Appendix Q Water Supply Assessment

Appendices

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BREA 265
WATER SUPPLY ASSESSMENT

March 2022

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CITY OF BREA

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ABBREVIATIONS/ACRONYMS

AF	Acre-feet
AFY	Acre-feet per year
CDR	Center for Demographic Research
CEQA	California Environmental Quality Act
CGBC	California Green Building Standards Code
City, Brea	City of Brea
CRA	Colorado River Aqueduct
CVP	Central Valley Project
DU	Dwelling Unit
DWR	California Department of Water Resources
EIR	Environmental Impact Report
FY	Fiscal Year
GMP	Groundwater Management Plan
Gpd	Gallons per day
gpm	Gallons per minute
IID	Imperial Irrigation District
IRP	Integrated Resources Planning
MAF	Million acre-feet
MCL	Maximum Contaminant Level
Metropolitan, MWD	Metropolitan Water District of Southern California
MG	Million gallons
MWDOC	Municipal Water District of Orange County
MWELO	Model Water Efficient Landscape Ordinance
OC	Orange County
QSA	Quantification Settlement Agreement
RA	Replenishment Assessment
SB	Senate Bill
SDCWA	San Diego County Water Authority
SWP	State Water Project
UWMP	Urban Water Management Plan
WSA	Water Supply Assessment
WSAP	Water Supply Allocation Plan
WSDM	Water Surplus and Drought Management
WUE	Water Use Efficiency

EXECUTIVE SUMMARY

This Water Supply Assessment (WSA) has been prepared for the Brea 265 Specific Plan Project (the "Proposed Project") in accordance with applicable sections of the Public Resources Code and California Water Code as referenced in Senate Bill (SB) 610.

The Proposed Project encompasses approximately 265 acres located north of State Route 90 (SR 90) and east of State Route 57 (SR 57) in the City of Brea and in the City of Brea's Sphere of Influence. See Figure ES-1. The Proposed Project consists of the redevelopment of the project area by Aera Energy from active oil operations into a proposed master-planned community. The specific plan is a direct reflection of the City's foundational planning strategies which includes a resident-driven strategic plan adopted in 2017.

The purpose of this WSA is to provide information to verify that there is sufficient water supply to the City to provide for the Proposed Project now and into the future. This WSA develops the water demands that the City will need to serve because of the land use changes in the Proposed Project area, as addressed in the specific plan. The proposed land use changes and commensurate additional water demand requires the preparation of a WSA.

The Proposed Project would allow development of up to 1,100 dwelling units with parks and open space, and as such, necessitates the preparation of a WSA because the project exceeds at least one of the minimum development thresholds per SB 610 of 500 residential dwelling units.

E.1 Water Demands

City Water Demands

The City's total water demand in FY 2020 was 9,131 acre-feet (AF). The City has reduced water use in accordance the Water Conservation Act of 2009 (SBx7-7) that mandated water demand reductions of 10 percent by 2015, and a reduction of 20 percent by 2020, both of which the City has met.

Annual potable water use within the City's service area has averaged 9,956 AF in the past decade. As a result of Governor Jerry Brown's mandatory water conservation order in 2014, retail water use within the City's service area has decreased from the average of 10,679 AF (FY2010/11 through FY2014/15) to the last five-year average of 9,234 (FY2015/16 through FY2019/20). In FY 2019-20, the City's water use profile was comprised of 51.2% residential use, 28.7% commercial, institutional, and industrial (CII) use, 15.0% large landscape/irrigation, with non-revenue water (NRW) and other uses comprising about 5.0%. There is currently no recycled water use within the City's service area.

City water demands were developed and projected in the City's 2020 UWMP based on projections prepared by CDM Smith as part of the 2021 OC Water Demand Forecast for Municipal Water District of Orange County (MWDOC) and Orange County Water District (OCWD). The updated demand projections were made for the Orange County region as a whole and also provided retail agency specific demands based on collaboration with MWDOC and OCWD member agencies.

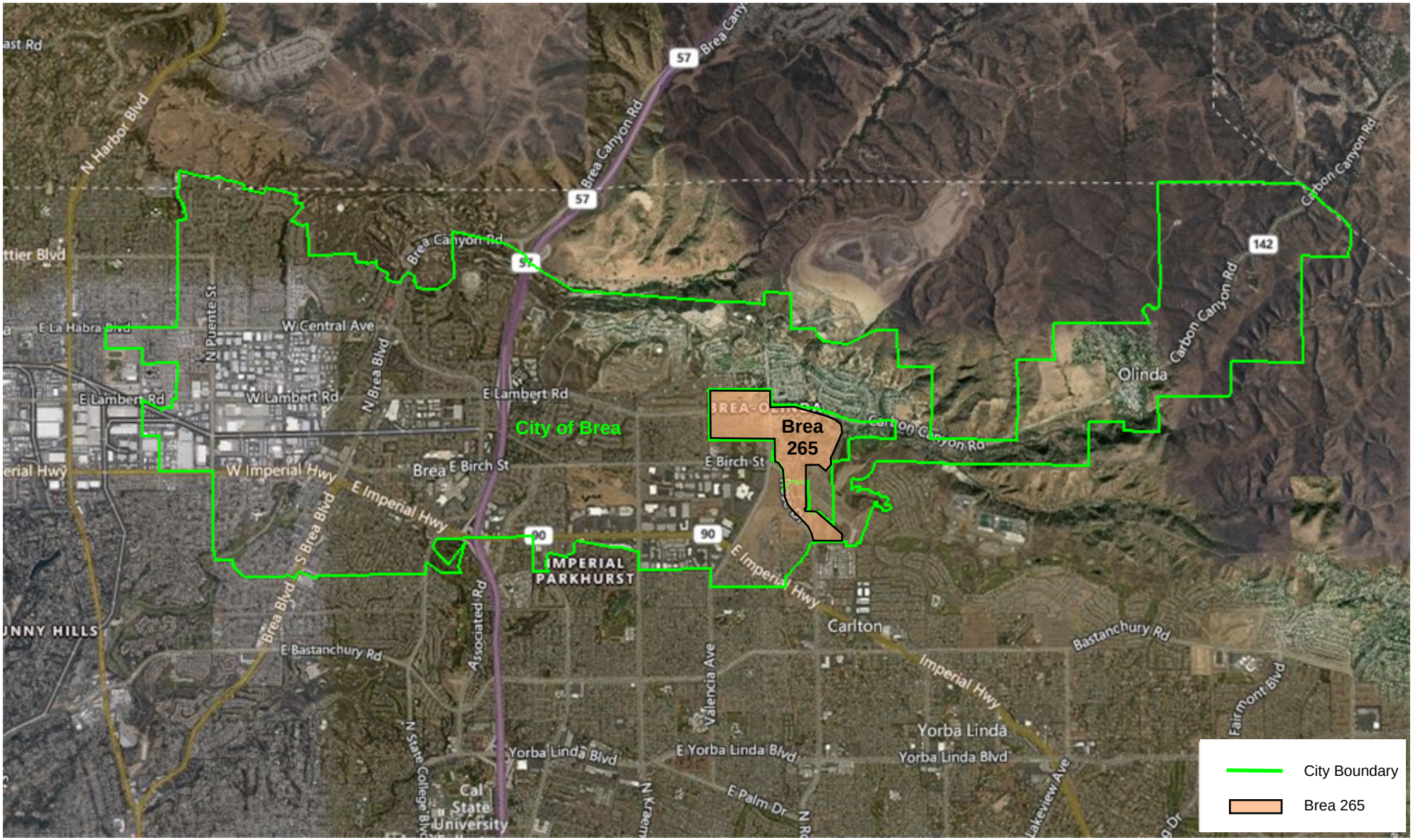

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Figure ES-1
Regional Location

Project Water Demands

Except for some agricultural use in the southern area, most of the Project site has been used for oil production continuously since the early 1900s. Of the approximately 190 wells drilled on the site, 110 remain in operation and produce approximately 500 barrels per day. Once the project entitlements are complete, Aera will discontinue all on-site oil operations and abandon and remediate wells and production facilities in accordance with Federal, State, and local regulations. No residual oil operations will remain in the repurposed residential community.
Water consumption (demand) for the existing land uses in the specific plan area are assumed to be negligible in this WSA. Regardless, the water demand for the existing land uses are accounted for in the existing demand reported in the City's 2020 UWMP. Projected water demand for the Brea 265 Project was specifically addressed as 'Under Entitlement Review' in Table 3-4 of the 2020 UWMP, Developments in the City. However, the projected demographic data presented in the 2020 UWMP does not appear to account for enough future dwelling units (DUs) to include the Proposed Project.

Average water use factors for existing newer residential developments within the City were analyzed for various land use densities that are similar to the proposed densities within the Project. These water use factors were then compared with the unit water use factors in the aforementioned 2021 OC Water Demand Forecast for MWDOC and OCWD that was used to develop demands for the 2020 UWMP. Demand factors based on City meter data for similar densities were utilized in this WSA to estimate Project water demands. These factors reflect new development standards for water conservation and are more closely related to the proposed land use densities. For example, proposed hillside residential use within the eastern portion of the Project area results in higher per dwelling unit water use factors than utilized in the OC Water Demand Forecast study. Based on the estimated Proposed Project development phasing, estimated demand phasing is shown in Table E.1. The estimated buildout water demand for the Proposed Project is projected to be 507 acre-feet per year (AFY), excluding water loss.

Table E.1
Estimated Project Phasing of Water Demand[(a)]

Demand	FY 2025	FY 2030	FY 2035	FY 2040	FY 2045
Estimated Proposed Project Water Demand (AFY)	507	507	507	507	507

(a) Not including water loss

Projected normal City water demand through FY 2045 is shown in Table E.2. All demands include an estimated 5 percent in water loss consistent with the 2020 UWMP. City water demand, as estimated in the 2020 UWMP, was projected to include increased demand due to residential development. However, as discussed above, the demographic data used to project future demand does not appear to account for enough DUs to accommodate the Project. As such, Project demand was added to the projected demand presented in the 2020 UWMP. The demand from the Proposed Project in FY 2045 is projected to be 5 percent of the total demand estimated for the City.

Table E.2
Projected Normal City Water Demand (AF)

Projected Normal Demand[a]	FY 2025	FY 2030	FY 2035	FY 2040	FY 2045
Total City Demand without Proposed Project (2020 UWMP)[b]	9,543	9,695	9,691	9,725	9,745
Additional Proposed Project Demand[c]	532	532	532	532	532
Total Demand	10,075	10,227	10,223	10,257	10,277

(a) Includes 5% water loss consistent with the 2020 UWMP
(b) Normal year demand as projected in the City's 2020 UWMP, not including the Project area demand
(c) Additional demand based on Proposed Project

E.2 Water Supply

The City's primary sources of water supply are imported groundwater from the Main San Gabriel Basin provided by California Domestic Water Company (CDWC) and imported water from the Colorado River and State Water Project (SWP) provided by Metropolitan through MWDOC. The City also extracts local groundwater from the La Habra Groundwater Basin (Basin). However, the one groundwater well owned by the City is used strictly for irrigation purposes. In FY 2019-20, the City relied on 99% imported water from CDWC and 1% local groundwater. It is projected that by 2045, the water supply portfolio will shift to 92.5% imported water from CDWC, 6.5% imported water from MWDOC, and 1% groundwater. Metropolitan's 2020 UWMP includes strategies that will be used to meet full-service demands at the retail level under all foreseeable hydrologic conditions through 2045. The projected imported water supply numbers from MWDOC represent only the supplies projected to meet demands and not the full supply capacity.

Imported Water Supply

The City obtains imported groundwater supply from CDWC, a mutual water company. CDWC provides groundwater from the Main San Gabriel Basin to each of its member agencies who own and/or lease stock in the company. There are two classes of entitlement with CDWC, which translate to different water allotments: "common stock entitlement" and "other entitlement." As of 2020, the City owns approximately 2,208 and leases another 188 common stock entitlements, which translates to an entitlement allotment of approximately 3,475 AFY. As for other entitlements, the City owns approximately 2,189 shares, which translates to approximately 1,663 AFY. The City also leases additional shares of CDWC stock from member agencies that do not use their maximum allotted amount. The City receives water from CDWC through three metered connection. Each connection is gravity fed and comes from one of two CDWC hydraulic lift systems.

