



# Appendix M

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## Water Supply Assessment-Utilities



**Water Supply Assessment**

**South Campus Specific Plan**  
**Amendment Project**

**April 15, 2020**

Western Municipal Water District  
14205 Meridian Parkway  
Riverside, CA 92518

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## **Introduction**

The purpose of this water supply assessment (“WSA”) is to evaluate whether the total projected water supplies available to Western Municipal Water District (“Western”) during normal, single-dry, and multiple-dry years over the next 20-year period are sufficient to meet the projected demands of the proposed South Campus Specific Plan Amendment (“Project”), in addition to Western’s existing and planned future uses, including agricultural and manufacturing.

Western currently provides water service to the developed portions of the March Business Center, which is included as part of Western’s existing demands. This WSA was requested by the lead agency for the project, March Joint Powers Authority (“March JPA”), and has been prepared in accordance with the requirements of Water Code Section 10910 *et seq.*, commonly referred to as California Senate Bill 610 (“SB 610”).

## **Proposed Project – South Campus Specific Plan Amendment**

The Project site is located within the southwestern portion of the March JPA jurisdiction approximately 1.6 miles west of the Interstate 215 Freeway off-ramp and bounded by Van Buren Boulevard to the north, Village West Drive to the east, Barton Street to the west, and Nandina Avenue to the south in unincorporated Riverside County.

The total area of the Meridian Business Center South Campus occupies approximately 563 acres and is a multiple-use development with a number of designated land uses including: 1) business park, 2) commercial, 3) industrial, 4) mixed use, 5) office, and 6) parks/open space. The Project is an amendment to the existing South Campus components of the March Business Center Specific Plan to shift land uses between parcels. The Project does not convert any new land to development and will not encroach on the March Air Reserve Base or its operations. To reflect the evolving community priorities and environmental regulatory landscape, the proposed mix of uses has been designed to reduce the environmental impacts compared to the South Campus development originally approved in 2003, as well as the currently approved South Campus development.

The Project involves the following changes in authorized land uses for 52.1 acres within the South Campus Specific Plan Amendment area.

- 1) Parks/Open Space: increase of 15.3 acres, from 125.0 acres to 140.3 acres
- 2) Industrial: increase of 65.8 acres, from 134.5 acres to 200.3 acres
- 3) Commercial: increase of 17.1 acres, from 6.4 acres to 23.5 acres
- 4) Office: reduction of 27.4 acres, from 32.0 acres to 4.6 acres
- 5) Mixed Use: reduction of 5.5 acres, from 33.3 acres to 27.8 acres
- 6) Business Park: reduction of 61.3 acres, from 232.1 acres to 170.8 acres
- 7) Public Facilities: new addition of 0.9 acres

The Project proposes the development of:

- 1) an 800,000 square foot (“sf”) speculative industrial building on a 36.5 acre parcel located on the northwest corner of Coyote Bush Road and Krameria Avenue;
- 2) a 61,336 sf commercial area development, including grocery store, on a 9.4 acre parcel located off Van Buren Boulevard and Orange Terrace Parkway;
- 3) a 6.2-acre dog park and paseo located between Barton Street and Krameria Avenue;
- 4) and the construction of Caroline Way and the extension of Village West Drive.

The anticipated water use is 87.8 acre-feet per year (“AFY”) which includes the estimated water demand of 1,960,200 square-feet of landscaping and approximately 1,100 total employees. Western staff evaluated the availability and location of recycled water infrastructure and determined it was not feasible to deliver water to the proposed Project. The proposed Project is not dependent on receiving recycled water and Western can meet the proposed Project’s estimated indoor and landscape water demands without the delivery of recycled water.

In October 2002, Western prepared a WSA for the March Air Force Base Business Center (the area now known as the March Business Center). That WSA addressed a 2,179 acre-feet per year estimated water demand for 1,285 acres encompassing both the North and South business park campuses. In 2009, Western prepared a WSA for the March Business Center North Campus Specific Plan Amendment for land use changes affecting 256.5 acres of the North Campus Area with an estimated potable water demand of 555 AFY. As such, Western has accounted for the water demand associated with previous specific plan amendments and land use changes for the March Business Center. As previously indicated, the proposed Project is located entirely within the South Campus area. Thus, the proposed Project’s projected water demand of 87.8 AFY is determined to be new demand that has not been previously accounted for by Western in its 2015 Urban Water Management Plan.

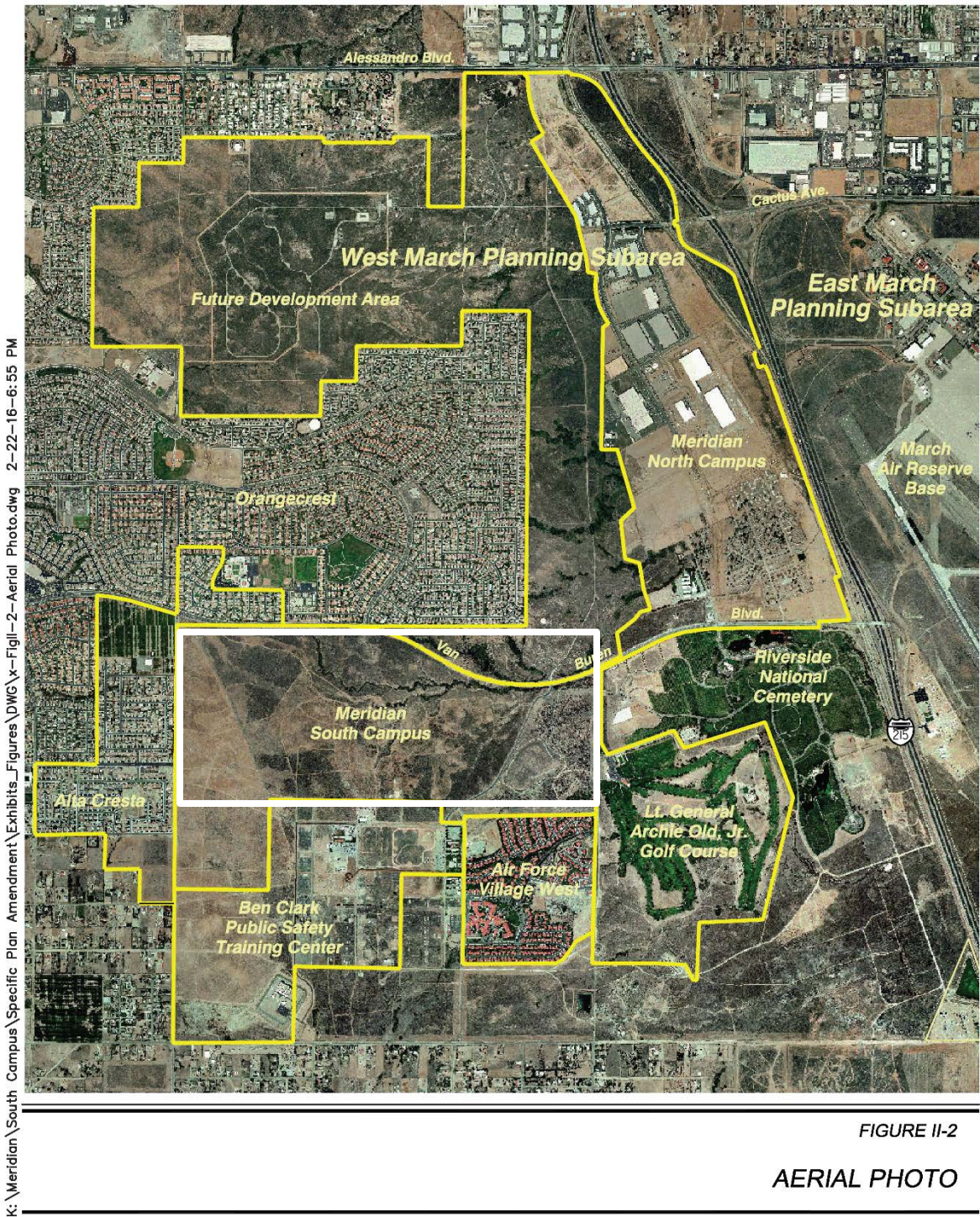




Project Vicinity Map

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MARCH BUSINESS CENTER - SPECIFIC PLAN AMENDMENT



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**Water Supply Assessment Statute****Senate Bill 610**

SB 610 requires the preparation of a WSA for certain projects that are subject to review under the California Environmental Quality Act (“CEQA”) and that meet any of the following criteria:<sup>1</sup>

1. A residential development of more than 500 units,
2. A business/shopping center with more than 1,000 employees or 500,000 square-feet of floor space,
3. A commercial office building with more than 1,000 employees or 250,000 square-feet of floor space,
4. A hotel/motel with more than 500 rooms,
5. An industrial/manufacturing/processing plant or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area,
6. A mixed-use development project that includes one or more of the projects specified in subsections 1. through 5., above,
7. A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project, or
8. For a public water system with 5,000 or fewer connections, a project that will increase the number of connections by 10 percent or more.

As a shopping center or business center employing more than 1,000 persons and an industrial park encompassing more than 650,000 sf of floor space, the proposed Project meets the criteria in Water Code Section 10912 (a)(2) and (a)(5), and thus requires preparation of a WSA. Under SB 610, at the time the local/lead agency determines a “project” (Water Code Section 10912) is subject to review under CEQA, the agency must identify any public water system whose service area includes the project site and any public water system adjacent to the project site that may provide water service to the project and request the applicable water provider to prepare a WSA for the project.<sup>2</sup>

Generally, the WSA must include an analysis of whether the total projected water supplies available to the water provider over the next 20-year period during normal, single-dry, and multiple-dry years, will be sufficient to meet the projected water demand associated with the proposed project, in addition to the water provider’s other existing and planned future uses, including agricultural and manufacturing uses.<sup>3</sup> Additional analysis is required if the water supplies identified to serve the project include groundwater.

The proposed Project will be served a blend of Western’s water supplies primarily comprised of imported water from Metropolitan Water District of Southern California (“MWD”). To ensure a comprehensive discussion regarding Western’s overall water supply availability and reliability of Western’s supply portfolio, this WSA includes a detailed analysis regarding the surface, groundwater, and other local supplies available to Western, as further set forth below.

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<sup>1</sup> California Water Code § 10912(a)–(b)

<sup>2</sup> California Water Code § 10910(b)

<sup>3</sup> California Water Code § 10910(c)



Upon the water provider's adoption of the WSA, the WSA must be forwarded to the lead agency and incorporated into the CEQA document being prepared for the project. The lead agency must then determine, based on the entire record, whether the total projected water supplies available to the water provider over the next 20-year projection during normal, single-dry, and multiple-dry years will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses.<sup>4</sup>

### **Western Municipal Water District**

Western was formed by the voters in 1954, primarily to bring supplemental water to western Riverside County. Today, Western serves eight wholesale customers and approximately 24,000 retail customers. Western's water supply portfolio consists mainly of imported supplies from the Colorado River and the State Water Project ("SWP") but also includes recycled water and supplemental water obtained from the cities of Corona and Riverside, and other local projects. Western's general district consists of a 527-square-mile area of western Riverside County and an estimated population of more than 860,000.

As a member agency of MWD, Western provides supplemental water on a wholesale basis to the cities of Corona, Norco, and Riverside and the water agencies of Box Springs Mutual Water Company, Eagle Valley Mutual Water Company, Elsinore Valley Municipal Water District ("EVMWD"), Temescal Valley Water District, and Rancho California Water District. Western serves retail customers in the unincorporated areas of El Sobrante, Eagle Valley, Temescal Creek, Woodcrest, Lake Mathews, and March Air Reserve Base.

### **Retail Service Area**

Western's retail service area covers about 104 square miles and provides water to an estimated population of 95,000, via approximately 24,000 service connections. Western purchases water from MWD comprised of Colorado River and SWP supplies to serve its wholesale and retail customers. Most of the water purchased by Western is imported from the SWP with about 20 percent from the Colorado River. As mentioned previously, groundwater will not be directly served to the proposed Project as Western's supply portfolio is comprised of various sources. As set forth below, Western also obtains water through several local water supply projects and agreements.

Western's main retail service area is within the County of Riverside. Based on the total number of domestic customers, Western's retail service area experienced an annual average growth of approximately 5.8 percent between 2001 and 2010. Western's growth rate was influenced by the undeveloped land in its retail service area compared to historically urban areas. This annual average growth rate then attenuated to approximately 1.14 percent between 2010 and 2015.<sup>5</sup> The Southern California Association of Governments ("SCAG") projected the annual growth rate for regional population will be only 0.7 percent through the year 2040.<sup>6</sup> Western's 2015 Urban

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<sup>4</sup> California Water Code § 10911(b)-(c)

<sup>5</sup> 2015 Urban Water Management Plan, Western Municipal Water District

<sup>6</sup> Regional Transportation Plan, 2016–2040 Sustainable Communities Strategy Report, Chapter 3, "Challenges in a Changing Region," Average Annual Population Growth Rate, p. 47, Southern California Association of Governments, December 2015

Water Management Plan projected the annual population growth rate within Western's service area at an average of 1.4 percent through the year 2040.

### **The WSA Process**

In accordance with the requirements of SB 610, this WSA evaluates:

1. The total projected water supplies available to Western during normal, single-dry, and multiple-dry water years during a 20-year projection, and
2. Whether Western's total projected supplies are sufficient to meet the projected water demand associated with the proposed Project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

SB 610 provides: "If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the Urban Water Management Plan in preparing the elements of the assessment..."<sup>7</sup> The Urban Water Management Planning Act, Water Code section 10610 *et seq.*, requires water providers to perform various planning analyses with the goal of ensuring overall long-term water supply sufficiency and reliability within their service areas. For instance, Urban Water Management Plans ("UWMP") must include a water supply reliability assessment, including a detailed evaluation of the supplies necessary to meet demands over at least a 20-year period in average, single-year, and multi-year drought conditions. Urban water providers must also prepare a water shortage contingency plan that documents the stages of actions needed to address up to a 50 percent reduction in an agency's water supplies. Water shortage contingency plans must also identify actions to be taken in the event of a catastrophic interruption in water supplies and describe mandatory prohibitions against specific water use practices during water shortages. All such elements are included in Western's 2015 UWMP.

Western, as a member agency of MWD, closely coordinated the preparation of its 2015 UWMP and analyses with MWD's 2015 Regional Urban Water Management Plan ("RUWMP"), MWD's 2015 Integrated Resources Plan ("IRP"), and related analyses. Western's 2015 UWMP, MWD's 2015 RUWMP, and MWD's 2015 IRP are the most recent local and regional water supply analyses prepared and adopted pursuant to the Urban Water Management Planning Act. Thus, as authorized by SB 610, certain information and analyses from those and other documents were utilized in preparing this WSA. In addition, and as further discussed below, information and analyses from MWD's 2015 RUWMP and 2015 IRP were used, in part, to address and analyze recent legal, regulatory, and environmental conditions having the potential to affect the availability and reliability of imported water supplies from MWD.

