

## Appendix Q. 2016 Water Supply Assessment

## Appendix

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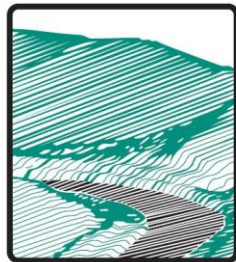


**California Senate Bill 610**

**Water Supply Assessment**  
for  
**Rancho Miramonte**

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

by:



***PENCO Engineering, Inc.***

Civil Engineering  
Planning  
Surveying

*"Client Success is Our Success"*

**January 2016**

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City of Chino  
Water Supply Assessment  
Rancho Miramonte

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## ACRONYMS and ABBREVIATIONS

AB	Assembly Bill
ACT	Urban Water Management Planning Act of 1983
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
CBWCD	Chino Basin Water Conservation District
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
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
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 Agreement
LRP	Local Resources Program
MAF	Million Acre Feet
Max	Maximum
MCL	Maximum Contaminant Level
MDR	Medium Density Residential
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
OCWD	Orange County Water District
QSA	Quantification Settlement Agreement
RP	Regional Plant
RWIP	Recycled Water Implementation Plan
RWQCB	Regional Water Quality Control Board
SARI	Santa Ana Regional Interceptor
SAWPA	Santa Ana Watershed Project Authority
SB	Senate Bill
SBCFCD	San Bernardino County Flood Control District
SCADA	Supervisory Control Data Acquisition System
SCIWP	Southern California Integrated Watershed Program
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TIN	Total Inorganic Nitrogen
TMDL	Total Maximum Daily Load
TVMWD	Three Valleys Municipal Water District
USBR	U.S. Bureau of Reclamation
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compounds
WMWD	Western Municipal Water District
WFA	Water Facilities Authority
WMP	Water Master Plan
WSA	Water Supply Assessment
WSDM	Water Surplus and Drought Management
WSMP	Water System Master Plan
WTP	Water Treatment Plant

## EXECUTIVE SUMMARY<sup>[7]</sup>

A California Environmental Quality Act (CEQA) report is being prepared on behalf of the City of Chino (City) in support of the Rancho Miramonte Project. The EIR includes an assessment of utilities, including water supply. Recent legislation, 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 does not, nor is it intended to, identify infrastructure needs related to the provision of water for the proposed Rancho Miramonte project.**

The WSA is considered at a point in time when known future projects are considered. It is also understood that new and innovative programs and projects in concept are yet to be designed. Therefore, WSAs are a part of the ongoing planning efforts of the City to optimize its water resource program.

The WSA includes a discussion of the relevant legislation requiring the WSA, an overview of the proposed Project, analysis of water demands for the City's existing service area and the Project over a 20+ 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-year planning period.

### **Rancho Miramonte**

Rancho Miramonte is located within the Mill Creek development (formerly Edgewater communities), southerly of Chino-Corona Rd, and easterly of Cucamonga Ave. The approximate 271-acre site is within the City of Chino's designated Subarea 2. The site currently consists primarily of agricultural operations with a few single-family residences. The proposed project includes 11 residential neighborhoods of varying densities (823 lots), parks, and open space.

### **Water Supply**

As described in the City's 2010 Urban Water Management Plan (UWMP) update, the City of Chino relies on four sources for its long-term water supply -- City-produced local groundwater, imported water, desalted water, and recycled water.

- Groundwater is produced from the Chino Groundwater Basin (Basin). The Basin was adjudicated in 1978, which allocated water production rights to water producers. The City's current groundwater production right as a share of the Safe Yield of the Basin is 4,034 acre-feet per year (AFY). However, the City has the ability to obtain annual adjustments to its allocated production capability. Management of the Basin is accomplished by the Chino Basin Watermaster through implementation of its operating documents, including 1) the 1978 Chino Basin Judgment; 2) the Peace Agreements; and 3) the Optimum Basin Management Program (OBMP).
- Imported State Water Project (SWP) water is received from the Metropolitan Water District of Southern California (MWD) through the Inland Empire Utilities Agency (IEUA) and the Water Facilities Authority (WFA). The City's imported water deliveries are treated by the WFA at its Agua de Lejos Treatment Plant located in Upland, California.

The City is entitled to 5.9 percent of the treatment plant capacity which calculates to a current Chino entitlement of 5,353 AFY.

- Desalted water is received from the Chino Basin Desalter Authority's (CDA) Chino I Desalter. The City's allocation is 5,000 AFY.
- Recycled water is supplied to the City by IEUA through the Regional Recycled Water Distribution System. In fiscal year 2013/2014, the city provided approximately 8,916 AF of recycled water to industrial, landscape irrigation, and agricultural customers. The City's limited recycled water infrastructure is currently expanding due to the expansion of the IEUA's Regional Recycled Water Distribution System. However, recycled water demands are expected to decrease in the future upon conversion of agricultural lands to urban use.

### **Chino Groundwater Basin Safe Yield Re-determination**

The Chino Groundwater Basin has been adjudicated and is subject to the terms and conditions of the January 27, 1978 SBSC Judgment (RCV 51010) which was restated in 2012 by that certain Restated Judgment (Judgment). Per the Judgment, the Safe Yield of Chino Basin is 140,000 acre feet per year as cited in the TPSP WSA. The Judgment requires that the Chino Basin Watermaster (CBW) conduct a redetermination of the Safe Yield of 140,000 acre feet after the first ten (10) years of operation of the physical solution under the Judgment that redetermination was to have been completed in 2011 and is pending.

CBW presented information at a July 30, 2013 workshop describing potential impacts that may result as a consequence of a reduction in the Basin Safe Yield. The worst case scenario (based on a plausible set of assumptions) presented at the July 30, 2013 workshop, described a possible reduction of the Safe Yield from 140,000 acre-feet to 113,000 acre feet. If implemented, such a worst case scenario could result in a reduction of 6,499 acre-feet to Chino's combined (i.e. share of Safe Yield plus agricultural reallocation plus share of storm water New Yield) annual groundwater production rights in Fiscal Year 2011-2012, and consequently result in an annual groundwater production right totaling 6,948 acre-feet for Chino in that Fiscal Year, as compared to a groundwater production of 7,857 AFY by city wells.

CBW stakeholders are currently evaluating the Safe Yield scenario described above, and other possible Safe Yield scenarios. At this time, the final outcome of any court-ordered Safe Yield redetermination is unknown. However, based on available information, it is possible the Safe Yield may be reduced from the 140,000 acre-feet quantity that has been in-place since the time the Judgment was implemented in 1978. 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. These under-utilized Agricultural Pool rights are the same rights that also satisfy requests for (but for the last several years, only partially satisfied all requests) agricultural land use conversions. Because the under-utilized Agricultural Pool rights would be first used to restore Appropriators' respective shares of Operating Safe Yield diminished by the reduction in the Safe Yield, the amount of under-utilized Agricultural Pool rights available to satisfy land use conversions would be reduced to a level that would not totally satisfy land use conversions. Because all agricultural land in the City of Chino is undergoing urbanization, the City of Chino's

reliance on land use conversions to satisfy the water needs of such urbanization would be severally impacted by a reduction in the Safe Yield.

It is important to note that any Safe Yield redetermination may be further impacted by the timing of a re-determined Safe Yield. It is possible that the implementation may be applied retroactively, which would result in the reduction of the quantity of the City's groundwater production reserves.

It is anticipated that the Safe Yield re-determination will involve CBW's entire suite of groundwater basin management programs, including controlled overdraft (from time-to-time as may be necessary to bridge periods of drought or interruption/curtailment of a particular source of water supply) of the basin (estimated to have a capacity of over 5 million acre-feet) and corresponding replenishment, recharge of the basin with storm water and recycled water, and various water storage programs with outside agencies. The combination of these water management program activities can provide for optimization of the groundwater basin as a groundwater supply source for the entire region, to ameliorate the impact of any reduction in the current Safe Yield of 140,000 AFY, and serve as measures to satisfy the City's current and projected future water demands with minimal replenishment from outside sources.

### ***Water Demand***

The City's current (FY 2013/14) average total domestic and non-domestic demand is 25,141 AFY. The Project water demand was accounted for in the future demand estimate of the 2010 UWMP, and is estimated at 445,525 gallons per day, of which up to 133,657 gpd is for irrigation and could be served by non-domestic sources such as recycled water. Combined with the build-out of future developments that were also included in the UWMP projections, total City water demand is anticipated to increase to 28,435 AFY by 2035.

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

Development of the proposed Rancho Miramonte Project is expected to be completed in phases during the next several years. The City of Chino will meet its future water demands, including the demands for the Project, from existing supply sources as well as sources that are currently being planned, developed and implemented. Future sources include an expanded service area for recycled water and water conservation. Supplies of imported water and CDA water are expected to remain relatively stable throughout the forecast period. Enhanced water conservation and increased local well production are anticipated to provide for the balance of needed supplies.

The City has the opportunity to increase supply to meet demand through the following measures: (1) production of groundwater based on Safe Yield limitations and replenishment; (2) increasing imported water purchases, if available and if there is available WFA capacity; (3) purchasing additional desalted water if more is produced than needed to satisfy requirements of other purchasers, and (4) purchasing additional recycled water, if available. Collectively, these additional options may be used by the City of Chino in an effort to provide sufficient water supplies to satisfy demands now and into the future.

## **Reliability**

Reliability of future water supplies to the region is based on implementation of the OBMP, implementation of local agency programs, and combined efforts and programs among agencies, including all water retailers, and the Chino Basin Watermaster, IEUA, MWD, WFA, CDA, Santa Ana Regional Water Quality Control Board (RWQCB), Santa Ana Watershed Project Authority (SAWPA), and the Chino Basin Water Conservation District.

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.

### **SWP Reliability Update**

DWR has issued a State Water Project Final Delivery Reliability Report 2013. This 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 be plus or minus one (1) percent of previous projections utilizing both existing conditions and future conditions.

### **Conclusion**

The information included in this WSA describes a program of potential options that may be utilized in an effort to secure sufficient water supply to satisfy the city's anticipated future water demands, including the subject project.

## 1.0 INTRODUCTION<sup>[7]</sup>

A California Environmental Quality Act (CEQA) report is being prepared for the Rancho Miramonte 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 WSA does not, nor is it intended to, identify infrastructure needs for service distribution to the proposed Project.** The regional location of the Project is shown in **Exhibit 1**.

Rancho Miramonte is located within the Mill Creek development (formerly Edgewater communities), southerly of Chino-Corona Rd, and easterly of Cucamonga Ave. The approximate 271-acre site is within the City of Chino's designated Subarea 2. The site currently consists primarily of agricultural operations with a few single-family residences. The proposed project includes 11 residential neighborhoods of varying densities (823 lots), parks, and open space, as shown in **Exhibit 2**.

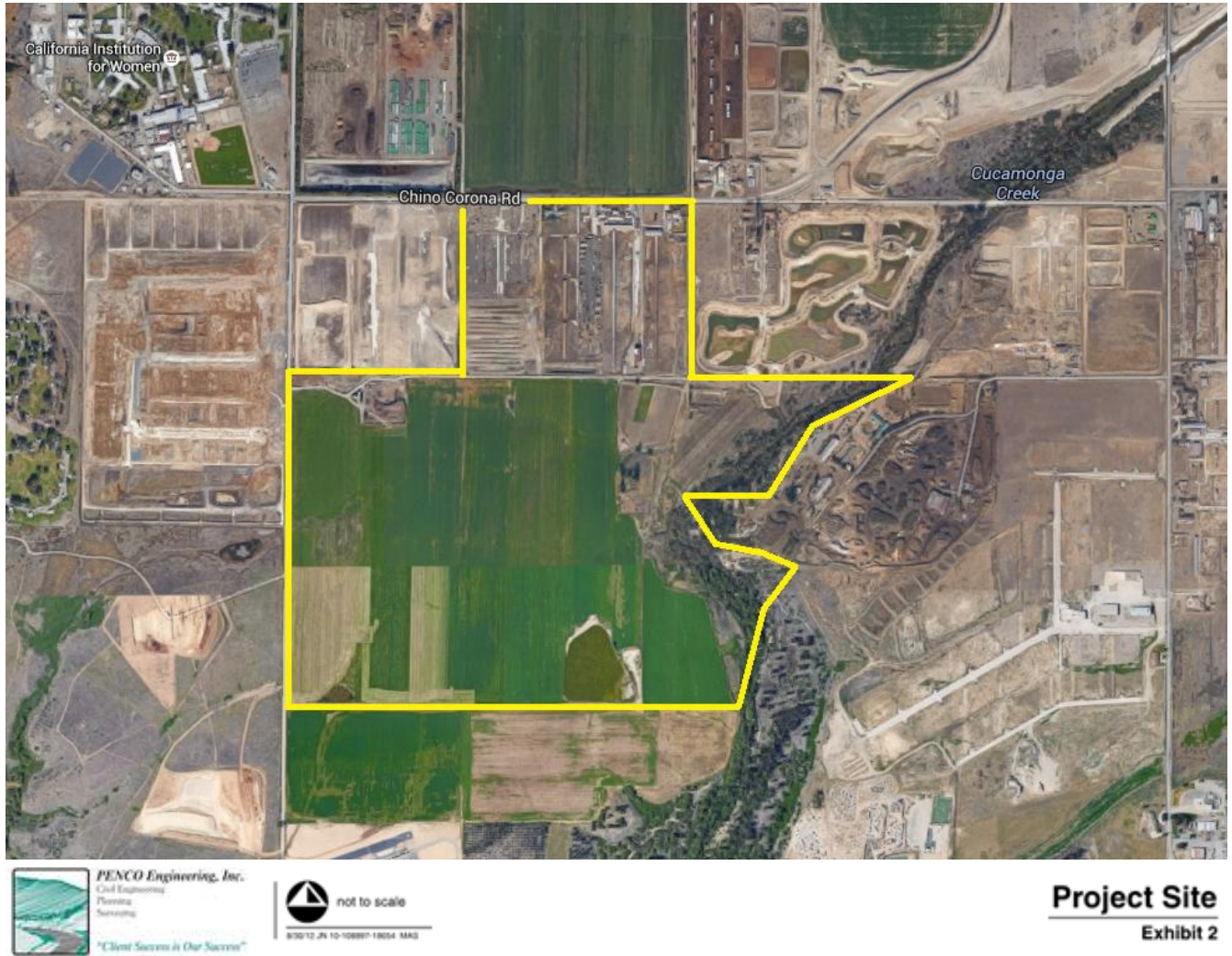
The WSA is part of the ongoing planning efforts of the City to optimize its water resource program. The WSA includes a discussion of the Senate Bill 610 legislation, an overview of the proposed Project, and analysis of water demands for the City's existing service area and the Project and other City development projects 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-year planning period.

### Exhibit 1. Rancho Miramonte Project



**Rancho Miramonte - Exhibit 1**

**Exhibit 2. Site Vicinity – Rancho Miramonte Project**



## 2.0 LEGISLATION<sup>[7]</sup>

Due to the Project's potential impact 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 11 residential neighborhoods of varying densities (823 lots), parks, and open space. As the Project exceeds 500 dwelling units, preparation of a WSA is required to determine 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 – Costa – 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 Chino is to comply with the requirements. It specifically identifies methods for establishing urban water use targets. These requirements and the City of Chino's specific Compliance Plan are outlined in the 2010 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 increases the water use reduction goal to 25 percent as compared to 2013 usage throughout the State. The EO outlines 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 addresses facilitating funding for projects designed to increase local water supplies and improve water supply reliability. It also orders more frequent reporting and modifications to the State's Model Water Efficient Landscape Ordinance; mandates Agricultural water suppliers to prepare their Agricultural Water Management Plans by specific dates; and orders 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.

Additionally, the State Water Resources Control Board on May 5, 2015, adopted regulations implementing Executive Order B-29-15. Under this SWRCB regulation the City of Chino

is required to reduce its total potable water production by 24 percent for each month as compared to the amount used in the same month in 2013.

### 3.0 RANCHO MIRAMONTE PROJECT

#### 3.1 Project Description

Rancho Miramonte is located within the Mill Creek development (formerly Edgewater communities), southerly of Chino-Corona Rd, and easterly of Cucamonga Ave. The approximate 271-acre site is within the City of Chino's designated Subarea 2. The site currently consists primarily of agricultural operations with a few single-family residences. The proposed project includes 11 residential neighborhoods of varying densities (823 lots), parks, and open space. The Project land uses are summarized in Table 3.1-1, and the general site plan is shown in **Exhibit 3**.

**Table 3.1-1** summarizes the proposed land uses of the Rancho Miramonte project.

**Table 3.1-1 – Project Land Use Summary**

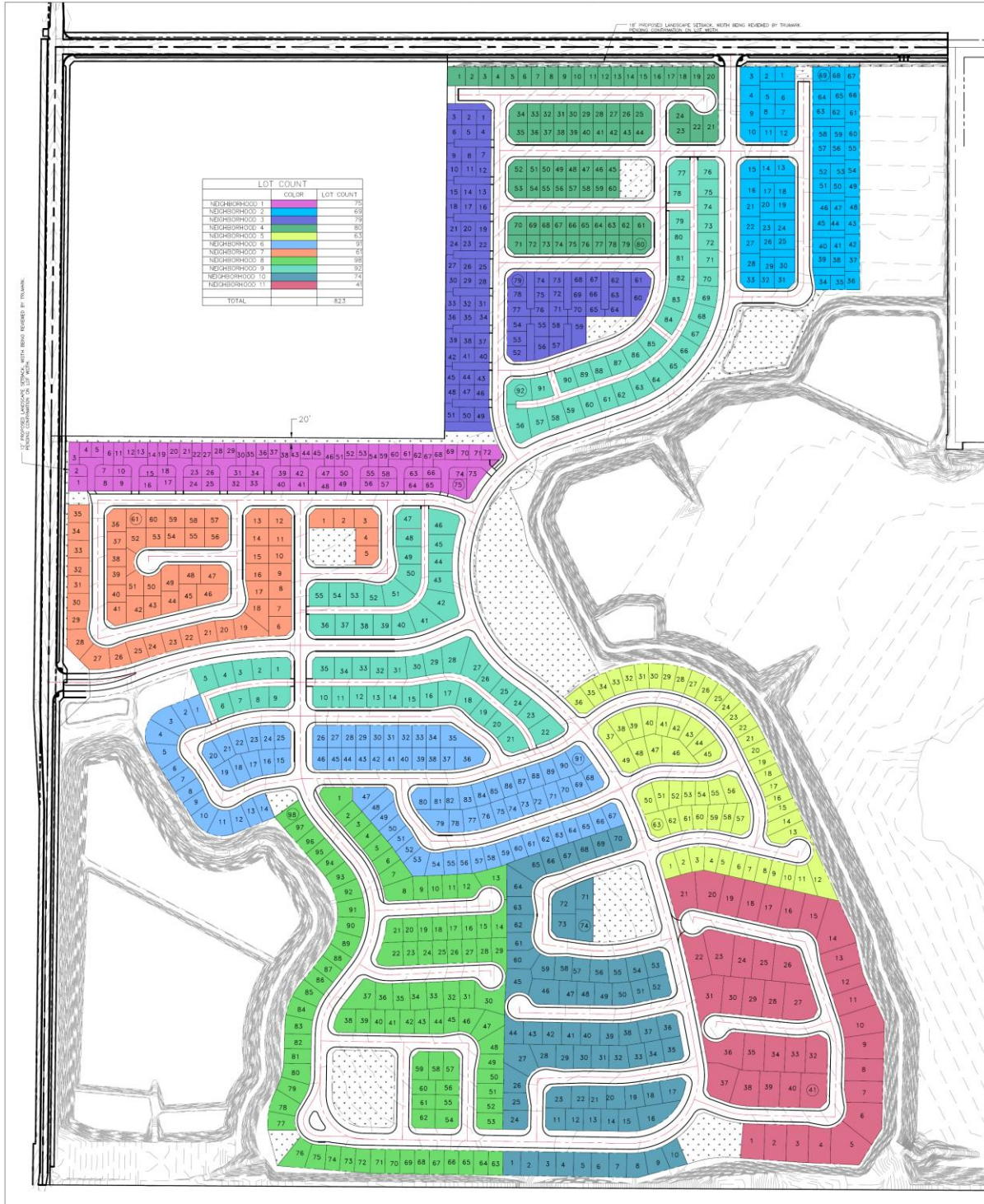
Lot #	Land Use	Area (acres)	Density (DU/Acre)	# of Units
1	MDR-1	10.03	8.08	81
2	MDR-2	8.61	9.29	80
3	LDR-2	6.02	6.31	38
4	MDR-2	7.30	9.59	70
5	NEIGH. COMM.	5.07	0.00	0
6	MDR-3	6.90	11.01	76
7	LDR-2	10.94	5.21	57
8	LDR-2	3.68	5.71	21
9	LDR-2	1.38	6.53	9
10	LDR-2	3.66	6.28	23
11	MDR-1	2.50	8.79	22
12	LDR-1	4.22	5.92	25
13	MDR-1	8.64	7.76	67
14	LDR-2	10.73	5.78	62
15	LDR-2	12.01	5.33	64
16	MDR-2	1.39	10.04	14
17	MDR-1	1.16	8.64	10
18	LDR-1	12.43	3.30	41
19	MDR-1	8.80	7.16	63
20	CLUBHOUSE	3.56	--	0
A	OPEN SPACE-R	2.32	--	--
B	OPEN SPACE-R	7.61	--	--
C	OPEN SPACE-R	2.34	--	--
D	OPEN SPACE-R	3.14	--	--
E	OPEN SPACE-R	0.97	--	--
F	OPEN SPACE-R	0.37	--	--
G	OPEN SPACE-R	0.15	--	--
H	OPEN SPACE-R	2.89	--	--