Each CDWC member agency receives a prescribed entitlement to water based upon the number of shares owned and the safe yield of the Main San Gabriel Basin. The member agency entitlement criterion per share varies year by year, based on CDWC's allotted percentage and the Basin Operating Safe Yield of the Main San Gabriel Basin. The Basin Operating Safe Yield is determined annually by the Main San Gabriel Basin Watermaster, the agency created by the Main San Gabriel Judgment to manage the Main San Gabriel Basin. Agencies that use water beyond their share of

entitlement must pay a surcharge levied by CDWC (Brea, Water Master Plan Update, November 2009).

Metropolitan's 2020 UWMP finds that Metropolitan can meet, full-service demands of its member agencies from 2020 through 2045 during normal years, a single dry year, and multiple dry years. Metropolitan's 2020 UWMP was developed as part of the 2020 Integrated Water Resources Plan (IRP) planning process. The IRP represents Metropolitan's comprehensive blueprint for long-term water reliability, including key supply development and water use efficiency goals. The foundation of Metropolitan's resource strategy for achieving regional water supply reliability has been to develop and implement water resources programs and activities through its IRP preferred resource mix. This preferred resource mix includes conservation, local resources such as water recycling and groundwater recovery, Colorado River supplies and transfers, SWP supplies and transfers, in-region surface reservoir storage, in-region groundwater storage, out-of-region banking, treatment, conveyance, and infrastructure improvements.

Groundwater Supply

The La Habra Groundwater Basin covers parts of Los Angeles County and Orange County and is part of both the Coastal Plan of Los Angeles, Central Basin, and the Coastal Plain of Orange County, Orange County Basin. A portion of the Basin is located within Central Basin as well as the northern tip of the Orange County Basin. La Habra's Groundwater Management Plan only focuses on the portion of the Basin located outside of both Central Basin and Orange County Basin. The Basin lies entirely within the Coyote Creek Watershed.

The Sustainable Groundwater Management Act (SGMA) was adopted by the State of California in 2014 to help manage its groundwater sustainability and limit adverse effects of groundwater extractions. DWR designated the non-adjudicated Coastal Plain of OC Basins medium-priority, thus requiring the creation of a Groundwater Sustainability Plan (GSP). OCWD led the effort, along with its member agencies, to comply with the SGMA by creating the "Basin 8-1 Alternative" which meets State's requirements for a Groundwater Sustainability Plan (GSP). The City of La Habra has been deemed the exclusive Groundwater Sustainability Agency (GSA) under the SGMA for the La Habra-Brea Management Area. The La Habra-Brea Management Area is part of Basin 8-1 but is hydrogeologically distinct from the OCWD Management Area and is not under the jurisdiction of OCWD.

The La Habra Basin is not adjudicated. Instead, the City follows a "safe yield" which is used for the management and future planning of the Basin for sustained beneficial use. The safe yield is the volume of groundwater that can be pumped without depleting the aquifer to a point where it cannot recover through natural recharge over a reasonable period of time. The safe yield for the Basin was estimated to be approximately 4,500 AFY. This safe yield was determined through an average from two separate studies that took into account natural groundwater recharge and natural groundwater discharge. The La Habra Basin continues to be managed sustainably by maintaining and coordinating groundwater production within the estimated safe yield. The City of La Habra is also evaluating its existing monitoring program with the intent to develop a more robust groundwater elevation and water quality monitoring program (UWMP, 2020).

Historically, groundwater produced from the Basin yielded low quality water. The City owns and operates one non-potable groundwater well used for irrigation at Brea Creek Golf Course. Local groundwater accounted for 57 to 107 AFY of the City's total water supply in the past five years.

Since FY 2015-16, the volume of groundwater pumped by the City has increased and remained relatively stable for the last four years.

E.3 Reliability of Water Supplies

Every urban water supplier is required to assess, in their UWMP, the reliability of their water service to its customers under a normal year, a single dry year, and a drought period lasting five consecutive years. The water service reliability assessment compares projected supply to projected demand for these three hydrological scenarios between 2025 and 2045. Factors affecting reliability, such as climate change and regulatory impacts, are accounted for as part of the assessment.

The City depends on a combination of imported and local supplies to meet its water demands and has taken numerous steps to ensure it has adequate supplies. Metropolitan's, MWDOC's and the City's 2020 UWMP conclude that they can meet full-service demands of their member agencies through 2045 during normal years, single-dry years, and multiple-dry years. Consequently, the City is projected to meet full-service demands through 2045 for the same scenarios, due to diversified supply and conservation measures.
For this WSA, the additional demands estimated for the Proposed Project are added to the normal-year, single dry-year, and multiple dry-year demands projected for the City through FY 2045 as estimated in the City's 2020 UWMP, which are compared with projected available groundwater and imported water supplies. Demands for dry-year scenarios were increased 6.0 percent to be consistent with the City's 2020 UWMP (based on higher anticipated irrigation demand).

E.4 Conclusion

The estimated water demand for the Proposed Project is projected to be 507 AFY at Project buildout. Adding the reported water loss, consistent with the City's UWMP, increases this additional demand to a supply requirement of 532 AF, which is 5 percent of the total supply requirement estimated for the City in FY 2045.

The City is projected to have sufficient imported and groundwater supplies to meet normal, single-dry year, and multiple-dry year conditions including the Proposed Project demands because:

1. Metropolitan has projected supply surpluses for each of these conditions, and
2. The City can increase groundwater import water by leases of additional shares of CDWC stock from member agencies that do not use their maximum allotted amount

The information included in this WSA identifies a sufficient and reliable water supply for the City, now and into the future, including a sufficient water supply for the land uses proposed for the Proposed Project. These supplies are also enough to provide for overall City-wide growth at the rate projected in the City's 2020 UWMP.

1 INTRODUCTION

1.1 Proposed Project

The Brea 265 Specific Plan Project encompasses approximately 265 acres located north of State Route 90 (SR 90) and east of State Route 57 (SR 57) in the City of Brea and in the City of Brea's Sphere of Influence. The Proposed Project consists of the redevelopment of the project area by Aera Energy from active oil operations into a proposed master-planned community. The specific plan is a direct reflection of the City's foundational planning strategies which includes a resident-driven strategic plan adopted in 2017. The Proposed Project would allow development of up to 1,100 dwelling units with parks and open space, and as such, necessitates the preparation of a WSA because the project exceeds a number of minimum development thresholds per SB 610, one of which is 500 dwelling units.

The Brea 265 Specific Plan serves as a planning tool to implement the intent of the Brea General Plan for the area covered by the Specific Plan. The Specific Plan is consistent with the applicable goals and objectives identified in the General Plan and includes regulations and standards necessary for the systematic implementation of the General Plan.

Approval of the Proposed Project includes the adoption of a new specific plan, the Brea 265 Specific Plan. Approximately 43 acres of the Specific Plan area are located within the City of Brea's corporate boundaries and designated as "Hillside Residential" on the Brea General Plan's Land Use Policy Map. The remaining 217.7 acres of the Specific Plan area are within unincorporated Orange County and in the southern portion of Brea's Sphere of Influence. The General Plan's Land Use Policy Map designates 123.2 acres of this 217.7-acre portion as "Hillside Residential" and 94.5 acres as "Low Density Residential." In concurrent with Specific Plan approvals, the 217.7-acre portion of the Brea 265 site currently within City's Sphere of Influence will be annexed into the City and the amended land use designations on this portion of Brea 265 will become in effect upon completion of the annexation process. Implementation of the Specific Plan requires a zone change from the existing designation to "Brea 265 Specific Plan."

The City of Brea is the Lead Agency for purposes of California Environmental Quality Act (CEQA) compliance and has prepared an EIR to consider the following discretionary actions for which applications have been submitted to the City. These actions and approvals are required to implement the Brea 265 Specific Plan.

- **Environmental Impact Report (EIR):** The Brea 265 Specific Plan is a discretionary project and is subject to CEQA requirements. The EIR for Brea 265 has been prepared in accordance with CEQA and the CEQA Guidelines. As part of the Specific Plan approval process, the EIR must be considered and certified by the City Council prior to approvals of any project related entitlements.
- **Specific Plan/Pre-Zoning:** The Brea 265 Specific Plan will regulate future development in the Specific Plan area. The Specific Plan will implement the City's General Plan and will be adopted by ordinance by the City Council. Approval of the Specific Plan is required for changing the zoning designations of the project site from "Hillside Residential" and "Single Family Residential" to "Brea 265 Specific Plan" and for pre-zoning of the 217.7-acre portion of the Specific Plan area currently within the County and in Brea's Sphere of Influence.

- **Development Agreement:** A Development Agreement will be negotiated between the City of Brea and the Project Applicant (Aera Energy) in conjunction with the Brea 265 Specific Plan/Pre-Zoning requests. The Development Agreement will establish vesting of development rights and entitlements, identify project improvements, timing of improvements, as well as the responsibilities and rights of both the City and the Project Applicant.
- **Annexation:** After the above discretionary actions have received approvals from the City Council, the property will be annexed into the City of Brea consistent with the 2005 pre-annexation agreement. The request will be processed through the Orange County Local Agency Formation Commission (OC LAFCO) to annex the 217.7-acre portion of the Brea 265 site currently within the City's Sphere of Influence into the City. The annexation area is shown in Figure 1-1.

1.2 WSA Purpose

The purpose of this WSA is to provide information to verify that there is sufficient water supply to the City to provide for the Proposed Project now and into the future. This WSA develops the additional water demand that will need to be served by the City as a result of the land use changes in the Proposed Project area, which are consistent with the land uses being addressed the EIR. The proposed land use changes and commensurate additional water demand requires the preparation of a new WSA in conjunction with the subject EIR.

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Figure 1-1
Annexation Area

2 LEGISLATION

According to the Guidebook for Implementation of Senate Bill (SB) 610 and SB 221 Water Code Section 10912, a "Project" requiring a WSA is defined by any of the following criteria:

1. A proposed residential development of more than 500 dwelling units (DU)
2. A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet (sf) of floor space
3. A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space
4. A proposed hotel or motel, or both, having more than 500 rooms
5. A proposed industrial, manufacturing, or 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 space
6. A mixed-use project that includes one or more of the projects specified in this subdivision
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

The Proposed Project would allow development of up to 1,100 DUs and as such, necessitates the preparation of a WSA following the requirements of SB 610.

2-1 SB 610 – Costa – Water Supply Planning

SB 610 was chaptered into law on October 9, 2001. It mandates that a city or county approving certain projects subject to CEQA (i) identify any public water system that may supply water for the project, and (ii) request those public water systems to prepare a specified water supply assessment. The assessment is to include the following:

1. A discussion of whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing.
2. The identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project and water received in prior years pursuant to those entitlements, rights, and contracts.
3. A description of the quantities of water received in prior years by the public water system under the existing water supply entitlements, water rights, or water service contracts.
4. A demonstration of water supply entitlements, water rights, or water service contracts by the following means:
    a. Written contracts or other proof of entitlement to an identified water supply.
    b. Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.

c. Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.

d. Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.

5. The identification of other public water systems or water service contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system.

6. If groundwater is included for the supply for a proposed project, the following additional information is required:

   a. Review of any information contained in the Urban Water Management Plan (UWMP) relevant to the identified water supply for the proposed project.

   b. Description of any groundwater basin(s) from which the proposed project will be supplied. Adjudicated basins must have a copy of the court order or decree adopted and a description of the amount of groundwater the public water system has the legal right to pump. For non-adjudicated basins, information on whether the DWR has identified the basin as over-drafted or has projected that the basin will become over-drafted if present management conditions continue, in the most current bulletin of DWR that characterizes the condition of the basin, and a detailed description of the efforts being undertaken in the basin to eliminate the long-term overdraft condition.

   c. Description and analysis of the amount and location of groundwater pumped by the public water system for the past five years from any groundwater basin which the proposed project will be supplied. Analysis should be based on information that is reasonably available, including, but not limited to, historic use records.

   d. Description and analysis of the amount and location of groundwater projected to be pumped by the public water system from any groundwater basin by which the proposed project will be supplied. Analysis should be based on information that is reasonably available, including, but not limited to, historic use records.

   e. Analysis of the sufficiency of the groundwater from the basin(s) from which the proposed project will be supplied.

The Water Supply Assessment shall be included in any environmental document prepared for the project. The assessment may include an evaluation of any information included in that environmental document. A determination shall be made whether the projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses. Additionally, SB 610 requires new information to be included as part of an UWMP if groundwater is identified as a source of water available to the supplier. Information must include a description of all water supply projects and programs that may be undertaken to meet total projected water use. SB 610 prohibits eligibility for funds from specified bond acts until the plan is submitted to the State.

