APPENDIX Q

Water Supply Assessment

North River Farms

Water Supply Assessment and Water Supply Verification (WSA)

FINAL

Prepared for:

City of Oceanside

300 North Coast Hwy

Oceanside, CA 92054

July 24, 2018

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List of Acronyms and Abbreviations

Af	Acre-feet
af/ac/yr	Acre-feet per acre per year
AFY	Acre-feet per year
CEQA	California Environmental Quality Act
City	City of Oceanside
Du	Dwelling unit
DWR	California Department of Water Resources
EIR	Environmental Impact Report
ETo	Evapotranspiration

GMP	Groundwater Management Plan
Gpcd	Gallons per capita per day
Gpd	Gallons per day
Gpm	Gallons per minute
GPQ	Groundwater Pumping Quota
Guidebook	Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001
IPR	Indirect Potable Reuse
MAF	Million Acre Feet
MBGPF	Mission Basin Groundwater Purification Facility
M&I	Municipal and industrial
Mgd	Million gallons per day
mg/L	Milligrams per liter
Msl	Mean sea level
MWD	Metropolitan Water District
SANDAG	San Diego Association of Governments
SDCWA	San Diego County Water Authority
SB 221	California State Senate Bill 221 of 2001
SB 610	California State Senate Bill 610 of 2001
Sf	Square feet
SWP	State Water Project
TBD	To be determined
TDS	Total Dissolved Solids
UWMP	Urban Water Management Plan
WSA	Water Supply Assessment
WMP	2015 Water Master Plan
WCP	2016 Water Conservation Master Plan

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EXECUTIVE SUMMARY

Purpose of Water Supply Assessment and Water Supply Verification

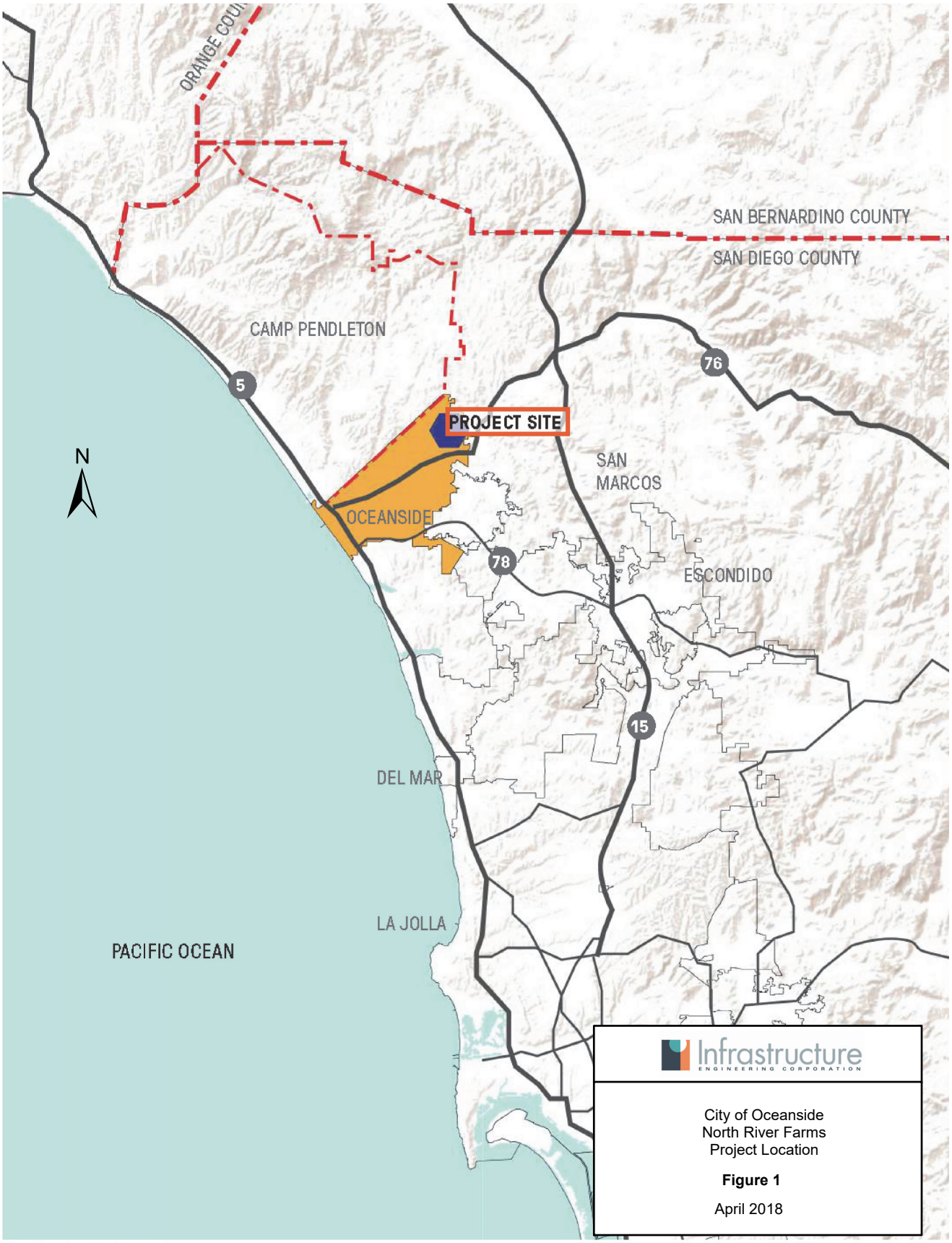
The purpose of this Water Supply Assessment and Water Supply Verification (WSA) is to perform the evaluation required by California Water Code sections 10910 through 10915, Public Resources Code Section 21151.9, and Government Code section 66473.7, as established by Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221), regarding the proposed North River Farms Planned Development (Project). Together, SB 610 and SB 221 seek to promote more collaborative planning between local water suppliers and cities and counties. SB 610 requires that the water purveyor of the public water system prepare a water supply assessment to be included in the environmental documentation of certain proposed projects.

Infrastructure Engineering Corporation prepared this WSA for the City of Oceanside (City) for the Project, which is located within the City's water service area. This WSA evaluates the adequacy of the City's total projected water supplies to meet the City's existing and projected future water demands, including those water demands associated with the Project, under all hydrologic conditions (Normal Years, Single Dry Years, and Multiple Dry Years) during a 20-year projection. This WSA Report has been independently reviewed by the City. The WSA will be included as part of the Environmental Impact Report (EIR) prepared by the developer pursuant to the California Environmental Quality Act (CEQA).

North River Farms Project Overview and Water Use

The North River Farms development is located in the South Morro Hills neighborhood in the northeastern corner of the City. The 176.63-acre site is centered on North River Road about a mile east of the intersection of North River Road and College Boulevard with its eastern boundary marked by the southerly alignment of Wilshire Boulevard. Currently, the entire property is designated as Agricultural (A) under the City's Zoning Ordinance and General Plan. **Figure 1** shows the location of the Project site.

The Project proposes a planned development consisting of a General Plan Amendment, Zoning Amendment, Planned Development Plan, and Vesting Tentative Map. If approved, these entitlements would allow the development of a planned residential, mixed-use community on 176.6 acres in the northeastern portion of the City along the North River Road alignment. The project would allow for the development of up to 689 dwelling units, approximately 31.6 acres of agricultural uses, and approximately 16.0 acres of park and open space features. The project would also allow for a boutique hotel, an education center, and flexible commercial uses on 13.8 acres of the site.



Source: Figure 1-1. North River Planned Development Plan Draft

Projected Potable Water Demand for the Project

The projected potable water demand at buildout of the project is estimated to be 347,046 gallons per day (GPD) or 389 acre-feet per year (AFY). The estimated existing demand due to agricultural land use is 146,313 GPD or 164 AFY. Therefore, the project is estimated to increase water supply demand due to the land use change from agricultural to mixed use residential development by 225 AFY: (389 – 164) AFY = 225 AFY. This demand increase results in approximately 0.7% increase on the overall system demand estimated in the City's 2015 Urban Water Management Plan (UWMP). The City's continued implementation of conservation measures could ensure adequate supply is maintained to the project and existing/planned customers despite the small increase in water supply demand from this Project.

Summary of Projected Water Supply Availability and Reliability

The City's 2015 UWMP projects 100% supply reliability under normal year and single-dry year conditions. Under multiple dry year conditions, the City's total water demand is estimated to exceed the total supply by approximately 3% and 7% for the third year of 2035 and 2040, respectively. Details of the City's ability to provide sufficient supplies are discussed in Chapters 5 and 6 below.

