



Urban Water Management Plan

SEPTEMBER 2021

SAN ANTONIO WATER COMPANY





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Urban Water Management Plan

SEPTEMBER 2021

Prepared by Water Systems Consulting, Inc.



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ACRONYMS & ABBREVIATIONS

°C	Degrees Celsius
°F	Degrees Fahrenheit
AB	Assembly Bill
AF	Acre Foot
AFY	Acre Feet per Year
AHHG	Area of Historic High Groundwater
AMR	Automatic Meter Reader
APA	Administrative Procedures Act
AWWA	American Water Works Association
BMP	Best Management Practice
CALWARN	California Water/Wastewater Agency Response Network
CAT	Climate Action Team
CCF	Hundred Cubic Feet
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFS	Cubic Feet per Second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Irrigation System
CUWCC	California Urban Water Conservation Council
DCR	DWR SWP Delivery Capacity Report
DDW	SWRCB Division of Drinking Water
DFW	California Department of Fish and Wildlife
DIP	Ductile Iron Pipe
DMM	Demand Management Measure
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
ERNIE	Emergency Response Network of the Inland Empire
ESA	Endangered Species Act
ET	Evapotranspiration
ETo	Reference Evapotranspiration

GAC	Granulated Activated Carbon
GIS	Geographic Information System
GPCD	Gallons per Capita per Day
GPM	Gallons per Minute
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
IX	Ion Exchange
KAF	Thousand Acre Feet
KAFY	Thousand Acre Feet per Year
LAFCO	Local Agency Formation Commission
MAF	Million Acre-Feet
MCL	Maximum Contaminant Level
MF	Multi-family
MG	Million Gallons
MGD	Million Gallons per Day
MOU	Memorandum of Understanding
MSL	Mean Sea Level
MTBE	Methyl Tertiary Butyl Ether
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PCE	Perchloroethylene
PVC	Polyvinyl Chloride
QWEZ	Qualified Water Efficient Landscaper
RIX	Rapid Infiltration and Extraction
RPA	Reasonable and Prudent Alternative
RUWMP	Regional Urban Water Management Plan
RWQCB	Regional Water Quality Control Board
SAWCo	San Antonio Water Company
SBX7-7	Senate Bill 7 of Special Extended Session 7
SF	Single Family
SOI	Sphere of Influence
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TCE	Trichloroethylene
ULFT	Ultra-Low Flush Toilet

UV	Ultraviolet
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
VOC	Volatile Organic Compound
WBIC	Weather Based Irrigation Controller
WSCP	Water Shortage Contingency Plan
WFF	Water Filtration Facility
WSS	Water Sense Specification
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

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2020 URBAN WATER MANAGEMENT PLAN

Introduction and Lay Description

This chapter provides a brief overview of the San Antonio Water Company (SAWCo) and the purpose of this Urban Water Management Plan (UWMP).

SAWCo is a private non-profit Mutual Water Company formed in 1882 under the General Corporation Laws of the United States with the purpose to furnish, lease, or sell water for irrigation, milling, manufacturing and other purposes to the newly established Ontario irrigation colony. Land for the irrigation colony was sold primarily for the booming citrus industry at the time, and a share in SAWCo was included with every acre of land purchased. Each shareholder was entitled to a portion of available local water, distributed equally by SAWCo amongst shareholders on a non-profit basis. Today SAWCo retains the same purpose of providing beneficial water service to all shareholders based on established monthly entitlements and a fixed number of shares.

IN THIS SECTION

- California Water Code
- UWMP Organization
- UWMP Relation to Other Efforts

1.1 The California Water Code

In 1983, the State of California Legislature (Legislature) enacted the Urban Water Management Planning Act (UWMP Act). The law required an urban water supplier, providing water for municipal purposes to more than 3,000 customers or serving more than 3,000 acre-feet (AF) annually, to adopt an UWMP every five years demonstrating water supply reliability under normal as well as drought conditions.

Since the original UWMP Act was passed, it has undergone significant expansion, particularly since the completion of the 2015 UWMP. Prolonged droughts, groundwater overdraft, regulatory revisions, and changing climatic conditions affect the reliability of water suppliers as well as the statewide water reliability overseen by California Department of Water Resources (DWR), the State Water Resources Control Board (State Water Board), and the Legislature. Accordingly, the UWMP Act has grown to address changing conditions and the current requirements are found in Sections 10610-10656 and 10608 of the California Water Code.

DWR provides guidance for urban water suppliers by preparing an Urban Water Management Plan Guidebook 2020 (Guidebook) (California Department of Water Resources, 2021), conducting workshops, developing tools, and providing program staff to help water suppliers prepare comprehensive and useful UWMPs, implement water conservation programs, and understand the requirements in the California Water Code. Suppliers prepare their own UWMPs in accordance with the requirements and submit them to DWR. DWR then reviews the plans to make sure they have addressed the requirements identified in the California Water Code and submits a report to the Legislature summarizing the status of the plans for each five-year cycle.

The purpose of the UWMP is for water suppliers to evaluate their long-term resource planning and establish management measures to ensure adequate water supplies are available to meet existing and future demands. The UWMP provides a framework to help water suppliers maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during drought conditions or other water supply interruptions.

The UWMP is a valuable planning tool used for multiple purposes including:

- Provides a standardized methodology for water utilities to assess their water resource needs and availability.
- Serves as a resource to the community and other interested parties regarding water supply and demand, conservation and other water related information.
- Provides a key source of information for cities and counties when considering approval of proposed new developments and preparing regional long-range planning documents such as city and county General Plans.
- Informs other regional water planning efforts.

This plan, which was prepared in compliance with the California Water Code, and as set forth in the Guidebook and format established by the DWR, constitutes the 2020 UWMP for SAWCo.

1.2 UWMP Organization and Lay Description

This UWMP is organized as follows:

Chapter 1 – Introduction

The introduction provides a description of SAWCo and background on the UWMP and California Water Code. Water suppliers that serve more than 3,000 customers or 3,000 acre-feet-per-year (AFY) are required to prepare a UWMP. The UWMP is an important tool that details SAWCo's system and service area, estimates supply and demand over a twenty-five-year period, and analyzes reliability in terms of drought.

Chapter 2 – Plan Preparation

The UWMP is prepared based on guidance from DWR. This UWMP provides information in terms of calendar year (January 1st – December 31st) and in units of AFY. While preparing this UWMP, SAWCo coordinated with other local agencies and sent notifications that the UWMP was being developed, available for review, and details pertaining to the public hearing and plan adoption meeting.

Chapter 3 – System Description

This chapter summarizes SAWCo's service area, climate, demographics, and land use. SAWCo provides domestic service to the San Antonio Heights community with an estimated population of 3,000 people. SAWCo provides water based on entitlement and the number of shares. There are 6,389 shares in SAWCo. In 2020, only 6,178 shares were active.

Chapter 4 – Water Use Characterization

This chapter summarizes historical and future water use. SAWCo provides water for domestic, municipal, and miscellaneous uses. In addition, SAWCo spreads water in the Chino, Cucamonga, and Six Basins groundwater basins for groundwater recharge. In 2020, the largest customer was the City of Upland's purchases for irrigation water, which accounted for 50% of the total water sales.

SAWCo's Basic Area is nearly built out. SAWCo's ongoing Master Plan effort identified seven parcels as possible future development and corresponding water demand factors. Using the information developed in the Master Plan, it is estimated that should these seven parcels develop, future demands on SAWCo will increase by approximately 30 AFY.

Chapter 5 – Water Supply Characterization

SAWCo uses local groundwater from several groundwater basins and surface water to meet customer demands. Local groundwater is extracted from the Chino Basin, Cucamonga Basin, and Six Basins. The three groundwater basins are each adjudicated, and SAWCo's has water rights as defined by the various legal Judgements in place to protect and manage each basin. SAWCo also participates in groundwater recharge operations that enhance groundwater supply. Surface water from San Antonio Creek are pre-1914 water rights, and annual water availability is influenced by rainfall. The San Antonio Tunnel is a deep rock tunnel 100 feet below ground surface that collects naturally percolated groundwater.

Chapter 6 – Water Service Reliability and Drought Risk Assessment

Future demand and supply were analyzed to evaluate supply reliability over the planning period. The UWMP analyzed conditions for normal, or average, single-dry, and five-year consecutive dry periods. SAWCo aims to provide shareholders full entitlement, but in periods of drought, allocations per share may be reduced, depending on supply availability. In all scenarios, SAWCo expects to meet customer

demands based on shareholders full entitlement. In addition, a Drought Risk Assessment was performed to analyze anticipated supply and demand for the next five years (2021-2025). The Drought Risk Assessment analysis determines that SAWCo's supplies are able to reliably meet customer demands.

Chapter 7 – Water Shortage Contingency Plan

The Water Shortage Contingency Plan (WSCP) provides guidance on declaring a water shortage stage and how to mitigate supply deficits. The WSCP defines four stages of water shortage and outlines the actions that will be required of customers during each stage. The complete WSCP is available in Appendix H.

Chapter 8 – Demand Management Measures

This chapter summarizes the various demand management measures used to implement water conservation throughout SAWCo. To participate in any of the rebate programs, interested customers should contact SAWCo directly.

Chapter 9 – Plan Adoption, Submittal, and Implementation

This chapter summarizes the various requirements to adopt and submit a UWMP and WSCP. Details on public hearing dates, notification letters to local agencies, and how to submit or amend a plan are discussed.

1.3 UWMP Relation to Other Efforts

The UWMP characterizes water use, estimates future demands and supply sources, and evaluates supply reliability for normal, single-dry, and consecutive dry years. The UWMP Act also requires reevaluation of SAWCo's Water Shortage Contingency Plan (WSCP). Details on the WSCP are provided in Chapter 7.

Documents that were leveraged in preparation of this UWMP and how they overlap with the primary topics included in the UWMP are shown in Figure 1-1.

			PLAN TOPICS				
							
PLANNING DOCUMENT	PREPARED BY	DOCUMENT STATUS	SUPPLIES / RELIABILITY	DEMANDS / WATER USE EFFICIENCY	INFRASTRUCTURE	RISK & MITIGATION	EMERGENCY RESPONSE
Water Master Plan	WSC for SAWCo	■■■□□ Under development	✓	✓	✓		
AWIA Risk and Resilience Assessment and Emergency Response Plan	WSC for SAWCo	■■■■■ Complete	✓		✓	✓	✓
2017 Water Master Plan	Civiltec Engineering, Inc for SAWCo	■■■■■ Complete	✓	✓	✓		
2017 Water Rate and Fee Study	Carollo Engineers for SAWCo	■■■■■ Complete		✓			
2015 Urban Water Management Plan	Civiltec Engineering, Inc for SAWCo	■■■■■ Complete	✓	✓		✓	✓

Figure 1-1. UWMP Relation to Other Planning Efforts.

2 2020 URBAN WATER MANAGEMENT PLAN

Plan Preparation

This plan was prepared using guidance from the Department of Water Resources' (DWR) Urban Water Management Plan Guidebook 2020 (2020 UWMP Guidebook). This chapter provides details regarding SAWCo's UWMP preparation and the coordination and outreach efforts conducted.

A DWR review sheet checklist is provided in Appendix A.

2.1 Basis for Preparing a Plan

As mentioned in Chapter 1, the Water Code requires Suppliers with 3,000 or more service connections or water deliveries in excess of 3,000 AFY to prepare an UWMP every five years. Details pertaining to SAWCo's water system, such as public water system number, 2020 number of connections and volume of water supplied are provided in Table 2-1. In 2020, SAWCo delivered 16,345 AFY of water to nearly 1,210 service connections and in a wholesale capacity; therefore, SAWCo is required to prepare an UWMP. SAWCo included all 2020 data in the development of this UWMP.

IN THIS SECTION

- Basis for Preparing a Plan
- Coordination and Outreach

Table 2-1. DWR 2-2 Plan Identification

TYPE OF PLAN	MEMBER OF RUWMP	MEMBER OF REGIONAL ALLIANCE	NAME OF RUWMP OR REGIONAL ALLIANCE
Individual UWMP	No	No	

Table 2-2. DWR 2-3 Agency Identification

TYPE OF SUPPLIER	YEAR TYPE	FIRST DAY OF YEAR		UNIT TYPE
Wholesaler	Calendar Years	DD	MM	Acre Feet (AF)
		01	01	

2.2 Coordination and Outreach

The UWMP Act requires a water purveyor to coordinate the preparation of its UWMP with other appropriate agencies in and around its service area. This includes other water suppliers that share a common source, water management agencies, and relevant public agencies. All relevant entities, including the County of San Bernardino, were sent 60-day notices of preparation and consideration for adoption at a public hearing prior to the adoption of the 2020 UWMP. Copies of the letters and other correspondence are provided in Appendix B. Public hearing notices are also provided in Appendix B.

2.2.1 Wholesale and Retail Coordination

SAWCo provides water based on a fixed number of shares. Several local water suppliers own shares in SAWCo and are listed in Table 2-3.

Table 2-3. DWR 2-4W Water Supplier Information Exchange

Supplier has informed 10 or fewer other water suppliers of water supplies available in accordance with Water Code Section 10631. Complete the table below.

WHOLESALE WATER SUPPLIER NAME
Cucamonga Valley Water District
Monte Vista Water District
City of Ontario
City of Upland

2.2.2 Coordination with Other Agencies and the Community

CWC Section 10621 requires that suppliers notify cities and counties to which they serve water that the UWMP and WSCP are being updated. Notices should be provided at least 60 days prior to a public hearing. To fulfill this requirement, SAWCo notified local and regional agencies of preparation of its 2020 UWMP and WSCP, inviting these agencies to submit any comments. SAWCo provided notices to the agencies listed in Table 2-4.

Table 2-4. Agency Coordination.

AGENCY/ORGANIZATION	WAS NOTIFIED OF PLAN AVAILABILITY ¹	WAS SENT A NOTICE OF INTENTION TO ADOPT 60 DAYS PRIOR TO PUBLIC HEARING
Water Suppliers		
Cucamonga Valley Water District	X	X
Monte Vista Water District	X	X
Public Agencies		
City of Upland	X	X
City of Ontario	X	X
City of Pomona	X	X
County of San Bernardino	X	X
Others		
Chino Basin Watermaster	X	X

¹Was notified of availability of Draft UWMP and directed to an electronic copy of the draft plan on SAWCo's website.

3 2020 URBAN WATER MANAGEMENT PLAN

System Description

This section will describe SAWCo’s service area, climate, population, demographics, and land uses.

SAWCo is governed by a seven-person Board of Directors elected to four-year terms. Daily operations are overseen by the General Manager with support by the Assistant General Manager and Water Utility Superintendent. SAWCo employs approximately 10 staff members to manage operational and administrative services.

SAWCo is governed by bylaws. The purpose of SAWCo is to develop, distribute, supply, and deliver water to its shareholders for irrigation, domestic, and all other useful purposes, in proportion to the number of shares of stock held by them respectively, at actual cost, and is not organized for the private gain of any person (San Antonio Water Company).

SAWCo contains a fixed number of shares at 6,389 shares. In 2020, 6,178 shares were actively taking water. Water is provided based on entitlement and the number of shares a customer holds. Shares may be divided or sold. In 2020, the total yearly entitlement was 13,000 AF; the yearly entitlement per share was equal to 2.03 AF/share.

IN THIS SECTION

- Service Area
- Climate
- Population and Demographics
- Land Uses

3.1 Service Area

SAWCo's bylaws specify the service area is made up of a Basic Area and an Extended Area. The Basic Area generally coincides with the incorporated community of San Antonio Heights located north of the City of Upland in San Bernardino County, as shown in Figure 3-1. The Basic Area is bounded to the south by the City of Upland, to the north by the San Bernardino Mountains, to the west by the Los Angeles County Line and to the east by Cucamonga Creek. SAWCo provides retail service to all end users who reside in the Basic Area.

The Extended Area is identified as all lands not included in the Basic Area. Customers within the Extended Area are considered wholesale shareholders. There are however a limited number of retail customers in the Extended Area including the Upland Hills Golf course, the Red Hill Golf Course, Holliday Rock Company, and several grove irrigators.

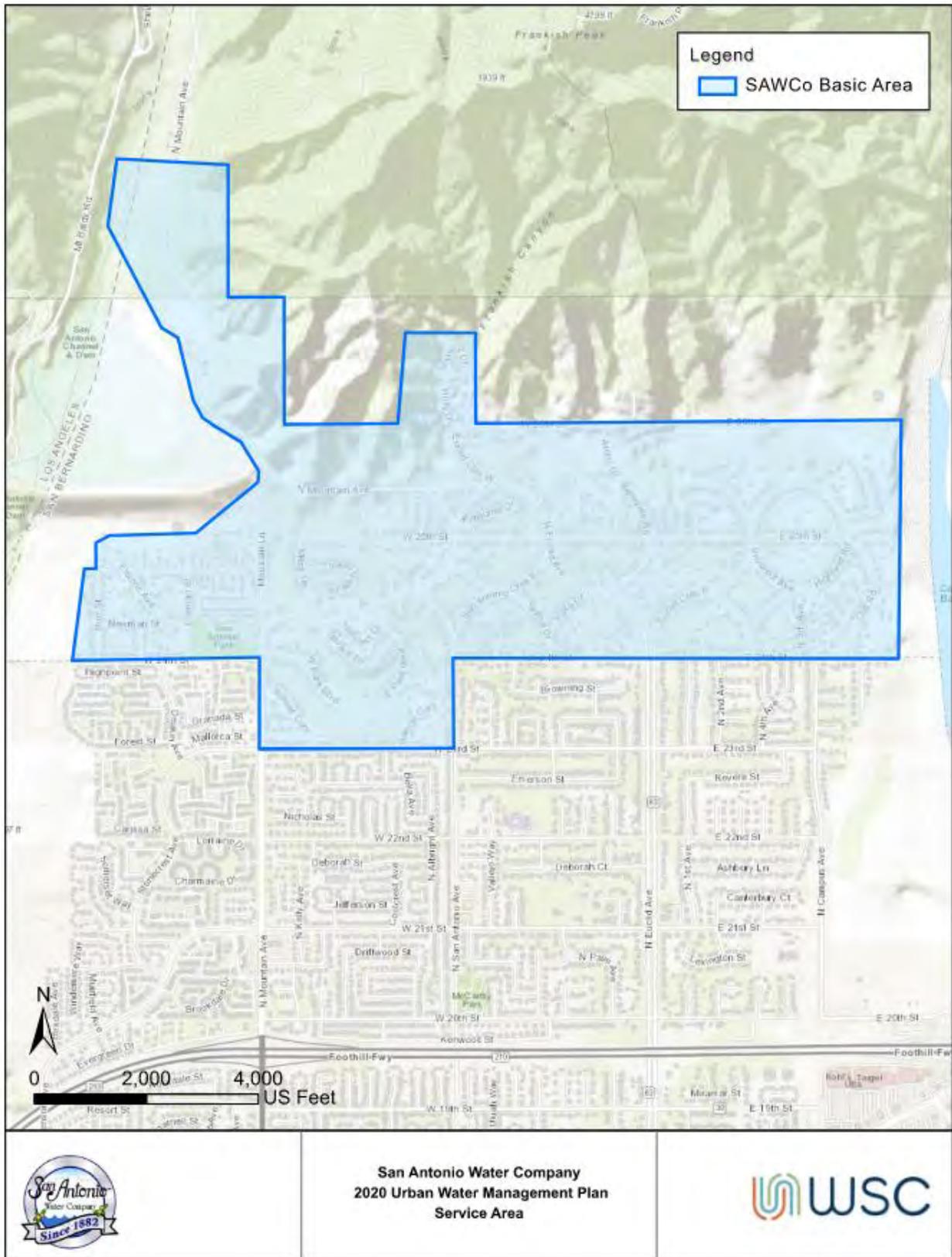


Figure 3-1. Service Area

3.2 Service Area Climate

Table 3-1 presents average climate data for the service area, including temperature, rainfall, and reference evapotranspiration (ET_o) from the California Irrigation Management Information System (CIMIS). CIMIS data was used as it provided the most recent data pertaining to temperature, rainfall, and ET_o. As shown in

Table 3-1, the warmest month of the year is typically August with an average temperature of 82.4 degrees Fahrenheit (°F), while the coldest month of the year is December with an average temperature of 58.5°F.