2-2 SB 1262 – Sustainable Groundwater Management Act

State Senate Bill 1262 adopted in September 2016 amends Section 66473.7 of the Government Code to require WSAs to address certain elements regarding groundwater sustainability if the project relies in whole or in part on groundwater as a source of supply.

For this WSA, the portions of SB 1262 that are applicable are as follows:

For a basin that has not been adjudicated that is a basin designated as high- or medium-priority pursuant to Section 10722.4, information regarding the following should be provided:

- Whether the department (DWR) has identified the basin as being subject to critical conditions of overdraft pursuant to Section 12924.
- If a groundwater sustainability agency has adopted a groundwater sustainability plan or has an approved alternative, a copy of that alternative or plan.

The City extracts local groundwater from the La Habra Groundwater Basin (Basin). However, the one groundwater well owned by the City is used strictly for irrigation purposes and will not be utilized to supply the Project.

3 BREA 265 SPECIFIC PLAN

3.1 Proposed Project Location

The proposed Brea 265 Specific Plan is located in the City of Brea, and in the City of Brea's Sphere of Influence. The City of Brea is located on the north-eastern border of Orange County. The project site is located north of State Route 90 (SR 90) and east of State Route 57 (SR 57), as shown in Figure ES-1, Regional Map. Locally, the project is located towards the eastern portion of the City surrounded by existing residential neighborhoods, the Brea Sports Park and Carbon Canyon Regional Park, as shown by Figure 3-1, Local Context. The Specific Plan area is bisected by Valencia Avenue which runs in a north-south direction, and by Lambert Road which runs in an east-west direction. The project site is located to the south of Lambert Road/Carbon Canyon Road, north of Rose Drive, east of Valencia Avenue and west of Carbon Canyon Regional Park.

3.2 Proposed Project Characteristics

"Project," as defined by the CEQA Guidelines, means "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and that is any of the following: (1)…enactment and amendment of zoning ordinances, and the adoption and amendment of local General Plans or elements thereof pursuant to Government Code Sections 65100–65700" (14 Cal. Code of Reg. 15378[a]).

3.2.1 Existing Conditions

Aera Energy plans to redevelop approximately 265 acres of active oil operations within the Proposed Project area. Except for agricultural use in the southern area, the majority of the site has been used for oil production continuously since the early 1900s. Of the approximately 190 wells drilled on the site 110 remain in operation and produce approximately 500 barrels per day. Once the Project entitlements are complete, Aera will discontinue all on-site oil operations and abandon and remediate wells and production facilities in accordance with Federal, State, and local regulations. No residual oil operations will remain in the repurposed residential community.

No specific plan has been adopted for the Proposed Project. Currently, development activities in the Project Area are governed by the City's adopted General Plan and Zoning Code. The existing General Plan and zoning designations for the Proposed Project area are shown on Figure 3-2.

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Figure 3-1
Local Vicinity

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Figure 3-2
Existing General Plan Land Use and Zoning

3.2.2 Proposed Project Description

The Proposed Project consists of the adoption and implementation of a specific plan for the Project Area as described below.

Brea 265 Specific Plan

The Brea 265 Draft Specific Plan, dated October 14, 2021, proposes a master planned residential community within the City of Brea as shown in Land Use Summary Table 3.1 below. The Specific Plan proposes:

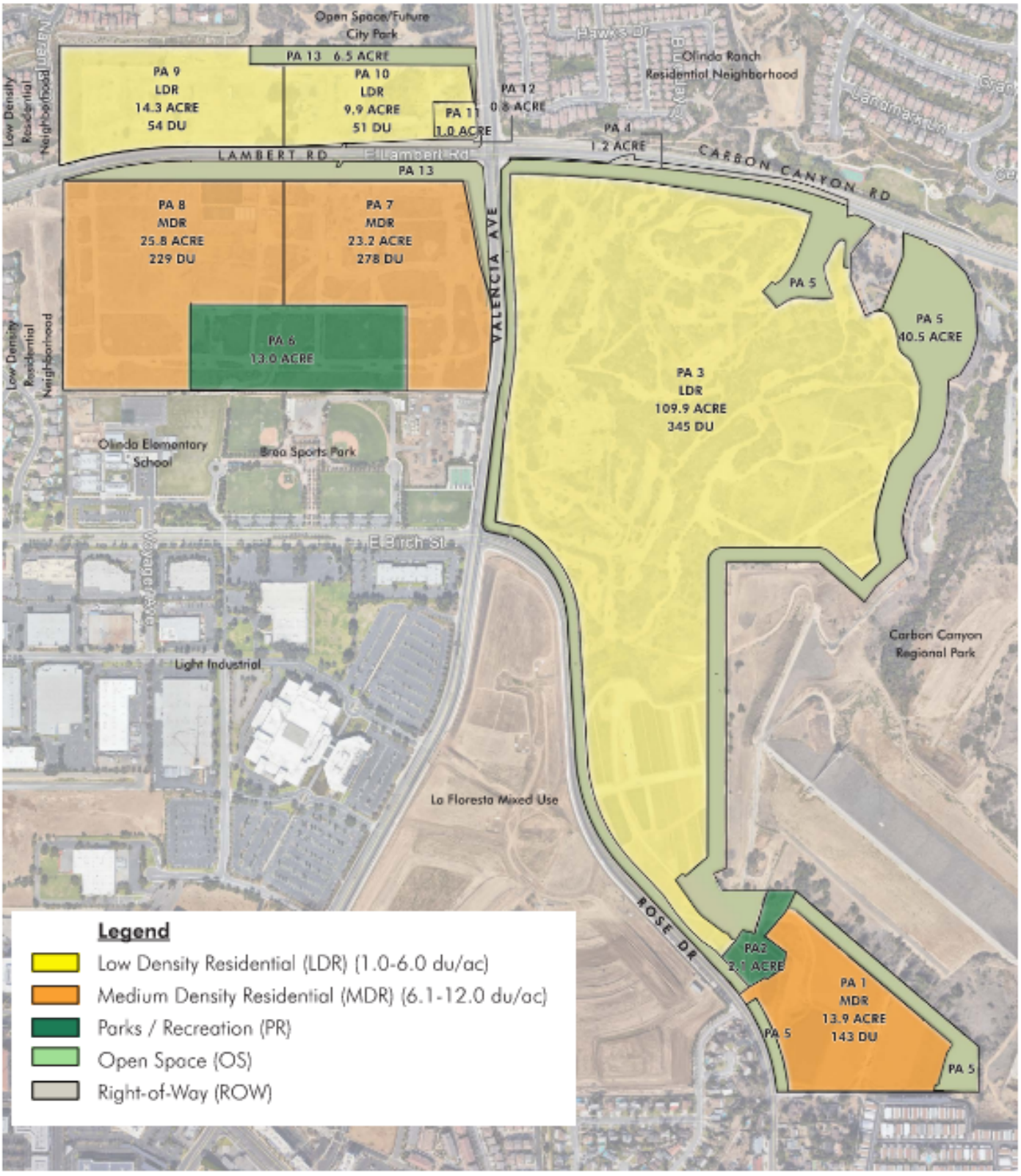
- A mix of approximately 1,100 residential units (on approximated 189 acres)
- 15.1 acres of parks/recreations uses
- 47.0 acres of open space
- Overall average density 4.2 du/acre

These land uses would be linked together through a trail system that connects the park/recreation areas to the adjacent neighborhoods and off-site parks, open space, employment centers and retail venues. The land use is intended to provide for a mix of housing and recreational/open space uses that are compatible with the existing neighborhoods in the area. The plan provides a maximum of 1,100 dwelling units within two residential land use categories, designated as Low Density Residential (LDR) and Medium Density Residential (MDR), along with open space, trails, and street system, as shown on Figure 3-3, Conceptual Land Use Plan.

Table 3.1
Proposed Brea 265 Specific Plan Development Areas

Land Use	AC	DU's
Residential		
Low Density Residential (LDR)*	134.6	450
Medium Density Residential (MDR)	62.9	650
Non-Residential		
Parks/Recreation (PR)	15.1	N/A
Open Space (OS)	47.0	N/A
Right-of-Way (ROW)	2.0	N/A
Total	**262.1**	**1,100**

*Includes 1-acre public safety/civic uses



For illustrative purposes only; final design may vary.

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Figure 3-3
Specific Plan Land Use

3.2.3 Proposed Project Phasing

The Proposed Project will be implemented in phases with construction beginning after 2020 and projected buildout estimated to occur by the year 2025. The estimated Project phasing is shown in Table 3.2. The initial implementation phase will include Proposed Project adoption and the necessary amendments to City documents.

Table 3.2
Estimated Brea 265 Specific Plan Phasing

Land Use	FY 2020	FY 2025	FY 2030	FY 2035	FY 2040	FY 2045
Residential Phasing by DU						
Low Density Residential (LDR)	0	450	450	450	450	450
Medium Density Residential (MDR)	0	650	650	650	650	650
Total Residential DU's	**0**	**1,100**	**1,100**	**1,100**	**1,100**	**1,100**
Non-Residential Phasing by Acres						
Parks/Recreation	0	15.1	15.1	15.1	15.1	15.1
Total Non-Residential Acres	**0**	**15.1**	**15.1**	**15.1**	**15.1**	**15.1**

3.3 Project Water Demand

Water consumption (demand) for the existing land uses in the specific plan area are assumed to be negligible in this WSA. Regardless, the water demand for the existing land uses are accounted for in the existing demand reported in the City's 2020 UWMP, along with the projected future demand through fiscal year (FY) 2045.

3.3.1 City Water Demand Factors

City water demands were developed and projected in the City's 2020 UWMP are based on projections prepared by CDM Smith as part of the 2021 OC Water Demand Forecast for Municipal Water District of Orange County (MWDOC) and Orange County Water District (OCWD). The updated demand projections were made for the Orange County region as a whole and also provided retail agency specific demands based on collaboration with MWDOC and OCWD member agencies.

The forecast methodology began with a retail water agency survey that asked for FY 2017-18, FY 2018-19, and FY 2019-20 water use by major sector, including number of accounts. Given that FY 2017-18 was a slightly above-normal demand year (warmer/drier than average) and FY 2018-19 was a slightly below-normal demand year (cooler/wetter than average), water use from these two years were averaged to represent an average-year base water demand.

For the residential sectors (single-family and multi-family) the base year water demand was divided by households in order to get a total per unit water use (gallons per home per day). In order to split household water use into indoor and outdoor uses, three sources of information were used: (1) the Residential End Uses of Water (Water Research Foundation, 2016); (2) California's plumbing codes and landscape ordinances; and (3) CA DWR's Model Water Efficient Landscape Ordinance (MWELO) calculator.

Three different periods of residential end uses of water were analyzed as follows:

- Pre-2010 efficiency levels – Has an average indoor water use that is considered to be moderately efficient, also does not include the most recent requirements for MWELO.
- High-efficiency levels – Includes the most recent plumbing codes that are considered to be highly efficient, and also includes the most recent requirements for MWELO.
- Current average efficiency levels – Represents the weighted average between pre-2010 efficiency and high efficiency levels, based on average age of homes for each retail water agency.

For outdoor residential water use, the indoor per capita total was multiplied by each member agency-specific persons per household in order to get an indoor residential household water use (gallons per day per home), and then was subtracted from the base year total household water use for single-family and multifamily for each agency based on actual water use as reported by the agency surveys.

For existing residential homes, the current average indoor and outdoor water use for each member agency were used for the year 2020. It was assumed that indoor water uses would reach the high efficiency level by 2040. Based on current age of homes, replacement/remodeling rates, and water utility rebate programs it is believed this assumption is very achievable. It was also assumed that current outdoor water use would be reduced by 5% by 2050.