The projected water demands associated with the proposed Project were not specifically accounted for in Western's 2015 UWMP; however, the overall projected demands for the land use were accounted for by population growth. Therefore, in preparing this WSA, projected and adjusted demand information for Western's service area has been reviewed and presented in

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<sup>7</sup> California Water Code § 10910(c)(2)

relation to Western's 2015 UWMP and MWD's 2015 RUWMP to evaluate the sufficiency of Western's total projected water supplies to serve the proposed Project in addition to Western's existing and planned future uses. This WSA also identifies conservation and water-budgeted tiered rates as a means of reducing demand in Western's retail area.

Among other data and analyses, the following documentation was utilized in the preparation of this WSA:

**Western Municipal Water District**

- 2015 Urban Water Management Plan
- Updated Integrated Regional Water Management Plan Report, May 2008
- Drought Allocation Plan and Water Conservation and Supply Shortage for the Western Municipal Water District, April 15, 2015
- Western Municipal Water District Ordinance 384, February 18, 2015
- Western Municipal Water District Ordinance 385, May 20, 2015
- Western Municipal Water District Resolution 2910, May 20, 2015

To view the abovementioned documents, visit Western's website at [www.wmwd.com](http://www.wmwd.com).

**Metropolitan Water District of Southern California**

- 2015 Integrated Water Resources Plan
- 2015 Regional Urban Water Management Plan

**California Department of Water Resources**

- State Water Project Final Delivery Capability Report, July 2017

The full report can be viewed here:

<https://data.cnra.ca.gov/dataset/dcr2017/resource/be3e5c05-e4d2-450e-8f61-b55cc7a71301>

**Water Supply**

Under normal water year conditions, Western's retail service area relies on imported water supplies from MWD. Western has a 10-year purchase order agreement with MWD valid from 2015 to 2024 which includes a 105,783 AFY allocation of Tier one water. However, as discussed in greater detail below, Western has developed various local supplies that can be used for potable and non-potable purposes during normal, off-season, extraordinary, or emergency conditions.

**Imported Water Supplies – Metropolitan Water District of Southern California**

Below are the imported water supplies that Western has received from MWD for the last five years.

Total Western Calendar Year Imported Water from MWD (AF)				
2015	2016	2017	2018	2019*
58,269	65,320	74,882	72,945	54,159

\*2019 figure is not final and may need to be updated at a later time



MWD is a legislatively created agency charged with regional water supply management for large portions of Southern California. MWD holds contractual rights to receive SWP and Colorado River water supplies, and has developed various other water supply programs and projects to augment its overall portfolio. From that perspective, MWD has developed comprehensive and highly specialized modeling techniques to evaluate short, intermediate, and long-term availability and reliability of its total projected supplies used to serve and supplement the needs of its 26 member agencies, including Western.

MWD's mission statement is "[T]o 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."<sup>8</sup> To fulfill this mission, MWD takes a coordinated approach to regional planning through its IRP. The first IRP was developed in 1996. MWD and its member agencies worked cooperatively to compile and analyze water demand and supply data, then applied that information in developing a diverse water supply portfolio. The 1996 plan stated that MWD and its member agencies would meet all full-service water demands without interruption through 2020. The IRP also set targets for conservation, development of local supplies, imported water supplies, groundwater banking, and water transfers.

MWD has updated its IRP several times. The most recently updated 2015 IRP was adopted on January 12, 2016. The 2015 IRP Update identifies various strategies to ensure water supply reliability including:

1. Diversified portfolio of actions calling for stabilization and maintenance of imported supplies,
2. Meeting future growth through increased water conservation and sustaining and developing new local supplies,
3. Pursuing a comprehensive transfer and exchange strategy, and
4. Building storage in wet and normal years to manage risks and drought.

MWD's IRP process used the MWD-MAIN Water Forecasting System to calculate demand projections among the MWD member agencies. The model incorporates demographic and economic data (and, thus, projected demand) obtained from regional planning agencies. Supply reliability was evaluated through another computer model developed by MWD known as the Integrated Resources Planning Simulation Model ("IRPSIM"). This model uses historical hydrologic data from 1922 to 2012 to generate water shortage/surplus estimates over a 25-year planning horizon.

The 2015 IRP Update provides a roadmap for maintaining regional water supply reliability over the next 25 years and beyond and addresses many of the key factors affecting SWP and Colorado River supplies. In addition, the update incorporated those factors into its forecasts, analyses, and future planning actions to ensure an adequate and reliable water supply for its member agencies.

The 2015 IRP Update presents a three-component approach:

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<sup>8</sup> <http://www.mwdh2o.com/WhoWeAre/Mission>

1. A core resources strategy represents baseline efforts to manage water supply and demand conditions and to stabilize MWD's traditional imports from the Colorado River and northern California through the Sacramento-San Joaquin Delta. This strategy is based on known factors, including detailed planning assumptions about future demographic scenarios, water supply yields, and a range of observed historical weather patterns. Under this strategy, MWD and its member agencies will advance water use efficiency through conservation and recycling, and with further local development such as groundwater recovery and seawater desalination.
2. A cost-effective "supply buffer" will enable the region to adapt to future circumstances and foreseeable challenges. The buffer helps protect the region from possible shortages caused by conditions that exceed the core resources strategy, starting with increased conservation and water-use efficiency on a region-wide basis.
3. Foundational actions guide the region in determining alternative supply options for long-range planning. If future changed conditions, such as climate change or the availability of resources, exceed what is covered by MWD's core resources and supply buffer, these alternatives would provide a greater contribution to water reliability than MWD's imported water sources or any other single supply. These actions, including feasibility studies, research, and regulatory review would provide the foundation to develop alternative resources, if needed.<sup>9</sup>

The 2015 IRP Update builds upon the adaptive management strategy established in the 2010 IRP, and continues to refine that strategy to ensure water supply reliability throughout MWD's service area. This strategy includes a diversified portfolio of actions that calls for stabilizing and maintaining imported water supplies; meeting future growth through increased water conservation, and sustaining and developing new local supplies; pursuing a comprehensive transfer and exchange strategy; building storage in wet and normal years to manage risks and drought; and preparing for uncertainty with future water supply actions. Among other water supply strategies, the 2015 IRP Update includes the following reliability targets for the SWP, Colorado River Aqueduct, local water supplies, and conservation:

1. Maintain Colorado River Supplies. The 2015 IRP Update goal for Colorado River Aqueduct ("CRA") supplies is to maintain current levels of water supplies from existing programs, while also developing flexibility through dry-year programs and storage. In order to accomplish this goal, the 2015 IRP Update targets development of sufficient base supply programs to ensure that a minimum of 900,000 AF of diversions are available when needed and to ensure access to 1.2 million AF of supplies in dry years through flexible programs and storage.
2. Stabilize SWP Supplies. The goal for SWP supplies is to adaptively manage flow and export regulations in the near term and to achieve a long-term Delta solution that addresses ecosystem and water reliability challenges. Achieving this goal will require continued participation and a successful outcome in the California WaterFix and the California EcoRestore efforts. This approach targets an average of 980,000 AF of SWP

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<sup>9</sup> 2015 Integrated Water Resources Plan Update, Press Release, January 12, 2016.

supplies in the near term and 1.2 million AF on average starting in 2030 when a long-term Delta solution is estimated to be in place.

3. **Achieve Additional Conservation Savings.** Conservation is crucial to the 2015 IRP Update strategy. While MWD and its member agencies continue to work toward achieving water savings consistent with 20x2020 goals, the 2015 IRP Update seeks further savings through increased emphasis on outdoor water use efficiency, largely through enhanced regional compliance with the state's Model Water Efficient Landscape Ordinance. MWD would work with its member agencies to develop a combination of incentive, education/outreach, and other programs in support of this approach. The 2015 IRP Update target for conservation would result in approximately 485,000 AF of new water savings by 2040.
4. **Develop Additional Local Water Supplies.** Local supplies are a key to providing water supply reliability into the future. Over half of the region's water supplies come from locally developed sources. The 2015 IRP Update goal for local water supplies is primarily to maintain existing and under-construction supply sources. The 2015 IRP Update target for local supplies totals 2.2 million AF in 2016; this target grows to a total of 2.4 million AF by 2040. In comparison, local supplies produced a total of about 1.94 million AF in calendar year 2014. Over the next 25 years, up to 460,000 AF of additional local supplies would be developed.

### **Imported Water Supplies – Determination of MWD available supplies**

#### **MWD Regional Urban Water Management Plan**

With respect to imported supply, MWD's 2015 Regional Urban Water Management Plan has projected near, intermediate, and long-term water supply availability and reliability using historic hydrology. The year 1977 was identified as the single driest and 1990–1992 was used for the three-year dry period. MWD's water supply estimates are provided on the next page in Table 2-4 for the single driest year, Table 2-5 for multi-year dry period, and Table 2-6 for the average year hydrology.

**Table 2-4**  
**Single Dry-Year**  
**Supply Capability<sup>1</sup> and Projected Demands**  
**Repeat of 1977 Hydrology**  
 (Acre-feet per year)

Forecast Year	2020	2025	2030	2035	2040
<b>Current Programs</b>					
In-Region Supplies and Programs	693,000	774,000	852,000	956,000	992,000
California Aqueduct <sup>2</sup>	691,000	712,000	723,000	749,000	749,000
Colorado River Aqueduct					
Total Supply Available <sup>3</sup>	1,451,000	1,457,000	1,456,000	1,455,000	1,454,000
Aqueduct Capacity Limit <sup>4</sup>	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Colorado River Aqueduct Capability	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
<b>Capability of Current Programs</b>	<b>2,584,000</b>	<b>2,686,000</b>	<b>2,775,000</b>	<b>2,905,000</b>	<b>2,941,000</b>
<b>Demands</b>					
Total Demands on Metropolitan	1,731,000	1,784,000	1,826,000	1,878,000	1,919,000
IID-SDCWA Transfers and Canal Linings	274,000	282,000	282,000	282,000	282,000
<b>Total Metropolitan Deliveries<sup>5</sup></b>	<b>2,005,000</b>	<b>2,066,000</b>	<b>2,108,000</b>	<b>2,160,000</b>	<b>2,201,000</b>
<b>Surplus</b>	<b>579,000</b>	<b>620,000</b>	<b>667,000</b>	<b>745,000</b>	<b>740,000</b>
<b>Programs Under Development</b>					
In-Region Supplies and Programs	43,000	80,000	118,000	160,000	200,000
California Aqueduct	20,000	20,000	198,000	198,000	198,000
Colorado River Aqueduct					
Total Supply Available <sup>3</sup>	155,000	125,000	75,000	25,000	25,000
Aqueduct Capacity Limit <sup>4</sup>	0	0	0	0	0
Colorado River Aqueduct Capability	0	0	0	0	0
<b>Capability of Proposed Programs</b>	<b>63,000</b>	<b>100,000</b>	<b>316,000</b>	<b>358,000</b>	<b>398,000</b>
<b>Potential Surplus</b>	<b>642,000</b>	<b>720,000</b>	<b>983,000</b>	<b>1,103,000</b>	<b>1,138,000</b>

<sup>1</sup> Represents Supply Capability for resource programs under listed year type.

<sup>2</sup> California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.

<sup>3</sup> Colorado River Aqueduct includes programs, IID-SDCWA transfer and exchange and canal linings conveyed by the aqueduct.

<sup>4</sup> Maximum CRA deliveries limited to 1.20 MAF including IID-SDCWA transfer and exchange and canal linings.

<sup>5</sup> Total demands are adjusted to include IID-SDCWA transfer and exchange and canal linings. These supplies are calculated as local supply, but need to be shown for the purposes of CRA capacity limit calculations without double counting.

SDCWA – San Diego County Water Authority

MAF – Million Acre-Feet

CRA – Colorado River Aqueduct

**Table 2-5**  
**Multiple Dry-Year**  
**Supply Capability<sup>1</sup> and Projected Demands**  
**Repeat of 1990-1992 Hydrology**  
 (Acre-feet per year)

Forecast Year	2020	2025	2030	2035	2040
<b>Current Programs</b>					
In-Region Supplies and Programs	239,000	272,000	303,000	346,000	364,000
California Aqueduct <sup>2</sup>	664,000	682,000	687,000	696,000	696,000
Colorado River Aqueduct					
Total Supply Available <sup>3</sup>	1,403,000	1,691,000	1,690,000	1,689,000	1,605,000
Aqueduct Capacity Limit <sup>4</sup>	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Colorado River Aqueduct Capability	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
<b>Capability of Current Programs</b>	<b>2,103,000</b>	<b>2,154,000</b>	<b>2,190,000</b>	<b>2,242,000</b>	<b>2,260,000</b>
<b>Demands</b>					
Total Demands on Metropolitan	1,727,000	1,836,000	1,889,000	1,934,000	1,976,000
IID-SDCWA Transfers and Canal Linings	274,000	282,000	282,000	282,000	282,000
<b>Total Metropolitan Deliveries<sup>5</sup></b>	<b>2,001,000</b>	<b>2,118,000</b>	<b>2,171,000</b>	<b>2,216,000</b>	<b>2,258,000</b>
<b>Surplus</b>	<b>102,000</b>	<b>36,000</b>	<b>19,000</b>	<b>26,000</b>	<b>2,000</b>
<b>Programs Under Development</b>					
In-Region Supplies and Programs	36,000	73,000	110,000	151,000	192,000
California Aqueduct	7,000	7,000	94,000	94,000	94,000
Colorado River Aqueduct					
Total Supply Available <sup>3</sup>	80,000	75,000	50,000	25,000	25,000
Aqueduct Capacity Limit <sup>4</sup>	0	0	0	0	0
Colorado River Aqueduct Capability	0	0	0	0	0
<b>Capability of Proposed Programs</b>	<b>43,000</b>	<b>80,000</b>	<b>204,000</b>	<b>245,000</b>	<b>286,000</b>
<b>Potential Surplus</b>	<b>145,000</b>	<b>116,000</b>	<b>223,000</b>	<b>271,000</b>	<b>288,000</b>

<sup>1</sup> Represents Supply Capability for resource programs under listed year type.

<sup>2</sup> California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.

<sup>3</sup> Colorado River Aqueduct includes programs, IID-SDCWA transfer and exchange and canal linings conveyed by the aqueduct.

<sup>4</sup> Maximum CRA deliveries limited to 1.20 MAF including IID-SDCWA transfer and exchange and canal linings.

<sup>5</sup> Total demands are adjusted to include IID-SDCWA transfer and exchange and canal linings. These supplies are calculated as local supply, but need to be shown for the purposes of CRA capacity limit calculations without double counting.

