4.18 WATER SUPPLY

This section evaluates the water supply impacts of the proposed Plan.

4.18.1 EXISTING CONDITIONS

This section describes the general water supply conditions of both potable water and groundwater supply in the San Diego region, including local water supplies, imported water supply, desalination, and water recycling efforts. The existing conditions discussion provided below is primarily summarized from the Urban Water Management Plans (UWMPs) prepared by the applicable water supply agencies including the San Diego County Water Authority (SDCWA) and the Metropolitan Water District (MWD) (SDCWA 2021a, MWD 2021a). UWMPs have a 25-year planning horizon. The existing water supply conditions are based on the most recent available data for the San Diego region. Hydrological conditions and surface and groundwater water quality are addressed in Section 4.10, *Hydrology and Water Quality*.

METROPOLITAN WATER DISTRICT

The following information about MWD is summarized from their 2020 UWMP, dated March 2021 (MWD 2021a), unless noted otherwise. MWD is a public agency formed in 1928 for the purpose of developing, storing, and distributing water to the residents of Southern California. MWD's mission is "to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way" (MWD 2018a). MWD imports water from two sources: (1) the Colorado River water via the Colorado River Aqueduct and (2) the State Water Project (SWP) via the California Aqueduct from the Bay/Delta area in Northern California. The Colorado River aqueduct is more than 240 miles long, beginning at Lake Havasu on the Arizona/California border and ending at Lake Mathews in Riverside County. The aqueduct has the capacity to deliver up to 1.25 million acre-feet of water per year. The SWP is owned by the State of California and operated by the Department of Water Resources (DWR). The California Aqueduct, which conveys water from the SWP, is owned and operated by DWR. The SWP stretches for more than 600 miles, from Lake Oroville in the north to Lake Perris in the south. Water is stored at Lake Oroville and released when needed into the Feather River, which flows into the Sacramento River and to the Delta. The Delta is the largest estuary on the United States' west coast and is used for multiple purposes, including agriculture, recreation, and fishing, and provides the means by which to deliver water from Northern California to the south. SWP facilities provide drinking water to 23 million Californians and irrigation water for 755,000 acres of farmland (SDCWA 2021a).

MWD's service area covers nearly 5,200 square miles and includes portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. MWD serves approximately 19 million residents and is composed of 26 member agencies, including 14 cities, 11 municipal water districts, and 1 county water authority, the SDCWA. MWD's member agencies serve residents in 152 cities and 89 unincorporated communities (MWD 2016). Average daily delivery (5-year average as of December 31, 2015) is 5,000 acre-feet (MWD 2018b). An acre-foot is approximately 325,900 U.S. gallons, or roughly enough to supply 2.5 single-family households of four people for a year (SDCWA 2018a). MWD is a water wholesaler with no retail customers. To aid in planning future water needs, member agencies advise MWD of how much water they anticipate needing during the next 5 years. In addition, MWD works with its member agencies to forecast future water demand and develop emergency supply strategies to ensure a secure, long-term water supply.

SAN DIEGO COUNTY WATER AUTHORITY

The following information is summarized from SDCWA's 2020 UWMP unless noted otherwise. SDCWA was formed in 1944 and became a member of MWD in 1946 to obtain Colorado River water for the San Diego region. SDCWA's mission is to provide a "safe and reliable supply of water to its member agencies serving the San Diego region". SDCWA has 24 member agencies: 6 cities, 5 water districts, 3 irrigation districts, 8 municipal water districts, 1 public utility district, and 1 federal military agency. Its service area covers about 951,000 acres (1,486 square miles), encompassing the western third of the County, and includes approximately 3.3 million people. SDCWA's member agencies include Carlsbad, Fallbrook, Helix, Lakeside, Olivenhain, Otay, Padre Dam, Rainbow, Ramona, Rincon del Diablo, San Dieguito, Santa Fe, South Bay, Vallecitos, Valley Center, Vista, and Yuima water districts; Camp Pendleton Marine Corps Base; and the cities of Del Mar, Escondido, National City, Oceanside, Poway, and San Diego. Coronado and Imperial Beach are not within SDCWA's service area (County of San Diego 2016); however, as they obtain their water from the City of San Diego, their water consumption is included in regional water use. The supply of these two cities originates primarily from water imported by the SDCWA and provided to the City of San Diego, and secondarily from water captured in City of San Diego reservoirs.

SDCWA classifies water demand within its service area into two categories: municipal and industrial (M&I), and agricultural. The M&I demand classification includes residential demand and water used for commercial, industrial, and institutional purposes. M&I use amounts to 92 percent of water demand. SDCWA utilizes an econometric model to develop its long-range M&I demand forecasts, which is based on the U.S. Army Corps of Engineers' Municipal and Industrial Needs model and the SANDAG official growth forecasts. Agricultural demand projections are based on coordination between SDCWA, its member agencies, SANDAG, County of San Diego Agricultural Weights and Measures, and the California Avocado Commission.

As an urban water supplier, SDCWA is required to submit a complete version of its UWMP to DWR every 5 years. SDCWA prepared the 2020 UWMP in accordance with the Urban Water Management Planning Act. In addition to the 2020 UWMP, SDCWA also prepares Annual Water Supply Reports to provide updated information on development of local and imported water supplies. The 2013 Regional Water Facilities Optimization and Master Plan Update (2013 Master Plan Update) (SDCWA 2013) serves as a comprehensive evaluation of infrastructure requirements needed to ensure water supply for the SDCWA service area. The Capital Improvement Projects included in the Master Plan Update are designed to meet projected water supply and delivery needs of the member agencies through 2035. These supporting documents provide the most relevant source of baseline information for understanding existing SDCWA water supply conditions.

Table 4.18-1 shows annual regional water use (excluding recycled water) within SDCWA's service area from 2016 through 2020. Total potable water use for 2020 increased approximately 6 percent compared to the prior year.

Table 4.18-1
SDCWA Service Area Regional Water Use (acre-feet)

Year	Total Potable Water Use[1]	Municipal and Utility Water Use
2016	457,918	423,455
2017	470,275	437,346
2018	478,912	446,867
2019	429,253	407,425

Year	Total Potable Water Use[1]	Municipal and Utility Water Use
2020	457,963	432,584

Source: SDCWA 2021b.
[1] Excludes reclaimed water.

SDCWA Water Supply Sources

SDCWA supplies imported water to the San Diego region for wholesale distribution to its member agencies and is now the predominant water provider in the County, supplying 75 to 95 percent of the San Diego region's water. Historically, SDCWA has relied predominantly on imported water supplies purchased from MWD to meet the needs of its member agencies. SDCWA is MWD's largest member agency, purchasing up to 30 percent of MWD's supplies annually. Overall, imported water supplies consist of water purchases from MWD, core water transfers from the Imperial Irrigation District (IID), the All-American Canal and Coachella Canal Lining Projects, and as-needed spot water transfers to offset reduced supplies (shortages) from MWD. These imported water supplies are delivered to SDCWA's member agencies through a system of large-diameter pipelines, pumping stations, and reservoirs. In addition to imported water supplies, SDCWA began delivering regional water supplies consisting of desalinated seawater from the Carlsbad Desalination Plant in December 2015. Each of the primary sources of SDCWA's water supply is detailed further below.

Metropolitan Water District Purchases

As noted, SDCWA has relied predominantly on imported water supplies purchased from MWD, acquiring up to 30 percent of MWD's annual supplies. According to MWD's 2020 Annual Report, SDCWA purchased 322,627 acre-feet (25.4 percent) of all the water MWD delivered in fiscal year 2019–2020. Imported water supplies purchased from MWD are separate from, and supplemental to, SDCWA-IID transfer supplies and water supplies from the Coachella Canal and All-American Canal Lining Projects (MWD 2018c)

SDCWA–IID Water Conservation and Transfer Agreement

On April 29, 1998, SDCWA entered into a Water Conservation and Transfer Agreement with IID for the long-term transfer of conserved Colorado River water to the San Diego region. The Water Authority–IID Water Conservation and Transfer Agreement (Transfer Agreement) is the largest agriculture-to-urban water transfer in U.S. history. Colorado River water is conserved by Imperial Valley farmers who voluntarily participate in the program by fallowing and implementing on-farm conservation projects that conserve water, which is then transferred to SDCWA for use in the San Diego region. Additionally, the IID is developing distribution system efficiency improvements to conserve water, which are planned to increase over time as the transfer volume also increases. In October 2003, SDCWA and IID executed an amendment to the original 1998 Transfer Agreement, which modified, among other things, certain aspects of the agreement to lessen the environmental impacts of transferring conserved water. In 2015, SDCWA received 100,000 acre-feet of water from the transfer up until 2019. This increased to 192,500 acre-feet in 2020. Quantities are to increase up to 200,000 acre-feet by 2021 where it would remain for the duration of the Transfer Agreement. The initial term of the Transfer Agreement is 45 years, with a provision that allows either agency to extend it for an additional 30 years. Table 4.18-2 details the existing projected water supplies based on the current Transfer Agreement (SDCWA 2021a).

Table 4.18-2
Existing and Projected SDCWA-IID Transfer Supplies – Normal Year (acre-feet/year)

2020	2021	2025	2035	2045
192,500	200,000	200,000	200,000	200,000

Source: SDCWA 2021a.

All-American and Coachella Canals

SDCWA also has a separate, 110-year agreement to receive water conserved by lining parts of the Coachella and All-American canals in Imperial Valley. As part of the Quantification Settlement Agreement and related contracts, SDCWA receives the rights to 77,700 acre-feet per year of conserved water from these two canal lining projects. SDCWA helped fund the construction of a 37-mile lining project along the Coachella Canal and a 24-mile lining project along the All-American Canal. The concrete-lined sections replaced earthen sections and conserve water previously lost to seepage (SDCWA 2021a). The Coachella Canal Lining Project involved construction of the concrete-lined canal parallel and adjacent to the existing earthen Coachella Canal. Construction was completed in 2006, at which time 26,000 acre-feet per year of conserved water began flowing to project beneficiaries. Deliveries of conserved water to SDCWA from the Coachella Canal Lining project began in 2007 (SDCWA 2018b).

The All-American Canal Lining Project involved construction of a 24-mile concrete-lined canal parallel to the existing earthen All-American Canal. Construction was completed in 2010, when its full yield of 67,700 acre-feet per year was made available to project beneficiaries (SDCWA 2018b). The project will provide SDCWA with approximately 80,000 acre-feet of conserved water per year for 110 years. The remaining canal-lining water, 16,000 acre-feet annually, belongs to several bands of Mission Indians in the northern San Diego region and helped settle a water rights dispute with the federal government and decades of litigation (SDCWA 2018b).

The canal lining projects help SDCWA achieve its goals of water supply diversification and improved water supply reliability. SDCWA anticipates that by 2020, the canal-lining transfer would constitute 15 percent of its water supply portfolio. Over the 110-year term of the agreement, 8.5 million acre-feet are anticipated to flow to the San Diego region. Table 4.18-3 details the projected supply from the two lining projects.

Table 4.18-3
Projected Supply from Canal Lining Projects – Normal Year (acre-feet per year)

	2020	2025	2030	2035	2040	2045
Coachella Canal Lining Project	21,500	22,500	22,500	22,500	22,500	22,500
All-American Canal Lining Project	56,200	56,200	56,200	56,200	56,200	56,200
Total	**77,700**	**78,700**	78,700	78,700	78,700	78,700

Source: SDCWA 2021a.

Carlsbad Desalination Plant

Desalinated seawater is a new source of water supply in the San Diego region. Development of seawater desalination in the San Diego region creates a reliable source of water by diversifying its water resources, which in turn reduces the region's dependence on imported water supplies. Additionally, desalinated seawater is a drought-proof, locally treated water supply. In 2012, SDCWA entered into a formal Water Purchase Agreement with Poseidon Water for the purchase of desalinated ocean water produced at the Claude "Bud"

Lewis Carlsbad Desalination Plant (Carlsbad Desalination Plant) and delivered to SDCWA's regional aqueduct system. The Carlsbad Desalination Plant, located at the Encina Power Station in Carlsbad, became operational in December 2015 and provides an average of 50 million gallons per day (MGD) and up to 56,000 acre-feet per year of high-quality drinking water for the region. Of this total, 6,000 acre-feet is considered water supply directly for SDCWA's member agencies. A 10-mile-long pipeline delivers water from the plant to the SDCWA Second Aqueduct. The Second Aqueduct conveys desalinated water to the SDCWA Twin Oaks Valley Water Treatment Plant (WTP), where it is integrated with existing drinking water supplies for regional distribution. Table 4.18-4 details the projected water supply deliveries to SDCWA from the Carlsbad Desalination Plant.

Table 4.18-4
Projected Supply from Carlsbad Desalination Plant – Normal Year (acre-feet per year)

2020	2025	2030	2035	2040	2045
50,000	50,000	50,000	50,000	50,000	50,000

Source: SDCWA 2021a.

Dry-Year Water Supplies and Carryover Storage

In addition to normal year water supplies, SDCWA has a carryover storage supply program to maintain water supply reliability during dry and multiple dry years. This program includes both in-region surface water storage at San Vicente Reservoir, secured as part of the San Vicente Dam project, and out-of-region groundwater storage in California's Central Valley. Because of these storage capabilities, SDCWA can store water during wet periods for use during water supply shortages.

The San Vicente Dam Raise Carryover Storage project, located in the San Vicente Reservoir, was completed in 2014 and provides approximately 105, 563 acre-feet of local storage capacity that can be made available during water supply shortages. In addition, SDCWA's out-of-region groundwater program consists of 70,000 acre-feet of permanent groundwater storage allocation in the Semitropic-Rosamond Water Bank Authority and the Semitropic Water Bank (40,000 acre-feet and 30,000 acre-feet, respectively) in Kern County. SDCWA's assigned rights include a total Program Delivery Capacity of 12,715 acre-feet per year and 10,865 acre-feet per year of Program Pumpback Capacity.

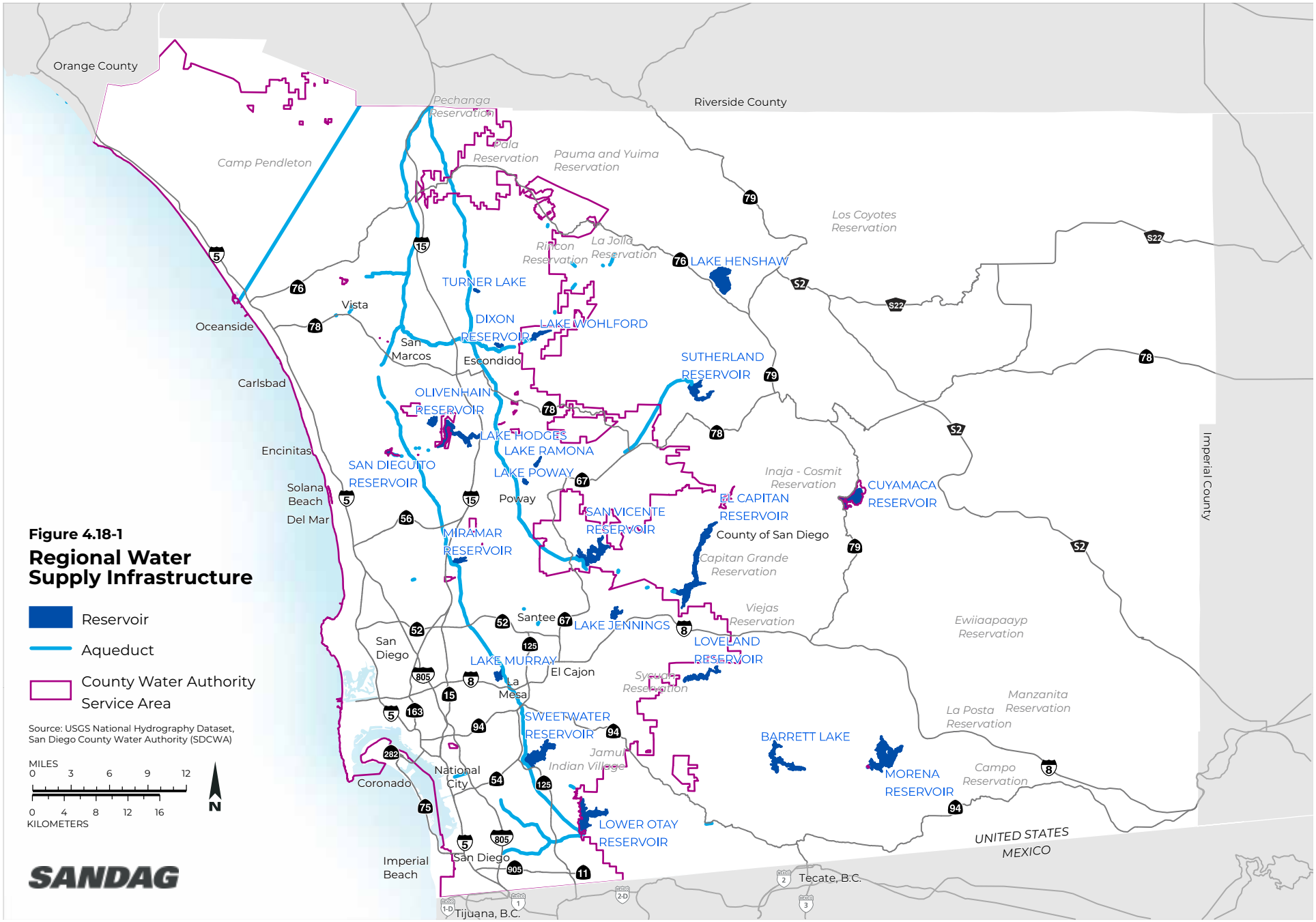
In accordance with SDCWA's Water Shortage Contingency Plan (WSCP), which guides SDCWA's water supply shortage management, use of carryover storage supplies can occur in Level 1 (Voluntary Cutbacks) and Levels 2–6 (Mandatory Cutbacks). The WSCP is discussed below.