For new homes, the indoor high efficiency level was assumed for the years 2025 through 2050. Outdoor uses for new homes were assumed to be 25% and 30% lower than current household water use for single-family and multifamily homes, respectively. The resulting residential water demand projections utilized in the City's 2020 UWMP are shown in Table 3.3

Table 3.3
City of Brea 2020 UWMP Residential Demand Data

	2020	2025	2030	2035	2040	2045
Residential Dwelling Units	**17,031**	**17,053**	**17,068**	**17,068**	**17,265**	**17,476**
Single-Family	9,557	9,579	9,594	9,594	9,622	9,628
Multi-Family	7,474	7,474	7,474	7,474	7,643	7,848
Residential Demand (AFY)	**4,675**	**4,797**	**4,724**	**4,646**	**4,603**	**4,622**
Single-Family	3,627	3,692	3,640	3,583	3,535	3,522
Multi-Family	1,048	1,105	1,084	1,063	1,068	1,100
Residential Unit Demand (gpd/du)						
Single-Family	339	344	339	333	328	327
Multi-Family	125	132	129	127	125	125
Population	*45,629*	*45,883*	*46,615*	*47,697*	*48,155*	*48,236*
Per-capita Residential Demand	*91.5*	*93.3*	*90.5*	*87.0*	*85.3*	*85.5*

Source: City of Brea 2020 UWMP and Center for Demographic Research at California State University, Fullerton, 2020

Existing and projected population, single-family and multi-family households for each retail water agency were provided by the Center for Demographic Research at California State University Fullerton (CDR) under contract by MWDOC and OCWD. CDR provides historical and future demographics by census tracts for all of Orange County. Census tract data is then clipped to retail water agency service boundaries in order to produce historical and projected demographic data by agency.

The projected number of residential dwelling units and the calculated per dwelling unit demand for single-family and multi-family homes is shown in Table 3.3. The best representation for water use in water efficient homes is given by years 2040 and 2045. It was assumed in the demand projections that existing home indoor use would reach high efficiency levels by 2040 and new homes would start off as efficient. This results in water efficient residential use factors of 327 gpd/du for single-family homes and 125 gpd/du for multi-family homes shown for 2040 in Table 3-3. These factors are slightly higher than what a new home factor would be because outdoor use for existing homes was only reduced by 5% by 2050 when compared to existing outdoor use while for new homes it was reduced by 25% for single-family and 30% for multi-family homes when compared to existing outdoor use.

These demand factors are maintained in this analysis for the projection of City water demand. The City identified water demands from anticipated new development in the 2020 UWMP, including Brea 265. An estimated water demand for Brea 265 of 545.9 AFY is documented in Table 3-4 of the UWMP. However, the demographic data presented in Table 3.3 above, taken from the UWMP, does not appear to account for sufficient residential growth to accommodate the Project. As such, Project demands will be added to the overall City demands presented in the 2020 UWMP.

The Project demand of 545.9 AFY presented in the UWMP was taken from the City of Brea 2021 Water Master Plan (WMP). The WMP used a single water demand factor, for single-family residential use, and applied it to the entire project acreage. This is an appropriate approach to

estimating system-wide future water demands for the WMP as a high-level planning document. The various demand factors in the WMP were generated on a per-acre basis using billed water use data for 2019 divided by the corresponding land use acreage from GIS. The year 2019 was chosen as a representative year most closely matching the five-year average water use from 2015 through 2019. The WMP developed a per-acre factor for residential uses, rather than a per dwelling unit factor, because the City's GIS data did not include the number of dwelling units. The resulting demand factors for single-family and multi-family uses in the WMP combine many different densities and ages of housing products. As such, a separate and more detailed demand projection for the Proposed Project is presented below based on Specific Plan land use data, metered water use for similar housing products, and estimated irrigation water use.

The Project area will contain all new construction with mandated water conservation measures in place. The City provided 2018 water use data for newer developments within their service area that have residential densities similar to the Proposed Project. The year 2018 was selected because it had the highest metered water use since 2015 and would provide conservative results for water supply planning. The developments provided were Olinda Ranch, Blackstone, and La Floresta. The average calculated densities and average water demand per dwelling unit (du) for these developments are summarized in Table 3.4.

Table 3.4

2018 Average Water Use by Residential Development

Development	Land Use	AC	DU's	Average Density (du/ac)	Average Use (gpd/du)
Olinda Ranch	Very Low Density	41	63	1.5	762
PA 6 Blackstone	SFD	33	93	2.8	407
PA 5 Blackstone	SFD	25	100	4.0	352
PA 8 La Floresta	Zero Lot Line SFD	16	77	6.0	218
PA 3 Blackstone	SFD Cluster	49	261	6.5	145
PA 3 La Floresta	SFD Cluster	12	89	8.5	144
PA 7 La Floresta	Townhomes			15.0	122

The residential land use data for the Project was split into the area west of Valencia Avenue and the area east of Valencia Avenue to account for the lower density product to the east. The Project's residential land use types and densities were compared with the water use data in Table 3.4 to estimate Project water demand factors on a per dwelling unit basis. The proposed demand factors also take into account estimated sewer flow generation factors that were calculated using September 2019 sewer flow monitoring data collected as part of this Project. Sewer flow represents indoor water use with the remainder of the water demand attributed to outdoor (irrigation) use. The recommended residential water demand factors for the Proposed Project are shown in Table 3.5 along with the resulting average water demand. The Project water demand factors are conservatively higher than those used for projected residential growth in the City's 2020 UWMP, shown in Table 3.3.

Table 3.5
Proposed Project Water Demand Factors for Residential Use

Proposed Land Use	Acres	du/ac	DU's	Factor (gpd/du)	Average Demand (gpd)
WEST LOW DENSITY RESIDENTIAL					
Low Density Residential (LDR)	25.2	4.2	105	380	39,900
Public Safety/Civic[(1)]					330
Medium Density Residential (MDR)	49.0	10.3	507	160	81,120
Subtotal	**74.2**	**8.2**	**612**		**121,350**
EAST HILLSIDE RESIDENTIAL					
Low Density Residential (LDR)	109.4	3.1	345	420	144,900
Medium Density Residential (MDR)	13.9	10.0	143	160	22,880
Subtotal	**123.3**	**4.0**	**488**		**167,780**
Total Domestic	**197.5**	**5.6**	**1,100**		**289,130**

(1) Included in LDR land use in Specific Plan (PA 11). Average flow assumes 6 personnel and 55 gpcd.

The Specific Plan breaks down residential use into Low Density Residential (LDR) and Medium Density Residential (MDR) as opposed to the Single-Family and Multi-Family Residential categories used in the 2020 UWMP. The LDR category provides for detached and attached single-family homes. The MDR products provides for detached and attached single-family homes, townhomes, condominiums, and duplexes. Both residential categories are classified based on residential density shown in Table 3.5. The LDR demand factor for the western Project area of 380 gpd/du is based on the average water use for Blackstone Planning Area (PA) 5 and PA 6 shown in Table 3.4. The factor is conservatively high given the lower density of these existing housing products. It also correlates with the sewer generation factor of 230 gpd/du, assuming that approximately 60 percent of the water demand will be indoor use (sewer flow) and 40 percent outdoor use for irrigation. The LDR factor for the eastern Project area of 420 gpd/du is based on the lower density Blackstone PA 6 development. This factor also correlates with the sewer flow factor used for this product of 250 gpd/du, assuming the same 60/40 indoor/outdoor ratio.

A factor of 160 gpd/du is assumed for MDR homes in both the eastern and western Project areas based on the Blackstone and La Floresta Cluster homes and La Floresta zero lot line detached homes. This is conservative given the higher density product within the Project areas compared to the Blackstone and La Floresta homes. The MDR product correlates with the estimated sewer flow by assuming 80 percent indoor use (sewer flow) and 20 percent outdoor use. The lower outdoor use is anticipated for the MDR homes due to limited yard/landscape areas within these products. Water demand for the common area landscaping is accounted for separately and is described below.

In addition to the residential land uses, the Specific Plan provides for a reserved site for public safety/civic uses within PA 11 which is designated in the LDR category. Water demand for this public use was calculated using and estimated 6 personnel on duty at any one time and a demand of 55 gallons per capita per day (gpcd). The estimate of personnel on duty was provided by City staff.

Landscape Irrigation Demand

The parks and recreation area within the Project includes a 13-acre sports park to the west of Valencia Avenue and a 2.1-acre park to the east of Rose Drive. State mandated water conservation measures require an outdoor water budget that is consistent with the Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO) adopted by the State Water Resources Board in 2015. The MWELO requires the calculation of a maximum applied water allowance (MAWA) for outdoor water use that is no more than 55% of the reference evapotranspiration (ETo) rate for residential landscaping and 45% for commercial landscaping. A landscape irrigation factor of 2,040 gpd/acre was calculated for the Project residential areas based on the MAWA using the ETo data for Monrovia, CA, of obtained from California Irrigation Management Information System (CIMIS) and an ETo adjustment factor (ETAF) of 0.55 (55% of the ETo) for residential areas. The Monrovia CIMIS station is the closest station to the Project site and the ETo for that station was 49.85 inches per year. The resulting common area irrigation water demand estimate for the Project is shown in Table 3.6. The irrigated acreage for the residential common areas was provided by the developer's engineer, Hunsaker & Associates, and the park area is included in the Project Specific Plan. As a cross-check, the irrigation demand for the sports park was calculated using the proposed site plan along with the ETo and estimated plant factor and irrigation efficiency. The result was an estimated 31 AFY for the parks and recreation area compared to 35 AFY derived using the MAWA calculation.

Table 3.6
Proposed Irrigation Demand Factors

Land Use	Acres	Factor (gpd/ac)	GPD
Irrigated Common Areas	65.00	2,040	132,602
Parks/Recreation	15.10	2,040	30,805
Total	**80.10**		**163,407**
Monrovia Eto (in/yr)	49.85		

New developments are required to comply with current water conservation standards and are expected to have lower than average demand when compared to current City-wide use. As such, the recommended factors utilized in this analysis are sufficiently conservative and appropriate for planning purposes. The projected water use for the Project, utilizing the factors described above, is summarized in Table 3.7.

Table 3.7
Water Demand Summary

Water Use	gpd	AFY
Residential	289,130	323.9
Irrigation	163,407	183.0
Total Water Demand	**452,537**	**507**

The resulting total water demand is somewhat lower than the value reported for Brea 265 in Table 3-4 of the UWMP. However, the residential water use factors for the Project are conservatively higher than those used in the City's 2020 UWMP for new residential development.

The population for the Proposed Project is estimated using the factors utilized in the Project Environmental Impact Report (EIR) of 2.82 persons per du from the City's General Plan 2021-2029 Housing Element. The resulting population estimate is 3,102 for the Project. Using this population estimate and the calculated Project residential demand, the resulting residential per capita water use is equal to 93 gpd. In comparison, using data from the 2020 UWMP for year 2045 (water efficient homes), the residential per capita water use is equal to 86 gpd, again showing that Project water demand estimates in this WSA are conservative.

Based on the estimated Project development phasing as shown in Table 3.2, estimated water demand phasing is shown in Table 3.8 (excluding water loss). Buildout is estimated to occur by 2025, so Project water demands are estimated to remain constant from 2025 through 2045.

Table 3.8
Estimated Project Phasing of Water Demand

	2025	2030	2035	2040	2045
Brea 265 Water Demand (AFY)	507	507	507	507	507

4 CITY WATER SYSTEM

4.1 City Water System Characteristics

The City is located in northern Orange County between the City of La Habra on the west, City of Fullerton on the southwest, the City of Yorba Linda on the southeast and the County of Los Angeles on the north and encompasses an area of approximately 12.1 square miles. The City Water Division serves all the City's area except the Vesuvius tract at the eastern end which is served by Yorba Linda Water District. The City's water service area population was 45,629 in 2020 according to the CDR. The City receives its water from three main sources, local well water from the La Habra Basin and the Main San Gabriel Basin, which is provided by the California Domestic Water Company (CDWC) and imported water from the Municipal Water District of Orange County (MWDOC). MWDOC is Orange County's wholesale supplier and is a member agency of the Metropolitan Water District of Southern California (Metropolitan).

The City's distribution system consists of 228 miles of pipeline and seven storage reservoirs with a combined storage capacity of 69.5 million gallons (MG). The storage system is supported with five booster pump stations. The booster pumps have a total capacity of 14,800 gallons per minute (gpm) serving 18 pressure zones. In 2020, the City served 13,821 municipal connections that supplied 9,131 AF of water. The City also manages an irrigation well located at the Brea Creek Golf Course that pumps up to 450 gpm to serve the golf course.

4.2 City Water Demands

Annual potable water use within the City's service area has averaged 9,956 AF in the past decade. As a result of Governor Jerry Brown's mandatory water conservation order in 2014, retail water use within the City's service area has decreased from the average of 10,679 AF (FY2010/11 through FY2014/15) to the last five-year average of 9,234 (FY2015/16 through FY2019/20). In FY 2019-20, the City used 9,131 AF of water; this was comprised of 9,039 AF (99%) potable imported water from CDWC, and 92 AF (1%) non potable water pumped from La Habra Groundwater Basin for irrigation purposes only. In FY 2019-20, the City's water use profile was comprised of 51.2% residential use, 28.7% commercial, institutional, and industrial (CII) use, 15.0% large landscape/irrigation, with non-revenue water (NRW) and other uses comprising about 5.0%. There is currently no recycled water use within the City's service area.