I	OPEN SPACE-R	0.20	--	--
J	OPEN SPACE-R	1.39	--	--
K	OPEN SPACE-R	10.17	--	--
L	OPEN SPACE-R	3.97	--	--
M	OPEN SPACE-R	4.74	--	--
N	OPEN SPACE-R	4.25	--	--
O	OPEN SPACE-R	30.02	--	--
P	OPEN SPACE-R	12.18	--	--
Q	OPEN SPACE-R	22.91	--	--
R	OPEN SPACE-R	2.81	--	--
S	OPEN SPACE-R	0.17	--	--
T	OPEN SPACE-R	0.05	--	--
U	OPEN SPACE-R	0.92	--	--
V	OPEN SPACE-R	6.58	--	--
W	OPEN SPACE-R	0.16	--	--
X	OPEN SPACE-R	1.91	--	--
Y	OPEN SPACE-R	16.34	--	--
Z	OPEN SPACE-R	0.97	--	--
AA	OPEN SPACE-R	1.88	--	--
BB	OPEN SPACE-R	0.62	--	--
<b>TOTALS:</b>		<b>271</b>		<b>823</b>

**Exhibit 3 – Project Site – Rancho Miramonte Project**

**RANCHO MIRAMONTE**

Updated Base for TTM 18846 "A" Map Lots and 74' Onsite Backbone Street  
 with last grade base overlay



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 18872 Van Nuys Ave, Ste 150  
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BASED ON TRUMARK 823 LOT LAYOUT

Scale 1" = 100'  
 September 2, 2015

### 3.2 Rancho Miramonte Project Water Demands

Table 3.2-1 calculates the total water demand of the Project.

Table 3.2-1 - Total Project Water Demand

Lot #	Land Use	[5] Area (acres)	DU's	[4] Water Demand Factor (gpd/du)	Density (du/ac)	Demand Factors [1]				ADD Indoor Potable Water Demand (gpd)	ADD Outdoor Potable Water Demand [2] (gpd)	ADD Recycled [3] (gpd)	ADD Total Potable Water Demand (gpd)
						[5] Land Use	Total Water Demand (gpd/ac)	Percent Indoor Water	Percent Outdoor Water				
1	MDR-1	10.03	81	343	8.08	MDR-1	--	70%	30%	19,448	8,335	0	27,783
2	MDR-2	8.61	80	258	9.29	MDR-2	--	70%	30%	14,448	6,192	0	20,640
3	LDR-2	6.02	38	420	6.31	LDR-2	--	70%	30%	11,172	4,788	0	15,960
4	MDR-2	7.30	70	258	9.59	MDR-2	--	70%	30%	12,642	5,418	0	18,060
5	NC	5.07	0	--	--	NC	3,000	70%	30%	10,647	4,563	0	15,210
6	MDR-3	6.90	76	201	11.01	MDR-3	--	70%	30%	10,396	4,583	0	15,276
7	LDR-2	10.94	57	420	5.21	LDR-2	--	70%	30%	16,758	7,182	0	23,940
8	LDR-2	3.68	21	420	5.71	LDR-2	--	70%	30%	6,174	2,646	0	8,820
9	LDR-2	1.38	9	420	6.53	LDR-2	--	70%	30%	2,646	1,134	0	3,780
10	LDR-2	3.66	23	420	6.28	LDR-2	--	70%	30%	6,762	2,898	0	9,660
11	MDR-1	2.50	22	343	8.79	MDR-1	--	70%	30%	5,282	2,264	0	7,546
12	LDR-2	4.22	25	420	5.92	LDR-2	--	70%	30%	7,350	3,150	0	10,500
13	MDR-1	8.64	67	343	7.76	MDR-1	--	70%	30%	16,087	6,894	0	22,981
14	LDR-2	10.73	62	420	5.78	LDR-2	--	70%	30%	18,228	7,812	0	26,040
15	LDR-2	12.01	64	420	5.33	LDR-2	--	70%	30%	18,816	8,064	0	26,880
16	MDR-2	1.39	14	258	10.04	MDR-2	--	70%	30%	2,528	1,084	0	3,612
17	MDR-1	1.16	10	343	8.64	MDR-1	--	70%	30%	2,401	1,029	0	3,430
18	LDR-1	12.43	41	630	3.30	LDR-1	--	70%	30%	18,081	7,749	0	25,830
19	MDR-1	8.80	63	343	7.16	MDR-1	--	70%	30%	15,126	6,483	0	21,558
20	CLUB H.	3.56	0	--	--	NC	3,000	70%	30%	7,476	3,204	0	10,680
<b>Subtotal</b>												<b>318,237</b>	
A	OS-R	2.32	--	--	--	OS-R	2,900	10%	90%	673	0	6,055	673
B	OS-R	7.61	--	--	--	OS-R	2,900	10%	90%	2,207	0	19,862	2,207
C	OS-R	2.34	--	--	--	OS-R	2,900	10%	90%	679	0	6,107	679
D	OS-R	3.14	--	--	--	OS-R	2,900	10%	90%	911	0	8,195	911
E	OS-R	0.97	--	--	--	OS-R	2,900	10%	90%	281	0	2,532	281
F	OS-R	0.37	--	--	--	OS-R	2,900	10%	90%	107	0	966	107
G	OS-R	0.15	--	--	--	OS-R	2,900	10%	90%	44	0	392	44
H	OS-R	2.89	--	--	--	OS-R	2,900	10%	90%	838	0	7,543	838
I	OS-R	0.20	--	--	--	OS-R	2,900	10%	90%	58	0	522	58
J	OS-R	1.39	--	--	--	OS-R	2,900	10%	90%	403	0	3,628	403
K	OS-R	10.17	--	--	--	OS-R	2,900	10%	90%	2,949	0	26,544	2,949
L	OS-R	3.97	--	--	--	OS-R	2,900	10%	90%	1,151	0	10,362	1,151
M	OS-R	4.74	--	--	--	OS-R	2,900	10%	90%	1,375	0	12,371	1,375
N	OS-R	4.25	--	--	--	OS-R	2,900	10%	90%	1,233	0	11,093	1,233

Lot #	Land Use	Area (acres)	DU's	[4] Water Demand Factor (gpd/du)	Density (du/acre)	Demand Factors [1]				ADD Indoor Potable Water Demand (gpd)	ADD Outdoor Potable Water Demand [2] (gpd)	ADD Recycled [3] (gpd)	ADD Total Potable Water Demand (gpd)
						Land Use	Total Water Demand (gpd/acre)	Percent Indoor Water	Percent Outdoor Water				
R	OS-R	2.81	--	--	--	OS-R	2,900	10%	90%	815	0	7,334	815
S	OS-R	0.17	--	--	--	OS-R	2,900	10%	90%	49	0	444	49
T	OS-R	0.05	--	--	--	OS-R	2,900	10%	90%	15	0	131	15
U	OS-R	0.92	--	--	--	OS-R	2,900	10%	90%	267	0	2,401	267
V	OS-R	6.58	--	--	--	OS-R	2,900	10%	90%	1,908	0	17,174	1,908
W	OS-R	0.16	--	--	--	OS-R	2,900	10%	90%	46	0	418	46
X	OS-R	1.91	--	--	--	OS-R	2,900	10%	90%	554	0	4,985	554
Y	OS-R	16.34	--	--	--	OS-R	2,900	10%	90%	4,739	0	42,647	4,739
Z	OS-R	0.97	--	--	--	OS-R	2,900	10%	90%	281	0	2,532	281
BB	OS-R	0.62	--	--	--	OS-R	2,900	10%	90%	180	0	1,618	180
<b>Subtotal</b>											195,854		
<b>TOTALS</b>										<b>244,528</b>	<b>95,471</b>	<b>195,854</b>	<b>339,999</b>

[1] Demand factors based on City of Chino 2004 Water System Master Plan Update

[2] Represents recycled water demand if all outdoor usage is served by recycled water - residential and non-residential.

[3] Based on only non-residential outdoor usage served by recycled water.

[4] Demand factors based on College Park – Phase 2 Potable Water Study (2012)

[5] Land use designation:

- Density EDR = 1-3 du/acre
- Density LDR-1 = 3-5 du/acre
- Density LDR = 5-7 du/acre
- Density MDR-1 = 7-9 du/acre
- Density MDR-2 = 9-11 du/acre
- Density MDR-3 = 11-13 du/acre
- Density HDR-1 = 13-16 du/acre
- Density HDR-2 = 16+ du/acre

The project's total average day potable water demand is approximately 339,999 gallons per day (gpd), 236 gpm, or 381 AFY. Project construction is planned to begin within the next few years. For adherence to Senate Bill 610 requirements and consistency with the method of calculating demand for other developments (SRG Chino South Industrial and College Park), the water demands were estimated for both potable water and recycled water. It is assumed that all indoor water use will be met by potable water, and all public and non-residential irrigation for the project will be served recycled water. However, residential front yards and backyards may also be served with recycled water. Considering this potential, non-domestic water use for the project would range between 195,854 gpd, 136 gpm, or 219 AFY (no service to residential land uses) to 291,325 gpd, 202 gpm, or 327 AFY (full service to residential land uses). The total potable water demand is 339,999 gpd, 236 gpm, or 381 AFY.

## **4.0 CITY OF CHINO WATER DEMAND AND SUPPLIES**

The City of Chino Water Utility serves water to an area of approximately 29.5 square miles. Portions of the City extend beyond the westerly and northwesterly boundary of the City's water service area which are served by other water purveyors, including the Monte Vista Water District. The City's water service area, including the new development areas (i.e., Subareas 1 and 2) is shown in Exhibit 4.

### **4.1 Overview of Supply and Demand**

In FY 2013/14 the City received approximately 27 percent of its water supply from groundwater, 17 percent from imported water, 21 percent from desalted water, and 35 percent from recycled water. Recycled water supplies have increased to a higher use in recent years than was projected in the 2005 UWMP. Although agricultural irrigation within the City's service area has increased in recent years, it is expected to decrease as agricultural conversion takes place for Rancho Miramonte and other development projects.

The City currently obtains water from the following primary water sources: (1) groundwater from the Chino Groundwater Basin managed by the Chino Basin Watermaster; (2) imported State Water Project (SWP) water from the MWD through the Inland Empire Utilities Agency (IEUA); (3) desalted groundwater from the Chino Basin Desalter Authority (CDA); and (4) recycled water supplied by IEUA. The City owns four reservoirs with a combined storage capacity of 15.3 million gallons, 16 groundwater wells with future plans for rehabilitation of existing wells and several new wells for enhanced production, one imported water connection to the Water Facilities Authority (WFA) Agua de Lejos Water Treatment Plant, an ion-exchange treatment plant, two booster pump stations, two CDA water connections, emergency connections with adjacent water purveyors, potable water pipelines, and recycled water pipelines.

### **Growth Rate**

The City's adopted 2010 UWMP includes an analysis of the City's anticipated growth rate. The 2010 service area population was approximately 71,506. The population is expected to increase to over 103,902 by 2035. Table 4.1-1 shows the projected service area population for the City. The increase population projected by the 2010 UWMP was based on normal growth rates as projected by regional planning agencies, including Southern California Association of Governments (SCAG).

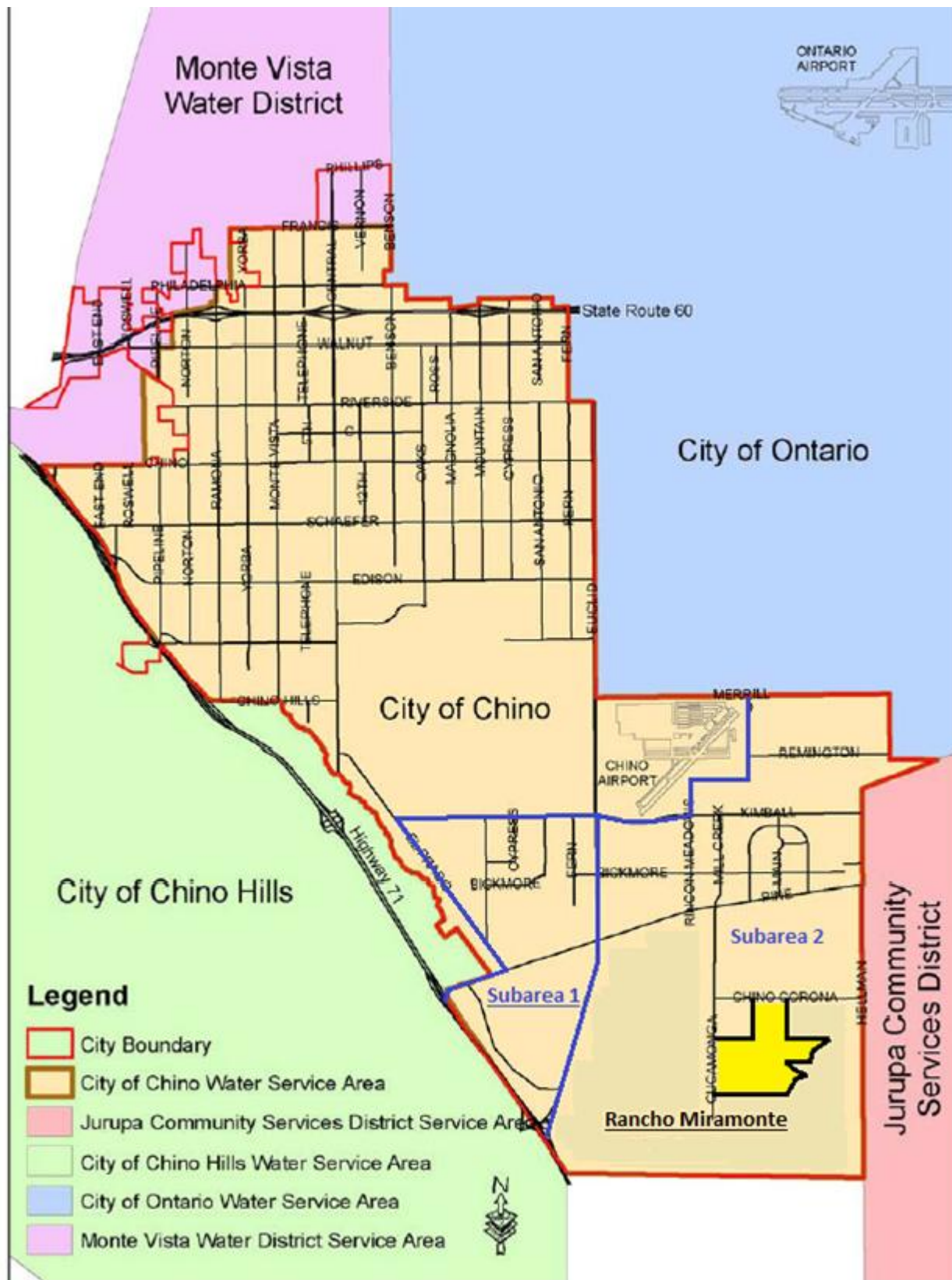


Exhibit - 4

Source: City of Chino Public Works Department

**Table 4.1-1 – City of Chino Service Area Population**

Year	2010	2015	2020	2025	2030	2035
City of Chino Water Service Area Population	71,506	76,627	84,806	94,140	98,238	103,902

Source: City of Chino 2010 UWMP

**Water Demand**

The City's total water demand in FY 2013/14 is approximately 25,141 AFY. The Project potable water demand was accounted for in the future demand estimate of the 2010 UWMP, and is estimated at 339,999 gallons per day, of which up to 95,471 gpd is for irrigation and could be served by non-domestic sources such as recycled water. Combined with the build-out of future developments that were also included in the UWMP projections, total City water demand is anticipated to increase to 28,435 AFY by 2035. Recycled water demand is estimated at 195,854 gpd.

**Demand and Supply Comparison**

Table 4.1-2 shows the current (Year 2015) and projected water demand and supply for the City of Chino, including additional demand the Project will require through 2035. This represents a 20-year planning period, which is consistent with the City's 2010 UWMP and satisfies the minimum 20-year period for the WSA.

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 through the 20-year planning period and beyond based on the Chino Basin Watermaster's current Basin Safe Yield of 140,000 AFY.

**Table 4.1-2 – Projected Water Demand and Supply for City of Chino**

	(AFY)	Projected (AFY)				
	2013	2015	2020	2025	2030	2035
<b>DEMAND <sup>[1]</sup></b>						
Potable	15,832	16,312	17,512	18,732	19,932	21,132
Recycled	8,957	8,350	8,107	7,864	7,621	7,379
<b>TOTAL WATER DEMAND</b>	<b>24,789</b>	<b>24,662</b>	<b>25,619</b>	<b>26,596</b>	<b>27,553</b>	<b>28,511</b>
<b>SUPPLY <sup>[2]</sup></b>						
Local - Groundwater Production Rights (AFY) <sup>[3]</sup>	8,284	8,846	10,251	11,656	13,061	14,466
Local - Desalter Water	5,000	5,000	5,000	5,000	5,000	5,000
Import WFA/ IEUA	5,353	5,353	5,353	5,353	5,353	5,353
Total Potable Supply	18,637	19,199	20,604	22,009	23,414	24,819
Total Recycled Supply	8,957	8,350	8,107	7,864	7,621	7,379
<b>TOTAL WATER SUPPLY</b>	<b>27,594</b>	<b>27,549</b>	<b>28,711</b>	<b>29,873</b>	<b>31,035</b>	<b>32,198</b>
<b>POTABLE SUPPLY SURPLUS</b>	2,805	2,887	3,092	3,277	3,482	3,687

[1] Based on Tables 2.2-1 and 2.4-1 of the City of Chino 2010 UWMP, except for Yr 2013, which is actual water demand provided by City staff.

[2] Source: Table 3.2-1 of the City of Chino 2010 UWMP. It should be noted that the Supply figures are based on available Local - Groundwater Production Rights of 140,000 AFY Safe Yield through Year 2035. If the Safe Yield is reduced to 113,000 AFY it is likely that Local - Groundwater Production Rights would be significantly less than that presented here. An examination of annual groundwater production rights corresponding to Fiscal Years 2011/12 and 2012/13 suggests an annual reduction ranging from 5,284 AFY (FY 2011/12) to 5,464 AFY (FY 2012/13).

[3] Projected supplies interpolated using 2010 – 7,441AF (from 2010 UWMP) and 2035 – 14,466AF (estimated ultimate potential resulting from agricultural land use conversion)

The analysis shows that as groundwater supplies increase, desalted and imported water supplies will remain stable. The 2010 UWMP reports a significant increase in recycled water use in the last five years with the development of IEUA's Regional Recycled Water Distribution System and expanded recycled water infrastructure within the City. However, the conversion of irrigated agricultural lands to urban uses is expected to decrease recycled water needs in the City for the planning horizon.