Sufficient water supplies will be available to meet the demands of the Project during average/normal, single-dry, and multiple-dry years. This is mainly due to increases in supply through the purchases of raw and treated water, reliable local groundwater, and continued augmentation of recycled water use in new as well as established parts of the City's service area, which is anticipated to offset potable demand. The City also continues to find ways to expand its water supply portfolio, for example, via its indirect potable reuse project. Although the City is also looking into desalination water as a potential supply source, its use as a supply source has not yet been determined feasible, and therefore it has not been considered for this assessment. In the event supply shortages do occur in the future, the City may invoke its Water Shortage Contingency Plan, as described in its 2015 UWMP, which provides a comprehensive and proactive approach to shortage response planning.

Therefore, pursuant to Water Code section 10910(c)(4), and based on the technical analyses described in this WSA and the 2015 UWMP, the projected demands for the North River Farms Planned Development can be met by the City during normal, single-dry, and multiple-dry years within a 20-year projection.

Chapter 1. Introduction

1.1. Need for and Purpose of Water Supply Assessment and Water Supply Verification

On January 1, 2002, California Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) took effect. The intent of SB 610 and SB 221 was to improve the link between information on water supply availability and certain land use decisions made by cities and counties. Specifically, certain sections of the California Water Code and Government Code were amended to require coordination between land use lead agencies and public water purveyors. The purpose of this coordination is to ensure that prudent water supply planning has been conducted; and that planned water supplies are adequate to meet existing demands, anticipated demands from approved projects and tentative maps, and the demands of proposed projects.

Under SB 610, if a development is a "Project"[1] as defined by the Water Code Section 10912, the water purveyor responsible for delivering water to the Project must be identified and must prepare a WSA. The WSA is to be included in the CEQA environmental documentation and approval process for certain proposed projects. The purpose of the WSA is to demonstrate that the water purveyor has sufficient water supplies to satisfy the water demands of the proposed development while still meeting the current and projected water demands of existing customers, and under various hydrologic conditions.

SB 221 requires an affirmative written verification from the water purveyor of the public water system that sufficient water supplies are available for certain residential subdivisions[2] prior to approval of a tentative map. SB 221 was intended to act as a fail-safe mechanism to ensure that collaboration occur between the water supplier and a city or county to ensure adequate water supplies before the start of construction on new, large development.

A foundational document for compliance with both SB 610 and SB 221 is the UWMP. Cities, counties, water districts, property owners, and developers utilize UWMPs as an important document in a planning context (i.e. updating a General Plan) and when proposing new projects. The City's 2015 UWMP is used as the primary reference for this WSA. Other planning documents consulted include the City's 2015 Water Master Plan, its 2015 Water Conservation Master Plan, and the North River Farms Planned Development Plan.

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[1] The North River Farms development meets the definition of "Project" per Water Code Section 10912 (a) (1). That is, "A proposed residential development of more than 500 dwelling units."
[2] The term "subdivision" refers to a proposed residential development of more than 500 dwelling units per Government Code Section 66473.7(a)(1).

1.2. Report Organization

The Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001 (Guidebook) provides general guidance on the preparation of water supply assessments and verifications. Chapters 2 through 4 of the WSA report are organized to follow Sections 1 through 17 of the Guidebook as shown in Table 1-1. For reference, relevant citations to the Water Code and the Government Code are included throughout this WSA, with the language applicable to this WSA italicized.

Table 1-1: WSA Chapters aligned with Guidebook Sections

WSA Chapters	SB 610 Guidebook Sections	SB 221 Guidebook Sections
Chapter 2.0 Project Description	• **Section 1**: Does SB 610 apply to the proposed development? • **Section 2**: Who will prepare the SB 610 assessment? • **Section 3**: Has an assessment already been prepared that includes this project? • **Section 4**: Is there a current Urban Water Management Plan?	• **Section 9**: Does the SB 221 apply to this subdivision? • **Section 10**: Is the subdivision exempt from SB 221? • **Section 11:** Who will prepare the SB 221 verification of sufficient water supply? • **Section 12**: Has a verification already been prepared for this subdivision?
Chapter 3.0 Water Demand Chapter 4.0 Water Supply	• **Section 5**: What information should be included in an assessment? • **Section 6**: Is the projected water supply sufficient or insufficient for the proposed project?	• **Section 13**: What information should be included in a verification? • **Section 14**: Determining if the projected water supply is sufficient for the subdivision
Chapter 5.0 Potable Water Supply Reliability Chapter 6.0 Determination of Water Supply Sufficiency	• **Section 7**: Requirements if the projected supply is determined to be insufficient • **Section 8**: Final SB 610 assessment actions by the lead agency	• **Section 15**: Requirements if the projected supply is determined to be insufficient • **Section 16**: Final SB 221 verification actions by agency • **Section 17**: Special Circumstances

Chapter 2. Project Description

2.1. Project Location

The North River Farms Planned Development is located in the South Morro Hills neighborhood within the northeastern portion of the City of Oceanside. The 176.63-acre site is centered on North River Road east of the intersection of North River Road and Stallion Drive with its eastern boundary marked by the southerly alignment of Wilshire Boulevard as shown in **Figure 1**.

2.2. SB 610 and SB 221 Apply to the Project

2.2.1. Regulations

SB 610

California Water Code Section 10910

(a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code), under Section 21080 of the Public Resources Code shall comply with this part.

California Water Code Section 10912

For the purposes of this part, the following terms have the following meanings:

(a) "Project" means any of the following:

(1) A proposed residential development of more than 500 dwelling units.

(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet 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 area.

(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.

SB 221

Government Code Section 65867.5

(c) *A development agreement that includes a subdivision, as defined in section 66473.7, shall not be approved unless the agreement provides that any tentative map prepared for the subdivision will comply with the provisions of section 66473.7.*

Government Code Section 66473.7

(a) For the purposes of this section, the following definitions apply:

(1) "*Subdivision" means a proposed residential development of more than 500 dwelling units,* except that for a public water system that has fewer than 5,000 service connections, "subdivision" means any proposed residential development that would account for an increase of 10 percent or more in the number of the public water system's existing service connections

2.2.2. The North River Farms Planned Development is a Project and Subdivision subject to SB 610 and SB 221

The Project proposes a planned development consisting of a General Plan Amendment, Zoning Amendment, Planned Development Plan, and Vesting Tentative Map. If approved, these entitlements would allow the development of a planned residential, mixed-use community on 176.6 acres in the northeastern portion of the City along the North River Road alignment. The project would allow for the development of up to 689 dwelling units, approximately 31.6 acres of agricultural uses, and approximately 16.0 acres of park and open space features. The project would also allow for a boutique hotel, an education center, and flexible commercial uses on 13.8 acres of the site.

The Project is designated with four separate Planning Areas: PA-1. Riverside Village, PA-2. Village Core, PA-3. North Village, and PA-4. Hilltop Village. Table 2-1 provides a land use summary[3] of the Project by Planning Area. The Project is subject to CEQA, is defined a "Project" pursuant to Water Code Section 10912 (a), and is a "subdivision" as defined by Government Code Section 66473.7 (a). Therefore, the requirements of SB 610 and SB 221 apply to the Project.

[3] Source: Land use summary provided by Integral Communities. See appendix for details.

Table 2-1: Proposed Land Use by Planning Area			
Planning Areas	Acres	Residential Density (DU/AC)	Residential Units
PA-1: Riverside Village			
Single Family Residential (RMA)	20.6	6.0 - 9.9	250
Single Family Residential (RMB)	7.8	10.0 - 15.0	
Agriculture	13.3	-	-
Park	1.9	-	-
Basin	1.7	-	-
Subtotal	***45.2***		-
PA-2: Village Core			
Medium Density Residential (RMC)/ Mixed Uses (MU)	13.8	15.1 - 20.9	130
Agriculture	9.3	-	-
Park	1.8	-	-
Subtotal	***24.9***		-
PA-3: North Village			
Single Family Residential (RS)	40.3	3.6 - 5.9	209
Agriculture	9	-	-
Park	3.6	-	-
Buffer	1.7	-	-
Basin	1.7	-	-
Subtotal	***56.4***		-
PA-4: Hilltop Village			
Single Family Residential (RS)	29.5	3.6 - 5.9	100
Park	2.8	-	-
Buffer	4.1	-	-
Habitat	0.6	-	-
Subtotal	***37***	-	-
Backbone Roads	***13.1***	-	-
Total	**176.6**		**689**

2.3. Project Water Supplier

2.3.1. Regulations

SB 610

California Water Code Section 10910

(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the *California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined in Section 10912, that may supply water for the project.* If the city or county is not able to identify any public water system that may supply water for the project, the city or county shall prepare the water assessment required by this part after consulting with any entity serving domestic water supplies whose service area includes the project site, the local agency formation commission, and any public water system adjacent to the project site.

