actions.
State funding programs	Y	This funding resource has been used in the past and could be used to fund future mitigation actions.
Other		
How can these capabilities be expanded and improved to reduce risk?		
The capabilities can be expanded upon by continuing to train staff and allocate resources to reducing hazard risks. In addition, we can improve upon this list by researching other funding resources to fund future mitigation actions.		

Source: Regional San

O.6.4. Mitigation Education, Outreach, and Partnerships

Table O-22 identifies education and outreach programs and methods already in place that could be/or are used to implement mitigation activities and communicate hazard-related information.

Table O-22 Regional San’s Mitigation Education, Outreach, and Partnerships

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	N	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Y	Conservation of water relating to mitigation of drought effects. The program can help implement future mitigation activities.
Natural disaster or safety related school programs	N	
StormReady certification	N	
Firewise Communities certification	N	
Public-private partnership initiatives addressing disaster-related issues	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		
These capabilities can be improved upon by updating the programs and outreach as new hazards and risks present themselves to Regional San. Regional San will continue to train staff to ensure quality mitigation education.		

Source: Regional San

O.6.5. Other Mitigation Efforts

Regional San will participate as required during activation of the Sacramento County Office of Emergency Services for local and emergency events to assist in emergency coordination and intends to look for funding required to continue and complete projects identified that are necessary to protect Regional San assets to allow continued service to local communities.

Some of Regional San’s past or current hazard mitigation projects include:

- **SRWTP Ring Levee Improvements:** In 1997, the design and construction for the perimeter levee improvements were completed. The purpose of the project was to enhance the level of flood protection for the SRWTP by improving existing flood protection facilities and constructing new facilities.
- **South River Pump Station Low Level Flood Protection Project:** In 2009, Regional San completed a temporary flood mitigation project for the South River Pump Station (SRPS) located in Yolo County. When the SRPS was designed and constructed, the SRPS was shown on the Yolo County FIRM to be in the 500-year floodplain. Shortly afterwards, the surrounding levees were re-evaluated and the SRPS is now shown in the 100-year flood plain. The temporary flood mitigation project for the SRPS consisted of constructing a sealed, custom (no holes) 2-foot 8-inch K-Rail wall around the pump station perimeter at an estimated cost of \$76,000. This temporary mitigation is effective against low-level flooding (i.e., 8 to 12 inches of water depth).
- **Bufferlands Fire Break Maintenance (ongoing):** Annually by the end of May, Regional San uses a combination of mowing and disking to establish firebreaks on the Bufferlands as a fire control measure. The firebreak widths vary from 30-60 feet depending on the habitat types and fire risks.
- **South River Pump Station (SRPS) Flood Protection Project:** The project, completed in 2018, consisted of constructing a new flood protection levee and a raised all-weather access road around the existing

SRPS. The ring levee and raised access road consist of a 22-foot high, 160-foot wide bottom width, earthen embankment that surrounds the SRPS and provides access from South River Road in the event that flooding occurs. The newly constructed flood protection system is designed to provide a minimum of 200-year level of protection.

O.7 Mitigation Strategy

O.7.1. Mitigation Goals and Objectives

The Regional San adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

O.7.2. Mitigation Actions

The planning team for the Regional San identified and prioritized the following mitigation actions based on the risk assessment. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, potential funding, estimated cost, and timeline are also included. The following hazards were considered a priority for purposes of mitigation action planning:

- Dam Failure
- Floods: 1%/0.2% annual chance
- Levee Failure
- Pandemic
- Wildfire

It should be noted that many of the projects submitted by each jurisdiction in Table 5-4 in the Base Plan benefit all jurisdictions whether or not they are the lead agency. Further, many of these mitigation efforts are collaborative efforts among multiple local, state, and federal agencies. In addition, the countywide public outreach action, as well as many of the emergency services actions, apply to all hazards regardless of hazard priority. Collectively, this multi-jurisdictional mitigation strategy includes only those actions and projects which reflect the actual priorities and capacity of each jurisdiction to implement over the next 5-years covered by this plan. It should further be noted, that although a jurisdiction may not have specific projects identified for each priority hazard for the five year coverage of this planning process, each jurisdiction has focused on identifying those projects which are realistic and reasonable for them to implement and would like to preserve their hazard priorities should future projects be identified where the implementing jurisdiction has the future capacity to implement.

