

## **APPENDIX M: WATER SUPPLY ASSESSMENT**

*This page intentionally left blank.*

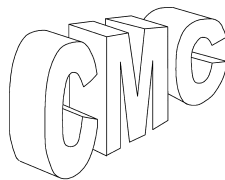


**California Senate Bill 610**

**Water Supply Assessment**  
**for**  
**CapRock Acquisitions,**  
**LLC**

Prepared for  
The City of Norco  
Public Works Department, Water Utility

by:



*Charles Marr Consulting*

Contact:  
Charlie Marr, P.E.

**January 10, 2019**  
**Revised May 31, 2019**  
**Revised September 18, 2019**

*This page intentionally left blank*



City of Norco  
Water Supply Assessment  
Palomino Business Park

**TABLE OF CONTENTS**

---

<b>SECTION</b>	<b>PAGE</b>
ACRONYMS and ABBREVIATIONS	ACR-1
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION	1-1
2.0 LEGISLATION	2-1
2.1 SB 610 Water Supply Planning	2-1
2.2 SBx7-7 and EO B-29-15	2-2
3.0 PALOMINO BUSINESS PARK (PBP) PROJECT	3-1
3.1 Project Description	3-1
3.2 Palomino BP Water Demands	3-3
4.0 CITY OF NORCO WATER DEMAND AND SUPPLIES	4-1
4.1 Overview of Supply and Demand	4-1
4.2 Desalter and Imported Water	4-4
4.3 Groundwater	4-5
4.4 Recycled Water	4-6
4.5 Desalted Water	4-7
5.0 RELIABILITY OF WATER SUPPLIES	5-1
5.1 Temescal Basin	5-1
5.2 Chino Basin	5-1
5.3 State Water Project (SWP)	5-2
5.4 Water Shortage Plans	5-4
5.5 Interconnections	5-5
5.6 City of Norco Dry-Year Reliability Analysis	5-6
6.0 CONCLUSION	6-1
7.0 REFERENCES	7-1

<b>TABLES</b>	<b>PAGE</b>
Table 3-1 Palomino BP Land Use Summary	3-1
Table 3-2 Palomino BP Water Demand Estimate	3-3
Table 4-1 City of Norco Service Area Population	4-3
Table 4-2 Projected Water Demand and Supply for City of Norco	4-4
Table 4-3 City of Norco Historic Annual Imported Water Production	4-5
Table 4-4 Projected Recycled Water Use within the City of Norco	4-7
Table 5-1 MWD Resource Conditions and Action Stages	5-4
Table 5-2 Normal Year Supply and Demand Comparison	5-6
Table 5-3 Single-Dry Year Supply and Demand Comparison	5-6
Table 5-4 Multiple-Dry Year Supply and Demand Comparison	5-7

<b>EXHIBITS</b>	<b>PAGE</b>
Exhibit 1          Regional Vicinity	1-2
Exhibit 2          Site Vicinity	1-3
Exhibit 3          Conceptual Site Plan	3-2
Exhibit 4          Norco Water Service Area and System Facilities	4-2

## ACRONYMS and ABBREVIATIONS

AB	Assembly Bill
ACT	Urban Water Management Planning Act of 1983
AD	Arlington Desalter
AF	Acre Feet
AFY	Acre Feet per Year
AWPF	Advanced Water Purification Facilities
BMP	Best Management Practices
CA	California
CALFED	California and Federal Bay-Delta Program
CALSIM	California Water Allocation and Reservoir Operations Model
CBW	Chino Basin Watermaster
CCF	Hundred Cubic Feet
CCWRF	Carbon Canyon Water Reclamation Facility
CDA	Chino Basin Desalter Authority
CEQA	California Environmental Quality Act
CII	Commercial, Industrial and Institutional
CIM	California Institution for Men, Chino
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Program
CPTP	Coastal Pumping Transfer Program
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CDPH	California Department of Public Health
CVP	Central Valley Project
DBP	Disinfection Byproducts
DDW	Division of Drinking Water
DMM	Demand Management Measure
DWR	Department of Water Resources
DYY	Dry Year Yield
EIR	Environmental Impact Report
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ETo	Evapotranspiration
gpd	Gallons Per Day
gpf	Gallons Per Flush
gpm	Gallons Per Minute
GWMP	Groundwater Management Plan
IAWP	Interim Agricultural Water Program
IEUA	Inland Empire Utilities Agency
IRP	Integrated Resources Plan
IRWM	Integrated Regional Water Management
JCSD	Jurupa Community Services District
JPA	Joint Powers Authority
LRP	Local Resources Program
MAF	Million Acre Feet
MCL	Maximum Contaminant Level
MGD	Million Gallons per Day
mg/L	Milligrams Per Liter
Min	Minimum
MOU	Memorandum of Understanding

---

MWD	Metropolitan Water District of Southern California
MZ	Management Zone
OBMP	Optimum Basin Management Program
RP	Regional Plant
RWQCB	Regional Water Quality Control Board
SAWPA	Santa Ana Watershed Project Authority
SB	Senate Bill
RCFCD	Riverside County Flood Control and Water Conservation District
SCADA	Supervisory Control and Data Acquisition
SCIWP	Southern California Integrated Watershed Program
SWP	State Water Project
SWRCB	State Water Resources Control Board
TB	Temescal Basin
TDS	Total Dissolved Solids
TIN	Total Inorganic Nitrogen
TMDL	Total Maximum Daily Load
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compounds
WFA	Water Facilities Authority
WMP	Water Master Plan
WMWD	Western Municipal Water District
WRCRWA	Western Riverside County Regional Wastewater Authority
WSA	Water Supply Assessment
WSDM	Water Surplus and Drought Management
WSMP	Water System Master Plan
WTP	Water Treatment Plant



## **EXECUTIVE SUMMARY**

A California Environmental Quality Act (CEQA) report is being prepared on behalf of the City of Norco (City) in support of the Palomino Business Park Project (PBP or Project). The EIR includes an assessment of utilities, including water supply. Senate Bill 610 requires that a water supply assessment (WSA), based on specific criteria, be prepared to document the sufficiency of available water supply for the City and the Project. The WSA identifies water supply and reliability to the City and the Project both now and in the future.

The WSA includes a discussion of the relevant legislation which requires the WSA; an overview of the proposed Project; identification of current water demands for the City's existing service area, and estimated demands of the Project over a 20-plus year planning period; and an analysis of reliability of the City's water supplies. This WSA includes discussion of the potential impacts each agency that supplies water to the region has on the City, and concludes with a sufficiency analysis of water supply during normal, single-dry, and multiple dry years over a 20-plus year planning period.

### ***Palomino Business Park Project***

The PBP project site is located in the City of Norco on approximately 110 acres generally bounded by First Street on the south side, Mountain Avenue on the east side, Second Street on the north side, and Pacific Avenue on the west side. Existing or recent uses of the Project site include vacant land, rural residential and industrial operations. The proposed Project includes a maximum of 2,050,000 square feet of commercial, warehouse and office space.

### ***Water Supply***

As described in the City's 2015 Urban Water Management Plan (UWMP) update, the City of Norco relies primarily on the Temescal basin, desalted water from the Arlington and Chino Groundwater Basin Desalters, and imported water. The City owns active wells in the Temescal basin, and also owns inactive wells in the Chino Groundwater Basin with rights to pump its groundwater as an Appropriative Pool member of the Chino Groundwater Basin.

Groundwater quality from the City-produced wells typically does not meet the EPA and Division of Drinking Water (DDW) maximum contaminant levels (MCL) for fluoride (2 mg/L), arsenic, and secondary standards for iron and manganese. Therefore, it is treated for iron, manganese and arsenic removal in order to maximize its use of local groundwater supplies.

The Arlington Desalter delivers water supplies to the City pursuant to its take-or-pay provision. The City's minimum annual delivery of Arlington Desalter water is 4,400 AF, and can purchase additional water up to 7,000 AF annually. The City monitors the supply sources on a monthly basis in order to ensure the minimum is met.

The Chino Basin Desalter Authority (CDA) originally contracted with interested parties to provide a combined total of 9,200 AFY of product water from the Chino I Desalter to agencies including Norco, Jurupa Community Service District (JCSD), and the cities of Chino and Chino Hills. Later expansions have increased this desalted water supply to a combined total of 24,600 AFY, and upon completion of the Phase III expansion contract, contract amounts would increase to a total of 35,200 AFY. The City of Norco is allocated 1,000 AFY as a member of the CDA.

The City is a member agency of the Western Riverside County Regional Wastewater Authority (WRCRWA), a Joint Powers Authority (JPA). WRCRWA owns and operates a wastewater conveyance, treatment and disposal system. Six (6) agencies, including the City of Norco, have the right to discharge to the WRCRWA treatment facility and collection system. The City has the right to utilize its discharge capacity to the WRCRWA plant for recycled water use. The City owns 2.7 million gallons per day capacity in the WRCRWA plant. The City also owns 0.10 million gallons per day of sanitary sewer collection capacity and wastewater treatment capacity in the City of Corona wastewater system.