California Water Code Section 10912

(a) *"Public water system" means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections.* A public water system includes all of the following:

(1) Any collection, treatment, storage, and distribution facility under control of the operator of the system which is used primarily in connection with the system.

(2) Any collection or pretreatment storage facility not under the control of the operator that is used primarily in connection with the system.

(3) Any person who treats water on behalf of one or more public water systems for the purpose of rendering it safe for human consumption

SB 221

Government Code Section 66473.7

(a) (3) "Public water system" means the water supplier that is, or may become as a result of servicing the subdivision included in a tentative map pursuant to subdivision (b),a public water system, as defined in Section 10912 of the Water Code, that may supply water for a subdivision.

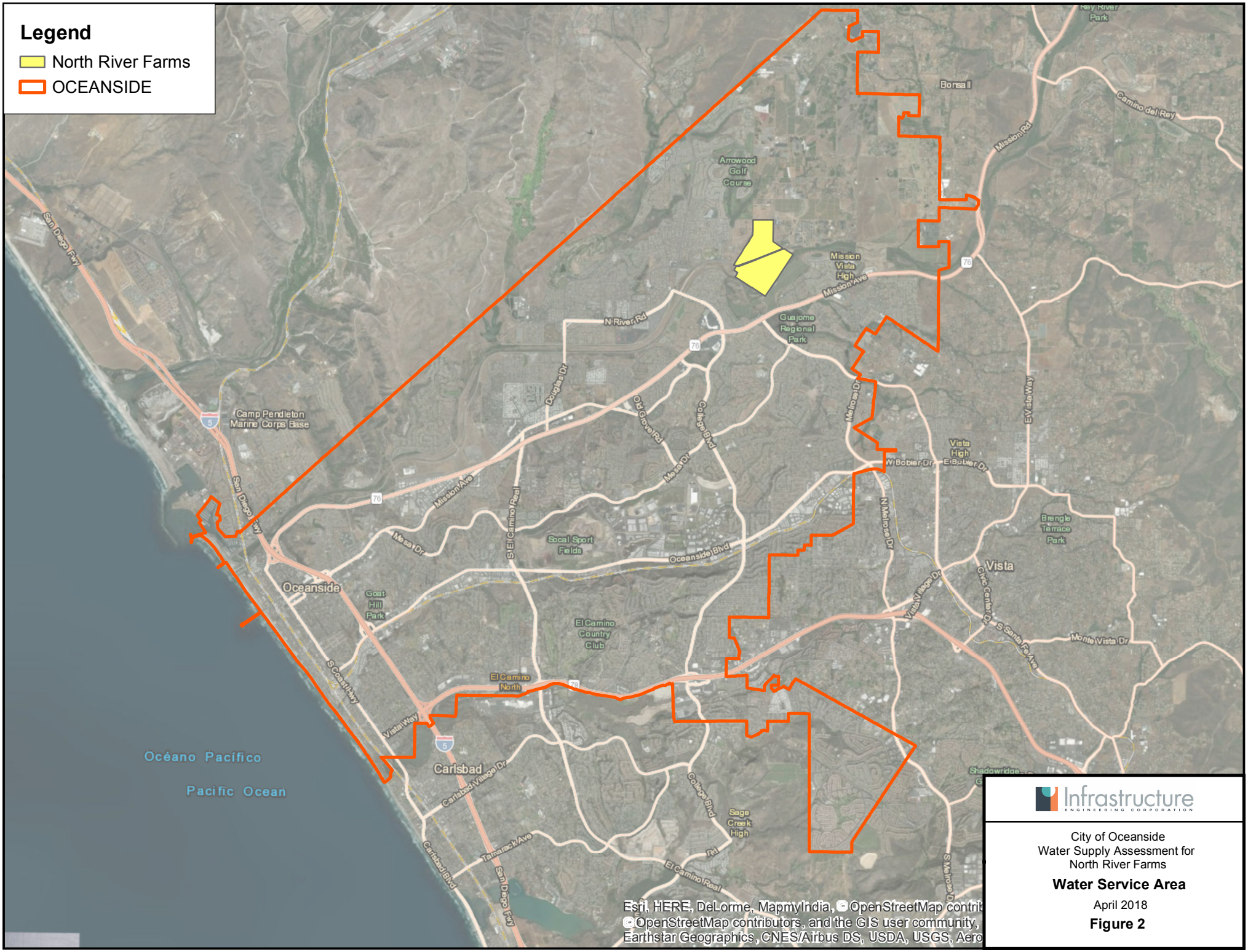
2.3.2. The City of Oceanside is the Water Supplier for the Project and Preparer of this Water Supply Assessment and Verification

The City of Oceanside is located in northern San Diego County, encompassing approximately 42 square miles. The City is bordered by the Pacific Ocean to the west, Camp Pendleton Marine Base to the north, the City of Carlsbad to the south, and the City of Vista and unincorporated San Diego County to the east. The location of the City is shown in **Figure 2**.

The City delivers water throughout the City's water service area for domestic, industrial, commercial, irrigation, and fire protection purposes. At present, the City's potable water supply portfolio includes purchased water from the San Diego County Water Authority (SDCWA) and local groundwater from the Mission Basin, which is treated at the Mission Basin Groundwater Purification Facility (MBGPF). Additionally, the City provides recycled water treated at the San Luis Rey Water Reclamation Facility (SLRWRF) for non-potable use to offset demands from potable water.

The City's water distribution system consists of approximately 28 pressure zones, 574 miles of pipeline, 8 groundwater wells, 12 storage reservoirs, 9 booster pumping stations, 2 water supply pump stations located at the MBGPF, 5 imported water connections, 54 pressure regulating stations (PRS), and 7 altitude valves. These facilities serve more than 43,300 service connections.

Since the Project is located within the service area of the City of Oceanside, specifically in Pressure Zone 420, pursuant to Water Code Sections 10910 (b) and 10912 (c), as well as Government Code Section 66473.7, the City is the designated water supplier and preparer of this SB 610 WSA and SB 221 Verification of Sufficient Water Supply.



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City of Oceanside
Water Supply Assessment for
North River Farms

Water Service Area

April 2018

Figure 2

2.4. Urban Water Management Plan

2.4.1. Regulations

SB 610

California Water Code Section 10910

(c) (1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).

(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g)

(3) If the projected water demand associated with the *proposed project was not accounted for in the most recently adopted urban water management plan,* or the public water system as no urban water management plan, *the water assessment for the project shall include a discussion with regard to 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 uses.*

SB 221

Government Code Section 66473.7

(c) The applicable public water system's written verification of its ability or inability to provide a sufficient water supply that will meet the projected demand associated with the proposed subdivision as required by subdivision (b) shall be supported by substantial evidence. The substantial evidence may include, but is not limited to, any of the following:

(1) The public water system's most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610) of Division 6 of the Water Code.

(2) A water assessment that was completed pursuant to Part 2. 10 (commencing with Section 10910) of Division 6 of the Water Code.

(3) Other information relating to the sufficiency of the water supply that contains analytical information that is substantially similar to the assessment required by Section 10635 of the Water Code.

2.4.2. Water Demand for the Project was Not Accounted for in the 2015 UWMP

Water demand for the Project was not accounted for in the City's most recently adopted 2015 UWMP. Pursuant to Water Code Section 10910 (c) (3), if the water demand for a proposed project was not accounted for in the most recently adopted UWMP, the water supplier must prepare an assessment that includes a discussion on whether the total projected water supplies determined to be available for the project 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 water supplier's existing and planned future uses, including agricultural and manufacturing uses. Therefore, this WSA considers whether adequate supply will be available for the project during normal, single dry, and multiple dry water years for a 20-year projection period.

2.4.3. UWMP is a Primary Reference for this WSA Concerning Water Supply and Demand for Existing, Near-term, and Future Conditions

North River Farms development was NOT accounted for in the City's most recently adopted 2015 Urban Water Management Plan.