The California Green Building Standards Code (CGBC) has a direct impact on new residential and non-residential building and water conservation in the State. The 2016 California Green Building Standards Code, which became effective on January 1, 2017, aims to cut indoor water consumption by 20 to 35 percent from standards in place prior to the adoption of the first CGBC that became effective August 1, 2009, primarily through more efficient indoor water fixtures. The 2016 California Green Building Standards Code also includes outdoor water conservation by reducing the area devoted to high-irrigation use lawns and plants, emphasizing natural drought-tolerant plantings and the installation of irrigation controls that respond to local weather conditions. This is consistent with the MWELO, which was adopted by the State on July 15, 2015.

Future City water demands were projected in the City's 2020 UWMP based on such factors as current and future demographics and future water use efficiency measures. As discussed in Section 3.3.1, the water demand projections included in the City's 2020 UWMP were an outcome of the 2021 OC Water Demand Forecast for Municipal Water District MWDOC and OCWD prepared

by CDM Smith. Water demand for existing land use at the Project site is included in the City's 2020 UWMP water use data, though this existing demand is assumed negligible in this WSA. The additional demand resulting from the Proposed Project was identified in the UWMP as future residential use (2020 UWMP, Table 3-4) with a projected demand of 545.9 AFY.

When looking at projected water demand by use sector, it appears that the residential demand and corresponding residential units may not account for enough residential growth given the Project size and anticipated future densification projects within the City. Therefore, to be conservative, the demand for the Project will be added to the demand projections in the 2020 UWMP, even though the Project was specifically identified in the UWMP.

Projected City water demand through FY 2045, including the water demand from the Proposed Project, is shown in Table 4.1. A separate line item is shown for the Project which is then added to the projected City demand from the 2020 UWMP. All demands in Table 4.1 include 5 percent water loss consistent with the 2020 UWMP.

Table 4.1
Projected Normal City Water Demand (AF)

Projected Normal Demand[a]	FY 2025	FY 2030	FY 2035	FY 2040	FY 2045
Total City Demand without Project (2020 UWMP)[b]	9,543	9,695	9,691	9,725	9,745
Additional Proposed Project Demand[c]	532	532	532	532	532
Total Demand	**10,075**	**10,227**	**10,223**	**10,257**	**10,277**

(a) All demands include estimated 5% water loss consistent with the 2020 UWMP
(b) Normal year demand as projected in the City's 2020 UWMP assumed not to include Project demand
(c) Projected for FY2025, 2030, 2035, 2040, & 2045 (507 AFY from Table 3.8 plus 5% water loss)

4.3 City Water Supply

The City's primary sources of water supply are imported groundwater from the Main San Gabriel Basin through CDWC and imported water from Metropolitan through MWDOC. The City also extracts local groundwater from the La Habra Groundwater Basin (Basin). However, the one groundwater well owned by the City is used strictly for irrigation purposes. City water supply by source for the five fiscal years 2016-2020 consisting of groundwater supplied through CDWC, imported water supplied through MWDOC, and non-potable local groundwater is shown in Table 4.2.

Table 4.2
Historical City Potable Water Supply (AF)

Source	2016	2017	2018	2019	2020
CDWC Imported	7,267	7,645	7,950	8,315	9,039
MWDOC Imported	1,553	1,160	1,889	877	0
Local Groundwater	57	96	107	95	92
Total	**8,878**	**8,900**	**9,946**	**9,287**	**9,131**

The City's projected water supply from the 2020 UWMP is shown in Table 4.3 in Section 4.3.5. The imported water supply numbers shown in Table 4.3 represent only the supplies projected to meet demands and not the full supply capacity.

Non-revenue water (water loss) is defined by the International Water Association (IWA) and American Waterworks Association (AWWA) as the difference between distribution systems input (supply) volume and billed authorized consumption (demand). Water loss is an extraneous demand on the water system. In the City's 2020 UWMP, non-revenue potable water was calculated at approximately 5 percent of the water supplied into the City's distribution system in FY 2020. Water loss is included in the supply totals for each water supply shown in Table 4.2 and Table 4.3.

4.3.1 Imported Groundwater Supply

The information in this section is intended to furnish the information required by Water Code section 10910(f).

The City obtains imported groundwater supply from CDWC, a mutual water company. CDWC provides groundwater from the Main San Gabriel Basin to each of its member agencies who own and/or lease stock in the company. There are two classes of entitlement with CDWC, which translate to different water allotments: "common stock entitlement" and "other entitlement." As of 2020, the City owns approximately 2,208 and leases another 188 common stock entitlements, which translates to an entitlement allotment of approximately 3,475 AFY. As for other entitlements, the City owns approximately 2,189 shares, which translates to approximately 1,663 AFY. The City also leases additional shares of CDWC stock from member agencies that do not use their maximum allotted amount. The City receives water from CDWC through three metered connections. Each connection is gravity fed and comes from one of two CDWC hydraulic lift systems.

Each CDWC member agency receives a prescribed entitlement to water based upon the number of shares owned and the safe yield of the Main San Gabriel Basin. The member agency entitlement criterion per share varies year by year, based on CDWC's allotted percentage and the Basin Operating Safe Yield (OSY) from the Basin. The OSY is determined annually by the Main San Gabriel Basin Watermaster, the agency created by the Main San Gabriel Judgment to manage the Main San Gabriel Basin. Agencies that use water beyond their share of entitlement must pay a surcharge levied by CDWC. As such, there is not a permanent limit or cap on the amount of water CDWC can produce from the Basin. CDWC owns approximately 12,363 AF of prescriptive pumping rights in the Main San Gabriel Basin with the quantity available adjusted annually based on the determination of the Basin's OSY. Based on the FY 2020-21 OSY for the Basin set at 150,000 AF, CDWC's prescriptive pumping rights is adjusted to total approximately 9,383 AF. Currently, this is the amount of groundwater CDWC can produce from the Basin before incurring replacement water assessments. The Main San Gabriel Basin and the Basin Judgement are further described in Section 6.2.1 of the City's 2020 UWMP.

4.3.2 Imported Surface Water

The information in this section is intended to provide the information required by Water Code section 10910(d).

MWDOC provides imported water supplies to the City as a member agency of Metropolitan. Metropolitan is a wholesale water agency serving 19 million people in six Southern California counties. Metropolitan was formed in 1928 and is composed of 26 member agencies including both cities and water districts. Metropolitan provides water from the Colorado River and the State Water Project (San-Joaquin River Delta), and also obtains additional supplies from numerous storage, water transfers, exchanges, water banking, and fallowing projects.
Metropolitan has a legal entitlement to receive water from the Colorado River under a permanent service contract with the Secretary of the Interior. The Colorado River Aqueduct (CRA) transports water from Lake Havasu, at the border of the states of California and Arizona, approximately 242 miles to its terminus at Lake Mathews in Riverside County. The actual amount of water per year that may be conveyed through the CRA to Metropolitan's member agencies is subject to the availability of Colorado River water for delivery. The CRA is owned and operated by Metropolitan and has a capacity of 1.2 MAF a year. Water from the Colorado River or its tributaries is available to users in California, Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming, as well as to Mexico. Metropolitan has a basic entitlement of 550,000 AFY of Colorado River water, plus surplus water up to an additional 662,000 AFY under specific conditions.

Metropolitan also receives water from the San-Joaquin River Delta (Delta) in northern California via the 444-mile-long California Aqueduct (State Water Project or SWP), which is managed by the Department of Water Resources (DWR). The DWR has entered into contracts with water districts and regional agencies (SWP Contractors) specifying the amount of SWP water to be delivered to each SWP Contractor. Each SWP Contractor was provided with a contract amount (Table A Amount) and capacity rights to the SWP aqueduct and storage system in return for payments intended to cover operation and maintenance, bondholder obligations, and repayment of moneys loaned from the California Water Fund. DWR water supply contracts contemplate that the SWP would deliver 4.17 MAFY to 29 SWP Contractors. Of this amount, 4.13 MAFY is the maximum Table A water available for delivery from the Delta pumps as stated in the State Water Contract.

In accordance with its contract with the DWR, Metropolitan has a Table A allocation of 1,911,500 AF per year under contract from the SWP. The availability of water supplies from the SWP can be highly variable. A wet water year may be followed by a dry or critically dry year and fisheries issues can restrict the operations of the export pumps even when water supplies are available. As such, annual deliveries are set as a percentage of the maximum allocation-based water supply for that year.

Metropolitan's 2020 UWMP finds that Metropolitan can meet demands of its member agencies, including the City through MWDOC, from 2020 through 2045 during normal years, a single dry year, and multiple dry years. The foundation of Metropolitan's resource strategy for achieving regional water supply reliability has been to develop and implement water resources programs and activities that provide a mix of resources. This preferred resource mix includes conservation, local resources such as water recycling and groundwater recovery, Colorado River supplies and transfers, SWP supplies and transfers, in-region surface reservoir storage, in-region groundwater

storage, out-of-region water banking, treatment, conveyance, and infrastructure improvements. Reliability of Metropolitan's supply is further discussed in Section 5.0, Reliability of Water Supplies.

Metropolitan member agencies receive imported water at various delivery points along the Metropolitan transmission system and pay for it at tiered and/or uniform rates established by the Board depending on the class of service. The City purchases treated potable water from Metropolitan through MWDOC. The three City supply connections with Metropolitan are OC-6, OC-29, and OC-62, with capacities of 10 cubic feet per second (cfs), 15 cfs, and 10 cfs, respectively (Brea, Water Master Plan, May 2021). The infrastructure programs are in place and no further regulatory permits are required to permit Metropolitan to convey imported water to these facilities for use by the City. Because the City also is supplied with groundwater through CDWC, reliance on imported surface water from Metropolitan is greatly reduced. Metropolitan water can be utilized to smooth out seasonal peaks and enhance overall water supply reliability to the City.

A description of the amount of Metropolitan water delivered to the City in the past and anticipated to be delivered to the City in the future under a variety of scenarios is set forth in Section 5 of this WSA.

4.3.3 Local Groundwater Supply

The La Habra Basin

The unadjudicated La Habra Basin covers parts of Los Angeles County and Orange County and is part of both the Central Basin and the Orange County Basin, which are both designated by DWR as medium-priority basins. The La Habra Basin lies entirely within the Coyote Creek Watershed. A portion of the Basin is located within Central Basin as well as the northern tip of the Orange County Basin. La Habra's Groundwater Management Plan only focuses on the portion of the Basin located outside of both Central Basin and Orange County Basin.

From a structural geology standpoint, the La Habra Basin area is dominated by the northwest trending La Habra Syncline (a U–shaped down–fold) which is bounded on the north by the Puente Hills and on the south by the Coyote Hills. The fold is a naturally occurring trough, or valley, where significant quantities of groundwater have accumulated over the past 150,000 years. The La Habra Groundwater Basin consists of three water-bearing zones: 1) the Alluvium, 2) the La Habra Formation (including the Coyote Hills Formation), and 3) the San Pedro Formation.

The Alluvium is comprised of young and old alluvium. The deposits are found along the surface stream courses and is composed of unconsolidated silt, clay, sand, and gravel. Alluvium thickness ranges from a few feet to over 100 feet. Generally, the La Habra Formation lies below the Alluvium, consisting of the La Habra and Coyote Hills Formations. However, in the Coyote Hill and Puente Hills, the Alluvium is uplifted and exposed. The La Habra Formation consists of non-marine mudstone, siltstone, sandstone, and conglomerate. It ranges in thickness from 300 to nearly 1,200 feet. Water levels of wells in the La Habra Formation have been measured between 100 and 200 feet below ground surface across the La Habra Basin area.

Underneath the La Habra Formation lies the San Pedro Formation. As the deepest water bearing unit, the San Pedro Formation is comprised of sand, gravel, sandstone, conglomerate, and shale. The San Pedro Formation ranges between 200 and 400 feet in thickness and produces the best quality groundwater of all the water bearing zones. Pressure levels of confined groundwater in wells of the San Pedro aquifer zone range from about 100 to 200 feet below ground surface.