The City of Chino has the opportunity to increase supply as needed to meet demand through additional production of groundwater based on Safe Yield limitations. Also, the City may purchase additional desalted water if more is produced than needed to satisfy requirements of other purchasers.

Reliability of future water supplies to the region is enhanced through continued implementation of the Optimum Basin Management Program (discussed in Section 4.2 below), implementation of local agency programs, and combined efforts and programs among member and cooperative agencies, including all water retailers, and the Chino Basin Watermaster, IEUA, MWD, Santa Ana Regional Water Quality Control Board, Santa Ana Watershed Project Authority, and the Chino Basin Water Conservation District. The Water Utility manages agreements and contracts with these agencies and continually monitors activities, projects and programs to optimize the City's water supply.

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

## **4.2 Groundwater**

### ***Chino Groundwater Basin***

The City receives groundwater from the Chino Groundwater Basin, one of the largest basins in southern California, which is managed by Chino Basin Watermaster. The Chino Basin Watermaster is guided by the provisions of the Chino Basin adjudication and subsequent agreements between the parties to the Judgment. These agreements provide for groundwater production rights that are not fully utilized by the Basin's agricultural interests to be transferred to municipal water purveyors via two methods; agricultural land use conversion and early transfer.

The Chino Basin Watermaster prepares an Assessment Package each year to determine the assessments for each groundwater producer based on production from the prior fiscal year. Table 4.2-1a and Table 4.2-1b describe the City's annual groundwater production right corresponding to FY 11/12 and FY 12/13 when the available Safe Yield is 140,000 AFY, and under a potentially reduced Safe Yield of 113,000 AFY (as discussed later in this section). An approximate 19 percent reduction in available Safe Yield results in an approximate 34 percent reduction in the City's annual production right.

**Table 4.2-1a – City of Chino  
 Total Annual Groundwater Production Right (AF)<sup>[1]</sup>**

	Production Year 2011/12	Production Year 2012/13
Early Transfer	2,413	2,413
Land Use Conversion	6,559	6,954
Difference of Potential for Reallocation vs. Net	(1,215)	(1,363)
<b>Sub-Total</b>	<b>7,757</b>	<b>8,004</b>
<hr/>		
Assigned Water Rights	4,034	4,034
Carry Over from previous year	4,034	4,034
Previous Years Reconciliation	467	0
<b>Sub-Total</b>	<b>8,535</b>	<b>8,068</b>
<hr/>		
<b>Total Production Right</b>	<b>16,292</b>	<b>16,072</b>

Source: Chino Basin Watermaster, Final 2012/13 Assessment Package

[1] All amounts are subject to change annually; based on Chino Groundwater Basin Safe Yield = 140,000 AFY

**Table 4.2-1b – City of Chino  
 Total Annual Groundwater Production Right (AF)<sup>[1]</sup>**

	Production Year 2011/12	Production Year 2012/13
Early Transfer	2,413	2,413
Land Use Conversion	6,559	6,954
Difference of Potential for Reallocation vs. Net	(6,499)	(6,827)
<b>Sub-Total</b>	<b>2,473</b>	<b>2,540</b>
<hr/>		
Assigned Water Rights	4,034	4,034
Carry Over from previous year	4,034	4,034
Previous Years Reconciliation	467	0
<b>Sub-Total</b>	<b>8,535</b>	<b>8,068</b>
<hr/>		
<b>Total Production Right</b>	<b>11,008</b>	<b>10,608</b>

Source: Chino Basin Watermaster, Final 2012/13 Assessment Package

[1] All amounts are subject to change annually; based on Chino Groundwater Basin Safe Yield = 113,000 AFY

### **Groundwater Management**

The Chino Basin Watermaster was established in 1978 by a judgment entered by the Superior Court of California. 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. These agreements provide for groundwater

production rights that are not fully utilized by the Basin's agricultural interests to be transferred to municipal water purveyors via two methods; agricultural land use conversion and early transfer. Four primary documents govern the adjudication and management of the Chino Basin: (1) the 1978 Chino Basin Judgment, (2) the Peace Agreement, (3) the OBMP, and (4) the Peace II Agreement. The following discusses each of these documents as they pertain to basin management and the City of Chino water supply from groundwater.

The City's current assigned water production right, based on a share of Safe Yield, is 4,034 AFY from the Chino Groundwater Basin. Additional production allocations are received from annual entitlements of Early Transfers and Land Use Conversions, although they are subject to availability. Additional groundwater may also be available via the Dry Year Yield (DYY) program for the Chino Basin in partnership with the Chino Basin Watermaster, IEUA, and MWD. The DYY program is anticipated to reduce summertime peaking, deliver SWP supplies, control MWD surface water deliveries during future droughts/emergencies, and allow MWD to export stored water for other member agencies.

### **Adjudication – 1978 Judgment**

In 1978, the Superior Court of the State of California entered a judgment that adjudicated the water rights of the Chino Basin, and imposed a physical solution, which is the heart of the Judgment.

According to the Judgment, there are significant imported water supplies available to supplement the native Safe Yield of the Basin. Therefore, the purpose of the physical solution was to establish a legal and practical means for making the maximum reasonable beneficial use of the waters of the Chino Basin by providing the optimum economic, long-term, conjunctive utilization of surface waters, ground waters and supplemental water, to meet the requirements of water users having rights in or dependence on the Chino Basin. A fundamental premise of the physical solution was that all water users dependent on the Chino Basin would be allowed to pump sufficient waters to meet their needs. To the extent that a water producer's pumping exceeds its share of the Safe Yield, the water producer has the obligation to provide for replenishment of the Basin for the amount of production exceeding its rights.

The Watermaster, as an extension of the court, manages the Basin in accordance with the provisions of the Judgment. An Assessment Package is produced by the Watermaster on an annual basis, which describes the rights and abilities to which appropriators are entitled according to the provisions of the Judgment.

### **Water Rights – 1978 Judgment**

Three operating pools were established by the 1978 Judgment for Watermaster administration: the Overlying Agricultural Pool, the Overlying Non-Agricultural Pool, and the Appropriative Pool. Rights to the Safe Yield of the Chino Basin were allocated to each operating pool. According to the Judgment, the Safe Yield of the Chino Basin is 140,000 AFY. However, the court ordered Watermaster to re-evaluate the Safe Yield, and that re-evaluation is in progress. Preliminary results indicate it is possible the Safe Yield may be reduced. Safe Yield is defined as the long-term average annual quantity of groundwater (excluding replenishment water or stored water but including return flow to the Basin from the use of replenishment or storage water), which can be produced from the Basin under cultural conditions of a particular year without causing an undesirable result.

Overlying right is defined as the appurtenant right of an owner of lands overlying the Chino

Basin to produce water from the Basin for overlying beneficial use on such lands. Appropriative right is defined as the annual production right of a producer from the Chino Basin other than pursuant to an overlying right.

Aggregate preserved overlying rights in the Safe Yield for agricultural pool use, including the rights of the State of California, total 82,800 AFY, or 414,000 AF in any five consecutive years. Overlying rights for non-agricultural pool use total 7,366 AFY. In accordance with the provisions of the Chino Basin Watermaster process, when land converts from agricultural use to non-agricultural use, the purveyor that will supply water to the converted land may apply for additional groundwater production credit; i.e., Agricultural Land Use Conversion.

Appropriative rights allocated by the Judgment include rights by prescription and are entitled under the physical solution to share in the remaining Safe Yield, after satisfaction of overlying rights. Operating Safe Yield is defined as the amount of groundwater that the Watermaster shall determine can be produced from the Chino Basin by the Appropriative Pool parties free of replenishment obligation under the physical solution. Any subsequent change in the Safe Yield would debit or credit the Appropriative Pool. The City's current share of the Operating Safe Yield is 7.357 percent or 4,034 AFY.

### ***Reallocation of Water Rights***

According to the Judgment, in any five years that any portion of the share of Safe Yield allocated to the Overlying Agricultural Pool is not produced, that water is available for reallocation to the Appropriative Pool. Priority of that water is first to supplement water available from Operating Safe Yield to compensate for any reduction in the Safe Yield after the tenth year of operation (1988), conversion claims, and then for supplement to the Operating Safe Yield without regard to reductions in Safe Yield.

Appropriative rights and corresponding shares of Operating Safe Yield may be assigned or may be leased or licensed to another appropriator, as approved by the Watermaster.

### ***Overdraft - 1978 Judgment***

In adopting the Operating Safe Yield for any year, the Watermaster is limited to 200,000 acre-feet of accumulated overdraft, and in no event shall the Operating Safe Yield for all pools in any year be less than the Appropriative Pool's share of Safe Yield or exceed the Appropriative Pool's share of Safe Yield by more than 10,000 AF. Note: all footnotes are listed in at the end of this document in Section 7.1.

### ***Groundwater Replenishment – 1978 Judgment***

Overdraft is defined as a condition wherein the total annual production from the Basin exceeds the Safe Yield. The 1978 Judgment stated that the Chino Basin, since at least 1953, was in a condition of overdraft. The Watermaster reports in its State of the Basin Report, July 2005 that the Safe Yield of the Basin could be reduced unless certain actions are taken. These actions are to occur through the implementation of the Optimum Basin Management Program (OBMP). The State of the Basin Report also states that the Judgment allows a 5,000 AFY overdraft of Chino Basin through 2017.

The Watermaster levies an annual Replenishment Assessment in an amount sufficient to purchase replenishment water to replace production during the preceding year, which exceeds the Safe Yield.

In any year that the City may elect to produce groundwater in-excess of its available production rights (due to declining yield of the Basin or any other reason) to satisfy its needs, the City would incur a replenishment obligation. That obligation, along with all other similar replenishment obligations, would be tracked by the Watermaster as part of its responsibility to obtain water to meet all replenishment obligations, and issue corresponding annual assessments, accordingly.

The Judgment provides that “Watermaster shall levy and collect assessments in each year, pursuant to the respective pooling plans, in amounts sufficient to purchase replenishment water to replace production by any pool during the preceding year which exceeds the pool’s allocated share of Safe Yield in the case of the overlying pools, or Operating Safe Yield in the case of the Appropriative Pool. It is anticipated that supplemental water for replenishment of Chino Basin may be available at different rates to the various pools to meet their replenishment obligations. If such is the case, each pool will be assessed only that amount necessary for the cost of replenishment water to that pool, at the rate available to the pool, to meet its replenishment obligation.”

Supplemental water may be used to recharge the Basin either directly by spreading and percolating or injecting the water into the Basin, or indirectly by delivering the water for use in lieu of production and use of Safe Yield or operating Safe Yield. Supplemental water may be obtained from any available source including recycled water, State water, local import, and Colorado River supplies.

The Judgment also provides that “Watermaster shall seek to obtain the best available quality of supplemental water at the most reasonable cost for recharge in the Basin.”

Much of the available natural surface water runoff in the Santa Ana River Watershed is captured and recharged to the groundwater aquifers. A system of flood control channels and percolation basins have been developed to increase the recharge capacity of the Basin. The groundwater recharge program is planned to be expanded in the future.

### ***Groundwater Replenishment – Recycled Water***

IEUA has primary responsibility for production and delivery of recycled water to Chino Basin facilities for recharge. Direct use of recycled water has priority over recharge deliveries.

The Chino Basin Recycled Water Groundwater Project, developed by the Chino Basin Water Conservation District (CBWCD), IEUA, San Bernardino County Flood Control District (SBCFCD), and the Chino Basin Watermaster, includes redevelopment and modification of the existing Chino Basin groundwater recharge facilities. Historically, these basins have been used primarily for flood control, and as part of the OBMP, the recharge basins will help “drought-proof” the Chino Basin as they will be enhanced to capture storm water and provide for the greater ability to store imported water in the Chino Basin.

The Recycled Water Groundwater Recharge Program is being implemented in two phases to reduce dependence on imported water that may not be available in the future. Phase 1 will recharge up to 44,000 AFY of storm water, recycled water and imported water within the upper portion of the Chino Basin. This will include recharging up to 20 percent recycled water, or about 8,000 AFY. Phase 2 is an expansion of Phase 1.

### ***Carryover – 1978 Judgment***

Any Appropriator who produces less than its assigned share of Operating Safe Yield may carry such unexercised right forward for use in subsequent years. The first water used in any such subsequent year is to be an exercise of that carryover right. If the aggregate carryover of any appropriator exceeds its share of Operating Safe Yield, it is eligible for storage.

### **Groundwater Storage Capacity – 1978 Judgment**

The Judgment states that a substantial amount of available groundwater storage capacity exists in Chino Basin, which is not utilized for storage or regulation of Basin waters. The Basin stores approximately 5 MAF of groundwater and has the capability of storing an additional 1 MAF. Chino Basin reservoir capacity can appropriately be utilized for storage and conjunctive use of supplemental water with Basin waters. Any person or public entity may make reasonable beneficial use of the available groundwater storage capacity for storage of supplemental water, with allocation preference of storage capacity to the needs and requirements of the lands overlying the Basin and the owners of rights in the Basin.

### **Peace Agreement**

Adopted in July 2000 and amended in 2004, the “Peace Agreement” amended the 1978 Chino Basin Judgment for a term of 30 years. The Peace Agreement facilitates the implementation of the Optimum Basin Management Plan (OBMP). The Peace Agreement amended the judgment in three areas:

- Members of the Overlying Non-Agricultural Pool have the right to transfer or lease their quantified production rights within the same pool or to the Watermaster in conformance with specified procedures.
- Any appropriator who provides water service to overlying rights to the extent necessary to provide water service to overlying lands.
- For the term of the Peace Agreement, in any year in which sufficient unallocated Safe Yield from Overlying Agricultural Pool is available for conversion claims, the Watermaster can allocate each appropriator with a conversion claim, 2.0 AF of unallocated Safe Yield water for each converted acre approved.

### **Overdraft – Peace Agreement**

Individual producers do not currently have a limit on how much they can over-produce; however, they are assessed an amount to replenish the Basin for all overproduction. Producers generally develop annual demand projections that assist in making arrangements with other appropriators for pre-purchase of replenishment water through transfers and other agreements. This allows the Watermaster to optimize planning within the OBMP.

The Watermaster is responsible to conduct recharge and replenishment of the Basin. As part of its ongoing efforts to manage the basin so that ground water producers may pump groundwater in sufficient quantities to meet their needs, the Watermaster committed per the Peace Agreement to conduct physical recharge of supplemental water of 6,500 AFY in one or more of the areas known as Montclair, Brooks, and Upland spreading facilities (Management Zone 1 – MZ1). If the cumulative total of 32,500 AF of recharge has not been accomplished at the end of the five years, then recharge will continue at the same annual rate until 32,500 AF has been reached. The prescribed recharge of 32,500 AF was accomplished.

### **In-Lieu of Groundwater Production**

Recharging the Basin may be accomplished either directly by spreading and percolating or injecting the water into the Basin, or indirectly by delivering the water for use in lieu of groundwater production and use of Safe Yield or operating Safe Yield.

In lieu areas are designated by the Watermaster. The Watermaster has designated the entire Chino Basin as an in-lieu area. Any member of the Appropriative Pool, who is willing to abstain for any reason from producing any portion of its share of operating Safe Yield in any year, may offer the unproduced water to the Watermaster. The Watermaster then may purchase the unproduced groundwater, in place of spreading replenishment water.

### ***Storage and Recovery – Peace Agreement Local Storage***

Local storage is protected and each party has the right to store its un-produced carry-over water in the Basin. Water held in storage is transferable, but storage capacity is not. Parties may continue to produce the actual quantity of water held in its storage account, subject only to the loss provisions. Rate of loss from local storage was zero percent until 2005. At that time, the Watermaster recalculated the rate of loss based on the best available scientific information. The current two percent Storage Loss is deducted annually from local storage accounts. For production year 2012/13, the city's total stored water reserves (including excess carryover) were approximately 61,148 AF.

The Watermaster has the general discretion to place reasonable limits on the further accrual of carry-over and supplemental water in local storage. This is necessary to provide priority for the use of storage capacity for Storage and Recovery Programs that provide broad mutual benefits to all parties.

### ***Storage and Recovery Program***

The initial target for the cumulative quantity of water held in storage in the Basin is 500,000 AF, as established by the OBMP. As part of regional Storage and Recovery activities, a conjunctive use program (called Dry Year Yield) for the Chino Basin was developed. 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 that Chino Basin retail agencies decrease their imported water use and make-up the supply by producing groundwater from MWD's groundwater storage account. As of April 30, 2008, there was about 86,000 AF of storage (designed for 100,000 AF) based on agreements with MWD's DYY account. On May 1, 2008, MWD called for the parties to begin withdrawing water from the DYY account in the amount of 33,000 AF per 12-month period, which was the first call since the program has been under development since 2002. At the end of the 2008 calendar year, the account balance was 34,493 AF. The DYY Program has now completed a full cycle, with Chino Basin benefitting from those facilities, and MWD having filled the account and now drawing it down over three years. In April 2010, MWD made the final call on that water and the DYY Program stored water balance was zeroed out. This program is just one example of storage programs that are necessary to optimize Basin storage and supplies, and reduce demand on imported water supplies.

### ***Transfers – Peace Agreement***

Transfers must have the approval of the Watermaster. Transfers include the assignment, lease, or sale of a right to produce water to another producer within the Chino Basin or to

another person or entity for use outside the Basin whether the transfer is temporary or permanent. Lease of water rights are also permissible to allow producers to make up for the lessee's over-production.

Non-Agricultural Pool members have the right to transfer or lease within the pool, and the right to transfer to the Watermaster for the purpose of replenishment for a desalter or for a storage and recovery program.

### **Early Transfer**

An "early transfer" means the reallocation of Safe Yield not produced by the Overlying Agricultural Pool to the Appropriative Pool on an annual basis rather than according to the five-year increment described in the Judgment. The Early Transfer of not less than 32,800 AFY was the expected approximate amount of water not produced by the Agricultural Pool. Early transfer is to be the greater of 32,800 AF or 32,800 AF plus the actual quantity of water not produced in a given year after all the land use conversions are satisfied. Early transfer water is allocated among members of the Appropriative Pool in accordance with their pro-rata share of the initial Safe Yield. The City of Chino's share of the initial Safe Yield is 7.357 percent, yielding an Early Transfer of 2,413 AFY.

### **Land Use Conversion of Water Rights**

With the effective date of the Peace Agreement (June 2000), the amount of water rights converted from agricultural land to urban use was changed from 2.6 AFY per acre with allocation between initial shares of Safe Yield and service provider to 2.0 AFY per acre, all of which is allocated upon conversion of the land to the Appropriative Pool member service provider. Upon conversion of water rights, the purveyor pledges the amount of water needed for the urban land use, and up to 2.0 AFY per acre of land will be made available. Although the City is eligible for a maximum of 2.0 AFY per acre of land, the Watermaster will annually determine the amount of rights that is made available to the City. Based on historical data in recent years, the City has applied for such additional rights and received approximately 65 percent of the 2.0 AFY per acre (1.3 AFY per acre of land). If the Basin Safe Yield is reduced in accordance with the Chino Basin Watermaster from 140,000 AFY to 113,000 AFY, the City may receive approximately 25 percent (approximately 0.5 AFY per acre of land).

Major developments in the City that represent significant land use conversions include The Preserve, College Park, Mill Creek (formerly Edgewater Communities), and SRG Chino South Industrial Park. The Preserve Specific Plan includes 2,652 acres of development. Therefore, the estimated water demands of The Preserve represent an estimated total of 5,304 AF of water rights at build out, which includes the water rights associated with Watson Industrial Park. College Park, which has 719 acres of development, represents up to 1,438 AF of water rights at build out.

The Mill Creek development project has 222.35 acres of development eligible for conversion to urban use, representing potential for an additional 444.7 AF, and the SRG Chino South Industrial Park consists of 127.7 acres of development, with 81 acres eligible for conversion to urban use for a total of 162 AF. Two other development projects include Watson Land Company's 180-acre site east of the Chino Airport and the Majestic at Southeast project, which is a 155-acre site. These are eligible for conversion to urban use for a total of 670 AF. The total water rights that the City will receive through the land use conversion process applied to these developments, when combined with the City's current share of water rights at 4,034 AFY under the Chino Basin operating Safe Yield and an Early Transfer share of 2,413 AFY, are 14,466

AFY.