SDCWA Member Agency Supplies

Local resources developed and managed by SDCWA's 24 member agencies are critical to securing a diverse and reliable water supply for the region. Water projects implemented at the local level help to reduce the demand for imported water and ensure a drought-resilient supply for member agencies. Member agency water supplies consist predominantly of surface water stored in reservoirs, while a small but increasing amount comes from recycled water, groundwater recovery projects, potable reuse, and desalinated seawater. A description of each of these supplies follows.

Surface Water

Surface water refers to water accumulated in local streams, rivers, and lakes from precipitation in various watersheds throughout the San Diego region. Collection and storage of local water supplies are supported by the 24 surface reservoirs located in seven of the nine coastal watersheds in the San Diego region (see Figure 4.18-1). The surface reservoirs have a combined capacity of 722,793 acre-feet. The water is placed into storage in the winter months when demand is low and pipeline capacity is available and withdrawn by the member agencies in the summer months when demand increases and pipeline capacity is restricted due to increased demands.


Orange County
Riverside County
Imperial County
Camp Pendleton
Pechanga Reservation
Pala Reservation
Pauma and Yuima Reservation
Los Coyotes Reservation
Rincon Reservation
La Jolla Reservation
LAKE HENSHAW
TURNER LAKE
Vista
Oceanside
DIXON RESERVOIR
LAKE WOHLFORD
San Marcos
Escondido
SUTHERLAND RESERVOIR
Carlsbad
OLIVENHAIN RESERVOIR
LAKE HODGES
LAKE RAMONA
Encinitas
SAN DIEGUITO RESERVOIR
LAKE POWAY
Inaja - Cosmit Reservation
CUYAMACA RESERVOIR
Solana Beach
Poway
EL CAPITAN RESERVOIR
Del Mar
SAN VICENTE RESERVOIR
MIRAMAR RESERVOIR
County of San Diego
Capitan Grande Reservation
Viejas Reservation
Ewiiaapaayp Reservation
Santee
LAKE JENNINGS
LOVELAND RESERVOIR
San Diego
LAKE MURRAY
El Cajon
Sycuan Reservation
La Mesa
Manzanita Reservation
La Posta Reservation
SWEETWATER RESERVOIR
BARRETT LAKE
Jamul Indian Village
National City
MORENA RESERVOIR
Campo Reservation
Coronado
LOWER OTAY RESERVOIR
UNITED STATES
MEXICO
Imperial Beach
San Diego
Tecate, B.C.
Tijuana, B.C.
Figure 4.18-1
Regional Water Supply Infrastructure
Reservoir
Aqueduct
County Water Authority Service Area
Source: USGS National Hydrography Dataset, San Diego County Water Authority (SDCWA)
MILES
0 3 6 9 12
0 4 8 12 16
KILOMETERS
N
SANDAG

Surface water supplies can represent the largest single local resource for SDCWA's member agencies. However, annual surface water yields can vary substantially due to fluctuating hydrologic cycles. Annual surface water yields have ranged from a low of 4,100 acre-feet in fiscal year 2015 to a high of 140,300 acre-feet in fiscal year 1984. SDCWA member agencies project average annual surface water use to increase slightly, from 44,237 acre-feet in 2020 to 44,659 acre-feet in 2045 (SDCWA 2021a). Table 4.18-5 shows the estimated average surface water supply of SDCWA's member agencies.

Table 4.18-5
SDCWA Member Agency Projected Surface Water Supply

Year	Water Supply (acre-feet per year)
2020	44,237
2025	43,957
2030	43,957
2035	44,659
2040	44,659
2045	44,659

Source: SDCWA 2021a.

Conservation

Conservation is an important resource strategy for ensuring a cost-effective reliable supply of water for the San Diego region. For the 2020 UWMP, future water conservation savings were developed for each member agency using the Alliance for Water Efficiency Water Conservation Tracking Tool, listed in DWR's 2020 UWMP Guidebook as an application to assist water purveyors in developing savings estimates (DWR 2020). Future active conservation savings are set at the 2018 level of conservation program activity moving forward, absent the recent large-scale turf replacement program and the current State Water Resources Control Board (SWRCB) State-mandated water-use reduction (SDCWA 2021a).

Potable Reuse Water

Recycled water can be further treated for potable reuse through the use of multi-barrier advanced purification treatment processes, which may include technologies such as reverse osmosis and advanced oxidation. The advanced treated water may be passed through a natural barrier, such as a groundwater basin or surface water reservoir, and provided with additional treatment to render wastewater suitable for potable purposes. Projects that include a natural barrier are considered indirect potable reuse. Projects that deliver advanced treated water directly to a raw or treated water pipeline are considered direct potable reuse.

Several SDCWA member agencies are completing studies pertaining to potable reuse in the San Diego region through groundwater recharge or reservoir augmentation. Two agencies, the City of San Diego and the Padre Dam Municipal Water District, have implemented pilot projects to determine potable reuse project viability. The City is currently developing the Pure Water Program, which is a multi-year program planned to produce 83 million gallons of purified water per day (one-third of San Diego's future drinking water supply) between 2026 and 2035. It is scheduled to be operational by 2021. The Pure Water Program will use proven water purification technology to produce safe, high-quality drinking water from treated recycled water.

Recycled Water

SDCWA works closely with its member agencies to determine the projected yield from existing and planned recycled water projects. Table 4.18-6 shows the estimated annual yield from the projects in 5-year increments based on the implementation schedules provided by the member agencies and the likelihood of development.

Table 4.18-6
Projected Recycled Water Use – Normal Year (acre-feet per year)

2020	2025	2030	2035	2040	2045
37,372	42,993	46,493	46,593	46,693	46,793

Source: SDCWA 2021a

The increase in projected recycled water use in 2020 and beyond is primarily from the expansion of existing water recycling facilities throughout the San Diego region. Recycled water development helps relieve pressure on the region's potable water supplies by providing a drought-proof, locally controlled water supply source.

The California Department of Transportation (Caltrans) is one of the largest users of recycled water in the San Diego region and is implementing a program to convert irrigation from potable water to recycled water wherever possible. Caltrans is installing water lines to bring recycled water to the Interstate (I-) 5 north coast corridor, which extends from La Jolla in San Diego to Oceanside; I-15 from Escondido to Friars Road in San Diego; State Route (SR) 52; and the eastern portion of SR 56. Caltrans also plans on expanding recycled water use in the southern part of the region on I-5, I-805 and SR 905 (Caltrans 2016).

Groundwater Supplies

The San Diego region overlies three general categories of aquifers: alluvial and sedimentary aquifers, fractured rock aquifers, and desert basin aquifers (County of San Diego 2010a). The distribution and hydrology of groundwater basins within the County of San Diego is discussed in detail in Section 4.10.

SDCWA does not currently hold groundwater basin rights, nor does it own or operate groundwater facilities within the San Diego region. However, groundwater provides an additional source of water supplies for SDCWA's member agencies. Although opportunities are limited, groundwater is currently used to meet a portion of the municipal water demands throughout SDCWA's service area from Marine Corps Base Camp Pendleton in the north to the City of National City in the south. There are several factors that limit the amount of groundwater production within SDCWA's service area, including the limited distribution of sand and gravel (alluvial) aquifers and their relatively shallow nature, lack of rainfall and associated groundwater recharge, and degraded water quality from human activities (SDCWA 2021a). Outside of the principal alluvial aquifers and farther inland, groundwater occurs in fractured crystalline bedrock and semi-consolidated sedimentary deposits where yield and storage are limited, and aquifers are best suited for lower-yielding domestic water supply wells (SDCWA 2021c).

From 2015 to 2020 (the timeframe between UWMP updates), water supply agencies within SDCWA's service area produced an annual average of approximately 22,300 acre-feet per year of potable water supplies from groundwater (SDCWA 2021a). This total includes production from both brackish groundwater desalination facilities and municipal groundwater wells. However, it does not include groundwater production from

privately owned water wells used for irrigation and domestic purposes, or groundwater produced annually from the Warner Basin by the Vista Irrigation District. Rather, this groundwater is discharged into Lake Henshaw and reported as local surface water supply by the City of Escondido and Vista Irrigation District.

In addition to providing a local supply to water agencies, groundwater is also both a primary and supplemental source of water supply for numerous private well owners, who draw on groundwater to help meet their domestic and agriculture water needs. These domestic supplies help to offset demand for imported water from SDCWA and its member agencies. However, it is difficult to accurately quantify and estimate the amount of groundwater pumped by private wells within SDCWA's entire service area (SDCWA 2021a).

While groundwater is less abundant in the San Diego region compared to other parts of the state, several water supply agencies within SDCWA's service area have identified potential projects that may provide several thousand acre-feet of additional future groundwater production. SDCWA works closely with its member agencies to develop groundwater yield projections. To be conservative, projections account for existing (verifiable) groundwater projects, which include any planned expansions to existing projects. Table 4.18-7 shows the projected annual groundwater yield from verifiable groundwater projects in 5-year increments.

4.18-7
Projected Groundwater Supply – Normal Year (acre-feet per year)

2020	2025	2030	2035	2040	2045
25,950	30,300	31,500	31,500	28,800	28,000

Source: SDCWA 2021a.
The overall increase in groundwater production from 2020 to 2040 is primarily from the recent expansion of the Richard A. Reynolds Groundwater Desalination Facility, which can now treat local groundwater supply that was previously considered non-potable or unusable.

As discussed below, the Sustainable Groundwater Management Act (SGMA) requires basins to be sustainably managed by local public agencies (e.g., counties, cities, and water agencies) that become groundwater sustainability agencies (GSAs). The main goals of the SGMA are to: (1) achieve sustainable groundwater basins, (2) enhance local management of the groundwater, and (3) establish standards for effective and continuous management of groundwater. The primary purpose of the GSAs is to develop and implement a Groundwater Sustainability Plan (GSP) to achieve long-term groundwater sustainability.

In the San Diego region, the State has designated four of the region's basins as requiring preparation of a GSP: The San Diego River Valley, San Luis Rey Valley, and San Pasqual Valley are designated as medium priority. The San Diego River Valley Basin extends from El Capitan Reservoir in the east San Vicente Reservoir in the north, and terminates just east of Mission Gorge. The San Diego River Valley Basin consists of alluvium deposited by the San Diego River and its tributaries. The San Luis Rey Valley Basin extends from the confluence of the San Luis Rey River and Paradise Creek, continuing downstream through four valleys (Pauma, Pala, Bonsall, and Mission) and ending at the Pacific Ocean in the City of Oceanside. Only the Pala and Pauma Valley portions of the basin are subject to the requirements of SGMA. The San Pasqual Valley Basin underlies San Pasqual Valley and Cloverdale, Rockwood, and Bandy Canyons in central San Diego County. Santa Ysabel, Guejito, and Santa Maria Creeks drain the valley and converge to form the San Dieguito River, which flows into Lake Hodges (County of San Diego 2018a).

The San Diego River Valley GSP is being prepared by the City of San Diego, Lakeside Water District, and Padre Dam Municipal Water District. The San Luis Rey Valley GSP is being prepared by the Pauma Community

Services District, the Upper San Luis Rey Resource Conservation District, and the Yuima Municipal Water District. The San Pasqual Valley GSP is being prepared by the City of San Diego. These GSPs are required by the SGMA to be completed by January 31, 2022 (County of San Diego 2018a).

The Borrego Valley Basin was designated as a high priority by the State due to a "critical overdraft" condition and is discussed in additional detail under *Water Supplies Outside of the SDCWA Service Area*.

SDCWA Water Supply Infrastructure and Delivery System

There are 24 surface reservoirs within SDCWA's service area, located in seven of the nine coastal watersheds in the San Diego region. Runoff in these watersheds occurs at the crest of the region's Peninsular Range and drains into the Pacific Ocean. Table 4.18-8 lists the 24 reservoirs, together with their operating agency and storage capacity. Olivenhain Reservoir, completed in 2003, is the region's newest reservoir. It is part of SDCWA's Emergency Storage Project (ESP) and has a storage capacity of 24,789 acre-feet. The ESP adds 90,100 acre-feet of additional storage capacity and is designed to protect the region from disruptions in the water delivery system.

In addition, the 2002 Regional Water Facilities Master Plan identified an opportunity to augment the ESP with a carryover storage component (CSP) at San Vicente. SDCWA completed the ESP and CSP portion of the San Vicente Dam Raise in mid-2014, which provides an additional 152,000 acre-feet of water storage capacity.

Table 4.18-8
Reservoirs in the San Diego Region

Reservoir	Operator	Usable Capacity (acre-feet)
Barrett Lake	City of San Diego	34,806
Lake Cuyamaca	Helix Water District	8,195
Dixon Reservoir	City of Escondido	2,606
El Capitan Reservoir	City of San Diego	112,807
Lake Henshaw	Vista Irrigation District	51,832
Lake Hodges	City of San Diego[1]	13,401[1]
Lake Jennings	Helix Water District	9,790
Loveland Reservoir	Sweetwater Authority	25,400
Lower Otay Lake	City of San Diego	47,067
Maerkle	City of Carlsbad	600
Miramar Lake	City of San Diego	6,682
Morena Reservoir	City of San Diego	50,694
Morro Hill	Rainbow Municipal Water District	465
Poway	City of Poway	3,432
Lake Murray	City of San Diego	4,684
Olivenhain Reservoir	Olivenhain Municipal Water District	24,774
Lake Poway	City of Poway	3,330
Lake Ramona	Ramona Municipal Water District	12,000
Red Mountain	Fallbrook Public Utility District	1,335
San Dieguito Reservoir	City of San Diego	883

Reservoir	Operator	Usable Capacity (acre-feet)
San Vicente Reservoir	City of San Diego	249,358
Sutherland Reservoir	City of San Diego	29,508
Sweetwater Reservoir	Sweetwater Authority	28,079
Turner Lake	Valley Center Municipal Water District	1,612
Lake Wohlford	City of Escondido	2,783[2]

SDCWA 2021a.
[1] The capacity accounts for the lowered reservoir level at Lake Hodges due to DWR Division of Dam Safety issues.
[2] The capacity accounts for the lowered reservoir level at Lake Wohlford due to DWR Division of Dam Safety issues.

SDCWA Water Treatment Facilities

SDCWA receives both treated and untreated water from MWD. Treated water provided by MWD is filtered at the Robert A. Skinner Treatment Plant in Hemet (Riverside County) and transported to the San Diego region for use via the First and Second San Diego Aqueducts operated by SDCWA. Untreated water received by SDCWA is treated prior to use by the public at one of the 12 water treatment facilities owned and operated by SDCWA or one of its member agencies. SDCWA owns the 100-MGD Twin Oaks Valley WTP and has agreements with the Helix Water District securing 36 MGD of treatment capacity from the R.M. Levy WTP. Water from the Levy WTP supplements treated water service to the eastern portion of the San Diego region. The balance of treated water supplies comes from WTPs owned and operated by member agencies. These water treatment facilities are listed in Table 4.18-9.

Table 4.18-9
Water Treatment Facilities within the SDCWA Service Area

Water Treatment Plant	Operator	Capacity (MGD)
Escondido-Vista WTP	City of Escondido and Vista Irrigation District	75
Robert A. Weese Filtration Plant	City of Oceanside	25
Lester J. Berglund WTP	City of Poway	24
Miramar WTP	City of San Diego	140
Alvarado WTP	City of San Diego	150
Otay WTP	City of San Diego	34
R.M. Levy WTP	Helix Water District	106
David C. McCollom WTP	Olivenhain Municipal Water District	34
R.E. Badger Filtration Plant	Santa Fe Irrigation District	40
Twin Oaks Valley WTP	San Diego County Water Authority	100
Robert A. Perdue WTP	Sweetwater Authority	30

Source: SDCWA 2021a.
MGD = million gallons per day; WTP = Water Treatment Plant

SDCWA Water Storage Contingency Plan

The WSCP (SDCWA 2020) provides an overview of SDCWA's actions to increase the region's water supply reliability and to outline the response to drought or other water shortage emergencies. It builds upon previous planning documents as well as the experience gained in two previously declared droughts in this century. A review of historic drought periods is presented along with SDCWA's actions and lessons learned during those periods. Annual water supply and demand assessment is summarized. Six regional water shortage response

actions and levels are presented, including actions required at each level and the water supply conditions that trigger the response levels. Extraordinary Demand Reduction Measures are identified. These include a list of potential consumer water use restrictions and extraordinary measures to reduce demands during shortage events. A detailed methodology for allocation of supplies to member agencies in a water supply shortage is presented. A description of how SDCWA would manage catastrophic water shortages caused by an event such as an earthquake is outlined.