Sustainable Groundwater Management Act

In 2014, the State of California adopted the Sustainable Groundwater Management Act (SGMA) to help manage its groundwater sustainably, and limit adverse effects such as significant groundwater-level declines, land subsidence, and water quality degradation. SGMA requires all high- and medium-priority basins, as designated by DWR, be sustainably managed. DWR designated the non-adjudicated Coastal Plain of OC Basin as a medium-priority basin, primarily due to heavy reliance on the groundwater as a source of water supply. Compliance with SGMA can be achieved in one of two ways (City of La Habra et al., 2017):

1) A GSA is formed, and a GSP is adopted, or
2) Special Act Districts created by statute, such as OCWD, and other agencies may prepare and submit an Alternative to a GSP

Led by OCWD, the agencies within Basin 8-1, collaborated to submit an Alternative to a GSP in 2017, titled the "Basin 8-1 Alternative" to meet SGMA compliance. This document supersedes the La Habra Basin Groundwater Management Plan from 2014 and will be updated every five years. The current (2017) version of the SGMA-compliant document can be found on the following link: basin-8-1-alternative-final-report-1.pdf (ocwd.com).

Basin Safe Yield

The Basin is not adjudicated. Instead, the City follows a "safe yield" which is used for the management and future planning of the Basin for sustained beneficial use. The safe yield is the volume of groundwater that can be pumped without depleting the aquifer to a point where it cannot recover through natural recharge over a reasonable period of time.

The safe yield for the Basin was estimated to be approximately 4,500 AFY. This safe yield was determined through an average from two separate studies that accounted for natural groundwater recharge and natural groundwater discharge. The La Habra Basin continues to be managed sustainably by maintaining and coordinating groundwater production within the estimated safe yield. The City of La Habra is also evaluating its existing monitoring program with the intent to develop a more robust groundwater elevation and water quality monitoring program (La Habra, 2020).

Groundwater elevations within the Basin have risen approximately 100 feet from the 1940s through 2014 with an overall rising trend of 50 to 60 feet between 1970 and 2007. This increase in groundwater elevations demonstrates the Basin is not currently in an overdraft condition. However, the City will continue monitoring groundwater elevation trends of the Basin and will review its groundwater operations should groundwater elevations show any signs of decline (La Habra, Groundwater Study, August 2014).

Historic Groundwater Extraction

Historically, groundwater produced from the Basin yielded low quality water. The City owns and operates one non-potable groundwater well used for irrigation at Brea Creek Golf Course. Local groundwater accounted for 57 to 107 AFY of the City's total water supply in the past five years. Since FY 2015-16, the volume of groundwater pumped by the City has increased and remained relatively stable for the last four years (Table 4.2).

4.3.4 Recycled Water Supply

The City does not own or operate any wastewater or recycled water facilities and does not use recycled water as a supply source.

4.3.5 Projected City Water Supply

Projected normal–year supply by source for the City from the 2020 UWMP through the year 2045 is shown in Table 4.3.

Table 4.3
2020 UWMP Projected City Normal Year Water Supply (AF)

Supply Sources/Demands	FY 2025	FY 2030	FY 2035	FY 2040	FY 2045
Supply	Normal Year				
CDWC	9,000	9,000	9,000	9,000	9,000
MWDOC	428	580	576	610	630
Local (Groundwater)[(a)]	115	115	115	115	115
Total Supply	**9,543**	**9,695**	**9,691**	**9,725**	**9,745**

(a) One City well used for irrigation
(b) Source: City of Brea 2020 UWMP

5 RELIABILITY OF WATER SUPPLIES

Every urban water supplier is required to assess the reliability of their water service to its customers under normal, dry, and multiple dry water years. The City depends on a combination of imported and local supplies to meet its water demands and has taken numerous steps to ensure it has adequate supplies. There are various factors that may impact reliability of supplies such as legal, environmental, water quality and climatic. This section provides a description of Metropolitan's, CDWC's, and the City of Brea's efforts in securing adequate water supply, as well as the reliability of regional and City normal, single dry year, and multiple dry year water supplies. Metropolitan's, MWDOC's and the City's 2020 UWMPs conclude that they are able to meet, full-service demands of their member agencies through 2045 during normal years, a single-dry year, and multiple-dry years. Consequently, the City is projected to meet full-service demands through 2045 for the same scenarios.

5.1 Metropolitan Water District Supply Reliability

Metropolitan was formed in the late 1920's. Collectively, charter members recognized the limited water supplies available within the region and realized that continued prosperity and economic development of Southern California depended upon the acquisition and careful management of an adequate supplemental water supply. This foresight made the continued development of Southern California possible.

Metropolitan acquires water from Northern California via the State Water Project (SWP) and from the Colorado River to supply water to most of Southern California. As a wholesaler, Metropolitan has no retail customers, and distributes treated and untreated water directly to its 26 member agencies.

Metropolitan's 2020 IRP update describes the core water resources that will be used to meet full-service demands at the retail level under all foreseeable hydrologic conditions from 2025 through 2045. The foundation of Metropolitan's resource strategy for achieving regional water supply reliability has been to develop and implement water resources programs and activities through its IRP preferred resource mix. This preferred resource mix includes conservation, local resources such as water recycling and groundwater recovery, Colorado River supplies and transfers, SWP supplies and transfers, in-region surface reservoir storage, in-region groundwater storage, out-of-region banking, treatment, conveyance, and infrastructure improvements.

Metropolitan's 2020 UWMP was developed as part of the 2020 IRP planning process. Metropolitan's 2020 UWMP finds that Metropolitan can meet, full-service demands of its member agencies from 2020 through 2045 during normal years, single dry year, and multiple dry years. The IRP represents Metropolitan's comprehensive blueprint for long-term water reliability, including key supply development and water use efficiency goals.

The reliability and operational issues related to Metropolitan's various sources of supply are discussed by major source in the subsequent sections.

5.1.1 State Water Project

The SWP consists of a network of pump stations, reservoirs, aqueducts, tunnels, and power plants operated by DWR and is an integral part of the effort to ensure that business and industry, urban and suburban residents, and farmers throughout much of California have sufficient water. The SWP is the largest state-built, multipurpose, user-financed water project in the United States. Nearly two-thirds of residents in California receive at least part of their water from the SWP with approximately 70 percent of SWP's contracted water supply going to urban users and 30 percent to agricultural users. The primary purpose of the SWP is to divert and store water during wet periods in northern and central California and distribute it to areas of need in northern California, the San Francisco Bay area, the San Joaquin Valley, the Central Coast, and Southern California.

The availability of water supplies from the SWP can be highly variable. A wet water year may be followed by a dry or critically dry year and fisheries issues can restrict the operations of the export pumps even when water supplies are available.

The Sacramento-San Joaquin River Delta (Delta) is key to the SWP's ability to deliver water to its agricultural and urban contractors. All but five of the 29 SWP contractors receive water deliveries below the Delta (pumped via the Harvey O. Banks or Barker Slough pumping plants). However, the Delta faces many challenges concerning its long-term sustainability such as climate change posing a threat of increased variability in floods and droughts. Sea level rise complicates efforts in managing salinity levels and preserving water quality in the Delta to ensure a suitable water supply for urban and agricultural use. Furthermore, other challenges include continued subsidence of Delta islands, many of which are below sea level, and the related threat of a catastrophic levee failure as the water pressure increases, or because of a major seismic event.

Ongoing regulatory restrictions, such as those imposed by federal biological opinions (Biops) on the effects of SWP and the federal Central Valley Project (CVP) operations on certain marine life, also contribute to the challenge of determining the SWP's water delivery reliability. In dry, below-normal conditions, Metropolitan has increased the supplies delivered through the California Aqueduct by developing flexible CVP/SWP storage and transfer programs. The goal of the storage/transfer programs is to develop additional dry-year supplies that can be conveyed through the available Harvey O. Banks pumping plant capacity to maximize deliveries through the California Aqueduct during dry hydrologic conditions and regulatory restrictions. In addition, the California State Water Resources Control Board (SWRCB) has set water quality objectives that must be met by the SWP including minimum Delta outflows, limits on SWP and CVP Delta exports, and maximum allowable salinity level.

"Table A" water is the maximum entitlement of SWP water for each water contracting agency. Currently, the combined maximum Table A amount is 4.17 MAFY. Of this amount, 4.13 MAFY is the maximum Table A water available for delivery from the Delta pumps as stated in the State Water Contract. However, deliveries commonly are less than 50 percent of Table A amounts.

SWP contractors may receive Article 21 water on a short-term basis in addition to Table A water if requested. Article 21 of SWP contracts allows contractors to receive additional water deliveries only under specific conditions, generally during wet months of the year (December through March). Because an SWP contractor must have an immediate use for Article 21 supply or a place to store it outside of the SWP, there are few contractors like Metropolitan that can access such supplies.

Carryover water is SWP water allocated to an SWP contractor and approved for delivery to the contractor each year but not used by the end of the year. The unused water is stored in the SWP's share of San Luis Reservoir, when space is available, for the contractor to use in the following year.

Turnback pool water is Table A water that has been allocated to SWP contractors that has exceeded their demands. This water can then be purchased by another contractor depending on its availability.

SWP Delta exports are the water supplies that are transferred directly to SWP contractors or to San Luis Reservoir storage south of the Delta via the Harvey O. Banks pumping plant. Estimated average annual Delta exports and SWP Table A water deliveries have generally decreased since 2005, when Delta export regulations affecting SWP pumping operations began to become more restrictive due to the Biops.

Metropolitan's 2020 UWMP provides details on the factors that affect the ability to estimate existing and future water delivery reliability. In summary, they include water availability at the source, water rights with priority of the SWP, climate change, regulatory restrictions on SWP Delta exports, ongoing environmental and policy planning efforts, and Delta levee failure. Metropolitan estimated SWP supplies using the 2019 SWP Delivery Capability Report distributed by DWR in August 2020. The Delivery Capability Report presents the current estimate of the amount of deliveries for current (2020) conditions and conditions 20 years in the future.

5.1.2 Colorado River Aqueduct

The Colorado River was Metropolitan's original source of water after Metropolitan's establishment in 1928. The CRA, which is owned and operated by Metropolitan, transports water from the Colorado River to its terminus at Lake Mathews in Riverside County. The actual amount of water per year that may be conveyed through the CRA to Metropolitan's member agencies is subject to the availability of Colorado River water for delivery.

The CRA includes supplies from the implementation of the Quantification Settlement Agreement (QSA) and related agreements to transfer water from agricultural agencies to urban uses. The 2003 QSA enabled California to implement major Colorado River water conservation and transfer programs, stabilizing water supplies for 75 years and reducing the state's demand on the river to its 4.4 million acre-feet (MAF) entitlement. Colorado River transactions are potentially available to supply additional water up to the CRA capacity of 1.25 MAF on an as-needed basis. Water from the Colorado River or its tributaries is available to users in California, Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming, as well as to Mexico. California is apportioned the use of 4.4 MAF of water from the Colorado River each year plus one-half of any surplus that may be available for use collectively in Arizona, California, and Nevada. In addition, California has

historically been allowed to use Colorado River water apportioned to but not used by Arizona or Nevada. Metropolitan has a basic entitlement of 550,000 AFY of Colorado River water, plus surplus water up to an additional 662,000 AFY when the following conditions exists (Metropolitan, 2020 UWMP):

- Water unused by the California holders of priorities 1 through 3
- Water saved by the Palo Verde land management, crop rotation, and water supply program
- When the U.S. Secretary of the Interior makes available either one or both:
  - Surplus water is available
  - Colorado River water is apportioned to but unused by Arizona and/or Nevada

Approximately 40 million people rely on the Colorado River and its tributaries for water with 5.5 million acres of land using Colorado River water for irrigation. Climate change will affect future supply and demand as increasing temperatures may increase evapotranspiration from vegetation along with an increase in water loss due to evaporation in reservoirs, therefore reducing the available amount of supply from the Colorado River and exacerbating imbalances between increasing demands from rapid growth and decreasing supplies.

The Colorado River Basin experienced a severe 5-year drought from 2000 to 2004 with below average precipitation and runoff. Average precipitation has been near normal since that time while runoff has been less than average in two out of every three years. This change in the precipitation to runoff relationship is indicative of a drying trend that is characterized as a long-term drought. For example, in 2020 the Upper Colorado River Basin snowpack reached a level of 107 percent of the median. However, runoff was observed from April through July was just 52 percent of the average due to hot and dry conditions. This drying trend over the past 21-years has resulted in Lake Mead and Lake Powell storage at 40 and 42 percent of capacity (Metropolitan, 2020 UWMP).