Multi-Hazard Actions

Action 1. Develop Climate Change Resiliency Plan

Hazards Addressed: Climate Change, Dam Failure, Drought & Water Shortage, Floods: 1%/0.2% annual chance, Floods: Localized Stormwater, Levee Failure, Severe Weather, Wildfire

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background: With climate change creating more intense seasons of drought and extreme weather, it is important to prepare adaptation and mitigation measures for continuing or worsening climate change effects.

Project Description: To perform an asset level risk assessment based on climate variability and change, and develop recommendations for adaptation and mitigation actions to reduce vulnerabilities intensified by climate change.

Other Alternatives: Develop a Climate Action Plan (CAP)

Existing Planning Mechanism(s) through which Action Will Be Implemented: Develop scope of work; procure consultant; perform study

Responsible Agency/ Department/Partners: Regional San Policy and Planning Department

Cost Estimate: \$300,000

Benefits (Losses Avoided): Mitigate continuing or worsening climate change effects with recommended projects.

Potential Funding: Grants; Regional San Operations Fund

Timeline: Release RFP by end of 2021

Project Priority (H, M, L): H

Action 2. Replace current equipment with touchless technologies

Hazards Addressed: Pandemic

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background: The transfer of germs can be enhanced by every-day actions like using equipment in shared spaces and opening doors. These are especially important in society's current state of pandemic to mitigate by installing touchless technologies to provide a more hygienic workplace.

Project Description: Replace current equipment with touchless technologies to create a more hygienic workplace.

Other Alternatives: No other alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Installing touchless thermometer stations; installing touchless hand-drying stations, hand-washing stations and soap dispensers.

Responsible Agency/ Department/Partners: Regional San Safety Office

Cost Estimate: \$50,000

Benefits (Losses Avoided): Bring staff back to office safely, avoid outbreak of illnesses.

Potential Funding: Regional San Operations Fund

Timeline: current

Project Priority (H, M, L): H

Action 3. Complete I&I Study and Develop I&I Policy

Hazards Addressed: Dam Failure, Floods: 1%/0.2% annual chance, Flood: Localized Stormwater, Severe Weather: Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background: The SRWTP has experienced recent increases in Peak Wet Weather Flows (PWWF) due to suspected inflow and infiltration (I/I) during peak storm events. I/I is problematic for the SRWTP because it creates inconsistency in flow patterns and changes the quality of the influent which has an adverse impact on operational efforts.

Project Description: Regional San executed a District Engineer's agreement with Woodard & Curran to develop a work plan to coordinate and perform a region-wide interagency study. The study will evaluate I&I in the conveyance systems tributary to the SRWTP and inform the development of a policy to comprehensively address I&I in an efficient and cost effective manner.

Other Alternatives: Do nothing.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Hire consultant to execute a workplan for I&I study; develop I&I policy

Responsible Agency/ Department/Partners: Woodard & Curran, Regional San Policy & Planning, Contributing Agencies

Cost Estimate: \$700,000

Benefits (Losses Avoided): Avoid inconsistent flow patterns; avoid impact to SRWTP Operations, and unsafe discharge of wastewater.

Potential Funding: Regional San operations fund

Timeline: current

Project Priority (H, M, L): M

Action 4. Regional San Biogeneration Facility

Hazards Addressed: Climate Change, Extreme Heat

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background: Regional San currently delivers renewable biogas to SMUD in exchange for reliable utility and backup power, steam for digester heating, and revenue according to the terms of the existing Commodity Agreement. The original driver for the agreement was the co-location of the Carson Cogeneration Plant on the SRWTP site, where digester gas helped fuel the power plant, and steam from the power plant could be returned for digester heating, but SMUD no longer combusts the digester gas on-site. Currently, SMUD sends Regional San’s biogas offsite to the Cosumnes Power Plant (via private pipeline), and steam for the digesters is produced by a natural-gas-fueled auxiliary boiler instead of the Carson Cogen Plant. With the Commodity Agreement expiring in 2025, Regional San is pursuing an alternative use for its biogas. Another driving force for a new biogas utilization project is to get Regional San exempted from “covered” process regulations via onsite biogas use. The level of effort associated with compliance with these regulations is significant.