SB 221 suggests that an UWMP is a good source of information for developing a verification of supply (Government Code Section 66473.7). The UWMP provides detailed information concerning existing and projected water supply and demand. Therefore, the City's most recent adopted 2015 UWMP, and other source documents including the City's 2015 Water Master Plan and its 2015 Water Conservation Master Plan have been relied in preparation of this WSA, consistent with SB 221 and SB 610.

Details of the City's water supply portfolio and how it will address the demands required of the Project at existing and build out conditions will be discussed in the following chapters.

2.5. Project Water Demand

2.5.1. Regulations

SB 610

California Water Code Section 10631 (Urban Water Management Plan Requirements)

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available....

(e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

2.5.2. Water Demand Projections

Land use information is used to characterize existing water use patterns for different types of land use (single-family residential, multi-family residential, commercial, industrial, etc.), termed a "customer category." The City keeps track of the water use patterns for each type of land use. These patterns can be expressed in terms of water demand unit factors (WDFs), which represent the average daily water demands for each type of land use. These are usually expressed in units of gallons per day per acre (gpd/ac). Water demand unit factors are combined with land use data to generate future (typically ultimate build-out) water demand estimates.

The City's 2015 UWMP estimated water demand within its service area through 2040 using the Decision Support System (DSS Model) tool, which was used to project water use in the Water Conservation Master Plan (WCMP) that was prepared concurrently. The DSS model forecasts future water demands by customer category based upon the City's population and employment projections. Population projections were based on the 2020-2045 population from the San Diego Association of Governments (SANDAG) Series 13 Growth Forecast, and employment projections were based on the Series 13: 2050 Regional Growth Forecast by SANDAG. SANDAG coordinated with the City to collect and verify detailed existing and planned land use inputs and guidance (including information from the General Plan), which information was used by SANDAG to develop population and employment forecasts and to project future development patterns for the City throughout 2050.

Thus, planning level water demand projections for the City were primarily based on population forecasts, employment forecasts, and land use information. Since the Project proposes a General Plan Amendment, it was not accounted for in the SANDAG's population and employment projections or the UWMP. Rather, projections for site would have been based on its General Plan land use designation of Agricultural District (A).

The UWMP water demand estimates were used to forecast water use in the concurrently prepared 2015 Water Conservation Master Plan (WCMP). Based on the WCMP and the 2015 UWMP, future water demand was projected by account growth among each customer category; however, no growth was projected for the agricultural customer category. Utilizing the projected water demand and land use for Agriculture land in the 2015 UWMP, water demand unit factor for Agriculture Land was determined to be 827 gpd/acre.

However, for this WSA, total water demand for the Project site was estimated based on the City's 2015 Water Master Plan (WMP) by Carollo to be consistent with City planning efforts.

2.5.2.1. Project Water Demand Unit Factors (WDFs)

WDFs used for the Project were based on the consumption data used in the 2015 WMP and are listed in **Table 2-2**.

Agriculture

WDFs for Agriculture and Park/Open Space land use categories were not available in the WMP. Therefore, unit factors for these land use types were estimated using similar methodology provided in the WMP. That is, WDFs were calculated using geospatially matched customer billing data for the period of 2010 through 2012 for sample areas of each land use type located within the City's water service area. The unit factors were calculated to be 797 gpd/acre for Agriculture and 922 gpd/acre for Park/Open Space land uses. For conservative planning purposes in this WSA, the recommended demand factors were rounded

up about 20%. The WDFs used in calculating water demand for the Project are 1,000 gpd/acre for Agriculture and 1,200 for Park/Open Space land uses[4].

Residential

To calculate residential WDFs, the WMP variably used units of gpd/acre and gpd/unit, depending on available land use information. WDFs may therefore be calculated in two ways, under what is termed in this WSA as "Water Demand Factor 1," which calculates water demand based on WDFs in units of gpd/acre; or under what is termed "Water Demand Factor 2," which calculates water demand based on WDFs in units of gpd/unit. The Project's water demand has been estimated under both Water Demand Factor 1 using gpd/acre and Water Demand Factor 2 using gpd/unit.

Hence, for residential water demand, two estimates of Project demand are provided for each land use. Estimated Demand 1 provides the estimated Project water demand based on Water Demand Factor 1; while Estimated Demand 2 provides the estimated Project water demand based on Water Demand Factor 2.

Mixed Uses

A majority of Village Core Planning Area (PA-2) is proposed with Mixed Uses (MU) which consist of a mix of residential, commercial, and hotel land uses. Pursuant to our discussions with the developer, the MU area has not been mapped at this time in order to allow for flexibility in the ultimate development of this area; therefore, a breakdown of acreage by land use category was not available at the time of preparing this WSA.

Based on the WMP, the WDF for the Commercial land use category was estimated at 1,500 gpd/acre. Estimated Demand 1 calculates the water demand associated with the commercial and hotel uses based on gpd/acre based on gross acres.

Although the hotel use is part of the commercial core within the MU area, water consumption for hotel is typically different from general commercial use. Water Demand Factor 2 uses a demand factor for hotel uses of 115 gpd/room. For conservative purposes, Estimated Demand 2 calculates the water demand associated with the hotel use separately based on Water Demand Factor 2 by gpd/room.

[4] Utilizing the projected water demand and land use estimates for agriculture land in the 2015 UWMP, water demand unit factor for Agricultural land uses was determined to be 827 gpd/acre. However, for purposes of this WSA, total water demand for the Project site was estimated based on the City's 2015 WMP to be consistent with City planning efforts. In addition, the WDF for Agricultural land uses used in this WSA of 1,000 gpd/acre is significantly more conservative that the WDF as calculated based on the UWMP.

2.5.2.2. Project Water Demand Calculation

Project estimated demand calculations are presented in **Table 2-2**. Total water demand for the Project was calculated using the above WDFs and under both residential Water Demand Factor 1 and Water Demand Factor 2 scenarios.

In addition, since the 13.8-acre Mixed Use (MU) area has not been mapped in order to allow for flexibility in the ultimate development of this area, the following assumptions have been made for the water demand calculation of the MU area. The MU area is proposed with medium density residential use with 130 dwelling units, commercial use, and hotel use. Based on the City's General Plan, residential density for medium density residential use ranges from 15.1 – 20 dwelling units per acre (DU/AC). Gross area for the residential use within the MU area has been determined by assuming a midpoint residential density within this General Plan range of 17.5 DU/AC. Based on the assumption of 130 dwelling units and 17.5 DU/AC, medium density residential uses would comprise approximately 7.4 acres of this MU area. The gross area for the commercial use within the MU area is then determined by subtracting the residential acreage (7.4 acres) from the total MU area (13.8 acres), resulting in 6.4 acres of commercial uses.

Estimated Demand 1 projects a total Project water demand of 272,380 gpd (305 AFY). Estimated Demand 2 projects a total Project water demand of 347,380 gpd (389 AFY).

Table 2-2: Water Demand Projection for the North River Farms Project

Land Use	Residential Density (DU/AC)	Acres	Units	Water Demand Factors 1 (gpd/ac)[5]	Water Demand Factor 2 (gpd/unit or gpd/room)[5]	Estimated Demand 1 (gpd)	Estimated Demand 2 (gpd)
Single Family Residential (RS)	3.6 - 5.9	69.8	309	1,500	400	104,700	123,600
Single Family Residential (MDA/MDB)	6.0 - 15	28.4	250	3,000	400	85,200	100,000
Medium Density Residential/ Mixed Uses (MDC/MU)	15.1 - 20	7.4[6]	130	3,000	400	22,200	52,000

[5] Data source: 2015 WMP
[6] Gross acreage was calculated by assuming the residential density is 17.5 DU/AC.

Table 2-2: Water Demand Projection for the North River Farms Project							
Land Use	Residential Density (DU/AC)	Acres	Units	Water Demand Factors 1 (gpd/ac)[5]	Water Demand Factor 2 (gpd/unit or gpd/room)[5]	Estimated Demand 1 (gpd)	Estimated Demand 2 (gpd)
Agriculture	-	31.6	-	1,000	-	31,600	31,600
Parks/Open Space[7]	-	15.9	-	1,200	-	19,080	19,080
Commercial	-	6.4[8]	-	1,500	-	9,600	9,600
Hotel	-	-	100	1,500	115	-	11,500
Others	-	17.1	-	-	-	-	-
Total		**176.6**				**272,380**	**347,380**

2.5.2.3. Project Water Demand Comparison to 2015 UWMP Estimate

Table 2-3, North River Farm Project Demand Comparison, summarizes the potable water demand projected for the Project compared to the water demand projected for the site in the 2015 UWMP under agricultural land uses. Using the more conservative Estimated Demand 2, 389 AFY Project water demand, the incremental increase in demand to the City system associated with the Project is estimated to be about 225 AFY. The Project is therefore estimated to increase the projected water demand for 2040 in the 2015 UWMP by approximately 0.7% based on this WSA's conservative projections.