**Table 2-6**  
**Average Year**  
**Supply Capability<sup>1</sup> and Projected Demands**  
**Average of 1922-2012 Hydrologies**  
(Acre-feet per year)

Forecast Year	2020	2025	2030	2035	2040
<b>Current Programs</b>					
In-Region Supplies and Programs	693,000	774,000	852,000	956,000	992,000
California Aqueduct <sup>2</sup>	1,555,000	1,576,000	1,606,000	1,632,000	1,632,000
Colorado River Aqueduct					
Total Supply Available <sup>3</sup>	1,468,000	1,488,000	1,484,000	1,471,000	1,460,000
Aqueduct Capacity Limit <sup>4</sup>	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Colorado River Aqueduct Capacity	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
<b>Capability of Current Programs</b>	<b>3,448,000</b>	<b>3,550,000</b>	<b>3,658,000</b>	<b>3,788,000</b>	<b>3,824,000</b>
<b>Demands</b>					
Total Demands on Metropolitan	1,586,000	1,636,000	1,677,000	1,726,000	1,765,000
IID-SDCWA Transfers and Canal Linings	274,000	282,000	282,000	282,000	282,000
<b>Total Metropolitan Deliveries<sup>5</sup></b>	<b>1,860,000</b>	<b>1,918,000</b>	<b>1,959,000</b>	<b>2,008,000</b>	<b>2,047,000</b>
<b>Surplus</b>	<b>1,588,000</b>	<b>1,632,000</b>	<b>1,699,000</b>	<b>1,780,000</b>	<b>1,777,000</b>
<b>Programs Under Development</b>					
In-Region Supplies and Programs	43,000	80,000	118,000	160,000	200,000
California Aqueduct	20,000	20,000	268,000	268,000	268,000
Colorado River Aqueduct					
Total Supply Available <sup>3</sup>	5,000	25,000	25,000	25,000	25,000
Aqueduct Capacity Limit <sup>4</sup>	0	0	0	0	0
Colorado River Aqueduct Capacity	0	0	0	0	0
<b>Capability of Proposed Programs</b>	<b>63,000</b>	<b>100,000</b>	<b>386,000</b>	<b>428,000</b>	<b>468,000</b>
<b>Potential Surplus</b>	<b>1,651,000</b>	<b>1,732,000</b>	<b>2,085,000</b>	<b>2,208,000</b>	<b>2,245,000</b>

<sup>1</sup> Represents Supply Capability for resource programs under listed year type.

<sup>2</sup> California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.

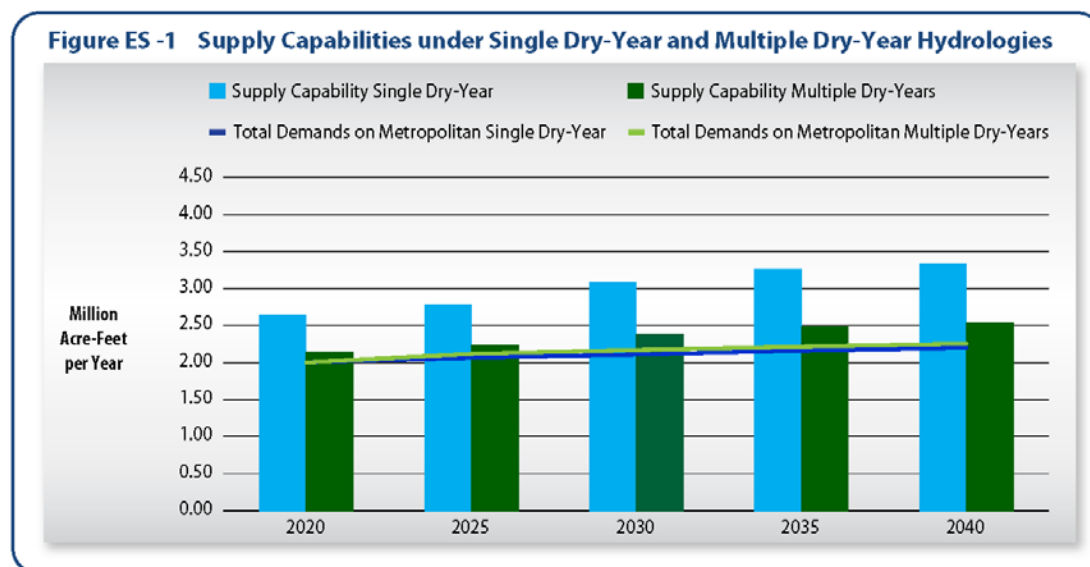
<sup>3</sup> Colorado River Aqueduct includes programs, IID-SDCWA transfer and exchange and canal linings conveyed by the aqueduct.

<sup>4</sup> Maximum CRA deliveries limited to 1.20 MAF including IID-SDCWA transfer and exchange and canal linings.

<sup>5</sup> Total demands are adjusted to include IID-SDCWA transfer and exchange and canal linings. These supplies are calculated as local supply, but need to be shown for the purposes of CRA capacity limit calculations without double counting.

Based on these tables and the supporting analyses and information in its most recent 2015 RUWMP, MWD has concluded that:

1. MWD has supply capabilities that would be sufficient to meet expected demands from 2020 through 2040 under single dry-year and multiple dry-year conditions, as presented in Figure ES-1 (2015 RUWMP, pp. ES-5 and ES-6).



**Note:**

1. Supply capabilities are derived using the simulated median storage level going into each of five-year increments based on the balances of supplies and demands. Under the median storage condition, there is an estimated 50 percent probability that storage levels would be higher than the assumption used, and a 50 percent probability that storage levels would be lower than the assumption used.
  2. Under some conditions, Metropolitan may choose to implement the WSAP in order to preserve storage reserves for a future year, instead of using the full supply capability. This can result in impacts at the retail level even under conditions where there may be adequate supply capabilities to meet firm demands.
  3. All storage capability figures shown in the 2015 UWMP reflect actual storage program conveyance constraints.
2. MWD has comprehensive plans for stages of actions it would undertake to address up to 50 percent reduction in its water supplies and a catastrophic interruption in water supplies through its Water Surplus and Drought Management and Water Supply Allocation Plans. MWD also developed an Emergency Storage Requirement to prepare for potential interruption in water supplies resulting from catastrophic occurrences within the southern California region, including, but not limited to, seismic events along the San Andreas Fault. In addition, MWD is working with the State to implement a comprehensive improvement plan to address catastrophic occurrences that could occur outside of the southern California region, such as a maximum probable seismic event in the Delta that would cause levee failure and disruption of SWP deliveries.
  3. MWD has plans for supply implementation and continued development of a diversified resource portfolio including Colorado River and SWP supplies, Central Valley transfers, local resource projects, and in-region storage that enables MWD to meet the water supply needs of its member agencies, including Western.

Importantly, MWD's conclusions and water supply capabilities have been developed to specifically account for several critical factors, as further discussed in this WSA:

*Water Demand Growth:* Despite the recent residential development slowdown, population growth in the southern California region has continued to increase overall water demands, and MWD has accounted for that growth.

*State Water Supply:* Recent regulatory issues, court decisions, and climate conditions have imposed restrictions on the amount and timing of deliveries from the SWP.

*Colorado River Supplies:* The Colorado River Basin has experienced a multi-year drought and ongoing legal and regulatory factors continue to have potential effects on California's use of Colorado River supplies.

To address these and other factors, MWD notes that it continues to evaluate and develop resource alternatives to provide a reliable and high quality water supply, while exploring ways to reduce demands through water conservation and efficiency programs and allocating supplies among its member agencies when necessary through its WSAP. MWD's adoption of its 2015 IRP Update is an example of its ongoing water supply planning efforts. Preparation of the 2020 IRP is underway. Also discussed herein, various statewide, regional, and local measures are being enacted to change historic water use practices, increase conservation, and reduce per capita water demands.

### **State Water Project Deliveries**

Various legal, regulatory, climatic, and environmental factors have the potential to affect the availability and reliability of SWP supplies. As further discussed below, the California Department of Water Resources ("DWR") specifically accounts for these and other factors in evaluating the projected delivery capability of SWP supplies to MWD and other State contractors.

### **Delta Constraints**

A number of distinct species of fish, including the Delta Smelt, that either reside in or migrate through the Bay-Delta are listed as either endangered or threatened under the Federal Endangered Species Act. These listed species, as well as their designated critical habitat, receive protections under the endangered species protection laws, as well as under other environmental statutes and regulations.

Beginning in 2006, Governor Arnold Schwarzenegger established the Delta Vision and Delta Vision "Blue Ribbon" Task Force to identify strategies and actions to manage and achieve a sustainable ecosystem for the Sacramento-San Joaquin Delta. The Delta Vision Task Force released a strategic plan in 2008 to protect environmental resources and provide a reliable water supply. Coordination, communication, and action among stakeholders and state agencies are essential to the success of improving the Delta.

As described in greater detail below, the federal wildlife agencies (the United States Fish and Wildlife Service ["FWS"] and the National Marine Fisheries Services ["NMFS"]) have each



issued biological opinions and “reasonable and prudent alternatives” which have the effect of placing operational constraints on the SWP and the Central Valley Project (“CVP”) to protect these listed fish and their habitats, and limit the timing and diversion of water supplies from the Delta. In addition, the California Department of Fish and Wildlife has issued permits under the California Endangered Species Act imposing similar constraints on SWP and CVP operations.

On December 15, 2008, FWS issued a biological opinion to the Bureau of Reclamation and the California Department of Water Resources, as the respective operators of the CVP and SWP, to reduce the impacts of water project operations on delta smelt and other species within the jurisdiction of FWD. NMFS also issued a biological opinion on June 4, 2009 related to the long-term operations of the CVP and SWP on salmonid (salmon and steelhead) migrating through the Delta that are under the jurisdiction of NMFS. In order to minimize “taking” listed species and avoid adverse impact to the species’ critical habitat, the biological opinions each require the water projects to operate under a “reasonable and prudent alternative.” Ultimately, the federal Ninth Circuit Court of Appeals upheld both biological opinions as valid.

As compared with historical volumes of diversions of Delta water by the SWP, DWR’s implementation of the requirements of the two biological opinions negatively impacted SWP deliveries post 2008 to all of DWR’s contractors, including those made to MWD. Between 2008 and 2014, MWD determined implementation of the biological opinions resulted in a combined loss of 3.0 million acre-feet (MAF) to its water supplies, as compared with historical delivery amounts. In turn, the volume of water delivered by MWD to its member agencies, including Western, was also concomitantly reduced.

On October 21, 2019, the U.S. Fish and Wildlife Service and National Marine Fisheries Service issued new biological opinions for continued coordinated SWP and CVP operations, which provide greater flexibility to manage the projects based on real-time conditions and real-time monitoring of fish species. DWR is currently seeking a permit from the California Department of Fish and Wildlife to operate the SWP in a way that protects species protected under the California Endangered Species Act. DWR issued a Draft Environmental Impact Report for Long-Term Operation of the California SWP on November 21, 2019. Similar to the federal biological opinions, the proposed project allows for greater flexibility in managing the SWP based on real-time management. The State of California has announced an intent to sue the federal government over the 2019 biological opinions but has not specified the nature of that suit or when it may file it. While these developments create some uncertainty regarding future supplies, that uncertainty is currently speculative and has yet to impose any actual operational constraints on the SWP that would affect MWD’s supplies. Further, both the State and federal permits and proposed action incorporate new science and seek greater flexibility for SWP operations than provided under the 2008 and 2009 biological opinions.

State and federal resource agencies and various environmental and water user entities are currently engaged in developing a plan to modernize Delta conveyance (formerly known as California WaterFix, EcoRestore, the Bay Delta Conservation Plan), aimed at addressing Delta ecosystem restoration, water supply conveyance, and flood control protection and storage development. As directed by Governor Newsom in 2019 and building on work already conducted, DWR rescinded the twin tunnel WaterFix program and is pursuing a new

environmental review and planning process for a single tunnel solution to modernize Delta conveyance. This approach is consistent with the Governor's April 2019 Executive Order N-10-19 directing state agencies to develop a portfolio of statewide water actions and investments. Modernizing Delta conveyance paired with complementary projects that improve water recycling, recharge depleted groundwater reserves, strengthen existing levee protections and improve Delta water quality will help ensure a resilient water supply for Metropolitan and Western

#### DWR Final 2017 SWP Delivery Capability Report

DWR continues to evaluate the issues affecting SWP exports from the Delta and how those issues may affect the long-term availability and reliability of SWP deliveries to water agencies that hold SWP contracts. As indicated above, DWR has released its Final 2017 SWP Delivery Capability Report. According to the 2017 Final Report, the average delivery of contractual SWP Table A supply is projected to be 62 percent under current conditions. Within that long-term average, SWP Table A deliveries can range from 8 percent (single dry-year) to 99 percent (single wet-year) of contractual amounts under current conditions. Under current conditions, contractual amounts are projected to range from 29 to 34 percent during multiple-dry year periods, and from 77 to 96 percent during multiple wet periods.<sup>10</sup> The 2017 Final Report also presents the following findings:

The average annual delivery of Table A water estimated for the 2017 Report is 2,571,000 AFY (an increase of 0.8 percent from the 2015 Report).

The estimated maximum Table A deliveries for the 2017 Final Report is 4,133,000 AF, which is a 1.9 percent increase from the 2015 Report. The 2017 Final Report also shows 77 percent likelihood (74 percent with the 2015 Report) that more than 2,000,000 AFY of Table A water will be delivered under the current estimates.

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<sup>10</sup> DWR 2017 Final Report at pg. 24-25, Tables 5-4, 5-5.

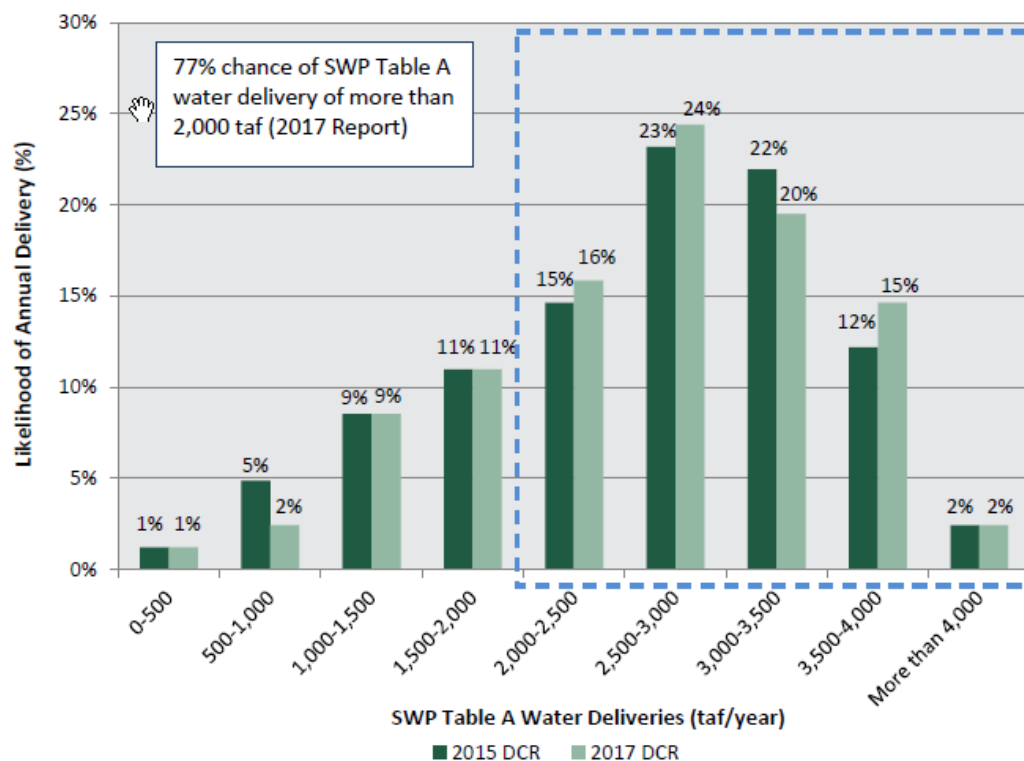


Figure 5-2. Estimated Likelihood of SWP Table A Water Deliveries, by Increments of 500 taf (Excluding Butte County and Yuba City)

taf = thousand acre-feet

To ensure a conservative analysis, DWR's 2017 Final Report expressly assumes and accounts for the institutional, environmental, regulatory, and legal factors affecting SWP supplies, including but not limited to: water quality constraints, fishery protections, other D-1641 requirements, and the operational limitations imposed by the FWS and NMFS BiOps that are discussed above. Finally, DWR's long-term SWP delivery reliability analyses incorporate assumptions intended to account for potential supply shortfalls related to climate change.<sup>11</sup> These and other factors result in DWR presenting a conservative projection of SWP delivery reliability in its 2017 Final Report.