An Agricultural Pool member has the right to a voluntary agreement with an appropriator, which has a service area contiguous to or inclusive of the agricultural land, to provide the required water to the overlying land on behalf of the Ag Pool member. The appropriator is then entitled to a credit to off-set production to the extent it is serving the overlying land up to the amount of the historical maximum annual quantity previously used on that property. The credit is debited to the Ag Pool's collective production right.

Total potential reallocations of unproduced Agricultural Pool water in the form of Early Transfers and Land Use Conversions are subject to availability. As shown in Table 4.2-1a, in FY 2011/12, the City received an Early Transfer share of 2,413 AF and a Land Use Conversion amount of 6,559 AF; however, these amounts are subject to reconciliation between the amount of acre feet required and the amount of acre- feet eligible based on Agricultural Pool under (over) production. The City was assigned a debit for FY 2011/12 of 1,215 AF reconciliation. Consequently, the total available to the City for Ag Pool Reallocation in 2011- 12 was 7,757 AF. At the conclusion of production year 2012/13, the City's net Agricultural Pool Reallocation (considering an assigned debit of 1,363 AF) was 8,004 AF. As shown in Table 4.2-1b, if the Basin Safe Yield is reduced to 113,000 AF, then reallocations would be reduced to 2,473 AF for FY 2011/12 and 2,540 AF for FY 2012/13.

### ***Optimum Basin Management Program for the Chino Basin***

In 1998, the Chino Basin Watermaster developed an integrated set of water management goals and actions for the Basin. Known as the Optimum Basin Management Program (OBMP), this document describes nine program elements to meet the water quality and local production objectives in the Basin. The OBMP encourages the increased use of local supplies to help "drought proof" the Basin.

The OBMP is intended to formulate and implement a groundwater management program that will preserve and enhance the Safe Yield and the water quality of the Chino Basin. The Watermaster's goal is to make it possible for all groundwater users to produce water from the basin for beneficial uses at an affordable cost. The OBMP is intended to allow continued reliance on groundwater for beneficial use within the basin while minimizing demand for imported water, and to encourage beneficial use of the large available storage space in the aquifer system. OBMP actions are intended to benefit both local and regional water supply programs.

The effort to complete the OBMP for the Chino Basin was divided into two phases. The first phase culminated in the September 1999 submittal of the draft Phase 1 Report to the Court with continuing jurisdiction over the Basin groundwater resources. The second phase, including a programmatic EIR, was completed and adopted in July 2000, as the Implementation Plan.

Phase 1 of the OBMP defined the state of the Chino Groundwater Basin, established the goals and objectives concerning major issues identified by stakeholders, and affirmed a management plan for the achievement of the stated goals and objectives. Phase 2 of the OBMP is the Implementation Plan for the installation and operation of OBMP facilities. The major OBMP facilities include pipelines, groundwater treatment plants, recharge basins, pump stations, production wells, and monitoring devices.

The four primary OBMP management goals are to enhance basin water supplies, to protect

and enhance water quality, to enhance management of the basin, and to equitably finance the OBMP.

The OBMP includes nine program elements that were developed during the Phase 1 OBMP Report that collectively will meet the goals of the OBMP. The scope of implementation of some of the programs have been combined since they overlap and have synergies between them. The program elements include developing and implementing each of the following:

- Element 1 – Comprehensive Monitoring Program
- Element 2 – Comprehensive Recharge Program
- Element 3 – Water Supply Plan for the Impaired Areas of the Basin
- Element 4 – Comprehensive Groundwater Management Plan for Management Zone 1
- Element 5 – Regional Supplemental Water Program
- Element 6 – Cooperative Programs With the Regional Water Quality Control Board, Santa Ana Region, and Other Agencies to Improve Basin Management
- Element 7 – Salt Management Program
- Element 8 – Groundwater Storage Management Program
- Element 9 – Storage and Recovery Programs

### ***Peace II Agreement***

The “Peace II Agreement” is a set of measures proposed by Chino Basin Watermaster and approved by parties to the Chino Basin Judgment to supplement the OBMP Implementation Plan. Focus for the measures are placed on achieving hydraulic control (reduction of groundwater discharge from the Chino North Management Zone to the Santa Ana River). To achieve hydraulic control, re-operation (controlled overdraft) of the groundwater basin is proposed. Groundwater would be withdrawn from existing and/or proposed Desalter facilities strategically to benefit the long-term reliability of the Basin.

Achieving hydraulic control of the Chino Basin will reduce reliance on imported water supply and loss of stored water from the basin. Once the re-operation is complete a ‘New Yield’ of the basin will be defined. Then a replenishment obligation will be assigned to the various desalters consistent with the obligation for replenishment already directed by the Judgment. A reduction in dependency on imported water for recharge will be the result of the New Yield, as less water will be lost to the Santa Ana River from the reservoir at the Prado Dam. Hydraulic control through re-operation will also help drought proof the basin by allowing for recharge of reclaimed water to supplement Basin storage.

The recommendations set forth in the Peace II Agreement consist of: 1) expansion of the desalter program to 40,000 acre-feet by 2012 with new well pumping located to best provide hydraulic control, 2) strategic reduction in groundwater storage with a controlled overdraft of up to 400,000 AF, 3) the added benefit of recharge using reclaimed water, 4) recalculation of the Safe Yield of the basin by Watermaster once overdraft is complete, and 5) the establishment of a new Recharge Master Plan to re-investigate and establish long-term operational objectives.

In FY 2009/10, the Watermaster provided updates to the Groundwater Recharge Master Plan in response to changes in demand, recharge capacity, Safe Yield, and other factors. Consistent with the Peace II Agreement, the Watermaster completed an update of the Master Plan for the Chino Basin in July 2010. The Watermaster prepared another update to the Groundwater Recharge Master Plan. The proposed Groundwater Recharge Master Plan identifies opportunities for enhanced storm water, recycled water, and imported water recharge (including low impact development, new recharge projects and integrated storm water facilities), and when

implemented could help to mitigate impacts that may occur as a result of a reduced Safe Yield of the Basin.

Parties to the Chino Basin Judgment shall benefit from the Peace II Agreement through the drought proofing of the basin, recharge of reclaimed water, and reduction of dependency on imported water (for groundwater recharge) during the re-operation period and beyond.

### **Chino Groundwater Basin Safe Yield Re-determination**

The Chino Groundwater Basin has been adjudicated and is subject to the terms and conditions of the January 27, 1978 SBSC Judgment (RCV 51010) which was restated in 2012 by that certain Restated Judgment (Judgment). Per the Judgment, the Safe Yield of Chino Basin is 140,000 acre feet per year as cited in the TPSP WSA. The Judgment requires that the Chino Basin Watermaster (CBW) conduct a redetermination of the Safe Yield of 140,000 acre feet after the first ten (10) years of operation of the physical solution. Under the Judgment, that redetermination was to have been completed in 2011 and is pending.

CBW presented information at a July 30, 2013 workshop describing potential impacts that may result as a consequence of a reduction in the Basin Safe Yield. The worst case scenario (based on a plausible set of assumptions) presented at the July 30, 2013 workshop, described a possible reduction of the Safe Yield from 140,000 acre-feet to 113,000 acre feet. If implemented, such a worst case scenario could result in a reduction of 6,499 acre-feet to Chino's combined (i.e. share of Safe Yield plus agricultural reallocation plus share of storm water New Yield) annual groundwater production rights in Fiscal Year 2011-2012, and consequently result in an annual groundwater production right totaling 6,948 acre-feet for Chino in that Fiscal Year, as compared to a groundwater production of 7,857 AFY by city wells.

CBW stakeholders are currently evaluating the Safe Yield scenario described above, and other possible Safe Yield scenarios. At this time, the final outcome of any court-ordered Safe Yield redetermination is unknown. However, based on available information, it is possible the Safe Yield may be reduced from the 140,000 acre-feet quantity that has been in-place since the time the Judgment was implemented in 1978. 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. These under-utilized Agricultural Pool rights are the same rights that also satisfy requests for (but for the last several years, only partially satisfied all requests) agricultural land use conversions. Because the under-utilized Agricultural Pool rights would be first used to restore Appropriators' respective shares of Operating Safe Yield diminished by the reduction in the Safe Yield, the amount of under-utilized Agricultural Pool rights available to satisfy land use conversions would be reduced to a level that would not totally satisfy land use conversions. Because all agricultural land in the City of Chino is undergoing urbanization, the City of Chino's reliance on land use conversions to satisfy the water needs of such urbanization would be severally impacted by a reduction in the Safe Yield.

It is important to note that any Safe Yield redetermination may be further impacted by the timing of a re-determined Safe Yield. It is possible that the implementation may be applied retroactively, which would result in the reduction of the quantity of the City's groundwater production reserves (aka groundwater storage).

It is anticipated that the Safe Yield re-determination will involve CBW's entire suite of groundwater basin management programs, including controlled overdraft (from time-to-time as may be necessary to bridge periods of drought or interruption/curtailment of a particular source of water supply) of the basin (estimated to have a capacity of over 5 million acre-feet) and corresponding replenishment, recharge of the basin with storm water and recycled water, and various water storage programs with outside agencies. The combination of these water management program activities can provide for optimization of the groundwater basin as a groundwater supply source for the entire region, to ameliorate the impact of any reduction in the current Safe Yield of 140,000 AFY, and serve as measures to satisfy the City's current and projected future water demands with minimal replenishment from outside sources.

**City of Chino Wells**

Table 4.2-2 presents the City's current wells and associated capacities (2014).

**Table 4.2-2 – City of Chino Anticipated Groundwater Wells Status – 2014 (gpm)**

Number	Max Well Capacity	Anticipated Capacity	Operational Status
3	0	0	Inactive; last observed capacity (1970's) was 600 gpm
4	900	0	In-Active due to high level of nitrate
5	1,300	1,090	Active
6	935	0	Inactive due to high level of perchlorate
7	0	0	Inactive; hydrogeological conditions contribute to the need to reconstruct well
9	2,300	2,285	Active
10	1,200	1,175	Active
11	1,900	1,950	Active
12	2,200	550	Active after re-equipping and blending with imported water
13	1,492	615	Active; capacity is limited by the requirement to blend with available CDA water
14	2,297	0	Inactive due to high level of perchlorate
15	Unknown	Unknown	Well has not been fully developed or equipped
16	1,025	600	Active; capacity is limited by the high level of nitrate
17	1,025	0	Inactive due to limited treatment capacity at the Eastside Well Facility
18	1,200	0	Equipped, but inactive due to high levels of Nitrate
33	2,000	0	Active; pending an amended permit
Total	19,774	8,265	

Source: Falloncrest WSA draft, March 2015

The City's Water System Master Plan includes recommendations for well improvements for system reliability and continued groundwater pumping. Improvements are discussed in Section 5.1

Tables 4.2-3 and 4.2-4 provide the amount and location of groundwater pumped for the last several years and groundwater projections through the year 2035, respectively.

**Table 4.2-3 – City of Chino  
 Historic Groundwater Production from Chino Basin (AF)**

Well Number	2005	2006	2007	2008	2009	2010	2011	2012	2013
4	356	479	807	739	780	478	709	85	0
5	550	231	326	282	620	1,260	36	781	573
6	273	528	897	1,110	837	992	892	1,201	0
7	0	0	0	0	0	0	0	0	0
9	75	1,677	2,701	2,913	2,535	610	2,154	1,663	2,772
10	0	0	0	0	160	1,076	340	573	79
11	1,982	1,961	1,823	1,771	2,228	1,768	1,922	2,134	2,092
12	89	0	0	0	0	0	0	0	63
13	776	819	1,251	1,501	1,480	1,253	1,209	1,164	1,010
14	1,649	1,464	677	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	44
Total	5,750	7,159	8,482	8,316	8,640	7,437	7,262	7,601	6,633

Source: Falloncrest WSA draft, March 2015

**Table 4.2-4 – City of Chino  
 Projected Amount of Groundwater Pumping from the Chino  
 Basin (AF)**

25-Year Projections				
2015	2020	2025	2030	2035
8,846	10,251	11,656	13,061	14,466

Source: Falloncrest WSA draft, March 2015

### 4.3 Imported Water (surface Water) – Water Facilities Authority

The City receives its imported water through the Water Facilities Authority (WFA). The WFA Agua de Lejos Treatment Plant is located in Upland, and receives surface water from the SWP. The water is purchased from MWD through IEUA.

MWD's Rialto Branch of the Foothill Feeder delivers SWP water to the WFA Agua de Lejos Water Treatment Plant for treatment. The Agua de Lejos Water Treatment Plant is permitted to treat 81 MGD of SWP water. The actual quantity of treated water has ranged from 12 MGD in the winter months to as high as 70 MGD during the summer. WFA water enters the City's

potable water distribution system at Benson Avenue and State Street. The regional water management strategy within WFA's service area is to maximize the use of local water supplies and minimize the need for additional imported water, especially during dry years and other emergencies when imported water is less reliable. With the continuing investment in the development of regional facilities that will maximize the availability of local supplies, including groundwater recharge, desalting, recycled water and water use efficiency programs, local water supplies are expected to meet nearly 85 percent of the water needs within the WFA service area. The overall need for full service imported water is expected to remain at approximately the same level of demand compared to recent years.

The City is entitled to 5.9 percent of the WFA Agua de Lejos Plant capacity (5,353 AFY or 4.78 MGD). However, the City has historically taken up to 7.3 percent of the capacity (6,607 AFY or 5.9 MGD). Table 4.3-1 shows historical imported water production from 2004 through 2013.

**Table 4.3-1 – City of Chino  
 Historic Annual Imported Water Production (AF)**

WFA	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Imported Water	6,607	6,287	4,837	4,457	3,622	2,579	2,602	2,637	3,245	4,394

Source: City of Chino WSA

The City may take delivery of more than its entitlement when other WFA members are not taking delivery of their full entitlements. Historically, there has always been unused capacity and Chino has always had an opportunity to meet water quality standards and demands through additional WFA imported water. Many of the WFA members desire less dependence on imported water and greater reliability and control on local supplies. As a result, development of local water supply programs has increased and continued opportunity for purchase of unused capacity is anticipated.

Discussions on the opportunity to maintain and increase the capacity of the WFA treatment plant have occurred; however, analysis would need to be done to determine feasibility and economic benefits considering the climate of imported water reliability. The plant could be increased to 88 MGD through re-rating of the existing plant, and further capacity increases would be accomplished by plant expansion. However, the overall water demand trend in the WFA service area has essentially flattened. In 2007, the water demand peaked, and since that time, water demand has decreased. The continuing downward trend in overall water use is an excellent indicator of how well the water suppliers in the region have responded to the current water supply challenges. Based on expected land uses in the WFA service area, water used for agricultural purposes is expected to decline from 18 percent of water demand to less than 3 percent of the demand by 2035.

With the investment in local water supplies and the overall need for full service imported water to remain at approximately the same level through the 20-year planning, it is unlikely that a modification of the WFA treatment plant would be required.

#### **4.4 Recycled Water**

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 is a critical component of the water resources management strategy for the region. The City relies on the Regional Recycled Water Distribution System operated by IEUA for its recycled water supply. Development and expansion of the regional system is critical to meeting the City's anticipated demands for recycled water. Development of the local recycled water distribution lines within the City is a partnership between the City, IEUA, and developers.

Reuse of highly treated tertiary water is available to meet the growing water demands of the IEUA service area. Recycled water will provide a dependable local supply of water as well

as reduce the likelihood of water rationing during droughts. In addition, the use of recycled water for groundwater recharge is an integral part of the OBMP. Region-wide implementation of recycled water projects are vital to the protection and enhancement of the Safe Yield and water quality of the Chino Groundwater Basin.

#### ***IEUA Regional Wastewater Treatment Plants***

IEUA operates four regional wastewater treatment plants: Regional Plant No.1 (RP-1), RP-4, RP-5, and the Carbon Canyon Water Reclamation Facility (CCWRF). Each treatment plant produces tertiary treated recycled water in compliance with California's Title 22 regulations and exceeds the stringent public health standards. IEUA's goal is to use as much recycled water for local beneficial direct use as is economically practical and for replenishment of the Chino Basin. Recycled water availability from IEUA's four regional facilities, as shown in IEUA's 2010 Regional UWMP, is 65,000 AF for 2010 with 36 percent usage. IEUA completed the 2005 IEUA Regional Recycled Water Implementation Plan, the 2007 Recycled Water Business Plan, and the 2010/11 Recycled Water Business Plan Update, which all describe 50,000 AFY of potential use by 2012- 2013 (31,120 AFY for direct use and 18,880 AFY for recharge). Completion of the Regional Recycled Water System, which merges all the recycled water plants together, will provide for sufficient system flexibility to satisfy anticipated future demands.

IEUA facilities serve seven contracting agencies, including: the cities of Chino Hills, Fontana, Montclair, Ontario, and Upland, and the Cucamonga Valley Water District. Additional sources of recycled water used within IEUA's service area include the Upland Hills Water Reclamation Plant (operated by the City of Upland) and the CIM Water Reclamation Plant (operated by the California Institution for Men at Chino).

Currently, IEUA produces about 59,000 AF of tertiary treated recycled water annually. In FY 11/12, recycled water use totaled about 26,439 AF, of which approximately 8,600 AF was used for groundwater recharge. The remaining supply of recycled water, about 32,500 AF, was discharged to the Santa Ana River (1969 Santa Ana River Judgment – minimum of 17,000 AFY of water will be discharged to the Santa Ana River which can be adjusted based on water quality).

IEUA's goal is to fully utilize the recycled water supply for local beneficial uses. IEUA initiated a recycled water marketing program in 1999, which has been successful in securing additional recycled water sales, and the recent market assessment to identify potential recycled water customers has greatly enhanced this effort.

**Recycled Water for Regional Direct Use and Groundwater Recharge**

Recycled water used for groundwater recharge will be blended with MWD’s imported SWP supplies and local storm water, consistent with the water quality requirements of the Chino Basin Watermaster’s OBMP, Santa Ana Regional Water Quality Control Board’s Basin Plan and the CDPH.

Depending on basin specific measurements and up-gradient groundwater migration data, the blending ratio will be calculated to achieve up to 50 percent with all other sources of water as determined by CDPH over a 10-year period. Additional facilities, including development/modifications of new groundwater recharge basins, and installation of additional pumping capacity, will be needed to achieve the long-term water recycling goals for the region. As more and more direct use customers are connected, groundwater recharge will be operated to ensure availability for direct reuse.

Development of local recycled water facilities will be key to expanding the direct use of recycled water. Direct uses include irrigation for landscaping, industrial process and cooling, and recreational uses, including decorative fountains. All future direct use by landscape and industrial customers will be given priority service over recharge deliveries. Recharge will be credited based upon the annual flow contributions for all contracting agencies on a pro-rata basis.

**Recycled Water Use in the City of Chino**

The City recognizes the potential uses of recycled water in its community, such as landscape irrigation, parks, industrial and other uses, and works with IEUA to develop the needed recycled water infrastructure to support use of recycled water.

In fiscal year 2013/14, the city provided 8,916 AFY of recycled water from the IEUA Regional Recycled Water System to landscape irrigation, agricultural irrigation, industrial customers, and construction customers. Projected ultimate use of recycled water in the City is estimated to decrease with the conversion of irrigated agricultural lands to urban uses. Recycled water use for 2015 is projected at 8,190 AF, decreasing to 7,379 AFY by 2035 as shown in Table 4.4-1.

**Table 4.4-1 – Projected Recycled Water Use within the City of Chino (AF)**

	2015	2020	2025	2030	2035
Total Recycled Water Use	8,350	8,107	7,864	7,621	7,379

Source: Watson Industrial Park WSA 2015

By the year 2035, over 83,000 AFY of recycled water is expected to be available within the IEUA service area from the Regional Plants. IEUA estimates total recycled water usage of 61,900 AFY by 2035, which includes Chino’s estimated usage of 7,379 AFY. This demonstrates that available recycled water supply is projected to meet, and in fact exceed, demand in all hydrologic conditions.