The annual average precipitation within SAWCo's service area is about 15.6 inches. As shown in Table 3-1, the majority of rainfall occurs in the months of October through March. December is typically the wettest month with an average rainfall of approximately 3.9 inches.

Table 3-1. Average Climate ¹

MONTH	AVERAGE TEMPERATURE (°F)	AVERAGE RAINFALL (INCH)	AVERAGE STANDARD ET _o (INCH)
January	59.9	2.8	2.2
February	60.5	2.1	2.8
March	63.8	1.9	4.3
April	67.0	0.9	5.4
May	69.8	0.4	5.8
June	75.8	0.1	6.6
July	81.2	0.2	7.5
August	82.4	0.0	7.3
September	80.1	0.5	5.6
October	73.5	1.3	4.0
November	65.0	1.6	2.7
December	58.5	3.9	2.0
ANNUAL AVERAGE	69.8	15.6 ²	4.7

¹ Data based on CIMIS weather station 78 Pomona; <https://cimis.water.ca.gov/>. Averages calculated from 2010-2020 data.

² Annual total rainfall.

3.3 Service Area Population and Demographics

3.3.1 Service Area Population

SAWCo’s Basic Service Area closely follows the boundaries of the census designated place of San Antonio Heights, which had a population of 3,092 in 2017, down from 3,371 in 2010 per the US Census (Datausa.io, 2017). To identify the population for 2020, the DWR population tool was used. Using a persons per connection factor of 2.73, it was estimated that the population within the Basic Area is 3,303 people.

San Antonio Heights is primarily residential and nearly built out. SAWCo has identified seven parcels that could potentially be developed and require water service. For this UWMP, it was assumed development would occur between 2025 and 2030. Therefore, future population was determined to increase to 3,322 people and remain constant throughout the planning horizon.

$$Future\ population = 2020\ population + 2.73 \frac{persons}{connection} * 7\ future\ connections = 3,322\ people$$

SAWCo also provides water for irrigation, industrial, agricultural, and wholesale in the Extended Area. Land use and planning in the extended area is under the jurisdiction of numerous cities and San Bernardino County and is addressed in their respective UWMPs.

Table 3-2. DWR 3-1W Current and Projected Population

POPULATION SERVED	2020	2025	2030	2035	2040	2045
Basic Area - San Antonio Heights	3,303	3,303	3,322	3,322	3,322	3,322

3.3.2 Other Social, Economic, and Demographic Factors

Based on 2015-2019 data, the United States Census Bureau (Census) estimates that households within the San Antonio Heights are composed of 2.69 people per household and approximately 64% of households are composed of married-couples with families. The median age of a resident within the San Antonio Heights is approximately 48 years old. Based on 2015-2019 Census data, 95% of people 25 years or older had at least graduated from high school and 42% obtained a bachelor’s degree or higher. It was estimated that 5% of people did not complete high school.

Throughout the San Antonio Heights, approximately 58% of the working population (people ages 16 and over) were employed. Approximately 75% held a private wage or salary position, and 16% were employed by the federal, state, or local government. Educational services, health care and social assistance (30%) is the most common industry that San Antonio Heights residents work in, followed by a retail trade (14%). The median household income was \$91,897, while the median earnings for a full-time, year-round worker was \$78,071 (United States Census Bureau, n.d.).

It was estimated that 5.2% of people within the San Antonio Heights were in poverty. 1.8% of households participated in government programs, such as the Supplemental Nutrition Assistance Program (SNAP). Of the households that received SNAP, 100% had children under the age of 18 within the household (United States Census Bureau, n.d.).

Census data reported that of the people identifying as one race alone, 79.7% were White. Approximately 4.5% identified as two or more races. Of the total population, an estimated 60.3% identified as White non-Hispanic and 27.8% as Hispanic. It was estimated that 18.9% of people at least

5 years or older spoke a language other than English at home. In addition to English, Asian and Pacific Islander languages were the most common languages spoken by San Antonio Heights residents. 7.4% of people stated that they did not speak English “very well” (United States Census Bureau, n.d.).

3.4 Land Uses within Service Area

As mentioned, SAWCo provides potable water service to the Basic Area, which incorporates the community of San Antonio Heights. This area consists of residential users only. There are only seven parcels currently identified as undeveloped. If they are developed, single-family residences will be established. Therefore, both current and future land uses within SAWCo’s Basic Area is residential only.

4

2020 URBAN WATER MANAGEMENT PLAN

Water Use Characterization

SAWCo provides potable and non-potable water to customers within its service area.

SAWCo provides potable water to residents within the San Antonio Heights and on occasion, to the City of Upland. SAWCo provides non-potable water for irrigation to various local irrigators and other agencies, including the Cities of Upland and Ontario, Monte Vista Water District, and Cucamonga Valley Water District. Other large irrigation accounts include the Holiday Rock Company and Red Hill Golf Course and Homeowners Association.

SAWCo's bylaws outline the various water services provided, which include domestic, municipal, and miscellaneous uses, defined below (San Antonio Water Company):

Domestic: water treated by SAWCo and directly delivered to shareholders through SAWCo's distribution system.

Municipal: untreated water and delivered to shareholders who in turn treat the water for delivery of domestic, commercial, and other users through their delivery systems.

Miscellaneous: untreated water directly delivered to shareholders through SAWCo's distribution system for a variety of legal permissible uses, including farm irrigation, golf course watering, and rock company operations.

IN THIS SECTION

- Non-Potable vs. Potable Water Use
- Water Use by Sector

4.1 Non-Potable Versus Potable Water Use

As mentioned, SAWCo serves both potable and non-potable water. Potable water is provided to residents within the San Antonio Heights and to the City of Upland. Non-potable water used for irrigation is also provided to several local irrigators and other nearby agencies, as mentioned above. Based on data for 2016 through 2020, SAWCo’s average non-potable deliveries account for 84% of the total water provided by SAWCo.

4.2 Past, Current, and Projected Water Use by Sector

SAWCo has provided potable and non-potable water to its customers and will continue to do so in the future. Past deliveries are shown in Figure 4-1.

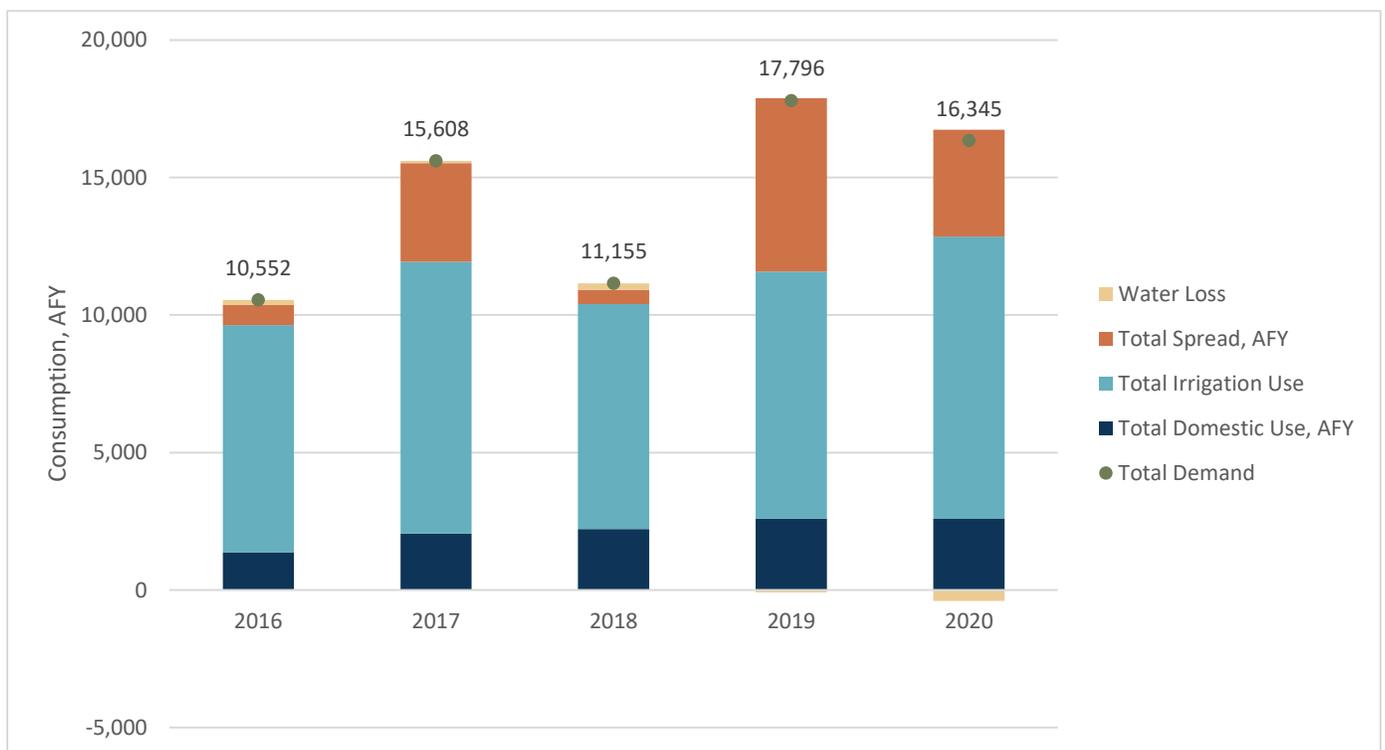


Figure 4-1. Water Demand for 2016-2020, AFY

4.2.1 Distribution System Water Losses

Over the last few years, SAWCo has focused on mitigating water losses. Based on historical data, it was clear that SAWCo experienced meter inaccuracies throughout the system. As shown above in Figure 4-1, SAWCo experienced negative water losses, meaning SAWCo sold more water than produced. As a result, the volume of 2020 actual water use shown in Table 4-1 differs from the total supply shown in Table 5-6.

Investigation helped SAWCo identify a substantial area of water losses, located at a flow meter at the Basin 6 settling ponds. In early 2021, SAWCo fixed this meter, and since then, water losses have

remained consistent. Based on data for January through April 2021, water losses have been recorded as 0.9% within the domestic system and 1% within the irrigation system.

In addition, SAWCo has replaced customer meters with Automated Meter Reading (AMR) to improve data collection and response.

4.2.2 Current Water Use

In 2020, SAWCo provided 16,746 AF of water to its customers or spread into groundwater storage. The City of Upland’s irrigation system consumed 50% of SAWCo’s total water produced. The second largest water use was for spreading, accounting for 23% of the total water produced. Potable deliveries for SAWCo’s domestic system within the San Antonio Heights accounted for 8%. A breakdown of water used in 2020 is provided in Figure 4-2.

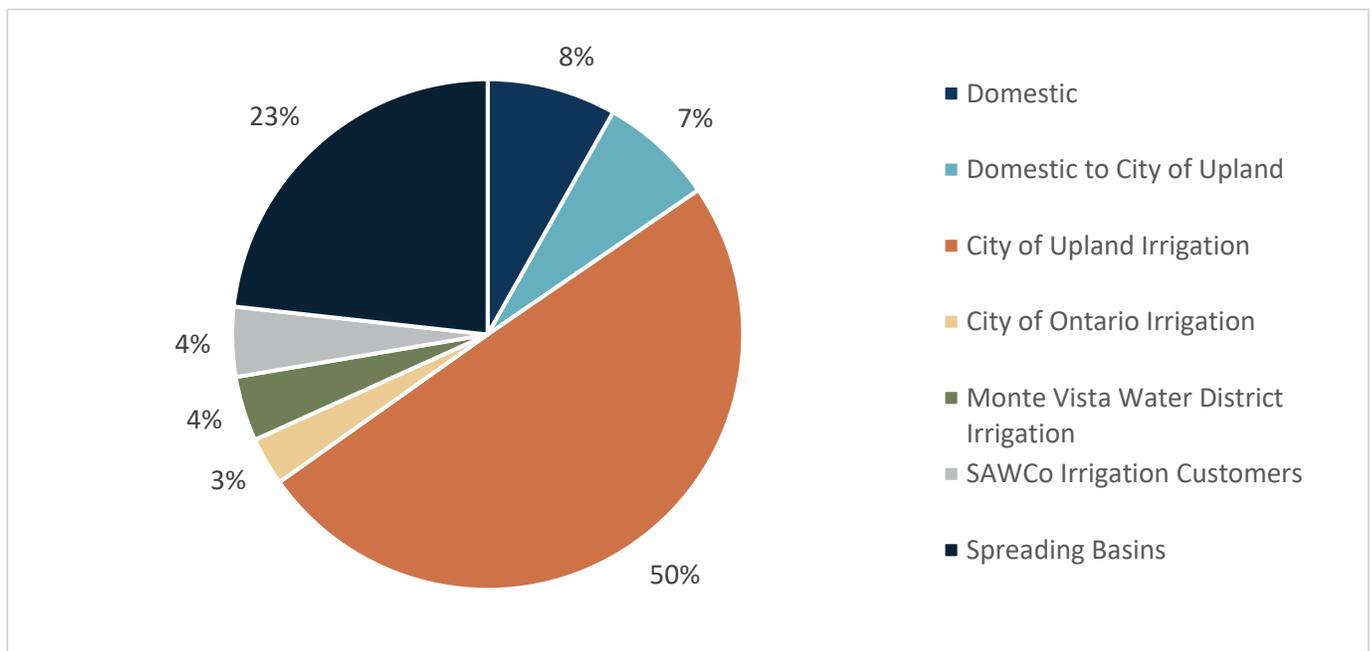


Figure 4-2. 2020 Water Use

Table 4-1. DWR 4-1W Actual Demands for Water, AFY

USE TYPE	ADDITIONAL DESCRIPTION	LEVEL OF TREATMENT WHEN DELIVERED	2020 VOLUME
Single Family	SAWCo Domestic Customers	Drinking Water	1,371
Sales/Transfers/Exchanges to Other Agencies	City of Upland	Drinking Water	1,213
Sales/Transfers/Exchanges to Other Agencies	City of Upland	Raw Water	8,332
Sales/Transfers/Exchanges to Other Agencies	Monte Vista Water District	Raw Water	687
Sales/Transfers/Exchanges to Other Agencies	City of Ontario	Raw Water	511
Landscape	Minor Irrigators	Raw Water	740
Groundwater Recharge	Spreading Basins	Raw Water	3,893
-		TOTAL:	16,747

4.2.3 Projected Water Use

SAWCo's system is very close to buildout and therefore, demands are expected to increase minimally. The majority of the San Antonio Heights area is already developed and any new development, should it occur, is expected along Holly Drive. These developments are anticipated to be single family residential and require potable service only.

Future demands were estimated as part of SAWCo's 2020 Master Plan, using a factor calculated from 2019 consumption and parcel acreage. This factor was applied to areas identified as possible development within the 2017 Water Master Plan and added to current demand to determine the total future demand for SAWCo's potable system. Areas for possible development are identified in Figure 4-3 below and corresponding demand for each parcel is summarized in Table 4-2.

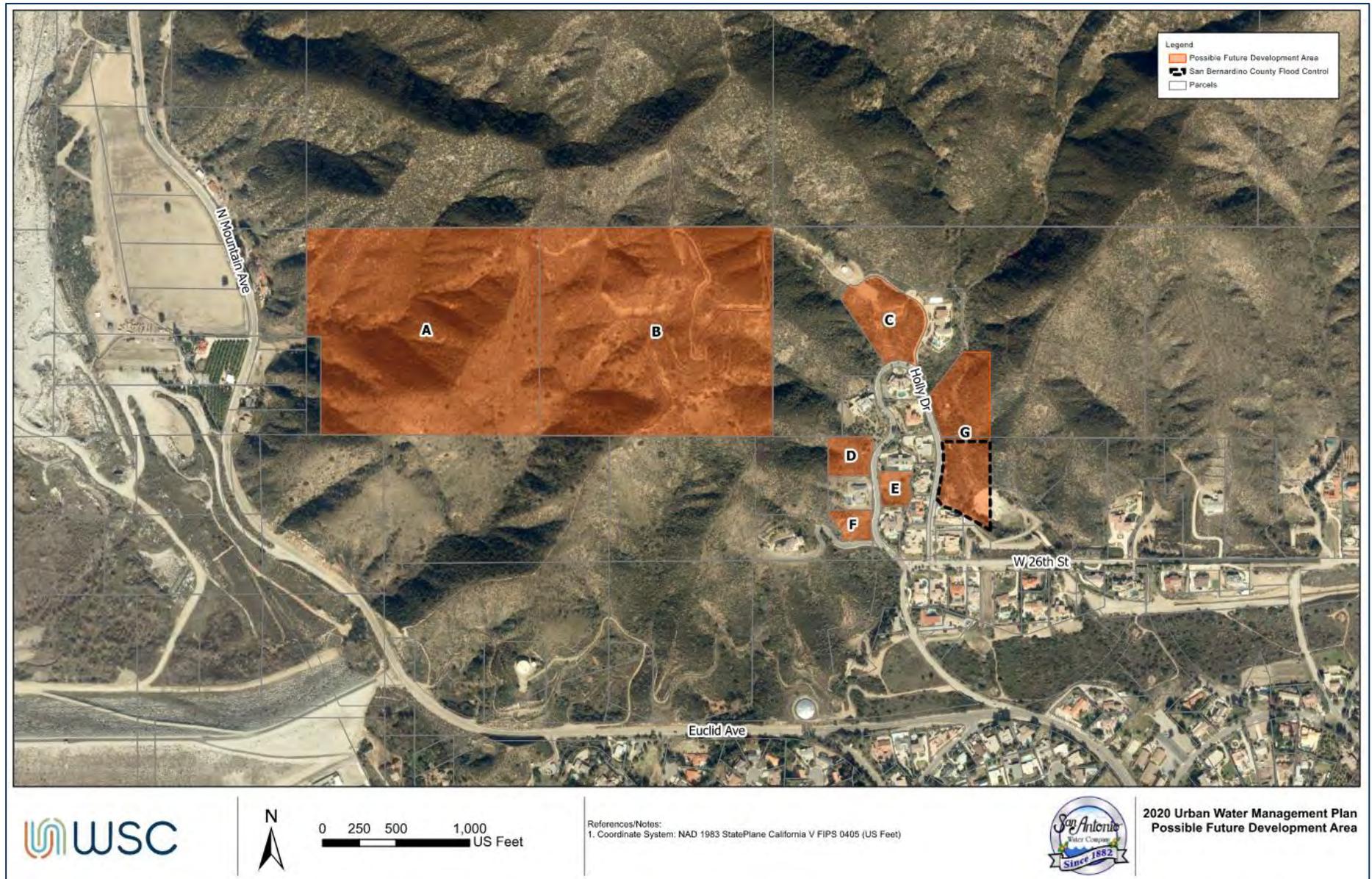


Figure 4-3. Areas Identified as Possible for Future Development

Table 4-2. Future Potable Demand from Future Development

AREA	ACRES	WATER DEMAND FACTOR (GPM/ACRE)	WATER DEMAND (GPM)	WATER DEMAND (AFY)
A ¹	33.8	1.036	17.53	10.9
B ¹	35.2	1.036	18.23	11.3
C	3.4	1.036	3.54	2.2
D	1.2	1.036	1.28	0.8
E	0.8	1.036	0.81	0.5
F	0.8	1.036	0.82	0.5
G ²	5.9	1.036	6.09	3.8
ADDITIONAL FUTURE DEMAND, AFY				29.9

Notes:

¹If developed, parcel expected to be half developed. Half of total parcel acreage used to determine future demand.