The City constructed a recycled water distribution system which currently consists of approximately eight miles of pipeline with a small storage reservoir, booster pump station, and two pressure reducing stations. The recycled water system is not active because the use of recycled water has not yet been approved by the State. The City recently completed a Recycled Water Facilities Master Plan (November 2016). The City's Master Plan assumes recycled water service for schools, parks, Lake Norconian, highway corridor, and other major outdoor irrigation uses.

### **Groundwater Management**

The City of Norco has identified strategies for managing the Temescal Basin groundwater system while maintaining groundwater production. With plans to increase reliance on groundwater supplies for future demand, the City of Norco could opt to activate its groundwater pumping capacity within the Chino Basin and exercise its rights as a member of the Appropriative Pool. However, due to contamination of the groundwater and the City's pumping allocation allowed from the Chino Basin (limited to approximately 200 AFY), pumping from the Chino Basin is not currently planned to increase. Reliability of future water supplies from the Chino Basin is based on implementation of the OBMP, as managed by the Chino Basin Watermaster. The WSA describes the adjudication proceedings of the Chino Basin, which began in the 1970's with the appointment of a Watermaster. Among its many responsibilities, the Watermaster monitors production from the basin, groundwater levels, and the on-going management of the physical solution and Safe Yield determinations. The initial Safe Yield declaration was established and allocated capacities as follows: 82,800 AFY to the Agricultural Pool; 7,366 AFY to the Non-Agricultural Pool; and 54,834 AFY to the Appropriative Pool.

### **Water Demand**

The City's total water demand in Fiscal Year 2017-18 was approximately 7,279 acre-feet, and is anticipated to be approximately 7,800 AFY by Year 2040. The PBP water demand is within the future demand estimate of the 2015 UWMP, which is estimated to be a total of 228,000 gallons per day, or 255 AFY.

### **Demand and Supply Projections**

Water supply allocations for the City of Norco currently meet its future water demands, including the estimated demands for the Project. Additionally, continued water use reduction habits and increased City well production from the Temescal Basin are anticipated to provide additional assurance of future water supplies. Analyses of normal, single-dry, and multiple-dry year scenarios also demonstrate the City's ability to supply water to meet demand until year 2040 under each hydrologic scenario.



## **Reliability**

The City purchases treated groundwater from WMWD's Arlington Desalter, treated groundwater from the Chino Basin Desalter Authority (CDA), and treated surface water from Metropolitan Water District of Southern California (MWD) via WMWD and wheeled through a connection with the City of Corona. The City of Norco has met historical water demands with these supplies, including demands during average, single-dry, and multiple-dry year scenarios.

The City-owned primary water supply source is groundwater pumped from the Temescal Basin. The Temescal basin is currently unadjudicated. The City of Corona completed a Groundwater Management Plan (GWMP) for the Temescal Basin that the City of Norco has reviewed. The City has identified strategies for managing the groundwater system while maintaining groundwater production. The GWMP concluded that, assuming no significant changes in current water extraction practices, average pumping totals of about 12,000 AFY in the Temescal basin would result in no significant loss of groundwater storage.

A court-ordered Safe Yield re-determination is underway for the Chino Groundwater Basin. Based on available information, it is possible the Safe Yield may be reduced. It is generally understood by the stakeholders that such a reduction would impact the annual shares of Operating Safe Yield allocated to the Appropriators, that overlying rights allocated to the Agricultural Pool and individual members of Non-Agricultural Pool would not be reduced, and that the respective amounts of reduction to the Appropriators would be restored, partially or fully, from any under-utilized overlying Agricultural Pool groundwater production rights, which currently are re-allocated to Appropriators on an annual basis. The City of Norco's pumping rights in the Chino Basin could be minimally impacted by a reduction in the Safe Yield redetermination.

## **SWP Reliability Update**

Prevailing drought conditions throughout California and the Colorado River Basin, coupled with environmental issues affecting deliveries of SWP water through the Sacramento – San Joaquin Delta, have resulted in diminished imported surface water supplies to Southern California. MWD, the major importer of surface water to Southern California, has developed plans and programs to address drought conditions and its continuing ability to meet the water demands of its service area. MWD continually re-evaluates these plans and programs for effectiveness in consideration of changing conditions. The plans describe a progressive series of actions, including tapping into stored water reserves and, if necessary, reductions in deliveries.

DWR has issued its 2017 State Water Project Final Delivery Capability Report. The report has been updated three times – in 2013, 2015 and 2017. The 2017 report utilizes 82 years of historic rainfall and snow history, along with projected consideration factors for climate change. The 2017 report projects deliveries of SWP water to have a 77 percent likelihood that more than 2,000 TAF of Table A water will be delivered annually. This compares to 74 percent likelihood in the 2015 Report.

## **Conclusion**

The information included in this Water Supply Assessment is based on the City of Norco 2015 UWMP, which describes its plans for continuing to provide reliable water supplies to satisfy the City's anticipated future water demands, including the Palomino Business Park project. It concludes that a sufficient water supply exists for the City, its current water users, and current development projects within the City's service area, including the Palomino Business Park.

## 1.0 INTRODUCTION

A California Environmental Quality Act (CEQA) report is being prepared for the Palomino Business Park project (PBP or Project). The EIR includes an assessment of utilities, including water supply. Legislation implemented in 2002 (Senate Bill 610), requires that a water supply assessment (WSA), based on specific criteria, be prepared to document the sufficiency of available water supply for the City and the Project. The WSA identifies water supply and reliability to the City, now and into the future, and makes a determination regarding water supply sufficiency for the Project. The regional location of the Project is shown in **Exhibit 1**.

The PBP project site is located in the City of Norco on 110 acres generally bounded by First Street on the south side, Mountain Avenue on the east side, Second Street on the north side, and Pacific Avenue on the west side. The site currently consists of rural residential and industrial land uses. The local vicinity of the Project within the City of Norco is shown in **Exhibit 2**. The proposed Project includes approximately 2,050,000 square feet of warehouse and office space.

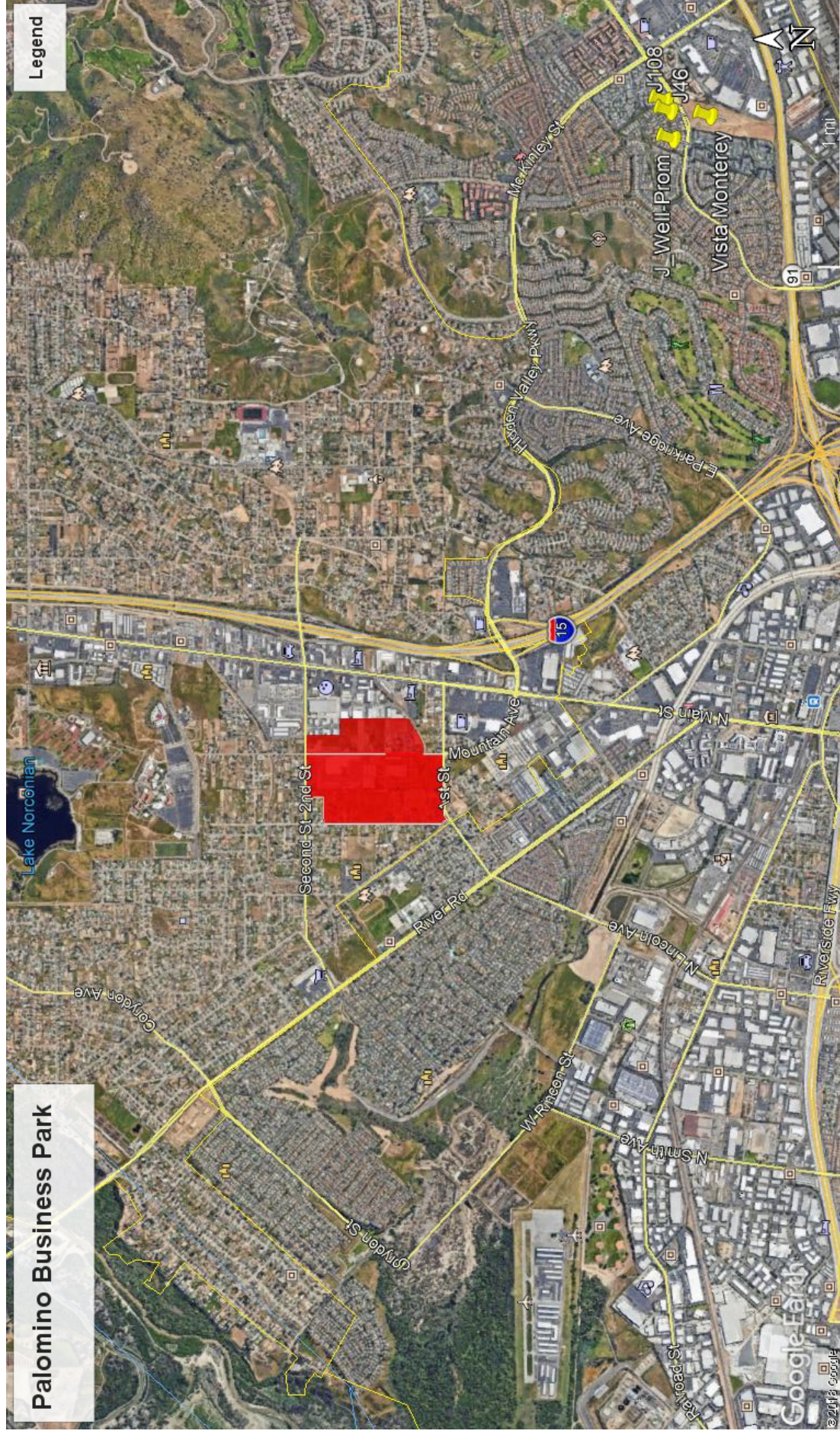
The WSA is part of the ongoing planning efforts of the City to optimize the use of its water resources. The WSA includes a discussion of the Senate Bill 610 legislation, an overview of the proposed Project, and analysis of water supply and demand for the City's existing service area and the Project and other development projects planned within the City over a 20-year planning period. The WSA also includes an analysis of reliability of the City's water supplies and water quality, and concludes with an analysis describing water supply during normal, single-dry, and multiple dry years over a 20-plus year planning period.