The coordinated operation of Lake Powell and Lake Mead was provided for in the 2007 Interim Guidelines and the Intentionally Created Surplus (ICS) program that allows Metropolitan to store water in Lake Mead. These stored supplies will help ensure that Metropolitan can deliver up the CRA capacity of 1.25 MAF. Additionally, the Lower Basin Drought Contingency Plan (DCP) was signed in 2019 to incentivize storage in Lake Mead. This program helps maintain water levels and increases Metropolitan's flexibility to both store water and take delivery of stored water.

With the long-term challenges of water demand exceeding available supply from the Colorado River, and additional uncertainties due to climate change, Metropolitan has developed a number of supply and conservation programs to increase the amount of supply available from the Colorado River. These are discussed in Chapter 3 of the Metropolitan 2020 UWMP which also quantifies the volume of water available through these programs to meet expected CRA deliveries equal to its annual capacity of 1.25 MAF. The amount of supplies available to Metropolitan for the 2020 UWMP planning period is based on U.S. Bureau of Reclamation modeling.

5.1.3 Storage

Storage is a major component of Metropolitan's dry year resource management strategy. Metropolitan's likelihood of having adequate supply capability to meet projected demands, without implementing its Water Supply Allocation Plan (WSAP), is dependent on its storage resources. Under some conditions, Metropolitan may choose to implement the WSAP to preserve storage reserves for a future year rather than using the full supply capability. The WSAP provides a detailed methodology to fairly distribute a limited amount of water supply.

Lake Oroville is the SWP's largest storage facility, with a capacity of about 3.5 MAF. The water is released from Oroville Dam into the Feather River as needed, which converges with the Sacramento River while some of the water at Bethany Reservoir is diverted from the California Aqueduct into the South Bay Aqueduct. The primary pumping plant, the Harvey O. Banks pumping plant, pumps Delta water into the California Aqueduct, which is the longest water conveyance system in California.

5.1.4 Supply Management Strategies

On the regional level, Metropolitan has taken a number of actions to secure a reliable water source for its member agencies. Metropolitan developed its WSAP for dealing with potential shortages that take into consideration the impact on retail customers and the economy, changes and losses in local supplies, the investment in and development of local resources, and conservation achievements. Metropolitan's Water Surplus and Drought Management (WSDM) Plan, developed in 1999, provides policy guidance for managing regional water supplies during both surplus and shortage conditions with the overall goal to minimize the probability of severe shortages. Additional actions taken by Metropolitan over the past several years have increased spending on conservation, local projects, and water supply/reliability enhancements.

5.2 California Domestic Water Company Supply Reliability

CDWC has water rights, production, treatment, and conveyance facilities in the Main San Gabriel Basin that serve overlying customers within the Suburban Water Company as well as serving the City and the City of La Habra. Based on the ten-year average from FY 2010-11 through 2019-20, the annual deliveries of groundwater from CDWC to the City and the City of La Habra are approximately 13,261 AFY, but this volume varies from year to year.

The Main San Gabriel Basin lies in eastern Los Angeles County and occupies most of San Gabriel Valley. The hydrologic basin or watershed coincides with a portion of the upper San Gabriel River watershed, and the aquifer or groundwater basin underlies most of the San Gabriel Valley. It is bounded on the north by the San Gabriel Mountains, on the northwest by Raymond Basin, on the southeast by Puente Basin, and on the south by Central Basin. The Main San Gabriel Basin encompasses approximately 107,000 acres and has a storage of 8.9 MAF when the groundwater elevation at the Baldwin Park Key Well is 316 feet. Generally speaking, one foot of groundwater elevation is equivalent to approximately 8,000 AF of storage.

The hydrogeological San Gabriel Basin is divided between three sub-basins, Main Basin, Puente Basin, and portions of Six Basins area. A portion of Six Basins area is tributary to the Main Basin. Each of the sub-basins are adjudicated and managed separately.

Major sources of recharge to the Main San Gabriel Basin are infiltration of rainfall on the valley floor and runoff from the nearby mountains. The Main San Gabriel Basin is the first of a series of basins to receive the water from mountain runoff. The Main San Gabriel Basin interacts hydrogeologically and institutionally with adjoining basins, including Puente Basin, Central Basin, and West Coast Basin (Main San Gabriel Basin Watermaster, 2020).

Main San Gabriel Basin Judgment

Rapid urbanization in the San Gabriel Valley in the 1940s resulted in an increased demand for groundwater drawn from the Upper Area users in Main San Gabriel Basin. Consequently, the Main San Gabriel Basin was in a state of overdraft and the available water supply for the Lower Area and downstream users decreased. In 1968, at the request of producers, the Upper San Gabriel Municipal Water District filed a complaint that would adjudicate water rights in the Main San Gabriel Basin and would bring all Basin producers under control of one governing body. The final result was the entry of the Main San Gabriel Basin Judgment in 1973.

The Judgment defined the water rights of 190 original parties to the legal action. It created a new governing body, the Main San Gabriel Basin Watermaster, and described a program for management of water in the Main San Gabriel Basin. Under the terms of the Main San Gabriel Basin Judgment all rights to the diversion of surface water and production of groundwater within the Main Basin and its Relevant Watershed were adjudicated. The Main Basin Judgment does not restrict the quantity of water agencies may extract from the Main Basin. Rather, it provides a means for replacing with Supplemental Water all annual extractions in excess of an agency's annual right to extract water. The Main Basin Watermaster annually establishes an Operating Safe Yield for the Main Basin that is then used to allocate to each agency its portion of the Operating Safe Yield that can be produced free of a Replacement Water Assessment. If a producer extracts water in excess of his right under the annual Operating Safe Yield, it must pay an assessment for Replacement Water that is sufficient to purchase one AF of Supplemental Water to be spread in the Main San Gabriel Basin for each AF of excess production. All water production is metered and is reported quarterly to the Main Basin Watermaster. The Operating Safe yield for FY 2022-23 through 2025-26 has been set to 130,000 AF per year[1].

In addition to Replacement Water Assessments, the Main Basin Watermaster levies an Administration Assessment to fund the administration of the Main Basin management program under the Main Basin Judgment and a Make-up Obligation Assessment in order to fulfill the requirements for any make-up Obligation under the Long Beach Judgment and to supply fifty percent of the administration costs of the River Watermaster service. The Main Basin Watermaster levies an In-lieu Assessment and may levy special Administration Assessments.

Water rights under the Main Basin Judgment are transferable by lease or purchase so long as such transfers meet the requirements of the Judgment. There is also provision for Cyclic Storage Agreements that allow Parties and non-parties to store imported supplemental water in the Main Basin under such agreements with the Main Basin Watermaster pursuant to uniform rules and conditions and Court approval (Main San Gabriel Basin Watermaster, Annual Report, 2015).

The Main Basin Watermaster has entered into a Cyclic Storage Agreement with three municipal water districts, Metropolitan, Three Valleys Municipal Water District (TVMWD), and Upper San

[1] Main San Gabriel Basin Watermaster, May 2021.

Gabriel Valley Municipal Water District (USGVMWD). The first agreement with Metropolitan and USGVMWD permits Metropolitan to deliver and store imported water in the Main Basin in an amount not to exceed 100,000 AF for future Replacement Water use. The second Cyclic Storage Agreement is with TVMWD and permits Metropolitan to deliver and store 40,000 AF for future Replacement Water use. The third is with SGVMWD.

Water Quality

A number of contaminants in limited parts of the Main San Gabriel Basin require careful monitoring and treatment before the water can be supplied to customers. The primary contaminants of concerns in the Main San Gabriel Basin include volatile organic compounds (VOCs) and nitrates, perchlorate, NDMA, trichloropropane (1,2,3-TCP), and hexavalent chromium (CR VI). VOCs and nitrates are the most prevalent contaminants found in the Main San Gabriel Basin. As a result, the location and treatment methods are generally well understood. During FY 2019-20, 30 treatment plants treated approximately 75,000 AF of VOC-contaminated water from the Main San Gabriel Basin. Although VOC contamination is substantial, it is centered in just a few areas, leaving a large portion of the Main San Gabriel Basin unaffected.

The California State Division of Drinking Water (DDW) lowered the notification level of perchlorate from 18 to 4 parts per billion (ppb) in January 2002. Subsequently, a total of 22 wells from the Main San Gabriel Basin were removed from service due to unacceptable levels of perchlorate. In October 2007, the DDW established a maximum contaminant level (MCL) of 6 ppb. Efforts to treat perchlorate by the Watermaster resulted in ion-exchange technology treatment facilities at five sites in the Baldwin Park Operable Unit (BPOU) and at two facilities in other parts of the Main San Gabriel Basin during FY 2019-20. In April 2020, DDW issued a Notice of Proposed Rulemaking to consider lowering the perchlorate Detection Limit for Purposes of Reporting (DLR) to 2 ppb, and in anticipation of this possible revision, the Watermaster coordinated with Producers to conduct “low-level” detection sampling at a level of 0.1 ppb.

During 1998, eight local wells within the Main San Gabriel Basin had levels of NDMA above the notification level of 2 ppt at the time. Five of the wells with measurable levels of NDMA had already been taken out of service for other reasons, and the other three were taken offline as a direct result of NDMA levels above notification level. The Watermaster played a key role in the construction of NDMA treatment facilities within the Main San Gabriel Basin. Five facilities were operational during FY 2019-20.

1,2,3-TCP is a degreasing agent that has been detected in the BPOU during the winter of 2006. Its presence delayed the use of one treatment facility for potable purposes. The DDW determined 1,2,3-TCP is best treated through liquid phase GAC. Facilities to treat 1,2,3-TCP were operational during FY 2019-20.

The DDW required specific water systems to conduct water quality tests for Per- and polyfluoroalkyl substances (PFAS) and Perfluorooctane Sulfanate (PFOS) during 2019 and established the notification level at 5.1 ppt and 6.5 ppt for PFOS and PFOS, respectively. The Watermaster is conducting PFAS sampling and monitoring as required by the SWRCB and working with the DDW to characterize the extent of PFAS in the Main San Gabriel Basin (Main San Gabriel Basin Watermaster, 2020).

5.3 City Water Supply Reliability Measures

Demand Management Measures

The provisions and water conservation measures to be implemented in response to specific water shortage levels are described in the City of Brea Water Shortage Contingency Plan (WSCP) located in Appendix H of the City's 2020 UWMP. Aligned with the WSCP, the City adopted Ordinance No. 1221, the Water Shortage Contingency Response Ordinance, on June 1, 2021. This Ordinance updates Ordinance No. 1123, the Water Conservation and Water Supply Shortage Program (WCWSS Program), adopted on June 2, 2009. The new Ordinance was adopted to be consistent with 2018 amendments to the Urban Water Management Planning Act that include new WSCP requirements, MWDOC's 2020 UWMP, and MWDOC's 2020 WSCP. The purpose of Ordinance No. 1123 is to establish water management requirements necessary to "assure adequate supplies of water to meet the needs of the public and further the public health, safety, and welfare, recognizing that water is a scarce natural resource that requires careful management not only in times of drought, but at all times."

The ordinance establishes permanent water conservation standards intended to alter behavior related to water use efficiency for non-shortage conditions related to:

- Limits on watering hours and no irrigation within 48 hours of rainfall event
- Limits on water duration
- No excessive water flow or runoff -
- No washing down hard or paved surfaces -
- Obligation to fix leaks, breaks, or malfunctions
- Water fountains and decorative water features only as part of recirculating system -
- Limits on washing vehicles -
- Drinking water served upon request only
- Commercial lodging establishments must provide option to note launder linen daily
- No installation of single pass cooling systems
- No installation of non-re-circulating water systems in commercial car wash and laundry systems
- Restaurant required to use water conserving dish wash spray valves

The ordinance also establishes six levels of water supply shortage response actions to be implemented during times of declared water shortage or declared water shortage emergency, with increasing restrictions on water use in response to worsening drought or emergency conditions and decreasing supplies.

The City is fully metered for all customer sectors, including separate meters for single-family and multi-family residential, CII, dedicated landscape, and City-owned meters. The City's program for meter replacement and calibration consists of replacing meters every 10 years and calibrating meters every two years for diameters 1.5-inch and above or as needed.

The City has a four-tier inclining block rate structure for single-family residential customers and a uniform rate for non-residential customers. Non-residential category includes multifamily, commercial, industrial, institutional, and greenbelt. A 20 percent lifeline discount for the first tier of the inclining rate structure is in place to assist low-income residents. Qualified residents may also receive a discount of 10 percent on the second tier and five percent of the third tier of the inclining rate structure. The City's water rate structure includes a monthly service charge based on meter size and monthly usage charges based on the amount of water used. This rate structure became effective on July 1, 2017. The City's conservation pricing structure is always in place and is not dependent upon a water shortage for implementation.