²Half of area identified as future development is highly unlikely to be developed. Southern portion of Area G owned by San Bernardino County Flood Control. Dashed lines in Figure 4-3 delineate area owned by San Bernardino County Flood Control.

4.2.4 Characteristic Five-Year Water Use

As outlined in SAWCo’s Bylaws, SAWCo provides water to its shareholders and expects its customers to maximize their shares. Therefore, SAWCo projects future water uses based on total shares and entitlement for each customer.

Table 4-3. DWR 4-2W Projected Demands for Water

USE TYPE	ADDITIONAL DESCRIPTION	PROJECTED WATER USE				
		2025	2030	2035	2040	2045
Single Family	SAWCo Domestic Customers	1,270	1,270	1,270	1,270	1,270
Sales/Transfers/Exchanges to Other Agencies	City of Upland	9,186	9,186	9,186	9,186	9,186
Sales/Transfers/Exchanges to Other Agencies	Monte Vista Water District	671	671	671	671	671
Sales/Transfers/Exchanges to Other Agencies	Cucamonga Valley Water District	8	8	8	8	8
Sales/Transfers/Exchanges to Other Agencies	City of Ontario	601	601	601	601	601
Industrial	Holiday Rock Company	269	269	269	269	269
Landscape	Red Hills Golf Course	444	444	444	444	444
Other	Red Hill HOA	20	20	20	20	20
Other	Minor Irrigators	102	102	102	102	102
Groundwater Recharge	Spreading Basins	2,000	2,000	2,000	2,000	2,000
-	TOTAL:	14,571	14,571	14,571	14,571	14,571

Table 4-4. DWR 4-3W Total Gross Water Use

	2020	2025	2030	2035	2040	2045
Potable and Raw Water From Table 4-1W and 4-2W	16,747	14,571	14,571	14,571	14,571	14,571
Recycled Water Demand* From Table 6-4W	-	-	-	-	-	-
Total Water Demand:	16,747	14,571	14,571	14,571	14,571	14,571

4.3 Climate Change Considerations

It is anticipated that SAWCo’s shareholders will continue to use water based on their share’s entitlement. Demands may decrease as the result of water supply shortage and drought messaging, as discussed in SAWCo’s Water Shortage Contingency Plan.

5 2020 URBAN WATER MANAGEMENT PLAN

Water Supply Characterization

This section describes the existing and projected supplies for SAWCo. SAWCo currently receives all its water supply from local sources including the San Antonio Creek, groundwater from the San Antonio Tunnel, and three groundwater basins: Chino Basin, Cucamonga Basin, and Six Basins.

Surface water from San Antonio Creek are pre-1914 water rights, and annual water availability is influenced by rainfall. The San Antonio Tunnel is a deep rock tunnel 100 feet below ground surface that collects naturally percolated groundwater. The three groundwater basins are each adjudicated, and SAWCo's water rights are defined by the various legal Judgements in place to protect and manage each basin. SAWCo also participates in groundwater recharge operations that enhance groundwater supply.

SAWCo provides water from the San Antonio Tunnel (Tunnel), the Chino Basin, and the Cucamonga Basin to its domestic customers. During times of large flows from the Tunnel, potable water overflows into the irrigation system through the Forebay Pump Station. This provides SAWCo with the opportunity to avoid large water losses within the domestic system and decrease groundwater extraction for the irrigation system.

IN THIS SECTION

- Purchased Water
- Groundwater
- Wastewater and Recycled Water
- Future Projects
- Summary of Existing and Planned Supplies
- Energy Intensity

5.1 Water Supply Analysis Overview

SAWCo currently relies on local supply sources to meet its shareholder needs. Supplies include local surface water from the San Antonio Creek and groundwater from several basins. SAWCo expects to continue using these local sources throughout the future.

Surface Water: SAWCo may obtain up to 13,864 AFY of surface water from the San Antonio Creek. However, the actual volume received depends on minimum stream flowrates and can vary significantly based on rainfall. Water from the San Antonio Creek is used to meet irrigation demands and also conveyed to the City of Upland's water treatment plant for treatment and subsequent distribution by the City of Upland.

Tunnel Water: SAWCo may obtain all the volume of water in the San Antonio Tunnel (Tunnel). The Tunnel is supplied by naturally percolated groundwater, which can vary year to year based on rainfall and snowpack. SAWCo may also divert water from the San Antonio Creek spreading grounds north of the San Antonio Tunnel, where it is percolates into the tunnel and is conveyed to SAWCo's Forebay Tank and can be used in either the domestic or irrigation system.

Groundwater: SAWCo has groundwater rights in the Chino, Cucamonga, and Six Basins, as summarized in Table 5-1 below.

Table 5-1. SAWCo's Groundwater Rights

GROUNDWATER BASIN	SAWCO RIGHTS, AFY	NOTES
Chino Basin	1,234	
Cucamonga Basin	4,500 – 8,500	SAWCo may obtain up to 6,500 AFY of groundwater from the Cucamonga Basin, provided 2,000 AF is spread each year. If SAWCo spreads less than 2,000 AFY, SAWCo may only extract 4,500 AFY. If SAWCo spreads an excess of 2,000 AFY, SAWCo may extract up to 95% of the total spreading surplus amount, but not more than 8,500 AFY.
Six Basins	932	

5.2 UWMP Water Supply Characterization

Details on SAWCo's various supply sources are described in this section.

5.2.1 Purchased or Imported Water

SAWCo does not currently purchase or import water.

5.2.2 Groundwater

SAWCo obtains groundwater from the Chino, Cucamonga, and Six Basins groundwater basins. Groundwater extracted from the Chino Basin is used for potable demands only. Groundwater from the Cucamonga Basin and Six Basins is used within SAWCo's irrigation system. Figure 5-1 shows the various groundwater basins SAWCo utilizes and their boundaries.

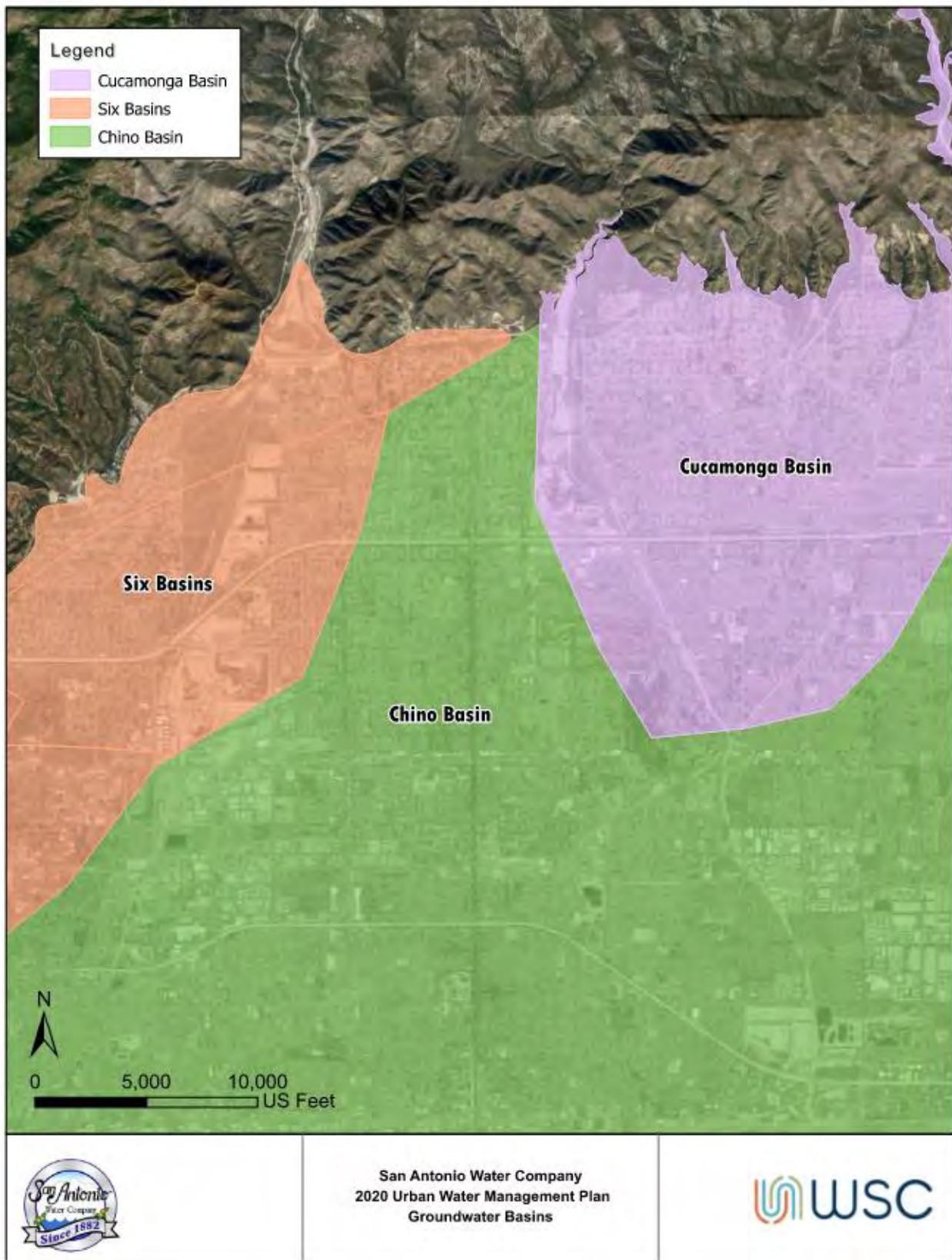


Figure 5-1. Groundwater Basins

5.2.2.1 Chino Basin

The Chino Basin is a subbasin to the Upper Santa Ana Valley Groundwater Basin and is designated by DWR as Basin 8-002.01. The Chino Basin underlies southeast Los Angeles County, northwest Riverside County, and southwest San Bernardino County. It is bound to the northwest by the San Jose fault, to the north by the Cucamonga fault and impermeable rocks that make up the San Gabriel Mountains. To the east, the Chino Basin is bounded by the Rialto-Colton fault, to the southeast by the Jurupa, Pedley, La Sierra Hills as well as the Santa Ana River. It is bounded to the southwest by the Chino and Puente Hills (California Department of Water Resources, 2016). The Chino Basin is considered a very-low-priority basin under the Sustainable Groundwater Management Act (SGMA).

The Chino Basin is governed by the Chino Basin Watermaster. The Chino Basin Watermaster serves to enforce the provisions of the 1978 Judgment in Chino Basin Municipal Water District vs. City of Chino et al (Judgment) and any other orders from the Court, as well as develops an Optimum Basin Management Program. Under the 1978 Judgment, the Chino Basin's safe yield was established as 140,000 AFY. The safe yield is defined in the Chino Basin Judgment as "the long-term average annual quantity of groundwater (excluding replenishment of stored water but including return flow to the Basin from use of replenishment or stored water) which can be produced from the Chino Basin under conditions of a particular year without causing an undesirable result" (Chino Basin Municipal Water District v. City of Chino, et al., 1978). The 1978 Chino Basin Judgment's allocation of the safe yield of the Chino Basin includes three separate Pools: The Overlying Agricultural Pool, Overlying Non-Agricultural Pool, and the Appropriative Pool. SAWCo is a member of the Appropriative Pool and has an appropriative right of 2.748 percent of the total appropriative rights in the Chino Basin. Under the 1978 Judgment, SAWCo was entitled to 1,506.888 AF. A copy of the 1978 Judgment is provided in Appendix D.

In 2020, the Safe Yield was recalculated to better manage the Basin and ensure sustainability. As established in the 2000 Optimum Basin Management Program (OBMP), the safe yield of the Chino Basin must be recalculated every 10 years, commencing in 2011. The Watermaster evaluated the safe yield recalculation using a groundwater flow model to redetermine the net recharge into the Chino Basin and identify any factors that could create undesirable results. The resulting Safe Yield was estimated at 135,000 AF (Chino Basin Watermaster, 2020). As a result, starting on June 30, 2020, SAWCo is entitled to 1,232.038 AF.

The Chino Basin Watermaster has also developed an updated 2020 OBMP that outlines how the Chino Basin should be managed over the next 20 years. The 2020 OBMP, provided as Appendix E, also includes the storage management plan that encompasses the recalculated safe yield.

The Chino Basin Watermaster also reallocates the unused portion of the Chino Basin safe yield from to the Overlying Agricultural Pool to the Appropriative Pool members as a supplement to the Appropriative Pool share of OSY rights in any year. These transfers are permanent if agricultural land has been converted to non-agricultural use, or temporary if agricultural pool extractions are less than their share of the safe yield. As agricultural production declines within the Chino Basin, the reallocation of water to the Appropriative Pool is expected to increase. Appropriators, like SAWCo, who are party to the Chino Basin Judgment are authorized to continue to produce groundwater while exceeding their water rights. Such extractions result in assessments by the Chino Basin Watermaster to pay for water to replenish the basin, through imported surface water recharge. Water to replenish the Chino Basin is purchased from Metropolitan Water District of Southern California (Metropolitan) by Chino Basin Watermaster in coordination with the Inland Empire Utilities Agency (IEUA) or from Appropriation Pool participants (Civiltec Engineering Inc. for San Antonio Water Company, June 2016).

5.2.2.2 Cucamonga Basin

The Cucamonga Basin is a subbasin to the Upper Santa Ana Valley Groundwater Basin and is designated by DWR as Basin 8-002.02. The Cucamonga Basin is bounded to the north by the San Gabriel Mountains and bounded by the Red Hill fault to the west, east and south (California Department of Water Resources, 2016). The Cucamonga Basin is considered a very-low-priority basin under the Sustainable Groundwater Management Act (SGMA).

In 1958, the Cucamonga Judgement was established and outlined water rights for individual groundwater producers, how much can be exported to non-overlying areas, and specific requirements for spreading (San Antonio Water Company vs Others, 1958). The Cucamonga Judgment stipulates production for all stakeholders of 22,721 AFY, with SAWCo's water production right of 6,500 AFY, provided SAWCo spreads 2,000 AFY of water from the San Antonio Canyon. If the annual spreading is less than 2,000 AFY, SAWCo's water rights may be reduced to a minimum amount of 4,500 AFY. However, if the spreading exceeds 2,000 AFY, SAWCo can credit 95% of the excess up to a maximum of 8,500 AFY production. From 2010-2019, SAWCo spread an average of 1,500 AFY; however, spreading between 2012 through 2018 were less than 2,000 AFY. As a result, SAWCo's 2020 production right from the Cucamonga Basin was limited to approximately 6,000 AF (4,500 AF plus the 10-year average spread). A copy of the Cucamonga Judgement is provided in Appendix F.

5.2.2.3 Six Basins

The Six Basins are a part of the Main San Gabriel Basin, designated by DWR as Basin 4-013 and as a very low priority basin. The Six Basins area consists of six interconnected groundwater basins: Canyon, Upper Claremont Heights, Lower Claremont Heights, Live Oak, Ganesha, and the Pomona Basins. The Six Basins area is bounded by the San Jose Hills to the south, the Chino Basin to the east, the San Gabriel Mountains to the north, and the Main San Gabriel Basin to the west.

The Six Basins are further broken down into the Four Basins and Two Basins. The Four Basins include the Canyon, Upper Claremont Heights, Lower Claremont Heights and Pomona Basins. The Two Basins refer to the Live Oak and Ganesha Basins. Water within the Two Basins is used solely by the City of La Verne (Jericho Systems, Inc. and Tom Dodson & Associates for Three Valley Municipal Water District, May 2021). SAWCo is entitled up to 7.166 percent of the OSY of the Four Basins. For 2020, SAWCo was entitled to 932.10 AFY with 2,643.30 AFY available from storage.

The Six Basins is managed by the Six Basins Watermaster. The Six Basins were adjudicated in 1998 through the stipulated judgement "Southern California Water Company vs. City of La Verne et al." known as the Six Basins Judgement, provided in Appendix G. The Six Basins Judgement specified a safe yield of 19,300 AFY and the Six Basins Watermaster establishes operating safe yields (OSY) annually. In additions, water users within the Six Basins may obtain "carryover rights" for unused production (Southern California Water Company vs. Others, 1998).