WATER SUPPLIES OUTSIDE OF THE SDCWA SERVICE AREA

The rural, eastern portion of the San Diego region is outside the SDCWA service area and completely dependent on local groundwater for water supply. Geographically, the majority of the unincorporated area (65 percent) located roughly within and east of the Palomar and Cuyamaca mountains is reliant upon either separate groundwater-dependent districts or private wells that are unaffiliated with SDCWA. Groundwater is derived from onsite private wells, small community water systems, or private water companies. According to forecasts, as of 2016, there were 95,171 county residents outside of the SDCWA service area. Regardless of the responsible provider, all of these areas are entirely reliant on groundwater and as such are subject to its availability. Table 4.18-10 provides a list of water supply providers outside of the SDCWA service area.

Several of these districts are not required to prepare UWMPs because they either do not serve over 3,000 customers or do not distribute over 3,000 acre-feet of water annually (County of San Diego 2011).

The County of San Diego conducted a groundwater study as part of the 2011 General Plan Update (County of San Diego 2010a). The study area encompassed approximately 1,885 square miles of land, which is entirely groundwater dependent. The study area is bounded by Riverside County to the north, the international boundary with the Republic of Mexico to the south, San Diego County unincorporated and incorporated land served by the SDCWA member agencies to the west, and desert basin aquifers and Imperial County to the east. It consists of nine hydrologic units within the San Diego Hydrologic Region and three hydrologic units within the Colorado Hydrologic Region.

The study identified the following areas as having the potential for localized groundwater problems (especially at the height of extended drought periods) from pumping large amounts of groundwater: (1) Ballena Valley, located east of Ramona, (2) Guatay located in the Cuyamaca Mountains, (3) Julian Town Center, (4) and Morena Village, located northwest of Campo. Thirteen basins were identified as having a potentially significant impact on groundwater resources at maximum build-out of the proposed General Plan Update. The study also determined that the Borrego Springs Park Community Services District and Borrego Water District would have inadequate water supply to serve their service area (County of San Diego 2010a).

Table 4.18-10
Water Supply Agencies Outside the SDCWA Service Area

Water Supply Provider	Community Served	Source
Borrego Water District	Anza Borrego and Borrego Springs	Local groundwater supply and sole source aquifer[1]
Borrego Springs Park Community Service District *	Borrego Springs	Local groundwater supply
Campo Water Maintenance District*	Campo	Local groundwater supply

Water Supply Provider	Community Served	Source
Canebrake County Water District	Anza Borrego, seasonal visitors and part-time residents	Local groundwater supply
Cuyamaca Water District*	Cuyamaca	Local groundwater supply
Descanso Community Service District*	Descanso	Local groundwater supply
Jacumba Community Services District*	Jacumba	Local groundwater supply
Julian Community Service District *	Julian	Local groundwater supply
Live Oak Springs Water Company	Boulevard	Local groundwater supply
Majestic Pines Community Service District*	Julian	Local groundwater supply
Mootamai Municipal Water District*	Pala-Pauma	Local groundwater supply
Pauma Municipal Water District*	Pala-Pauma	Local groundwater supply
Pine Hills Mutual Water Company*	Julian/Pine Hills	Local groundwater supply
Pine Valley Mutual Water Company*	Pine Valley	Local groundwater supply
Questhaven Municipal Water District*	San Dieguito	Local groundwater supply
Rancho Pauma Mutual Water Company*	Pala-Pauma	Local groundwater supply
San Luis Rey Municipal Water District*	Fallbrook, Valley Center, Pala-Pauma	Local groundwater supply
Wynola Water District*	Julian/Wynola	Local groundwater supply

Source: County of San Diego 2011, 2021.
[1] A sole source aquifer is an underground water supply designated by the U.S. Environmental Protection Agency as the "sole" or "principal" source of drinking water for an area.
* Denotes Water Supply Providers that either do not serve over 3,000 customers or do not distribute over 3,000 acre-feet of water annually and are therefore not required to have a UWMP.

Borrego Valley Groundwater Subbasin

Desert basins account for approximately 14 percent of the unincorporated area of the San Diego region, and are located in its easternmost portions. These basins are characterized by extremely limited groundwater recharge but large storage capacity. When groundwater extraction exceeds recharge the result is an overdraft condition that is not sustainable (County of San Diego 2010a). The Borrego Valley Groundwater Basin has a well-documented groundwater overdraft condition. In 2016, the DWR subdivided the Borrego Valley Groundwater Basin into two separate subbasins, the Borrego Springs Groundwater Subbasin and the Ocotillo Wells Groundwater Subbasin (DWR 2016b). The Borrego Springs Subbasin covers an area of approximately 98 square miles, and the Ocotillo Wells Groundwater Subbasin covers an area of approximately 141 square miles (of which approximately 44 percent is located within San Diego County; the remainder of the Ocotillo Wells Groundwater Subbasin is located in Imperial County).

Current groundwater use in the Borrego Springs Groundwater Subbasin greatly exceeds groundwater recharge, and the Subbasin is designated by the DWR as high priority and critically overdrafted (Borrego Valley Groundwater Sustainability Agency [BVGSA] 2019). The Coyote Creek, Upper San Felipe Creek, and the Borrego Valley-Borrego Sink Wash watersheds drain to the Borrego Springs Subbasin and provide the majority of recharge for the subbasin. Due to its arid climate, the Borrego Springs Subbasin receives limited precipitation, and is remote for potential sources of imported water. The Borrego Springs Subbasin holds a large amount of groundwater in storage, estimated in 2016 to be approximately 1.5 million acre-feet of usable groundwater (BVGSA 2019). Water levels have been declining for decades because of the overdraft condition, and groundwater production at current rates is not sustainable. Groundwater withdrawal through pumping has

exceeded the amount of water that has been replenished, causing groundwater level declines of 2 feet per year in wells in the northern part of the valley, where groundwater is intensively pumped for irrigation agriculture (USGS 2015). Over the past 65 years, groundwater levels have declined as much as 126 feet in the northern portion and by approximately 87 feet in the west-central portion of the subbasin. Less groundwater has been pumped in the southeastern part of the subbasin, and groundwater levels have remained relatively stable in this portion of the subbasin. While the majority of residences and commercial entities in Borrego Valley receive their water from the Borrego Water District (BWD), some private property owners within the BWD service area use private wells that rely on groundwater extracted from the Borrego Spring Subbasin. The vast majority of the water supplied to agricultural users within Borrego Valley comes from privately owned wells within the BWD service area (County of San Diego 2010b).

In order to comply with the Sustainable Groundwater Management Act (see Regulatory Setting below) efforts began in 2017 to prepare a GSP for the Borrego Springs Subbasin. A public input process was conducted and a draft GSP prepared and circulated. Ultimately, the BWD filed a lawsuit seeking a comprehensive adjudication of groundwater rights in the subbasin (JND Legal Administration, 2021). A Settlement Agreement to adjudicate groundwater rights, was approved on April 8, 2021 (see *Borrego Water District v. All Persons who Claim a Right to Extract Groundwater in the Borrego Valley Groundwater Subbasin No. 7.024-01 Whether Based on Appropriation, Overlying Right, or Other Basis Of Right, and/or Who Claim a Right to use of Storage Space in the Subbasin*). Under the terms of the Settlement Agreement, all parcels within the Borrego Water District will be metered to measure water use. All users will be required to ratchet down by 5 percent each year the amounts of water they take from the aquifer. By 2030, all will have halved their baseline amounts, and by 2040 groundwater and thereafter withdrawal will be reduced by 74 percent. From that time forward groundwater withdrawal will match basin recharge (JND Legal Administration 2021).

ANTICIPATED EFFECTS FROM CLIMATE CHANGE

The San Diego region is likely to experience sea-level rise of up to 1.2 feet by 2050 and up to 4.6 feet by 2100, wetter winters and more intense precipitation that can lead to increased flooding, a 12 percent decrease in runoff and streamflow due to less snowpack and greater evaporation, more intense heat waves and annual average temperatures increases of up to 4.8°F by 2050, and a longer and less predictable fire season (CEP and SDF 2015, Kalansky et al. 2018, OPC 2018). More details on future climate projections are available in Appendix C.

Climate change may have an impact on both imported and local water supplies for the San Diego region. Imported supply could be reduced by changes in snowpack and snowpack melt (which would affect the timing of water availability), less precipitation, increased evaporation from higher temperatures, and saltwater intrusion due to sea-level rise. Meanwhile, demand could be increased due to evapotranspiration and drought.

Effects such as reduced snowpack and precipitation, as well as more precipitation falling as rain rather than snow in the mountains, can decrease water supplies coming from the mountain ranges. These effects reduce the amount of runoff and streamflow from melted snow, potentially decreasing this source of water. Such changes have already affected the Colorado River, which has seen a decline in streamflow by 16.5 percent between 1916 and 2014; over half of this decline can be attributed to warming temperatures (Xiao et al. 2018). A shift in the timing of melting snowpack can also affect supplies (CEP and SDF 2015). This snowpack usually melts in the spring and summer, releasing water when it is most needed; however, snow has melted earlier in recent years, reducing the amount of water available later in the year (Reidmiller et al. 2018). By 2100, snow water equivalent is expected to decline to less than one-half of its historical average under Representative

Concentration Pathways (RCP) 4.5 and less than one-third of the historical average under RCP 8.5 (Bedsworth et al. 2018).

The San Diego region does draw from mountain water, as SDCWA bought 40 percent of its water from MWD in 2017 (SDCWA 2016). MWD draws from the Sierra Nevada mountain range and the Colorado River, which is also supplied by mountain water.

Other impacts of climate change, such as reduced precipitation, increased evaporation, and increased drought, can also make some water sources drier. These changes would affect the Colorado River (CEP and SDF 2015), State Water Project, groundwater supply, and other surface water sources (SDF 2008).

Sea-level rise could result in saltwater intrusion along coastline water sources. Saltwater intrusion degrades freshwater supply, decreasing the amount of drinking water available to the San Diego region. Saltwater intrusion would affect the Bay-Delta (Kibel 2015), which MWD also sources from, as well as groundwater wells located along the coast (USGS n.d.).

Future water supplies are also vulnerable to impacts of climate change, although the San Diego region plans on diversifying its water portfolio, and it is unknown what the net impact will be. SDCWA plans on reducing its reliance on MWD sources to 2 percent of its supplies by 2035. However, the other two imported water sources that feed the San Diego region (the Imperial Irrigation District Transfer and the All American & Coachella Canal Lining, which made up 38 percent of the region's water supplies in 2017 and will constitute 45 percent of the supply by 2035) still originally source their water from the Colorado River (SDCWA 2016).

Part of the future water supply plan also includes increasing reliance on local water supplies, from 22 percent in 2017 to 51 percent in 2035 (SDCWA 2016). The increase in extraction from groundwater, one local supply, may result in subsidence, permanently reducing availability of groundwater supply (Melillo et al. 2014). Other supplies, such as seawater desalination, consume large amounts of energy, a resource that may also be compromised by climate change (Kelley 2011). The largest-growing water supply that the County plans on drawing from is potable reuse, from 0 percent in 2017 to 17 percent by 2035 (SDCWA 2016). Little research exists on the effects of climate change on potable reuse, so the impact this will have on the San Diego region's water supply is unknown.

Climate change impacts such as drought and evapotranspiration may increase agricultural water demand due to increased irrigation to make up for lack of rainfall and to adjust to higher temperatures. Christian-Smith et al. (2012) forecasted a 10 percent increase in urban demand due to climate change by 2055 in California under a medium-to-high emissions scenario, without water conservation strategies. Because many water distributors across California other than SDCWA also buy from MWD, this statewide increase in demand could put stress on water supplies. In the San Diego region specifically, the demand totaled 463,128 acre-feet in 2020, while the demand forecasted in 2035 will total 632,000 acre-feet under RCP 8.5,[1] having increased from a combination of population growth, rising temperatures, and more drought and evaporation (SDCWA 2016, SDCWA 2021a). This increase in demand may come from all sectors (though residential use dominates), where higher temperatures, drought, and evapotranspiration may require various operations to source more water

[1] Representative Concentration Pathway 8.5 is the IPCC greenhouse gas concentration trajectory that assume a "business as usual" scenario where greenhouse gas emissions continue to rise throughout the twenty-first century.

(Christian-Smith et al. 2012). However, the exact increases in water demand in the region resulting from climate change are not known.

4.18.2 REGULATORY SETTING

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Safe Drinking Water Act

The Safe Drinking Water Act (42 U.S. Code Sections 300(f) et seq.) gives the U.S. Environmental Protection Agency (EPA) the authority to set drinking water standards (40 Code of Federal Regulations 141.1 et seq.). Drinking water standards apply to public water systems, which provide water for human consumption through at least 15 service connections, or regularly serve at least 25 individuals. There are two categories of drinking water standards, the National Primary Drinking Water Regulations (NPDWR) and the National Secondary Drinking Water Regulations (NSDWR). The NPDWR are legally enforceable standards that apply to public water systems. NPDWR standards protect drinking water quality by establishing maximum contaminant levels for specific drinking water contaminants that present a risk to human health. The NSDWR set non-mandatory water quality standards for 15 contaminants that are not considered to present a human health risk (EPA 1974).

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

Department of Water Resources California Water Plan Update 2018

The California Water Plan (CWP) is "the State's strategic plan for sustainably managing and developing water resources statewide for current and future generations" (DWR 2019). The update provides recommended actions, funding scenarios, and an investment strategy to bolster efforts by water and resource managers, planners, and decision-makers to overcome California's most pressing water resource challenges. The update builds on progress made in the CWP Update 2013 and contains six goals for sustainability: (1) improving integrated watershed management; (2) strengthening resiliency and operational flexibility of existing and future infrastructure; (3) restoring critical ecosystem functions; (4) empowering California's under-represented or vulnerably communities; (5) improving inter-agency alignment and addressing persistent regulatory challenges; and (6) supporting real-time decision-making, adaptive management, and long-term planning.

California Water Resilience Portfolio

The California Water Resilience Portfolio (CNRA 2020) was developed in response to Governor Newsom's Executive Order N-10-19, which directed State agencies to develop recommendations to meet water needs through the 21st century and enable water security for all Californians. State agencies developed the California Water Resilience Portfolio to improve California's capacity to prepare for disruptions, withstand and recover from climate-related shocks, and adapt into the future. The portfolio embraces a broad, diversified approach, with four categories of goals and actions: (1) maintaining and diversifying water supplies; (2) protecting and enhancing natural ecosystems; (3) improving physical infrastructure to store, move, and share water more flexibly and integrate water management; and (4) preparing for new threats. The portfolio recognizes that water resilience will be achieved with local, regional and tribal leadership, on a region by region basis, considering the unique challenges and opportunities in each area. The portfolio includes more than 100 detailed actions to ensure California water systems work for our communities, our economy, and our environment, which will be implemented based on priority and to the extent resources are available.

SWRCB Emergency Conservation Regulations

On January 17, 2014, Governor Brown issued a proclamation of a state of emergency under the California Emergency Services Act based on drought conditions. In April 2017, the Governor partially ended the drought State of Emergency in most of California, while maintaining water reporting requirements and prohibitions on wasteful practices such as watering during or right after rainfall, hosing off sidewalks, and irrigating ornamental turf on public street medians (SWRCB 2019).

Executive Order B-37-16 and B-40-17

On May 9, 2016, Governor Brown issued Executive Order B-37-16, calling for the SWRCB to adjust emergency water conservation regulations through the end of January 2017 in recognition of the differing water supply conditions across the state. Executive Order B-40-17 builds on actions taken in Executive Order B-37-16, which remains in effect, to continue making water conservation a way of life in California. The long-term conservation framework includes recommendations to establish permanent water conservation standards and improved agricultural and urban water management planning to better prepare for more frequent and severe droughts due to climate change.

Regulations Related to Recycled Water

Under Code of California Regulations Title 22, the State Department of Public Health established statewide effluent bacteriological and treatment reliability standards for recycled water uses. (On July 1, 2014, the State's Drinking Water Program was transferred to the SWRCB.) The standards are based on the potential for human contact with recycled water. Each of California's nine Regional Water Quality Control Boards (RWQCBs) has established and enforces requirements for the application and use of recycled water. Permits are required from the RWQCB for any recycling operation. Applicants for a permit are required to demonstrate that the proposed recycled water operation is in compliance with Title 22 and will not exceed the ground and surface water quality objectives in the regional basin management plan. In the San Diego region, the basin management plan is the Water Quality Control Plan for the San Diego Basin 9 prepared and administered by the San Diego RWQCB.

The Water Conservation Act of 2009

The Water Conservation Act of 2009 (Senate Bill [SB] x7-7 of 2009) sets water conservation targets and efficiency improvements for urban and agricultural water suppliers. The legislation establishes a statewide target to reduce urban per capita water use by 20 percent by 2020. Urban retail water suppliers are required, individually or on a regional basis, to develop an urban water use target by December 31, 2010, to meet their target by 2020, and to meet an interim target (half of their 2020 target) by 2015. Urban water suppliers cannot impose conservation requirements on process water (water used in production of a product) and are required to employ two critical efficient water management practices—water measurement and pricing. Urban retail water suppliers were required to complete water management plan to include information such as the baseline daily per capita water use, water use target, interim water use target, and compliance daily per capita water use. Effective in 2016, urban retail water suppliers who did not meet the water conservation requirements established by this bill were not eligible for State water grants or loans (DWR 2009).