DWR's 2017 Final Report demonstrates the projected long-term average delivery amounts of contractual SWP Table A supplies are essentially the same as those projected in the 2015 Final Report. As noted, the projections developed by DWR are predicated on several conservative assumptions, which make the projections useful from a long-range water supply planning perspective. While various factors could lead DWR to increase its delivery projections, the 2017 Final Report remains the best available information concerning the long-term delivery reliability of SWP supplies.

<sup>11</sup> See, e.g., DWR 2017 Report, Section 3, pp. 10–13.

## Colorado River Water Deliveries

The CRA, which is owned and operated by MWD, transports water from the Colorado River approximately 242 miles to its terminus at Lake Mathews in Riverside County. After deducting for conveyance losses and considering maintenance requirements, up to 1.2 million AF of water a year may be conveyed through the CRA to MWD's member agencies, subject to availability of Colorado River water for delivery to MWD. Similar to SWP supplies discussed above, various legal, regulatory, climatic and environmental factors have the potential to affect the availability and reliability of Colorado River supplies. The following is a summary of several key factors.

### Background on Colorado River Supplies

The Colorado River is managed and operated in accordance with the *Law of the River*, the collection of interstate compacts, federal and state legislation, various agreements and contracts, an international treaty, a U.S. Supreme Court decree, and federal administrative actions that govern the rights to use of Colorado River water within the seven Colorado River Basin states. The Colorado River Compact, signed in 1922, apportioned the waters of the Colorado River Basin between the Upper Colorado River Basin (Colorado, Wyoming, Utah, and New Mexico) and the Lower Basin (Nevada, Arizona, and California). The Colorado River Compact allocates 15 million AF per year ("AFY") of Colorado River water: 7.5 million AFY to the Upper Basin and 7.5 million AFY to the Lower Basin, plus up to 1 million AFY of surplus supplies. The Lower Basin's water was further apportioned among the three Lower Basin states by the Boulder Canyon Project Act in 1928 and the 1964 U.S. Supreme Court decree in *Arizona v. California*. Arizona's basic annual apportionment is 2.8 million AFY, California's is 4.4 million AFY, and Nevada's is 0.3 million AFY. California has been diverting up to 5.3 million AFY in recent years, using the unused portions of the Arizona and Nevada entitlements. Mexico is entitled to 1.5 million AFY of the Colorado River under the 1944 United States-Mexico Treaty for Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande. However, this treaty did not specify a required quality for water entering Mexico. In 1973, the United States and Mexico signed Minute No. 242 of the International Boundary and Water Commission requiring certain water quality standards for water entering Mexico.

California's apportionment of Colorado River water is allocated by the 1931 Seven Party Agreement among Palo Verde Irrigation District ("PVID"), Imperial Irrigation District ("IID"), Coachella Valley Water District ("CVWD"), and MWD. The three remaining parties, the City and the County of San Diego and the City of Los Angeles, are now part of MWD. The allocations defined in the Seven Party Agreement are shown in the Table below. In its 1979 supplemental decree in the *Arizona v. California* case, the United States Supreme Court also assigned "present perfected rights" to the use of Colorado River water to a number of individuals, water districts, towns, and Indian tribes along the river. These rights, which total approximately 2,875,000 AFY, are charged against California's 4.4 million AFY allocation and must be satisfied first in times of shortage. Under the 1970 Criteria for Coordinated Long-Range Operation of the Colorado River Reservoirs (Operating Criteria), the Secretary of the Interior determines how much water is to be allocated for use in Arizona, California, and Nevada and whether a surplus, normal, or shortage condition exists. The Secretary may allocate additional water if surplus conditions exist on the Colorado River (see additional discussion that follows).

**Priorities and Water Delivery Contracts Under Seven Party Agreement of 1931**

<b>Priority</b>	<b>Description</b>	<b>AFY</b>
1	Palo Verde Irrigation District gross area of 104,500 acres of Coachella Valley lands	3,850,000
2	Yuma Project (Reservation Division) not exceeding a gross area of 25,000 acres within California	
3(a)	IID, CVWD and lands in Imperial and Coachella Valley's to be served by the All American Canal	
3(b)	Palo Verde Irrigation District – 16,000 acres of mesa lands	
4	Metropolitan Water District of Southern California for use on coastal plain	550,000
	<b>Subtotal – California Basic Apportionment</b>	<b>4,400,000</b>
5(a)	Metropolitan Water District of Southern California for use on coastal plain	550,000
5(b)	Metropolitan Water District of Southern California for use on coastal plain	112,000
6(a)	IID and lands in the Imperial and Coachella Valley's to be served by the All American Canal	300,000
6(b)	Palo Verde Irrigation District – 16,000 acres of mesa lands	
<b>Total</b>		<b>5,362,000</b>

Sources: United States Bureau of Reclamation, <http://www.usbr.gov>; MWD 2015 Official Statement, Special Variable Rate Water Revenue Refunding Bonds, Appendix A, p. A-17.

California's Colorado River supply is protected by the 1968 Colorado River Basin Project Act, which provides that in years of insufficient supply on the main stream of the Colorado River, supplies to the Central Arizona Project shall be reduced to zero before California will be reduced below 4.4 million AF in any year. This assures full supplies to the Coachella Valley except in periods of extreme drought. As further described below, delivery analyses performed for the Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead indicated that California would only experience shortages if the total shortage in the Lower Basin exceeds 1.7 million AFY.

**Quantification Settlement Agreement**

Although the rights and relative priorities to Colorado River supplies, as discussed above, remain established under the *Law of the River*, an additional framework applies in California. In 2003, CVWD, IID, and MWD successfully completed negotiation of the Quantification Settlement Agreement ("QSA"). The QSA quantifies the Colorado River water allocations of California's agricultural water contractors for the next 75 years and provides for the transfer of water between agencies. As further discussed below, legal challenges were filed against the QSA in 2003 and the case was litigated over the following ten years.

**Drought Conditions and Interim Guidelines**

Drought conditions in the Colorado River Basin are well documented. For example, the period from 2000 through 2007 was the driest eight-year period in the 100-year historical record of the Colorado River. That drought in the Colorado River Basin reduced Colorado River system storage, while demands for Colorado River water supplies continued to increase. From October

1, 1999 through September 30, 2007, storage in Colorado River reservoirs decreased from 55.8 million AF (approximately 94 percent of capacity) to 32.1 million AF (approximately 54 percent of capacity), and was as low as 29.7 million AF (approximately 52 percent of capacity) in 2004. In November 2010, Lake Powell and Lake Mead were at 62 percent and 38 percent of their storage capacities, respectively (Reclamation, 2010b). As of February 2017, Lake Powell and Lake Mead were at 47 percent and 40 percent of their respective storage capacities, with total system storage reported at 53 percent of capacity.<sup>12</sup>

In January 2001, the Secretary of the Interior adopted guidelines (the “Interim Surplus Guidelines”) for use through 2016 in determining if there is surplus Colorado River water available for use in California, Arizona, and Nevada. The Interim Surplus Guidelines were amended in 2007, with the new Guidelines extending through 2026. The Interim Surplus Guidelines contain a series of benchmarks for reductions in agricultural use of Colorado River water within California by set dates.

The purposes of the Guidelines are to: (1) improve Reclamation’s management of the Colorado River by considering trade-offs between the frequency and magnitude of reductions of water deliveries, and considering the effects on water storage in Lake Powell and Lake Mead, where BOR will also consider the effects on water supply, power production, recreation, and other environmental resources; (2) provide mainstream United States users of Colorado River water, particularly those in the Lower Division states, a greater degree of predictability with respect to the amount of annual water deliveries in future years, particularly under drought and low reservoir conditions; and (3) provide additional mechanisms for the storage and delivery of water supplies in Lake Mead to increase the flexibility of meeting water use needs from Lake Mead, particularly under drought and low reservoir conditions. As a result of the Guidelines, recipients of Colorado River water will receive deliveries with a higher degree of reliability.

#### Protected Species and Other Environmental Issues

Federal and state environmental laws protecting fish species and other wildlife species have the potential to affect Colorado River operations. A number of species that are on either endangered or threatened lists under the ESAs, are present in the area of the Lower Colorado River, including among others, the bonytail chub, razorback sucker, southwestern willow flycatcher, and Yuma clapper rail. To address this issue, a broad-based state/federal/tribal/private regional partnership that includes water, hydroelectric power, and wildlife management agencies in Arizona, California, and Nevada have developed a multi-species conservation program for the main stem of the Lower Colorado River (the Lower Colorado River Multi-Species Conservation Program or “MSCP”). The MSCP allows MWD to obtain federal and state permits for any incidental take of protected species resulting from current and future water and power operations of its Colorado River facilities and to minimize any uncertainty from additional listings of endangered species. The MSCP also covers operations of federal dams and power plants on the Colorado River that deliver water and hydroelectric power for use by MWD and other agencies. The MSCP covers 27 species and habitat in the Lower Colorado River from Lake Mead to the Mexican border for a term of 50 years. Over the 50-year term of the program, the total cost to MWD will be about \$88.5 million (in 2003 dollars), and annual costs will range between \$0.8

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<sup>12</sup> Lower Colorado Region Available Reservoir Elevations and Contents. Available at: <http://www.usbr.gov/lc/rivops.html>

million and \$4.7 million (in 2003 dollars). (MWD 2015 Official Statement, Special Variable Rate Water Revenue Refunding Bonds, Appendix A, pp. A-23 to A-24.)

### Potential Climate Change Impacts

Climate change has the potential to affect imported water supplies. Potential effects of global warming could also increase water demand within California. Although precise estimates of potential future impacts of climate change on runoff throughout the Colorado River Basin cannot be predicted with certainty, reports and data have been developed that address changes in climate and hydrology within that region. For example, the BOR's 2011 SECURE Water Act Report identifies the following climate challenges in the Colorado River Basin: (1) on average, Colorado River Basin temperature is projected to increase by 5 to 6 degrees Fahrenheit during the 21st century, with slightly larger increases projected in the upper Colorado Basin; (2) precipitation is projected to increase by 2.1 percent in the upper Basin while declining by 1.6 percent in the lower Basin by 2050; (3) mean annual runoff is projected to decrease by 8.5 percent by 2050; and (4) warmer conditions will likely transition snowfall to rainfall, producing more December through March runoff and less April through July runoff.<sup>13</sup>

The 2011 SECURE Water Act Report also discussed potential future impacts for water and environmental resources in the Colorado River Basin. The Report notes that:

- 1) spring and early summer runoff reductions could translate into a drop in water supply for meeting irrigation demands and adversely impacting hydropower operations at smaller reservoirs,
- 2) increased winter runoff may require infrastructure modifications or flood control rule changes to preserve flood protection, which could further reduce warm season water supplies,
- 3) warmer conditions might result in increased stress on fisheries, shifts in geographic ranges, increased water demands for instream ecosystems and thermoelectric power production, increased power demands for municipal uses, including cooling, and increased likelihood of invasive species infiltrations, where endangered species issues might also be exacerbated, and
- 4) warming could also lead to significant reservoir evaporation, increased agricultural water demands and losses during water conveyance and irrigation.

In response to climate change issues, BOR is taking a lead role in assessing risks to western U.S. water resources and is dedicated to mitigating risks to ensure long-term water resource sustainability. Where opportunities exist, BOR has begun adaptation actions in response to climate stresses as well as land use, population growth, invasive species and others. These activities include extending water supplies, water conservation, hydropower production, planning for future operations, and supporting rural water development. For example, a 2010–2011 Pilot Run of the Yuma Desalting Plant increased water supplies in the Lower Basin through conservation by an estimated 29,000 AF, enough to supply as many as 150,000 people for one year. At Hoover Dam, new wide head range turbines are being installed that will allow more efficient power generation over a wider range of lake levels than existing turbines. Furthermore,

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<sup>13</sup> See U.S. Department of the Interior, Bureau of Reclamation, Basin Report, Colorado River (<http://www.usbr.gov/climate/SECURE/docs/coloradobasinfactsheet.pdf>).

the Department of the Interior High Priority Goal for Climate (“Department”) includes activities of the Landscape Conservation Cooperatives and Climate Science Centers, assessing vulnerabilities to the natural and cultural resources management by the Department and activities to adapt to the stresses of climate change.

Potential climate changes impacts were also evaluated in the Environmental Impact Study (“EIS”) on the BOR Interim Surplus Guidelines (“Guidelines”) discussed above. The Guidelines extend through 2026, providing the opportunity to gain valuable operating experience through the management of Lake Powell and Lake Mead, particularly for low flow reservoir conditions, and to improve the bases for making additional future operational decisions during the interim period and thereafter. The Guidelines are crafted to include operational elements that would respond if potential impacts of climate change and increased hydrologic variability occur. The Guidelines include coordinated operational elements that allow for adjustment of Lake Powell releases to respond to low average storage conditions in Lake Powell or Lake Mead. In addition, the Guidelines enhance conservation opportunities in the Lower Basin and retention of water in Lake Mead.

#### Quantification Settlement Agreement Litigation

On November 5, 2003, the IID filed a validation action in Imperial County Superior Court, seeking a judicial determination that thirteen agreements associated with the water transfer between IID and the San Diego County Water Authority (“SDCWA”) and the QSA are valid, legal, and binding. Other lawsuits also were filed contemporaneously challenging the execution, approval, and implementation of the QSA on various grounds. All of the QSA cases were coordinated in Sacramento Superior Court. Between early 2004 and late 2009, a number of pretrial challenges and dispositive motions were filed by the parties and ruled on by the court, which reduced the number of active cases and narrowed the issues for trial, the first phase of which began in November 2009 and concluded in December 2009. One of the key issues in this first phase was the constitutionality of the QSA Joint Powers Agreement, pursuant to which IID, CVWD, and SDCWA agreed to commit \$163 million toward certain mitigation and restoration costs associated with implementation of the QSA and related agreements, and the State agreed to be responsible for any costs exceeding this amount. A final judgment was issued on February 11, 2010, in which the trial court held that the State’s commitment was unconditional in nature and, as such, violated the appropriation requirement and debt limitation under the California Constitution. The trial court also invalidated eleven other agreements, including the QSA, because they were inextricably interrelated with the QSA Joint Powers Agreement. Lastly, the trial court ruled that all other claims raised by the parties, including CEQA claims related to the QSA Programmatic EIR and the IID Transfer Project EIR, were moot. (MWD 2015 Official Statement, Special Variable Rate Water Revenue Refunding Bonds, Appendix A, p. A-21.)