The Six Basins Watermaster is currently developing a Six Basins Strategic Plan (Strategic Plan). The Strategic Plan's Draft Program Environmental Impact Report (PEIR) is currently in a public review period. This Strategic Plan will become the conjunctive water management program utilized by the Six Basins Watermaster to implement water supply and conservation projects in coordination with others and to optimize conjunctive water management activities within the Six Basins (Jericho Systems, Inc. and Tom Dodson & Associates for Three Valley Municipal Water District, May 2021). Specifically, the Strategic Plan aims to:

- Enhance water supplies
- Enhance basin management
- Protect and enhance water quality
- Equitably finance the Strategic Plan implementation

5.2.2.4 Past Five Years

Groundwater extractions by basin over the past five years are provided in Table 5-2.

Table 5-2. DWR 6-1W Groundwater Volume Pumped

All or part of the groundwater described below is desalinated.

GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020
Alluvial Basin	Chino Basin	897	393	487	477	738
Alluvial Basin	Cucamonga Basin	6,281	5,761	6,407	5,340	4,945
Alluvial Basin	Six Basins	757	884	969	1,180	1,252
-	TOTAL:	7,935	7,038	7,863	6,997	6,935

Table 5-3. DWR 6-1W Groundwater Volume Pumped: Potable

All or part of the groundwater described below is desalinated.

GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020
Alluvial Basin	Chino Basin	897	393	487	477	738
Alluvial Basin	Cucamonga Basin	116	42	1	-	13
-	TOTAL:	1,013	435	488	477	751

Table 5-4. DWR 6-1W Groundwater Volume Pumped: Non-Potable

All or part of the groundwater described below is desalinated.

GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020
Alluvial Basin	Cucamonga Basin	6,165	5,720	6,406	5,340	4,933
Alluvial Basin	Six Basins	757	884	969	1,180	1,252
-	TOTAL:	6,922	6,604	7,375	6,520	6,185

5.2.2.5 San Antonio Tunnel

SAWCo is entitled to all water supplied through the San Antonio Tunnel (Tunnel). The Tunnel is a deep rock tunnel located 100 feet below ground surface and is supported by redwood beams and solid rock. Groundwater naturally percolates into the Tunnel and can vary year to year based on rainfall and snowpack. SAWCo may also divert water from the San Antonio Creek spreading grounds north of the Tunnel, where it is percolates into the tunnel and used primarily as a potable supply. The Tunnel deliveries this supply at SAWCo's Forebay station. In times of high Tunnel flows and low domestic demand, Tunnel water overflows into the irrigation system to avoid water losses. The average supply from the Tunnel since 1999 is 2,443 AFY and ranged from only 727 AF in 2015 to 3,682 AF in 1996.

5.2.3 Surface Water

SAWCo has rights for up to 13,864 AFY of surface water from the San Antonio Creek. However, the actual volume received depends on minimum stream flowrates and can vary significantly based on rainfall. SAWCo's supply from the San Antonio Creek since 1999 ranged from a low of 1,181 AF in

2018 to a high of 9,072 AF in 2005. The average volume from San Antonio Creek during years with average rainfall years is 4,042 AFY.

5.2.4 Stormwater

SAWCo's water sources are limited to groundwater from the basins that underlie SAWCo's service area and local surface water runoff.

5.2.5 Wastewater and Recycled Water

SAWCo does not own or operate wastewater or recycled water facilities and therefore does not have any current nor planned recycled water use. SAWCo encourages the use of recycled water as a regional resource through its affiliation with the Inland Empire Utilities Agency (IEUA). In the event that a SAWCo customer were to acquire recycled water as a supply, the customer may choose to lease, sell, or inactivate their shares within SAWCo.

5.2.5.1 Wastewater Collection, Treatment, and Disposal

SAWCo's domestic customers utilize septic tanks to dispose of their wastewater.

5.2.6 Desalinated Water Opportunities

SAWCo does not currently nor plan to use desalinated water as a supply source.

5.2.7 Water Exchanges and Transfers

SAWCo maintains interconnections with the City of Upland. Two of these connections have been identified for emergency use. However, SAWCo has not provided or purchased any emergency sales through the emergency interconnections over the last five years. In addition, several water suppliers own shares in SAWCo; therefore, they are considered SAWCo customers or shareholders and are discussed in Chapter 4.

5.2.8 Future Water Projects

SAWCo is currently updating its Water Master Plan. As part of the Water Master Plan, future projects that may increase SAWCo's supply and reliability may be identified. The Water Master Plan is anticipated to be complete by the end of 2021.

SAWCo is currently constructing several projects to increase storage and capture all raw water released through the Frankish Tunnel. Both projects are anticipated to be complete in early 2021.

Table 5-5. DWR 6-7W Expected Future Water Supply Projects or Programs

The supplier will complete the table.

NAME OF FUTURE PROJECTS OR PROGRAMS	JOINT PROJECT WITH OTHER SUPPLIERS	AGENCY NAME	DESCRIPTION	PLANNED IMPLEMENTATION YEAR	PLANNED FOR USE IN YEAR TYPE	EXPECTED INCREASE IN WATER SUPPLY TO SUPPLIER, AF
Frankish Tunnel Outfall Improvements	No	N/A	Improve the Frankish Tunnel outfall to capture all water released through the Frankish Tunnel for storage into various groundwater basins for future use.	2021	All Year Types	
Holly Drive Reservoir Upgrades	No	N/A	Installation of two 100,000-gallon tanks for additional fire and operations water storage.	2022	All Year Types	0.55
Well 19	No	N/A	Construction of new well for domestic use.	2022-2023	All Year Types	2,400

5.2.9 Summary of Existing and Planned Sources of Water

SAWCo currently utilizes local surface water and groundwater sources to meet its customers’ demands. SAWCo will continue to efficiently utilize existing sources to meet future needs. Future supply projections reflect 20-year average supply from the San Antonio Creek and San Antonio Tunnel, while groundwater sources reflect SAWCo’s total water right by basin.

Table 5-6. DWR 6-8W Actual Water Supplies

		2020	
WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	ACTUAL VOLUME	WATER QUALITY
Groundwater (not desalinated)	Chino Basin	738	Drinking Water
Groundwater (not desalinated)	Cucamonga Basin	13	Drinking Water
Groundwater (not desalinated)	Cucamonga Basin	4,933	Other Non-Potable Water
Groundwater (not desalinated)	Six Basins	1,252	Other Non-Potable Water
Surface water (not desalinated)	San Antonio Creek	6,901	Other Non-Potable Water
Groundwater (not desalinated)	San Antonio Tunnel	1,833	Drinking Water
Groundwater (not desalinated)	San Antonio Tunnel	676	Other Non-Potable Water
-	TOTAL:	16,346	

Table 5-7. DWR 6-9W Projected Water Supplies

		PROJECTED WATER SUPPLY				
		2025	2030	2035	2040	2045
WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME
Surface water (not desalinated)	San Antonio Creek	4,416	4,416	4,416	4,416	4,416
Groundwater (not desalinated)	San Antonio Tunnel	2,178	2,178	2,178	2,178	2,178
Groundwater (not desalinated)	Chino Basin	1,234	1,234	1,234	1,234	1,234
Groundwater (not desalinated)	Cucamonga Basin	6,500	6,500	6,500	6,500	6,500
Groundwater (not desalinated)	Six Basins	932	932	932	932	932
-	TOTAL:	15,260	15,260	15,260	15,260	15,260

Supply from the San Antonio Creek and San Antonio Tunnel reflect 20-year average supply from 2000 through 2020. Supply from various groundwater basins reflect SAWCo's total water rights from each basin.

5.2.10 Special Conditions

As mentioned previously, SAWCo is currently developing a Water Master Plan. The master planning effort also includes a supply risk and resilience analysis that addresses both the domestic and irrigation systems. Existing supply sources were analyzed, the top risks to their supplies evaluated, and the impacts these risks would have on SAWCo’s ability to continue to provide a reliable and high-quality water to its shareholders quantified.

5.2.10.1 Climate Change Effects

Climate change is expected to result in more extreme droughts, shifting rainfall patterns, more intense rainfall and flooding, and higher variability from surface water supplies. Climate change is occurring and the best mitigation SAWCo can take is to plan and prepare for climate change related impacts. The Cal-Adapt Climate Projections for the Desert Region of San Bernardino County, of which SAWCo overlies, estimates a 2- to 4-inch decline in annual average rainfall by 2050 due to climate change. However, all models predict shifting rainfall patterns with wetter winters and drier summers (2021 California Energy Commission, 2021).

5.3 Energy Intensity

SAWCo monitors funds spent on energy at its facilities. In 2020, SAWCo spent approximately \$629,000 on energy. It was assumed that energy is billed at \$0.23 per kilo-Watt hour (kWh). Therefore, it was estimated that SAWCo consumed 2.7 million kWh to provide service to its customers, yielding an energy intensity of 167.3 kWh/AF.

Table 5-8. DWR O-1B Recommended Energy Reporting - Total Utility Approach

URBAN WATER SUPPLIER: San Antonio Water Company				
Water Delivery Product (If delivering more than one type of product use Table O-1C): Multiple Products (unable to use table O-1C)				
ENTER START DATE FOR REPORTING PERIOD	1/1/2020	URBAN WATER SUPPLIER OPERATIONAL CONTROL		
END DATE	12/30/2020			
		SUM OF ALL WATER MANAGEMENT PROCESSES	NON-CONSEQUENTIAL HYDROPOWER	
Water Volume Units Used: AF		TOTAL UTILITY	HYDROPOWER	NET UTILITY
	Volume of Water Entering Process (AF)	16,345	0	16,345
	Energy Consumed (kWh)	2,734,416	0	2,734,416
	ENERGY INTENSITY (KWH/AF)	167.3	0.0	167.3

Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data): Estimate

Data Quality Narrative: Energy usage assumed based on a factor of \$0.23/kWh and applied to the total amount SAWCo paid in 2020.



Water Service Reliability and Drought Risk Assessment

This section considers SAWCo’s water supply reliability during normal, single dry, and multiple dry water years over the planning horizon. A Drought Risk Assessment of the next five years is also included.

The supply reliability assessment discusses factors (i.e. climatic, environmental, water quality, and legal) that could potentially limit the expected quantity of water available to SAWCo through 2045. Multiple drought scenarios are considered and the quantitative impacts of the aforementioned factors on water supply and demand are discussed, as well as possible methods for addressing these issues. The management tools that SAWCo has implemented to maximize current resources is also discussed.

IN THIS SECTION

- Water Service Reliability Assessment
- Drought Risk Assessment

6.1 Water Service Reliability Assessment

6.1.1 Constraints on Water Sources

As described in the previous section, SAWCo relies on surface water from the San Antonio Creek, naturally percolated water through the San Antonio Tunnel, and groundwater from several local basins.

Climatic Factors

Water available from the San Antonio Creek and Tunnel are highly susceptible to climate change and increased drought periods. The San Antonio Creek relies on rainfall and the snowpack in the local mountains. In periods of dry weather, the San Antonio Creek may cease to flow, resulting in decreased supply to SAWCo's irrigation system. The Tunnel also relies on naturally percolated groundwater from rainfall.

Groundwater within the Chino, Cucamonga, and Six Basins may be impacted by climate change. As other sources are negatively impacted, basin users may need to extract additional groundwater to meet their needs. Since the Chino, Cucamonga, and Six Basins are adjudicated, SAWCo obtains water rights within these basins. Should severe conditions occur, SAWCo's allocation may be reduced to avoid over-extraction and harm to the basins. In the event that SAWCo's water allocations are reduced, SAWCo's shareholders may also receive a reduction in allocation.

Environmental Factors

Local groundwater basins may be impacted by water quality. Groundwater management agencies, like the Chino Basin Watermaster, has and continues to focus on sustainable basin management to ensure local sources remain and that stakeholders can fully utilize their water rights. The Chino Basin Watermaster continues to monitor contaminants that may impact supply and publishes water quality data in the State of the Basin report every two years.

Similarly, the Six Basins Watermaster publishes an annual report that addresses the status of the Six Basins, including details on groundwater levels and the operating safe yield determination.

Other Factors

In times of severe drought, total entitlement to SAWCo and its shareholders has been adjusted to mitigate supply shortages. Entitlement has been reduced equally among all shareholders, based on a percentage. Should future severe dry periods occur, it is possible that entitlement may need to be reduced to align with supply available and in coordination with other supply management agencies and users, like Watermasters and other groundwater basin users.

6.1.1 Year Type Characterization

As required, the water service reliability assessment and Drought Risk Assessment (DRA) analyze supply over several water years: normal, single dry, and multiple dry years.

DWR defines these years as:

- **Normal Year:** this condition represents the water supplies a supplier considers available during normal conditions. This could be a single year or averaged range of years that most closely represents the average water supply available.
- **Single Dry Year:** the single dry year is recommended to be the year that represents the lowest water supply available.

- **Five-Consecutive Year Drought:** the driest five-year historical sequence for the supplier, which may be the lowest average water supply available for five years in a row.

6.1.1.1 Sources for Water Data

SAWCo provides water service based on the number of shares a customer holds. To determine the amount of supply available, the 20-year average volume was determined, as shown in Figure 6-1. SAWCo will only produce what is required to meet shareholder’s demands; therefore, it assumed that the total supply available will equal the Company-wide shareholder entitlement of 14,571 AFY.

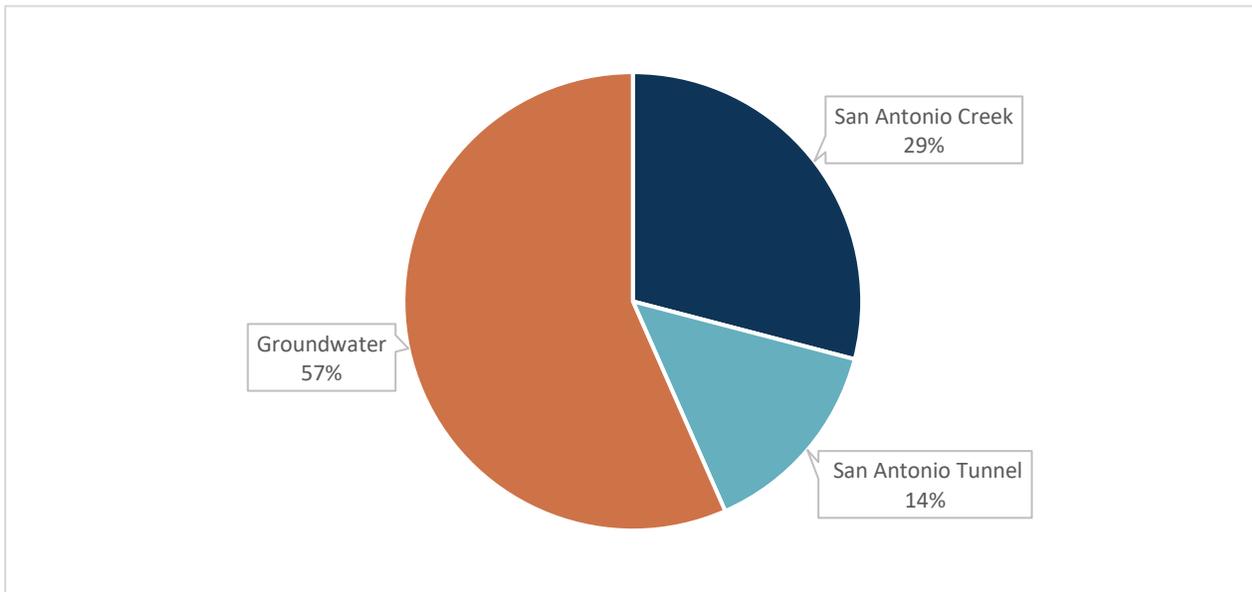


Figure 6-1. Average Supply

Table 6-1. DWR 7-1W Basis for Water Year Data

Quantification of available supplies is provided in this table as either volume only, percent only, or both.

YEAR TYPE	BASE YEAR	AVAILABLE SUPPLY IF YEAR TYPE REPEATS	
		VOLUME AVAILABLE	PERCENT OF AVERAGE SUPPLY
Average Year		14,571	100%
Single-Dry Year		14,571	100%
Consecutive Dry Years 1st Year		14,571	100%
Consecutive Dry Years 2nd Year		14,571	100%
Consecutive Dry Years 3rd Year		14,571	100%
Consecutive Dry Years 4th Year		14,571	100%
Consecutive Dry Years 5th Year		14,571	100%

6.1.2 Water Service Reliability

Results of the water supply and demand analysis for normal, single dry, and five-year consecutive dry droughts are shown in the following tables. SAWCo expects to meet demands under all water year scenarios with existing supply sources.

Depending on rainfall and other local factors, the amount of water available from the San Antonio Creek and Tunnel may be reduced. The variability of water utilized from each source is illustrated in Figure 6-2. SAWCo plans to mitigate reductions from San Antonio Creek by increased groundwater pumping in drier years.

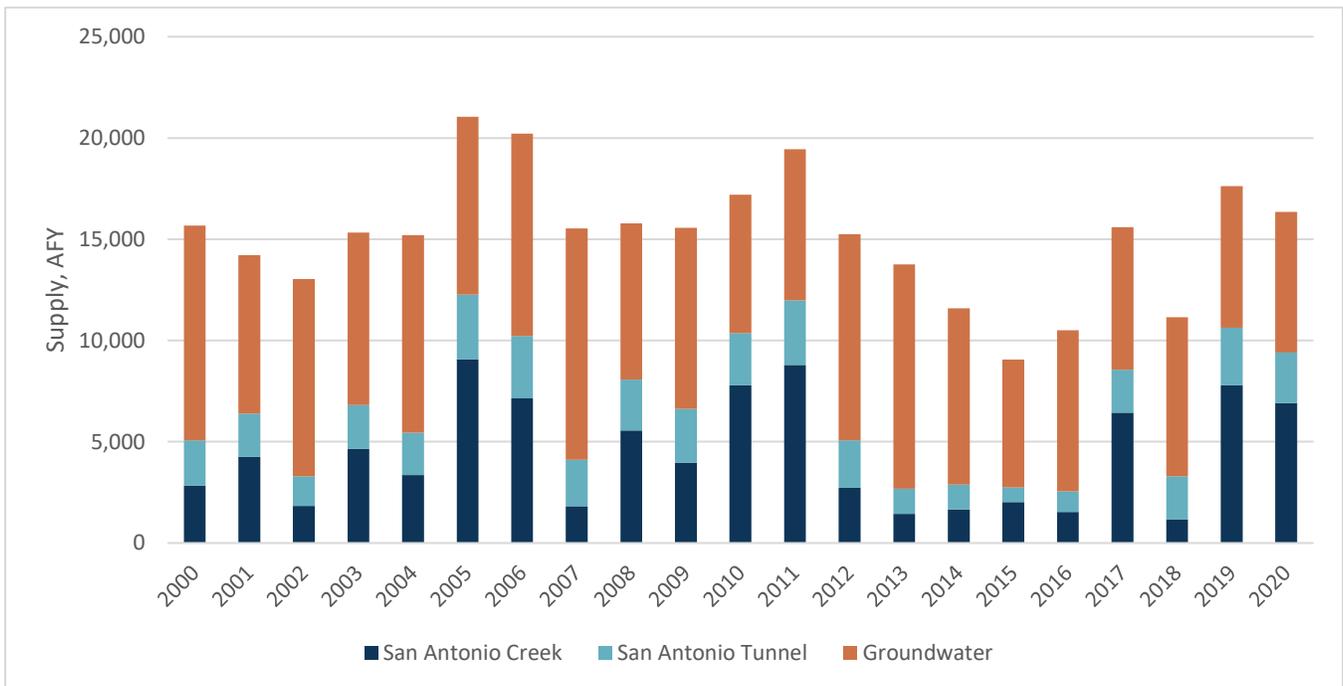


Figure 6-2. Historical Supply Variability

Table 6-2. DWR 7-2W Normal Year Supply and Demand Comparison

	2025	2030	2035	2040	2045
Supply Totals From Table 6-9W	15,260	15,260	15,260	15,260	15,260
Demand Totals From Table 4-3W	14,571	14,571	14,571	14,571	14,571
DIFFERENCE:	689	689	689	689	689

Supply totals reflect 20-year average supply from the San Antonio Creek and Tunnel, and total SAWCo allocation rights for groundwater.