2018 Water Conservation and Drought Planning Legislation

SB 606 and AB 1668 of 2018 (Chapters 14 and 15, Statutes of 2018) modify several provisions of the Water Conservation Act of 2009. These bills call for creation of new urban efficiency standards for indoor use, outdoor

use, and water lost to leaks, as well as any appropriate variances for unique local conditions. The SWRCB is required to adopt these standards by regulation no later than June 30, 2022. The indoor water use standard is required to be 55 gallons per capita per day (GPCD) until January 2025, decreasing to 50 GPCD in January 2030. Each urban retail water agency is required annually, beginning November 2023, to calculate its own water use objective, using SWRCB standards and based on the water needed in its service area, for efficient indoor residential water use; outdoor residential water use; commercial, industrial and institutional irrigation; and other uses. In addition, AB 1668 creates additional requirements for agricultural water management plans originally required by the Water Conservation Act of 2009.

California Urban Water Management Planning Act

The California Urban Water Management Planning Act (Water Code Part 2.6) states that each urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet of water annually, should make every effort to ensure the appropriate level of reliability in its water service is sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years by preparing a UWMP and updating it every 5 years. The last required UWMP updates were completed in 2021. The California Urban Water Management Planning Act describes the contents of UWMPs, and requires each agency's UWMP to assess the reliability of the agency's water resources over a 20-year planning horizon.

SB 606 of 2018 created additional requirements for UWMPs, including preparation of a drought risk assessment and a water shortage contingency plan. It also requires urban water suppliers conduct an annual water supply and demand assessment, and submit an annual water shortage assessment report to DWR.

Water Supply Planning

SB 610 (Chapter 643, Statutes of 2001) and SB 221 (Chapter 642, Statutes of 2001) improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires local public water providers with more than 3,000 service connections to prepare a Water Supply Assessment (WSA) for any project that is subject to CEQA and meets specified minimum size criteria.

For qualified projects, the WSA must document sources of water supply, quantify water demands, and compare future water supply and demand to show that sufficient water will be available to serve the project. Water supply must be assessed for normal, single dry, and multiple dry water years during a 20-year forecast. If supplies are found to be insufficient to serve the project, the WSA must include plans for acquiring sufficient supplies. The WSA must be included in the CEQA document for the project.

SB 221 (Chapter 642, Statutes of 2001) applies to subdivisions of more than 500 dwelling units. Like SB 610, it is intended to ensure an adequate water supply for new development is available. SB 221 requires that approval of a tentative map include a requirement that a sufficient water supply is available. Government Code Section 66473.7(k) contains special provisions for SB 221 compliance in the San Diego region.

California Groundwater Management Act

The Groundwater Management Act (Water Code Section 10750 et seq.) provides guidance for applicable local agencies to develop voluntary groundwater management plans (GMPs) in State-designated groundwater basins. GMPs can allow agencies to raise revenue to pay for measures influencing the management of the basin, including extraction, recharge, conveyance, facilities' maintenance, and water quality. The Sustainable Groundwater Management Act (see below) prohibited new GMPs from being adopted or an existing GMP from being renewed, beginning January 1, 2015.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (Chapters 346, 347, and 348, Statutes of 2014) encompasses three bills: Assembly Bill (AB) 1739, SB 1168, and SB 1319 of 2014. The Act focuses on the importance of local action in order to achieve groundwater sustainability and allow local agencies to tailor sustainable groundwater plans to their own economic and environmental needs. The Act created a timeline for its implementation: by 2017, local groundwater management agencies were identified; groundwater sustainability plans must be adopted for basins designated as high- or medium-priority currently being over-drafted by January 31, 2020; groundwater sustainability plans must be adopted for all other high- and medium-priority basins by January 31, 2022; and by 2040 all high- and medium-priority groundwater basins must achieve sustainability. SWRCB has the authority to intervene in sustainability plan preparation if deadlines are not met by local agencies.

The formation of groundwater management agencies results in the monitoring of well water pumping from the managed aquifer along with the calculation of a sustainable yield. Once a sustainable yield has been determined, a basis exists for a groundwater trading program that allows users to purchase or lease the rights of other users while staying within the overall withdrawal limits set by the groundwater sustainability plan.

The Sustainable Groundwater Management Act is meant to stop over-drafting of groundwater supplies and to reduce the potential of groundwater contamination by salt water infiltration. It aims to supply California with a reliable water source for the future (DWR 2018c).

REGIONAL AND LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

Both MWD and SDCWA have developed plans that address long-term water supply and demand, as well as catastrophic supply interruption and emergency storage. These plans, as they relate to the issues in this EIR, are described below.

MWD Integrated Water Resources Plan, 2015 Update

Developed in collaboration with all of MWD's member agencies, MWD's Integrated Water Resources Plan (MWD 2015) adopts an "adaptive integrated resources management strategy." A number of uncertainties could affect future water supply: climate change, cost and use of energy, potential policy and permitting restrictions, endangered species protections, and demographic unknowns. To achieve maximum supply reliability in a cost-effective and adaptive manner, MWD will rely on the following main management components to build on existing supplies:

- Stabilizing and maintaining imported supplies.
- Meeting future growth through increased conservation and existing and new local supplies.
- Pursuing a comprehensive transfers and exchanges strategy.
- Building storage in wet and normal years to manage risks and drought.
- Preparing for climate change with Future Supply Actions – recycled water, seawater desalination, stormwater capture and groundwater cleanup.

MWD Regional Urban Water Management Plan

The 2015 MWD UWMP was prepared in compliance with Water Code Sections 10608.36 and 10610 through 10656 of the Urban Water Management Planning Act. Information in MWD's 2015 UWMP may be used by local water suppliers in preparation of their own UWMP and represents current available planning projections of supply capability and demand. The UWMP describes MWD's planning activities and explains how the agency will manage the region's water resources to ensure a reliable water supply for the region. The UWMP also addresses the issue of water quality and steps taken to deliver high-quality water to MWD's service area (MWD 2016).

SDCWA Urban Water Management Plan and Water Use Efficiency Programs

SDCWA's 2020 UWMP presents strategies designed to enhance water supply reliability through diversification of water sources, compliance with Water Conservation Act of 2009 conservation targets, and improvement of supply and delivery infrastructure. Some of the more prominent strategies are the All-American Canal and Coachella Canal Lining Projects, development of a regional seawater desalination plant located in Carlsbad (SDCWA 2016), construction of the San Vicente Dam Raise and Carryover Storage Project, and supporting the development of additional local supplies. Combined with strategies are SDCWA's outreach efforts to raise public awareness of growing water supply and water rate challenges and increased long-term residential, commercial, and public sector water use efficiency. The 2020 UWMP is based on SANDAG's Series 14 Regional Growth Projections.

Additionally, SDCWA's Water Use Efficiency Policy Principles include how SDCWA may implement and administer regional water use efficiency projects and programs where economies of scale, geography considerations, or other member agency circumstances make a regional program more efficient or cost-effective. The principles also provide additional direction to staff regarding efficiency projects or programs affecting SDCWA, its member agencies, and/or regional water management and use. The principles include policies pertaining to member agency support, funding and resources, program performance, outreach and education, and regulation and legislation.

San Diego Integrated Regional Water Management Plan

The 2019 San Diego Integrated Regional Water Management Plan (IRWMP) presents an integrated approach for addressing water management issues in the San Diego region (IRWMP 2019). The 2019 San Diego IRWMP focuses on five goals:

- Improve the reliability and sustainability of regional water supplies.
- Protect and enhance water quality.
- Protect and enhance our watersheds and natural resources.
- Enhance the resiliency to climate change for local water resources.
- Promote and support sustainable integrated water resource management.

SDCWA Regional Water Facilities Optimization and Master Plan Update

SDCWA's Regional Water Facilities Optimization and Master Plan Update (Master Plan Update) (SDCWA 2013) is a comprehensive evaluation of infrastructure requirements needed to meet SDCWA's mission of providing a safe and reliable water supply to its member agencies. It is based on projections for future water demands

and water supplies from the 2010 UWMP. The Master Plan Update identifies projects needed to ensure reliability and ability to serve projected water demands to 2035. Projects include expanded water conveyance facilities, new water storage facilities, upgraded pump stations, and pipeline relining.

Local Urban Water Management Plans and Water Use Efficiency Programs

The California Urban Water Management Planning Act (Water Code Part 2.6) requires each of SDCWA's 24 member agencies to prepare a UWMP to support long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. SDCWA's member agencies' UWMPs reflect and are coordinated with SDCWA's UWMP. Local agencies with a UWMP include the City of Carlsbad, the City of Escondido, the Fallbrook Public Utility District, Helix Water District, Lakeside Water District, the City of Oceanside, Otay Water District, Rainbow Municipal Water District, Rincon Del Diablo Municipal water District, Ramona Municipal Water District, the City of San Diego, San Dieguito Water District, Santa Fe Irrigation District, Sweetwater Authority, Valley Center Municipal Water District, Vallecitos Water District, Vista Irrigation District, Rainbow Municipal Water District, the City of Poway, Olivenhain Municipal Water District, and Padre Dam Municipal Water District (DWR 2018c).

SDCWA also runs a water conservation program known as WaterSmart, which is implemented by SDCWA member agencies. The online program offers various resources, programs, and incentives for residences, businesses, Home Owner Associations, and agricultural use management programs, as well as information for teachers and students, WaterSmart tips, eGuides, and rebate offers (SDCWA 2018d).

San Diego County Groundwater Ordinance

The County Groundwater Ordinance states that a project listed in Section 67.711 (Application) of the Ordinance that will extract or use at least 1 acre-foot (325,851 gallons) of groundwater per year shall include one or more groundwater use reduction measures, identified in the Ordinance. The groundwater use reduction measures shall fully offset the amount of groundwater that the proposed project will use and shall result in "no net increase" in the amount of groundwater extracted (County of San Diego 2013).

Groundwater Sustainability Plan for the Borrego Springs Groundwater Subbasin

In 2020, the BVGSA adopted the Borrego Springs Groundwater Sustainability Plan (GSP), which established criteria that will maintain or achieve sustainable groundwater management of the Borrego Springs Subbasin. The GSP contains a summary of the Borrego Springs Subbasin setting and overdraft conditions; it establishes sustainability indicators, minimum thresholds, and measurable objectives for the Subbasin; and establishes project and management actions to reduce water demand within the Subbasin and maintain water quality suitable for current and future beneficial uses. The Borrego Springs GSP establishes a sustainability goal to halt the overdraft condition in the Subbasin by bringing the groundwater demand in line with a sustainable yield of 5,700 acre-feet per year by 2040, while stabilizing or improving groundwater levels (BVGSA 2019). BWD filed suit seeking an adjudication of groundwater rights within the subbasin. Under the terms of a Settlement Agreement approved on April 8, 2021, the sustainability goals of the Borrego Springs GSP were implemented.

Recycled Water Regulations

The County Department of Environmental Health regulates the use of recycled water through a delegation agreement with the State of California. The purpose is to protect the public from health risks associated with cross-connections of recycled water and drinking water supplies, as well as to prevent health risks from body contact with recycled water. The department's Land and Water Quality Division reviews recycled water use

plans and conducts site inspections to ensure drinking water supplies are not contaminated with recycled water. Spray irrigation sites are monitored to ensure the recycled water irrigation does not present a risk to the public. Recycled water sites must also pass a cross-connection control shutdown test when installed and every 4 years after installation (County of San Diego 2018b).

The City of San Diego maintains the policy that recycled water be used for any purpose approved for recycled water use when it is economically, financially, and technically feasible, as mandated by Ordinance 0-17327 (City of San Diego 2008). The policies regarding recycled water use are documented in the Rules and Regulations for Recycled Water Use and Distribution within the City of San Diego (2008), which lists the following goals:

- Prevent direct human consumption of recycled water through adherence to all applicable rules and regulations and laws which include a strict cross-connection/backflow prevention program.
- Prevent cross-connection between recycled and potable water systems.
- Isolate contamination by other sources, such as wastewater, sludge, urban runoff, or other substances which may come into contact with the recycled water.

In addition to the County regulations, the City of Escondido's Recycled Water Master Plan (City of Escondido 2011), summarizes the City's Recycled Water Service Rules and Regulations for Recycled Water Use. The San Dieguito Water District's Recycled Water Rules and Regulations govern the requirements for recycled water use within the District's jurisdiction (City of Encinitas 2011). The Fallbrook Public Utility District Administrative Code, Article 28, describes the District's Recycled Water Program (FPUD 2010). Olivenhain Municipal Water District's Rules and Regulations Governing the Use of Recycled Water describes the facility requirements, recycled water services, and operational requirements in the jurisdiction (OMWD 2015). In 2002 the Rincon del Diablo Municipal Water District revised their Recycled Water Service Rules, Regulations, and Project Guidelines (RDDMWD 2018).

4.18.3 SIGNIFICANCE CRITERIA

Appendix G of the CEQA Guidelines provides criteria for evaluating the significance of a project's environmental impacts on water supply, in the form of Initial Study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions in CEQA Guidelines Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR, and the unique nature of the proposed Plan.

Checklist questions for water supply are included in Sections IX (b and e) and XIX (a and b) of Appendix G. Because of the importance of water supply issues in the San Diego region and throughout California, this EIR addresses the water supply impacts of the proposed Plan in a stand-alone section. For purposes of this EIR the Appendix G questions have been combined and modified. Specifically, Appendix G Section XIX (b) regarding sufficient water supplies is addressed in criterion WS-1. Section IX questions (b) and (e) regarding groundwater supplies and sustainable groundwater management plans are addressed in criterion WS-2. Section XIX question (a) regarding the relocation or construction of new or expanded water facilities is addressed in criterion WS-3. For the purposes of this EIR, the proposed Plan would have a significant water supply impact if it would:

WS-1 Not have sufficient water supplies available to serve the projected regional demand during normal, dry and multiple dry years.

WS-2	Substantially decrease groundwater supplies, or interfere substantially with groundwater recharge such that the proposed Plan would impede sustainable management of groundwater basins or obstruct implementation of a sustainable groundwater management plan.
WS-3	Require or result in the relocation or construction of new or expanded water facilities, the construction or relocation of which could cause significant environmental effects.

4.18.4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

WS-1 NOT HAVE SUFFICIENT WATER SUPPLIES AVAILABLE TO SERVE PROJECTED REGIONAL DEMAND DURING NORMAL, DRY, AND MULTIPLE DRY YEARS

ANALYSIS METHODOLOGY

To analyze 2025 and 2035 impacts of forecasted regional growth and land use change within the SDCWA service area, estimated water demand resulting from forecasted growth under the proposed Plan is compared to projected water demand and projected available supplies through 2035 as identified in the SDCWA 2013 Master Plan Update and 2020 UWMP. An assessment of water supply reliability is required by the UWMP Act. The assessment must compare projected water supply and demands over the ensuing 20 years. The SDCWA UWMP analysis covers the next 25 years, until the year 2045. The analysis must include projected water supply and demand in 5-year increments under normal, single dry water years, and multiple dry water years. Given these requirements, the UWMP is suitable for answering Impact WS-1. Material in this section is derived from the SDCWA UWMP unless otherwise indicated.

The analysis of regional water demands conducted is based on projections of both normal and dry-year annual demands from the 2020 UWMP. Normal, dry, and multiple dry-year annual demands were consistent with those in the 2020 UWMP for each member agency. Projected water supply for a normal water year is based on forecasts provided by the 2020 UWMP within SDCWA's service area in a normal water year and single dry water year through 2045.

For the 2050 analysis of regional growth and land use change, "projected per capita usage in gallons per day multiplied by forecasted future population" is used to project water demand. Most urban areas in the region depend upon a combination of surface water, recycled water, and water conservation to provide sufficient water supplies for their existing and planned residents and businesses. Table 4.18-11 shows the 2020 UWMP normal water year assessment, summarizing the total water demands within the SDCWA service area through the year 2045.

A 2050 population of 3,746,073 is forecast. Of this total, 101,317 people are projected to reside outside the SDCWA service area. Water demand in 2050 was estimated using the 2020 UWMP assumptions for population and water demand in 2045 for normal year conditions. These assumptions were used to develop per capita rates for each scenario (i.e., acre-feet per person during normal year, single dry year, multiple dry years). These per capita rates were then applied to forecasted 2050 population under the proposed Plan to calculate the following 2050 water demands under the proposed Plan. Water demand for 2050 was calculated at 646,920 acre-feet. The construction of new transportation network improvements, including roadways, bicycle and pedestrian facilities, and transit facilities, and operation and maintenance of new facilities could increase the demand for water for construction activities such as concrete mixing and dust control, and operational activities and services such as restrooms and drinking fountains. These water demands are evaluated

qualitatively to determine whether they could contribute to a situation where insufficient water supply to meet regional demands exists.