**4.5 Desalted Water**

The Chino Groundwater Basin is the water source for the Chino Basin Desalter Authority (CDA). Since August 2000, the Chino I Desalter produced approximately 8.4 MGD of potable water until its expansion in 2006 increasing capacity to 12.7 MGD. Facilities consist of approximately 14 groundwater wells located within the southern portion of the Chino

Groundwater Basin, a central water treatment plant (WTP), and pipelines to deliver water from the wells to the WTP and from the WTP to the water retailers (cities of Chino, Chino Hills, Ontario, and the Jurupa Community Services District/City of Norco). In 2006, the CDA constructed a new Chino II Desalter in Mira Loma, CA. The Chino II Desalter has a treatment capacity of approximately 11,200 AFY and is supplied by 8 additional 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.

Since the desalters are supplied from groundwater wells, the amount of water produced by the desalters is subject to replenishment by the 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 managed by the CDA is 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 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 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 City of Chino entered into a contract in 1996 committing to purchase a minimum of 3,000 AFY on a "take or pay" contractual basis. Expansion of the Desalter increased the City's flow allocation and commitment to 5,000 AFY.

The contract allows the City of Chino to obtain additional product water if the Chino Basin Desalter Authority is capable of producing more Product Water than is necessary to satisfy the requirements of the purchasers. The City is entitled to purchase a minimum proportionate share of additional Product Water. Under this contract, Chino is also entitled to unused Product Water if it remains available after offered to all purchasers up to their respective percentages. Chino also has the opportunity to negotiate the purchase of contracted desalted water with purchasers that are constrained by the "take-or-pay" obligation, but have optimized other sources of local water and do not need to take their full entitlement.

The CDA originally contracted to provide a combined total of 9,200 AFY of product water from the Chino I Desalter to Jurupa Community Service District (JCSD) and the cities of Chino, Chino Hills, and Norco. 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 Chino, Chino Hills, Norco and Ontario, and the JCSD and the Santa Ana River Water

Company. With an additional 10,400 AFY of contracts associated with 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, as shown in **Table 4.5-1**.

**Table 4.5-1 – Desalted Water Deliveries from Desalters (AFY)**

Agency	Existing	Expansion Phase III
	Contract Volume	Contract Volume
City of Chino	5,000	5,000
City of Chino Hills	4,200	4,200
Jurupa Community Services District	8,200	11,733
City of Norco	1,000	1,000
City of Ontario	5,000	8,533
Santa Ana River Water Co.	1,200	1,200
WMWD	0	3,534
<b>Total</b>	<b>24,600</b>	<b>35,200</b>

Source: City of Chino 2010 UWMP

## **5.0 RELIABILITY OF WATER SUPPLIES**

The City of Chino and all of southern California communities and water agencies are facing increasing challenges in their role as stewards of water resources in the region. For example, increased environmental regulations, biological opinions, and competition for water from outside the region have resulted in reduced supplies of imported water. Continued population and economic growth increase water demand within the region, putting an even larger burden on local supplies.

The Rancho Miramonte project includes development of residential and open space land uses within its approximate 271-acre site. The City works with the following agencies to ensure water supply reliability to the region: Inland Empire Utilities Agency, Metropolitan Water District of Southern California, Water Facilities Authority, Chino Basin Watermaster, Chino Basin Desalter Authority, Chino Basin Water Conservation District, Santa Ana Regional Water Quality Control Board, and Santa Ana Watershed Project Authority.

The following sections discuss these agencies, and others throughout the region, their roles in water supply reliability, and the near and long-term efforts they are involved with to ensure future reliability of water supplies to the City and the region as a whole.

### **5.1 City of Chino**

The City's water system is expanding as a result of the facilities (e.g. pipelines, wells, storage tanks) that are necessary to supply water to new developed areas such as The Preserve, College Park, Mill Creek development (formerly Edgewater Communities) and SRG Chino South Industrial Park. In addition, the City's water system is expanding as a result of more stringent water quality regulations, which increase the need for wellhead treatment.

The WSA does not identify specific infrastructure needs for the Project. The City of Chino 5-Year CIP identifies equipping Well 17 at the new "Eastside Well" facility. The CIP also identifies upgrades to Wells 12, 14, and 33. These wells will help facilitate the projected increase in groundwater production over the 25-year planning period by approximately 85 percent. In the event that other water supplies are less than projected, additional groundwater production from these wells would be available. These wells, along with other projected water facility improvements included in the CIP, will enhance system reliability and redundancy. For example, if another existing well fails or must be taken out of service and cannot produce water for a period of time, the wells described above provide a measure of system redundancy to provide adequate water supply, thereby enhancing system reliability. The City's approach to responsible system planning augments existing infrastructure and provides multiple sources of water to the City thus resulting in more available capacity than demand.

### **5.2 Chino Basin Watermaster**

As required by the Court, the Chino Basin Watermaster prepares semiannual reports that describe implementation of the OBMP and provide information on each OBMP program element and their implementation status.

### **Groundwater Level Monitoring**

Water level monitoring is important to understand the impacts of pumping, availability of storage, changes in Basin hydrology, and the influence of recharge on groundwater levels. The Watermaster has three active groundwater-level monitoring programs operating in the Basin: (1) A semiannual basin-wide program; (2) A key well monitoring program associated with the Chino I/II Desalter well fields and the Hydraulic Control Monitoring Program; and (3) A piezometric monitoring program associated with land subsidence and ground fissuring in Management Zone 1 (MZ-1).

For the semiannual program, about 678 wells are monitored as part of the basin-wide program. Of those wells, about 516 are private wells, monitored by Watermaster staff. The remaining 162 wells operated by members of the overlying non-agricultural and appropriate pools are monitored by the well owners. The frequency of data collection is at least twice per year – once in the spring and once in the fall.

In conjunction with the semiannual program, Watermaster staff manually measure water levels at about 133 key wells in the south portion of the Basin and around the Chino I/II Desalter well fields once per month. Of these, 73 are private wells monitored by Watermaster staff, and 21 monitoring wells and 30 production wells are monitored with pressure transducers/data loggers.

For the MZ 1 program, groundwater level data is collected automatically at 35 wells in the southern portion of MZ 1 once every 15 minutes using pressure transducer/data loggers installed at each well.

The Watermaster and IEUA are planning to construct a number of monitoring wells at recharge basins to monitor the influence of recharge on the groundwater levels in general, and to monitor water quality resulting from the recharge of supplemental and storm waters.

### **Dry Year Yield Program**

Participants in the Dry Year Yield (DYY) Program, as described in Section 5.4, are required to reduce (shift) their imported water usage by a predetermined amount during a dry year. Each participating agency has a specific shift obligation that, when added together, will provide MWD with 33,000 AF of dry year yield. The eight participating agencies include the cities of Chino, Chino Hills, Ontario, Pomona, and Upland, and Cucamonga Valley Water District, Jurupa Community Services District, and Mont Vista Water District. The DYY Program is designed to supply local water during a prolonged drought.

In 2002, IEUA, the Watermaster, and MWD executed an agreement for the development of the Chino Basin DYY Program to help reduce demands on imported water during dry years by pumping additional groundwater. The DYY Program is an implementation element of the OBMP Program Element Nos. 8 and 9, which were to develop and implement a groundwater storage and conjunctive use program.

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. MWD will utilize the Chino Basin for dry year storage up to 100,000 AF of surplus imported water. Imported water deliveries to participants would increase during wet or normal (or “put”) years, and deliveries of imported water would decrease during dry (or “take”) years.

Collectively, the eight DYY participants, six of which are local retail agencies of IEUA, including the City of Chino, would perform to predetermined levels in order to achieve a maximum 25,000 AFY “put” and a maximum 33,000 AFY “take”. Each of the local retail agencies volunteered to produce excess groundwater during a dry year in-lieu of receiving normal imported water deliveries. In exchange, they received funding for new groundwater treatment and well facilities that would enable additional groundwater production during dry years. IEUA’s overall imported water demands during dry years would decrease by 29,000 AFY, which equals the portion of the 33,000 AFY of the DYY shift obligation for IEUA’s local retail agencies, as shown in Table 5.4-1.

### **Land Subsidence**

Land subsidence is a current groundwater issue in the Chino Basin. Land subsidence can occur in areas where underlying fine-grained sediment layers (silt and/or clay) are dewatered over a long period of time allowing these layers to compress. According to the Phase I OBMP Report, subsidence and ground fissuring has been documented in portions of the City. The area underlying the City has experienced ground fissuring as early as 1973, and an accelerated occurrence of subsidence ensued after 1991. A common cause of ground fissuring within alluvial basins is the removal of subsurface fluids resulting in compaction of poorly consolidated aquifer materials and land subsidence.

Remote sensing studies of subsidence were conducted for the City in 1999 to further analyze the location and relative magnitude of subsidence in MZ 1. It was concluded that the cause of this subsidence was localized groundwater overdraft and declining groundwater levels, and effects resulting from groundwater production from mostly deep wells in the area.

The Water master has developed a ground-level monitoring program that includes multiple tools to evaluate subsidence. The Watermaster’s ground-level monitoring program includes the monitoring of piezometric levels, aquifer-system deformation, vertical ground-surface deformation, and horizontal ground-surface deformation. It appears that the abatement of land subsidence in MZ-1 is related to the recovery of piezometric levels that has resulted from decreased deep zone pumping.

### **5.3 Water Facilities Authority**

The WFA is permitted to treat 81 MGD of SWP water through a MWD imported water connection located in the City of Upland. MWD’s Rialto Branch of the Foothill Feeder delivers SWP water to the Agua de Lejos Plant for treatment. The actual quantity of treated water has ranged from 12 MGD in the winter months to as high as 71 MGD during the summer.

The City is entitled to 5.9 percent of the WFA Agua de Lejos Plant capacity, but has utilized up to 7.3 percent of the capacity. Historically, there has always been unused capacity and Chino has always had an opportunity to meet water quality standards and demands through additional WFA imported water. Many of the WFA members desire less dependence on expensive imported water and greater reliability and control of local supplies. As a result, the development of local water supply programs has received increased attention and the continued opportunity for utilization of unused WFA treatment capacity is reasonably anticipated.

Discussions on the opportunity to increase the capacity of the WFA treatment plant have occurred; however, analysis would need to be done to determine feasibility and economic benefits considering the climate of imported water reliability. The plant could be increased to 88 MGD through re-rating of the existing plant, and further capacity increases would need to be accomplished by plant expansion. However, SWP cutbacks and MWD incentive programs for developing local water sources may reduce the opportunity to take additional WFA water.

#### **5.4 Inland Empire Utilities Agency**

The City of Chino is a sub agency of the IEUA. Other retail water service agencies located within the IEUA service area include the City of Chino Hills, Cucamonga County Water District, Fontana Water Company, Monte Vista Water District, City of Ontario, and the City of Upland.

##### ***Imported Water***

As a water wholesaler, MWD supplies imported water to IEUA to meet the water needs of IEUA's service area. MWD's diverse resources and aggressive conservation program protect the reliability of the region's water supply, as discussed above. MWD's 2010 IRP and 2010 Regional UWMP establish the framework for the policies, projects, and programs that will ensure that Southern California has an adequate and reliable supply of imported water for future residential, commercial and environmental needs. The 2010 IRP is an adaptive resources management plan that can change in response to the many challenges and uncertainties facing the regional water supply. The 2010 IRP strategies focus on three key components: core resources, supply buffer and foundational action.

As a result of implementing the 2010 IRP strategies, during a single dry year or multiple dry years, MWD will have the ability to rely on the established Dry Year Yield Program (DYY) which will reduce local imported reliance by up to 33,000 AFY. With this shift in place, MWD anticipates being able to meet 100 percent of the remaining demands within the IEUA service area as outlined below.

##### ***Dry Year Yield Program***

In 2002, IEUA, the Watermaster, and MWD executed an agreement for the development of the Chino Basin DYY Program to help reduce demands on imported water during dry years by pumping additional groundwater. The DYY Program is an implementation element of the OBMP Program Element Nos. 8 and 9, which were to develop and implement a groundwater storage and conjunctive use program.

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. MWD will utilize the Chino Basin for dry year storage up to 100,000 AF of surplus imported water. Imported water deliveries to participants would increase during wet or normal (or "put") years, and deliveries of imported water would decrease during dry (or "take") years.

Collectively, the eight DYY participants, six of which are local retail agencies of IEUA, including the City of Chino, would perform to predetermined levels in order to achieve a maximum 25,000 AFY "put" and a maximum 33,000 AFY "take". Each of the local retail agencies volunteered to produce excess groundwater during a dry year in-lieu of receiving normal imported water deliveries. In exchange, they received funding for new groundwater

treatment and well facilities that would enable additional groundwater production during dry years. IEUA’s overall imported water demands during dry years would decrease by 29,000 AFY, which equals the portion of the 33,000 AFY of the DYY shift obligation for IEUA’s local retail agencies, as shown in Table 5.4-1.

**Table 5.4-1 – Participating Agencies DYY Shift Obligations**

<b>Local Retail Agency</b>	<b>DYY Program Shift Obligation (AFY)</b>
City of Chino	1,159
City of Chino Hills	1,448
Cucamonga Valley Water District	11,353
(1) Jurupa Community Services District	2,000
Monte Vista Water District	3,963
City of Ontario	8,076
(1) City of Pomona	2,000
City of Upland	3,001
<b>Total</b>	<b>33,000</b>

(1) Agencies not within the IEUA service area.  
 Source: City of Chino 2010 UWMP

**Recycled Water for Direct Use**

Recycled water is becoming an increasingly important source of local water for the region. According to IEUA, it has been assumed that recycled water will be 100 percent reliable during a single dry year. During multiple dry years, reliability remains unaffected and use of recycled water continues to help reduce potable water demands as new water users make optimum use of the regional recycled water system. It is projected that during multiple dry years, increased utilization of recycled water will increase to 105 percent of normal in the second dry year and 110 percent of normal in the third dry year. Recycled water is a reliable resource not subject to droughts or imported water availability.

**Recycled Water Groundwater Recharge Project**

The Chino Basin Recycled Water Groundwater Recharge Project is part of the comprehensive Water Supply Enhancement Program jointly sponsored by IEUA, Chino Basin Watermaster, Chino Basin Water Conservation District, and the San Bernardino County Flood Control District. The recharge program is regulated by the RWQCB and is consistent with and responds to various plans, agreements, legal decisions, studies, task force objectives, and approvals throughout the region and the state.

The purpose of the Recharge Project is to enhance water supply reliability and reduce dependence on imported water, and improve groundwater quality in local drinking water wells throughout the Chino Basin by increasing the recharge of storm water, imported water, and recycled water. The Project is being implemented in two phases. Phase 1 will recharge up to 44,000 AFY of storm water, recycled water and imported water within the upper portion of the Chino Basin. This will include recharging up to 20 percent recycled water, or about 8,000 AFY. Phase 2 is an expansion of Phase 1, increasing recharge from 44,000 AFY to 134,000 AFY. This will expand recycled water recharge to about 15,000 AFY.

## 5.5 Metropolitan Water District of Southern California

MWD's primary goal is to provide reliable water supplies to meet the water needs of its service area at the lowest possible cost. The reliability of MWD's water supply has been threatened as existing imported water supplies from the Colorado River and SWP face increasing challenges.

MWD evaluated the dependability of these supplies and concluded that the combination of imported water and expanding local resource programs would ensure its service area's demands would be met in the future. IEUA and its member agencies, including the City of Chino, expressly rely upon MWD's 2010 UWMP in estimating future imported water availability to its service area.

In April 1998, MWD adopted the WSDM Plan. The guiding principal of the WSDM Plan is to manage MWD's water resources and programs to maximize utilization of wet year supplies and minimize adverse impacts of water shortages to retail customers. 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.
- Increase public awareness about water supply issues.

In February 2008, MWD adopted the Water Supply Allocation Plan (WSAP). The WSAP was developed in consideration of the principles and guidelines described in the WSDM Plan, with the objective of creating an equitable needs-based water supply allocation. The WSAP formula seeks to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level for shortages of MWD supplies of up to 50 percent.

Despite these challenges, MWD continues to develop and encourage projects and programs to ensure reliability now and into the future. One such project is MWD's recently completed Diamond Valley Lake in Hemet, California; an 800,000 AF capacity reservoir for regional seasonal and emergency storage for SWP and Colorado River water. The reservoir began storing water in November 1999 and reached the sustained water level by early 2002.

In October 2003, the Quantification Settlement Agreement (QSA), a critical component of the California's Colorado River Water Use Plan, was authorized defining Colorado River water deliveries and facilitated the transfer of water from agricultural agencies to urban uses. The QSA is a landmark agreement signed by the four Colorado River water use agencies and the U.S. Secretary of the Interior, which will guide reasonable and fair use of the Colorado River by California through the year 2037.

MWD's Integrated Water Resources Plan recognizes that the QSA supports MWD's development plans for Colorado River Aqueduct deliveries, and demonstrates the reliability benefits as a result of the QSA and existing supply enhancement programs.

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

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. This report, The State Water Project Delivery Reliability Report (DWR, 2009), provides information on the reliability of the SWP to deliver water to its contractors assuming historical precipitation patterns. The report updates the DWR's estimate of 2009 and future (2029) SWP water delivery reliability. As in previous reliability reports, SWP deliveries are based upon operation simulations in DWR's CalSim II model. The 2009 report shows that future SWP deliveries will be impacted by two significant factors: (1) a significant restriction on the SWP and Central Valley Project (CVP) Delta pumping, as required by the biological opinions issued by the U.S. Fish and Wildlife Service (December 2008) and the National Marine Fisheries Service (June 2009); and (2) climate change, which is altering hydrologic conditions in the state.

The report represents the state of affairs if no Delta improvements are made. It shows the continued erosion of SWP water delivery reliability under the current method of moving water through the Delta. In the 2007 SWP Delivery Reliability Report, the average Table A delivery was about 63 percent for 2007 conditions and about 66 to 69 percent for 2027 conditions. In the 2009 report, the average Table A delivery is about 60 percent for 2009 conditions and about 60 percent for 2029 conditions. Most of the reduced reliability is caused by the export limitations resulting from the biological opinions of the Fish and Wildlife Service and Marine Fisheries Service, as mentioned above.

On an annual basis, each of the 29 SWP contractors including MWD request an amount of SWP water based on their anticipated yearly demand. In most cases, MWD's requested supply is equivalent to its full "Table A Amount"; currently at 1,911,500 AFY. After receiving the requests, DWR assesses the amount of water supply available based on precipitation, snow pack in northern California watersheds, volume of water in storage, projected carryover storage, and Sacramento-San Joaquin Bay Delta regulatory requirements.

Due to the uncertainty in water supply, contractors are not typically guaranteed their full Table A Amount, but instead a percentage of that amount based on the available supply. Typically, around December of each year, DWR provides the contractors with an initial estimate of allocation for the following year. Due to the variability in water supply for any given year, it is important to understand the reliability of the SWP to supply a specific amount of water each year to the contractors. As hydrologic and water conditions develop throughout the year, DWR revises the allocations. Currently, SWP contractor's allocation of Table A Amounts is set at 40 percent (December 2012).

### **SWP Reliability Update**

DWR has issued a State Water Project Final Delivery Reliability Report 2013. This 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 be plus or minus 1 percent of previous projections utilizing both existing conditions and future conditions.

The City of Chino receives its MWD imported water supplies through IEUA. IEUA's 2010 UWMP Update includes a supply reliability analysis that indicates the region will be able to meet 100 percent of its dry year demand under every hydrologic scenario through year 2035. Based on historical supply reliability data consistent with MWD, IEUA has identified reliability as a percentage of normal water year supply for each of its supply sources. As stated above, most of

the reduced reliability is based on the biological opinions of the Fish and Wildlife Service and the Marine Fisheries Service. To be consistent with this, the City of Chino has updated its reliability percentages in their 2010 UWMP Update representing a cutback from Table A Amounts of up to 40 percent.

### ***Integrated Water Resources Plan (IRP)***

To address the SWP reliability challenges, MWD and its member agencies developed an Integrated Water Resources Plan (IRP) in 1996. The overall objective of the IRP process is the selection and implementation of a Preferred Resource Mix (or strategy) consisting of complementary investments in local water resources, imported supplies and demand-side management that meet the region's desired reliability goal in a cost-effective and environmentally sound manner. The 1996 IRP was reviewed as part of MWD's strategic plan and rate refinement to guide the development and implementation of revised MWD water management programs through the year 2005.