Table 6-3. DWR 7-3W Single Dry Year Supply and Demand Comparison

	2025	2030	2035	2040	2045
Supply Totals	14,571	14,571	14,571	14,571	14,571
Demand Totals	14,571	14,571	14,571	14,571	14,571
DIFFERENCE:	0	0	0	0	0

Table 6-4. DWR 7-4W Multiple Dry Years Supply and Demand Comparison

		2025	2030	2035	2040	2045
First Year	Supply Totals	14,571	14,571	14,571	14,571	14,571
	Demand Totals	14,571	14,571	14,571	14,571	14,571
DIFFERENCE:		0	0	0	0	0
Second Year	Supply Totals	14,571	14,571	14,571	14,571	14,571
	Demand Totals	14,571	14,571	14,571	14,571	14,571
DIFFERENCE:		0	0	0	0	0
Third Year	Supply Totals	14,571	14,571	14,571	14,571	14,571
	Demand Totals	14,571	14,571	14,571	14,571	14,571
DIFFERENCE:		0	0	0	0	0
Fourth Year	Supply Totals	14,571	14,571	14,571	14,571	14,571
	Demand Totals	14,571	14,571	14,571	14,571	14,571
DIFFERENCE:		0	0	0	0	0
Fifth Year	Supply Totals	14,571	14,571	14,571	14,571	14,571
	Demand Totals	14,571	14,571	14,571	14,571	14,571
DIFFERENCE:		0	0	0	0	0

6.1.3 Descriptions of Management Tools and Options

SAWCo relies on local sources to meet demands and intends to continue to utilize existing sources well into the future. SAWCo is proactive in ensuring these resources, such as the San Antonio Tunnel, is cared for and continues to evaluate its condition to ensure long-term reliability.

6.2 Drought Risk Assessment

The Drought Risk Assessment (DRA) is based on an analysis of historical drought data forecasted into the future under various drought conditions, with a focus on the five-year consecutive drought scenario. The DRA analyzes historical data to assess patterns and more reliably determine if there could be any water shortages in the next five years. If demands cannot be met by the expected supply available, shortage response actions from SAWCo's WSCP may be implemented. Details on SAWCo's WSCP are provided in Appendix H.

6.2.1 Data, Methods, and Basis for Water Shortage Condition

The data, methods, and basis for a water shortage condition were identified using typical normal year supply and total possible system demand (total entitlement based on all SAWCo shares). Since the total number of shares within SAWCo is fixed, the total demand is also fixed, and therefore constant over the next five years.

6.2.2 DRA Water Source Reliability

The DRA provides a snapshot of the anticipated surplus or deficit if a drought were to occur in the next five years. As described previously, SAWCo provides water based on total number of shares a stakeholder possesses. SAWCo will provide the water entitled to its shareholder, or only what is needed, to meet shareholder demands. SAWCo anticipates meeting all demands over the next five years.

Table 6-5. DWR 7-5 Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b)

2021	Gross Water Use	14,571
	Total Supplies	14,571
	Surplus/Shortfall without WSCP Action	0
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	0
	Resulting Percent Use Reduction from WSCP Action	0%
	2022	Gross Water Use
Total Supplies		14,571
Surplus/Shortfall without WSCP Action		0
Planned WSCP Actions (Use Reduction and Supply Augmentation)		
WSCP (Supply Augmentation Benefit)		
WSCP (Use Reduction Savings Benefit)		
Revised Surplus/Shortfall		0
Resulting Percent Use Reduction from WSCP Action		0%
2023		Gross Water Use
	Total Supplies	14,571
	Surplus/Shortfall without WSCP Action	0
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	0
	Resulting Percent Use Reduction from WSCP Action	0%
	2024	Gross Water Use
Total Supplies		14,571
Surplus/Shortfall without WSCP Action		0
Planned WSCP Actions (Use Reduction and Supply Augmentation)		
WSCP (Supply Augmentation Benefit)		
WSCP (Use Reduction Savings Benefit)		
Revised Surplus/Shortfall		0
Resulting Percent Use Reduction from WSCP Action		0%
2025		Gross Water Use
	Total Supplies	14,571
	Surplus/Shortfall without WSCP Action	0
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	0
	Resulting Percent Use Reduction from WSCP Action	0%



2020 URBAN WATER MANAGEMENT PLAN

Water Shortage Contingency Plan Summary

The Water Shortage Contingency Plan (WSCP) is a strategic plan that SAWCo uses to prepare for and respond to foreseeable and unforeseeable water shortages. A water shortage occurs when the water supply available is not sufficient to meet the normally expected customer water use at a given time. A shortage may occur for many reasons, such as an extended drought, water pollution, power outage, or a catastrophic event.

The WSCP provides guidance to SAWCo’s Board of Directors, staff, and the public by identifying anticipated water shortages and response actions to manage any water shortage with predictability and accountability in an efficient manner. This WSCP is intended to provide a working framework and options to guide SAWCo’s response to water shortages.

IN THIS SECTION

- WSCP Overview

7.1 WSCP Overview

The WSCP is composed of the following elements:

Water Supply Reliability Analysis

Summarizes SAWCo's water supply analysis and reliability and identifies any key issues that may trigger a shortage condition. Details on the water supply reliability analysis are provided in Chapter 7.

Annual Water Supply and Demand Assessment

Describes the key data inputs, evaluation criteria, and methodology for assessing the system's reliability for the coming year and the steps to formally declare a water shortage.

Shortage Stages

Establishes water shortage levels to clearly identify and respond to a water shortage emergency.

Shortage Response Actions

Describes the response actions that may be implemented or considered for each shortage stage to reduce gaps between available supply and demand.

Communication Protocols

Describes communication protocols SAWCo follows to ensure that its stakeholders are well-informed of shortage conditions and requirements.

Compliance and Enforcement

Defines compliance and enforcement actions available to implement the WSCP.

Legal Authority

Summarizes the legal documents that provide SAWCo with the authority to declare a water shortage emergency and implement and enforce response actions.

Financial Consequences of WSCP Implementation

Describes the anticipated financial impact of a water shortage and identifies mitigation strategies to offset financial burdens.

Monitoring and Reporting

Summarizes the monitoring and reporting techniques to evaluate the effectiveness of shortage response actions and overall WSCP implementation. Results will be used to determine whether additional shortage response actions should be implemented and if current actions are successful.

WSCP Refinement Procedures

Describes the factors that may trigger updates to the WSCP and outlines how to complete an update.

Special Water Features Distinctions

Defines considerations and definitions for water use for decorative features versus pools and spas. Decorative features include ornamental fountains, ponds, and other aesthetic features.

Plan Adoption, Submittal, and Availability

Describes the WSCP adoption process, submittal, and availability after revision.

The WSCP is a stand-alone document that can be modified as needed, and included as Appendix H.



Demand Management Measures

This section provides a comprehensive description of the water conservation programs that SAWCo has implemented for the past five years, is currently implementing, and plans to implement in the future.

8.1 Demand Management Measures for Wholesale Suppliers

8.1.1 Metering

In September 2020, SAWCo’s Board approved a \$740,000 project to replace all meters with new automated meters. The new meters will be Automated Meter Reading (AMR) cellular meters and will record water use daily. In addition, SAWCo is developing an online portal so that all shareholders can access their water consumption and receive alerts directly. All meters were replaced in early 2021. Previously, SAWCo staff visited meters once a month and manually read and logged meters.

IN THIS SECTION

- Demand Management Measures for Wholesalers
- Other Demand Management Measures
- Reporting Implementation

8.1.2 Public Education and Outreach

SAWCo provides updated information on its website, Facebook account, through quarterly newsletters, bill inserts, and other outreach materials. SAWCo may also participate in local events such as The Water Fair and Pancake Breakfast.

8.1.3 Water Conservation Program Coordination and Staffing

SAWCo does not have a dedicated water conservation coordinator, but employs administrative staff devoted to commit part time as SAWCo's water conservation representative.

8.1.4 Asset Management

SAWCo uses an "Asset Depreciation Schedule" that provides equipment service life for different types of water distributions facilities. A straight-line depreciation method is used to determine remaining service life estimates of existing equipment for the purposes of making replacement recommendations. SAWCo is currently developing an updated Water Master Plan that will identify replacement projects. SAWCo also maintains an annual maintenance budget to respond to needed repairs and perform routine preventive maintenance.

8.1.5 Wholesale Supplier Assistance Programs

SAWCo's wholesale agencies are provided toilets with installation for their customers. Agencies will provide name and contact information and contractor Bottomline Solutions will contact to set up appointment to remove old toilet and install new UHET toilets. Old toilets are also hauled away and disposed of.

8.2 Other Demand Management Measures - Rebates

SAWCo currently administers the following rebate programs through the Metropolitan Water District of Southern California. More information on each of these rebates can be found on SAWCo's website, <https://www.sawaterco.com/rebates>, or at <https://socalwatersmart.com>.

High-Efficiency Clothes Washers

Using high-efficiency washers can reduce water and energy usage in the home. The high-efficiency washers only use about 20-60% of water compared to traditional washers, which translate to energy savings as it uses as little as 20-50% of energy because there is less water to heat. SAWCo offers rebate starting at \$85 for purchase of a high-efficiency washers. A listing of high-efficiency washers can be found at SoCal WaterSmart web site.

Weather-Based Irrigation Controllers

The Weather-Based Irrigation Controllers (WBICs) help reduce overwatering by applying water only when plants need it. It provides the appropriate watering schedule, adjusts for weather changes and irrigates based on the needs of the landscape and soil conditions. SAWCo offers rebates starting at \$80 per controller for less than one acre of landscape and \$35 per station for more than one acre of landscape.

Rotating Sprinkler Nozzles

Rotating sprinkler nozzles use less water than traditional sprinklers because it operates with lower precipitation rates, have greater uniform distribution and coverage. Rotating nozzles are a great water conservation tool as it applies water more slowly and uniformly than conventional sprays, especially when adjusted for specific site conditions. To help with wasteful water runoff, check out SoCal WaterSmart for recommended rotating nozzles. SAWCo offers \$2 per nozzle rebates with a minimum quantity of 30 nozzles.

Turf Removal

SAWCo offers a turf removal rebate. Interested stakeholders can apply through SoCal WaterSmart at <https://socalwatersmart.com>.

Rain Barrels and Cisterns

Rain barrels and cisterns can be installed to capture stormwater and runoff from rooftops and stored for later use. SAWCo offers a \$35 rebate for the purchase of a rain barrel and a rebates for cisterns start at \$250.

Single Family/Multi Family High Efficiency Toilet

SAWCo offers single family or multifamily premium high efficiency toilet rebates, starting at \$40 for a 1.08 gallons per flush (GPF) toilet.

Soil Moisture Sensor Systems

Soil moisture sensor systems helps to save water by sensing the moisture in the soil and regulate the irrigation system for watering in response to changes of the weather for large residential sites.

8.3 Reporting Implementation

SAWCo provided an update to its Board on April 20, 2021 summarizing the various conservation efforts implemented during 2020 and summarized below.

8.3.1 Local Assistance in meeting Best Management Practices

Table 8-1. Conservation Rebates

RESIDENTIAL REBATE PROGRAMS (FISCAL YEAR) THRU METROPOLITAN WATER DISTRICT	DEVICES/REBATES	EST. GALLONS SAVED/ DEVICE/YEAR	TOTAL EST. GALLONS SAVED PER YEAR
High Efficiency Clothes Washers	2	11,243	22,486
Rotating Nozzles	0		
Weather Based Irrigation Controllers	1	105,917	105,917
High Efficiency Toilets (premium)	1	13,851	13,851
Rain Barrels	0	619	
Turf Removal	0		
Landscape Audit	1	3,485	3,485
Total Savings for calendar year – thru 12/31/2020	5		145,739

8.3.2 SAWCo's efforts in meeting Best Management Practices as of 3/31/2021

Table 8-2. DMM Efforts

SAWCO PROGRAMS	TOTAL BUDGET	DEVICES/REBATES	ESTIMATED GALLONS SAVED PER DEVICE PER YEAR	TOTAL ESTIMATED GALLONS SAVED PER YEAR
Toilet Direct Installation for SAWCo Customers	\$5,000 Cost to date: \$1,035 4 toilets	4	15,600	62,400
SAWCo Wholesale Agencies Assistance-Toilet Direct Installation	\$15,000 Cost to date: \$3,860 14 toilets	14	15,600	218,400
TOTAL	\$20,000	18		280,800

9

2020 URBAN WATER MANAGEMENT PLAN

Plan Adoption, Submittal, and Implementation

This section describes steps taken to adopt and submit the and to make it publicly available.

9.1 Notice of Public Hearing

Before the public hearing, SAWCo made a draft WSCP and draft UWMP available for public inspection at SAWCo's office and website. Pursuant to CWC Section 10642, general notice of the public hearing was provided through publication of the hearing date and time and posting of the hearing at SAWCo's office.

Table 9-1 provides a summary of the notifications that were issued as a part of SAWCo's development of the UWMP. SAWCo notified the public within its service area of the opportunity to provide input regarding the UWMP. A copy of the public outreach materials, including newspaper notices and invitation letters, are included in Appendix B.

IN THIS SECTION

- Public Hearing and Notices
- Public Hearing and Adoption
- Plan Submittal
- Public Availability

Table 9-1. DWR 10-1W Notification to Cities and Counties

Supplier has not notified more than 10 cities or counties in accordance with Water Code Sections 10621 (b) and 10642. Completion of the table is required.

CITY	60 DAY NOTICE	NOTICE OF PUBLIC HEARING	OTHER
City of Upland	Yes	Yes	
City of Ontario	Yes	Yes	
City of Pomona	Yes	Yes	
COUNTY	60 DAY NOTICE	NOTICE OF PUBLIC HEARING	OTHER
County of San Bernardino	Yes	Yes	
OTHER	60 DAY NOTICE	NOTICE OF PUBLIC HEARING	OTHER
Cucamonga Valley Water District	Yes	Yes	
Monte Vista Water District	Yes	Yes	
Chino Basin Watermaster	Yes	Yes	

9.2 Public Hearing and Adoption

Prior to adoption of the WSCP and 2020 UWMP, SAWCo held a public hearing regarding its WSCP and UWMP on September 21, 2021.

The WSCP and UWMP were publicly reviewed during the September 21, 2021 public hearing. This hearing provided the cities and counties and other members of the public a chance to review the staff report and attend the hearing to provide comment. The public hearing took place before the adoption allowing opportunity for the report to be modified in response to public input. Following the public hearing, the WSCP and UWMP were adopted by SAWCo on September 21, 2021.

A copy of the Resolution of Plan Adoption signed by the SAWCo Board is included as Appendix C of the UWMP. The UWMP includes all applicable information necessary to meet the requirements of CWC. The 2020 UWMP and WSCP were submitted to the DWR within 30 days of adoption.

9.3 Plan Submittal

A hard copy of the Final 2020 UWMP and WSCP were sent to the California State Library and electronic copies to DWR (electronically using the WUEdata reporting tool), and electronic copies to all cities and counties within SAWCo's service area within 30 days of adoption.

9.4 Public Availability

To fulfill the requirements of CWC Section 10642 of the UWMP Act, SAWCo made the 2020 UWMP and WSCP available online and at the main SAWCo office located at 139 N. Euclid Avenue, Upland, CA 91786-6036 between the hours of 8:00 am and 4:00 pm, Monday – Thursday, and on alternating Fridays between 8:00 am and 3 pm, for public review within 30 days of adoption.

9.5 Amending an Adopted UWMP or WSCP

Amendments to the SAWCo's 2020 UWMP and WSCP will be made on an as needed basis. Should SAWCo need to amend the adopted 2020 UWMP or WSCP in the future, SAWCo will hold a public hearing for review of the proposed amendments to the document and send a 60-day notification letter to all cities and counties within their service area and notify the public in same manner as set forth in this UWMP. Once the amended document is adopted, a copy of the finalized version will be distributed to the California State Library, DWR (electronically using the WUEdata reporting tool), and all cities and counties within SAWCo's service area within 30 days of adoption. The finalized version will also be made available to the public both online on SAWCo's website and in person at SAWCo's office during normal business hours.