EXHIBIT 1











## **2.0 LEGISLATION**

Due to the potential impact by the Palomino Business Project on current and future water supplies, the State of California, through SB 610, requires that a WSA be completed for the proposed development. The Project is proposed to include 2,050,000 square feet of light industrial building space on approximately 110 acres. As the Project occupies more than 40 acres of land and exceeds 650,000 square feet of floor area, preparation of a WSA is required as a basis for determining the sufficiency of water supply to the Project and the City's water customers, now and for a 20-year planning period. The following information outlines the requirements of SB 610.

### **2.1 SB 610 Water Supply Planning**

Senate Bill (SB) 610 was implemented January 2002. SB 610 requires a development that qualifies as a "Project" under Water Code 10912 to be supported in CEQA documentation with a Water Supply Assessment report drafted to specifically identify the public water system that shall supply water to the project and analyze the availability and reliability of water supply to the development. The Water Supply Assessment is to include the following if applicable to the supply conditions:

1. 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.
2. Identification of existing water supply entitlements, water rights, or water service contracts secured by the purveying agency and water received in prior years pursuant to those entitlements, rights, and contracts.
3. 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. Water supply entitlements, water rights or water service contracts shall be demonstrated by supporting documentation such as the following:
  - a. Written contracts or other proof of entitlement to an identified water supply.
  - b. Copies of 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. 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. Description of 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 overdrafted or has projected that the basin will become overdrafted 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.
- b. Description and analysis of the amount and location of groundwater pumped by the public water system for the past five (5) years from any groundwater basin from 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.
  - c. Description and analysis of the amount and location of groundwater projected to be pumped by the public water system from any groundwater basin from 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. Analysis of sufficiency of the groundwater from the basin(s) from which the proposed project will be supplied.
7. The water supply assessment shall be included in any environmental document prepared for the project.
  8. 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.

## **2.2 SBx7-7 and EO B-29-15**

The Water Conservation Act of 2009 (SBx7-7) requires all California urban water agencies to set and meet certain demand reduction targets in order to assist the State in reducing urban water use by 20 percent by 2020. The Act also requires each agency to monitor its progress toward its targets. This was implemented for the purpose of meeting the mandate to reduce per capita urban water consumption by 20 percent statewide. SBx7-7 describes the overall process by which the City of Norco is to comply with the requirements. It specifically identifies methods for establishing urban water use targets. These requirements and the City of Norco's specific Compliance Plan are outlined in the 2015 UWMP.

The Governor issued a State of Emergency and Continued State of Emergency in 2014 in response to the persistent state-wide drought. Most recently, Executive Order B-29-15 was issued by the Governor in April 2015 which essentially increased the water use reduction goal to 25 percent as compared to 2013 usage throughout the State. The EO outlined specific water use reduction orders designed to heighten the urgency to reduce water consumption and facilitate the ability of local agencies to implement and enforce water conservation requirements. It facilitated funding for projects designed to increase local water supplies and improve water supply reliability. It also ordered more frequent reporting and modifications to the State's Model Water Efficient Landscape Ordinance; mandated Agricultural water suppliers to prepare their Agricultural Water Management Plans by specific dates; and ordered the State to coordinate their water conservation related goals with other State departments like Fish and Wildlife, Forestry and Fire Protection, and the Energy Commission.

On May 5, 2015 the State Water Resources Control Board adopted regulations implementing Executive Order B-29-15. Under this SWRCB regulation the City of Norco was required to further reduce its total potable water production until it was rescinded in April 2017 when the current prohibition on wasteful practices took effect under EO B-40-17.



### 3.0 PALOMINO BUSINESS PARK (PBP) PROJECT

#### 3.1 Project Description

The proposed Palomino Business Park Project (PBP or Project) is proposed primarily as a distribution center (Light Industrial) with warehouse type uses and with planned maximum building floor area of 2,050,000 square feet in southwest Norco, California. It is primarily located within the Gateway Specific Plan. The Project is scheduled to be complete and operational by 2022. The Project area and building square-footage are summarized in **Table 3-1**, and the site plan is shown in **Exhibit 3**.

**Table 3-1 - Palomino Business Park Land Use**

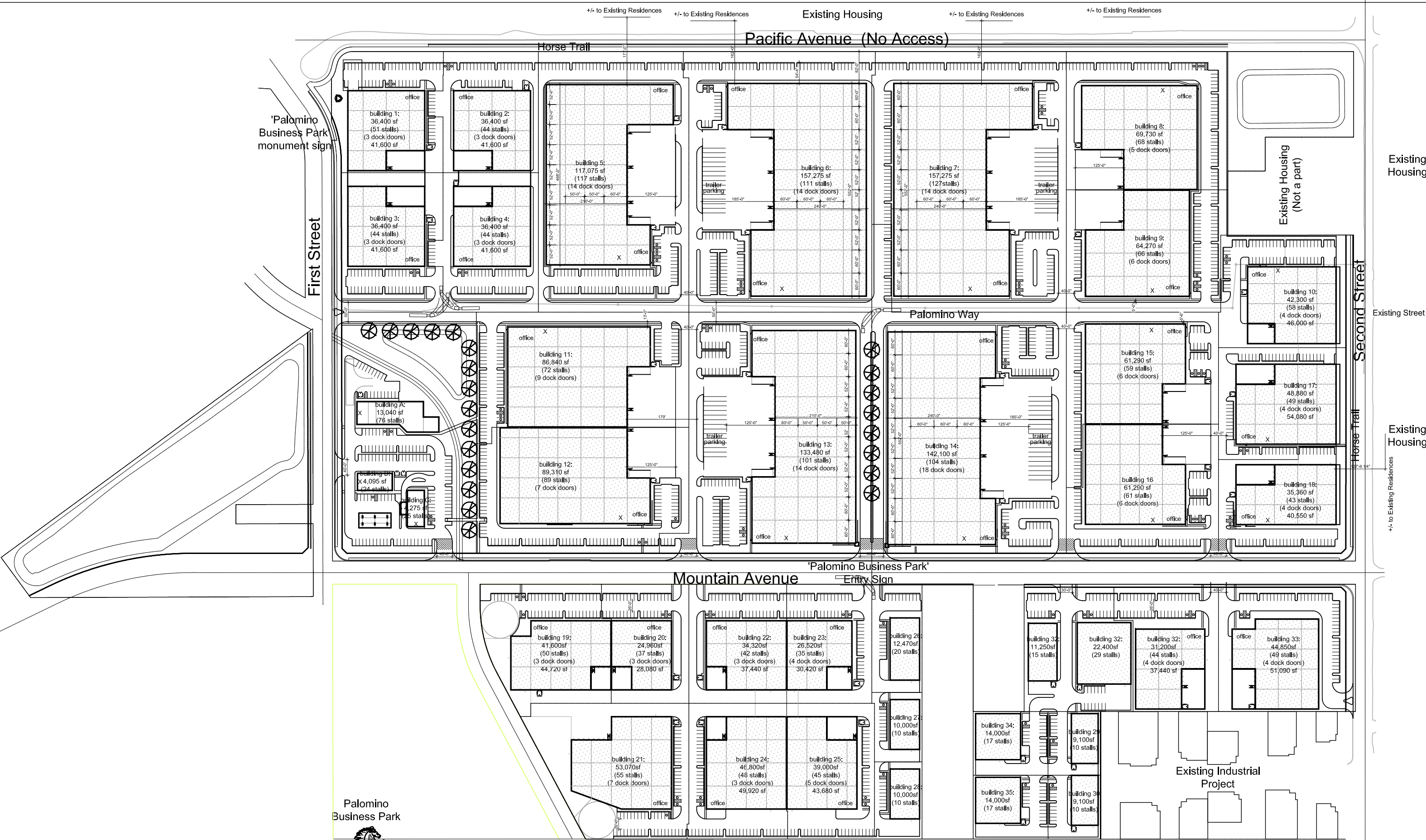
Area	Buildings	Land Use	Bldg Area (sf) [1]
1 (Contiguous)	'A' thru 'C' 1 thru 18	Retail/ Restaurant	21,410
		Ware-house	1,368,075
		office	88,000
2 (Outparcel)	19 and 36	Ware-house	475,510
		office	97,005 [2]
<b>Total</b>	<b>-</b>	<b>Ret/Rest</b>	<b>21,410</b>
		<b>Ware-house</b>	<b>1,843,585</b>
		<b>office</b>	<b>185,005</b>

**Total Building Area 2,050,000**

[1] Based on site plan and tabulation of proposed land uses provided by CapRock Partners 9/4/19.