Table 2-3: North River Farm Project Demand Comparison						
Data Source	Existing Land Use	Proposed Land Use	2015 Demand (gpd)	2015 Demand (afy)	2040 Demand (gpd)	2040 Demand (afy)
2015 UWMP	Agriculture	Agriculture	146,334	164[9]	146,334	164[8]
NRF Development Plan	Agriculture	Planned Development	347,380	389	347,380	389
Difference from the 2015 UWMP			201,046	225	201,046	225

[7] Parks/ Open Space use includes parks and buffers.
[8] Gross acreage was calculated by subtracted the total area (13.8 acres) of the mixed use area with the calculated residential area (7.4 acres).
[9] Water demand was calculated based on project site area and the demand factor of 827 gpd/ac estimated from the 2015 UWMP

Table 2-4 illustrates the total increased demand of the Project to the total City water demand estimated in the UWMP in 5-year increments for a 20-year projection.

Table 2-4: Impact of Project to Total Water Demands (AFY)

Demand	2015	2020	2025	2030	2035	2040
Project	-	225	225	225	225	225
TOTAL WATER DEMAND	23,717	31,728	32,915	32,813	33,190	33,537
% Increase	-	0.7%	0.7%	0.7%	0.7%	0.7%

Chapter 3. Water Demand

3.1. Historical Potable and Recycled Water Demands

The City serves more than 43,300 service connections. Significant reductions in water consumption have been recognized in the City since the implementation of emergency conservation regulations that were adopted by the State Water Board in 2014, as shown in **Figure 3, Historical Potable and Recycled Water Demands**. Based on the water demands projected in the 2015 UWMP and with assumption of linear increase on water demands between planning years, potable water demands were estimated to be 25,156 AFY and 26,699 AFY for 2016 and 2017, respectively. However, the actual total potable water usage for 2016 and 2017 was 23,578 AFY and 23,972 AFY, respectively, substantially lower that the 2015 UWMP's projected demands.

Reductions have been recognized through the City's introduction of non-potable recycled water supplies and potable reuse supplies to the water service area to offset potable water demands. The City has also utilized local groundwater supplies to reduce dependence on imported water. If the City continues implementation of conservation programs, it will most likely further reduce overall water demands.

3.2. Projected Future Potable and Recycled Water Demands

Table 3-1 presents the City's projected potable and recycled water demand as detailed in the 2015 UWMP. **Table 3-1** presents the project future water demands for the City in five-year increments from 2015 through 2040. The 2015 UWMP assumed that the City will continue its water conservation efforts. The 2015 UWMP also assumed implementation of conservation "Program B" in the demand forecast, which includes aggressive water conservation, smart meters (AMI), and further implementation of recycled water conversions.

Table 3-1: Total Water Demands (AFY)

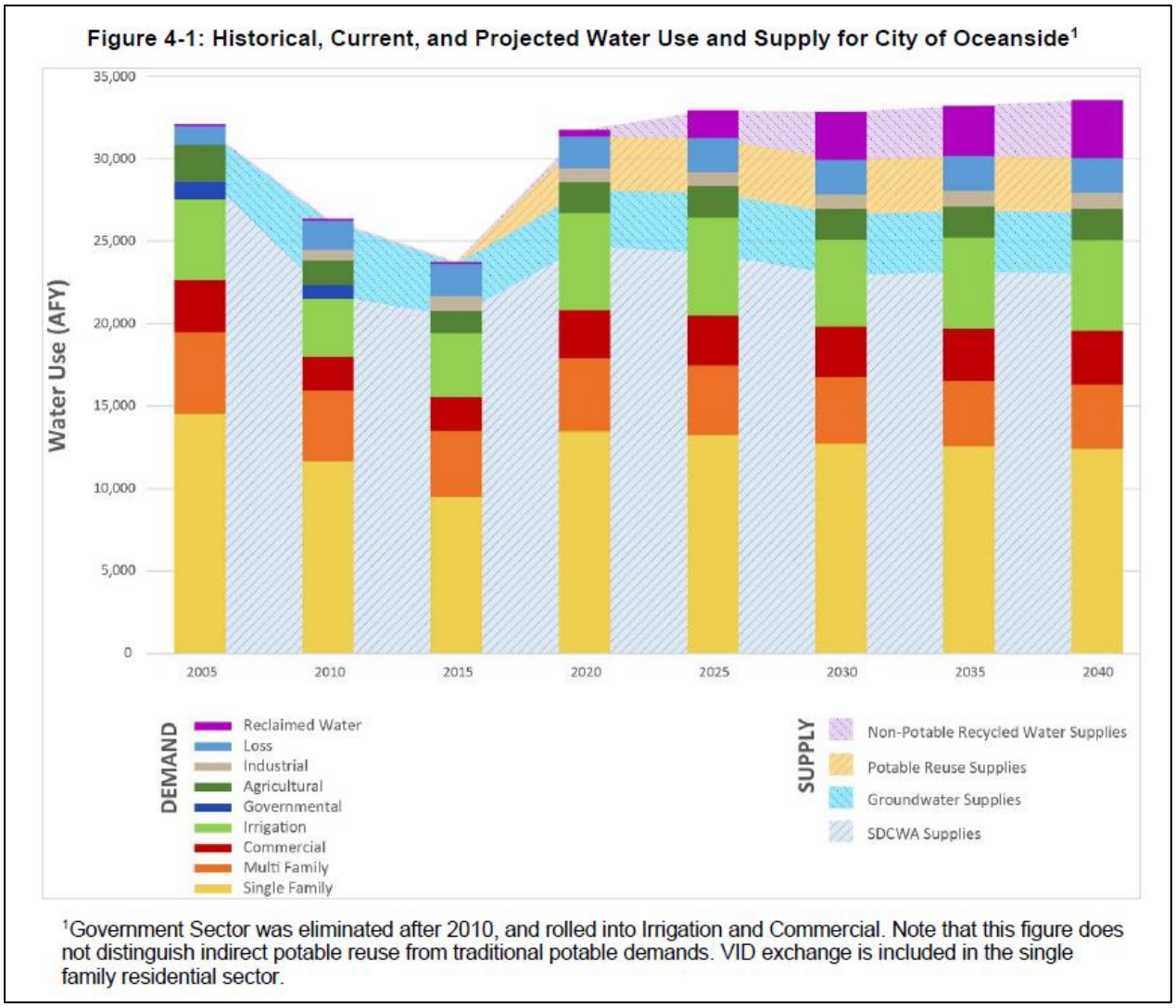
Demand Type	2015	2020	2025	2030	2035	2040
Potable and Raw water	23,613	31,328	31,215	29,913	30,130	30,037
Recycled Water	104	400	1,700	2,900	3,060	3,500
TOTAL WATER DEMAND	23,717	31,728	32,915	32,813	33,190	33,537

Source: 2015 City of Oceanside UWMP Table 4-4 Retail: Total Water Demands

The average water demand projection for the City for 2040 is 33,537 AFY.

Total water demands are estimated to increase by 0.7% by 2040 due to the Project. As detailed above, Project water demand has been conservatively estimated, in the WSA; therefore, actual demand is likely to be less than this 0.7% increase. Project water demand is also likely to be less than projected as a result of implementation of water conservation programs, and potential use of non-potable supplies to offset potable demands. The reductions seen in potable water uses in 2016 and 2017 compared to 2015 UWMP projections further supports the assumption that Project potable water demand is likely to be significantly less with conservation and non-potable supplies. The actual total potable water usage for 2016 and 2017 were 23,578 AFY and 23,972 AFY, respectively. Therefore, the City is confident that the anticipated potable water use of the Project can be met in addition to its existing customers and other future users.

Figure 3. Historical Potable and Recycled Water Demands



Source: 2015 City of Oceanside Urban Water Management Plan

Chapter 4. Water Supply

4.1. Regulations

SB 610

California Water Code Section 10910

(d) (1) The assessment required by this section shall include *an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system,* or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.

(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision(b), shall be demonstrated by providing information related to all of the following:

(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.