The IRP has since been updated and the most recent update was completed in 2010. MWD's 2010 IRP Update states that a key evolution from the previous Plan (July 2004 IRP Update) is the identification of contingency actions that MWD can take in order to swiftly respond to uncertainties. The IRP is intended as a regional water resource planning document that identifies potential supplies to meet future demands, including contingencies for supply and demand uncertainties. The IRP sets out a general policy framework only and does not constitute approval of any specific actions by MWD. The IRP process provides flexible planning direction, subject to annual adjustments and periodic updates. Specific initiatives or individually-listed projects are representative only and subject to full environmental study and board deliberation and reconsideration prior to any future approval. The IRP assists in a technological and programmatic means to accomplish regional reliability goals. The options presented in MWD's IRP 2010 Update are projected to meet future water supply needs of Southern California.

MWD initiated the Local Resources Program (LRP) in 1982 to promote the development of water recycling projects that reduced demand for imported water and improved regional water supply reliability. In 1991, the Groundwater Recovery Program was implemented to similarly promote the recovery of local degraded groundwater supplies. In 1995, both programs were combined into the LRP.

LRP recycled water and groundwater recovery programs produced a total of 223,000 AF; 161,000 AF and 62,000AF, respectively. Another 182,000 AF was produced by local agencies without MWD funding assistance. Currently, the LRP has 84 projects planned and 80 in operation, with an ultimate yield of 421,000 AF. Since inception, the projects have produced 1,868,000 AF. MWD's current projections of regional implementation of recycling, groundwater recovery, and seawater desalination exceed the 2004 IRP goals, demonstrating regional water reliability. In 2007, MWD reported it had funded agreements for 59 member agency projects.

In addition to the LRP, MWD also provides financial and technical assistance for implementing water conservation Best Management Practices (BMPs), as well as a significant investment in regional and local water conservation programs. MWD was also responsible for distributing \$45 million in funds from Proposition 13 funding for development of conjunctive management programs in Southern California.

When viewed altogether, MWD has developed programs and identified projects that will meet cumulative IRP targets through 2025. However, when viewed by individual category, some development components may be at higher risk, or previously identified options simply may not be available for implementation. Since existing water supplies and programs are susceptible to potential changed conditions, MWD continues to identify and pursue additional resource opportunities consistent with the implementation buffer or “planning contingency” adopted as part of the IRP Update. The IRP is an adaptive planning framework, and with the adopted annual implementation reporting and five-year updating cycle, MWD and its member agencies will continue to refine and revise the resource targets as new information and technologies become available.

## **5.6 Santa Ana Watershed Project Authority**

SAWPA was formed in 1968 as a planning agency and reformed in 1972 as a joint powers agency for the purpose of coordinating regional planning within the Santa Ana River Watershed, including the Santa Ana and San Jacinto Rivers, to address water quality and supply improvements. SAWPA is comprised of five major water supply and wastewater management agencies within the Santa Ana Watershed: Inland Empire Utilities Agency, Eastern Municipal Water District, Orange County Water District, San Bernardino Valley Municipal Water District, and Western Municipal Water District.

Since the early 1970’s, SAWPA has held a key role in the development and update of the Regional Basin Plan for the RWQCB. SAWPA conducts water-related investigations and planning studies, and builds facilities needed for regional water supply, wastewater treatment or water quality remediation. Existing studies include the Chino Basin Water Resources Management Study, the Colton-Riverside Conjunctive Use Project, an investigation of water quality in Lake Elsinore and studies on the nitrogen and organic carbon levels in the Prado Basin.

SAWPA adopted an IRP in June 1998 to facilitate improvements to the local water supply system. The IRP focuses on the following:

- Planning time horizons for 2010, 2025, and 2050 of water demands and supplies.
- Water resource plans by member districts.
- A breakdown of planned water resource projects into six major project categories.
- Balancing of available resources.
- Identification of regional problems, issues, and description of long-term integrated solutions.

SAWPA conducted a stakeholder process, which resulted in identifying potential IRP projects with a total estimated cost of over \$1 billion. Approved in March 2000, Proposition 13 provided \$235 million to the Southern California Integrated Watershed Program (SCIWP).<sup>11</sup> The SCIWP was developed by SAWPA as a series of projects that would be required to achieve SAWPA’s goal of making the watershed drought-proof; i.e., no imported water during drought years. On July 17, 2000, the SWRCB entered into a memorandum of understanding to set forth general procedures and criteria for selecting projects to rehabilitate and improve the Santa Ana River watershed to be funded by the SCIWP. On August 1, 2000, SAWPA approved an Initial Project Priority List of 44 projects with an estimated cost of \$689 million, and adopted a policy to ensure that the Project Priority List is reviewed and updated periodically to ensure timely and cost-effective use of funds.

The Chino Basin received \$87 million for the construction of water desalters, groundwater recharge facilities and new wells, of which \$48 million has been allocated by SAWPA and the SWRCB for the Chino I Desalter Expansion and construction of the new Chino II Desalter (construction completed). This is part of the \$235 million approved for the Santa Ana River Watershed, subject to administration by SAWPA.

Both Proposition 50 and Proposition 84 have provided additional funding, and SAWPA prepared and adopted through a comprehensive stakeholder process the 2009 Santa Ana Integrated Watershed Plan – the region’s Integrated Regional Water Management Plan, known as the “One Water One Watershed” Plan. A project list of 297 projects was created for the watershed in preparation of anticipated funding opportunities. For the recent January 7, 2010 submittal for Proposition 84 IRWM Implementation Grant funding through DWR, 13 projects were prioritized to meet water reliability and other goals for the watershed, and submitted for a total of \$12 million in grant funding.

## **5.7 Santa Ana Regional Water Quality Control Board – Region 8**

### ***Background***

The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (Regional Boards) are responsible for the protection and, where possible, the enhancement of the quality of California's waters. The SWRCB sets statewide policy, and together with Regional Boards, implements state and federal laws and regulations. Each of the nine Regional Boards adopts a Water Quality Control Plan or Basin Plan, which recognizes and reflects regional differences in existing water quality, the beneficial uses of the region's ground and surface waters, and local water quality conditions and problems.

In 1975, the Santa Ana Regional Water Quality Control Board (RWQCB) adopted the original Water Quality Control Plan (Basin Plan) for the Santa Ana River Basin. In 1995, the RWQCB updated the Basin Plan to address issues that had evolved over time due to increasing populations and changing water demands in the region. The scope of the document covers the Santa Ana River Basin, which includes the upper and lower Santa Ana River watersheds including northwestern Orange County. In 2002, a triennial review of the Basin Plan was performed. In July 2002, at a public hearing, the RWQCB adopted Resolution No. R8-2002-0070, approving the Triennial Review Priority List and Work Plan.

The Basin Plan is more than just a collection of water quality goals and policies, descriptions of conditions, and discussions of solutions. It is also the basis for the RWQCB's regulatory programs. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The RWQCB also regulates water discharges to minimize and control impacts on the quality of the region's ground and surface water.

Water quality problems in the region are listed in the Basin Plan. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. Legal basis and authority for the RWQCB reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code (Porter-Cologne Water Quality Control Act) and the Clean Water Act.

## **Key Regional Issues**

According to the Basin Plan, the most critical water-related problem in the Santa Ana River Basin is water supply. The Santa Ana region uses approximately twice as much water as is available from local sources. As a result, the quantity of water imported into this region each year now equals or exceeds the amount of ground and surface water utilized. The Colorado River Aqueduct delivers water to Lake Matthews, but the relatively high mineral content of this water limits its reuse in the region. SWP water from the Sacramento-San Joaquin Delta has lower levels of dissolved minerals and can be used and reused again. As discussed in Section 3, the WFA uses strictly SWP water, so water quality due to high mineral content as experienced with Colorado River water is not an issue.

The Chino Basin Water Resources Management Study is currently being conducted by a consortium of agencies, including IEUA, SAWPA, MWD, Chino Basin Watermaster, and the Regional Board. The study will develop a comprehensive plan for water resource management in the Chino Basin. The objectives are to coordinate the management of imported and local water supplies, including wastewater, and to develop plans and projects which will maximize the use of these resources, enhance water supply reliability, and improve local water quality. A significant feature of the study is the development of a new integrated ground and surface water model for Chino Basin. The model is calibrated for both TDS and nitrogen. The new model will be used to evaluate the water quality and quantity effects of alternative water resource management plans. These analyses will then be used to select a recommended plan.

Water quality degradation due to high concentrations of nitrogen and TDS is a significant regional water quality problem in the Santa Ana River Watershed (Watershed). Historically, the Santa Ana River likely flowed during most of the year, recharging deep alluvial groundwater basins in the inland valley and the coastal plain. However, irrigation projects eventually led to the diversion of all surface flow in the river, and the quantity of groundwater recharge diminished greatly. Water quality concerns in the Watershed, specifically the Chino Basin Watershed Management Area, focus on elevated concentrations of TDS and total inorganic nitrogen (TIN).

A Task Force was formed in 1995 to provide oversight, supervision, and approval of a study to evaluate the impact of (total inorganic nitrogen) TIN and (total dissolved solids) TDS on water resources in the Watershed. The study is coordinated by SAWPA, and is investigating questions related to TIN and TDS management in the Watershed, including groundwater sub-basin water quality objectives, sub-basin boundaries, and regulatory approaches to wastewater reclamation and recharge.

## **Water Resources and Water Quality Management**

Numerous water resource management studies and projects, focused on water quality and/or water supply, are in progress in the Region under the auspices of a variety of parties. As stated above, the RWQCB has been working with SAWPA concerning water supply and reliability issues. SAWPA has been studying TIN and TDS issues and is a valuable partner in water resource and water quality management. SAWPA, and its member agencies, conduct water related investigations and planning studies, and build physical facilities where needed for water supply, wastewater treatment or water quality remediation.

Some of these activities bear directly on the implementation of the Basin Plan, while others may lead to future Basin Plan amendments to incorporate appropriate changes, such as revised regulatory strategies for various dischargers. These investigations and the implementation of

appropriate physical solutions are an essential and integral part of the effort to restore and maintain water quality in the Region.

## **5.8 Water Quality Effect on Water Management Strategies and Supply Reliability**

### **5.8.1 City of Chino**

The City works collaboratively with the Chino Basin Watermaster, WFA, IEUA, and CDA to achieve the highest quality of water and to ensure reliability of water supplies. The identified water quality issues facing the City include TDS, nitrate, VOCs, and perchlorate. A variety of water management strategies are implemented or planned for implementation by the City as discussed below.

#### ***Imported Water Quality***

In coordination with member agencies, MWD incorporated water quality management strategies to maintain the reliability of its supplies. However, unforeseeable water quality issues could potentially impact MWD's imported water and its supply reliability.

#### ***Expanded Water Quality Monitoring***

To comply with State and Federal Maximum Contaminant Levels (MCLs), the City safeguards its water supply by exceeding the monitoring frequency required by the EPA and CDPH. The City's distribution system is also monitored at various locations to ensure good quality water throughout the distribution system.

#### ***Water Treatment***

To address the concerns of nitrate and perchlorate, a new ion exchange treatment system is operating at the City's Benson Reservoir site. The treatment system removes nitrate and perchlorate from groundwater produced by City wells, and provides enhanced water quality and reliability.

#### ***Joint Water Supply Enhancement Project***

As part of the Dry Year Yield Project, the City entered into a joint water supply enhancement project with the Monte Vista Water District, which was expected to result in additional high-quality groundwater supplies. The project developed a new well for the injection of WFA imported water into the Basin, and the recovery of groundwater from the well. High-quality water that is injected was anticipated to blend with lower quality groundwater to produce water of drinking water standards. To safeguard against the possibility of the quality of pumped water being worse than expected (due to high Nitrates); wellhead treatment (ion-exchange) was put in place. Although the project was successfully constructed, the City is unable to take its share of the water supply because of unexpectedly high Dibromochloropropane (DBCP) levels. The City is currently evaluating options to treat and/or blend the well-produced water with other supplies in order to make use of the well.

#### ***Diversified Water Resource Mix***

The City is seeking to maximize the use of alternative supplies resulting in a diversified water resource mix. The City's Water System Master Plan identifies the maximum use of recycled

water and desalted water, where appropriate and available, as part of the City's plan to ensure a reliable water supply for its service area.

Additionally, groundwater will continue to be a focus of water management for the City to optimize and ensure reliability of this valuable and significant local resource. The following section provides water quality program activities of the Watermaster that seek to ensure a reliable supply of groundwater.

### ***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. Interconnections presently exist between the City's system and the systems operated by the City of Ontario and the Monte Vista Water District. The City may establish interconnections with neighboring water agencies' systems including the cities of Pomona, Chino Hills, and the Jurupa Community Services District.

### **5.8.2 Chino Basin Watermaster**

The Chino Basin Watermaster is conducting water quality management activities in the Chino Groundwater Basin that help to safeguard the groundwater supply.

### ***Groundwater Quality Monitoring***

As part of OBMP Program Element 1, the Watermaster conducts a water quality monitoring program that relies on the cooperation of municipal producers and other government agencies to supply groundwater quality data. Watermaster supplements these data with data obtained through its own sampling and analysis program. Groundwater monitoring is also conducted by private and public entities as part of contaminant cleanup activities. These programs consist of networks of monitoring wells designed specifically to delineate and characterize the extent of the responsible party's contamination. The following is a summary of the contamination monitoring in the Chino Basin:

- Chino Airport Plume: Constituent of Concern – VOCs RWQCB Cleanup and Abatement Order 90-134
- California Institution for Men Plume: Constituent of Concern – VOCs Voluntary Cleanup Monitoring
- General Electric Flatiron Facility Plume: Constituent of Concern – VOCs Voluntary Cleanup Monitoring
- General Electric Test Cell Facility Plume: Constituent of Concern – VOCs Voluntary Cleanup Monitoring
- Kaiser Steel Fontana Site Plume: Constituent of Concern – TDS/TOC Settlement Agreement to Mitigate
- Milliken Sanitary Landfill Plume Constituent of Concern – VOCs RWQCB Cleanup and Abatement Order 81-003
- Upland Sanitary Landfill Plume Constituent of Concern – VOCs RWQCB Cleanup and Abatement Order 98-99-07

South Archibald Plume (formerly referred to as Ontario Airport Plume) Constituent of Concern – VOC Plume south of Airport Voluntary Investigation and Monitoring by Responsible Parties

Stringfellow National Priorities List Site Plume Constituent of Concern – VOCs, Perchlorate, NDMA, Heavy Metals Subject to four USEPA Records of Decision Starting in 1999, and the Comprehensive Monitoring Program initiated the systematic sampling of private water supply wells south of State Route 60 in Chino Basin. Over a three year period, Watermaster developed a baseline data set. This program has 111 private water supply wells, and about half of these wells are sampled bi-annually in the southern portion of the Basin. Sampling is conducted for the following water quality analyses:

- All groundwater samples are analyzed for general mineral and general physical parameters.
- Wells within or near the two VOC plumes south of Ontario and Chino Airports are being analyzed for VOCs, in addition to the general mineral and general physical parameters.
- All private wells in the key program are being analyzed for Perchlorate because of its widespread occurrence in the recent sampling program, and the concerns expressed by appropriators faced with expensive treatment costs for Perchlorate- contaminated wells.

The Watermaster's 2010 State of the Basin Reports offer a detailed look at all basin management and monitoring including General Hydrologic Conditions, Basin Production and Recharge, Groundwater Levels, Groundwater Quality, and Ground Level Monitoring (for subsidence issues). Groundwater Quality is monitored in three methods.

Annual Key Well Groundwater Quality Monitoring Program. Historically, water quality data were very limited for the private wells in the southern portion of the Basin. In 1999, the comprehensive monitoring program initiated the systematic sampling of private wells south of State Route 60 in the Chino Basin. Over a three-year period from 1999 to 2001, Watermaster sampled all available wells at least twice to develop a robust baseline dataset. This program has since been reduced to approximately 110 key wells, located predominantly in the southern portion of the Basin: 100 wells are sampled on a triennial basis, and 10 are sampled on an annual basis.

HCMP Sampling. Watermaster collects groundwater quality samples from the nine nested HCMP monitoring wells to demonstrate whether hydraulic control is being achieved. In addition, Watermaster collects monthly samples from four near-river wells to characterize the interaction of the Santa Ana River and groundwater. These shallow monitoring wells along the Santa Ana River consist of two former US Geological Survey (USGS) National Water Quality Assessment Program (NAWQA) wells (Archibald 1 and Archibald 2) and two Santa Ana River Water Company (SARWC) wells (well 9 and well 11).

Chino Basin Data Collection (CBDC). Watermaster routinely and proactively collects groundwater quality from well owners, such as municipal producers and other government agencies. Water quality data are also obtained from special studies and monitoring that takes place under the orders of the Regional Board (landfills, groundwater quality investigations, etc.), the Department of Toxic Substances Control (DTSC) for the Stringfellow National Priorities List (NPL) site, the USGS, and others. These data are collected from the well owners and monitoring entities twice per year. The Watermaster continues to update its understanding of contaminants of concern in various plumes, and the extent of their migration.

### **Water Quality Monitoring of Groundwater Recharge**

Watermaster and IEUA collect weekly water quality samples from basins that are recharging recycled water and from lysimeters installed within those basins. During January to June 2009, 271 basin and lysimeter samples were collected and two recycled water samples were collected. Monitoring wells located down-gradient of the recharge basin were sampled quarterly at a minimum, however, some monitoring wells were sampled more frequently during early 2009 for a total of 108 samples.

### **TDS and Nitrogen Objectives for the Chino Basin**

The Watermaster has been working with the TDS/Nitrogen Task Force to revise the sub-basin boundaries and the TDS and Nitrogen objectives for the Chino Basin to promote maximum beneficial use of water in the Basin. The maximum beneficial use approach<sup>21</sup> will increase water supplies and lower water management costs over time while meeting water quality requirements. In December 2003, the Watermaster proposed specific water-quality management zone boundaries, and the recommendations were incorporated into the TDS/N Basin Plan Amendment in November 2003. The Basin Plan Amendment was approved by the SWRCB in 2004.

Watermaster developed surface water and groundwater monitoring programs that measure the progress of the Watermaster and IEUA in achieving the “maximum benefit” goal in the Basin. One such program is the development of the salt budget tool to estimate the current and future salt loads to the Basin. The tool was used to establish a TDS objective for the northern part of the Basin based on maximum beneficial use of water available to the region. The salt load projections were based on the water supply plan in the OBMP Implementation Plan and include alternative recycled water and SWP water recharge scenarios.

The Watermaster conducts a water monitoring program to characterize the water quality of water in the recharge basins. The purpose of this program is to estimate the volume and quality of recharge. Recharge monitoring is important because of the new yield implications from new storm water recharge. The concentrations of TDS and nitrogen in storm water are substantially below the existing Basin Plan objectives. Recharge of stormwater will improve groundwater quality and help to offset mitigation requirements for recycled water recharge. Generally, water quality samples are taken after storm events; however, monitoring of nuisance flows also occurs. There is frequent sampling of these basins since they are used for the recharge of recycled water.

### **VOC Plume at Ontario International Airport**

As discussed above, Groundwater Monitoring Programs include the identification and characterization of water quality anomalies, including the VOC anomaly south of the Ontario International Airport. Activities include assisting the RWQCB with research, monitoring and crafting of investigative and cleanup and abatement orders for potential dischargers. The Watermaster reports that data gathering is complete and RWQCB letters of Notification/Cleanup and Abatement Orders have been mailed to potential dischargers.

With regard to the Chino Airport VOC plume, the Watermaster obtained permission from private well owners to release well water quality data to the Watermaster’s consultant performing quarterly groundwater monitoring of the VOC plume. During 2003, five groundwater monitoring wells were installed onsite, and in 2005, an additional four (4) groundwater monitoring wells were installed for further characterization of the plume. During June and July 2006, Watermaster

conducted a focused sampling event of 25 wells in the vicinity of the Chino Airport plume. In 2006, the County of San Bernardino submitted a work plan to the RWQCB for conducting a groundwater investigation with cone penetration testing/direct push technologies. This investigation was completed during February 2007. In 2008, the RWQCB issued CAO No. R-8 2008-0064 to the San Bernardino County Department of Airports in order to define the lateral and vertical extent of the VOCs in groundwater and to prepare a remedial action plan. In late 2008, nine offsite monitoring wells were completed in three locations. Initial sampling of these wells was accomplished in August 2009. Findings indicate the plume is elongate in shape, up to 3,600 feet wide, and extends approximately 12,100 feet from the airport's boundary in the south to the southwestern direction. From July 2003 to June 2008, the maximum TCE concentration detected at an individual well within the Chino Airport plume was 910 µg/L.