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2020 URBAN WATER MANAGEMENT PLAN

References

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A

Appendix A. DWR Review Checklist

2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location
Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Section 1 Introduction and Lay Description
Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	1.2 UWMP Organization and Lay Description
Section 2.2	10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	1.1 The California Water Code
Section 2.6	10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	2.2 Coordination and Outreach
Section 2.6.2	10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan Preparation	2.2.2 Coordination with Other Agencies and the Community, Table 2-4
Section 2.6, Section 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	N/A
Section 2.6	10631(h)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	2.2.1 Wholesale and Retail Coordination, Table 2-3
Section 3.1	10631(a)	Describe the water supplier service area.	System Description	3.1 Service Area
Section 3.3	10631(a)	Describe the climate of the service area of the supplier.	System Description	3.2 Service Area Climate
Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	3.3.1 Service Area Population
Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	3.3.2 Other Social, Economic, and Demographic Factors
Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	3.3.1 Service Area Population, Table 3-2
Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	3.4 Land Uses within Service Area
Section 4.2	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	4.2 Past, Current, and Projected Water Use by Sector
Section 4.2.4	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	4.2.1 Distribution System Water Losses
Section 4.2.6	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans and other policies or laws.	System Water Use	4.2.3 Projected Water Use
Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	4.2.3 Projected Water Use
Section 4.3.2.4	10631(d)(3)(A)	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	N/A
Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	N/A
Section 4.5	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	4.3 Climate Change Considerations
Chapter 5	10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	N/A
Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	N/A
Section 5.1	10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	N/A
Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	N/A

Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	N/A
Section 5.5 and Appendix E	10608.4	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	N/A
Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Section 5 Water Supply Characterization
Sections 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, <i>including changes in supply due to climate change</i> .	System Supplies	Section 5 Water Supply Characterization and Section 6 Water Service Reliability and Drought Risk Assessment
Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	5.2 UWMP Water Supply Characterization
Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	5.2.8 Future Water Projects and 5.2.9 Summary of Existing and Planned Sources of Water
Section 6.2.8	10631(b)	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045.	System Supplies	5.2.9 Summary of Existing and Planned Sources of Water, Table 5-7
Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	5.2.2 Groundwater
Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	5.2.2 Groundwater, Appendix D, Appendix E
Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System Supplies	5.2.2.1 Chino Basin, 5.2.2.2 Cucamonga Basin, 5.2.2.3 Six Basins
Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	5.2.2 Groundwater, Appendix D
Section 6.2.2.1	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	5.2.2 Groundwater
Section 6.2.2.4	10631(b)(4)(C)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	5.2.2.4 Past Five Years
Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	5.2.9 Summary of Existing and Planned Sources of Water, Table 5-7
Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	5.2.7 Water Exchanges and Transfers
Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	5.2.5 Wastewater and Recycled Water
Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	5.2.5 Wastewater and Recycled Water
Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	5.2.5 Wastewater and Recycled Water
Section 6.2.5	10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	5.2.5 Wastewater and Recycled Water

Section 6.2.5	10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	5.2.5 Wastewater and Recycled Water
Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	5.2.5 Wastewater and Recycled Water
Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System Supplies	5.2.6 Desalinated Water Opportunities
Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	5.2.5 Wastewater and Recycled Water
Section 6.2.8, Section 6.3.7	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	5.2.8 Future Water Projects
Section 6.4 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	5.3 Energy Intensity
Section 7.2	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 6 Water Service Reliability and Drought Risk Assessment
Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	6.1.3 Descriptions of Management Tools and Options
Section 7.3	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	6.1.2 Water Service Reliability
Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	6.2 Drought Risk Assessment
Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	6.2.1 Data, Methods, and Basis for Water Shortage Condition
Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	6.2.2 DRA Water Source Reliability
Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	6.2.2 DRA Water Source Reliability, Table 6-5
Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	Section 6 Water Service Reliability and Drought Risk Assessment
Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Appendix F Water Shortage Contingency Plan
Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Appendix F, 1.1 Water Supply Reliability Analysis
Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Appendix F, 1.9 Monitoring and Reporting
Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Appendix F, 1.2 Annual Water Supply and Demand Assessment
Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Appendix F, 1.2 Annual Water Supply and Demand Assessment
Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	Appendix F, 1.3 Water Shortage Levels

Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	Appendix F, 1.3 Water Shortage Levels, Figure 1
Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	Appendix F, 1.4.2 Supply Augmentation
Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	Appendix F, 1.4.1 Demand Reduction
Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Appendix F, 1.4.3 Operational Changes
Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	Appendix F, 1.4.4 Additional Mandatory Restrictions
Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	Appendix F, Table 3 and Table 4
Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	Appendix F, 1.4.5 Seismic Risk Assessment, Mitigation Plan, and Emergency Response Plan
Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	Appendix F, 1.5 Communication Protocols
Section 8.5 and 8.6	10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	Appendix F, 1.5 Communication Protocols
Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	Appendix F, 1.6 Compliance and Enforcement
Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	Appendix F, 1.7 Legal Authorities
Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	Appendix F, 1.2 Annual Water Supply and Demand Assessment
Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	Appendix F, 1.2 Annual Water Supply and Demand Assessment
Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix F, 1.8 Financial Consequences of WSCP
Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix F, 1.8 Financial Consequences of WSCP
Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	N/A
Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	N/A
Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	Appendix F, 1.11 Special Water Feature Distinction
Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Appendix F, 1.12 Plan Adoption, Submittal, and Availability
Section 8.14	10632(c)	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	Appendix F, 1.12 Plan Adoption, Submittal, and Availability

Sections 9.1 and 9.3	10631(e)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	8.1 Demand Management Measures for Wholesale Suppliers
Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	N/A
Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	N/A
Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	9.1 Notice of Public Hearing, Table 9-1
Section 10.4	10621(f)	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	9.3 Plan Submittal
Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	9.4 Public Availability
Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	9.1 Notice of Public Hearing
Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Appendix C, Adoption Resolutions
Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	9.3 Plan Submittal
Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	9.4 Public Availability
Sections 10.4.1 and 10.4.2	10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	9.3 Plan Submittal
Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	9.4 Public Availability
Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	9.4 Public Availability
Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	N/A
Section 10.7.2	10644(b)	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	9.5 Amending an Adopted UWMP or WSCP

B

Appendix B. Letters of Notification and Public Hearing Notices



San Antonio Water Company

Incorporated October 25, 1882
Serving the original Ontario Colony lands

April 28, 2021

Subject: San Antonio Water Company 2020 Urban Water Management Plan Update

Dear SAWCO Stakeholder,

The San Antonio Water Company is currently preparing an update to its Urban Water Management Plan (UWMP) in compliance with the California Urban Water Management Planning Act and the Water Conservation Act of 2009.

Pursuant to Water Code section 10620 SAWCO encourages your agency's coordination as we prepare our plan update. Additionally, pursuant to Water Code 10621 this letter shall serve as notice to cities and counties within our service area that we are preparing an update to our UWMP.

SAWCO anticipates holding an open comment period ending with a public hearing in June 2021.

If you would like to continue receiving notifications and/or participate in the update of our UWMP, please contact me by phone or email (blee@sawaterco.com).

Sincerely,

Brian C. Lee

Brian Lee, PE
General Manager

CITY OF RANCHO CUCAMONGA - NOTICE INVITING SEALED BIDS

Notice is hereby given that the City of Rancho Cucamonga ("City") will receive sealed bids for the materials, supplies, equipment and - or services set forth herein, subject to all conditions outlined in the bid Package, Plans and Specifications, 1. PROJECT NAME - FY21-22 Local Overlay Pavement Rehabilitations. The scope of work consists of, but not limited to, full width and variable pavement edge cold plane; weed killing and crack sealing; pavement overlay; grind and patch; subgrade preparation; installing and compacting aggregate base; adjusting existing manholes, water meter, and valves to new grade; constructing PCC curb and gutter, sidewalks, retaining curbs, spirals, and access curb ramps; and traffic striping, pavement markings and markers; and related items of work per plans. Engineer's Estimate is \$2,000,000. A total of forty-five (45) working days to complete the project.

2. OBTAINING BID DOCUMENTS: In an effort to go green and paperless, digital copies of the plans, specifications, and bid proposal, including any future addenda or revisions to the bid documents, are available by going to www.ciplist.com and signing up, by going to Member Login or Member Signup (its free), then choose California, then scroll down to San Bernardino County and click on Browse Cities, then scroll down to Rancho Cucamonga and click on City Projects, then click on the Project of interest under the Title and follow directions for download. Note, copies of the plans, specifications, bid proposal, addendums and revisions will not be provided; digital copies must be downloaded from the above website then printed. Prospective bidders must register for an account on www.ciplist.com to be included on the prospective bidder's (list/s) and to receive email updates of any addenda or revisions to the bid documents. Be advised that the information contained on this site may change over time and without notice to prospective bidders or registered users. While effort is made to keep information current and accurate and to notify registered prospective bidders of any changes to the bid documents, it is the responsibility of each prospective bidder to register with www.ciplist.com and to check this website on a daily basis through the close of bids for any applicable addenda or updates. No proposal will be considered from a Contractor to whom a proposal form has not been issued by the City of Rancho Cucamonga to registered prospective bidders from www.ciplist.com.

3. SEALED BIDS: will be received at all times during normal business hours prior to the Bid Opening, at the Office of the City Clerk, City Hall, 1000 Civic Center Drive, Rancho Cucamonga, CA 91730-3801. The outside of the Sealed Bid shall be clearly marked with the Project Name. It is the responsibility of the Bidder - Contractor to confirm receipt of the bid Package in the City Clerk's Office prior to the date and time of the BID OPENING at 2:00 p.m. on Tuesday, September 21, 2021.

4. CONTRACTOR LICENSE: In accordance with provisions of Section 3309 of the California Public Contract Code, the City has determined that Contractor shall possess any and all contractors licenses, in form and class as required by any and all applicable laws with respect to any and all of the work to be performed under this contract including, a "Class-A" (General Engineering Contractor) or class "C-12" License (Earthwork and Paving Contractor) in accordance with the provisions of the Contractor's License Law (California Business and Professions Code, Section 7000 et. seq.), 5. PREVAILING WAGES: In accordance with the provisions of Section 1776, et seq., of the Labor Code, the Director of the Industrial Relations of the State of California has determined the general prevailing rate of wages applicable to the work to be done. The Contractor will be required to pay to all persons employed on the project by the Contractor sums not less than the sums set forth in the documents entitled General Prevailing Wage Determination made by the Director of Industrial Relations pursuant to California Labor Code, Part 7, Chapter 1, Article 2, Sections 1776, 1777, 1778.1. These documents can be reviewed in the Engineering Department or may be obtained from the State (go to: www.dir.ca.gov, "Statistics and Research").

6. BID SECURITY: Each bid shall be accompanied by bid security in the form and amount specified in Public Contract Code Sections 2070 and 2071. See Bid Package for details.

7. PAYMENT BOND AND COMPLETION BONDS: A Payment Bond and a Completion Bond, each in the amount of 100% of the contract amount, will be required of the Contractor.

8. CONTACT - Questions regarding this Notice Inviting Sealed Bids shall be submitted five (5) calendar days prior to bid opening and shall be directed to Project Manager: Ramon M. David, Associate Engineer (909) 774-4076. The City of Rancho Cucamonga reserves the right to reject any bid or all bids and to waive any informality or irregularity in any bid. Any contract awarded will be let to the lowest responsive and responsible bidder. Attest: Janice C. Reynolds, City Clerk, City of Rancho Cucamonga; Publish: Thursday(s) September 9, 2021 and September 14, 2021.

Inland Valley Daily Bulletin AD#11486616

City of Wildomar
REQUEST FOR CONSTRUCTION BIDS
NOTICE IS HEREBY GIVEN that sealed bids will be received at the office of the City Clerk, located at 22874 Clinton Keith Road, Suite 201, Wildomar, California, 92595 until 3:00 pm local time on **Wednesday, September 29, 2021**, for furnishing all labor, material, tax transportation, equipment, and services necessary for the:

HOUSE DEMOLITION FOR THE BUNDY CANYON ROAD IMPROVEMENT PROJECT, SEGMENT 2
 CIP 802-A

Bids received after 3:00 pm local time on **Wednesday, September 29, 2021**, shall be returned unopened. Bids will be opened and tabulated immediately after the time bids are due in the City Council Chambers located at 22874 Clinton Keith Rd., Suite 106, Wildomar, California, 92595. The bid opening will also be broadcasted live via the Zoom Meeting platform and the following web link: <https://us02w.zoom.us/j/892571119> or by dialing over the phone to +1 909 853 and entering in the Meeting ID: 898 2571 1119. Bidders, their representatives and other interested parties are invited to watch the bid opening in-person or via Zoom, or call-in to the bid opening via Zoom.

Description of Work
 Remove and dispose of existing structures (including lead and asbestos abatement), surface improvements, and certain vegetation/abandon utilities including septic systems and wells; install chain link fencing and gates at designated locations shown on the plans of 22 Bundy Canyon Rd., 22874 Bundy Canyon Rd., and 2454 Bundy Canyon Rd., Wildomar, CA 92595; and all items and materials all indicated in the Plans, Specifications, and the Technical Specifications within the Contract Documents.

The proposed work shall be performed in accordance with the Project Description, Scope of Work, and other specifications listed in the Request for Proposal.

Obtaining Documents
 Project documents may be downloaded from the City of Wildomar Website of http://www.cityofwildomar.org/businessbid_opportunities/rfps_rfas or **PURCHASED** from the City for \$30.00.

Construction License
 The successful bidder must possess a current Class C-21 Contractor's License issued by the State of CA.

For more information, contact: **Jesse Farag (951) 677-7751 x219**
Warren Baake (951) 437-1731
 Press-Enterprise: 9/14/2021

Public Hearing Notice
Urban Water Management Plan
And
Water Shortage Contingency Plan - 2020 Update

The California Urban Water Management Planning Act requires the San Antonio Water Company (SAWCO) to update its Urban Water Management Plan (UWMP) and associated Water Shortage Contingency Plan (WSCP) every 5 years.

The Company will hold a public hearing on September 21, 2021, at 5:00 p.m. to receive public comments and consider adoption of the 2020 UWMP and associated WSCP. The Public Hearing will be held at the City of Upland City Hall (440 N. Euclid Avenue Upland, CA 91766).

We invite your participation in the process. The draft UWMP and associated WSCP are available for public review on the Company's website (www.sawater.com). The meeting agenda will also be posted to our website at least three days prior to the meeting.

If you have any questions about the 2020 UWMP or WSCP or the process for updating these documents, please contact Brian Lee at blee@swater.com or at 909.922.4107.

Published: September 7 & 14, 2021 Inland Valley Daily Bulletin Ad#11485972

NOTICE OF PUBLIC SALE OF PERSONAL PROPERTY
 Notice is hereby given that pursuant to Sections 21709-21716 of the Business and Professions Code, Extra Storage Company, 2100 E. La Grange Court, Riverside, CA 92504, County of Riverside, State of California, of the above address will sell, to satisfy lien of the owner, of Public Sale, Unit will be sold by certified sale of Public Auction with bid opening on or after September 15, 2021, at 9:00 AM. The personal goods stored at the facility following may include but are not limited to general household items, furniture, boxes, clothes, and appliances. Frank Martinez, Dolaine Armstrong, Estelita Louvin
 Purchase may be made with cash and paid at time of sale. All goods are sold as is and must be removed within 24 hours from the time of purchase. Extra Storage Company reserves the right to retract bid. Sale is subject to adjournment and/or cancellation in the event of settlement between owner and obligated party.
 Auctioneer: www.auctioneers.com, Bond # 0454004, 208-784-0483
 To be published: Tuesday, September 7, 2021
 Tuesday, September 14, 2021 Press-Enterprise

C

Appendix C. Adoption Resolutions

RESOLUTION No. 2021-09-01
A RESOLUTION OF THE BOARD OF DIRECTORS OF THE
SAN ANTONIO WATER COMPANY ADOPTING THE 2020 URBAN WATER
MANAGEMENT PLAN

WHEREAS, the California Legislature enacted Assembly bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare an Urban Water Management Plan, the primary objectives of which are to verify the adequacy and reliability of existing and planned sources of water supply and to plan for the conservation and efficient use of water; and

WHEREAS, the San Antonio Water Company (Water Company) supplies domestic and irrigation shareholders;

WHEREAS, the Water Company provides 10% of its supply to domestic shareholders in the San Antonio Heights; 7% to shareholders outside of San Antonio Heights for irrigation, agricultural and industrial purposes; and 80% to Municipal water districts at wholesale. Inactive shareholders represent approximately 3%;

WHEREAS, the 2020 Urban Water Management Plan (UWMP) identifies the Water Company as a wholesaler; and

WHEREAS, the Board recognizes that this document is a useful planning document that will be periodically reviewed at least once every five years in conjunction with the update of the Water Master Plan and shall make amendments or changes to its plan indicated by the review; and

WHEREAS, the plan must be adopted after public review and hearing, and filed with the California State Library and the California Department of Water Resources within thirty days of adoption; and

WHEREAS, the Water Company has therefore, prepared and circulated for public review a draft of the UWMP, and a properly noticed public hearing regarding said Plan was held by the Board of Directors of the Water Company on September 21, 2021.

WHEREAS, SAWCo did prepare and shall file said Plan with the California State Library and the California Department of Water Resources; and

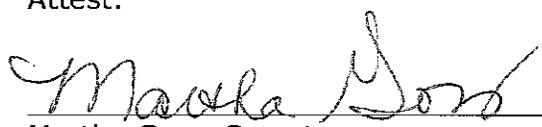
NOW THEREFORE, BE IT RESOLVED by the Board of Directors of the San Antonio Water Company that the 2020 Urban Water management Plan is hereby adopted and the General Manager is hereby authorized and directed to file the 2020 Urban Water Management Plan with the California State Library and the California Department of Water Resources within 30 days of this date.

This Resolution was passed and adopted on the 21st day of September 2021.



Tom Thomas, President
San Antonio Water Company

Attest:



Martha Goss, Secretary
San Antonio Water Company

RESOLUTION No. 2021-10-01
A RESOLUTION OF THE BOARD OF DIRECTORS OF THE
SAN ANTONIO WATER COMPANY ADOPTING THE 2020 WATER SHORTAGE
CONTINGENCY PLAN

WHEREAS, the California Legislature enacted Assembly bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare an Urban Water Management Plan including a Water Shortage Contingency Plan (WSCP); and

WHEREAS, the San Antonio Water Company (Water Company) supplies domestic and irrigation shareholders;

WHEREAS, the Water Company provides 10% of its supply to domestic shareholders in the San Antonio Heights; 7% to shareholders outside of San Antonio Heights for irrigation, agricultural and industrial purposes; and 80% to Municipal water districts at wholesale. Inactive shareholders represent approximately 3%;

WHEREAS, the Board recognizes that a Water Shortage Contingency Plan is a useful planning document that will be periodically reviewed at least once every five years in conjunction with the update of the Urban Water Management Plan and shall make amendments or changes to its plan indicated by the review; and

WHEREAS, the plan must be adopted after public review and hearing, and filed with the California State Library and the California Department of Water Resources within thirty days of adoption; and

WHEREAS, the Water Company has therefore, prepared and circulated for public review a draft of the Water Shortage Contingency Plan, and a properly noticed public hearing regarding said Plan was held by the Board of Directors of the Water Company on September 21, 2021.

WHEREAS, SAWCO did prepare and shall file said Plan with the California State Library and the California Department of Water Resources; and

NOW THEREFORE, BE IT RESOLVED by the Board of Directors of the San Antonio Water Company that the 2020 Water Shortage Contingency Plan is hereby adopted and the General Manager is hereby authorized and directed to file the 2020 Urban Water Management Plan, including the Water Shortage Contingency Plan with the California State Library and the California Department of Water Resources within 30 days of this date.

This Resolution was passed and adopted on the 19th day of October, 2021.