(e) If no water has been received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts, the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall also include in its water assessment pursuant to subdivision (c), an identification of the 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, or the city or county if either is required to comply with this part pursuant to subdivision (b), has identified as a source of water supply within its water assessments.

4.2. Existing and Projected Supplies

At present, the City has three major water supply sources: SDCWA purchases, local groundwater from Mission Basin, and non-potable recycled water from San Luis Rey Water Reclamation Facility (SLRWRF). Approximately 86% of the City's water is purchased from SDCWA. The City treats purchased, untreated water from SDCWA at the Robert A. Weese Water Filtration Plant. Approximately 13.5% of the City's water comes from the Mission Basin. Brackish groundwater is extracted and becomes potable water through a desalting process at the Mission Basin Groundwater Purification Facility (MBGPF). The City also recycles wastewater at the SLRWRF and uses it to irrigate the Oceanside Municipal Golf Course. Recycled water comprises about 0.5% of total water use.

The City has plans to expand its recycled water system through both additional non-potable recycled water deliveries and an indirect potable reuse (IPR) project to increase water supply reliability. Seawater desalination use is also being considered by the City via a feasibility study.

Table 4-1 provides a summary of the historical and projected supplies from each of these sources. The planned water supplies presented in **Table 4-1** are based on meeting the 2020 Gallons Per Capita Daily (GPCD) target for potable water. The planned water supplies are well below the contractual limits from SDCWA and the safe yield of groundwater extraction; therefore, the City can increase its supplies by purchasing additional imported water from SDCWA or extracting more groundwater from the Mission Basin, as needed. Additionally, the land use change from agricultural to mix-used for the North River Farms development would increase source water to the SLRWRF thereby increasing recycled water production.

Table 4-1: Summary of Historical and Projected Supplies (AFY)

Supply Type	2010	2015	2020	2025	2030	2035	2040
Purchased SDCWA Supply	24,897	20,400	24,728	24,215	22,913	23,130	23,037
Groundwater	3,732	3,213	3,300	3,700	3,700	3,700	3,700
Recycled Water (Non-Potable)	119	104	400	1,700	2,900	3,060	3,500
Advanced Treated Water (Potable Reuse)	0	0	3,300	3,300	3,300	3,300	3,300

Source: 2015 City of Oceanside UWMP, Table 6-1

4.3. San Diego County Water Authority

SDCWA is the regional wholesale water agency in San Diego County, serving 24-member agencies including the City. SDCWA purchases supplies from the Metropolitan Water District of Southern California (MWD), which receives its supplies primarily from the State Water Project (SWP) and the Colorado River. SDCWA also receives Colorado River water via transfers from Imperial Irrigation District (IID) and conservation savings from several canal-lining projects. Both SWP and Colorado River supplies have become increasingly vulnerable since the early 1990s due to droughts, water rights issues, and environmental restrictions. SDCWA thus also purchases desalinated seawater produced at the Claude "Bud" Lewis Carlsbad Desalination Plant and blends it into member agency supplies. SDCWA has diversified its supply sources to ensure water reliability to its member agencies, even in drought years.

The City purchases both treated (31%) and raw/ untreated (69%) water from SDCWA via five connections. Total capacity via connections is 68 million gallons/day (MGD) (76,169 AFY) for treated water and 108 MGD (120,975 AFY) for untreated water. The City's Robert A. Weese Water Filtration Plant is used to treat raw water from SDCWA to potable standards.

Pursuant to its contract with SDCWA, the City could purchase up to 40 cubic feet per second (CFS) (approximately 28,960 AFY) of treated water from SDCWA in addition to current Robert A. Weese Water Filtration Plant capacity of 36 CFS (approximately 26,100 AFY) of untreated water. This results in a reliable supply source for the City well in excess of its purchased SDCWA supply (refer to **Table 4-1**).

4.3.1. Metropolitan Water District of Southern California (MWD)

SDCWA purchases the largest amount of water from MWD among its 26-member agencies. MWD obtains its water supply from the Colorado River via Colorado River Aqueduct and the State Water Project via the California Aqueduct. Under Section 135 of the Metropolitan Act, each member agency has a preferential right to a percentage of WMD's available water supplies, and the preferential right is based on the total payment the member agency made toward capital and operating costs. Currently, SDCWA has preferential rights to 18.27% of MWD's water supply. Based on the MWD's 2015 UWMP, MWD has sufficient supply to meet expected demands under both the single driest year and the multiple dry-year hydrologic conditions through 2040.

4.3.2. Water Authority -- IID Water Conservation and Transfer Agreement

The SDCWA signed a transfer agreement with IID in 1998 for the long-term transfer of conserved agricultural water to San Diego County. On October 10, 2003, the SDCWA and IID executed an amendment to the original 1998 Transfer Agreement and on the approval and implementation of the Quantification Settlement Agreement. Through the agreement, SDCWA

received 100,000 AF in 2015, with the quantities to be increased annually up to 200,000 AF by 2021, at which time quantities would remain fixed for the duration of the transfer agreement.

4.3.3. All-American Canal and Coachella Canal Lining Projects

Through the 2003 Quantification Settlement Agreement and related contracts, the SDCWA receives 77,700 AFY of conserved water from lining of the All-American and Coachella Canals for 110 years.

4.3.4. Desalinated Seawater

SDCWA began purchasing and treating desalinated seawater from the Carlsbad Desalination Plant in October 2015. The plant can provide a highly reliable local supply of up to 56,000 AFY for the region. Of the 56,000 AFY of desalinated seawater production, 6,000 AFY is considered as a member agency local supply. This desalinated seawater is blended into SDCWA's treated water supply and delivered to its member agencies.

4.3.5. Carryover Supplies

SDCWA has invested in carryover storage supplies to increase supply reliability in dry years and multiple dry years. The carryover storage supply program includes both in-region surface water storage and out-of-region groundwater storage in California's Central Valley. Up to 40,000 AFY of carryover storage supplies can be utilized in one year.

4.4. Groundwater Supplies

4.4.1. Regulations

SB 610

California Water Code Section 10910

(f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water assessment:

(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated,

information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

4.4.2. Groundwater from the Mission Basin

The City pumps groundwater from the Mission Basin which is a sub-basin of the San Luis Rey Valley Groundwater Basin. The San Luis Rey Valley Groundwater Basin has been designated as a medium priority basin under the California Statewide Groundwater Elevation Monitoring (CASGEM) program, meaning that the state considers it a priority basin for monitoring. The City in conjunction with the County of San Diego are monitoring entities for the basin.

No groundwater management plan is currently in place for the Mission Basin, but the City is exploring formation as the Groundwater Sustainability Agency (GSA) for the lower basin, along with re-designation of the Mission Basin as a formally-recognized basin separate from San Luis Rey Valley Groundwater Basin.

Brackish groundwater extracted from the basin contains high levels of TDS, contaminations of Trichloropropane (TCP), iron, and manganese, and is required to be desalinated prior to distribution and use. Groundwater is treated at the Mission Basin Groundwater Purification Facility (MBGPF) primarily via the method of reverse osmosis from eight wells owned and operated by the City. The MBGPF was put into service in 1992 with a capacity of 2.0 MGD, and has since been expanded to its current capacity of 6.4 MGD (7,130 AFY), in 2002.

Mission Basin is estimated to have a natural safe yield of 7,000 to 10,000 AFY. However, with the challenges in groundwater extraction, including mechanical limitations and well production, the determined current reliable average brackish groundwater supply from the Mission Basin that can be treated at the MBGPF is 3,300 AFY.

When the Indirect Potable Reuse (IPR) project is completed, advanced treated water would be injected into the Mission Basin for groundwater recharge regardless of hydrologic conditions, allowing more groundwater extraction to meet potable demands. Extracted water would be treated at MBGPF, and then pumped into the distribution system. Previous studies conducted by the City concluded that the planned expansion of the MBGPF will result in no significant impacts to existing groundwater-dependent vegetation during extended dry-year periods lasting up to three years.

The IPR project will help maximize the use of existing groundwater pumping and treatment facilities and render MBGPF a reliable supply source of up to 7,130 AFY of potable water during multiple-dry water years. The City's goal is to have this IPR project produce approximately 3.0 MGD (~ 3,360 AFY) of the City's potable water supply, which would reduce its reliance on imported water.