Table 4.18-11
2020 UWMP Normal Water Year Supply and Demand Assessment (acre-feet/year)

	2025	2030	2035	2040	2045
Water Authority Supplies					
Imperial Irrigation District Water Transfer	200,000	200,000	200,000	200,000	200,000
ACC and CC Lining Projects	78,700	78,700	78,700	78,700	78,700
Carlsbad Desalination Plant	50,000	50,000	50,000	50,000	50,000
Subtotal	*328,700*	*328,700*	*328,700*	*328,700*	*328,700*
Member Agency Supplies (Verifiable)					
Surface Water	43,957	43,957	44,659	44,659	44,659
Water Recycling	42,993	46,493	46,593	46,693	46,793
Seawater Desalination	6,000	6,000	6,000	6,000	6,000
Potable Reuse	33,042	53,202	112,562	112,562	112,562
Brackish Groundwater Recovery	8,400	8,400	8,400	8,400	8,400
Groundwater	21,900	23,100	23,100	19,600	19,600
San Luis Rey Water Transfers	15,800	15,800	15,800	15,800	15,800
Subtotal	*172,092*	*196,952*	*257,114*	*253,714*	*253,814*
Metropolitan Water District Supplies	54,966	52,592	12,660	31,821	48,257
Total Projected Supplies	**555,758**	**578,244**	**598,474**	**614,235**	**630,771**
Total Long-Range Demand[2] Forecast with Conservation	**555,758**	**578,244**	**598,474**	**614,235**	**630,771**

Source: San Diego County Water Authority 2021a.
[1] Normal water year demands based on 1960-2018 hydrology.
[2] Supply and Demand are identical because the residual shortfall after accounting for SDCWA and Member Agency supplies is offset by purchases from MWD.
ACC = All=American Canal; CC = Coachella Canal

A significant impact would occur if the projected available regional water supplies and water delivery infrastructure are not able to meet regional demand during normal, dry, and multiple dry-year scenarios. The analysis is done for 2025 and 2035. Insufficient data on water supplies exists for a complete 2050 analysis; therefore, due to uncertainty about 2050 water supplies., the 2050 impact is considered significant. For transportation network improvements a qualitative analysis is included for water required for the production of concrete and dust suppression as well as operational water demands (e.g., landscape irrigation) of transportation network improvements. A significant impact would occur if existing and future water supplies available within the San Diego region would not be sufficient to meet regional water demands associated with transportation network improvements.

IMPACT ANALYSIS

2025

Regional Growth and Land Use Change

Examination of Table 4.18-11 indicates that the SDCWA projects adequate water supply to meet the 2025 demand of regional growth and land use change. Total water demand for 2025 is projected at 555,758 acre-feet. Sources of water supply include SDCWA supplies, totaling 328,700 acre-feet, originating from the following:

- IID Water Transfer
- All-American Canal and Coachella Canal Lining Projects
- Carlsbad Desalination Plan

The water derived from the IID Water Transfer and the canal lining projects is stored by MWD in Lake Mead and becomes part of the MWD water supply. Under an agreement between MWD and SDCWA, MWD agrees to provide a like amount of water from its overall supply (MWD 2021a).

Member agency supplies contributing to the regional water supply from the following sources total 172,092 acre-feet:

- Surface Water
- Water Recycling
- Seawater Desalination
- Potable Reuse
- Brackish Groundwater Recovery
- San Luis Rey River Water Transfers

In addition to the above supplies, SDCWA would purchase 54,966 acre-feet from MWD. Consultation with MWD has confirmed that this amount is available and is included in the calculations utilized by MWD in preparing their own UWMP (MWD 2021a).

In the single dry-year assessment for 2025, SDCWA assumed the continuation of long-term water efficiencies, but conservatively did not include additional potential savings derived from extraordinary conservation occurring during droughts. The groundwater and surface water yields assumed in the 2025 dry-year scenario are based on the very low yields of 2015. Other SDCWA supplies and member agency supplies were considered drought resilient. Dry-year assessments in five-year increments are presented in Table 4.18-12.

Table 4.18-12
Single Dry-Year Supply and Demand Assessment in 5-Year Increments (acre-feet per year)

	2025	2030	2035	2040	2045
Water Supply					
Water Authority Supplies					
Imperial Irrigation District Water Transfer	200,000	200,000	200,000	200,000	200,000
ACC and CC Lining Projects	78,700	78,700	78,700	78,700	78,700

	2025	2030	2035	2040	2045
Regional Seawater Desalination	50,000	50,000	50,000	50,000	50,000
Subtotal	*328,700*	*328,700*	*328,700*	*328,700*	*328,700*
Member Agency Supplies[1]					
Surface Water	6,004	6,004	6,004	6,004	6,004
Water Recycling	42,993	46,493	46,593	46,693	46,793
Seawater Desalination	6,000	6,000	6,000	6,000	6,000
Potable Reuse	33,042	53,202	112,562	112,562	112,562
Brackish Groundwater Recovery	8,400	8,400	8,400	8,400	8,400
Groundwater	15,281	15,281	15,281	15,281	15,281
San Luis Rey Water Transfers	15,800	15,800	15,800	15,800	15,800
Subtotal	*127,520*	*151,180*	*210,640*	*210,740*	*210,840*
Other Supplies					
Metropolitan Water District Supplies	336,232	336,674	337,116	337,558	338,000
Potential Supply (Shortage) or Surplus	195,487	197,675	237,146	221,944	206,220
Subtotal	*127,520*	*151,180*	*210,640*	*210,740*	*210,840*
Total Projected Core Supplies with Use of Carryover Storage Supplies	**792,452**	**816,554**	**876,456**	**876,998**	**877,540**
Water Demand					
Total Single Dry-Year Demands with Conservation	792,452	816,554	876,456	876,998	877,540
Total Demands with Water Efficiency Savings	596,965	618,879	639,310	655,054	671,320
Remaining Potential Surplus Supply, or (Shortage) That Will Be Addressed Through Management Actions	**195,487**	**197,675**	**237,146**	**221,944**	**206,220**

Source: San Diego County Water Authority 2021a.
[1] Member agency local supplies include production from verifiable reliable sources, as well as dry-year totals for actual 2015 surface water and groundwater supplies.
ACC = All=American Canal; CC = Coachella Canal.

Importantly, the SDCWA 2025 dry-year assessment assumes a major increase in water purchases from MWD. Purchases from MWD would increase from 54,966 under the 2025 normal-year scenario to 336,232 under the 2025 dry-year scenario. The UWMP states:

> For this single dry-year assessment, it was assumed that Metropolitan supplies are limited to 1.3 million AF [acre-feet] due to dry conditions and additional reduction in Metropolitan's deliveries from State Water Project (i.e., no Delta improvements) and Colorado River, and that the Water Authority received its preferential right based on Metropolitan's current method of calculating such rights.

MWD member agencies' ability to exercise preferential water rights was confirmed in a lawsuit filed by the SDCWA in 2001. The court decision affirmed the preferential right of each member agency to MWD water. The calculation of each member agency's preferential rights was clarified in a 2010 lawsuit filed by the SDCWA regarding payments to transport its independent Colorado River supplies through the MWD conveyance system (SDCWA 2021a). As of June 30, 2020, the SDCWA has a preferential right to purchase 25.83 percent of Metropolitan's water. By comparison, the SDCWA purchased about 6 percent of the water Metropolitan sold in fiscal year 2020 (SDCWA 2021a). Review of the MWD UWMP (2021a) dry-year water supply projections suggests that MWD supplies available to member agencies would be adequate to meet SDCWA demand assuming exercise of preferential water rights.

In assessing a multiple dry-year scenario ending in 2025 the SDCWA reached a similar conclusion regarding sufficient water supplies (see Table 4.18-13). Member agency supplies were reduced reflecting the decline in surface water and groundwater availability. SDCWA supplies derived from water transfers would be maintained at a static level. The SDCWA would continue to exercise its preferential right to the MWD supply of water available for wholesale. Review of the MWD UWMP (2021a) confirms that, assuming access to 25.83 percent of MWD supplies amidst a 5-year period, SDCWA would have sufficient supplies to fulfill local demand and would be able to augment local water storage.

Table 4.18-13
2021–2025 Multiple Dry Water Year Supply and Demand Assessment (acre-feet per year)

	2021	2022	2023	2024	2025
Member Agency Supplies[1]	153,762	152,645	132,982	109,672	127,481
Water Authority Supplies	328,700	328,700	328,700	328,700	328,700
Metropolitan Allocation (Preferential Right)	335,878	310,123	310,205	310,286	310,368
Total Estimated Core Supplies without Storage Takes	**818,340**	**791,468**	**771,887**	**748,658**	**766,549**
Total Multiple Dry-Year Demands with Conservation Savings	580,626	586,432	592,296	598,219	604,201
Remaining Potential Surplus Supply, or (Shortage) to Be Addressed Through Management Actions	**237,714**	**205,036**	**179,591**	**150,439**	**162,348**

Source: San Diego County Water Authority 2021a.
[1] Member agency local supplies include verifiable recycling and brackish groundwater recovery, San Luis Rey water transfer, seawater desalination, as well as dry-year estimates for surface water and groundwater.

A review of SDCWA and MWD planning documents allows a conclusion that there would be sufficient water supplies to satisfy the requirements of regional growth and land development in 2025, including in the event of a single or multiple dry years. Therefore, impacts regarding the availability of an adequate water supply to serve regional growth and land use change in 2025 would be less than significant.

Transportation Network Improvements and Programs

The construction of new transportation network improvements, including roadways, bicycle and pedestrian facilities, and transit facilities, and operation and maintenance of new facilities could increase the demand for water for construction activities such as concrete mixing and dust control, and operational activities and services such as restrooms and drinking fountains. These increases in demand are anticipated to be small on a per project basis. Landscaping for new Caltrans improvements would be irrigated with recycled water. In addition, large-scale regional transportation improvements have been underway for more than 15 years since the passage of Proposition A and the institution of a half-cent sales tax. This increase in water demand has not been identified as a significant component of regional demand, and impacts are not considered significant.

The construction of new transportation facilities would also increase demand for water use to irrigate new landscaping installed along roadways. This demand is not seen to result in significant impacts, as reclaimed water, of which there is a regional surplus, is used for this purpose in most areas. Any landscaping installed in outlying areas would be composed of native species with minimal water requirements.

2025 Conclusion

Water supplies are seen as adequate to serve regional growth and land use change and transportation network improvements and programs up until the year 2025. The water supply is adequate to serve these needs even in the event of a dry year or multiple dry years. The impacts of regional growth and land use change and transportation network improvements and programs on water supplies between 2016 and 2025 are less than significant.

2035

Regional Growth and Land Use Change

As shown in Table 4.18-11 above, the SDCWA UWMP shows an adequate water supply of 598,474 acre-feet for the year 2035 assuming normal conditions. SDCWA supplies from water transfers remain constant as to the supplies of member agencies. One notable development is the increase in member agency supply. This supply increases potable reuse from 33,042 acre-feet per year in 2025 to 112,562 acre-feet per year in 2035 due to increased supplies from the City of San Diego's Pure Water Program.

The increase in SDCWA member agency supplies is also reflected in the 2035 single dry-year assessment, as shown in Table 4.18-12 above. Examination of the MWD UWMP (2021a) confirms that, assuming the SDCWA has the ability to purchase wholesale water at a level determined by preferential right, adequate water supplies are available.

Assessment of 5-year multiple dry water supplies and demands between 2026 and 2035, as shown in Tables 4.18-14 and 4.18-15, indicate adequate water supply throughout these multiple dry-year periods. SDCWA water supplies from water transfers are constant. Member agency supplies consistently decrease from year-to-year as available surface water and groundwater both decline due to succeeding dry years.

Table 4.18-14
2026–2030 Multiple Dry Water Year Supply and Demand Assessment (acre-feet per year)

	2026	2027	2028	2029	2030
Member Agency Supplies[1]	213,285	209,508	190,545	167,935	151,180
Water Authority Supplies	328,700	328,700	328,700	328,700	328,700
Metropolitan Allocation (Preferential Right)	336,320	310,531	310,613	310,694	310,776
Total Estimated Core Supplies without Storage Takes	**878,305**	**848,739**	**829,858**	**807,329**	**790,656**
Total Multiple Dry-Year Demands with Water Conservation Savings	602,935	608,964	615,054	621,204	627,416
Remaining Potential Surplus Supply, or (Shortage) to Be Addressed Through Management Actions	275,370	239,775	214,804	186,125	163,240

Source: San Diego County Water Authority 2021a.
[1] Member agency local supplies include verifiable recycling and brackish groundwater recovery, potable reuse, San Luis Rey water transfer, seawater desalination, as well as dry-year estimates for surface water and groundwater.

Table 4.18-15
2031–2035 Multiple Dry Water Year Supply and Demand Assessment (acre-feet per year)

	2031	2032	2033	2034	2035
Member Agency Supplies[1]	216,105	211,648	192,005	168,715	210,640
Water Authority Supplies	328,700	328,700	328,700	328,700	328,700
Metropolitan Allocation (Preferential Right)	336,762	310,939	311,021	311,102	311,184
Total Estimated Core Supplies without Storage Takes	**881,567**	**851,287**	**831,726**	**808,517**	**850,524**
Total Multiple Dry-Year Demands with Water Conservation Savings	625,067	631,318	637,631	644,008	650,448
Remaining Potential Surplus Supply, or (Shortage) to be addressed through Management Actions	256,500	219,969	194,095	164,509	200,076

Source: San Diego County Water Authority 2021a.
[1] Member agency local supplies include verifiable recycling and brackish groundwater recovery, potable reuse, San Luis Rey water transfer, seawater desalination, as well as dry-year estimates for surface water and groundwater.

The 2026–2030 Multiple Dry Water Year scenarios continue to assume purchase of between 310,613 and 336,762 acre-feet per year of water from MWD. This assumption is based on preferential right to, and purchase of, 25.83 percent of an MWD supply of 1.2 to 1.3 million acre-feet. The MWD UWMP (2021a) projects that this quantity of supply would be available.

A review of SDCWA and MWD planning documents allows a conclusion that there would be sufficient water supplies to satisfy the requirements of regional growth and land development between 2026 and 2035, including in the event of a single or multiple dry years. Therefore, impacts related to the availability of an adequate water supply to serve regional growth and land use change between 2026 and 2035 would be less than significant.

Transportation Network Improvements and Programs

The construction of new transportation network improvements, including roadways, bicycle and pedestrian facilities, and transit facilities, and operation and maintenance of new facilities could increase the demand for water for construction activities such as concrete mixing and dust control, and operational activities and services such as restrooms and drinking fountains. These increases in demand are anticipated to be small on a per project basis. In addition, large-scale regional transportation improvements have been underway for more than 15 years since the passage of Proposition A and the institution of a half-cent sales tax. This increase in water demand has not been identified as a significant component of regional demand, and impacts are not considered significant.

The construction of new transportation facilities would also increase demand for water use to irrigate new landscaping installed along roadways. This demand is not seen to result in significant impacts, as reclaimed water, of which there is a regional surplus, is typically available for this purpose in most areas. Any landscaping installed in outlying areas would be composed of native species with minimal water requirements.

2035 Conclusion

Water supplies are seen as adequate to serve regional growth and land use change and transportation network improvements and programs between 2026 and 2035. The water supply is adequate to serve these needs even in the event of a dry year or multiple dry years. This impact would, therefore, be less than significant.

2050

Water demand in 2050 was estimated using the 2020 UWMP assumptions for population and water demand in 2045 for normal year conditions. These per capita rates were then applied to forecasted 2050 population under the proposed Plan to calculate the 2050 water demands under the proposed Plan. Water demand for 2050 was calculated at 646,920 acre-feet.

Regional Growth and Land Use Change

SDCWA and member agency normal-year supplies are constant for the 2035–2045 period. Using these same factors in 2050 would result in a total local water supply of 582,514 acre-feet. This shortfall of 64,406 acre-feet from the calculated regional demand of 646,920 acre-feet could only be obtained from MWD. This amount would be well within an amount eligible for purchase based on SDCWA preferential rights. However, MWD wholesale supplies cannot be confirmed in 2050 as MWD planning documents do not extend beyond a horizon of 2045. The inability to confirm the availability of MWD wholesale supplies for the year 2050 makes it difficult to determine that adequate water supplies are available to support regional growth and land use change. This uncertainty means that there may be insufficient regional water supplies to meet regional water demand in 2050, a significant impact.

As shown above in Table 4.18-12, single dry-year assessments prepared for the SDCWA UWMP do not extend beyond 2045. Using the same methodology employed to estimate 2050 normal year water demand, the single dry-year demand for the SDCWA service area is estimated at 878,082 acre-feet. SDCWA and member agency supplies are uniform across both the 2040 and 2045 dry-year estimates at 539,540 acre-feet. Use of these water supply calculations in a 2050 dry-year scenario would result in a shortfall of 338,542 acre-feet. This quantity is of a magnitude that it would only be available with the exercising of SDCWA's preferential rights to MWD supplies. As there are no projections of MWD supplies available for wholesale in 2050, however, the availability of this supply cannot be confirmed.

Multiple dry-year assessments for the years 2036–2040 and 2041–2045 are presented below. In both scenarios, SDCWA member agency supplies, consisting of groundwater and surface water, decline over time. SDCWA supplies derived from water transfers are constant. In all instances the shortfall between supply and overall demand would be bridged via the SDCWA exercising its preferential right and acquiring additional wholesale supplies from MWD.