[2] Total maximum Project Building floor area is 2,050,000 square feet; square-footage added to 'Outparcel office' for conservative water demand estimation.







### 3.2 Palomino Business Park Project Water Demands

**Table 3-2 - Palomino Business Park Water Demand Estimate**

Area	Buildings	Land Use	[1] Bldg Area (sf)	Project Site Acreage [2]			Indoor Water Demand Factor [3]	Outdoor Water Demand Factor [3]	[4]		
				total	Bldg	Irrig.			Indoor Water Demand	Outdoor Irrigation Demand [5]	
1 (Contiguous)	'A' thru 'C'	Retail	13,040	5.0	4.3	0.8	5,700 gpd/ac	2,900 gpd/ac	24,225 gpd	2,175 gpd	
		Restaurant	8,370				1,000 gpd/ksf		8,370 gpd		
	1 thru 18	Ware-house	1,368,075	76.0	64.6	11.4	1,250 gpd/ac	2,900 gpd/ac	75,870 gpd	33,060 gpd	
		office	88,000				5,700 gpd/ac		22,254 gpd		
2 (Outparcel)	19 and 35	Ware-house	475,510	29.0	24.7	4.4	1,250 gpd/ac	2,900 gpd/ac	25,592 gpd	12,615 gpd	
		office	97,005				5,700 gpd/ac		23,807 gpd		
Total		Retail/Rest	21,410	110.0	93.5	16.5	-	-	180,117 gpd	47,850 gpd	
		Ware-house	1,843,585								
		office	185,005								
Total Water Demand									227,967 gpd		
[1] Based on site plan and tabulation of proposed land uses provided by CapRock Partners.											
[2] Based on total Project acreage provided by CapRock Partners; area breakdown is approximated using Google Earth and assumes 15 percent will require irrigation.											
[3] Based on usage factors developed by the City of Chino (2004 Master Plan Update).											
[4] Represents demand on City's potable (domestic) water sources.											
[5] Represents demand that could be served by non-domestic water sources.											

Total average PBP Project water demand is estimated at approximately, 228,000 gpd (158 gpm or 255 AFY). This includes approximately 47,850 gpd for irrigation demand that could be served by future non-potable sources. Estimated existing water demands within the Project site could be used to offset the estimated demands for the new uses of the Project. Determination of the existing uses is not included in the water demand estimate; therefore, the Project water demand is presumed to represent the estimated increase to the City's water demands as a result of the PBP development project. Project construction is planned for late 2019.

## 4.0 CITY OF NORCO WATER DEMAND AND SUPPLIES

The City of Norco Water Utility serves water to an area of approximately 15 square miles. The City's land use is primarily residential (half acre properties), with smaller portions of commercial, industrial, and open space. The City is mostly built out, with about nine (9) percent vacant land. The residential properties that lie within the water service area are zoned primarily for residential animal keeping. The City of Norco water service area is shown in **Exhibit 4**.

### 4.1 Overview of Supply and Demand

The total supplies for the City over the previous five years to the writing of the 2015 UWMP averaged 8,000 acre-feet per year (AFY). Based on City of Norco *Daily Well Production*, in FY 2017-18 the City produced a total of 7,279 AF, of which 1,084 AF was produced from local groundwater sources, 4,486 AF was purchased from the Arlington Desalter, 1,683 AF was purchased from the Chino Desalter Authority, and 26 AF from imported water supplies (WMWD).

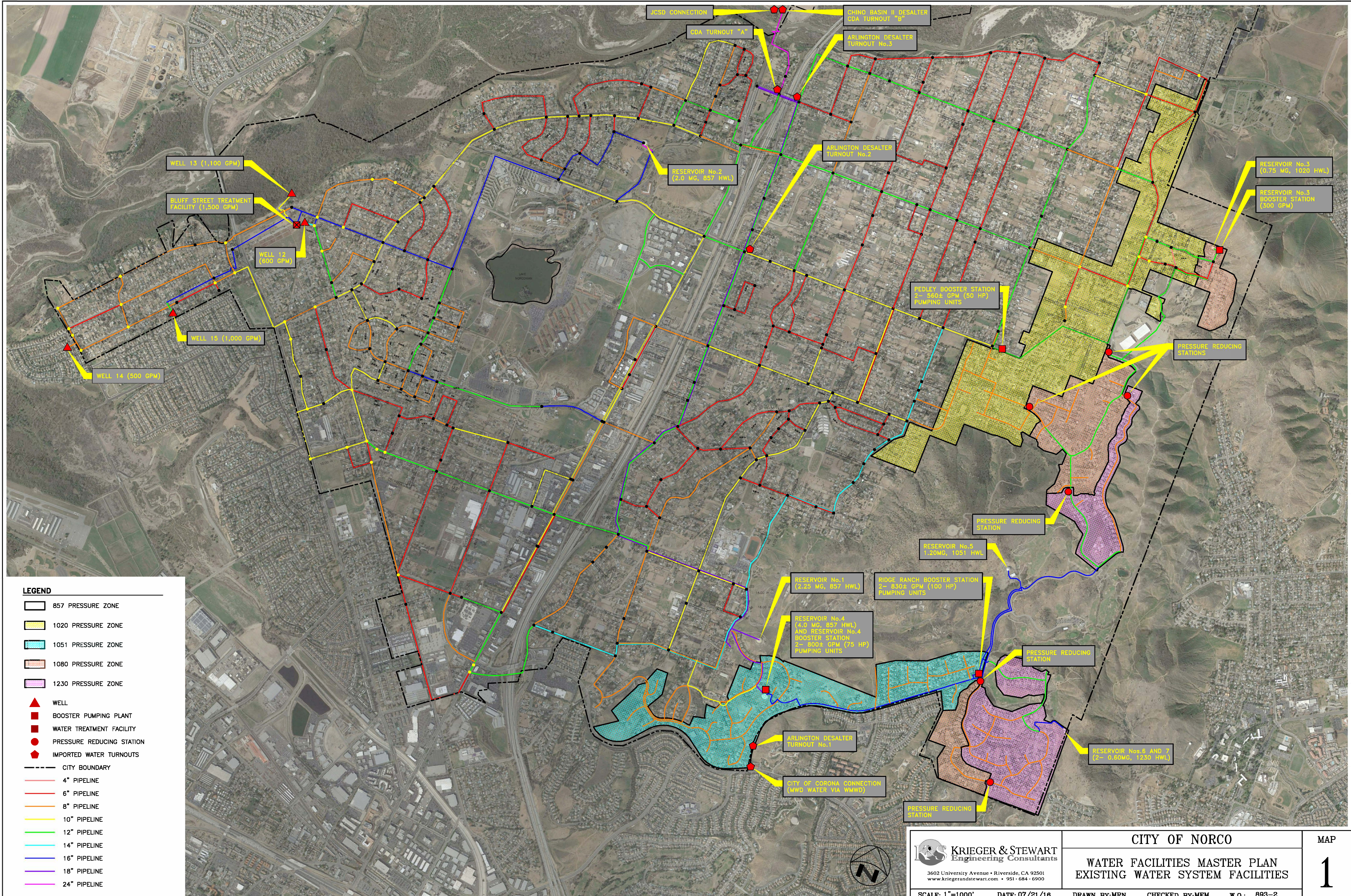
Since 1999, the City's local groundwater has accounted for approximately 38 percent of the overall demands with purchased water accounting for the remaining 62 percent of the overall demand. The production numbers vary from year to year depending upon weather conditions and local groundwater quality. Future demand projections assume approximately the same percentage between groundwater and purchased water supplies, as the City has expressed this ratio as a planning goal. The anticipated drinking water quantities are projected to remain relatively consistent as future demands increase slightly through the planning horizon of Year 2040.

The City purchases treated groundwater from WMWD's Arlington Desalter, treated groundwater from the Chino Basin Desalter Authority, and treated surface water from Metropolitan Water District of Southern California (MWD) via WMWD, and wheeled through a connection with the City of Corona.