In March 2010, MWD, IID, CVWD, SDCWA, the State and others filed notices of appeal challenging various aspects of the trial court’s ruling. On December 7, 2011, the Court of Appeal issued its ruling reversing, in part, the trial court’s ruling. In particular, the Court held that while the State’s commitment to fund mitigation costs in excess of \$163 million was unconditional, actual payment of such costs was subject to a valid appropriation by the Legislature, as required under the California Constitution. Moreover, the State’s commitment did not create a present debt in excess of the State Constitution’s debt limit. Thus, the QSA Joint Powers Agreement was



held to be constitutional. The Court of Appeal also rejected other challenges to this agreement, including that it was beyond the State's authority, there was no "meeting of the minds," and there was a conflict of interest. In light of its ruling, the Court of Appeal remanded the matter back to the trial court for further proceedings on the claims that had been dismissed as moot, including the CEQA claims.

On June 4, 2013, the trial court issued its ruling on remand, validating the QSA and eleven related agreements while denying the remaining legal challenges that were brought against the QSA. Among other important rulings, the court upheld the CEQA review that was prepared for the QSA. Among its decisions on specific environmental issues, the court determined that the potential air quality impacts to the Salton Sea were adequately analyzed under CEQA. The court also found that the use of a baseline consisting of existing and predicted future conditions of the Salton Sea was appropriate to measure the impacts of the long-term water transfers. It denied project opponents' arguments that more alternatives should have been considered and found that the water agencies' conclusion that use and transfer of water to the San Diego area would not induce growth, was supported by record evidence. The court also addressed the nature of changes made to the agreements after the environmental documentation was completed and the procedural decision of water districts to designate themselves as "co-lead agencies" under CEQA, finding that these decisions did not violate CEQA. As a result, the court concluded that the record supported the lead agencies' conclusions relating to CEQA and upheld the validity of the QSA and 11 related agreements.

In January 2010, a separate complaint was filed by the County of Imperial and the Imperial County Air Pollution Control District alleging that execution and implementation of three QSA-related agreements violate the federal NEPA and federal Clean Air Act ("CAA"). The complaint named the Department of the Interior, Secretary of the Interior, Bureau of Reclamation and Commissioner of Reclamation as defendants, and MWD, CVWD, IID, and SDCWA as real parties in interest. With respect to NEPA, the complaint alleged that the environmental impact statement prepared by the BOR failed to adequately analyze potential impacts on the Salton Sea and on land use, growth and socioeconomics; improperly segmented various project components; failed to address cumulative impacts; and failed to address mitigation of potential impacts. With respect to the CAA, the complaint alleged that the BOR failed to conduct a conformity analysis as required under the Act and Imperial County Air Pollution Control District's own rules. In April 2012, the court ruled against the plaintiffs and in favor of the defendants on all claims. The court held that the plaintiffs lacked standing to pursue NEPA and CAA claims and that the NEPA claims lacked merit. In May 2012, the plaintiffs filed a notice of appeal and the non-federal defendants filed a notice of cross-appeal. Briefing on all appeals was completed in 2013, and in May 2014, the United States Court of Appeals for the Ninth Circuit issued a decision that upheld the District Court ruling and found that no violations of NEPA or the CAA occurred in connection with the QSA.

#### Colorado River Basin Study

In December 2012, the BOR issued its Colorado River Basin Water Supply and Demand Study (2012 Study). According to BOR, the 2012 Study was prepared against the backdrop of challenges and complexities of ensuring a sustainable water supply and meeting future demand in the Colorado River system. Notably, the 2012 Study recognizes that because of the Colorado

River system's ability to store approximately 60 million AF of water (or nearly four years of average natural flow of the Colorado River), all requested deliveries have been met in the Lower Basin, despite recently experiencing the worst 11-year drought in the last century. (2012 Study, Executive Summary, p. ES-1.) The 2012 Study concludes that, without additional future water management actions among the Upper and Lower Basin states, a wide range of future imbalances is plausible, primarily due to uncertainties inherent in future water supply. (Id., p. ES-6.) Comparing the median long-term water supply projections against the median long-term water demand projections, and factoring in the myriad factors having the potential to affect the availability and reliability of Colorado River supplies and demands (such as climate change, species and other environmental issues, social trends, economic and legal forces, and technical capabilities), the 2012 Study shows that a long-term projected imbalance of 3.2 million AF or more could occur by the year 2060. (Id.) To address such potential long-term imbalances, the 2012 Study identifies and discusses a broad range of potential options to resolve the differences between water supply and demand. During the study period, over 150 options were received and organized into four groups: (1) those that increase Basin water supplies; (2) those that reduce Basin water demands; (3) those that focus on modifying operations; and (4) those that focus primarily on Basin governance. (Id., p. ES-7.) Moreover, recognizing that no single option is likely sufficient to resolve potential water supply and demand imbalances, the 2012 Study developed groups and portfolios of options to reflect different adaptive strategies. (Id., p. ES-11.) Importantly, the 2012 Study recognizes that *complete* elimination of Basin vulnerability is not likely obtainable, yet concludes that implementation of various adaptive management options results in a significant reduction in vulnerability (e.g., the percentage of future scenarios resulting in Lake Mead elevations being less than 1,000 feet mean sea level is reduced from 19 percent to only 3 percent). (Id., p. ES-14.) Indeed the 2012 Study states that implementation of management portfolios are projected to be successful in significantly improving the resiliency of Basin resources to vulnerable hydrologic conditions. (Id.) Similar to the extraordinary conservation and management efforts being undertaking throughout the MWD service area (including Western), the 2012 Study concludes that supply augmentation, water reuse and conservation will be critical tools in managing potential supply and demand imbalances.

### Colorado River Basin Drought Contingency Plans

On April 16, 2019, President Trump signed the H.R. 2030 and the Colorado River Drought Contingency Plan Authorization Act (the "Act") became law (Public Law No. 116-14). Among other matters, the Act directs the Secretary of the Interior to execute and carry out certain agreements concerning Colorado River Drought Contingency Management and Operations after execution by other parties thereto, including the Lower Basin Drought Contingency Plan Agreement. The completed plans are designed to reduce risks from ongoing drought and provide additional security and certainty of the water supply of the Colorado River water system. The Lower Basin Drought Contingency Plan contains provisions for implementing drought actions in the Lower Basin in the form of exhibits with specific conservation measures and goals.

### Western Municipal Water District – Local Water Supplies and Water Supply Projects

Below is a summary of water supplies that Western received from the Bunker Hill Basin for the last five years.

<b>Total Western Calendar Year Imported Water from Bunker Hill Basin (AF)</b>				
<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
7,150	8,505	8,182	7,463	6,618

To reduce its dependency on imported water, Western has aggressively sought to develop and/or expand local sources of supply for use under both non-emergency and emergency conditions. Western's Water Resources staff have evaluated a number of projects under the following criteria:

- Reliability – Meet system demands and ensure supply reliability under droughts and emergency conditions.
- Water Quality – Provide a safe and high quality water supply that meets or exceeds safe drinking quality regulations, and supports the development of recycled water and conjunctive use.
- Cost – Provide reliable and high quality water supply at a cost-effective price.
- Ability to Implement – Prioritize projects that have the greatest chance for successful implementation.
- Flexibility – Prioritize projects that have the greatest potential for operational flexibility.
- Environment – Consider the environmental impacts when developing and utilizing future water supplies.

Using these criteria, a number of water supply projects have been identified:

- I. Interconnections
  - A. City of Riverside
    1. Existing Mockingbird Canyon Pump Station
    2. Existing Whitegates Interconnection
    3. Proposed Campbell Interconnection
  - B. City of Corona
    1. Emergency four cubic-feet-per-second ("CFS") connection at the end of Reach F
- II. Arlington Desalter Expansion
- III. Chino Desalter Expansion
- IV. Banking Programs (Storage of SWP in San Bernardino Basin Area ("SBBA") and wheeled to Western via City of Riverside conveyance facilities)
- V. Riverside North Aquifer Storage and Recovery Project

Many of the new local water supplies identified below will be implemented through a variety of instruments including: (1) Cooperative Agreement with the City of Riverside for Water Production and Conveyance, (2) Reciprocal Use Agreement between Western, the City of Riverside, and EVMWD, and (3) Agreement regarding the Corona-Western Promenade Connection. While these resources will become part of Western's total water supply portfolio used to meet overall water demands of Western's Riverside Retail service area, they are not identified as specific sources that will supply the proposed Project. Rather, these local sources

offset the overall demand on Western's imported supplies, thus, increasing system-wide water supply availability and reliability.

## **Interconnections**

### **Riverside Wheeling and Purchase Agreement**

The City of Riverside's ability to deliver Meeks & Daley and other waters is seasonally limited due to capacity constraints when demands are at their peak. On an annual basis, all this water can be moved during the eight non-peak periods of the year. To address the seasonality issue, the City of Riverside and Western are collaborating on projects. Western has recently completed construction of improvements to its Mockingbird Pump Station to increase reliability of water deliveries from the City of Riverside at this location, which is the major delivery point. Western is also in the planning stages on the construction of a new Campbell Pump Station that will allow Western a third robust interconnection with the City of Riverside. Western purchased a property for the Campbell Pump Station in the city of Riverside. The City of Riverside has identified two projects within their distribution system in which Western may want to participate by oversizing certain major transmission pipelines to accommodate firm delivery capability throughout the year. Participation in these future projects will be dependent on timing and cost.

In 2013, Western started purchasing water from Riverside Highland Water Company ("RHWC"), which is produced by the City of Riverside and wheeled through its conveyance system for delivery to Western. In 2015, Western and RHWC signed one-year lease agreement allowing Western to purchase 1,500 AF unused water from RHWC. The basis of this agreement is that RHWC has groundwater rights in the SBBA in excess of its demands and is willing to lease those rights, on an annual basis, to Western until such time that RHWC's demands increase. Total water purchased from RHWC for year 2015 was 1,500 AF. Discussions between Western and RHWC regarding the quantity of water available occur on an annual basis.

Further, this water is not considered a firm source of supply because of RHWC's future demands and because the arrangement is subject to available capacity in the City of Riverside's conveyance system.

*Meeks & Daley Asset Exchange Agreement* – Pursuant to various agreements, Western has access to up to 4,208 AF annually of groundwater from the Bunker Hill Basin and the Colton and Riverside Basins. A "Cooperative Wheeling Agreement" (Cooperative Agreement for Water Production and Conveyance between the City of Riverside and Western) was finalized in February 2009. With this agreement, Western is able to convey groundwater obtained from EVMWD's groundwater rights (referred to as Meeks & Daley water), which is delivered via Riverside Public Utilities via the existing Mockingbird Canyon Pump Station and Whitegates Reservoir. Presently, Western does not itself extract groundwater from the Bunker Hill Basin. To the extent it utilizes native groundwater produced from the Bunker Hill Basin, it uses up to 4,208 AFY of Meeks & Daley water rights and water it purchases on an off-season basis from the City of Riverside, which has an adjudicated right of 53,918 AFY, including new conservation allocation.

*City of Corona (Promenade Interconnection)* – the City of Corona Promenade Avenue Connection is a two-way interconnection located in Promenade Avenue easterly of McKinley

Street, in the city of Corona, that will provide multiple benefits to a number of regional water purveyors.

- 1) Western will have the capability of furnishing water to Corona from Western's Arlington Desalter using Western's 30-inch diameter, 930 hydraulic grade line ("HGL"), while Corona will have the ability to receive water into its 30-inch diameter, 905 HGL Zone 2 pipeline.
- 2) Corona will have the capability of furnishing water to Western from Corona's 24-inch diameter, 1060 HGL Zone 3 pipeline and Western will have the ability to receive the water into its 30-inch diameter, 930 HGL Arlington Desalter Pipeline.
- 3) Corona will realize water quality benefits by receiving Western's Arlington Desalter water with a total dissolved solids ("TDS") of 350 milligrams per liter ("mg/L") in lieu of Colorado River water with a TDS range of 600–700 mg/L.
- 4) Both parties will realize water supply reliability benefits when other water supply facilities are out of service for planned or unplanned maintenance.

This project is fully operable and can provide 400 AFY.

### **Bunker Hill Basin Coordinated Use Agreement**

The Bunker Hill Basin has been adjudicated since 1969. Its safe yield, as determined by the Western-SBVMWD Watermaster, is 232,100 AFY. Total groundwater storage capacity for the Basin is approximately 5,976,000 AF. Recharge to the Bunker Hill Basin historically has resulted from infiltration of runoff from the San Gabriel and San Bernardino Mountains. The Bunker Hill Basin is also replenished by deep percolation of water from precipitation and resulting runoff, percolation from delivered water, and water spread in streambeds and spreading grounds.

Western, SBVMWD, and MWD have executed a coordinated-use agreement that allows Western to purchase surplus SWP supplies and store them in the San Bernardino/Bunker Hill Basin Area. The agreement allows Western to purchase up to 15,000 AF in any given year. The water is stored and retrieved as needed to meet demands. Western currently has 6,000 AF stored under this agreement. This project is fully approved and being implemented. All associated documents and agreements are on file with Western.

### **Arlington Basin Recharge**

The Arlington Groundwater Basin is a shallow, alluvial-filled valley located in western Riverside County within the limits of the city of Riverside. Total groundwater storage in the Arlington Basin is less than 80,000 AF. The quality of groundwater in Arlington Basin is generally poor, with TDS concentrations of approximately 1,000 mg/L and nitrate-nitrogen concentrations of approximately 20 mg/L. Without treatment, this water is not usable as a drinking water resource. The Arlington Desalter, owned and operated by Western, is a reverse-osmosis groundwater treatment facility located within the Arlington Basin that is supplied by five nearby production wells. The Arlington Desalter treats this groundwater so that it can be used as a potable resource.

Western has a contractual obligation to deliver up to 4,400 AFY of Arlington Desalter water to the City of Norco. Any additional production from the facility combined with other resources from the Chino Desalter can be available to Western's Riverside Retail customers via the La Sierra Pipeline (discussed below). This will provide up to 2,800 AFY of additional supplies above current operation of the Arlington Desalter. To avoid the chance of Arlington Basin overdraft, Western constructed project to stabilize the Arlington Basin, the "Arlington Basin Recharge Project." This project will recharge the Arlington Basin with storm runoff, urban runoff, and recycled water in the future using surface ponds. This project will increase the plant capacity by 1,800 AFY and allow the plant to operate at its permitted capacity of up to 7.25 million gallons per day ("MGD") and production to about 7,200 AF annually.