Table 4.18-16
2036–2040 Multiple Dry Water Year Supply and Demand Assessment (acre-feet per year)

	2036	2037	2038	2039	2040
Member Agency Supplies[1]	275,565	271,108	251,465	228,175	210,740
Water Authority Supplies	328,700	328,700	328,700	328,700	328,700
Metropolitan Allocation (Preferential Right)	337,204	311,347	311,429	311,510	311,592
Total Estimated Core Supplies without Storage Takes	**941,469**	**911,155**	**891,594**	**868,385**	**851,032**
Total Multiple Dry-Year Demands with Water Conservation Savings	645,703	652,160	658,681	665,268	671,921
Remaining Potential Surplus Supply, or (Shortage) to Be Addressed Through Management Actions	295,766	258,995	232,913	203,117	179,111

Source: San Diego County Water Authority 2021a.
[1] Member agency local supplies include verifiable recycling and brackish groundwater recovery, potable reuse, San Luis Rey water transfer, seawater desalination, as well as dry-year estimates for surface water and groundwater.

Table 4.18-17
2041–2045 Multiple Dry Water Year Supply and Demand Assessment (acre-feet per year)

	2041	2042	2043	2044	2045
Member Agency Supplies[1]	275,665	271,208	251,565	228,275	210,840
Water Authority Supplies	328,700	328,700	328,700	328,700	328,700
Metropolitan Allocation (Preferential Right)	337,646	311,755	311,837	311,918	312,000
Total Estimated Core Supplies without Storage Takes	**942,011**	**911,663**	**892,102**	**868,893**	**851,540**
Total Multiple Dry-Year Demands with Water Conservation Savings	661,605	668,221	674,903	681,652	688,469
Remaining Potential Surplus Supply, or (Shortage) to Be Addressed Through Management Actions	280,406	243,442	217,199	187,241	163,071

Source: San Diego County Water Authority 2021a.
[1] Member agency local supplies include verifiable recycling and brackish groundwater recovery, potable reuse, San Luis Rey water transfer, seawater desalination, as well as dry-year estimates for surface water and groundwater.

There are no SDCWA dry-year water demand projections after 2045. There are year-to-year variations in various supply and demand factors in the 2036–2040 and 2041–2045 assessments that make an estimate for 2046–2050 impossible without more detailed input from the water agencies. It is certain, however, that satisfying regional water demand in multiple dry years from 2046–2050 would require that the SDCWA exercise its preferential rights and acquire well in excess of 300,00 acre-feet per year. The availability of this water supply cannot be confirmed.

Transportation Network Improvements and Programs

The construction of new transportation network improvements, including roadways, bicycle and pedestrian facilities, and transit facilities, and operation and maintenance of new facilities could increase the demand for water for construction activities such as concrete mixing and dust control, and operational activities and

services such as restrooms and drinking fountains. These increases in demand are anticipated to be small on a per project basis. In addition, large-scale regional transportation improvements have been underway for more than 15 years since the passage of Proposition A and the institution of a half-cent sales tax. This increase in demand has not been identified as a significant component of regional water demand and impacts are not considered significant.

The construction of new transportation facilities would also increase demand for water use to irrigate new landscaping installed along roadways. This demand is not seen to result in significant impacts, as reclaimed water, of which there is a regional surplus, is typically available for this purpose in most areas. Any landscaping installed in outlying areas would be composed of native species with minimal water requirements.

2050 Conclusion

The impacts of regional growth and land use change in 2050 would be significant; the impacts of transportation network improvements would be less than significant. The UWMPs prepared by SDCWA and MWD indicate that there would be sufficient water supplies to provide for regional growth and land development through the year 2045. Subsequent to this time, however, documentation regarding sufficient supplies is unavailable, creating uncertainty about regional water supplies in 2050. This uncertainty means that there may be insufficient regional water supplies to meet regional water demand in 2050, a significant impact (WS-1).

Exacerbation of Climate Change Effects

The proposed Plan could exacerbate climate change effects on the ability to have sufficient water supplies available to serve projected regional demand beyond the year 2045. Climate change would impact multiple sources of water. Reduced precipitation and changes in timing of snowpack melt are likely to decrease the region's imported water supply (Xiao et al. 2018, CEP and SDF 2015), which comes from mountain ranges, such as the Sierra Nevada and the mountains that supply the Colorado River (SDCWA 2016). Increased evaporation and drought may also decrease surface water supplies and result in depletions of groundwater supply (CEP and SDF 2015, SDF 2008). Furthermore, sea-level rise could result in saltwater intrusion of coastal groundwater supplies, decreasing available drinking water (USGS n.d.).

Climate change may also increase water demand. Increased drought and evapotranspiration may increase water demand for agriculture and landscaping irrigation due to lack of rainfall and higher temperatures (Christian-Smith et al. 2012). This can further strain water resources feeding the San Diego region. The proposed Plan's projected population growth would increase water demand even more and thus adds to the uncertainty surrounding whether the San Diego region will have sufficient water supplies in 2050 for projected demand during normal dry and multiple dry years.

MITIGATION MEASURES

WS-1 NOT HAVE SUFFICIENT WATER SUPPLIES AVAILABLE TO SERVE THE PROJECTED REGIONAL DEMAND DURING NORMAL DRY AND MULTIPLE DRY YEARS

2050

WS-1a Implement Water Conservation Measures for Transportation Network Improvements. SANDAG shall, and other transportation project sponsors can and should, implement feasible water conservation

measures during planning, design, project-level CEQA review, construction, operations, and maintenance of transportation network improvements, including, but not limited to, the following:

- Comply with all prevailing State, regional, and local government plans, laws, and policies regarding water conservation and efficiency.
- Install drip or other water-conserving or weather-based irrigation systems for landscaping.
- Install native plant species and noninvasive drought-tolerant/low-water-use plants in landscaping, consistent with the most recent State, regional, and local government plans, laws, and policies.
- Incorporate the use of reclaimed water (also known as recycled water) during planning, design, project-level CEQA review, construction, operations, and maintenance of transportation network improvements to reduce the use of potable water.

WS-1b Implement Water Conservation Measures for Development Projects. The County of San Diego, cities, and other local jurisdictions can and should implement feasible water conservation measures during planning, design, and project-level CEQA review of development projects, including, but not limited to, the following:

- Install drip or other water-conserving or weather-based irrigation systems for landscaping.
- Install native plant species and noninvasive drought-tolerant/low-water-use plants in landscaping, consistent with the most recent State, regional, and local government plans, laws, and policies.
- Install low-flow plumbing fixtures.
- Install water-efficient appliances.
- Incorporate the use of reclaimed water. Measures to incorporate reclaimed water may include, but are not limited to, onsite water recycling; the use of recycled water to fill lakes, ponds, and ornamental fountains; the use of recycled water for irrigation, to mix concrete, and to control dust at construction sites; the use of recycled water for certain industrial processes and for flushing toilets and urinals in nonresidential buildings; and the use of recycled water for street sweeping purposes.

WS-1c Ensure Adequate Water Supply for Development Projects. During planning, design, and project-level CEQA review for development projects, the County of San Diego, cities, and other local jurisdictions can and should ensure that adequate water supply will be available to meet or satisfy projected water demands, consistent with applicable UWMPs, Master Plans, and General Plan projections of water supply and demand. This can and should be documented in the form of an SB 610 Water Supply Assessment, an SB 221 Water Supply Verification, or other water supply analysis.

SIGNIFICANCE AFTER MITIGATION

2050

Between 2036 and 2050, adequate water supplies have not been identified. This uncertainty means that there may be insufficient regional water supplies to meet regional water demand, notwithstanding implementation of the above mitigation measures, creating a significant unavoidable impact in 2050.

WS-2 SUBSTANTIALLY DECREASE GROUNDWATER SUPPLIES, OR INTERFERE SUBSTANTIALLY WITH GROUNDWATER RECHARGE SUCH THAT THE PROPOSED PLAN WOULD IMPEDE SUSTAINABLE MANAGEMENT OF GROUNDWATER BASINS OR OBSTRUCT IMPLEMENTATION OF A SUSTAINABLE GROUNDWATER MANAGEMENT PLAN.

ANALYSIS METHODOLOGY

The analysis addresses the impacts of forecasted regional growth and land use change and transportation network improvements on groundwater supplies both within and outside of the SDCWA service area, and determines whether the proposed Plan would impede sustainable management of a groundwater basin or obstruct implementation of a GSP. As stated above, various public agencies are currently preparing sustainable GSPs for the San Diego River Valley, San Luis Rey Valley, and San Pasqual Valley basins that must be completed by January 2022. For sustainable groundwater management plans that are not yet adopted, the analysis focuses on whether the proposed Plan would impede sustainable management of a groundwater basin or impede or obstruct implementation of the San Diego County Groundwater Study. For the Borrego Springs Subbasin GSP and adjudication, the analysis focuses on whether the proposed Plan would conflict with the project and management actions identified in the GSP to achieve the GSP's sustainability goal with plan implementation.

In addition, the analysis addresses increased use of groundwater and changes to groundwater recharge under the proposed Plan relative to the existing conditions, as described in the GSP. Groundwater use typically increases during dry years and decreases in wet years when surface water supplies are more available. Projected groundwater supply yield identified in the SDCWA 2020 UWMP ranges from a low of 25,950 acre-feet in 2020 to a high of 31,500 acre-feet in 2035. No groundwater availability projections are available for 2050. The analysis provides a qualitative discussion on how forecasted regional growth and land use change could interfere with groundwater recharge by creating additional impervious surfaces. Forecasted regional growth and land use change would also create additional demands for water supplies from local water supply agencies, a portion of which may be provided by groundwater; the analysis addresses these impacts as well.

A general discussion is provided to describe the proximity of planned transportation network improvements to documented groundwater resources and to determine whether they would impede sustainable groundwater management or conflict with or obstruct implementation of the existing County Groundwater Study and the Borrego Valley GSP. Transportation projects may increase impervious surfaces, but would have very limited demands for water supplies; therefore, they would not substantially affect groundwater resources such that they would result in land subsidence or create groundwater overdraft conditions. With regard to groundwater recharge, many of the proposed transportation facilities are on or adjacent to existing highways, streets, and roads in which most of the surfaces are already paved or impervious. The analysis will evaluate how the proposed Plan could result in the implementation of new roadways dispersed throughout the Plan Area. These new impervious surfaces, while planned for by local implementing agencies, could contribute to limiting regional groundwater recharge if they would substantially decrease groundwater supplies or substantially limit recharge in the areas of new impervious surfaces. If either of these scenarios occurs, it would be considered an impediment to sustainable management of a groundwater basin, and would be a significant impact.

IMPACT ANALYSIS

2025

Regional Growth and Land Use Change

Groundwater basins in San Diego County occur both within the service area of the SDCWA and in the eastern two-thirds of the County that is entirely dependent on groundwater for all water uses. The population of the portion of the County outside of the SDCWA service area was 95,171 in 2016. This population is forecasted to increase to 95,952 in 2025, 98,754 in 2035, and 101,317 in 2050. The County of San Diego General Plan Update EIR, Appendix D (County of San Diego 2010a) evaluated the groundwater impacts of forecasted growth and land use change within groundwater-dependent areas overlying fractured-rock aquifers in the unincorporated county. All fractured-rock aquifers and groundwater basins outside of the SDCWA service area were evaluated. Groundwater level data from a preceding 34-year period was analyzed. Using County of San Diego significance criteria, it was determined that a significant impact existed if, for at least 1 month during the period of analysis, the groundwater levels in the aquifers were reduced to or below 50 percent of the overall storage capacity of the groundwater basin or aquifer. It was found that 10 groundwater basins or aquifers had minimum storage levels below 50 percent under preexisting or existing conditions. These groundwater basins or aquifers were also below the 50 percent storage threshold under General Plan buildout conditions. When General Plan land use buildout conditions were modelled across the eastern two-thirds of the county, an additional 13 groundwater basins or aquifers were found to fall below the 50 percent storage threshold. The County groundwater study also concluded that in several areas under both existing and future conditions there were groundwater supply issues caused by a concentration of wells in a limited area. Any regional growth occurring between 2016 and 2025 in the 10 identified groundwater basins or aquifers with existing insufficient groundwater storage, or in the additional 13 groundwater basins or aquifers identified as having insufficient storage under General Plan buildout conditions would be a significant impact.

After the passage of the SGMA, groundwater basins were assessed across the state by the DWR. The groundwater basins were classified as high-, medium-, or low-priority based on groundwater storage and overdraft conditions. The SGMA requires medium- and high-priority basins to develop GSAs, develop GSPs, and manage groundwater for long-term sustainability. Three basins in San Diego County were identified as medium priority. An additional groundwater subbasin, the Borrego Valley Subbasin (discussed below), was determined to be a high priority due to "critical overdraft" conditions. The medium-priority basins in San Diego County are the San Luis Rey River Valley Groundwater Basin, the San Pasqual Valley Groundwater Basin, and the San Diego River Groundwater Basin. The GSAs for these three basins are mandated to finalize a GSP for approval by DWR by January 31, 2022. It should be noted that a large majority of the land overlying these three medium-priority groundwater basins is within the SDCWA service area. Although water is available from the SDCWA distribution system, groundwater in these basins provides a supplemental source of water for agricultural, domestic, and industrial uses. While monitoring wells track groundwater levels in these groundwater basins, there is currently no comprehensive information regarding the quantity of groundwater pumped from these basins.

Population increases are forecasted in the area overlying only one of these groundwater basins. Population in the San Diego River Valley Basin area is forecasted to increase from 49,479 in 2016 to 50,547 in 2025. Population in the San Luis Rey River Valley and the San Pasqual Valley Basins areas is forecasted to decrease. While it can be assumed that residential water use would decrease because of this population decline, this does not preclude an increased demand on groundwater supplies from agricultural or other users. Upon completion of a GSP, a mechanism will be in place to ensure that a new permitted use of groundwater within these basins

is consistent with the sustainable management of groundwater levels in these basins over time. Until such time as an approved GSP is in place, regional growth and land use changes resulting in an increase in groundwater use within the San Diego River Valley Basin area would cause a significant groundwater impact.

Under the terms of the Settlement Agreement, all parcels within the Borrego Water District will henceforth be metered by BWD to measure water use. All users will be required to reduce groundwater withdrawals by 5 percent each year. By 2030, all will have halved their baseline amounts, and by 2040 groundwater and thereafter withdrawal will be reduced by 75 percent. From that time forward groundwater withdrawal will match basin recharge (see *Borrego Water District v. All Persons who Claim a Right to Extract Groundwater in the Borrego Valley Groundwater Subbasin No. 7.024-01 Whether Based on Appropriation, Overlying Right, or Other Basis Of Right, and/or Who Claim a Right to Use of Storage Space in the Subbasin*).

A modest increase in population within the boundaries of the Borrego Valley Subbasin is forecast: from 4,721 in 2016 to 4,825 in 2025. As this population increase would be accompanied by at least some new development, BWD was contacted regarding the procedure for allowing new connections to their distribution system, or for allowing new metered wells. After the adjudication, new connections or wells will only be permitted by BWD in instances where the applicant has previously obtained sufficient water rights from preexisting water users. In addition, the applicant would be required to obtain sufficient preexisting water rights to allow for a sufficient level of water use *after* the reductions required by 2040. Regional water planning is based on a requirement of 0.5 acre-foot by a single-family dwelling unit. BWD will require that an applicant for a new residential connection purchase 2.42 acre-feet of water rights from existing users. This multiplier accounts for a 75 percent reduction from current water use plus an additional allowance for distribution system loss. This will allow the needed reductions over time to meet the sustainable aquifer withdrawal level by 2040 (Poole pers. comm.). As such, this population increase would not worsen the "Critical Overdraft" condition currently affecting this aquifer, as any new connection will only occur after the acquisition of preexisting water rights sufficient to allow for future incremental reductions in groundwater withdrawals required by the adjudication and thereby achieve aquifer sustainability.

The adjudication of the Borrego Valley Subbasin provides a regulatory framework for allowing some new development within the BWD service area. New development, and the Borrego Valley Subbasin's portion of forecasted regional growth, would only occur after the proposed new development has purchased preexisting water rights. These purchased preexisting rights would be in sufficient quantity to provide for the required future reductions in allowed groundwater withdrawal. Any forecasted regional growth that occurs within the boundaries of the Borrego Valley Subbasin would not substantially decrease groundwater supplies as it would be a portion of a groundwater budget set by, and incrementally reduced by, the terms of the adjudication. The water used by this future growth would be consistent with the terms of the adjudication and would therefore not interfere with the sustainable management of the Borrego Valley Subbasin aquifer, or the implementation of the Borrego Valley GSP, the terms of which were implemented via the adjudication.

Regional growth and land development would occur on land overlying groundwater basins and rural aquifers outside of the SDCWA service area that were identified by the County of San Diego (2010b) as currently having an insufficient level of aquifer storage to ensure sustainability or were projected to have unsustainable storage levels with General Plan buildout. Among these identified groundwater basins or aquifers, it is forecasted that between 2016 and 2025 there would be substantial population increases in areas relying on the Escondido Creek and Poway Valley groundwater basins. The population of the area overlying the Escondido Creek groundwater basin is projected to increase by 1,068. The population of the area overlying the Poway Valley groundwater basin is projected to increase by 1,008. While both basins are within the SDCWA service area, the

underlying aquifer is being utilized at an unsustainable level. Growth would exacerbate current unsustainable condition characterizing these aquifers and would cause a significant groundwater impact.