The City's existing potable water system consists of four active groundwater wells with a combined production capacity of approximately 3,200 gpm; a water treatment facility with a treatment capacity of 1,500 gpm; a connection to the Chino Basin II Desalter with a capacity of 620 gpm; a connection to the Arlington Desalter with a maximum capacity of 4,500 gpm; a connection to Jurupa Community Services District (JCSD) with a maximum capacity of 1,000 gpm; a connection to the City of Corona, which WMWD uses to wheel imported MWD water to the City with a maximum capacity of 3,000 gpm; four booster pump stations, including a hydropneumatic system, with a combined capacity of approximately 2,500 gpm; seven water storage reservoirs with a combined storage capacity of 11.4 million gallons; and approximately 115 miles of pipelines with diameters from 6 inches to 24 inches. The existing City potable water distribution facilities are shown in Exhibit 4.



DWG. NO.: 893-2-001-1 FILE NO.: 893-2 UPDATE BY: MRN PROJ. ENG.: MEM PLOT DATE: 07/21/16 PLOT TIME: 8:48AM PLOT SCALE: 1"=1'



**KRIEGER & STEWART**  
Engineering Consultants  
3602 University Avenue • Riverside, CA 92501  
www.kriegerandstewart.com • 951 • 684 • 6900

**CITY OF NORCO**  
**WATER FACILITIES MASTER PLAN**  
**EXISTING WATER SYSTEM FACILITIES**

SCALE: 1"=1000' DATE: 07/21/16 DRAWN BY:MRN CHECKED BY:MEM W.O.: 893-2

MAP  
**1**







#### 4.1.1 Growth Rate

The City's 2015 UWMP includes an analysis of the City's anticipated growth rate. The 2015 service area population was approximately 25,890. The population is expected to increase to approximately 29,300 by 2040. **Table 4-1** shows the projected service area population for the City.

**Table 4-1 - City of Norco Service Area Population**

Year	2015	2020	2025	2030	2035	2040
City of Norco Water Service Area Population	25,890	26,800	27,300	27,800	28,800	29,300

Source: City of Norco 2015 UWMP

#### 4.1.2 Water Demand

Based on City of Norco *Daily Well Production*, the City's total water demand in Fiscal Year 2017-18 was approximately 7,279 acre-feet, and is anticipated to be approximately 7,800 AFY by Year 2040. The PBP water demand is within the future demand estimate of the 2015 UWMP, which is estimated to be a total of 228,000 gallons per day (gpd), or 255 AFY. This accounts for approximately 49 percent of the anticipated increase in demands. All other current development projects within the City's service area are not anticipated to increase the City's demands by an appreciable amount due to development size, or is a redevelopment project replacing older services not designed to current-day water conservation standards. Current demand plus the PBP and other planned projects was anticipated for the 2015 UWMP.

#### 4.1.3 Demand and Supply Comparison

**Table 4-2** shows the demand and supply data for current (2017-18, City of Norco *Daily Well Production*) and projected water demand and supply for the City of Norco, including additional demand the Project will require through 2040. This represents a 20-year minimum planning period as required by Senate Bill 610.

Demand and supply projections consider land use, in addition to water development programs and projects. A supply surplus is indicated demonstrating a sufficient water supply for the City and the Project for the next 20+ years.

**Table 4-2 - Projected Water Demand and Supply for City of Norco**

	Projected (AFY)					
	2017-18	2020	2025	2030	2035	2040
<b>DEMAND <sup>[1]</sup></b>						
Potable	7279 <sup>[2]</sup>	6808	6970	6982	6894	6956
Recycled	0	844	844	844	844	844
<b>TOTAL WATER DEMAND</b>	<b>7,279<sup>[2]</sup></b>	<b>7,652</b>	<b>7,814</b>	<b>7,826</b>	<b>7,738</b>	<b>7,800</b>
<b>SUPPLY <sup>[1]</sup></b>						
Local Groundwater Production Rights (AFY)	3000	3000	3200	3200	3200	3200
Desalter and Imported Water	6000	6000	6000	6000	6000	6000
Total Potable Supply	9000	9000	9200	9200	9200	9200
Total Recycled Supply	0	1825	1825	1825	1825	1825
<b>TOTAL WATER SUPPLY</b>	<b>9000</b>	<b>10,825</b>	<b>11,025</b>	<b>11,025</b>	<b>11,025</b>	<b>11,025</b>
<b>POTABLE WATER SUPPLY SURPLUS</b>	<b>1,721</b>	<b>3,173</b>	<b>3,211</b>	<b>3,199</b>	<b>3,287</b>	<b>3,225</b>

[1] City of Norco 2015 UWMP, Tables 4-3 and 6-9, except as otherwise noted.

[2] Based on City of Norco *Daily Well Production*, provided by City staff.

The following sections discuss each of the water sources for the City of Norco. Reliability of each of these sources is discussed in Section 5.

## 4.2 Desalter and Imported Water

The City is a member agency of the Chino Desalter Authority (CDA), a Joint Powers of Authority, with an annual obligation to purchase 1,000 AFY of reverse osmosis treated potable groundwater water. The City entered into a purchase water agreement with WMWD to purchase a minimum of 4,400 AFY of treated groundwater annually from the Arlington Desalter reverse-osmosis treatment facility.

Water purchased by the City from the Chino Desalter Authority is extracted from the Chino groundwater basin. Water purchased by the City from the Arlington Desalter is extracted from the Arlington groundwater basin.

The City's imported water is supplied by MWD and purchased through WMWD, a member agency of MWD. The City's imported water supply consists of treated water supplied via the Mills Pipeline from MWDSC's Henry J. Mills Filtration Plant to the City of Corona, then wheeled through Corona's water system to a metered service connection to the City of Norco at Norco Hills Road and Hidden Valley Parkway at the south end of the City's service area, as shown in Exhibit 4.

The City is entitled to 3,000 gpm of imported water through the Corona connection. Current system limitations allow the City to receive a maximum of 1,800 gpm from the Corona connection. The City's historic annual volume from this supply source is shown in **Table 4-3**.

**Table 4-3 - Historic Annual Imported Water Production (AF) <sup>[1]</sup>**

WMWD	2011	2012	2013	2014	2017-18
Imported Water	446	552	n/a	n/a	26 <sup>[2]</sup>

[1] As deduced from City of Norco 2015 UWMP, Table 6-1, and SB X7-7 Tables 5 and 6, and assumes desalted water production was maximized for years 2011 and 2012 (5400 AFY). Individual source production was not available in the UWMP for years 2013 and 2014.

[2] Based on City of Norco *Daily Well Production*, provided by City staff.

### 4.3 Groundwater

The City's service area and distribution system overlies the Temescal Groundwater Basin, with a small portion of the service area overlying the southern end of the Chino Groundwater Basin. The Chino Groundwater Basin is an adjudicated basin, managed by the Chino Basin Watermaster. The City is a member of the Appropriative Pool in the Chino Basin.

The City's local groundwater supplies are pumped from the Temescal and Chino groundwater basins. The City operates four (4) active groundwater wells in the Temescal basin that provide water directly to the water distribution system. The City owns three (3) inactive groundwater wells in the adjudicated Chino Groundwater Basin.

In the past decade the City has designed and constructed an iron, manganese and arsenic treatment removal facility to maximize the production of local groundwater and minimize its reliance on imported water. The City has been committed to utilizing local groundwater sources to meet current and expected future water demands.

#### 4.3.1 Temescal and Chino Groundwater Basins

The Temescal basin encompasses an area of approximately 26 square miles bounded by the Santa Ana River, La Sierra Hills, El Sobrante Hills and the Santa Ana Mountains. Typical depths for the City's wells in the Temescal basin range from 180 to 1,100 feet. Groundwater quality of these wells typically does not meet the EPA and Division of Drinking Water (DDW) maximum contaminant levels (MCL) for fluoride (2 mg/L), arsenic, and secondary standards for iron and manganese. The aforementioned treatment facility is used to treat this local water supply.

The Chino Basin is adjudicated, and one of the largest groundwater basins in Southern California containing approximately 5,000,000 AF of water and has an unused storage capacity of approximately 1,000,000 AF. The Chino Basin consists of 235 square miles of the upper Santa Ana River watershed and lies within portions of San Bernardino, Riverside, and Los Angeles counties. Approximately five percent of the Chino Basin is located in Los Angeles County, 15 percent in Riverside County, and 80 percent in San Bernardino County. The Chino Basin is bounded by Cucamonga Basin and the San Gabriel Mountains to the north, the Temescal Basin to the south, Chino Hills and Puente Hills to the southwest, San Jose Hills, Pomona and Claremont Basins on the northwest and the Rialto/Colton Basins on the east. The legal boundaries of the Chino Basin are defined in the 1978 Chino Basin Adjudication Judgment. The City of Norco could re-activate its existing well pumps in the Chino Basin, which would further reduce its reliance on imported water.