4.5. Recycled Water

4.5.1. San Luis Rey Water Reclamation Facility

The City of Oceanside treats its collected wastewater at two wastewater treatment plants: SLRWRF and La Salina Wastewater Treatment Plant (WWTP). The SLRWRF has produced recycled water from the San Luis Rey plant since its construction in 1972. It currently treats up to 0.7 MGD or 784 AFY of wastewater to recycled water standards.

The City's existing recycled water system consists of 1.2 miles of recycled water pipeline that serves one customer, the Oceanside Municipal Golf Course. The golf course received 104 AFY tertiary recycled water in 2015. At present, the remaining tertiary recycled water not used at the golf course is discharged into Whelan Lake, a bird sanctuary. The average annual

deliveries to Whelan Lake between 2011 and 2015 were 194 AF, approximately 60% of the City's total recycled water production.

The City has no plans to produce recycled water at the La Salina Plant. However, the City plans to decommission this plant and replace it with a sewer lift station to pump wastewater flows to the SLRWRF. When complete, these improvements will increase recycled water production at the SLRWRF.

The new La Salina Lift Station is anticipated to be operational in 2020. The City plans to expand tertiary treatment capacity at the SLRWRF to 1.5 MGD by 2017, and to 7.5 MGD by 2045. Secondary treatment capacity will also be increased from 13.5 MGD by 2020, and to 17.4 MGD by 2045.

The City plans substantial expansion of its recycled water treatment capacity as well as its recycled water treatment system. Notably, the City is a member of the North San Diego Water Reuse Coalition. The City, together with nine other water and wastewater agencies in the North San Diego County, work to maximize recycled water use and improve recycled water efficiencies. The Coalition plans to add substantial additional recycled water to the County's water supply portfolio through increasing available recycled water resources, and constructing the recycled water pipeline and other infrastructure needed to provide recycled water to customers.

4.5.2. Indirect Potable Reuse

The City has initiated an indirect potable reuse project through groundwater recharge, which has completed the investigative phase. The indirect potable reuse project would have water treated at the SLRWRF recharged into the Mission Groundwater Basin to help replenish the local groundwater basin. Water would then later be extracted and treated for potable water usage.

The indirect potable reuse project will utilize advanced treated recycled water to be supplied through the MBGPF. When indirect potable reuse is implemented, approximately 3,360 AFY of additional supply is estimated by 2020 and 5,000 AFY of additional supply is estimated by 2050. The actual capacity, size, and location of the future indirect potable reuse facilities are currently being developed by the City.

4.5.3. Non-Potable Recycled Water

Based on the Recycled Water Master Plan that was completed in 2015, potential recycled water customers are expected to increase. Recycled water customers include, for instance, golf courses, cemeteries, parks, and home owner associations. Potential uses of recycled water include agricultural irrigation, landscape irrigation, wildlife habitat enhancement at Whelan Lake, and groundwater recharge with the primary use of landscape irrigation.

Two recycled water systems were proposed in the City's Recycled Water Master Plan: the Upper SLRWRF system and the Lower SLRWRF system. The Upper SLRWRF system

includes service to Arrowood Golf Course, Gilligan Groves, Rocket Farms Herbs and other agriculture and irrigation customers. Approximately 1,110 AFY of recycled water is estimated to be supplied over to these customers over 15 years. Rocket Farms Herbs will likely be replaced by the North River Farms Project after its completion. To be conservative, this analysis assumed all water demands associated with the Project will use potable water supplies. Rocket Farms Herbs was estimated to consume 104 AFY of recycled water, thus, future recycled water demands projected in the 2015 UWMP will be reduced accordingly.

The Lower SLRWRF system includes services to the El Corazon site, El Camino Country Club Golf, Ocean Ranch Future Development, Ocean Hills area, and other landscape irrigation customers. Approximately 2,040 AFY of recycled water will be served to these customers over the next 25 years.

4.6. Transfer Opportunities

The City currently has nine emergency interconnections with four neighboring agencies that can be used for short-term exchanges during catastrophic events. These emergency interconnections also allow the City to participate in regional water supply exchanges and access an intricate outside network of water distribution systems during planned outages. Except for providing a small volume of water to Vista Irrigation District (VID) through the Fall/Olive Exchange, the City does not regularly sell or transfer water to other agencies.

4.7. Desalinated Water Opportunities

The City has plans to expand its local water supplies and diversify its water resources. Desalinated water, including desalinated groundwater and desalinated seawater, is an expected future water supply for the City. In addition to the desalinated groundwater that is available to the City, the City is exploring an independent supply of desalinated seawater. The City completed a Seawater Desalination Pilot Facility and Feasibility Study in October 2010. The study identified a feasible, constructible and cost-effective project to add a seawater component to the MBGPF. Net Production of the seawater desalination plant is expected to be 5,040 AFY in the long-term planning period based on the 2015 WMP. Due to the uncertainty regarding the feasibility of this project, the City did not include this potential seawater desalination supply in its supply projections in the 2015 UWMP.

Chapter 5. Potable Water Supply Reliability

As discussed in the previous chapter, the City plans to diversify its water supply resources and reduce its dependence on imported water by utilizing groundwater supplies, expanding recycled water programs, and investigating the feasibility of other supply sources such as seawater desalination.

The City's water supply reliability is discussed in this section. This discussion is based on reliability projections under different hydrologic conditions as presented in the City's 2015 UWMP.

5.1. Potable Water Supply Reliability

5.1.1. SDCWA Reliability Policy

As a member agency of the SDCWA, the City is entitled to directly purchase water for its needs from the SDCWA on a wholesale basis. Therefore, it is important for the City to ensure that SDCWA can provide adequate amounts of imported water to the City to accommodate future needs.

To maximize the reliability of the regions' water supply, SDCWA is executing a long-term strategy to develop diverse and drought-resilient supplies; make major investments in the region's water delivery and storage system; and improve water use efficiency to offset the demands on imported water. SDCWA works with its member retail agencies in developing local supplies such as groundwater, recycled water, seawater desalination, and conservation.

The SDCWA's 2015 UWMP includes a supply reliability assessment using a conservative methodology, which only considered member agencies' "verifiable" supplies in addition to SDCWA's supply projections and supplemental supply from MWD. Based on SDCWA's supply reliability assessment, there would be adequate supplies for all planning years in a normal year. Shortages are expected to occur during a single dry-year by 2035, and more significant shortages will occur during a multiple dry year by 2028. The agency plans to mitigate these shortages through extraordinary water conservation measures and dry-year transfers if necessary. In addition, SDCWA assumed restricted supply from MWD during dry years in its reliability assessment. These shortages will be eliminated if MWD supplies approach the supply levels projected in its 2015 UWMP's supply capability for dry years.

5.1.2. City Water Supply Reliability

5.1.2.1. Regulations

SB 610

Water Code Section 10631 (Urban Water Management Plan requirements)

(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(1) An average water year.
(2) A single dry water year.
(3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

Note: Water Code section 10632 requires that the Urban Water Management Plan include a water shortage contingency analysis.

Water Code Section 10632 (Urban Water Management Plan requirements)

The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier: (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage. (b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply. (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster. (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning. (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply. (f) Penalties or charges for excessive use, where applicable. (g) An analysis of the impacts of

each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments. (h) A draft water shortage contingency resolution or ordinance. (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

5.1.2.2. City Supply Reliability

In 2015, the City adopted Ordinance No. 15-OR0276-1 to revise its existing water conservation program and add the implementation of drought response conservation measures in the event of mandatory water reductions.

In addition, as part of the City's 2015 UWMP, a water supply reliability assessment was developed for long-term water supply reliability under normal year, single-dry year, and multiple dry year conditions. To be consistent with the SDCWA's 2015 UWMP, the City used a 30-year average (1986 – 2015) as its normal year condition. The UWMP used 2015 conditions as single-dry year condition. Conditions from 2013 through 2015 were used as multiple-dry year conditions.

Table 5-1 shows the demand and supply assumptions in normal year, single-dry year, and multiple-dry year conditions as a percentage of normal conditions.