Transportation Network Improvements and Programs

Transportation network improvements have the potential to affect groundwater supplies through stormwater runoff. Stormwater is defined by the EPA as the runoff generated when precipitation from rain and snowmelt events flows over land or impervious surfaces without percolating into the ground (SWRCB 2020). Stormwater is often considered a nuisance because it mobilizes pollutants such as motor oil and trash. Stormwater discharges in California are regulated through National Pollutant Discharge Elimination System (NPDES) permits. Transportation network improvements made within already urbanized areas, such as the Central and San Ysidro Mobility Hubs, create lass impact as they do not represent a net increase in impervious surfaces. Water quality aspects of stormwater originating from transportation network improvements are analyzed in Section 4.10. At issue is the effects of stormwater originating from network transportation improvements on the water supplies of underlying aquifers. As is noted by the SWRCB, stormwater may act as a resource and recharge to groundwater when properly managed.

Within the State of California, methods of accommodating stormwater in new transportation improvements financed all or in part with State or federal funds are governed by Caltrans design standards. Caltrans standards also typically serve as the basis for municipal designs, as the municipalities operate under similar NPDES permit requirements. The principles of Caltrans transportation improvement design related to stormwater management include the following (Caltrans 2016b):

- Conserve natural areas to the extent feasible, including existing trees, stream buffer areas, vegetation, and soils.
- Minimize the impervious footprint of the project.
- Minimize disturbances to natural drainages.
- Design pervious areas to effectively receive runoff from impervious areas, taking into consideration the pervious area's soil conditions, slope, and other pertinent factors.
- Incorporate landscape and soil-based best management practices (BMPs).
- Use climate appropriate landscaping, that minimizes irrigation and runoff, promotes surface infiltration and minimizes the use of pesticides and fertilizers.

Temporary BMPs are deployed to retain stormwater during project construction. Permanent BMPs encompassing the above design principles are incorporated into the permanent design of new transportation improvements. Permanent stormwater detention and treatment facilities are sized to accommodate 85 percent of the runoff from a typical 24-hour storm event, which is referred to as a "design event." In the San Diego region, the design event is determined based on subregional rainfall contour mapping (County of San Diego 2020). Permanent BMPs are typically earthen basins or swales that allow detained runoff to infiltrate into the soil and ultimately the underlying groundwater basin.

When new transportation improvements are constructed, the 85 percent detention requirement is applicable to the entire facility. When the transportation improvement is a redevelopment or an expansion of an existing facility, the impervious area detention requirements vary dependent upon the area of the new improvement. For highway projects of less than 1 acre or non-highway transportation projects of less than 5,000 square feet, only the redeveloped area and the hydraulically inseparable flow must be detained. For projects larger than these thresholds, the entire impervious surface within the project limits must be detained and treated (Caltrans

2016b). Because of these requirements, there would be no net increase in stormwater runoff because of transportation network improvements.

Between 2016 and 2025, several network improvements would be constructed on land overlying groundwater basins. Rail and arterial roadways would be constructed on land overlying the San Marcos Area Groundwater Basin. Rail improvements would be built on land overlying the Escondido Creek Groundwater Basin. This basin was not identified as requiring a GSP by DWR. Arterial roadway improvements would be constructed on land overlying the Santa Maria Groundwater Basin. This basin was identified as having insufficient storage in the County Groundwater Study. I-5 Complete Corridor improvements would be constructed on land overlying the Sweetwater Valley and Otay Valley Groundwater Basins. These basins were not identified as requiring a GSP by DWR.

In determining the potential impact of transportation network improvements upon land overlying groundwater basins several factors should be considered. First, the total amount of new impervious surfaces resulting from transportation network improvements is extremely small in comparison to the size of the groundwater basins. Secondly, design storm detention requirements result in a groundwater replenishment scenario that is not dissimilar to natural conditions. The bulk of stormwater draining from new transportation facilities would be detained and allowed to infiltrate into the underlying soil. The residual amount would drain into storm sewers and ultimately watercourses. This is similar to natural conditions under which, after soil is fully saturated by infiltration of precipitation, runoff would travel as surface flow to watercourses. Finally, the detention requirements applied to new or expanded transportation improvements result in very little, if any, additional stormwater compared to existing conditions. Taking these factors into account allows a conclusion that transportation network improvements implemented between 2016 and 2025 would have less-than-significant impacts on groundwater supplies, groundwater recharge, or the sustainable management of groundwater basins.

2025 Conclusion

Regional growth and land development would result in population increases on land overlying one of the three groundwater basins requiring preparation of a GSP because of being identified as medium priority by DWR, the San Diego River Valley Basin. Regional growth and land development would also occur on land overlying the Escondido Creek and Poway Valley groundwater basins, which were identified by the County as having insufficient storage. This growth would exacerbate the existing overdraft or insufficient storage in these basins. Regional growth on land overlying medium-priority groundwater basins would also contribute to an existing aquifer overdraft. Groundwater impacts of regional growth and land use change would therefore be significant in the Year 2025 (WS-2). Transportation network improvements implemented between 2016 and 2025 would not substantially reduce groundwater supplies, groundwater recharge, or the sustainable management of groundwater basins due to the relatively small area of additional impervious surfaces and stormwater detention requirements.

2035

Regional Growth and Land Use Change

Regional growth and land use change between 2026 and 2035 would continue to occur on land overlying groundwater basins. Outside of the SDCWA service area growth would occur on land overlying groundwater basins and rural aquifers identified by the County (2010a) as currently having an insufficient level of aquifer storage to ensure sustainability, or were projected to have unsustainable storage levels with General Plan

buildout. Among these identified groundwater basins, it is forecasted that between 2026 and 2035 there would be substantial population increases in the areas overlying Escondido Creek and Poway Valley aquifers. The population of the area overlying the Escondido Creek aquifer is projected to increase by 1,068. The population of the area overlying the Poway Valley aquifer is projected to increase by 1,008. While both basins are within the SDCWA service area, the underlying aquifers are being utilized at an unsustainable level. Growth would exacerbate current unsustainable condition characterizing these aquifers and would cause a significant groundwater impact.

A decrease in population between 2026 and 2035 in the areas overlying all three of the groundwater basins designated as medium priority by DWR is forecasted. The population on land overlying the San Diego River Valley groundwater basin is forecasted to decrease from 50,547 to 50,023. The population of the land overlying the San Luis Rey River Valley groundwater basin is forecasted to decrease from 62,655 to 59,935. The population of the land overlying the San Pasqual Valley groundwater basin is forecasted to decrease from 1,097 to 1,083. Forecasted regional growth would therefore not impact the groundwater supply or groundwater sustainability within these aquifers.

While the population of the land overlying the Borrego Valley Subbasin is forecasted to increase slightly between 2026 and 2035, from 4,825 to 4,880, this increase would not contribute to a significant impact. Groundwater use associated with any new service connection to the BWD distribution system would be offset by purchases of existing groundwater rights sufficient to allow continued reductions in overall groundwater use in accordance with the adjudication and to achieve a sustainable level of groundwater withdrawal by 2040.

Transportation Network Improvements and Programs

Transportation network improvements constructed on land overlying groundwater basins between 2026 and 2035 would consist primarily of highway improvements. Complete corridor improvements along I-5, I-8, I-15, and SR 163 would cross land overlying the Mission Valley Groundwater Basin. I-8 Complete Corridor improvements would also cross land overlying the El Cajon Valley Groundwater Basin. SR 78 Complete Corridor Improvements would cross land overlying the San Marcos Area Groundwater Basin and the Escondido Creek Groundwater Basin. None of these were determined to be of medium or high priority by DWR due to overdraft conditions. The Escondido Creek Groundwater Basin was determined to have inadequate storage capacity under General Plan buildout conditions.

All new or expanded transportation network improvements developed between 2026 and 2035 would be required to detain stormwater runoff from newly created impervious services. Stormwater runoff equivalent to 85 percent of that generated by a design storm event would be detained in earthen basins or swales and allowed to infiltrate into the subsoil. This stormwater detention and infiltration would be sufficient to prevent any significant impacts on underlying groundwater basins or on groundwater sustainability.

2035 Conclusion

Regional growth and land use change between 2026 and 2035 outside of the SDCWA service area would occur on land overlying the Poway Valley and the Escondido Creek groundwater basins, both of which were identified by the County (2010a) as currently having an insufficient level of aquifer storage to ensure sustainability or were projected to have unsustainable storage levels with General Plan buildout. Regional growth and land use change would therefore, result in significant impacts on the groundwater supplies in basins and on groundwater basin sustainability in the Year 2035 (WS-2). Transportation network improvements would have

sufficient stormwater detention facilities to prevent significant impacts on groundwater supplies or groundwater basin sustainability.

2050

Regional Growth and Land Use Change

Regional growth and land use change between 2036 and 2050 would continue to occur on land overlying groundwater basins. Outside of the SDCWA service area growth would occur on land overlying rural groundwater aquifers identified by the County (2010a) as currently having an insufficient level of aquifer storage to ensure sustainability, or were projected to have unsustainable storage levels with General Plan buildout. Among these identified groundwater basins, it is forecasted that between 2036 and 2050 there would be population increases in the Escondido Creek and Poway Valley Groundwater Basins. Populations are projected to increase by 594 on land overlying the Escondido Creek Groundwater Basin and by 48 on land overlying the Poway Valley Groundwater Basin. While both basins are within the SDCWA service area, the underlying aquifers are being utilized at an unsustainable level. Growth would exacerbate current unsustainable condition characterizing these aquifers and would cause a significant groundwater impact.

An increase in population is forecasted between 2036 and 2050 in two of the three groundwater basins designated as medium priority by DWR. Forecasted regional growth would increase the population of land overlying the San Diego River Valley and San Pasqual Valley Groundwater Basins by 403 and 62, respectively. These potential contributions to an existing aquifer overdraft would cause a significant groundwater impact. The population in the Borrego Valley Subbasin area is forecasted to increase slightly to 5,091 between 2036 and 2050; however, this increase would not contribute to a significant impact. Groundwater use associated with any new service connection to the BWD distribution system would be offset by purchases of existing groundwater rights sufficient to allow continued reductions in overall groundwater use in accordance with the adjudication and to achieve a sustainable level of groundwater withdrawal by 2040.

Transportation Network Improvements and Programs

Transportation network improvements constructed on land overlying groundwater basins between 2036 and 2050 would consist primarily of highway and rail improvements. Complete corridor improvements along the I-5 would cross the land overlying the San Dieguito Creek and San Luis River Groundwater Basins. SR 125 Complete Corridor improvements would cross the land overlying the San Diego River Groundwater Basin. Rail improvements would cross the land overlying the Otay Valley, Sweetwater Valley, and Escondido Creek Groundwater Basins. The San Diego River Valley and the San Luis Rey River Groundwater Basins were determined to be of medium or high priority by DWR due to overdraft conditions. The Escondido Creek Groundwater Basin was determined to have inadequate storage capacity under General Plan buildout conditions.

All new or expanded transportation network improvements developed between 2036 and 2050 would be required to detain stormwater runoff from newly created impervious services. Stormwater runoff equivalent to 85 percent of that generated by a design storm event would be detained in earthen basins or swales and allowed to infiltrate into the subsoil. This stormwater detention and infiltration would be sufficient to prevent any significant impacts on underlying groundwater basins or on groundwater sustainability.

2050 Conclusion

Between 2036 and 2050 regional growth and land use change would continue to occur, with a forecasted increase in population, on land overlying the Escondido Creek and Poway Valley aquifers, both of which have been identified by the County as having inadequate storage. Regional growth and land use change would also result in population increases on land overlying the San Pasqual and San Diego River groundwater basins, which have been designated as medium priority by DWR. Additional demand upon these groundwater basins would be unsustainable. Regional growth and land use change would therefore result in significant impacts on the groundwater supplies in basins and on groundwater basin sustainability in the Year 2050 (WS-2). Transportation network improvements would have sufficient stormwater detention facilities to prevent significant impacts on groundwater supplies or groundwater basin sustainability.

Exacerbation of Climate Change Effects

The proposed Plan could exacerbate climate change effects on decreasing groundwater supplies or interfering with groundwater recharge in a way that impedes sustainable groundwater management. Climate change could directly affect groundwater supplies, such as through saltwater intrusion, which contaminates potable groundwater along the coast (USGS n.d.). Climate change effects on other water supplies—such as decreases in imported water and surface water—also affect groundwater, as decreases in other supplies result more groundwater withdrawals (CEP and SDF 2015).

The proposed Plan would increase population in the San Diego region, further increasing demand for groundwater. Furthermore, development for the proposed Plan would increase the number of impervious surfaces, which could impede groundwater recharge (Bedsworth et al. 2018), decreasing the potential for more groundwater supplies in the future. Thus, the proposed Plan could exacerbate sustainable groundwater management that is already expected to be strained in the future under climate change.

MITIGATION MEASURES

WS-2 SUBSTANTIALLY DECREASE GROUNDWATER SUPPLIES OR INTERFERE SUBSTANTIALLY WITH GROUNDWATER RECHARGE SUCH THAT THE PROPOSED PLAN WOULD IMPEDE SUSTAINABLE MANAGEMENT OF GROUNDWATER BASINS OR OBSTRUCT IMPLEMENTATION OF A SUSTAINABLE GROUNDWATER MANAGEMENT PLAN

2025, 2035, and 2050

Implement mitigation measures **WS-1a** and **WS-1b**, as described above.

WS-2 Implement Groundwater Measures to Ensure Sustainable Yield For Development Projects. The County of San Diego, cities, and other local jurisdictions can and should ensure sustainable yield of groundwater basins during planning, design, and project-level CEQA review of development projects, by taking measures including, but not limited to, the following:

- Participate in a groundwater trading program to enable permanent transfer and potentially long-term and short-term lease of baseline pumping allocations to allow groundwater users or new development to purchase needed groundwater allocation from others.

- Use drought-resistant landscaping options and provide information on where these can be purchased. Use of reclaimed water especially in median landscaping and hillside landscaping can and should be implemented where feasible.
- Ensure that projects requiring continual dewatering facilities implement monitoring systems and long-term administrative procedures to ensure proper water management that prevents degrading of surface water and minimizes, to the greatest extent possible, adverse impacts on groundwater for the life of the project. Comply with appropriate building codes and standard practices including the Uniform Building Code.
- Maximize, where practical and feasible, permeable surface area in existing urbanized areas to protect water quality, reduce flooding, allow for groundwater recharge, and preserve wildlife habitat. Minimize new impervious surfaces to the greatest extent possible, including the use of in-lieu fees and offsite mitigation.
- Avoid designs that require continual dewatering where feasible. Where feasible, do not site transportation facilities in groundwater recharge areas, to prevent conversion of those areas to impervious surface.

SIGNIFICANCE AFTER MITIGATION

2025, 2035, and 2050

Forecasted regional growth and land development between 2016 and 2050 would result in additional population in land overlying rural groundwater basins that have or are anticipated to have insufficient storage based on existing and projected groundwater withdrawals. This population increase would impede groundwater basin sustainability. Forecasted growth and land use change would result in population increases in areas overlying groundwater basins designated as medium priority by DWR due to overdraft conditions. This population increase would impede groundwater basin sustainability and would obstruct implementation of the required GMPs. Because it cannot be guaranteed that all future project-level groundwater impacts can be mitigated to a less-than-significant level, this impact (WS-2) would remain significant and unavoidable.

WS-3 REQUIRE OR RESULT IN THE RELOCATION OR CONSTRUCTION OF NEW OR EXPANDED WATER FACILITIES, THE CONSTRUCTION OR RELOCATION OF WHICH COULD CAUSE SIGNIFICANT ENVIRONMENTAL EFFECTS.

ANALYSIS METHODOLOGY

This analysis provides information on the adequacy of existing water facilities to serve forecasted regional growth and land use change and proposed transportation network improvements. *Water facilities* are defined to include conveyance (of raw water), storage, treatment, and distribution facilities. Major water conveyance systems serving the region include the California Aqueduct and Colorado River Aqueduct, and the system includes other conveyance pipelines and associated infrastructure. A significant impact would occur if forecasted regional growth and land use change or transportation network improvements and programs required construction, expansion, or relocation of water facilities that would result in significant physical impacts. To evaluate potential impacts, areas where growth and land use change or transportation network improvements and programs are expected to occur are compared to the existing capacity of water supply facilities identified in Section 4.18.1, *Existing Conditions*, to determine if implementation of the proposed Plan would require the construction of new or expanded water supply facilities in order to maintain water supply. Impacts of construction activities for new or expanded facilities are analyzed as well. As the timeframe analyzed

extends into the future, precise impact assessment is made difficult due to the age of the current SDCWA Facilities Master Plan, which dates to 2013 (SDCWA 2013).SDCWA's in-region storage includes the Olivenhain Reservoir, the San Vicente Reservoir, and Lake Hodges. In addition, SDCWA has contracted for out-of-region groundwater storage. Water treatment for almost all retail water service is provided by a member agency WTP, Twin Oaks Valley WTP, or by MWD's Skinner WTP. This regional treated-water capacity provides flexible and robust local water treatment options and supports member agencies' constructed facilities. Water demands associated with the proposed Plan's regional growth and land use change or transportation network improvements are discussed and then compared to the existing capacity of water facilities. A shortfall in capacity compared to future water demands would result in the need to construct additional facilities, resulting in new impacts.