Tom Thomas, President
San Antonio Water Company

Attest:



Martha Goss, Secretary
San Antonio Water Company

D

Appendix D. 1978 Chino Basin Judgment

*Rec'd J. Stark
Jan 27, 1978
td*

FILED

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FILED - West District
San Bernardino County Clerk

OCT 26 1989

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SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

MICROFILMED

12 CHINO BASIN MUNICIPAL WATER)
13 DISTRICT,)
14 Plaintiff,)
15 v.)
16 CITY OF CHINO, et al.)
17 Defendants.)

No. 164327

REN 51010

JUDGMENT

LAW OFFICES
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9 SUPERIOR COURT OF THE STATE OF CALIFORNIA
10 FOR THE COUNTY OF SAN BERNARDINO

11
12 CHINO BASIN MUNICIPAL WATER)
DISTRICT,)
13)
Plaintiff,) No. 164327
14)
v.) JUDGMENT
15)
CITY OF CHINO, et al.)
16)
Defendants.)
17)

18
19 I. INTRODUCTION

20 1. Pleadings, Parties and Jurisdiction. The complaint here-
21 in was filed on January 2, 1975, seeking an adjudication of water
22 rights, injunctive relief and the imposition of a physical solu-
23 tion. A first amended complaint was filed on July 16, 1976. The
24 defaults of certain defendants have been entered, and certain
25 other defendants dismissed. Other than defendants who have been
26 dismissed or whose defaults have been entered, all defendants have
27 appeared herein. By answers and order of this Court, the issues
28 have been made those of a full inter se adjudication between the

1 parties. This Court has jurisdiction of the subject matter of
2 this action and of the parties herein.

3 2. Stipulation For Judgment. Stipulation for entry of
4 judgment has been filed by and on behalf of a majority of the
5 parties, representing a majority of the quantitative rights herein
6 adjudicated.

7 3. Trial; Findings and Conclusions. Trial was commenced on
8 December 16, 1977, as to the non-stipulating parties, and findings
9 of fact and conclusions of law have been entered disposing of the
10 issues in the case.

11 4. Definitions. As used in this Judgment, the following
12 terms shall have the meanings herein set forth:

13 (a) Active Parties. All parties other than those who
14 have filed with Watermaster a written waiver of service of
15 notices, pursuant to Paragraph 58.

16 (b) Annual or Year -- A fiscal year, July 1 through
17 June 30, following, unless the context shall clearly indicate
18 a contrary meaning.

19 (c) Appropriative Right -- The annual production right
20 of a producer from the Chino Basin other than pursuant to an
21 overlying right.

22 (d) Basin Water -- Ground water within Chino Basin which
23 is part of the Safe Yield, Operating Safe Yield, or replen-
24 ishment water in the Basin as a result of operations under the
25 Physical Solution decreed herein. Said term does not include
26 Stored Water.

27 (e) CBMWD -- Plaintiff Chino Basin Municipal Water
28 District.

1 (f) Chino Basin or Basin -- The ground water basin
2 underlying the area shown as such on Exhibit "B" and within
3 the boundaries described in Exhibit "K".

4 (g) Chino Basin Watershed -- The surface drainage area
5 tributary to and overlying Chino Basin.

6 (h) Ground Water -- Water beneath the surface of the
7 ground and within the zone of saturation, i.e., below the
8 existing water table.

9 (i) Ground Water Basin -- An area underlain by one or
10 more permeable formations capable of furnishing substantial
11 water storage.

12 (j) Minimal Producer -- Any producer whose production
13 does not exceed five acre-feet per year.

14 (k) MWD -- The Metropolitan Water District of Southern
15 California.

16 (l) Operating Safe Yield -- The annual amount of ground
17 water which Watermaster shall determine, pursuant to criteria
18 specified in Exhibit "I", can be produced from Chino Basin by
19 the Appropriative Pool parties free of replenishment obliga-
20 tion under the Physical Solution herein.

21 (m) Overdraft -- A condition wherein the total annual
22 production from the Basin exceeds the Safe Yield thereof.

23 (n) Overlying Right -- The appurtenant right of an owner
24 of lands overlying Chino Basin to produce water from the Basin
25 for overlying beneficial use on such lands.

26 (o) Person. Any individual, partnership, association,
27 corporation, governmental entity or agency, or other organ-
28 ization.

1 (p) PVMWD -- Defendant Pomona Valley Municipal Water
2 District.

3 (q) Produce or Produced -- To pump or extract ground
4 water from Chino Basin.

5 (r) Producer -- Any person who produces water from Chino
6 Basin.

7 (s) Production -- Annual quantity, stated in acre feet,
8 of water produced.

9 (t) Public Hearing -- A hearing after notice to all
10 parties and to any other person legally entitled to notice.

11 (u) Reclaimed Water -- Water which, as a result of
12 processing of waste water, is suitable for a controlled use.

13 (v) Replenishment Water -- Supplemental water used to
14 recharge the Basin pursuant to the Physical Solution, either
15 directly by percolating the water into the Basin or indirectly
16 by delivering the water for use in lieu of production and use
17 of safe yield or Operating Safe Yield.

18 (w) Responsible Party -- The owner, co-owner, lessee or
19 other person designated by multiple parties interested in a
20 well as the person responsible for purposes of filing reports
21 hereunder.

22 (x) Safe Yield -- The long-term average annual quantity
23 of ground water (excluding replenishment or stored water but
24 including return flow to the Basin from use of replenishment
25 or stored water) which can be produced from the Basin under
26 cultural conditions of a particular year without causing an
27 undesirable result.

28 (y) SBVMWD -- San Bernardino Valley Municipal Water

1 District.

2 (z) State Water -- Supplemental Water imported through
3 the State Water Resources Development System, pursuant to
4 Chapter 8, Division 6, Part 6 of the Water Code.

5 (aa) Stored Water -- Supplemental water held in storage,
6 as a result of direct spreading, in lieu delivery, or other-
7 wise, for subsequent withdrawal and use pursuant to agreement
8 with Watermaster.

9 (bb) Supplemental Water -- Includes both water imported
10 to Chino Basin from outside Chino Basin Watershed, and re-
11 claimed water.

12 (cc) WMWD -- Defendant Western Municipal Water District
13 of Riverside County.

14 5. List of Exhibits. The following exhibits are attached to
15 this Judgment and made a part hereof:

16 "A" -- "Location Map of Chino Basin" showing boundaries
17 of Chino Basin Municipal Water District, and other geographic
18 and political features.

19 "B" -- "Hydrologic Map of Chino Basin" showing hydrologic
20 features of Chino Basin.

21 "C" -- Table Showing Parties in Overlying (Agricultural)
22 Pool.

23 "D" -- Table Showing Parties in Overlying (Non-
24 agricultural Pool and Their Rights.

25 "E" -- Table Showing Appropriators and Their Rights.

26 "F" -- Overlying (Agricultural) Pool Pooling Plan.

27 "G" -- Overlying (Non-agricultural) Pool Pooling Plan.

28 "H" -- Appropriative Pool Pooling Plan.

1 "I" -- Engineering Appendix.

2 "J" -- Map of In Lieu Area No. 1.

3 "K" -- Legal Description of Chino Basin.

4
5 II. DECLARATION OF RIGHTS

6 A. HYDROLOGY

7 6. Safe Yield. The Safe Yield of Chino Basin is 140,000 acre
8 feet per year.

9 7. Overdraft and Prescriptive Circumstances. In each year
10 for a period in excess of five years prior to filing of the First
11 Amended Complaint herein, the Safe Yield of the Basin has been
12 exceeded by the annual production therefrom, and Chino Basin is and
13 has been for more than five years in a continuous state of over-
14 draft. The production constituting said overdraft has been open,
15 notorious, continuous, adverse, hostile and under claim of right.
16 The circumstances of said overdraft have given notice to all
17 parties of the adverse nature of such aggregate over-production.

18 B. WATER RIGHTS IN SAFE YIELD

19 8. Overlying Rights. The parties listed in Exhibits "C" and
20 "D" are the owners or in possession of lands which overlie Chino
21 Basin. As such, said parties have exercised overlying water
22 rights in Chino Basin. All overlying rights owned or exercised by
23 parties listed in Exhibits "C" and "D" have, in the aggregate, been
24 limited by prescription except to the extent such rights have been
25 preserved by self-help by said parties. Aggregate preserved
26 overlying rights in the Safe Yield for agricultural pool use,
27 including the rights of the State of California, total 82,800 acre
28 feet per year. Overlying rights for non-agricultural pool use

1 total 7,366 acre feet per year and are individually decreed for
2 each affected party in Exhibit "D". No portion of the Safe Yield
3 of Chino Basin exists to satisfy unexercised overlying rights, and
4 such rights have all been lost by prescription. However, uses may
5 be made of Basin Water on overlying lands which have no preserved
6 overlying rights pursuant to the Physical Solution herein. All
7 overlying rights are appurtenant to the land and cannot be assigned
8 or conveyed separate or apart therefrom.

9 9. Appropriative Rights. The parties listed in Exhibit "E"
10 are the owners of appropriative rights, including rights by pres-
11 cription, in the unadjusted amounts therein set forth, and by
12 reason thereof are entitled under the Physical Solution to share in
13 the remaining Safe Yield, after satisfaction of overlying rights
14 and rights of the State of California, and in the Operating Safe
15 Yield in Chino Basin, in the annual shares set forth in Exhibit
16 "E".

17 (a) Loss of Priorities. By reason of the long continued
18 overdraft in Chino Basin, and in light of the complexity of
19 determining appropriative priorities and the need for con-
20 serving and making maximum beneficial use of the water re-
21 sources of the State, each and all of the parties listed in
22 Exhibit "E" are estopped and barred from asserting special
23 priorities or preferences, inter se. All of said appropri-
24 ative rights are accordingly deemed and considered of equal
25 priority.

26 (b) Nature and Quantity. All rights listed in Exhibit
27 "E" are appropriative and prescriptive in nature. By reason
28 of the status of the parties, and the provisions of Section

1 1007 of the Civil Code, said rights are immune from reduction
2 or limitation by prescription.

3 10. Rights of the State of California. The State of
4 California, by and through its Department of Corrections, Youth
5 Authority and Department of Fish and Game, is a significant pro-
6 ducer of ground water from and the State is the largest owner of
7 land overlying Chino Basin. The precise nature and scope of the
8 claims and rights of the State need not be, and are not, defined
9 herein. The State, through said departments, has accepted the
10 Physical Solution herein decreed, in the interests of implementing
11 the mandate of Section 2 of Article X of the California Constitu-
12 tion. For all purposes of this Judgment, all future production by
13 the State or its departments or agencies for overlying use on
14 State-owned lands shall be considered as agricultural pool use.

15 C. RIGHTS TO AVAILABLE GROUND WATER STORAGE CAPACITY

16 11. Available Ground Water Storage Capacity. There exists in
17 Chino Basin a substantial amount of available ground water storage
18 capacity which is not utilized for storage or regulation of Basin
19 Waters. Said reservoir capacity can appropriately be utilized for
20 storage and conjunctive use of supplemental water with Basin
21 Waters. It is essential that said reservoir capacity utilization
22 for storage and conjunctive use of supplemental water be undertaken
23 only under Watermaster control and regulation, in order to protect
24 the integrity of both such Stored Water and Basin Water in storage
25 and the Safe Yield of Chino Basin.

26 12. Utilization of Available Ground Water Capacity. Any
27 person or public entity, whether a party to this action or not, may
28 make reasonable beneficial use of the available ground water

1 storage capacity of Chino Basin for storage of supplemental water;
2 provided that no such use shall be made except pursuant to written
3 agreement with Watermaster, as authorized by Paragraph 28. In the
4 allocation of such storage capacity, the needs and requirements of
5 lands overlying Chino Basin and the owners of rights in the Safe
6 Yield or Operating Safe Yield of the Basin shall have priority and
7 preference over storage for export.

8
9 III. INJUNCTION

10 13. Injunction Against Unauthorized Production of Basin
11 Water. Each party in each of the respective pools is enjoined, as
12 follows:

13 (a) Overlying (Agricultural) Pool. Each party in the
14 Overlying (Agricultural) Pool, its officers, agents, employees,
15 successors and assigns, is and they each are ENJOINED AND
16 RESTRAINED from producing ground water from Chino Basin in any
17 year hereafter in excess of such party's correlative share of
18 the aggregate of 82,800 acre feet allocated to said Pool,
19 except pursuant to the Physical Solution or a storage water
20 agreement.

21 (b) Overlying (Non-Agricultural) Pool. Each party in
22 the Overlying (Non-agricultural) Pool, its officers, agents,
23 employees, successors and assigns, is and they each are
24 ENJOINED AND RESTRAINED from producing ground water of Chino
25 Basin in any year hereafter in excess of such party's decreed
26 rights in the Safe Yield, except pursuant to the provisions of
27 the Physical Solution or a storage water agreement.

28 (c) Appropriative Pool. Each party in the

1 (c) The determination of specific quantitative rights
2 and shares in the declared Safe Yield or Operating Safe Yield
3 herein declared in Exhibits "D" and "E"; and

4 (d) The amendment or modification of Paragraphs 7(a) and
5 (b) of Exhibit "H", during the first ten (10) years of oper-
6 ation of the Physical Solution, and thereafter only upon
7 affirmative recommendation of at least 67% of the voting power
8 (determined pursuant to the formula described in Paragraph 3
9 of Exhibit "H"), but not less than one-third of the members
10 of the Appropriative Pool Committee representatives of parties
11 who produce water within CBMWD or WMWD; after said tenth year
12 the formula set forth in said Paragraph 7(a) and 7(b) of
13 Exhibit "H" for payment of the costs of replenishment water
14 may be changed to 100% gross or net, or any percentage split
15 thereof, but only in response to recommendation to the Court
16 by affirmative vote of at least 67% of said voting power of
17 the Appropriative Pool representatives of parties who produce
18 ground water within CBMWD or WMWD, but not less than one-third
19 of their number. In such event, the Court shall act in con-
20 formance with such recommendation unless there are compelling
21 reasons to the contrary; and provided, further, that the fact
22 that the allocation of Safe Yield or Operating Safe Yield
23 shares may be rendered moot by a recommended change in the
24 formula for replenishment assessments shall not be deemed to
25 be such a "compelling reason."

26 Said continuing jurisdiction is provided for the purpose of en-
27 abling the Court, upon application of any party, the Watermaster,
28 the Advisory Committee or any Pool Committee, by motion and, upon

1 at least 30 days' notice thereof, and after hearing thereon, to
2 make such further or supplemental orders or directions as may be
3 necessary or appropriate for interpretation, enforcement or carry-
4 ing out of this Judgment, and to modify, amend or amplify any of
5 the provisions of this Judgment.

6
7 V. WATERMASTER

8 A. APPOINTMENT

9 16. Watermaster Appointment. CBMWD, acting by and through a
10 majority of its board of directors, is hereby appointed Water-
11 master, to administer and enforce the provisions of this Judgment
12 and any subsequent instructions or orders of the Court hereunder.
13 The term of appointment of Watermaster shall be for five (5) years.
14 The Court will by subsequent orders provide for successive terms or
15 for a successor Watermaster. Watermaster may be changed at any
16 time by subsequent order of the Court, on its own motion, or on the
17 motion of any party after notice and hearing. Unless there are
18 compelling reasons to the contrary, the Court shall act in con-
19 formance with a motion requesting the Watermaster be changed if
20 such motion is supported by a majority of the voting power of the
21 Advisory Committee.

22 B. POWERS AND DUTIES

23 17. Powers and Duties. Subject to the continuing supervision
24 and control of the Court, Watermaster shall have and may exercise
25 the express powers, and shall perform the duties, as provided in
26 this Judgment or hereafter ordered or authorized by the Court in
27 the exercise of the Court's continuing jurisdiction.

28 18. Rules and Regulations. Upon recommendation by the

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1 Advisory Committee, Watermaster shall make and adopt, after public
2 hearing, appropriate rules and regulations for conduct of Water-
3 master affairs, including meeting schedules and procedures, and
4 compensation of members of Watermaster at not to exceed \$25 per
5 member per meeting, or \$300 per member per year, whichever is less,
6 plus reasonable expenses related to activities within the Basin.
7 Thereafter, Watermaster may amend said rules from time to time upon
8 recommendation, or with approval of the Advisory Committee after
9 hearing noticed to all active parties. A copy of said rules and
10 regulations, and of any amendments thereof, shall be mailed to each
11 active party.

12 19. Acquisition of Facilities. Watermaster may purchase,
13 lease, acquire and hold all necessary facilities and equipment;
14 provided, that it is not the intent of the Court that Watermaster
15 acquire any interest in real property or substantial capital
16 assets.

17 20. Employment of Experts and Agents. Watermaster may
18 employ or retain such administrative, engineering, geologic,
19 accounting, legal or other specialized personnel and consultants as
20 may be deemed appropriate in the carrying out of its powers and
21 shall require appropriate bonds from all officers and employees
22 handling Watermaster funds. Watermaster shall maintain records for
23 purposes of allocation of costs of such services as well as of all
24 other expenses of Watermaster administration as between the several
25 pools established by the Physical Solution.

26 21. Measuring Devices. Watermaster shall cause parties,
27 pursuant to uniform rules, to install and maintain in good opera-
28 ting condition, at the cost of each party, such necessary measuring

1 devices or meters as Watermaster may deem appropriate. Such
2 measuring devices shall be inspected and tested as deemed necessary
3 by Watermaster, and the cost thereof shall constitute an expense of
4 Watermaster.

5 22. Assessments. Watermaster is empowered to levy and
6 collect all assessments provided for in the pooling plans and
7 Physical Solution.

8 23. Investment of Funds. Watermaster may hold and invest any
9 and all Watermaster funds in investments authorized from time to
10 time for public agencies of the State of California.

11 24. Borrowing. Watermaster may borrow from time to time
12 amounts not exceeding the annual anticipated receipts of Water-
13 master during such year.

14 25. Contracts. Watermaster may enter into contracts for the
15 performance of any powers herein granted; provided, however, that
16 Watermaster may not contract with or purchase materials, supplies
17 or services from CBMWD, except upon the prior recommendation and
18 approval of the Advisory Committee and pursuant to written order of
19 the Court.

20 26. Cooperation With Other Agencies. Subject to prior
21 recommendation or approval of the Advisory Committee, Watermaster
22 may act jointly or cooperate with agencies of the United States and
23 the State of California or any political subdivisions, munici-
24 palities or districts or any person to the end that the purpose of
25 the Physical Solution may be fully and economically carried out.

26 27. Studies. Watermaster may, with concurrence of the
27 Advisory Committee or affected Pool Committee and in accordance
28 with Paragraph 54(b), undertake relevant studies of hydrologic

1 conditions, both quantitative and qualitative, and operating
2 aspects of implementation of the management program for Chino
3 Basin.

4 28. Ground Water Storage Agreements. Watermaster shall
5 adopt, with the approval of the Advisory Committee, uniformly
6 applicable rules and a standard form of agreement for storage of
7 supplemental water, pursuant to criteria therefor set forth in
8 Exhibit "I". Upon appropriate application by any person, Water-
9 master shall enter into such a storage agreement; provided that all
10 such storage agreements shall first be approved by written order of
11 the Court, and shall by their terms preclude operations which will
12 have a substantial adverse impact on other producers.