Project Description: Sacramento Regional County Sanitation District (Regional San) is soliciting Design-Builders to design, build, provide extended commissioning/transitional operation, and maintenance services for the Sacramento Regional Wastewater Treatment Plant (SRWTP) Biogas Cogeneration System (Project) in Elk Grove, California.

Other Alternatives: No other alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Design-Build contractor procurement in progress; execute design builder agreement anticipated early 2022; project completion anticipated 2025

Responsible Agency/ Department/Partners: Regional San

Cost Estimate: \$104,000,000

Benefits (Losses Avoided): Onsite biogas-use reducing our carbon footprint

Potential Funding: Regional San Capital Outlay Fund, grants

Timeline: Current-2025

Project Priority (H, M, L): H

Action 5. Reduction of Fire Hazard of Regional San Bufferlands

Hazards Addressed: Severe Weather: Extreme Heat, Wildfires, Drought and Water Shortage

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background: Hot, dry summers increase the likelihood of wildfire on the Bufferlands area surrounding the Sacramento Regional Wastewater Treatment Plant (SRWTP). While much of the habitat of the Bufferlands is fire adapted, high fuel loads associated with the prevalent annual herbaceous vegetation on the property puts some habitats, crops, and infrastructure at risk.

Project Description: To minimize the risk of wildfire on the Bufferlands, Regional San annually establishes firebreaks between public roads and sensitive resources. Firebreaks are either disked to bare ground at a width of 30 feet or mowed to a height of 4-inches or less at a width of 100 feet. Grazing leases are utilized to reduce summer fuel loads on a large portion of Regional San upland habitat. Through lease agreements, Regional San requires that agricultural tenants be responsible for establishing fire breaks around their sensitive crop areas.

Other Alternatives: No other alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Annual O&M planning

Responsible Agency/ Department/Partners: SRWTP Bufferlands Office

Cost Estimate: \$50,000 annually

Benefits (Losses Avoided): Avoids fire damage to grasslands, tree mitigation lands, sensitive habitat area, crops, infrastructure.

Potential Funding: Regional San Operations Fund; tenants required to fund mitigation on tenant-occupied land

Timeline: Annually

Project Priority (H, M, L): L

Action 6. Update GHG Emissions Inventory

Hazards Addressed: Climate Change

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background: Regional San's GHG emissions inventory will be separate but supplemental to the Climate Resiliency Plan. Updating the inventory will allow Regional San to identify areas that produce the greatest emissions.

Project Description: Update the GHG emissions inventory last tabulated for 2005 values using improved best practices.

Other Alternatives: Escalate 2005 emissions using population, employment and housing data.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Collect data from the SRWTP, fleet, and Goethe office; coordinate with Climate Resiliency Study

Responsible Agency/ Department/Partners: Regional San Policy & Planning

Cost Estimate: \$100,000

Benefits (Losses Avoided): Identify high emissions to reduce our climate change footprint.

Potential Funding: Grants, Regional San Operations Fund

Timeline: 2021-2022

Project Priority (H, M, L): M

Action 7. Study Telecommute Options and Enhanced Information Technology Needs to Support Workforce

Hazards Addressed: Pandemic, Climate Change

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background: During the COVID-19 shut-down, Regional San has become more equipped to work from home. As the county begins to return to business-as-usual, Regional San can study telecommute options seen during this work-from-home period to prepare for a resilient workforce in the chance of further lock-down situations.

Project Description: Evaluate a policy that permits telecommuting amongst employees that have the capability to work from home.

Other Alternatives: Update existing telecommuting policy to reflect lessons learned from COVID-19

Existing Planning Mechanism(s) through which Action Will Be Implemented: Enhancing VPN capabilities, updating and researching video conferencing software, providing equipment for an optimal at-home desk setup.

Responsible Agency/ Department/Partners: Regional San

Cost Estimate: \$50,000

Benefits (Losses Avoided): Increases resiliency to future pandemic issues and reduces GHG emissions.

Potential Funding: Regional San Operations Fund

Timeline: June 2021

Project Priority (H, M, L): H