### **4.3.2 Groundwater Management**

Two public agencies - the City of Corona and the City of Norco - have historically extracted water from the Temescal basin. The City of Corona completed a Groundwater Management Plan (GWMP) that the City of Norco has reviewed. The report indicates that overdraft conditions may have occurred in the basin during the early 2000's as pumping increased from about 10,000 AFY to almost 20,000 AFY between 1990 and 2004. The Temescal basin is currently not adjudicated. However, the City has identified strategies for managing the groundwater system while maintaining groundwater production. The City of Corona GWMP concluded that, assuming no significant changes in current water extraction practices, average pumping totals of about 12,000 AFY in the Temescal basin would result in no significant loss of groundwater storage.

The Chino Basin began adjudication proceedings on January 2, 1975, when several Chino Basin producers filed suit in California State Superior Court for San Bernardino County (Court) to settle the problem of allocating water rights in the Chino Basin. On January 27, 1978, the Court entered a judgment establishing "Chino Basin Municipal Water District v. City of Chino et. al." how water rights would be managed within the Chino Basin and establishing a Watermaster to administer the "Judgment". The Watermaster was established in 1978 pursuant to the Judgment. The Judgment required that the Watermaster develop a management plan for the Chino Groundwater Basin that meets water quality and water quantity objectives for the region. The Watermaster is guided by the provisions of the Chino Basin adjudication and subsequent agreements between the parties to the Judgment.

The Judgment adjudicated all groundwater rights in Chino Basin and contains a physical solution to meet the requirements of water users having rights in or dependent upon the Chino Basin. The Judgment also appointed the Watermaster to account for, and implement, the Basin's management plan. The Judgment declared that the initial operating safe yield of the Chino Basin was 145,000 AFY, which was allocated as follows: 82,800 AFY to the Agricultural Pool; 7,366 AFY to the Non-Agricultural Pool; and 54,834 AFY to the Appropriative Pool.

Since the initial declaration, the operating Safe Yield was reduced to 140,000 AFY. Currently, a court-ordered Safe Yield redetermination is underway. Based on available information, it is possible the Safe Yield may be further reduced. It is generally understood by the stakeholders that such a reduction would impact the annual shares of Operating Safe Yield allocated to the Appropriators, that overlying rights allocated to the Agricultural Pool and individual members of Non-Agricultural Pool would not be reduced, and that the respective amounts of reduction to the Appropriators would be restored, partially or fully, from any under-utilized overlying Agricultural Pool groundwater production rights, which currently are re-allocated to Appropriators on an annual basis. The City of Norco's pumping rights in the Chino Basin could be reduced by a reduction in the Safe Yield redetermination, but because the City has not actively pumped water from the Chino Basin for approximately 13 years there is no impact to its active water supplies.

### **4.4 Recycled Water**

The City recently completed its Recycled Water Facilities Master Plan (November 2016). The City's Master Plan considers serving schools, parks, Lake Norconian, highway corridor, and other major outdoor irrigation uses. Water recycling involves the treatment of wastewater to create a high quality, safe source of water for outdoor irrigation, industrial and groundwater recharge uses. Water recycling can be an important component of the water resources management strategy for the region. Reuse of highly treated tertiary water is available to the

City of Norco. Recycled (non-domestic) water can provide a dependable local supply of water as well as reduce the likelihood of water rationing during droughts. However, the City has not made a determination that the use of recycled water and the maintenance required of a dual water distribution system is viable due to the lack of non-domestic water demand by potential customers. In addition, the use of recycled water at the Project site is not planned because no recycled water system exists in the area and none is planned to extend to the Project area in the future.

#### **4.4.1 Recycled Water Use in the City of Norco**

The City of Norco is a member agency of the Western Riverside County Regional Wastewater Authority (WRCRWA), a Joint Powers Authority (JPA). WRCRWA owns and operates a wastewater conveyance, treatment and disposal system. Six (6) agencies have the right to discharge to the WRCRWA treatment facility and collection system - Home Gardens Sanitary District, Jurupa Community Services District, Western Municipal Water District, the Santa Ana Watershed Project Authority, the City of Corona and the City of Norco. The City owns 2.7 mgd capacity in the WRCRWA treatment plant. The City also owns 100,000 GPD of sanitary sewer collection capacity and wastewater treatment capacity in the City of Corona wastewater system.

WRCRWA has been working with the State to obtain permission on a change of use petition that would allow each member agency the right to utilize their discharge capacity to the WRCRWA plant for recycled water use.

The City of Norco designed and constructed a recycled water distribution system in 2007 to deliver recycled water to multiple City-owned facilities. The City's recycled water distribution system currently consists of approximately eight miles of pipeline with a storage reservoir, booster pump station, and two pressure reducing stations.

Projected ultimate use of recycled water in the City is shown in Table 4-4.

**Table 4-4 - Projected Recycled Water Use within the City of Norco (AF)**

	2017-18	2020	2025	2030	2035	2040
Total Recycled Water Use	0	844	844	844	844	844

Source: City of Norco 2015 UWMP, Tables 6-4 and 6-6; and City of Norco *Daily Well Production*, provided by City staff.

The City of Norco's (City's) existing recycled water system facilities, as updated in the City's *Recycled Water Facilities Master Plan* (November 2016), consist of the City's Western Riverside County Regional Wastewater Authority (WRCRWA) Recycled Water Booster Station with a capacity of 1,000 gpm (not yet in service as of November 2016), an irrigation well with a capacity of approximately 350 gpm, one recycled water booster station with a capacity of 350 gpm, one recycled water storage reservoir with a capacity of 0.015 million gallon (MG), and approximately 33,000 linear feet (LF) of 12-inch transmission pipelines. The City also has an interconnection with the City of Corona's 20-inch recycled water pipeline.

#### **4.5 Desalted Water**

The Arlington Desalter is proposed to deliver water supplies to the City pursuant to its take-or-pay provision. The City's minimum annual delivery of Arlington Desalter water is 4,400 AF, and can purchase additional water up to 7,000 AF annually. The City monitors the

supply sources on a monthly basis in order to ensure the minimum is met.

The Chino Desalter Authority (CDA) Chino Basin II Desalter delivers water supplies to the City at a constant rate pursuant to its take-or-pay agreement with CDA for an annual volume of 1,000 AF. The Chino Groundwater Basin is the water source for the Chino Basin II Desalter. In 2006, the CDA constructed a Chino Basin II Desalter in Mira Loma, CA. It has a treatment capacity of approximately 11,200 AFY and is supplied by eight wells.

The Western Municipal Water District (WMWD) joined the CDA in November 2008, triggering expansion of the Chino II Desalter (known as the Phase 3 Desalter Project) by 10.5 MGD (11,800 AFY). The water supply for the new expansion of the Chino II Desalter is planned to be produced from a new set of wells known as the Chino Creek Well Field (CCWF) plus other wells as needed in order to produce the requisite amount of raw groundwater supply for treatment. The CCWF consists of five (5) recently drilled production wells located in the southwest area of the Chino Basin. The location of these new wells is critical to the attainment of hydraulic control of the Chino Basin as well as supply of CDA water to the City of Norco.

The desalters are supplied from groundwater wells; therefore, the amount of water produced by the desalters is subject to replenishment by the Chino Basin Watermaster to prevent overdrafting. The Watermaster has identified a hierarchy of water sources/supplies for replenishment purposes. Replenishment water is provided from the following: (1) the Watermaster Desalter Replenishment account; (2) new yield of the Basin; (3) Safe Yield of the Basin; and (4) additional replenishment water purchased by the Watermaster.

The Chino I and II Desalters are managed by the CDA and operated in accordance with the following: (1) "take-or-pay" agreements with the purchasers of the water; (2) an agreement with MWD to reduce the cost of the water produced by the desalters; and (3) an agreement with the Watermaster regarding replenishment obligations for operating the desalters. Since the desalters are supplied from the Chino Groundwater Basin, the amount of groundwater produced is subject to replenishment by the Watermaster to prevent overdrafting.

The CDA originally contracted to provide a combined total of 9,200 AFY of product water from the Chino I Desalter to Norco, Jurupa Community Service District (JCSD), and the cities of Chino and Chino Hills. The Chino I Desalter Expansion added 5,000 AFY of potable water available for use. The resultant total of 14,200 AFY was allocated between the cities of Norco, Chino, Chino Hills, and Ontario; the JCSD; and the Santa Ana River Water Company. With an additional 10,400 AFY of contracts associated with the Chino II desalter, CDA is currently contracted to provide a combined total of 24,600 AFY of product water, and upon completion of the Phase III expansion contract, contract amounts would increase to a total of 35,200 AFY.

## **5.0 RELIABILITY OF WATER SUPPLIES**

The City of Norco understands that water is a limited resource and that a long term reliable supply of water is essential to protect the local and state economy. The City also recognizes that, while conservation and efficient use of water is a statewide concern, planning is best done at the local level. The 2015 UWMP was used as the primary source document for the preparation of the Water Supply Assessment, which contains planning information to assist the City in developing a reliable supply of quality water in sufficient quantities for beneficial uses.