The types of potential short- and long-term physical impacts of constructing and operating such facilities are described. Several existing water infrastructure projects and expansions are identified in the SDCWA's 2013 Master Plan Update to meet current and projected regional water demand. Specific major infrastructure plans and projects proposed by the local water supply agencies are described, along with a general assessment of potential impacts that would occur. Construction of new or expanded water facilities would be expected to result in short-term construction-related impacts on air quality, noise, traffic, hydrology, and other environmental resources.

IMPACT ANALYSIS

2025

Regional Growth and Land Use Change

Baseline water usage within the SDCWA service area in 2016 was 454,963 acre-feet, and the forecasted demand for 2025 is 618,169 acre-feet (SDCWA 2021b). This represents an increase of 163,206 acre-feet. New facilities and expansion of existing water facilities would be needed to serve 2025 growth, and to serve alternative water supply projects, if required, but details on the size, location, and characteristics of those facilities are not completely known and would be addressed in project-specific documents. The near-term projects recommended by the 2013 Master Plan Update for further evaluation are described above under Impact WS-1. Near-term projects specific to the 2025 planning horizon are noted below. The potentially significant construction-related environmental impacts of these facilities, and potential mitigation measures, are summarized in Table 4.18-18. This table specifically addresses the impacts for future water supply projects.

Table 4.18-18
Potential Environmental Impacts Associated with Water Supply Projects

Environmental Issue Area	Potential Significant Impact	Possible Mitigation
Aesthetic and Visual Resources	Construction activities may alter scenic views. Addition of new visual features may block views and cause additional sources of light and glare.	Protect public views of scenic vistas during all project stages. Design projects to reduce impacts on scenic resources within scenic highways. Design projects to reduce light and glare with project-specific design features.

Environmental Issue Area	Potential Significant Impact	Possible Mitigation
Air Quality	The following may occur: temporary construction air quality impacts; emission of toxic air contaminants; and conflict with local Air Quality Management Plan.	Comply with all applicable federal, State, and local air quality guidelines.
Biological Resources	Construction and operation activities may impact terrestrial and aquatic biological resources.	Comply with all federal, State, and local laws and guidelines to ensure protection of biological resources in all stages of the project.
Cultural, Tribal, and Paleontological Resources	Construction and operation activities may potentially disturb undiscovered tribal, archaeological, and paleontological resources.	Conduct preconstruction surveys, records searches, studies, and Native American consultations. Identify the potential for unique paleontological resources or unique geologic features. Develop project-level measures to avoid or reduce impacts on cultural resources, paleontological resources, and unique geologic features. Protect historic resources during construction.
Energy	Construction and operation of such facilities may increase energy usage.	Comply with all applicable federal, State, and local energy regulations and plans.
Geology, Soils, and Mineral Resources	The following may occur: seismic-related hazards including earthquakes; and geologic-related hazards including landslides and liquefaction, soil and topsoil erosion, and water and wind erosion.	Prepare project-specific geotechnical studies. Comply with the recommendations of site-specific studies as a condition of the site development permit for specific projects.
Greenhouse Gas (GHG) Emissions	Project may increase the emissions of GHGs.	Comply with all State and local regulations to reduce GHG emissions.
Hazards and Hazardous Materials	Project may create hazards due to the storage, transportation, and/or handling of hazardous materials, thereby increasing the risk of exposure to hazards and hazardous materials.	Handle, store, transport, and dispose of all hazardous materials in accordance with all applicable federal, State, and local regulations. Implement measures to ensure emergency response services are adequate and can meet service levels.

Environmental Issue Area	Potential Significant Impact	Possible Mitigation
		Implement bank stabilization and other wildland fire risk reduction measures.
Hydrology and Water Quality	Stormwater runoff and flooding may occur. Some projects may result in increased surface water diversions.	Comply with all applicable regulations and detailed erosion control measures tailored to the specific project site. Implement measures to manage stormwater runoff and erosion including directing runoff to permitted system with capacity.
Noise	Construction and operation may cause impacts on nearby sensitive receptors.	Comply with noise standards in the specific project jurisdiction, and prepare a Noise Study.
Public Services and Utilities	Increased solid waste production may occur.	Comply with all applicable regulations and Assembly Bill 939. Reduce water use for construction and operations. Implement green building measures. Reduce construction waste through reuse or recycling of materials.
Traffic	Short-term project construction could potentially impact traffic.	Develop and implement a Traffic Control Plan for specific projects to ensure safety in construction zones.
Wildfire	Short-term project construction in Very High Fire Severity Zones and the Wildland-Urban Interface could potentially increase wildfire risk.	Develop and implement a Fire Safety Plan and incorporate fire prevention BMPs to reduce wildfire risk.

The following near-term projects have an anticipated implementation timeframe of 2016–2025 (SDCWA 2013a):

- North County ESP Pump Station (Existing Project): This project consists of a new 30 cubic foot per second pump station to deliver treated water to the northern reaches of the SDCWA service area when supplies from MWD are interrupted. Project location and pumping capacity are dependent on implementation of the Pipeline 3/Pipeline 4 Conversion project (see discussion under *2035* below). This project is scheduled for completion in 2023 (SDCWA 2021a).
- Mission Trails Projects (Existing Project): This project will alleviate the existing untreated water conveyance constraint south of Lake Murray. The project provides regulatory storage for improved aqueduct operations and increases untreated water conveyance capacity for deliveries to south county WTPs. The project includes a new storage facility sized up to 12 million gallons, flow control valve structure, and connections to the completed Mission Trails Tunnel project. An alternative to this project would be constructing a new interconnection or placing the existing Flow Balancing Structure back in service, both which would only address the conveyance constraint south of Lake Murray. This project is currently under construction.

- System Isolation Valves: This project, which is currently nearing completion, allows for more efficient isolation of segments of the aqueduct system to perform required inspections, maintenance, and repair work and isolates segments of the aqueduct system during low flow periods to address potential water quality concerns. High-risk areas generally include river and stream crossings, lake crossings, and other areas where damage may result from a seismic or flood event.
- Facility Planning Studies (New Project): This project includes new planning-level studies that would evaluate infrastructure requirements related to the assessment of water quality concerns and nitrification in the treated water system, system vulnerabilities at river and stream crossings resulting from flood and seismic events, and the evaluation of new in-line hydroelectric generation opportunities.

Construction of new or expanded water facilities would result in short-term construction-related impacts. Construction-related impacts are typically controllable and can be mitigated below a level of significance through actions of the implementing agency, including adherence to existing regulations and BMPs. Additionally, operation of new facilities may lead to long-term environmental impacts related to air quality, noise, traffic, and more. Because details about the timing, location, and project-specific information for new water facilities are not known, there is no assurance the impacts from the construction or operation of new or expanded water facilities would always be less than significant. Therefore, this impact is significant.

Transportation Network Improvements and Programs

Transportation network improvements and programs are developed to accommodate the projected growth and increases in population, housing, and employment. New treatment and storage facilities would not be required to provide water for irrigated landscaping on proposed Plan transportation projects, because the water demands of these projects are relatively minor.

New or extended distribution pipelines would be needed to extend recycled water service to new projects where such service is not available, and the extension of recycled water is included in the Complete Corridor improvements to provide for landscape irrigation. Construction and operation of these recycled water distribution facilities would cause the types of environmental impacts listed in Table 4.18-18. Therefore, implementation of the proposed Plan transportation network improvements and programs would result in a significant impact related to construction of new water distribution facilities in 2025.

The construction of new transportation network improvements, including roadways, bicycle and pedestrian facilities, and transit facilities, and operation and maintenance of new facilities could increase the demand for water for construction activities such as concrete mixing and dust control, and operational activities and services such as restrooms and drinking fountains. Although these increases in demand are anticipated to be small on a per project basis, the collective demand from all of the projects taken together could increase water demand in such a way as to exceed current projected supply, requiring construction of new or expanded water facilities. These impacts are considered significant.

2025 Conclusion

Regional growth and land use change and transportation network improvements under the proposed Plan would result in construction of new or expanded water facilities. The impacts of constructing some of these facilities would be significant. Therefore, this impact (WS-3) in the year 2025 is significant.

2035

Regional Growth and Land Use Change

As noted above, the forecasted water demand in 2025 is 618,169 acre-feet, and the forecasted demand for 2035 is 671,509 acre-feet (SDCWA 2021a). This represents an increase of 53,340 acre-feet. As stated in the 2025 analysis, construction of new or expanded water facilities to serve the growth would result in short-term construction-related impacts. Construction-related impacts are typically controllable and can be mitigated below a level of significance through actions of the implementing agency, including adherence to existing regulations and BMPs. Operation of new facilities may lead to long-term environmental impacts related to air quality, noise, traffic, and more. Because details about the timing, location, and project-specific information for new water facilities are not known, there is no assurance the impacts from the construction of new or expanded water facilities would always be less than significant. Therefore, this impact is significant.

Implementation of the near-term projects would reduce SDCWA's potential conveyance constraints and supply shortages. The near-term projects with an anticipated implementation timeframe between 2026 and 2035 include (SDCWA 2013a):

- Pipeline 3/Pipeline 4 Conversion (New Project): This project will alleviate the potential untreated water conveyance constraint at the MWD Delivery Point. The project will increase untreated water conveyance capacity in the Second Aqueduct north of Twin Oaks Valley by converting an existing segment of Pipeline 4 to untreated water service and converting an existing parallel segment of Pipeline 3 to treated water service. Total untreated water delivery capacity would increase by 190 cubic feet per second. Coordination with MWD is required to determine new infrastructure requirements outside the SDCWA service area that will facilitate the conversion of Pipelines 3 and 4.
- ESP San Vicente 3rd Pump and Power Supply (Existing Project): This project provides station upgrades and a new power supply to allow operation of the existing pump station at full design capacity. The project is needed to fully utilize an expanded San Vicente Reservoir for emergency storage operation and provide operational flexibility to deliver additional supply from the reservoir to meet peak seasonal demands. New power supply options include a new 12 kilovolt (kV) overhead circuit or onsite power generation using diesel- or natural gas–powered generator sets.
- System Storage (Existing Project): This project provides new regulatory storage to manage daily flow changes and unanticipated flow interruptions. The project includes two possible locations: at the Twin Oaks Diversion Structure (sized 10 to 20 million gallons) and at the First Aqueduct/Valley Center Pipeline connection (sized 2 to 3 million gallons).

The significant construction-related environmental impacts of the near-term and long-term facilities, and potential mitigation measures, are summarized in Table 4.18-18. This table specifically addresses the impacts for future water supply projects.

Because details about the timing, location, and project-specific information are not known, there is no assurance the impacts from the construction or operation of new or expanded water facilities would always be less than significant. Therefore, this impact is significant.

Transportation Network Improvements and Programs

Transportation network improvements and programs are developed to accommodate the projected growth and increases in population, housing, and employment, as discussed above in the 2025 analysis. New treatment

and storage facilities would not be required to provide water for irrigated landscaping on proposed Plan transportation projects, because the water demands of these projects are relatively minor.

New or extended distribution pipelines would be needed to extend recycled water service to new projects where such service is not available, and the extension of recycled water is included in Complete Corridor to provide for landscape irrigation. Construction and operation of these recycled water distribution facilities would cause the types of environmental impacts listed in Table 4.18-18. Therefore, implementation of the proposed Plan transportation network improvements would result in a significant impact related to construction of new water distribution facilities in 2035.

The construction of new transportation network improvements, including roadways, bicycle and pedestrian facilities, and transit facilities, and operation and maintenance of new facilities could increase the demand for water for construction activities such as concrete mixing and dust control, and operational activities and services such as restrooms and drinking fountains. Although these increases in demand are anticipated to be small on a per project basis, the collective demand from all of the projects taken together could increase water demand in such a way as to exceed current projected supply, requiring construction of new or expanded water facilities . These impacts are considered significant.

2035 Conclusion

Regional growth and land use changes, along with implementation of transportation network improvements and programs would result in construction of new or expanded water facilities. Impacts of constructing some of these facilities would be significant. Therefore, this impact (WS-3) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As noted above, the forecasted normal year water demand in 2035 is 671,509 acre-feet (SDCWA 2021a). The estimated normal year demand for 2050 is 817,821 acre-feet, an increase of 32,136 acre-feet. As stated in the 2020 and 2035 analyses, construction of new or expanded water facilities would result in short-term construction-related impacts. Construction-related impacts are typically controllable and can be mitigated below a level of significance through actions of the implementing agency, including adherence to existing regulations and best management practices, and, as stated in WS-1, no shortages are anticipated within the SDCWA's service area in a normal water year and single dry water year through 2045 (SDCWA 2021a), but some uncertainty exists for 2050 water supplies and facilities in the region. This uncertainty exists because the SDCWA's current UWMP (SDCWA 2021a) has a planning horizon of 2045 and the most recently prepared Facilities Management Plan dates to 2013 (SDCWA 2013). Future construction and operation of new facilities may lead to long-term environmental impacts related to air quality, noise, traffic, and more. Because details about the timing, location, and project-specific information for new water facilities are not known, there is no assurance the impacts from the construction of new or expanded water facilities will always be less than significant. Therefore, this impact is significant.

Transportation Network Improvements and Programs

By 2050, most of the transportation network improvements and programs associated with the proposed Plan would be in place and operational. The availability of water facilities to serve the increasing demand in 2050 is uncertain, and construction of new water facilities would cause the types of environmental impacts listed in Table 4.18-18. In some locations, new distribution pipelines would be needed to extend recycled water service

to new projects where such service is not available, and their construction and operation would cause the types of environmental impacts listed in Table 4.18-18. Therefore, implementation of the proposed Plan transportation network improvements would result in a significant impact related to construction of new water distribution facilities in 2050. This is a significant impact.

The construction and operation of new transportation network improvements, including roadways, bicycle and pedestrian facilities, and transit facilities, and operation and maintenance of new facilities could increase the demand for water. This would include water for construction activities such as concrete mixing and dust control, and operational activities and services such as restrooms and drinking fountains. Although these increases in demand are anticipated to be small on a per project basis, the collective demand from all of the projects taken together could increase water demand in such a way as to exceed current projected supply, requiring construction of new or expanded water facilities. These impacts are considered significant.

2050 Conclusion

Implementation of regional growth and land use change and transportation network improvements and programs would result in construction of new or expanded water facilities. Impacts of constructing some of these facilities would be significant. Therefore, this impact (WS-3) in the year 2050 is significant.

Exacerbation of Climate Change Effects

The proposed Plan could exacerbate climate change effects on potential relocation or construction of new or expanded water facilities. Climate change impacts that decrease water supplies, such as reduced precipitation, increased drought and evapotranspiration, and changes in snowpack melt timing (CEP and SDF 2015), may require construction of new water facilities in the future, such as reservoirs or treatment plants. Furthermore, climate change impacts such as increased wildfire and flooding risk could damage water facilities, requiring upgrades or new facilities to replace them. The proposed Plan's projected population growth would increase water demand, further straining existing water facilities and exacerbating the potential need for new ones.

MITIGATION MEASURES

WS-3 REQUIRE OR RESULT IN THE RELOCATION OR CONSTRUCTION OF NEW OR EXPANDED WATER FACILITIES, THE CONSTRUCTION OR RELOCATION OF WHICH COULD CAUSE SIGNIFICANT ENVIRONMENTAL EFFECTS.

2025, 2035, and 2050

Implement mitigation measures **WS-1a, WS-1b, WS-1c**, and **WS-2,** as described above.

WS-3 Implement Measures for New or Expanded Water Facilities. During planning, design, and project-level CEQA review of development projects and water projects, MWD, SDCWA, the County of San Diego, cities, and other local jurisdictions can and should apply necessary mitigation measures to avoid or reduce significant environmental impacts associated with the construction or expansion of new or expanded water facilities. Mitigation measures should be implemented by water management agencies directly responsible for the construction of new or expanded water facilities. Significant environmental impacts requiring mitigation may include but are not limited to air quality, noise, traffic, biological resources, cultural resources, paleontological resources, tribal cultural resources, energy, greenhouse gas emissions, hydrology and water quality, and water supply.

SIGNIFICANCE AFTER MITIGATION

2025, 2035, and 2050

Implementation of the proposed Plan would result in significant impacts associated with the construction or expansion of water facilities in 2025, 2035, and 2050. Mitigation measures WS-1a, WS-1b, WS-1c, and WS-2, would reduce the impacts of project-specific construction or expansion of water facilities through reducing water demands, and through project-level planning, design, and CEQA mitigation measures. Mitigation measure WS-3 would require project-specific mitigation to be implemented for new or expanded water facilities. However, it cannot be guaranteed that all future project-level impacts can be mitigated to a less than significant level. Therefore, this impact (WS-3) would remain significant and unavoidable.