The Watermaster's water level and water quality monitoring program over the last several years has resulted in a robust database that provides key information used by the Watermaster and other stakeholders in the Basin to continue VOC plume abatement and cleanup activities.

## **5.9 Water Shortage Plans**

### **5.9.1 City of Chino's Water Shortage Contingency Plan**

In 2009, the City of Chino adopted the new Water Conservation Ordinance ("Ordinance") replacing and superseding the previous Chapter 13.05 of the Municipal Code (included in Appendix E). The Ordinance was updated to respond to the water shortage caused by drought conditions prevailing in the state at the time. The Ordinance implements Water Conservation measures to reduce the quantity of water used per person in the City. The Ordinance further defines permanent measures to prevent the waste of water resources. The City Council can authorize and direct the implementation of certain restrictions (that are described in the Ordinance) based on prevailing conditions in the City, region, and/or state to protect public health, welfare, and safety or when the demand for water consumption threatens to exceed the City's available supply of quality water. These restrictions, which are more fully detailed in the City's 2010 Urban Water Management Plan, will provide for voluntary and/or mandatory water conservation throughout the City's service area.

As a sub-agency of IEUA, the City will also respond to MWD's Water Surplus and Drought Management (WSDM) Plan. IEUA will also follow the guidance of MWD's WSDM Plan, while considering the needs and water shortage actions of each sub-agency. The City will focus on implementing/enforcing the elements of its own contingency plan in association with IEUA's response to a declared regional water shortage.

### **5.9.2 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 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 SDM 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.

In 2007, MWD began to update its plans for addressing water shortage conditions. The impetus for this was a combination of on-going dry conditions and reduced deliveries from the SWP. In February 2008, the MWD Board adopted the Water Supply Allocation Plan. This plan is an extension of the WSDM Plan and includes specific formula for allocating available supplies among MWD member agencies. Table 5.9-1 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. In April 2009 and again in April 2010, MWD concluded that water shortage stage 7 conditions existed and the Water Supply Allocation Plan was implemented, resulting in reduced deliveries to all MWD member agencies.

**Table 5.9-1 – MWD Resource Conditions and Action Stages**

<b>Resource Stage</b>	<b>Action to be Taken</b>
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

Source: City of Chino 2010 UWMP

***Reliability Modeling of the WSDM Plan***

Using a technique known as “sequentially indexed Monte Carlo simulation,” MWD undertook an extensive analysis of system reservoirs, forecasted demands, and probable hydrologic conditions to estimate the likelihood of reaching each Shortage Stage through 2010. The results of this analysis demonstrated the benefits of coordinated management of regional supply and storage resources. Expected occurrence of a Severe Shortage is four percent or less in most years and never exceeds six percent; equating to an expected shortage occurring once every 17 to 25 years. An Extreme Shortage was avoided in every simulation run.

MWD also tested the WSDM Plan by analyzing its ability to meet forecasted demands given a repeat of the two most severe California droughts in recent history. Hydrologic conditions for the years 1923–34 and 1980–91 were used in combination with demographic projections to generate two hypothetical supply and demand forecasts for the period 1999–2010. MWD then simulated operation to determine the extent of regional shortage, if any. The results again indicate 100 percent reliability for full- service demands through the forecast period.

### **5.9.3 Catastrophic Supply Interruption Plans**

A water shortage emergency could be the result of a catastrophic event such as the failure of water distribution facilities, a regional power outage, earthquake, flood, supply contamination from a chemical spill, or other adverse conditions. The Chino City Council shall be responsible for authorizing and directing implementation of the water conservation stages described in the Water Shortage Contingency Plan, as appropriate, to address emergencies.

In the event of a water shortage emergency, the City will employ its Emergency Response Plan to minimize the impact of supply interruption. The major objectives to be accomplished include the following:

- Provide essential water services
- Manage repair crews
- Meet city, county, and state established priorities
- Coordinate service from outside water departments
- Provide and maintain an inventory of potable water resources
- Develop priorities

These objectives will be met through careful implementation of response activities, which include the following:

- Preserve water in storage
- Isolate areas for which restoration of service will require the longest period of time to accomplish and arrange for emergency water distribution
- Identify areas that can be served with minimal repairs
- Set priorities for repair work

Throughout this process, the City's Water Utility will coordinate with the City's Emergency Operation Center (EOC).

#### ***MWD Catastrophic Loss Planning Measures***

To safeguard the region from a catastrophic loss of water supply, MWD and its member agencies have made and are continuing to make substantial investments in emergency storage, distribution system reliability upgrades, and interconnections with adjacent water purveyors. MWD's emergency plan assumes that demands are reduced 25 percent from the 2020 baseline demand forecast through extraordinary conservation, while the local supplies are largely undisrupted. With few exceptions, MWD asserts it can deliver emergency supply from its Diamond Valley Lake Reservoir throughout its service area via gravity, thereby eliminating dependence on power sources that could also be disrupted by a major earthquake. MWD's WSDM Plan will guide management of available supplies and resources during an emergency.

In September, IEUA adopted federal emergency response procedures called NIMS (National Incident Management System) which can be implemented by IEUA personnel for a localized event or on a broader based regional event such as an earthquake or flood. The system provides a consistent nationwide template to enable federal, state, and local governments, as well as local private sector and non-governmental organizations, to work together effectively and efficiently to prepare for, prevent, respond to, and recover from domestic incidents, regardless of the cause, size or complexity, including acts of terrorism. Complementary to NIMS, IEUA has completed Mutual Aid Agreements between itself and its local retail agencies, including the City.

IEUA expects to meet emergency demands within the region through extraordinary conservation and groundwater pumping measures. Multiple sources of power exist within the service area (e.g. cogeneration facilities, portable and standby generators, etc.) that will help to ensure electrical power disruptions are temporary.

### **5.10 Water Conservation as a Reliable Water Source**

The City of Chino recognizes water use efficiency as an integral component of current and future water strategy for its service area. The City of Chino has made implementation of Best Management Practices (BMPs) the cornerstone of its conservation programs. As a sub-agency of IEUA, the City has supported regional water conservation, as a water resource management strategy, throughout the region.

IEUA establishes conservation goals on a regional level and the City implements measures to help meet the regional goals. The City's water service area will contribute significantly to meeting these goals through various conservation measures. In addition, the City will actively participate in achieving IEUA's urban water use reduction targets for the region.

IEUA and its member agencies established the following Regional Goals and Principles for future conservation programs and efforts:

#### **Regional Goals**

- Achieve and maintain compliance with AB 1420 to ensure eligibility for member agencies for grants and loans.
- Achieve and maintain compliance with other water use efficiency laws and regulations.
- Achieve a reduction in per-capita water use by 20 percent by 2020.
- Guide regional water use efficiency programs.
- Relieve drought and environmental impacts on regional water supply.
- Increase water use efficiency, eliminate waste, and improve water supply reliability.
- Contribute to other regional water resource management goals through the identification and integration of common interests such as groundwater recharge, recycled water, and composting.

#### **Regional Principles**

- **Promote Water Resource Management** - Manage cost-effective water use efficiency programs at a regional level using sound business decision-making practices to develop and implement strategies to meet water use efficiency targets and stretch limited water resources.

- **Develop and Implement Regional Programs** - Take advantage of economies of scale and stretch the limited regional water use efficiency budget by implementing programs on a regional basis. It is recognized that some programs can only be implemented at the individual agency level, such as budget-based tiered rate structures and water use efficiency ordinances.
- **Build Member Agency Cooperation** - Foster the cooperation, collaboration, and active participation of all member agencies for the successful development and implementation of water use efficiency programs. It is recognized that successful development and implementation of regional water use efficiency programs requires member agency cooperation in obtaining accurate water demand data, by customer class, in a timely manner, and promotion of cost-effective programs to customers.

The City and IEUA are signatories to the Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California with the California Urban Water Conservation Council (CUWCC). The City coordinates with IEUA to implement the following CUWCC BMPs:

***Foundational - BMP 1 and BMP 2***

- 1.1.1 Conservation Coordinator (Formerly BMP 12 - Water Conservation Coordinator)
- 1.1.2 Water Waste Prevention (Formerly BMP 13 - Water Waste Prohibition)
- 1.1.3 Wholesale Agency Assistance Programs (Formerly BMP 10 – Wholesale Agency Programs)
- 1.2 Water Loss control (Formerly BMP 3 - System water audits, leak detection, and repair)
- 1.3 Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections (Formerly BMP 4 - Metering for all new connections and retrofit of existing connections)
- 1.4 Retail Conservation Pricing (Formerly BMP 11 - Conservation pricing)
- 2.1 Public Information Programs (Formerly BMP 7 - Public information programs)
- 2.2 School Education Programs (Formerly BMP 8 – School Education Programs)

***Programmatic - BMP 3, BMP 4, and BMP 5***

- 3.1 Residential Assistance Program (Formerly BMP 2 – Residential Plumbing Retrofit and a portion of BMP 1 – Water survey Programs)
- 3.2 Landscape Water Survey (Formerly BMP 1 – Water Survey Programs for SF and MF Residential)
- 3.3 High-Efficiency Clothes Washing Machine Financial Incentive Programs (Formerly BMP 6 – High- efficiency washing machine rebate programs)

- 3.4 Water Sense Specification (WSS) Toilets (Formerly BMP 14 – Residential ultra-low-flush toilet replacement programs)
- 4.0 Commercial, Industrial and Institutional (Formerly BMP 9 – Conservation programs for commercial, industrial, and institutional accounts)
- 5.0 Landscape (Formerly BMP 5 – Large landscape conservation programs and incentives)

The City is committed to conservation as a means to provide a sustainable supply of water to its service area, and plans to expand its conservation program in conjunction with IEUA into the future.

The key to reducing water demand is getting people to recognize the value of water and use it efficiently through a stewardship approach. Water use efficiency is playing a greater role in the City's water resource planning due to the difficulties of developing or obtaining new water sources, trends of increasing frequencies of shortages, increased environmental concerns that impact the reliability of imported supply, legislative mandates, and the water quality for agricultural users. The goal is to develop and implement comprehensive water resource management plans. These plans serve as a guide to overall water resource management and set targets to provide adequate water supplies. Comprehensive plans are a method of combining supply, including development of recycled water supplies, and water use efficiency projects.

Pursuant to State legislation SBx7-7 (Water Conservation Act), the City has developed a plan to meet its water use targets for 2015 and 2020. In general, the following activities and programs summarize the City's Water Use Reduction Plan:

- **Water Use Efficiency Active Programs** – offering customers a portfolio of programs including cost-effective indoor and outdoor water efficiency measures.
- **Water Use Efficiency Passive Initiatives** – including education, building codes and ordinances, including the City's Water Conservation Ordinance.
- **Recycled Water Supply** – Reducing demand for potable water by increasing recycled supply.

### ***Water Use Efficiency Active Programs***

The City recognizes water use efficiency as an integral component of current and future water supply strategy for its service area. Demand Management Measures (DMM) refer to policies, programs, rules, regulation and ordinances, and the use of devices, equipment and facilities that, over the long term, have been generally justified and accepted by the industry as providing a "reliable" reduction in water demand. DMMs are equivalent to the Best Management Practices (BMPs) as established by the California Urban Water Conservation Council (CUWCC). The BMPs are generally technically and economically reasonable and environmentally and socially acceptable, and are not otherwise unreasonable for most water suppliers to implement. BMPs are being implemented both locally and regionally for the benefit of the City's water service area.

### **Water Use Efficiency Passive Initiatives**

The passive initiatives refer to code requirements limiting flush volumes for toilets and other fixture and appliance water demand limitations, as well as the City's Water Conservation Ordinance. Some of the most significant water savings measures in California have come from state and national updates to plumbing and building codes. These changes are referred to as "passive", simply because they require no active program efforts from local agencies.

The City's plan for water use reduction begins with its Water Conservation Ordinance (Municipal Code, Chapter 13.05), which sets forth permanent water conservation measures implemented throughout the City during adequate water supply periods and various degrees of drought periods. The purpose of the Water Conservation Ordinance is to provide procedures with voluntary and mandatory provisions to minimize the effect of a water shortage and reduce overall water usage. During the periods of adequate water supply, many activities are prohibited in order to reduce overall water usage. These measures apply to all water customers throughout the City's service area.

### **Recycled Water Supply**

Recycled water is a critical component of the City of Chino's water use reduction plan. Reuse of highly treated recycled water is an available source of water to meet the growing water demands of the City. Recycled water is a proven technology and will provide a more dependable local supply of water as well as reduce the likelihood of water rationing during droughts. Expansion of the City's Recycled Water System is being accomplished through implementation of the City's Water Master Plan.

### **5.11 Dry Year Reliability Analysis**

Defining when a drought begins is a function of the impacts of dry conditions on water users. One dry year does not constitute a drought for most California water users. In addition, large variability can take place year-to-year, as recently observed. While 2007 was one of the driest years of record since 1990 to 1992; 2006 was also the fifth wettest year on record for Northern California. That year left above-average storage conditions in most major reservoirs and groundwater basins. Past experience with California droughts tells us that impacts of a single dry year are felt primarily by those most dependent on/affected by annual rainfall. California's last major statewide drought occurred from 1987 to 1992. 1977 has the distinction of being the single driest year of California's measured hydrologic record.

In 2007, the convergence of dry weather and environmental issues has created the need for aggressive drought planning and resource management on the part of MWD. On May 1, 2007, MWD implemented Shortage Stage 4 of its WSDM Plan. Shortage Stage 4 actions include withdrawals from Diamond Valley Lake, withdrawal from out-of-region groundwater storage, curtailment or temporary suspension of deliveries to Long Term Seasonal and Replenishment Programs, and may include withdrawal from conjunctive use groundwater storage.

In February 2008, and as an extension of its Water Surplus and Drought Management Plan, MWD adopted the Water Supply Allocation Plan. Water Shortage Stage 7 is where the Water Supply Allocation Plan is implemented. In April 2009 and again in April 2010, MWD concluded that water shortage stage 7 conditions existed and the Water Supply Allocation Plan was implemented resulting in reduced deliveries to all member agencies.

### **City of Chino Dry Year Reliability Analysis**

The City's FY 2013/14 water demand was approximately 25,141 (domestic and non-domestic) AF. By the year 2035, the City's water demand is projected to be 28,435 AF.

The City's 2004 Water System Master Plan (WSMP) updated water demands to reflect the developments that occurred between 2000 and 2003, developments that were anticipated for 2004, and projected water demands through the year 2030. The City's 2010 UWMP is generally consistent with the WSMP Update.

Tables 5.11-1 through 5.11-5 compare current and projected water supplies and demands under normal, single-dry year and multiple-dry year scenarios for the City's service area, which includes Rancho Miramonte and the other currently anticipated development projects. The basis of the data in these tables is from Section 4.2 of the City's 2010 UWMP Demand and Supplies Comparison. The anticipated projects include the currently proposed development projects of The Preserve, College Park, SRG Chino South Industrial Park, and Majestic at Southeast development project. The supplies include associated agricultural conversion with the respective projects. The total supplies for the City are based on a cutback from Table A Amounts of up to 40 percent, which accounts for (1) restrictions in Delta pumping as required by the biological opinions, and (2) climate change altering hydrologic conditions in the State. The Demand and Supplies Comparison tables from the City's 2010 UWMP are updated to include water source capacity refinements, and included here as Tables 5.11-1 through 5.11-5. Each five-year table includes a version to account for the possible reduction in Chino Groundwater Basin Safe Yield to 113,000 AFY, as presented by the Watermaster in 2013 and described in Section 4.0.

**Table 5.11-1**  
**20-Year Water Supply and Demand Comparison during Multiple Dry**  
**Water Years Years 2013-2015 (AFY)**

Basin Safe Yield = 140,000 AFY [1]

<b>Water Sources</b>	<b>2013</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Supply</b>	<b>Normal Yr</b>	<b>Multiple Dry Years</b>		
Imported	5,353	3,212	3,265	3,319
Local (Groundwater) [1]	8,284	9,609	9,850	10,084
Local (Desalter)	5,000	5,000	5,000	5,000
<b>Subtotal – Potable Water Supply</b>	<b>18,637</b>	<b>17,821</b>	<b>18,115</b>	<b>18,403</b>
Recycled	8,957	8,957	9,329	9,695
<b>Total Supply</b>	<b>27,594</b>	<b>26,778</b>	<b>27,444</b>	<b>28,099</b>
Normal Year Supply [4]	27,594	27,594	27,803	28,013
% of Normal Year	100%	97%	99%	100%
<b>Demand</b>				
Potable	15,832	16,687	16,072	15,431
Recycled	8,957	8,957	9,329	9,695
<b>Total Demand</b>	<b>24,789</b>	<b>25,644</b>	<b>25,401</b>	<b>25,127</b>
Normal Year Demand	24,789	24,789	24,957	25,125
% of Normal Year	100%	103%	102%	100%
<b>Supply/ Demand Difference</b>	2,805	1,134	2,043	2,972
<b>Difference as % of Supply</b>	10%	4%	7%	11%
<b>Difference as % of Demand</b>	11%	4%	8%	12%

Basin Safe Yield = 113,000 AFY [1]

<b>Water Sources</b>	<b>2013</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Supply</b>	<b>Normal Yr</b>	<b>Multiple Dry Years</b>		
Imported	5,353	3,212	3,265	3,319
Local (Groundwater) [1]	6,574	7,626	7,629	7,631
Local (Desalter)	5,000	5,000	5,000	5,000
<b>Subtotal – Potable Water Supply</b>	<b>16,927</b>	<b>15,838</b>	<b>15,894</b>	<b>15,950</b>
Recycled [2]	8,957	8,957	9,329	9,695
<b>Total Supply</b>	<b>25,884</b>	<b>24,795</b>	<b>25,224</b>	<b>25,645</b>
Normal Year Supply	25,884	25,884	27,803	28,013
% of Normal Year	100%	96%	91%	92%
<b>Demand</b>				
Potable	15,832	16,687	16,072	15,431
Recycled [2]	8,957	8,957	9,329	9,695
<b>Total Demand</b>	<b>24,789</b>	<b>25,644</b>	<b>25,401</b>	<b>25,127</b>
Normal Year Demand	24,789	24,789	24,957	25,125
% of Normal Year	100%	103%	102%	100%
<b>Supply/ Demand Difference</b>	1,095	-849	-178	519
<b>Difference as % of Supply</b>	4%	-3%	-1%	2%
<b>Difference as % of Demand</b>	4%	-3%	-1%	2%

[1] Chino Groundwater Basin Safe Yield is currently established at 140,000 AFY. Watermaster has indicated a possible reduction of the Safe Yield to 113,000 AFY.

[2] Assumes Recycled Water supply equals RW demand.

[3] Make-up water is required in order to meet demands, and is anticipated to be provided by imported water and local groundwater supplies. Local supplies can be available through the many groundwater management programs in place.

[4] Revised from 2010 UWMP to update groundwater and recycled water supply, as provided by City staff.