The City purchases treated groundwater from WMWD's Arlington Desalter, treated groundwater from the Chino Basin Desalter Authority (CDA), and treated surface water from Metropolitan Water District of Southern California (MWD) via WMWD which is wheeled through a connection with the City of Corona. The City has met historical water demands with these supplies, including demands during average, single-dry, and multiple-dry year scenarios. The City has been able to meet all demands with its existing water supply portfolio, including through periods of single and multiple-dry years.

With the implementation of the water conservation measures mandated by the 2015 Executive Order, expenditures are expected to increase due to the executed water purchase agreements requiring the City to "take or pay". These agreements will require the City to continue purchasing the more expensive treated water in lieu of producing less expensive local groundwater. Due to this potential for expenditures to outpace revenue during a water shortage, the City recently initiated a rate study to create a rate model that can be adjusted annually to ensure an ongoing revenue stream that will adequately support operation of the utility. The reduction in revenue due to reduced water use will require adjustments to the fixed service charge for metered customers to help buffer the economic impacts of a reduction in use due to water shortage restrictions. For a catastrophic shortage, the City would use financial reserves to support the operation of the utility in the short term. For a long term shortage, such as a multi-year drought, the City would make rate adjustments or institute drought pricing as needed.

### **5.1 Temescal Basin**

The City operates four groundwater wells that pump from the Temescal basin. The Temescal basin is currently unadjudicated. It encompasses an area of approximately 26 square miles bounded by the Santa Ana River, La Sierra Hills, El Sobrante Hills and the Santa Ana Mountains. Typical depths for the City's wells in the Temescal basin range from 180 to 1,100 feet.

### **5.2 Chino Basin**

The City of Norco does not have any active wells in the Chino Basin and does not plan to resume any active pumping within the Chino Basin due to contamination of the groundwater where the wells are located. As an adjudicated basin, the court requires an appointed Watermaster, and that the Watermaster prepare semiannual reports that describe implementation of a basin management plan, known as the Optimum Basin Management Plan (OBMP), and provide information on each OBMP program element and their implementation status.

#### **5.2.1 Groundwater Level Monitoring – Chino Basin**

The Chino Basin is adjudicated and managed by the Chino Basin Watermaster to maintain groundwater levels. Current users of the Chino Basin produce groundwater from the Chino Basin, even during periods of drought. With continued management of the Chino Basin to

maintain groundwater elevations, the Chino Basin is considered to be a reliable future source of supply and may be used to offset any potential reductions in other Norco supplies.

### **5.2.2 Dry Year Yield Program – Chino Basin**

The DYY Program is the first step in a phased plan to develop and implement a comprehensive conjunctive use program to allow maximum use of imported water available during wet years and stored groundwater in the Chino Basin during dry years allowing MWD to utilize the Chino Basin for dry year storage of up to 100,000 AF of surplus imported water. Imported water deliveries to participants would increase during wet or normal years, and demands could be satisfied from the stored water during dry years while minimizing the need for imported water.

The storage and recovery activities of this conjunctive use of the Chino Basin are a critical component of the Dry Year Yield program. The program provides for MWD to store water in the Chino Basin. During periods of drought, when imported water is not in sufficient supply to meet all demands, MWD directs Chino Basin retail agencies to decrease their imported water use and make-up the supply by producing groundwater from MWD's groundwater storage account. MWD can provide up to 100,000 AF of stored water in the Chino Basin based on agreements with MWD's DYY account. The DYY Program completed a full cycle in April 2011, with Chino Basin benefitting from those facilities, and MWD having filled the account and subsequently drawing it down over three years. This program is an example of how demands on the Chino Basin can optimize its use and reduce demand on imported water supplies.

## **5.3 State Water Project (SWP)**

### **5.3.1 SWP/MWD Reliability Update**

The reliability of the SWP impacts MWD's member agencies' abilities to plan for future growth and supply. In January 2010, the DWR Bay-Delta Office published a report specifically addressing the reliability of the SWP. The report provides information on the reliability of the SWP to deliver water to its contractors assuming historical precipitation patterns. The report has been updated three times – in 2013, 2015 and 2017. The 2017 report utilizes 82 years of historic rainfall and snow history, along with projected consideration factors for climate change. The updated report projects deliveries of SWP water to have a 77 percent likelihood that more than 2,000 TAF of Table A water will be delivered annually. This compares to 74 percent likelihood in the 2015 Report.

As the State Water Project contracting wholesaler for Norco's imported water supplier, Western Municipal Water District, MWD has developed plans and programs to address drought conditions and its continuing ability to meet the water demands of its service area. Prevailing drought conditions throughout California and the Colorado River Basin, coupled with environmental issues affecting deliveries of SWP water through the Sacramento – San Joaquin Delta, have resulted in diminished imported surface water supplies to Southern California. MWD continually re-evaluates these plans and programs for effectiveness in consideration of changing conditions. The plans describe a progressive series of actions, including tapping into stored water reserves and, if necessary, reductions in deliveries.

### **5.3.2 MWD's Water Surplus and Drought Management Plan**

In 1999, MWD developed a WSDM Plan that included guidelines for implementing water supply restrictions in the event of a water shortage. The WSDM Plan does not outline specific criteria for how water would be distributed among the MWD member agencies (WMWD for City of



Norco) during water shortage conditions, but states that the methods to be used for determining reduction in supplies to each member agency would be developed in a manner that was equitable and minimized hardship to retail water customers. The WSDM Plan will guide management of regional water supplies to achieve the reliability goals of Southern California's IRP. The IRP sought to meet long-term supply and reliability goals for future water supply planning. The WSDM Plan's guiding principle is to minimize adverse impacts of water shortage and ensure regional reliability. From this guiding principle come the following supporting principles:

- Encourage efficient water use and economical local resource programs.
- Coordinate operations with member agencies to make as much surplus water as possible available for use in dry years.
- Pursue innovative transfers and banking programs to secure more replacement water for use in dry years.
- Increase public awareness about water supply issues

The WSDM Plan guides the operations of water resources (local resources, Colorado River, SWP, and regional storage) to ensure regional reliability. It identifies the expected sequence of resource management actions MWD will take during surpluses and shortages of water to minimize the probability of severe shortages that require curtailment of full service demands. Mandatory allocations are avoided to the extent practicable; however, in the event of an extreme shortage an allocation plan will be adopted in accordance with the principles of the WSDM Plan. The WSDM Plan describes MWD's ability to meet demand during a Surplus, Shortage, Severe Shortage, and Extreme Shortage. Within the WSDM Plan, these terms have specific meaning relating to MWD's capability to deliver water to the City, as follows:

**Surplus:** MWD can meet full-service and interruptible program demands, and it can deliver water to local and regional storage.

**Shortage:** MWD can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.

**Severe Shortage:** MWD can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation. In a Severe Shortage, MWD may have to curtail Interim Agricultural Water Program (IAWP) deliveries in accordance with IAWP.

**Extreme Shortage:** MWD must allocate available supply to full-service customers.

The WSDM Plan also defines five "surplus" management stages and seven "shortage" management stages to guide resource management activities. Each year, MWD will consider the level of supplies available and the existing levels of water in storage to determine the appropriate management stage for that year. Each stage is associated with specific resource management actions designed to: 1) avoid an Extreme Shortage to the maximum extent possible; and 2) minimize adverse impacts to retail customers should an Extreme Shortage occur. The sequencing outlined in the WSDM Plan reflects anticipated responses based on detailed modeling of MWD's existing and expected resource mix. This sequencing may change as the resource mix evolves.

Due to the recent droughts and reduced deliveries from the SWP, MWD updated its plans for addressing water shortage conditions. This update resulted in the Water Supply Allocation Plan, which acts as an extension of the WSDM Plan, and includes specific formula for allocating available supplies among MWD member agencies. Table 5-1 summarizes the surplus and shortage actions to be taken by MWD as defined in the WSDM Plan. As shown, water shortage Stage 7 is where the Water Supply Allocation Plan is implemented. MWD declared Stage 7 several times during the recent droughts, resulting in reduced deliveries to all MWD member agencies.

**Table 5-1 – MWD Resource Conditions and Action Stages**

Resource Stage	Action to be Taken
Surplus 5	Make cyclic deliveries
Surplus 4	Fill Central Valley Groundwater Basins
Surplus 3	Store Supplies in SWP Carryover
Surplus 2	Fill Conjunctive Use Basins
Surplus 1	Fill DWR and Diamond Valley Reservoir
Supplies = Demands	Conduct Public Affairs Program (Conservation)
Shortage 1	Utilize Diamond Valley Reservoir for Additional Supplies to MWD System
Shortage 2	Utilize Central Valley Groundwater Storage to Supplement Supplies
Shortage 3	Interrupt Long-term Seasonal and Replenishment Deliveries
Shortage 4	Take from Conjunctive Use and DWR Storage to Supplement Supplies
Shortage 5	Call for Extraordinary Conservation/Reduce Interim Agricultural Water Program (IAWP) Deliveries
Shortage 6	Call Options Contracts/Buy Spot Water
Shortage 7	Implement Water Supply Allocation Plan

## 5.4 Water Shortage Plans

The City of Norco has invested considerable effort and capital in developing a diverse water supply to ensure redundancy and flexibility in dealing with supply interruptions. Historically, the City has responded to water shortages through implementation of various conservation measures. In 1977, the City adopted a resolution and Ordinance 397 for a program of voluntary reduction of nonessential uses of water to reduce consumption by 15 percent during the multiple-year drought at the time. Currently, Title 14, Chapter 14.04 of the Norco Municipal Code, as amended by Ordinance 991 details the City's current water conservation rules and water shortage contingency plan. The water shortage stages include consideration of water shortages up to Stage 5 (Water Shortage Emergency), which includes reductions in water consumption by more than 50 percent.