Table 5 -1: Demand and Supply Assumptions, as Percent of Normal

Source	Normal Water Year	Single Dry Water Year	Multiple-Dry Water Years		
			Year 1	Year 2	Year 3
Demands					
Potable Water	100%	107%	106%	111%	116%
Recycled Water (Non-Potable)	100%	107%	106%	111%	116%
Total Percent of Normal Demands		107%	106%	111%	116%
Supplies					
SDCWA Purchases	100%	109%	108%	Variable (114%-115%)	Variable (110% - 121%)
Groundwater	100%	100%	100%	100%	100%
Advanced Treated Water	100%	100%	100%	100%	100%

Recycled Water	100%	107%	106%	111%	116%
Total Percent of Normal Potable Supplies		107%	106%	111%	Variable (108%-116%)
Total Percent of Overall Normal Supplies		107%	106%	111%	Variable (109%-116%)
Source: 2015 City of Oceanside UWMP, Table 7-3					

5.1.3. Normal Year Supply and Demand Comparison

The City is projected to have sufficient water to meet its customers' needs through 2040 under normal year conditions, as shown in **Table 5-2**.

Table 5-2: Normal Year Supply and Demand Comparison

Supply Type	2020	2025	2030	2035	2040
Supply Totals	31,728	32,915	32,813	33,190	33,537
Demand Totals	31,728	32,915	32,813	33,190	33,537
Difference	0	0	0	0	0
Source: 2015 City of Oceanside UWMP, Table 7-4					

5.1.4. Single-Dry Year Supply and Demand Comparison

Demands are expected to increase by an average of 7% during single-dry year conditions. The City will supply its customers with groundwater, recycled water, projected advanced treated water, and purchase additional water from SDCWA to meet these demands. The SDCWA's 2015 UWMP determined that no shortages are anticipated within the SDCWA's service area until 2035 during a single-dry year. SDCWA's projections assumed that MWD is limited to 1.4 million acre feet (MAF) of supplies due to dry conditions, and assumed increased reductions in deliveries from State Water Projects and /or reductions in Colorado River deliveries. Shortages would be accommodated should MWD supplies approach the supply levels projected in Metropolitan's 2015 UWMP Single Dry Year Supply Capacity via utilization of the carryover supplies of up to 40,000 AFY, as discussed in Section 4.3.5.

Therefore, the City has sufficient water to meet its customers' needs through 2040 under single-dry year conditions, as shown in **Table 5-3**.

Table 5-3: Single Dry Year Supply and Demand Comparison					
Supply Type	2020	2025	2030	2035	2040
Supply Totals	33,886	35,153	35,044	35,447	35,818
Demand Totals	33,886	35,153	35,044	35,447	35,818
Difference	0	0	0	0	0
Source: 2015 City of Oceanside UWMP, Table 7-5					

5.1.5. Multiple-Dry Year Supply and Demand Comparison

As shown in **Table 5-4**, water demands are projected to increase during a multiple dry year scenario by 6%, 11%, and 16% for years 1 through 3 respectively. During multiple-dry years, recycled water production is assumed to increase to meet additional recycled water demands, while advanced treated water and groundwater supplies would remain consistent with normal year projections. As in the case of a single-dry year, the City will purchase additional water from SDCWA for all years in which SDCWA projected 100% reliability. Based on the SDCWA's 2015 UWMP, a potential supply deficit of 3% and 7% is projected in the third year of a multiple-dry year scenario in both 2035 and 2040.

To be consistent with the SDCWA's 2015 UWMP, the City's 2015 UWMP anticipates reductions in purchased water from SDCWA of 3% and 7% in these years, as shown in **Table 5-4**. With reduced supplies from SDCWA, the City projects a potential deficit in 2035 and 2040 during the third year of a multiple-dry years scenario. This deficit would be addressed through implementation of extraordinary conservation measures or through the conversion of additional customers to recycled water beyond that already projected. These measures would reduce water demands in order to ensure sufficient available water supply, as shown in **Table 5-5**.

Table 5-4: Extraordinary Conservation in the Third Year of a Multiple Dry Year Scenario (AF)					
Multiple-Dry Year: Year 3	2020	2025	2030	2035	2040
Potable Supply	36,403	36,272	34,759	33,891	32,392
Potable Demand	36,403	36,272	34,759	35,011	34,903
Potential Difference	0	0	0	1,120	2,511
Extraordinary Conservation or Conversion to Recycled Water	0	0	0	1,120	2,511
Total Potable Demand	36,403	36,272	34,759	33,891	32,392
Difference	0	0	0	0	0
Source: 2015 City of Oceanside UWMP, Table 7-6					

Table 5-5: Multiple Dry Year Supply and Demand Comparison						
Multiple-Dry Year: Year 3		2020	2025	2030	2035	2040
First Year	Supply Totals	33,759	35,022	34,913	35,314	35,683
	Demand Totals	33,759	35,022	34,913	35,314	35,683
	Difference	0	0	0	0	0
Second Year	Supply Totals	35,282	36,601	36,488	36,907	37,293
	Demand Totals	35,282	36,601	36,488	36,907	37,293
	Difference	0	0	0	0	0
Third Year	Supply Totals	36,868	38,247	38,129	37,446	36,459
	Demand Totals	36,868	38,247	38,129	37,446	36,459
	Difference	0	0	0	0	0
Source: 2015 City of Oceanside UWMP, Table 7-7						

Chapter 6. Determination of Water Supply Sufficiency

6.1. Regulations

SB 221 Requirements

Government Code Section 66473.7

(a) (2) "Sufficient water supply" means the total water supplies available during normal, single-dry, and multiple-dry years within a 20- year projection that will meet the projected demand associated with the proposed subdivision, in addition to existing and planned future uses, including, but not limited to, agricultural and industrial uses. *In determining "sufficient water supply, all of the following factors shall be considered:*

(A) The availability of water supplies over a historical record of at least 20 years.

(B) The applicability of an urban water shortage contingency analysis prepared pursuant to Section 10632 of the Water Code that includes actions to be undertaken by the public water system in response to water supply shortages.

(C) The reduction in water supply allocated to a specific water use sector pursuant to a resolution or ordinance adopted, or a contract entered into, by the public water system, as long as that resolution, ordinance, or contract does not conflict with Section 354 of the Water Code.

(D) The amount of water that the water supplier can reasonably rely on receiving from other water supply projects, such as conjunctive use, reclaimed water, water conservation, and water transfer, including programs identified under federal, state, and local water initiatives such as CALFED and Colorado River tentative agreements, to the extent that these water supplies meet the criteria of subdivision (d).

6.2. Determination of Water Supply Sufficiency

As discussed in the previous section, the City's 2015 UWMP projects 100% supply reliability under normal year and single-dry year conditions. Under multiple-dry-year conditions, the City's total water demand is estimated to exceed the total supply by approximately 3.3% and 7.8 % for the third year of 2035 and 2040, respectively.

The projected water demand for the Project was not included in the City's 2015 UWMP. The increased water demand associated with the Project of 225 AFY is estimated to increase the City's total demand by 0.7% in 2040 under normal year conditions and 0.6% in 2040 under

single-dry year conditions. To offset the small incremental increase in demand under normal and single-dry year conditions, the City plans to purchase the additional water from SDCWA.

Under multiple-dry year conditions, the Project will increase the supply shortfall to 3.9% and 8.4% for the third year of 2035 and 2040, respectively. Therefore, the Project creates an incremental shortfall of approximately 0.6% in 2040. These deficits would be addressed through implementation of extraordinary conservation measures and/or through the conversion of additional customers to recycled water.

In addition, the City has developed a Water Shortage Contingency Plan that identifies ways in which the City can reduce water consumption during catastrophic events and in drought years. As part of the Water Shortage Contingency Plan, the Drought Ordinance established four drought stages of actions that can be taken to reduce water demand up to 40% or more. Since the Project will be located within the City's service area, the Project would have to adhere to any extraordinary conservation measures imposed by the City. Given the small incremental impact of the Project on the shortage projections during multiple dry-years, it is not expected that the City would have to change either its current supply strategy, or the implementation of its Water Shortage Contingency Plan in response to a drought, to meet the Project and existing/ planned water demand.

6.3. Conclusion

As discussed above, the planning documents referenced herein indicate that there is sufficient supply over a 20-year planning horizon to meet the projected demand during normal and single dry year, and through associated water conservation measures for multiple-dry years.

REFERENCES

California Department of Water Resources (DWR). 2016. 2015 UWMP Guidebook for Urban Water Suppliers. March.

City of Oceanside. 2015 Urban Water Management Plan. June 2016.

City of Oceanside. 2015 Integrated Master Plan, Vol. 1. Water Master Plan. June 2015.

City of Oceanside. 2016 Water Conservation Master Plan Update. June 2016.

San Diego County Water Authority (SDCWA). 2015 Urban Water Management Plan – Member Agency Draft. April 2016.

City of Oceanside. 2015 Recycled Water Master Plan. December 2015.

APPENDIX