**Table 5.11-2  
 20-Year Water Supply and Demand Comparison during Multiple Dry  
 Water Years Years 2016-2020 (AFY)**

Basin Safe Yield = 140,000 AFY [1]

<b>Water Sources</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Supply</b>	Normal Years		Multiple Dry Years		
Imported	5,353	5,353	3,212	3,265	3,319
Local (Groundwater) [1]	9,127	9,408	11,239	11,466	11,686
Local (Desalter)	5,000	5,000	5,000	5,000	5,000
<b>Subtotal – Potable Water Supply</b>	<b>19,480</b>	<b>19,761</b>	<b>19,451</b>	<b>19,731</b>	<b>20,005</b>
Recycled	8,742	8,670	8,598	8,953	9,301
<b>Total Supply</b>	<b>28,222</b>	<b>28,431</b>	<b>28,049</b>	<b>28,684</b>	<b>29,306</b>
Normal Year Supply [4]	28,222	28,431	28,640	28,850	29,059
% of Normal Year	100%	100%	98%	99%	101%
<b>Demand</b>					
Potable	16,552	16,792	17,952	17,272	16,566
Recycled	8,742	8,670	8,598	8,953	9,301
<b>Total Demand</b>	<b>25,294</b>	<b>25,462</b>	<b>26,550</b>	<b>26,225</b>	<b>25,867</b>
Normal Year Demand	25,294	25,462	25,630	25,798	25,967
% of Normal Year	100%	100%	104%	102%	100%
<b>Supply/ Demand Difference</b>	2,928	2,969	1,499	2,459	3,439
<b>Difference as % of Supply</b>	10%	10%	5%	9%	12%
<b>Difference as % of Demand</b>	12%	12%	6%	9%	13%

Basin Safe Yield = 113,000 AFY [1]

<b>Water Sources</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Supply</b>	Normal Years		Multiple Dry Years		
Imported	5,353	5,353	3,212	3,265	3,319
Local (Groundwater) [1]	6,755	6,815	7,975	7,975	7,974
Local (Desalter)	5,000	5,000	5,000	5,000	5,000
<b>Subtotal – Potable Water Supply</b>	<b>17,108</b>	<b>17,168</b>	<b>16,187</b>	<b>16,241</b>	<b>16,293</b>
Recycled	8,742	8,670	8,598	8,953	9,301
<b>Total Supply</b>	<b>25,850</b>	<b>25,838</b>	<b>24,785</b>	<b>25,194</b>	<b>25,594</b>
Normal Year Supply [4]	28,222	28,431	28,640	28,850	29,059
% of Normal Year	92%	91%	87%	87%	88%
<b>Demand</b>					
Potable	16,552	16,792	17,952	17,272	16,566
Recycled	8,742	8,670	8,598	8,953	9,301
<b>Total Demand</b>	<b>25,294</b>	<b>25,462</b>	<b>26,550</b>	<b>26,225</b>	<b>25,867</b>
Normal Year Demand	25,294	25,462	25,630	25,798	25,967
% of Normal Year	100%	100%	104%	102%	100%
<b>Supply/ Demand Difference</b>	556	376	-1,765	-1,031	-273
<b>Difference as % of Supply</b>	2%	1%	-7%	-4%	-1%
<b>Difference as % of Demand</b>	2%	1%	-7%	-4%	-1%

[1] Chino Groundwater Basin Safe Yield is currently established at 140,000 AFY. Watermaster has indicated a possible reduction of the Safe Yield to 113,000 AFY.

[2] Assumes Recycled Water supply equals RW demand.

[3] Make-up water is required in order to meet demands, and is anticipated to be provided by imported water and local groundwater supplies. Local supplies can be available through the many groundwater management programs in place.

[4] Revised from 2010 UWMP to update groundwater and recycled water supply, as provided by City staff.

**Table 5.11-3  
20-Year Water Supply and Demand Comparison during Multiple Dry  
Water Years Years 2021-2025 (AFY)**

Basin Safe Yield = 140,000 AFY [1]

<b>Water Sources</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>Supply</b>	Normal Years		Multiple Dry Years		
Imported	5,353	5,353	3,212	3,265	3,319
Local (Groundwater) [1]	10,532	10,813	12,869	13,081	13,288
Local (Desalter)	5,000	5,000	5,000	5,000	5,000
<b>Subtotal – Potable Water Supply</b>	<b>20,885</b>	<b>21,166</b>	<b>21,081</b>	<b>21,347</b>	<b>21,607</b>
Recycled	8,383	8,311	8,240	8,576	8,906
<b>Total Supply</b>	<b>29,268</b>	<b>29,477</b>	<b>29,321</b>	<b>29,923</b>	<b>30,512</b>
Normal Year Supply [4]	29,268	29,477	29,687	29,896	30,105
% of Normal Year	100%	100%	99%	100%	101%
<b>Demand</b>					
Potable	17,773	18,013	19,239	18,493	17,720
Recycled	8,383	8,311	8,240	8,576	8,906
<b>Total Demand</b>	<b>26,156</b>	<b>26,324</b>	<b>27,479</b>	<b>27,069</b>	<b>26,626</b>
Normal Year Demand	26,156	26,324	26,492	26,661	26,829
% of Normal Year	100%	100%	104%	102%	99%
<b>Supply/ Demand Difference</b>	<b>3,112</b>	<b>3,153</b>	<b>1,842</b>	<b>2,854</b>	<b>3,886</b>
<b>Difference as % of Supply</b>	<b>11%</b>	<b>11%</b>	<b>6%</b>	<b>10%</b>	<b>13%</b>
<b>Difference as % of Demand</b>	<b>12%</b>	<b>12%</b>	<b>7%</b>	<b>11%</b>	<b>15%</b>

Basin Safe Yield = 113,000 AFY [1]

<b>Water Sources</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>Supply</b>	Normal Years		Multiple Dry Years		
Imported	5,353	5,353	3,212	3,265	3,319
Local (Groundwater) [1]	7,055	7,116	8,324	8,321	8,317
Local (Desalter)	5,000	5,000	5,000	5,000	5,000
<b>Subtotal – Potable Water Supply</b>	<b>17,408</b>	<b>17,469</b>	<b>16,536</b>	<b>16,587</b>	<b>16,636</b>
Recycled	8,383	8,311	8,240	8,576	8,906
<b>Total Supply</b>	<b>25,791</b>	<b>25,780</b>	<b>24,776</b>	<b>25,163</b>	<b>25,542</b>
Normal Year Supply [4]	29,268	29,477	29,687	29,896	30,105
% of Normal Year	88%	87%	83%	84%	85%
<b>Demand</b>					
Potable	17,773	18,013	19,239	18,493	17,720
Recycled	8,383	8,311	8,240	8,576	8,906
<b>Total Demand</b>	<b>26,156</b>	<b>26,324</b>	<b>27,479</b>	<b>27,069</b>	<b>26,626</b>
Normal Year Demand	26,156	26,324	26,492	26,661	26,829
% of Normal Year	100%	100%	104%	102%	99%
<b>Supply/ Demand Difference</b>	<b>-365</b>	<b>-544</b>	<b>-2,703</b>	<b>-1,906</b>	<b>-1,084</b>
<b>Difference as % of Supply</b>	<b>-1%</b>	<b>-2%</b>	<b>-11%</b>	<b>-8%</b>	<b>-4%</b>
<b>Difference as % of Demand</b>	<b>-1%</b>	<b>-2%</b>	<b>-10%</b>	<b>-7%</b>	<b>-4%</b>

[1] Chino Groundwater Basin Safe Yield is currently established at 140,000 AFY. Watermaster has indicated a possible reduction of the Safe Yield to 113,000 AFY.

[2] Assumes Recycled Water supply equals RW demand.

[3] Make-up water is required in order to meet demands, and is anticipated to be provided by imported water and local groundwater supplies. Local supplies can be available through the many groundwater management programs in place.

[4] Revised from 2010 UWMP to update groundwater and recycled water supply, as provided by City staff.

**Table 5.11-4  
 20-Year Water Supply and Demand Comparison during Multiple Dry  
 Water Years Years 2026-2030 (AFY)**

Basin Safe Yield = 140,000 AFY [1]

<b>Water Sources</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>
<b>Supply</b>	Normal Years		Multiple Dry Years		
Imported	5,353	5,353	3,212	3,265	3,319
Local (Groundwater) [1]	11,937	12,218	14,499	14,697	14,890
Local (Desalter)	5,000	5,000	5,000	5,000	5,000
<b>Subtotal – Potable Water Supply</b>	<b>22,290</b>	<b>22,571</b>	<b>22,711</b>	<b>22,962</b>	<b>23,208</b>
Recycled	8,025	7,953	7,881	8,199	8,512
<b>Total Supply</b>	<b>30,315</b>	<b>30,524</b>	<b>30,592</b>	<b>31,162</b>	<b>31,720</b>
Normal Year Supply [4]	30,315	30,524	30,733	30,942	31,152
% of Normal Year	100%	100%	100%	101%	102%
<b>Demand</b>					
Potable	18,972	19,212	20,502	19,692	18,856
Recycled	8,025	7,953	7,881	8,199	8,512
<b>Total Demand</b>	<b>26,997</b>	<b>27,165</b>	<b>28,383</b>	<b>27,891</b>	<b>27,367</b>
Normal Year Demand	26,997	27,165	27,333	27,502	27,670
% of Normal Year	100%	100%	104%	101%	99%
<b>Supply/ Demand Difference</b>	<b>3,318</b>	<b>3,359</b>	<b>2,208</b>	<b>3,270</b>	<b>4,353</b>
<b>Difference as % of Supply</b>	<b>11%</b>	<b>11%</b>	<b>7%</b>	<b>10%</b>	<b>14%</b>
<b>Difference as % of Demand</b>	<b>12%</b>	<b>12%</b>	<b>8%</b>	<b>12%</b>	<b>16%</b>

Basin Safe Yield = 113,000 AFY [1]

<b>Water Sources</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>
<b>Supply</b>	Normal Years		Multiple Dry Years		
Imported	5,353	5,353	3,212	3,265	3,319
Local (Groundwater) [1]	7,356	7,417	8,673	8,668	8,661
Local (Desalter)	5,000	5,000	5,000	5,000	5,000
<b>Subtotal – Potable Water Supply</b>	<b>17,709</b>	<b>17,770</b>	<b>16,885</b>	<b>16,933</b>	<b>16,979</b>
Recycled	8,025	7,953	7,881	8,199	8,512
<b>Total Supply</b>	<b>25,734</b>	<b>25,723</b>	<b>24,766</b>	<b>25,132</b>	<b>25,491</b>
Normal Year Supply [4]	30,315	30,524	30,733	30,942	31,152
% of Normal Year	85%	84%	81%	81%	82%
<b>Demand</b>					
Potable	18,972	19,212	20,502	19,692	18,856
Recycled	8,025	7,953	7,881	8,199	8,512
<b>Total Demand</b>	<b>26,997</b>	<b>27,165</b>	<b>28,383</b>	<b>27,891</b>	<b>27,367</b>
Normal Year Demand	26,997	27,165	27,333	27,502	27,670
% of Normal Year	100%	100%	104%	101%	99%
<b>Supply/ Demand Difference</b>	<b>-1,263</b>	<b>-1,442</b>	<b>-3,617</b>	<b>-2,759</b>	<b>-1,876</b>
<b>Difference as % of Supply</b>	<b>-5%</b>	<b>-6%</b>	<b>-15%</b>	<b>-11%</b>	<b>-7%</b>
<b>Difference as % of Demand</b>	<b>-5%</b>	<b>-5%</b>	<b>-13%</b>	<b>-10%</b>	<b>-7%</b>

[1] Chino Groundwater Basin Safe Yield is currently established at 140,000 AFY. Watermaster has indicated a possible reduction of the Safe Yield to 113,000 AFY.

[2] Assumes Recycled Water supply equals RW demand.

[3] Make-up water is required in order to meet demands, and is anticipated to be provided by imported water and local groundwater supplies. Local supplies can be available through the many groundwater management programs in place.

[4] Revised from 2010 UWMP to update groundwater and recycled water supply, as provided by City staff.

**Table 5.11-5  
20-Year Water Supply and Demand Comparison during Multiple Dry  
Water Years Years 2031-2035 (AFY)**

Basin Safe Yield = 140,000 AFY [1]

<b>Water Sources</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>
<b>Supply</b>	Normal Years		Multiple Dry Years		
Imported	5,353	5,353	3,212	3,265	3,319
Local (Groundwater) [1]	13,342	13,623	16,129	16,313	16,491
Local (Desalter)	5,000	5,000	5,000	5,000	5,000
<b>Subtotal – Potable Water Supply</b>	<b>23,695</b>	<b>23,976</b>	<b>24,340</b>	<b>24,578</b>	<b>24,810</b>
Recycled	7,666	7,594	7,522	7,824	8,117
<b>Total Supply</b>	<b>31,361</b>	<b>31,570</b>	<b>31,862</b>	<b>32,402</b>	<b>32,927</b>
Normal Year Supply [4]	31,361	31,570	31,779	31,989	32,198
% of Normal Year	100%	100%	100%	101%	102%
<b>Demand</b>					
Potable	20,172	20,412	20,652	20,892	21,132
Recycled	7,666	7,594	7,522	7,824	8,117
<b>Total Demand</b>	<b>27,838</b>	<b>28,006</b>	<b>28,174</b>	<b>28,716</b>	<b>29,249</b>
Normal Year Demand	27,838	28,006	28,175	28,343	28,511
% of Normal Year	100%	100%	100%	101%	103%
<b>Supply/ Demand Difference</b>	<b>3,523</b>	<b>3,564</b>	<b>3,688</b>	<b>3,686</b>	<b>3,678</b>
<b>Difference as % of Supply</b>	<b>11%</b>	<b>11%</b>	<b>12%</b>	<b>11%</b>	<b>11%</b>
<b>Difference as % of Demand</b>	<b>13%</b>	<b>13%</b>	<b>13%</b>	<b>13%</b>	<b>13%</b>

Basin Safe Yield = 113,000 AFY [1]

<b>Water Sources</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>
<b>Supply</b>	Normal Years		Multiple Dry Years		
Imported	5,353	5,353	3,212	3,265	3,319
Local (Groundwater) [1]	7,657	7,717	9,022	9,014	9,004
Local (Desalter)	5,000	5,000	5,000	5,000	5,000
<b>Subtotal – Potable Water Supply</b>	<b>18,010</b>	<b>18,070</b>	<b>17,234</b>	<b>17,279</b>	<b>17,323</b>
Recycled	7,666	7,594	7,522	7,824	8,117
<b>Total Supply</b>	<b>25,676</b>	<b>25,664</b>	<b>24,756</b>	<b>25,103</b>	<b>25,439</b>
Normal Year Supply [4]	31,361	31,570	31,779	31,989	32,198
% of Normal Year	82%	81%	78%	78%	79%
<b>Demand</b>					
Potable	20,172	20,412	20,652	20,892	21,132
Recycled	7,666	7,594	7,522	7,824	8,117
<b>Total Demand</b>	<b>27,838</b>	<b>28,006</b>	<b>28,174</b>	<b>28,716</b>	<b>29,249</b>
Normal Year Demand	27,838	28,006	28,175	28,343	28,511
% of Normal Year	100%	100%	100%	101%	103%
<b>Supply/ Demand Difference</b>	<b>-2,162</b>	<b>-2,342</b>	<b>-3,418</b>	<b>-3,613</b>	<b>-3,809</b>
<b>Difference as % of Supply</b>	<b>-8%</b>	<b>-9%</b>	<b>-14%</b>	<b>-14%</b>	<b>-15%</b>
<b>Difference as % of Demand</b>	<b>-8%</b>	<b>-8%</b>	<b>-12%</b>	<b>-13%</b>	<b>-13%</b>

[1] Chino Groundwater Basin Safe Yield is currently established at 140,000 AFY. Watermaster has indicated a possible reduction of the Safe Yield to 113,000 AFY.

[2] Assumes Recycled Water supply equals RW demand.

[3] Make-up water is required in order to meet demands, and is anticipated to be provided by imported water and local groundwater supplies. Local supplies can be available through the many groundwater management programs in place.

[4] Revised from 2010 UWMP to update groundwater and recycled water supply, as provided by City staff.

## 6.0 CONCLUSION<sup>[7]</sup>

The City of Chino optimizes its water resource supply through an integrated resource approach, utilizing available water programs and projects. The City receives its water supplies from groundwater, desalted water, imported water, and recycled water. Complexities and continuing refinement in groundwater management and rights, evolving development of the regional recycled water system and supplies, desalter expansion and optimization projects, and challenges of imported water reliability make analysis of water demand and supply complicated.

A CEQA report is being prepared for Rancho Miramonte 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 Chino 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 and other City development projects over the UWMP 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 years.

**The WSA does not evaluate the adequacy of the City's infrastructure to handle the available water supplies nor does it make any recommendations with respect to capital improvements that may be necessary in order to provide an adequate level of service to the Rancho Miramonte Project.**

Rancho Miramonte is located within the Mill Creek development (formerly Edgewater communities), southerly of Chino-Corona Rd, and easterly of Cucamonga Ave. The approximate 271-acre site is within the City of Chino's designated Subarea 2. The site currently consists primarily of agricultural operations with a few single-family residences. The proposed project includes 11 residential neighborhoods of varying densities (823 lots), parks, and open space. It is expected that the projection of water demand of the former Edgewater site in comparison to the proposed Rancho Miramonte site would see a reduction.

<b>Reduction from Edgewater SPA to Rancho Miramonte SPA (Indoor Potable Water)</b>		
	Avg. Day Demand (gpd)	Avg. Day Demand (gpm)
Edgewater SPA	581,900	404
Rancho Miramonte	339,999	236
Reduction Amount	241,901	168

Source: Mill Creek Farming Associates, LLC Water Master Plan Update, Table 1A

Note: Edgewater SPA Demands are based on former lot layouts.

Recycled water demands are also assumed to be reduced.

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

The build-out of the Project will increase the City's water demand by approximately 339,999 gallons per day (gpd), 236 gpm, or 381 AFY, of which up to 95,471 gpd, 66 gpm, or 107 AFY is irrigation and could be served by non-domestic water sources.

Analysis of water supply projections for the City, including the Project, demonstrates that estimates of anticipated projected supplies are sufficient to satisfy City demand through the Year 2035 when the Chino Groundwater Basin Safe Yield is 140,000AF (current circumstance). These estimates consider land use, water development programs and projects, and water conservation. The capacity of the Chino Groundwater Basin, managed in accordance with the Watermaster-guided optimization programs, may be used to buffer episodes of drought and help address impacts that may result from a reduction of the Basin Safe Yield. The analysis relies on imported water and groundwater supplies to increase to match the projected needs during multiple dry years. Recycled water is proposed to be used to supply new development and certain existing uses, such as landscape irrigation and industrial uses currently supplied with potable water.

Specific analysis of water supply projections for the City included in the tables of the previous Section (5.0) suggests that estimates of anticipated projected supply entitlements are insufficient to totally satisfy City demand through the Year 2035 if the available Chino Groundwater Basin yield is reduced to 113,000 AFY. If the available yield were reduced to 113,000 AFY, the demand exceeds supply in multiple scenarios (both Normal Years and Dry Years) from 2013-2035. However, with the knowledge of this projected shortfall of supplies to meet demands, the City has the opportunity to pursue measures to increase supplies of potable water for these scenarios by utilizing a combination of the measures described below.

The City has the opportunity to increase supply to meet its water demand through the following measures: 1) production of groundwater based on Safe Yield limitations and replenishment; 2) increasing imported water purchases, if available and if there is available WFA capacity; 3) purchasing additional desalted water if more is produced than needed to satisfy requirements of other purchasers; and 4) purchasing additional recycled water, if available. Collectively, these additional options may be used by the City of Chino in an effort to provide sufficient water supplies to satisfy demands now and into the future.

If the City elects to produce groundwater in excess of its available rights, in an effort to ensure adequate supply of water for the City, due to declining yield of the Basin or any other reason, the City would incur a replenishment obligation. That obligation would be tracked by the Watermaster as part of its responsibility to obtain water to meet all replenishment obligations and issue corresponding annual assessments, accordingly.

The information included in this WSA describes a program of potential options that may be utilized in an effort to secure sufficient water supply to satisfy the city's anticipated future water demands, including the subject project.

## **7.0 REFERENCES**

1. City of Chino, *City of Chino 2010 Urban Water Management Plan (Final Draft)*, June 2011.
2. Inland Empire Utilities Agency, *Urban Water Management Plan 2010*, adopted June 1, 2011.
3. City of Chino, *City of Chino Water System Master Plan Update*, March 2004.
4. Department of Water Resources (DWR), *State Water Project Delivery Reliability Report*, 2013.
5. City of Chino, *Majestic Chino Gateway Water Supply Assessment*, February 2013
6. City of Chino, *City of Chino Groundwater Wells Status – 2014*
7. City of Chino WSA for Watson Industrial Park, July 2015
8. Mill Creek Farming Associates, LLC Water System Master Plan Update