All requirements of the City's Water Conservation Ordinance are in effect during normal water conditions. The waste of water is prohibited and defined in the Water Conservation Ordinance as:

- Do not use water to wash down sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas, except to alleviate immediate safety or sanitation hazards.
- Adjust sprinklers and irrigation systems to avoid overspray, runoff, and waste. Customers should also avoid watering on windy days.
- Irrigate all landscapes before dawn, if possible, but never between 8:00 a.m. and 8:00 p.m. Use a hand-held hose equipped with a positive shut-off nozzle or bucket to water landscaped areas that are not irrigated by a landscape irrigation system.
- Agricultural users are requested to reduce water usage and to consult with the local resource conservation district as needed or industry associations in their area for appropriate water conservation measures and to implement them as soon as possible.
- Residents are urged to design and install water-wise landscaping utilizing native and other drought-tolerant plant materials and minimize turf areas for permanent water conservation.
- Developers of commercial properties are urged to design and install water-wise landscaping utilizing native and other drought-tolerant plant materials and minimize turf areas for permanent water conservation, as required by City landscape ordinances.
- Install water-saving devices in indoor plumbing.
- Check faucets, toilets, and pipes, both indoors and outdoors, for leaks and repair them immediately.
- Use re-circulated water to operate decorative fountains, ponds, lakes or other similar aesthetic structures.
- Wash motor vehicles, trailers, boats, and all other mobile equipment using a bucket or a hand-held hose with a positive shut-off nozzle, mobile high-pressure/low-volume wash system, or at a commercial site that re-circulates (reclaims) water onsite. Avoid washing during hot conditions when additional water is required due to evaporation.
- Restaurants or other public places where food is served shall not serve drinking water to any customer unless requested by a customer.
- Irrigation is prohibited during and for 48 hours after any measurable rainfall.
- Operators of hotels and motels must provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language. (Ord. 991, 2015)

## **5.5 Interconnections**

To increase system reliability, the City has established interconnections with neighboring water agencies that may be activated in the event of an isolated interruption of water supply, and would serve to facilitate mutual aid. The City has emergency interties with Jurupa Community Services District, the City of Corona, and the City of Riverside.

## 5.6 City of Norco Dry Year Reliability Analysis

Based on City of Norco *Daily Well Production*, provided by City staff, the City's Fiscal Year 2017-18 water demand was approximately 7,279 AF. By Year 2040, the City's water demand is projected to be 7,800 AF.

The available supplies and water demands for the City's water service area were analyzed to assess the City's ability to satisfy demands during three hydrologic scenarios: a normal water year, single dry water year, and multiple-dry years. The tables in this section present the supply-demand balance for each of the hydrologic scenarios for the 20-year planning period (2020 to 2040). It is expected that the City will be able to meet 100 percent of its dry year demand under every scenario.

A projected supply and demand comparison during normal year scenarios is shown in Table 5-2 for the years 2020 through 2040. The projected supply exceeds demand for all projected years.

**Table 5-2 - Normal Year Supply and Demand Comparison**

	2020	2025	2030	2035	2040
Supply Totals	10,825	11,025	11,025	11,025	11,025
Demand Totals	7,652	7,814	7,826	7,738	7,800
Difference (surplus)	3,173	3,211	3,199	3,287	3,225

Source: City of Norco 2015 UWMP, Tables 4-3 and 6-9.

A projected supply and demand comparison during single-dry year scenarios is based on Table 7-3 of the City's 2015 UWMP, and is shown in Table 5-3 for the years 2020 through 2040. The projected supplies exceed demands for all years.

**Table 5-3 - Single-Dry Year Supply and Demand Comparison**

	2020	2025	2030	2035	2040
Supply Totals	10,825	11,025	11,025	11,025	11,025
Demand Totals	7,008	7,170	7,182	7,194	7,150
Difference (surplus)	3,817	3,855	3,843	3,831	3,875

Source: City of Norco 2015 UWMP, Table 7-3.

A projected supply and demand comparison during multiple-dry year scenarios is based on Table 7-4 of the City's 2015 UWMP, and is shown in Table 5-4 for the years 2020 through 2040. The projected supplies exceed demands for all years through 2040.

**Table 5-4 - Multiple-Dry Year Supply and Demand Comparison**

		2020	2025	2030	2035	2040
First Year	Supply Totals	10,828	11,025	11,025	11,025	11,025
	Demand Totals	7,008	7,170	7,182	7,194	7,150
	Difference (surplus)	3,820	3,855	3,843	3,831	3,875
Second Year	Supply Totals	10,828	11,025	11,025	11,025	11,025
	Demand Totals	7,008	7,170	7,182	7,194	7,150
	Difference (surplus)	3,820	3,855	3,843	3,831	3,875
Third Year	Supply Totals	10,828	11,025	11,025	11,025	11,025
	Demand Totals	7,008	7,170	7,182	7,194	7,150
	Difference (surplus)	3,820	3,855	3,843	3,831	3,875

Source: City of Norco 2015 UWMP, Table 7-4.



## **6.0 CONCLUSION**

The City of Norco receives its water supplies from groundwater, desalted water, and imported water. The City could re-activate its well pumps in the Chino Basin further reducing its reliance on imported water. However, the City has no plans at this time to pump directly from the Chino Basin due to contamination of the groundwater where the wells are located.

A CEQA report is being prepared for the Palomino Business Park (PBP) project, which includes an assessment of utility services and includes this Water Supply Assessment (WSA) pursuant to Senate Bill 610. The WSA will also be used by the City of Norco as part of its ongoing planning efforts to optimize its water resource program.

The WSA includes a discussion of the Senate Bill 610 legislation, an overview of the proposed Project, and analysis of water demands for the City's existing service area and the Project. It also considers the potential additional demands on the City's system from current development projects over the UWMP 25 year planning horizon. The WSA also includes an analysis of reliability of the City's water supplies and water quality, and concludes with a sufficiency analysis of water supply during normal, single-dry, and multiple dry years for the next 20-plus years.

The proposed Palomino Business Park project is proposed with distribution center (Light Industrial) warehouse type uses and with planned maximum building floor area of 2,050,000 square feet of warehouse and office space in southwest Norco, California. It is located within the Gateway Specific Plan. The 110-acre site currently consists of industrial and rural residential land uses. Current site demands were not available for the WSA analysis which would provide an estimate of 'net' Project site water demand lower than the gross water demand evaluated for the WSA. Existing demands will be replaced by the proposed PBP.

### ***Source of Water***

In Fiscal Year 2017-18 the City purchased and produced 7,279 AF of domestic water from City wells, desalted groundwater from the Arlington and Chino Basin Desalters, and WMWD imported water.

### ***Water Demand and Supply Projections***

The City of Norco will meet its future water demands, including the demands for the Project, from existing supply sources. The City could also re-activate their existing groundwater wells that pump from the Chino Basin. Future water sources are planned to include water conservation.

The Project's total average water demand is estimated at 228,000 gpd which will increase the current water demands on the City's potable water system. This includes approximately 47,850 gpd for irrigation demand that could be served by future non-domestic water sources.

The WSA analysis of water demand and supply projections for the City, including the Palomino Business Park Project, demonstrates that estimates of current and planned City water sources are sufficient to satisfy City of Norco demand now and through Year 2040. In addition, recycled water is planned to be used within the City to extend its potable water sources.





## 7.0 REFERENCES

1. City of Norco, *City of Norco 2015 Urban Water Management Plan*, July 1, 2016
2. City of Norco, staff communication/comments to January 2019 draft WSA, March 2019
3. City of Norco *Daily Well Production*, 2017 and 2018.
4. City of Chino, *City of Chino 2015 Urban Water Management Plan*, September 2016.
5. City of Norco, *Water Facilities Master Plan*, November 2016.
6. City of Norco, *Recycled Water Facilities Master Plan*, November 2016.
7. City of Chino, *City of Chino Water System Master Plan Update*, March 2004.
8. Department of Water Resources (DWR), *State Water Project Delivery Capability Report*, 2015.
9. Department of Water Resources (DWR), *State Water Project Delivery Capability Report*, 2017, March 2018 Update
10. City of Chino, *Water Supply Assessment for Chino Parcel Delivery* draft, April 16, 2018.