The estimated cost for the Arlington Recharge Project is approximately \$10 million, which will be reduced by funding for construction costs from three agencies: (1) \$1 million from Riverside County Flood Control and Water Conservation District, (2) \$1 million from Santa Ana Watershed Project Authority awarded through Proposition 84, Round 1, and (3) \$1 million of a federal WaterSMART grant. The net cost of the project, including grant commitments, is approximately \$7 million.

### **La Sierra Pipeline and Sterling Pump Station Project**

The newly constructed La Sierra pipeline will convey potable water from the Arlington Desalter to Western's retail service area in the city of Riverside. The project includes construction of an approximately 4.5-mile pipeline and two pump stations. The La Sierra Pipeline project will provide additional conveyance facilities within Western's retail area, thus, improving the reliability of Western's water supply to its customers and reducing the potential effect of water supply allocations by MWD, as discussed above. The pipeline includes three reaches: Reach 1 starts from the Sterling Pump Station to its turnout at the intersection of Pierce Street and Indiana Avenue; Reach 2 starts from the Arlington Desalter Turnout to La Sierra Turnout; and Reach 3 starts at La Sierra Turnout to La Sierra Tank and Mills Gravity Pipeline ("MGL"). The Sterling Pump Station is located near the Arlington Desalter, pumping water from approximately a HGL of 720' to the MGL at a variable HGL of 1,600' to 1,650'. Water would then flow by gravity back through the MGL to the Mockingbird Pump Station which would be required to lift water to Western's 1650 pressure zone, a total lift of approximately 136'. The total cost of the La Sierra Pipeline and Sterling Pump Station is estimated at \$40 million.

### **Chino II Desalter Expansion**

Western, in coordination with the City of Ontario and Jurupa Community Services District, is expanding the Chino II Desalter from a capacity of 10.5 MGD to 20.5 MGD, resulting in additional annual production capability of 10,500 AF. Western's portion of the additional supply is 3,534 AF annually. The project includes treatment, conveyance, and well facilities that will be constructed in the Chino Basin. A programmatic EIR for this project was completed in 2002, with a subsequent EIR for the expansion project completed in 2008. This water will be utilized to meet, in part, the 4,400 AFY obligation Western has to provide the City of Norco desalted water (see discussion above under Arlington Desalter) thereby allowing a like amount of water produced at Arlington Desalter to be used by Riverside Retail once the La Sierra Pipeline and Sterling Pump Station are constructed.

The Chino Basin was adjudicated in 1978, and groundwater storage and production within the Chino Basin is managed and reported by the Chino Basin Watermaster pursuant to the Judgment. In 2000, the various groundwater-producing entities entered into the court-approved “Peace Agreement,” and then in 2007 the parties entered the court-approved “Peace II Agreement,” which together formalized and fostered a new level of cooperation in groundwater management. These agreements paved the way for the implementation of the Optimum Basin Management Plan (“OBMP”), by which the Watermaster develops and enacts comprehensive programs for groundwater monitoring, salt management and desalter production, groundwater recharge, recycled water use and groundwater storage and recovery.

The safe yield of a groundwater basin has been defined as the amount of water that can be withdrawn annually without producing an undesirable results. Withdrawal in excess of safe yield is termed overdraft. The Judgment established the safe yield of the Chino Basin in the amount of 140,000 AFY; however, Watermaster may determine that the operating safe yield can be higher or lower from year-to-year depending on factors including favorable precipitation and management efforts that maximize the beneficial use of the groundwater basin. These management efforts, which ensure the long-term sufficiency of groundwater from the Chino Basin, including dry years.

The Chino Basin Watermaster began a Safe Yield redetermination process in 2013. Watermaster has primarily indicated the Safe Yield may be determined to be less than 140,000 AFY in the future; however, impacts on Judgment parties’ share of Safe Yield and Operating Safe Yield from year-to-year will depend on Chino Basin management projects and programs that may enable future Safe Yield production to remain in the range of 130,000–140,000 AFY. The Chino Basin Watermaster plans to redetermine Safe Yield every 10 years, with the next determination anticipated in 2020.

The following table provides estimates of the potential yield from Western’s water supply projects described above and expected operational dates:

Project	Western – Local Water Supply Project Yields (AF/year)						
	Projected Date of Operation	2018	2020	2025	2030	2035	2040
Meeks & Daley Asset Exchange Agreement <sup>(1)</sup>	Operable	4,208	4,208	4,208	4,208	4,208	4,208
Non-potable Water Purchase – Riverside Public Utilities	Operable	2,000	2,000	2,000			
Riverside Highland Water Company (RHWC)	Operable	1,000					
Bunker Hill Basin Coordinated Use Agreement	Operable		A total 6,000 AF is currently in storage (more may be added as replenishment water is available).				
Arlington Desalter	Operable		2,800	2,800	2,800	2,800	2,800
Chino Desalter II Expansion	Operable		3,534	3,534	3,534	3,534	3,534

Project	Western – Local Water Supply Project Yields (AF/year)						
	Projected Date of Operation	2018	2020	2025	2030	2035	2040
Riverside Wheeling and Purchase Agreement	Operable	2,000	2,000	2,000	2,000	2,000	2,000

(1) Up to 4,208 AFY of groundwater is available from the SBBA and the Colton and Riverside Basins pursuant to agreements with Riverside and EVMWD.

### Recycled Water Program

Although not included in this WSA as a potable water supply in Western’s supply portfolio, it is important to note that Western provides wastewater service to the unincorporated Riverside County areas north and east of Lake Mathews within its retail water service boundaries. This area is served by the Western Water Recycling Facility (“WWRF”), which is currently a three-MGD (3.0) wastewater treatment facility producing tertiary treated recycled water.

Treated water from the facility is provided to the Riverside National Cemetery and General Archie Old Golf Course as well as parks, schools, groves, and nurseries, representing a set of customers who previously were dependent on MWD supplies. With conversion of the distribution system from a non-potable system (when delivering raw MWD non-potable CRA water) to a recycled water system, those customers now have a new local and reliable supply which offsets demands for imported potable water supplies.

The following table provides projected WWRF recycled water production and uses:

Western Water Recycling Facility Projected Recycled Water Production and Use			
Year	Plant Design Capacity (AFY)	Expected Effluent (AFY)	Recycled (AFY)
2015	3,360	1,304	1,109
2020	3,360	1,600	1,600
2025	5,600	1,900	1,900
2030	5,600	2,100	2,100
2035	5,600	2,400	2,400
2040	5,600	2,700	2,700

### Water Use Efficiency

Given the factors affecting imported water supplies, there is increasing focus on water conservation—or water use efficiency—at the state, regional, and local levels.

On November 10, 2009, the state Legislature passed Senate Bill 7 (“SBX7-7”), more commonly referred to as “20 x 2020”. This law seeks to achieve a 20 percent reduction in urban per capita water use across California by 2020. This law codifies a similar reduction referenced in the Governor’s 2009 Executive Order.



In addition to creating methodologies to define specific water-use reduction targets, SBX7-7 includes reporting requirements for all retail urban water suppliers. It is intended to promote urban conservation standards consistent with the California Urban Water Conservation Council's ("CUWCC") Best Management Practices.

In 2011, Western implemented a water budget-based rate structure. The structure provides every customer with an individualized water allocation based on efficient indoor and outdoor practices. Monthly water bills now provide a regular signal of efficient water use. In an effort to assist customers to remain within their water budget, Western offers a portfolio of water use efficiency/customer support programs.

Examples of the programs currently offered by Western include:

- *Free irrigation efficiency evaluations* – Western contracts with irrigation professionals to evaluate irrigation systems and provide a written report to the customer highlighting opportunities to increase water use efficiency.
- *Rebate Programs* – Numerous rebates are available to retail customers for high-efficiency clothes washers, smart irrigation controllers, and high-efficiency sprinkler nozzles. The SoCal WaterSmart program ([www.socalwatersmart.com](http://www.socalwatersmart.com)) is administered by MWD. Western adds additional funding to some of the water-saving devices.

### **Western's Water Conservation and Management Measures**

#### **Retail Measures**

In response to the 2014 regulatory actions requiring enhanced water conservation, Western developed an updated Retail Customer Water Supply Shortage Contingency Program ("Program") as provided in Ordinance 384 adopted by Western's board of directors on February 18, 2015. The Program establishes five (5) stages of water conservation and supply shortage response measures which may be implemented. Stage One establishes permanent water use standards intended to alter behavior related to efficiency for non-shortage conditions. Stages Two through Five further establish levels of shortage response actions to be implemented during times of water supply shortage.

Water budget-based tiered rates are intended to promote the efficient use of water and provide customers with economic signals as their water use increases. Essentially, the rate structure is based upon providing customers with the water they need at a lower rate, while inefficient use is penalized with higher rates. Western's budget-based tiered rate system has demonstrated the ability to result in reductions in water consumption. Implementation of the measures outlined in Program, plus additional water savings from budget-based tiered rate, are designed to maximize water conservation and reduce retail water demands throughout Western's retail service area.

#### **Wholesale Measures**

As discussed above, Western also updated its Drought Allocation Plan ("DAP") in May 2015 to provide Western's wholesale customers with a means for potentially allocating limited imported water supplies from MWD under shortage conditions. The updated 2015 DAP is consistent with

the allocation methodology adopted as part of MWD's WSAP and provides a range of potential imported water shortage scenarios. The goal of the 2015 DAP is to equitably share potential water shortage allocations by MWD between Western and its wholesale agencies, and to avoid proposed MWD penalty rates in scenarios where its WSAP is implemented.

The updated 2015 DAP would be used to allocate water for municipal and industrial ("M&I") purposes among Western's wholesale water customers:

- City of Corona
- City of Norco
- City of Riverside
- Eagle Valley Mutual Water Company
- Elsinore Valley Municipal Water District
- Temescal Valley Water District
- Rancho California Water District
- Western Municipal Water District Retail Customers (including Box Springs Mutual Water Company)

The 2015 DAP<sup>14</sup> was prepared with the input and support from Western's wholesale customers. Recognizing the importance of wholesale customer involvement, Western created a Drought Allocation Plan Workgroup, made up of staff from Western and its wholesale customers. The DAP allocates supply to wholesale agencies based on:

- demand during the base period using data for the two most recent non-allocation years;
- base period local supplies;
- base period gallons per capita daily; and
- adjustments for growth.

### **Long-Term Conservation Legislation**

On May 31, 2018 Governor Jerry Brown signed into law Senate Bill 606 (Hertzberg) and Assembly Bill 1668 (Friedman). These bills require urban water providers in California to set permanent water use targets by 2022. Western and other agencies throughout the State are working with the State Water Resources Control Board and the Department of Water and Power to develop the long-term urban efficiency standards.

### **Western Riverside Retail Demand**

Western tracks retail water usage by customer types including residential, commercial, industrial, institutional, and agricultural accounts. Tracking is done by user code and reports can be generated to determine the number of accounts and quantities of water consumed. The number of future residential and commercial/industrial customers is expected to increase at the same rate as the estimated population growth.

Although population in Western's retail service grew tremendously during the early 2000s, the recent economic slowdown has substantially curtailed this trend. Data from the SCAG 2015

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<sup>14</sup> Drought Allocation Plan for the Western Municipal Water District of Riverside County, Adopted May 20, 2015.

*Regional Transportation Plan* suggests that future growth in the Inland Empire will be over the next 25 years less than one percent per year. As discussed above, for water supply planning purposes, Western's 2015 UWMP has projected the annual population growth rate within Western's service area at an average of 1.4 percent through the year 2040.

Agricultural land use is expected to continue decreasing with continued urbanization within the retail service area. The following table summarizes water demands for Western's retail service area from 2015–2019.

<b>Total Western Calendar Year Retail Demands (AF)</b>				
<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
23,357	21,772	22,441	22,835	18,804

### **Project Demand**

According to information submitted by the lead agency, March JPA and the Project proponent, the projected water demand for the proposed Project is approximately 87.8 AFY. Indoor water demand was calculated using the total estimated number of employees (1,100 employees) multiplied by 10 gallons per person per day which is appropriate for the specified land use type of industrial/commercial. To determine the projected annual indoor demand, the daily demand was multiplied by 256 working days (excluding weekends) to reach the total projected indoor water demand associated with the land use changes in the South Campus Specific Plan Amendment. Total projected annual indoor water demand is 8.64 AFY.

The proposed Project's projected landscape demand was determined using the California Water Efficient Landscape Worksheet which uses landscape area (1,962,200 square-feet), irrigation method, and local evapotranspiration to determine efficient water use. The Estimated Total Water Use (ETWU) according to the California Water Efficient Landscape Worksheet is 79.16 AFY.

### **Water Supply Analysis**

In addition to the foregoing, the following analyses and figures provide a detailed assessment of whether the total projected water supplies available to Western during normal, single-dry, and multiple-dry years over the next 20-year period are sufficient to meet the projected water demand associated with the proposed Project, in addition to existing and planned future uses. As a conservative measure, this WSA specifically analyzes how Western would address potential shortfalls in the availability and reliability of imported water supplies in demonstrating that sufficient water supplies are available to Western to serve the proposed Project according to the standards set forth by SB 610. While Western's full-service water demand shown in Tables 1 through 3 below are based on Western's 2015 UWMP, it should be noted that Western's calendar year 2019 retail water demand was 18,804 AF, which is significantly lower than projected future demands in the UWMP. Therefore, the surplus supply displayed in the tables are a conservative measurement when compared to Western's actual retail water demands over the last five years.

With respect to analyzing total projected water supplies available in normal, single-dry and multiple-dry years, this WSA addresses potential water supply reductions under MWD's WSAP,

which presents drier conditions than have existed under historic “single-dry” and “multiple-dry” scenarios. MWD’s 2015 RUWMP identified 1977 as the single-dry year and 1990–1992 as the multiple-dry year scenarios. These years were selected based on delivery conditions for the SWP only because it is MWD’s largest and most variable water supply. In 1977, SWP deliveries to MWD were approximately one-third of 1976 and 1978 deliveries. Nevertheless, MWD delivered more water in 1977 than either 1976 or 1978 (due to increased Colorado River supplies). During the early 1990s multiple-dry year period, SWP deliveries ranged from approximately 78 percent to 94 percent of average 1985–1999 deliveries. Total MWD (SWP plus Colorado River) deliveries during this same period averaged 94.82 percent of “normal” Although MWD requested voluntary conservation during this three-year period, there were no delivery cutbacks or drought allocations.

The water supply and demand data used for scenarios below (normal, single-dry, and multiple-dry years) are derived from Western’s 2015 UWMP. Through Western’s WUEMP implementation, Western has already implemented most of the conservation elements including Free Irrigation Efficiency Evaluations, Smart Yard, Turf Replacement, and Rebate programs throughout the retail service area, especially in the single-family residence outdoor watering arena. Water conservation is included in all the scenarios illustrated in the following Tables.