5.4 Normal, Dry Year and Multiple-Dry Year Supply Reliability

5.4.1 Metropolitan Supplies and Demands

In their 2020 UWMP, Metropolitan estimated supply capability and projected demands for an average (normal) year based on an average of hydrologies for the years 1922-2017; for a single dry-year based on a repeat of the hydrology in the year 1977; and for multiple dry years based on a repeat hydrology of a five consecutive year drought from 1988 through 1992. The single and multiple-dry-year hydrologies represent the timing of the least amount of available water resources from the SWP, a major source of Metropolitan's supply.

Metropolitan developed demand forecasts by first estimating total retail demands for its service area and then factoring out water savings attributed to conservation. Projections of local supplies then were derived based on information gathered from Metropolitan's annual local production surveys and communication with member agency staff. The resulting difference between total demands net of conservation and local supplies is the expected regional demands on Metropolitan supplies. These estimates are summarized by category in Table 5.4 for average, single-dry and multiple-dry-year water supply scenarios. More detailed information on Metropolitan's forecasts and these tables can be found in their 2020 UWMP. In all scenarios shown in Table 5.4 there is a projected surplus, even without Metropolitan's Supplies under Development and Potential Supplies.

5.4.2 City Supplies and Demands

The supply and demand reliability assessment is taken from the City's 2020 UWMP. The basis of normal-year, single-dry, and multiple-dry year hydrology are consistent with the hydrologic condition for the MWDOC service area, which the City is a part of, as provided in the MWDOC 2020 UWMP. City normal-year supplies and demands were discussed in Section 4.0. Normal-year hydrology is represented by the average of FY 2017-18 and FY 2018-19. The City demands presented in the 2020 UWMP are assumed to not include the increased demands attributed to the Proposed Project. As such, these demands were added to the projected City demands. The supplies are consistent with the normal-year supplies estimated in the City's 2020 UWMP with imported supplies from MWDOC increased in Table 5.5 to accommodate the increased demands from the Proposed Project. It is noted in the UWMP that the supply data in the reliability analysis was presented to match the projected City demand and does not account for additional supplies available. The City can purchase more Metropolitan water through MWDOC who demonstrates

surplus as discussed above. Based on Metropolitan's and MWDOC's UWMP, imported water is available to close any local water supply gap.

Table 5.6 shows City supplies and demands projected to occur for a single dry-year based on a repeat of the hydrology in the year 2014, consistent the MWDOC 2020 UWMP. Demands were increased 6.0 percent relative to demands forecast for normal-year conditions consistent with the City's 2020 UWMP. Again, supply is increased to accommodate the additional demands from the Proposed Project. Table 5.7 shows City supplies and demands projected to occur for multiple dry years based on a repeat of the hydrology in the years 2012-2016, consistent with MWDOC 2020 UWMP. Each year of the 5-year drought period was estimated using the same assumptions as the City's 2020 UWMP with demand increasing by 6.0 percent by year 5, relative to the normal year demand. .

The City is projected to have sufficient imported and groundwater supplies to meet normal, single-dry year, and multiple-dry year conditions with the addition of the Proposed Project demands as Metropolitan has projected supply surpluses for each of these conditions (even without supplies under development and potential supplies). Also, additional groundwater supplies are available for purchase through CDWC. It should be noted that imported water supplies are increased in single and multiple dry years consistent with Metropolitan's 2020 UWMP due to the fact that in dry years Metropolitan draws water from surface and groundwater storage programs.

Table 5.4
Metropolitan Regional Water Demands
Single Dry, Multiple Dry and Average Years (AF)

Metropolitan Supply Capability and Projected Demands (AFY)					
Single Dry Year MWD Supply Capability and Projected Demands (1977 Hydrology)					
Fiscal Year	**2025**	**2030**	**2035**	**2040**	**2045**
Capability of Current Supplies	2,772,000	2,761,000	2,760,000	2,760,000	2,757,000
Projected Demands	1,544,000	1,500,000	1,473,000	1,496,000	1,525,000
Projected Surplus	1,228,000	1,261,000	1,287,000	1,264,000	1,232,000
Projected Surplus %[(a)]	80%	84%	87%	84%	81%
Supplies under Development	0	0	0	0	0
Potential Surplus	1,228,000	1,261,000	1,287,000	1,264,000	1,232,000
Potential Surplus %[(a)]	80%	84%	87%	84%	81%
Multiple Dry Year MWD Supply Capability and Projected Demands (1988-1992 Hydrology)					
Fiscal Year	**2025**	**2030**	**2035**	**2040**	**2045**
Capability of Current Supplies	2,178,800	2,219,000	2,241,000	2,263,000	2,239,000
Projected Demands	1,592,000	1,570,000	1,537,000	1,539,000	1,564,000
Projected Surplus	586,800	649,000	704,000	724,000	675,000
Projected Surplus %[(a)]	37%	41%	46%	47%	43%
Supplies under Development	0	0	0	0	0
Potential Surplus	586,800	649,000	704,000	724,000	675,000
Potential Surplus %[(a)]	37%	41%	46%	47%	43%
Average Year MWD Supply Capability and Projected Demands (1922-2017 Hydrology)					
Fiscal Year	**2025**	**2030**	**2035**	**2040**	**2045**
Capability of Current Supplies	3,899,000	3,893,000	3,890,000	3,888,000	3,885,000
Projected Demands	1,427,000	1,388,000	1,362,000	1,378,000	1,403,000
Projected Surplus	2,472,000	2,505,000	2,528,000	2,510,000	2,482,000
Projected Surplus %[(a)]	173%	180%	186%	182%	177%
Supplies under Development	13,000	13,000	13,000	13,000	13,000
Potential Surplus	2,485,000	2,518,000	2,541,000	2,523,000	2,495,000
Potential Surplus %[(a)]	174%	181%	187%	183%	178%

(a) As a percentage of projected demand

(b) Total demands are adjusted to include IID-SDCWA transfer and exchange and canal lining. These supplies are calculated as local supplies but shown for CRA capacity limit calculations

Source: 2020 Metropolitan Urban Water Management Plan

Table 5.5
City Projected Normal-Year Water Supply and Demand (AF)

Supply Sources/Demands	2025	2030	2035	2040	2045
Supply	Normal Year				
CDWD	9,000	9,000	9,000	9,000	9,000
MWDOC[a]	960	1,112	1,108	1,142	1,162
Local (Groundwater)[b]	115	115	115	115	115
Total Supply	10,075	10,227	10,223	10,257	10,277
Demand[c]	Normal Year				
Total City Demand without Project[d]	9,543	9,695	9,691	9,725	9,745
Additional Proposed Project Demand[e]	532	532	532	532	532
Total Demand[f]	10,075	10,227	10,223	10,257	10,277

(a) The amount of MWDOC imported water supply to meet demand
(b) Local groundwater for irrigation uses and not utilized by the Project
(c) All normal-year demand includes 5% non-revenue water (water loss) consistent with City's 2020 UWMP
(d) Normal year demand based on the City's 2020 UWMP, assumed to not include Project demand
(e) Project demand based on Brea 265 Specific Plan. See Table 4.1
(f) Normal year demand based on the City's 2020 UWMP plus Proposed Project demand

Table 5.6
City Projected Single Dry-Year Water Supply and Demand (AF)

Supply Sources/Demands	2025	2030	2035	2040	2045
Supply	Single-Dry Year				
CDWD	9,000	9,000	9,000	9,000	9,000
MWDOC[a]	1,564	1,726	1,721	1,758	1,779
Local Groundwater[b]	115	115	115	115	115
Total Supply	10,679	10,841	10,836	10,873	10,894
Demand[c]	Single-Dry Year				
Total City Demand without Project[d]	10,115	10,277	10,272	10,309	10,330
Additional Proposed Project Demand[e]	564	564	564	564	564
Total Demand[f]	10,679	10,841	10,836	10,873	10,894

(a) The amount of MWDOC imported water supply to meet demand
(b) Local groundwater for irrigation uses and not utilized by the Project
(c) Includes 5% non-revenue water (water loss) consistent with City's 2020 UWMP and is 6% greater than normal year demand consistent with City's 2020 UWMP
(d) Single-dry year demand based on the City's 2020 UWMP, assumed to not include Project demand
(e) Project demand based on Brea 265 Specific Plan land use and increased by 6% for single-dry year
(f) Single-dry year demand based on the City's 2020 UWMP plus Proposed Project demand

Table 5.7
Projected Multiple Dry-Year Water Supply and Demand (AF)

Supply Sources/Demands		2025	2030	2035	2040	2045
First Year	CDWD	9,000	9,000	9,000	9,000	9,000
	MWDOC[a]	1,195	1,576	1,705	1,708	1,742
	Local Groundwater[b]	115	115	115	115	115
	Total Supply	10,310	10,691	10,820	10,823	10,857
	Total City Demand without Project	9,766	10,147	10,276	10,279	10,313
	Proposed Project Demand	544	544	544	544	544
	Total Demand[c]	10,310	10,691	10,820	10,823	10,857
Second Year	CDWD	9,000	9,000	9,000	9,000	9,000
	MWDOC[a]	1,288	1,614	1,709	1,721	1,751
	Local Groundwater[b]	115	115	115	115	115
	Total Supply	10,403	10,729	10,824	10,836	10,866
	Total City Demand without Project	9,854	10,180	10,275	10,287	10,317
	Proposed Project Demand	549	549	549	549	549
	Total Demand[c]	10,403	10,729	10,824	10,836	10,866
Third Year	CDWD	9,000	9,000	9,000	9,000	9,000
	MWDOC[a]	1,380	1,651	1,713	1,733	1,761
	Local Groundwater[b]	115	115	115	115	115
	Total Supply	10,495	10,766	10,828	10,848	10,876
	Total City Demand without Project	9,941	10,212	10,274	10,294	10,322
	Proposed Project Demand	554	554	554	554	554
	Total Demand[c]	10,495	10,766	10,828	10,848	10,876
Fourth Year	CDWD	9,000	9,000	9,000	9,000	9,000
	MWDOC[a]	1,472	1,688	1,717	1,746	1,770
	Local Groundwater[b]	115	115	115	115	115
	Total Supply	10,587	10,803	10,832	10,861	10,885
	Total City Demand without Project	10,028	10,244	10,273	10,302	10,326
	Proposed Project Demand	559	559	559	559	559
	Total Demand[c]	10,587	10,803	10,832	10,861	10,885
Fifth Year	CDWD	9,000	9,000	9,000	9,000	9,000
	MWDOC[a]	1,564	1,726	1,721	1,758	1,779
	Local Groundwater[b]	115	115	115	115	115
	Total Supply	10,679	10,841	10,836	10,873	10,894
	Total City Demand without Project	10,115	10,277	10,272	10,309	10,330
	Proposed Project Demand	564	564	564	564	564
	Total Demand[c]	10,679	10,841	10,836	10,873	10,894

(a) The amount of MWDOC imported water supply to meet demand
(b) Local groundwater for irrigation uses and not utilized by the Project
(c) Each multiple dry-year demand includes 5% water loss and increases to 6% greater than normal year demand by year 5, consistent with City's 2020 UWMP

6 CONCLUSION

The estimated buildout water demand for the Proposed Project is projected to be 507 AF greater (not including water loss) than the FY 2020 water demand for existing project area which was assumed to be negligible for the purpose of this WSA. Adding projected water loss consistent with the City's UWMP increases this additional demand to a supply requirement of 532 AF (including water loss), which is 5 percent of the total supply requirement estimated for the City in FY 2045.

The City is projected to have sufficient imported and groundwater supplies to meet normal, single-dry year, and multiple-dry year conditions with the addition of the Proposed Project demands because:

1. Metropolitan has projected supply surpluses for each of these conditions, and
2. The City can increase groundwater purchases through CDWC based on historical use.

The information included in this WSA identifies a sufficient and reliable water supply for the City, now and into the future, including a sufficient water supply for the land uses proposed for the Brea 265 Specific Plan. These supplies are also sufficient to provide for overall City-wide growth at the rate projected in the City's 2020 UWMP that includes the Proposed Project.

7 REFERENCES

The following documents were used, in conjunction with discussions with the City of Brea, in preparing this water supply assessment:

CDM Smith, *2021 OC Water Demand Forecast for MWDOC and OCWD,* March 30, 2021.

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