Tables 1 through 3 include local supply projects Western has developed and can control such as the Arlington Desalter Expansion and Chino Desalter Expansion. Western has increased water production from the Arlington Desalter up to 7,200 AFY. This project includes construction of an artificial recharge basin and a new production well. Western has a contractual obligation to deliver up to 4,400 AFY of Arlington Desalter water to the city of Norco. This project will provide up to 2,800 AFY of additional supplies above current operation of the Arlington Desalter. Any additional production from the facility combined with other resources from the Chino Desalter can be available to Western’s Riverside Retail customers via the La Sierra Pipeline.

As discussed above, Western is a member of the Chino Desalter Authority (“CDA”). The CDA is a collaborative effort among its members and other water users in the Chino Basin with the goal of maintaining water yield and water quality. Western is entitled to receive 3,534 AFY as a result of the Chino Desalter Expansion project. This will be allocated to the City of Norco, and thus free up 3,534 AFY of the Arlington Desalter water that was previously delivered to Norco. This 3,534 AFY can be delivered to Western’s Riverside Retail System via the La Sierra Pipeline. Because those water supplies will be from adjudicated and highly managed groundwater basins (Arlington and Chino), the amounts are categorized as reliable sources in normal, single-dry year, and multiple-dry year conditions.

The Riverside Wheeling and Purchase Agreement is also identified as a Western local supply. The agreement provides Western with up to 2,000 AFY of groundwater from the Bunker Hill Basin through the Riverside conveyance system.

### **Normal Year**

Table 1 illustrates Western’s water supply and demand projections under normal conditions, where no types of imported water supply reductions are being implemented by MWD.

**Table 1: Western Municipal Water District Water Supply Portfolio  
Normal Year Hydrology**

Normal Year Hydrology		2020	2025	2030	2035	2040
South Campus Specific Plan Amendment						
<b>Western Full-Service Demand<sup>(1)</sup></b>		29,214	31,814	34,315	36,770	39,004
<b>Annual Allocation from MWD (0% reduction)</b>		<b>29,214</b>	<b>31,814</b>	<b>34,315</b>	<b>36,770</b>	<b>39,004</b>
<b>Local Water Supply Projects</b>	<b>Projected Operation</b>					
<i>Meeks &amp; Daley Asset Exchange Agreement<sup>(2)</sup></i>	Operable	4,208	4,208	4,208	4,208	4,208
<i>Riverside Highland Water Company (RHWC)<sup>(3)</sup></i>	Operable					
<i>Riverside Wheeling and Purchase Agreement<sup>(4)</sup></i>	Operable	2,000	2,000	2,000	2,000	2,000
<i>Arlington/Corona Exchange<sup>(5)</sup></i>	Operable					
<i>Arlington Desalter Expansion (Arlington Basin Recharge)</i>	Operable	2,800	2,800	2,800	2,800	2,800
<i>Chino Desalter II Expansion/La Sierra Pipeline</i>	Operable	3,534	3,534	3,534	3,534	3,534
<b>Net local water supply</b>		<b>12,542</b>	<b>12,542</b>	<b>12,542</b>	<b>12,542</b>	<b>12,542</b>
<b>Total water supply (local &amp; MWD water)</b>		<b>41,756</b>	<b>44,356</b>	<b>46,857</b>	<b>49,312</b>	<b>51,546</b>
<b>Total water demand approved for projects since Western's 2015 UWMP, excluding this project</b>		2,207	2,207	2,207	2,207	2,207
<b>Total water supply less approved project since Western's 2015 UWMP</b>		39,549	42,149	44,650	47,105	49,339
<b>Water supply less Western's demand</b>		10,335	10,335	10,335	10,335	10,335
<b>South Campus Specific Plan Amendment water demand</b>		88	88	88	88	88
<b>(Shortfall)/Surplus</b>		<b>10,247</b>	<b>10,247</b>	<b>10,247</b>	<b>10,247</b>	<b>10,247</b>

(1) Based on Western's 2015 Urban Water Management Plan projections for 2020, 2025, 2030, 2035, and 2040. (2) Up to 4,208 AFY of groundwater is available from the SBBA and the Colton and Riverside Basins pursuant to agreements with Riverside and EVMWD. (3) Western and RHWC periodically enter into agreements to purchase water. This water is not considered a firm supply because of RHWC's future demands and Riverside's ability to wheel it through its conveyance system. (4) Riverside and Western have a long-term wheeling and purchase agreement for the purchase and delivery of 2,000 AFY. In addition, Western currently stores 6,000 AF in the Bunker Hill Basin. This water is wheeled through the city of Riverside. (5) The City of Corona and Western do not currently have an agreement in place, however, the infrastructure exists to deliver up to 400 AFY of water to Western if an agreement is executed.

The total annual demand for the proposed Project is estimated at 87.8 AFY. Table 1 demonstrates that Western will have sufficient supplies in a normal year scenario to serve the projected demands associated with the proposed Project over the 20-year projection, in addition to Western's existing and planned future uses.

### **Single-Dry Year**

Table 2, below, illustrates Western's supply and demand projections under single-dry year conditions, which for conservative purposes in this analysis are represented by a ten percent reduction in imported water supplies pursuant to a potential MWD water supply allocation.

**Table 2: Western Municipal Water District Water Supply Portfolio  
Near-Term Shortage/Single-Dry Year Scenario (10%)**

Single Dry Year Hydrology South Campus Specific Plan Amendment		2020	2025	2030	2035	2040
<b>Western Full-Service Demand<sup>(1)</sup></b>		29,214	31,814	34,315	36,770	39,004
<b>Annual Allocation from MWD (10% reduction)</b>		<b>26,293</b>	<b>28,633</b>	<b>30,884</b>	<b>33,093</b>	<b>35,104</b>
<i>Local Water Supply Projects</i>	<i>Projected Operation</i>					
<i>Meeks &amp; Daley Asset Exchange Agreement<sup>(2)</sup></i>	Operable	4,208	4,208	4,208	4,208	4,208
<i>Riverside Highland Water Company (RHWC)<sup>(3)</sup></i>	Operable					
<i>Riverside Wheeling and Purchase Agreement<sup>(4)</sup></i>	Operable	2,000	2,000	2,000	2,000	2,000
<i>Arlington/Corona Exchange<sup>(5)</sup></i>	Operable					
<i>Arlington Desalter Expansion (Arlington Basin Recharge)</i>	Operable	2,800	2,800	2,800	2,800	2,800
<i>Chino Desalter II Expansion/La Sierra Pipeline</i>	Operable	3,534	3,534	3,534	3,534	3,534
<b>Net local water supply</b>		<b>12,542</b>	<b>12,542</b>	<b>12,542</b>	<b>12,542</b>	<b>12,542</b>
<b>Total water supply (local &amp; MWD water)</b>		<b>38,835</b>	<b>41,175</b>	<b>43,426</b>	<b>45,635</b>	<b>47,646</b>
<b>Total water demand approved for projects since Western's 2015 UWMP, excluding this project</b>		2,207	2,207	2,207	2,207	2,207
<b>Total water supply less approved project since Western's 2015 UWMP</b>		36,628	38,968	41,219	43,428	45,439
<b>Water supply less Western's demand</b>		7,414	7,154	6,904	6,658	6,435
<b>South Campus Specific Plan Amendment water demand</b>		88	88	88	88	88
<b>(Shortfall)/Surplus</b>		<b>7,326</b>	<b>7,066</b>	<b>6,816</b>	<b>6,570</b>	<b>6,347</b>

(1) Based on Western's 2015 Urban Water Management Plan projections for 2020, 2025, 2030, 2035, and 2040. (2) Up to 4,208 AFY of groundwater is available from the SBBA and the Colton and Riverside Basins pursuant to agreements with Riverside and EVMWD. (3) Western and RHWC periodically enter into agreements to purchase water. This water is not considered a firm supply because of RHWC's future demands and Riverside's ability to wheel it through its conveyance system. (4) Riverside and Western have a long-term wheeling and purchase agreement for the purchase and delivery of 2,000 AFY. In addition, Western currently stores 6,000 AF in the Bunker Hill Basin. This water is wheeled through the city of Riverside. (5) The City of Corona and Western do not currently have an agreement in place, however, the infrastructure exists to deliver up to 400 AFY of water to Western if an agreement is executed.

As noted above, the total annual demand for the proposed Project is estimated at 87.8 AFY. Table 2 demonstrates that Western will have sufficient supplies in a single-dry year scenario to serve the projected demands associated with the proposed Project over the 20-year projection, in addition to Western's existing and planned future uses.

### **Multiple-Dry Year**

Table 3 illustrates Western's water supply and demand projections under multiple-dry year conditions, which for purposes of this analysis are conservatively represented by a 20 percent reduction in imported water supplies pursuant to a potential MWD water supply allocation.

**Table 3: Western Municipal Water District Water Supply Portfolio  
Intermediate and Long-Term Shortage/Multiple-Dry Year Scenario (20%)**

Multiple Dry Year Hydrology South Campus Specific Plan Amendment		2020	2025	2030	2035	2040
<b>Western Full-Service Demand<sup>(1)</sup></b>		29,214	31,814	34,315	36,770	39,004
<b>Annual Allocation from MWD (20% reduction)</b>		<b>23,371</b>	<b>25,451</b>	<b>27,452</b>	<b>29,416</b>	<b>31,203</b>
<i><b>Local Water Supply Projects</b></i>						
<i><b>Meeks &amp; Daley Asset Exchange Agreement<sup>(2)</sup></b></i>	<i><b>Projected Operation</b></i>					
<i><b>Riverside Highland Water Company (RHWC)<sup>(3)</sup></b></i>	Operable	4,208	4,208	4,208	4,208	4,208
<i><b>Riverside Wheeling and Purchase Agreement<sup>(4)</sup></b></i>	Operable	2,000	2,000	2,000	2,000	2,000
<i><b>Arlington/Corona Exchange<sup>(5)</sup></b></i>	Operable					
<i><b>Arlington Desalter Expansion (Arlington Basin Recharge)</b></i>	Operable	2,800	2,800	2,800	2,800	2,800
<i><b>Chino Desalter II Expansion/La Sierra Pipeline</b></i>	Operable	3,534	3,534	3,534	3,534	3,534
<b>Net local water supply</b>		<b>12,542</b>	<b>12,542</b>	<b>12,542</b>	<b>12,542</b>	<b>12,542</b>
<b>Total water supply (local &amp; MWD water)</b>		<b>35,913</b>	<b>37,993</b>	<b>39,994</b>	<b>41,958</b>	<b>43,745</b>
<b>Total water demand approved for projects since Western's 2015 UWMP, excluding this project</b>		2,207	2,207	2,207	2,207	2,207
<b>Total water supply less approved project since Western's 2015 UWMP</b>		33,706	35,786	37,787	39,751	41,538
<b>Water supply less Western's demand</b>		4,492	3,972	3,472	2,981	2,534
<b>South Campus Specific Plan Amendment water demand</b>		88	88	88	88	88
<b>(Shortfall)/Surplus</b>		<b>4,404</b>	<b>3,884</b>	<b>3,384</b>	<b>2,893</b>	<b>2,446</b>

(1) Based on Western's 2015 Urban Water Management Plan projections for 2020, 2025, 2030, 2035, and 2040. (2) Up to 4,208 AFY of groundwater is available from the SBBA and the Colton and Riverside Basins pursuant to agreements with Riverside and EVMWD. (3) Western and RHWC periodically enter into agreements to purchase water. This water is not considered a firm supply because of RHWC's future demands and Riverside's ability to wheel it through its conveyance system. (4) Riverside and Western have a long-term wheeling and purchase agreement for the purchase and delivery of 2,000 AFY. In addition, Western currently stores 6,000 AF in the Bunker Hill Basin. This water is wheeled through the city of Riverside. (5) The City of Corona and Western do not currently have an agreement in place, however, the infrastructure exists to deliver up to 400 AFY of water to Western if an agreement is executed.

As noted above, the total annual demand for the proposed Project is estimated at 87.8 AFY.

Table 3 demonstrates that Western will have sufficient supplies in a multiple-dry year scenario to serve the projected demands associated with the proposed Project over the 20-year projection, in addition to Western's existing and planned future uses.

**Conditions of Approval**

As with all projects within the Western retail service area, the proposed South Campus Specific Plan Amendment may be conditioned to construct on-site and off-site water facilities needed near the Project area. Water service also is contingent upon prompt payment of all applicable fees and charges as specified in Western's Rules and Regulations Governing Water Service and Water Users, Water Rate Schedules, Cost Recovery Charges, and Connection and Added Facilities Charges and Fees.

Landscape plans are required to ensure compliance with applicable requirements. In Western's area, those requirements may include, but are not limited to, landscape ordinances of the County of Riverside (Water Efficient Landscape Requirements Ordinance No. 859), and the City of Riverside (Municipal Code 19.570), as those authorities may be amended from time to time. The applicant/developer will be required to plan and install water efficient devices and landscaping in accordance with applicable ordinances and requirements.

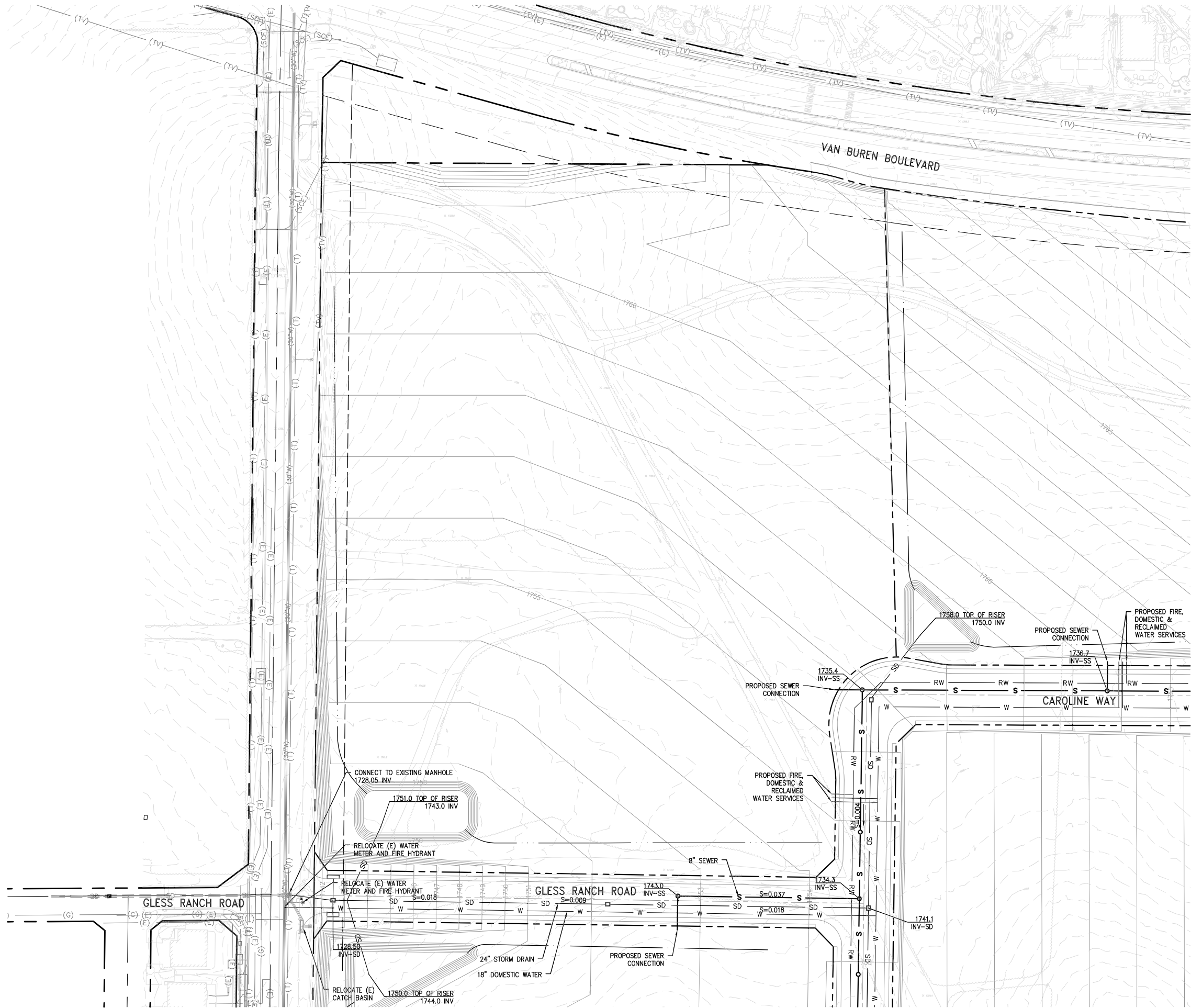
As noted in this WSA, the projected water demands associated with the proposed Project (87.8 AFY) fall within the overall projected increase in water demand within Western's Riverside Retail Area as set forth in Western's 2015 UWMP. Notwithstanding, nothing in this WSA is intended to create a right or entitlement to water service or any specific level of water service, nor does this WSA impose, expand, or limit any duty concerning the obligation of Western to provide service to its existing customers or to any future potential customers (Water Code Section 10914). Nor does anything in this WSA prevent or otherwise interfere with Western's discretionary authority to declare a water shortage emergency in accordance with Water Code Section 350 *et seq.* and to take any and all related and other actions authorized by law. Western retains complete discretion to adopt and implement rules, regulations, policies and procedures within its authority that may apply to the proposed Project, to develop a specific plan of service for the proposed Project, and to coordinate land use decisions and water supply planning to ensure a sufficient and reliable water supply for Western's existing and planned future uses.

This WSA is not a commitment to serve the proposed Project, but a review of Western's total projected water supplies based on information presently available. This WSA and the analyses and conclusions herein are conditioned on MWD's ability to continue to supply imported water to meet Western's requirements, including the requirements for the proposed Project. The proposed Project is subject to any special or additional requirements imposed by MWD or Western on water deliveries, including increased and/or varying pricing structure.

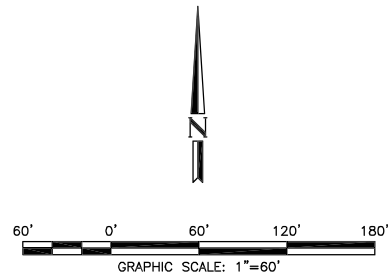
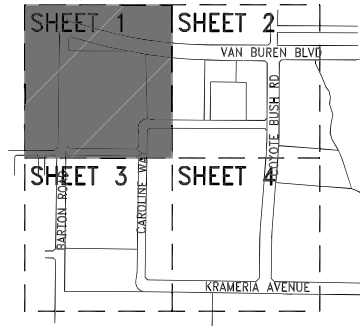
**Conclusion**

The projected water demand associated with the proposed Project is 87.8 AFY, which represents about 0.47 percent of Western's Retail total water demand of Calendar Year 2019. Based on the information and analyses contained in this WSA, Western concludes that the total projected water supplies available to Western during normal, single-dry and multiple-dry years throughout the next 20-year period are sufficient to meet the projected water demands of the proposed Project in addition to Western's existing and planned future uses in accordance with the standards set forth by SB 610.





- W PROPOSED DOMESTIC WATER
- S PROPOSED SEWER
- SD PROPOSED STORM DRAIN
- RW PROPOSED RECLAIMED WATER



PROJECT: **MERIDIAN SOUTH CAMPUS PHASE II**  
**MARCH JOINT POWERS AUTHORITY**  
**RIVERSIDE COUNTY, CA**

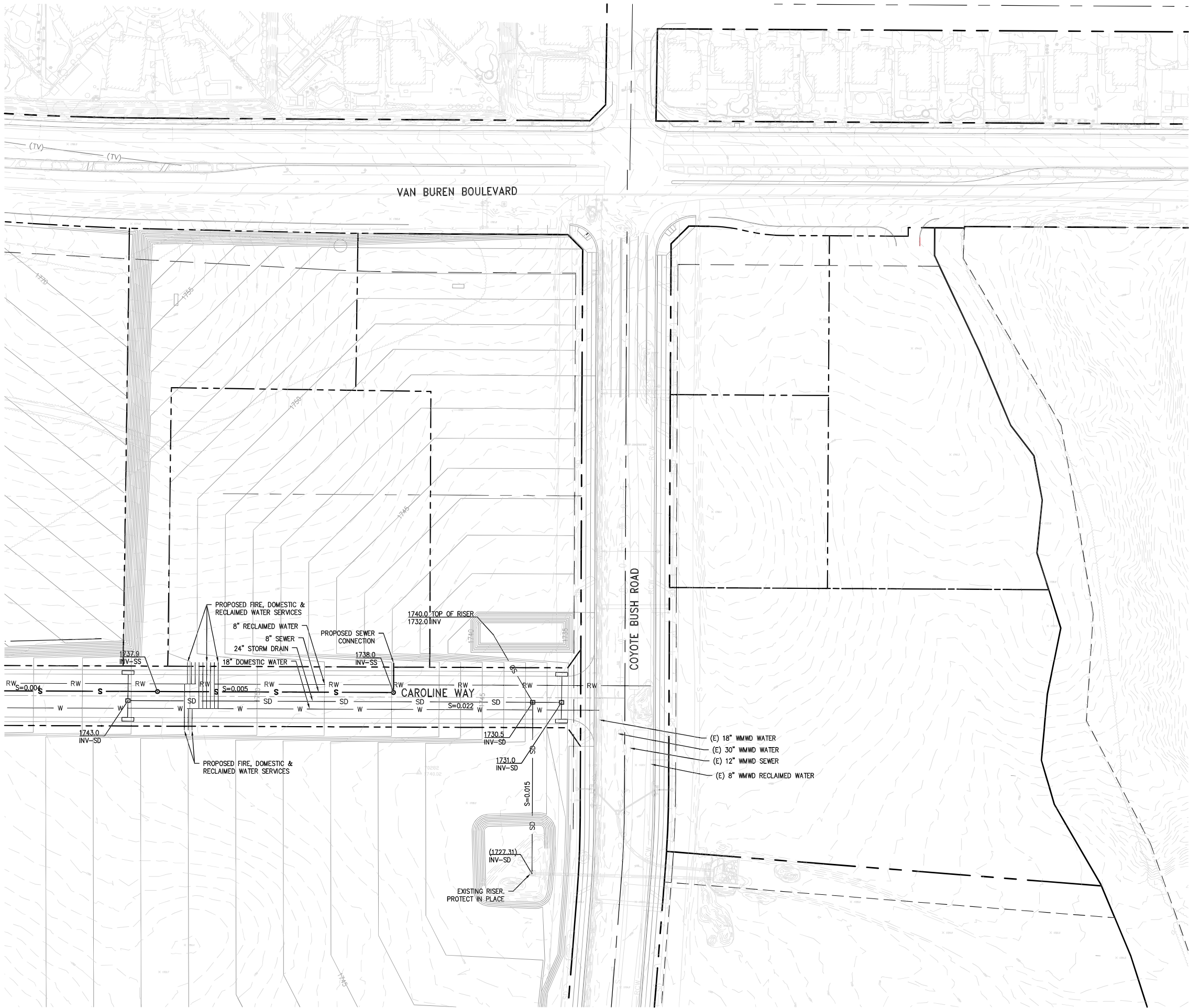
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OF	4 SHEETS
SCALE:	AS SHOWN

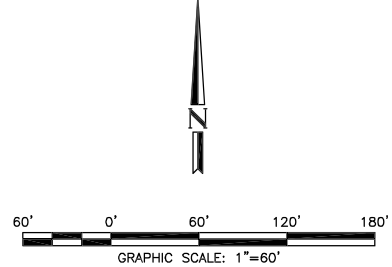
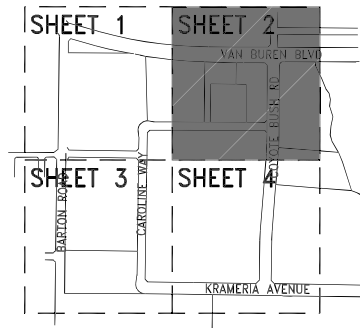
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Engineering, Inc.  
Civil Engineering/Land Surveying/Land Planning

160 S. Old Springs Road  
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Anheim Hills, CA 92808  
714-685-6860



- W PROPOSED DOMESTIC WATER
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**PROJECT:**  
**MERIDIAN SOUTH CAMPUS PHASE II**  
**MARCH JOINT POWERS AUTHORITY**  
**RIVERSIDE COUNTY, CA**

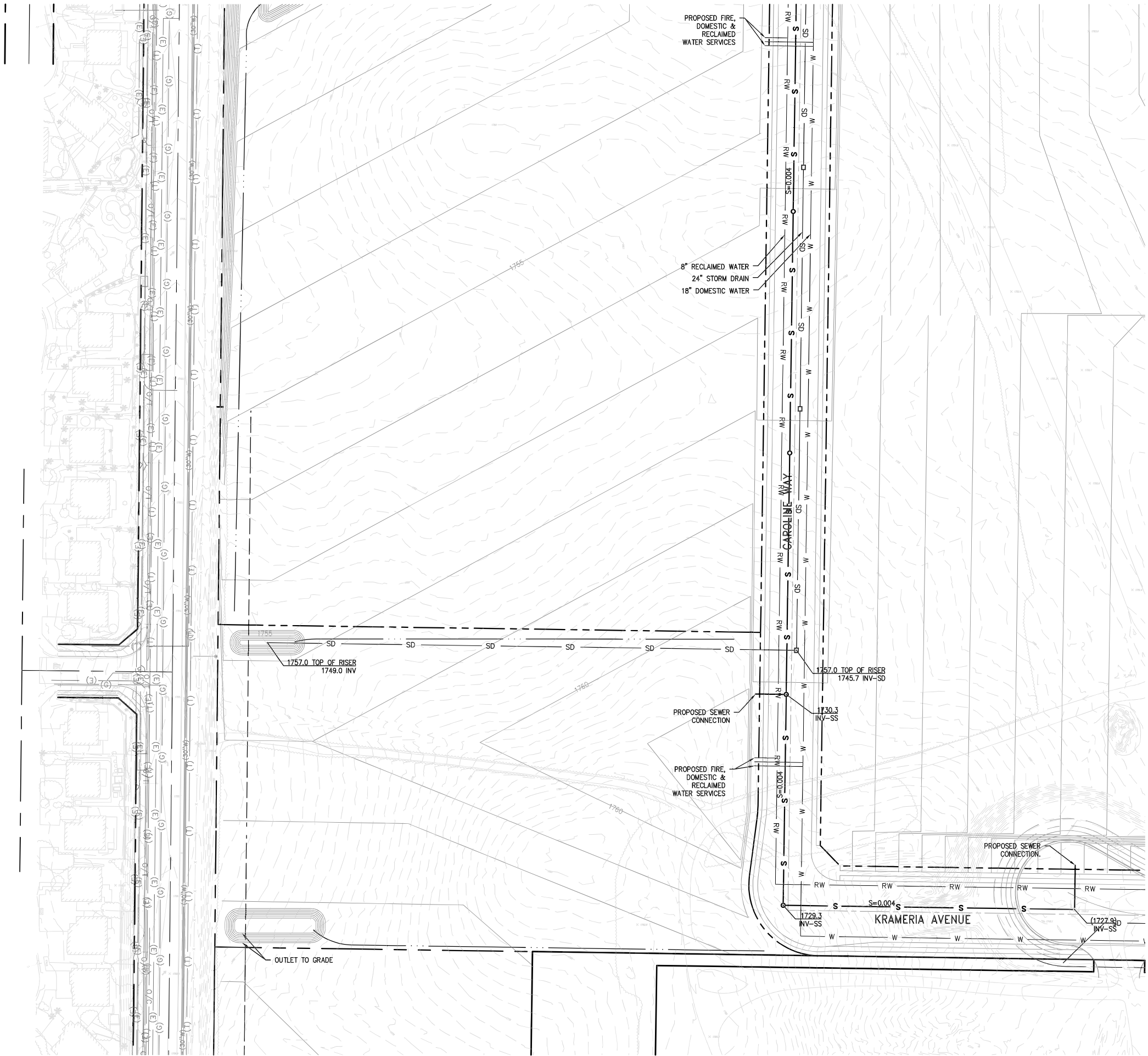
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OF	4 SHEETS
SCALE:	AS SHOWN

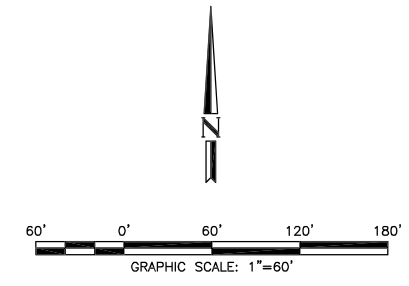
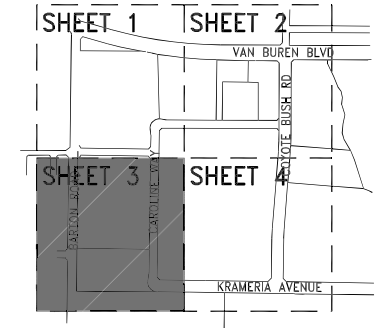
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**RIVERSIDE COUNTY, CA**

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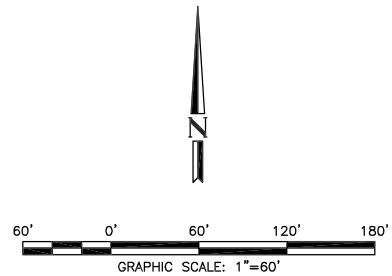
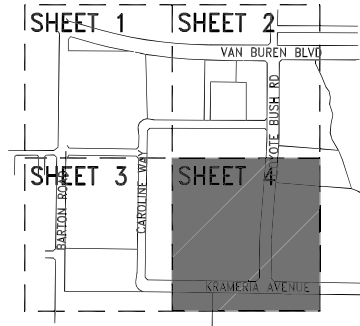
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- W PROPOSED DOMESTIC WATER
- S PROPOSED SEWER
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