13 29. Accounting for Stored Water. Watermaster shall calculate
14 additions, extractions and losses and maintain an annual account of
15 all Stored Water in Chino Basin, and any losses of water supplies
16 or Safe Yield of Chino Basin resulting from such Stored Water.

17 30. Annual Administrative Budget. Watermaster shall submit
18 to Advisory Committee an administrative budget and recommendation
19 for each fiscal year on or before March 1. The Advisory Committee
20 shall review and submit said budget and their recommendations to
21 Watermaster on or before April 1, following. Watermaster shall
22 hold a public hearing on said budget at its April quarterly meeting
23 and adopt the annual administrative budget which shall include the
24 administrative items for each pool committee. The administrative
25 budget shall set forth budgeted items in sufficient detail as
26 necessary to make a proper allocation of the expense among the
27 several pools, together with Watermaster's proposed allocation.
28 The budget shall contain such additional comparative information

1 or explanation as the Advisory Committee may recommend from time
2 to time. Expenditures within budgeted items may thereafter be
3 made by Watermaster in the exercise of powers herein granted, as a
4 matter of course. Any budget transfer in excess of 20% of a
5 budget category during any budget year or modification of such
6 administrative budget during any year shall be first submitted to
7 the Advisory Committee for review and recommendation.

8 31. Review Procedures. All actions, decisions or rules of
9 Watermaster shall be subject to review by the Court on its own
10 motion or on timely motion by any party, the Watermaster (in the
11 case of a mandated action), the Advisory Committee, or any Pool
12 Committee, as follows:

13 (a) Effective Date of Watermaster Action. Any action,
14 decision or rule of Watermaster shall be deemed to have
15 occurred or been enacted on the date on which written
16 notice thereof is mailed. Mailing of copies of approved
17 Watermaster minutes to the active parties shall constitute
18 such notice to all parties.

19 (b) Noticed Motion. Any party, the Watermaster (as
20 to any mandated action), the Advisory Committee, or any
21 Pool Committee may, by a regularly noticed motion, apply
22 to the Court for review of any Watermaster's action,
23 decision or rule. Notice of such motion shall be served
24 personally or mailed to Watermaster and to all active
25 parties. Unless otherwise ordered by the Court, such
26 motion shall not operate to stay the effect of such
27 Watermaster action, decision or rule.
28

1 (c) Time for Motion. Notice of motion to review any
2 Watermaster action, decision or rule shall be served and filed
3 within ninety (90) days after such Watermaster action, de-
4 cision or rule, except for budget actions, in which event said
5 notice period shall be sixty (60) days.

6 (d) De Novo Nature of Proceedings. Upon the filing of
7 any such motion, the Court shall require the moving party to
8 notify the active parties, the Watermaster, the Advisory
9 Committee and each Pool Committee, of a date for taking
10 evidence and argument, and on the date so designated shall
11 review de novo the question at issue. Watermaster's findings
12 or decision, if any, may be received in evidence at said
13 hearing, but shall not constitute presumptive or prima facie
14 proof of any fact in issue.

15 (e) Decision. The decision of the Court in such proceed-
16 ing shall be an appealable supplemental order in this case.
17 When the same is final, it shall be binding upon the Water-
18 master and all parties.

19 C. ADVISORY AND POOL COMMITTEES

20 32. Authorization. Watermaster is authorized and directed to
21 cause committees of producer representatives to be organized to
22 act as Pool Committees for each of the several pools created under
23 the Physical Solution. Said Pool Committees shall, in turn,
24 jointly form an Advisory Committee to assist Watermaster in per-
25 formance of its functions under this judgment. Pool Committees
26 shall be composed as specified in the respective pooling plans, and
27 the Advisory Committee shall be composed of not to exceed ten (10)
28 voting representatives from each pool, as designated by the

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1 respective Pool Committee. WMWD, PVMWD and SBVMWD shall each be
2 entitled to one non-voting representative on said Advisory Com-
3 mittee.

4 33. Term and Vacancies. Members of any Pool Committee, shall
5 serve for the term, and vacancies shall be filled, as specified in
6 the respective pooling plan. Members of the Advisory Committee
7 shall serve at the will of their respective Pool Committee.

8 34. Voting Power. The voting power on each Pool Committee
9 shall be allocated as provided in the respective pooling plan. The
10 voting power on the Advisory Committee shall be one hundred (100)
11 votes allocated among the three pools in proportion to the total
12 assessments paid to Watermaster during the preceding year; pro-
13 vided, that the minimum voting power of each pool shall be

- 14 (a) Overlying (Agricultural) Pool 20,
15 (b) Overlying (Non-agricultural) Pool 5, and
16 (c) Appropriative Pool 20.

17 In the event any pool is reduced to its said minimum vote, the re-
18 maining votes shall be allocated between the remaining pools on
19 said basis of assessments paid to Watermaster by each such remain-
20 ing pool during the preceding year. The method of exercise of
21 each pool's voting power on the Advisory Committee shall be as
22 determined by the respective pool committees.

23 35. Quorum. A majority of the voting power of the Advisory
24 Committee or any Pool Committee shall constitute a quorum for the
25 transaction of affairs of such Advisory or Pool Committee; pro-
26 vided, that at least one representative of each Pool Committee
27 shall be required to constitute a quorum of the Advisory Committee.
28 No Pool Committee representative may purposely absent himself or

1 herself, without good cause, from an Advisory Committee meeting to
2 deprive it of a quorum. Action by affirmative vote of a majority
3 of the entire voting power of any Pool Committee or the Advisory
4 Committee shall constitute action by such committee. Any action or
5 recommendation of a Pool Committee or the Advisory Committee shall
6 be transmitted to Watermaster in writing, together with a report of
7 any dissenting vote or opinion.

8 36. Compensation. Pool or Advisory Committee members may
9 receive compensation, to be established by the respective pooling
10 plan, but not to exceed twenty-five dollars (\$25.00) for each
11 meeting of such Pool or Advisory Committee attended, and provided
12 that no member of a Pool or Advisory Committee shall receive
13 compensation of more than three hundred (\$300.00) dollars for
14 service on any such committee during any one year. All such com-
15 pensation shall be a part of Watermaster administrative expense.
16 No member of any Pool or Advisory Committee shall be employed by
17 Watermaster or compensated by Watermaster for professional or other
18 services rendered to such Pool or Advisory Committee or to Water-
19 master, other than the fee for attendance at meetings herein
20 provided, plus reimbursement of reasonable expenses related to
21 activities within the Basin.

22 37. Organization.

23 (a) Organizational Meeting. At its first meeting in
24 each year, each Pool Committee and the Advisory Committee
25 shall elect a chairperson and a vice chairperson from its
26 membership. It shall also select a secretary, a treasurer
27 and such assistant secretaries and treasurers as may be
28 appropriate, any of whom may, but need not, be members of

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1 such Pool or Advisory Committee.

2 (b) Regular Meetings. All Pool Committees and the
3 Advisory Committee shall hold regular meetings at a place and
4 time to be specified in the rules to be adopted by each Pool
5 and Advisory Committee. Notice of regular meetings of any
6 Pool or Advisory Committee, and of any change in time or
7 place thereof, shall be mailed to all active parties in said
8 pool or pools.

9 (c) Special Meetings. Special meetings of any Pool or
10 Advisory Committee may be called at any time by the Chair-
11 person or by any three (3) members of such Pool or Advisory
12 Committee by delivering notice personally or by mail to each
13 member of such Pool or Advisory Committee and to each active
14 party at least 24 hours before the time of each such meeting
15 in the case of personal delivery, and 96 hours in the case of
16 mail. The calling notice shall specify the time and place of
17 the special meeting and the business to be transacted. No
18 other business shall be considered at such meeting.

19 (d) Minutes. Minutes of all Pool Committee, Advisory
20 Committee and Watermaster meetings shall be kept at Water-
21 master's offices. Copies thereof shall be mailed or otherwise
22 furnished to all active parties in the pool or pools con-
23 cerned. Said copies of minutes shall constitute notice of any
24 Pool or Advisory Committee action therein reported, and shall
25 be available for inspection by any party.

26 (e) Adjournments. Any meeting of any Pool or Advisory
27 Committee may be adjourned to a time and place specified in
28 the order of adjournment. Less than a quorum may so adjourn

1 from time to time. A copy of the order or notice of adjourn-
2 ment shall be conspicuously posted forthwith on or near the
3 door of the place where the meeting was held.

4 38. Powers and Functions. The powers and functions of the
5 respective Pool Committees and the Advisory Committee shall be as
6 follows:

7 (a) Pool Committees. Each Pool Committee shall have the
8 power and responsibility for developing policy recommendations
9 for administration of its particular pool, as created under
10 the Physical Solution. All actions and recommendations of any
11 Pool Committee which require Watermaster implementation shall
12 first be noticed to the other two pools. If no objection is
13 received in writing within thirty (30) days, such action or
14 recommendation shall be transmitted directly to Watermaster
15 for action. If any such objection is received, such action or
16 recommendation shall be reported to the Advisory Committee
17 before being transmitted to Watermaster.

18 (b) Advisory Committee. The Advisory Committee shall
19 have the duty to study, and the power to recommend, review
20 and act upon all discretionary determinations made or to be
21 made hereunder by Watermaster.

22 [1] Committee Initiative. When any recommendation
23 or advice of the Advisory Committee is received by
24 Watermaster, action consistent therewith may be taken by
25 Watermaster; provided, that any recommendation approved
26 by 80 votes or more in the Advisory Committee shall
27 constitute a mandate for action by Watermaster consistent
28 therewith. If Watermaster is unwilling or unable to act

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pursuant to recommendation or advice from the Advisory Committee (other than such mandatory recommendations), Watermaster shall hold a public hearing, which shall be followed by written findings and decision. Thereafter, Watermaster may act in accordance with said decision, whether consistent with or contrary to said Advisory Committee recommendation. Such action shall be subject to review by the Court, as in the case of all other Watermaster determinations.

[2] Committee Review. In the event Watermaster proposes to take any discretionary action, other than approval or disapproval of a Pool Committee action or recommendation properly transmitted, or execute any agreement not theretofore within the scope of an Advisory Committee recommendation, notice of such intended action shall be served on the Advisory Committee and its members at least thirty (30) days before the Watermaster meeting at which such action is finally authorized.

(c) Review of Watermaster Actions. Watermaster (as to mandated action), the Advisory Committee or any Pool Committee shall be entitled to employ counsel and expert assistance in the event Watermaster or such Pool or Advisory Committee seeks Court review of any Watermaster action or failure to act. The cost of such counsel and expert assistance shall be Watermaster expense to be allocated to the affected pool or pools.

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1 VI. PHYSICAL SOLUTION

2 A. GENERAL

3 39. Purpose and Objective. Pursuant to the mandate of
4 Section 2 of Article X of the California Constitution, the Court
5 hereby adopts and orders the parties to comply with a Physical
6 Solution. The purpose of these provisions is to establish a legal
7 and practical means for making the maximum reasonable beneficial
8 use of the waters of Chino Basin by providing the optimum economic,
9 long-term, conjunctive utilization of surface waters, ground waters
10 and supplemental water, to meet the requirements of water users
11 having rights in or dependent upon Chino Basin.

12 40. Need for Flexibility. It is essential that this Physical
13 Solution provide maximum flexibility and adaptability in order that
14 Watermaster and the Court may be free to use existing and future
15 technological, social, institutional and economic options, in order
16 to maximize beneficial use of the waters of Chino Basin. To that
17 end, the Court's retained jurisdiction will be utilized, where
18 appropriate, to supplement the discretion herein granted to the
19 Wastermaster.

20 41. Watermaster Control. Watermaster, with the advice of the
21 Advisory and Pool Committees, is granted discretionary powers in
22 order to develop an optimum basin management program for Chino
23 Basin, including both water quantity and quality considerations.
24 Withdrawals and supplemental water replenishment of Basin Water,
25 and the full utilization of the water resources of Chino Basin,
26 must be subject to procedures established by and administered
27 through Watermaster with the advice and assistance of the Advisory
28 and Pool Committees composed of the affected producers. Both the

1 quantity and quality of said water resources may thereby be pre-
2 served and the beneficial utilization of the Basin maximized.

3 42. General Pattern of Operations. It is contemplated that
4 the rights herein decreed will be divided into three (3) operating
5 pools for purposes of Watermaster administration. A fundamental
6 premise of the Physical Solution is that all water users dependent
7 upon Chino Basin will be allowed to pump sufficient waters from the
8 Basin to meet their requirements. To the extent that pumping
9 exceeds the share of the Safe Yield assigned to the Overlying
10 Pools, or the Operating Safe Yield in the case of the Appropriative
11 Pool, each pool will provide funds to enable Watermaster to replace
12 such overproduction. The method of assessment in each pool shall
13 be as set forth in the applicable pooling plan.

14 B. POOLING

15 43. Multiple Pools Established. There are hereby established
16 three (3) pools for Watermaster administration of, and for the
17 allocation of responsibility for, and payment of, costs of re-
18 plenishment water and other aspects of this Physical Solution.

19 (a) Overlying (Agricultural) Pool. The first pool shall
20 consist of the State of California and all overlying producers
21 who produce water for other than industrial or commercial
22 purposes. The initial members of the pool are listed in
23 Exhibit "C".

24 (b) Overlying (Non-agricultural) Pool. The second pool
25 shall consist of overlying producers who produce water for
26 industrial or commercial purposes. The initial members of
27 this pool are listed in Exhibit "D".

28 (c) Appropriative Pool. A third and separate pool shall

1 consist of owners of appropriative rights. The initial
2 members of the pool are listed in Exhibit "E".

3 Any party who changes the character of his use may, by sub-
4 sequent order of the Court, be reassigned to the proper pool; but
5 the allocation of Safe Yield under Paragraph 44 hereof shall not be
6 changed. Any non-party producer or any person who may hereafter
7 commence production of water from Chino Basin, and who may become a
8 party to this physical solution by intervention, shall be assigned
9 to the proper pool by the order of the Court authorizing such
10 intervention.

11 44. Determination and Allocation of Rights to Safe Yield of
12 Chino Basin. The declared Safe Yield of Chino Basin is hereby
13 allocated as follows:

14	<u>Pool</u>	<u>Allocation</u>
15	Overlying (Agricultural) Pool	414,000 acre feet in any five (5) consecutive years.
16	Overlying (Non-agricultural) 17 Pool.	7,366 acre feet per year.
18	Appropriative Pool	49,834 acre feet per year.

19 The foregoing acre foot allocations to the overlying pools are
20 fixed. Any subsequent change in the Safe Yield shall be debited or
21 credited to the Appropriative Pool. Basin Water available to the
22 Appropriative Pool without replenishment obligation may vary from
23 year to year as the Operating Safe Yield is determined by Water-
24 master pursuant to the criteria set forth in Exhibit "I".

25 45. Annual Replenishment. Watermaster shall levy and collect
26 assessments in each year, pursuant to the respective pooling plans,
27 in amounts sufficient to purchase replenishment water to replace
28 production by any pool during the preceding year which exceeds that

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1 pool's allocated share of Safe Yield in the case of the overlying
2 pools, or Operating Safe Yield in the case of the Appropriative
3 Pool. It is anticipated that supplemental water for replenishment
4 of Chino Basin may be available at different rates to the various
5 pools to meet their replenishment obligations. If such is the
6 case, each pool will be assessed only that amount necessary for the
7 cost of replenishment water to that pool, at the rate available to
8 the pool, to meet its replenishment obligation.

9 46. Initial Pooling Plans. The initial pooling plans, which
10 are hereby adopted, are set forth in Exhibits "F", "G" and "H",
11 respectively. Unless and until modified by amendment of the
12 judgment pursuant to the Court's continuing jurisdiction, each
13 such plan shall control operation of the subject pool.

14 C. REPORTS AND ACCOUNTING

15 47. Production Reports. Each party or responsible party
16 shall file periodically with Watermaster, pursuant to Watermaster
17 rules, a report on a form to be prescribed by Watermaster showing
18 the total production of such party during the preceding reportage
19 period, and such additional information as Watermaster may require,
20 including any information specified by the affected Pool Com-
21 mittee.

22 48. Watermaster Reports and Accounting. Watermaster's
23 annual report, which shall be filed on or before November 15 of
24 each year and shall apply to the preceding year's operation, shall
25 contain details as to operation of each of the pools and a certi-
26 fied audit of all assessments and expenditures pursuant to this
27 Physical Solution and a review of Watermaster activities.
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D. REPLENISHMENT

1
2 49. Sources of Supplemental Water. Supplemental water may be
3 obtained by Watermaster from any available source. Watermaster
4 shall seek to obtain the best available quality of supplemental
5 water at the most reasonable cost for recharge in the Basin. To
6 the extent that costs of replenishment water may vary between
7 pools, each pool shall be liable only for the costs attributable to
8 its required replenishment. Available sources may include, but are
9 not limited to:

10 (a) Reclaimed Water. There exist a series of agreements
11 generally denominated the Regional Waste Water Agreements
12 between CBMWD and owners of the major municipal sewer systems
13 within the basin. Under those agreements, which are recog-
14 nized hereby but shall be unaffected and unimpaired by this
15 judgment, substantial quantities of reclaimed water may be
16 made available for replenishment purposes. There are addi-
17 tional sources of reclaimed water which are, or may become,
18 available to Watermaster for said purposes. Maximum benefi-
19 cial use of reclaimed water shall be given high priority by
20 Watermaster.

21 (b) State Water. State water constitutes a major
22 available supply of supplemental water. In the case of State
23 Water, Watermaster purchases shall comply with the water
24 service provisions of the State's water service contracts.
25 More specifically, Watermaster shall purchase State Water from
26 MWD for replenishment of excess production within CBMWD, WMWD
27 and PVMWD, and from SBVMWD to replenish excess production
28 within SBVMWD's boundaries in Chino Basin, except to the

1 extent that MWD and SBVMWD give their consent as required by
2 such State water service contracts.

3 (c) Local Import. There exist facilities and methods
4 for importation of surface and ground water supplies from
5 adjacent basins and watersheds.

6 (d) Colorado River Supplies. MWD has water supplies
7 available from its Colorado River Aqueduct.

8 50. Methods of Replenishment. Watermaster may accomplish
9 replenishment of overproduction from the Basin by any reasonable
10 method, including:

11 (a) Spreading and percolation or Injection of water in
12 existing or new facilities, subject to the provisions of
13 Paragraphs 19, 25 and 26 hereof.

14 (b) In Lieu Procedures. Watermaster may make, or cause
15 to be made, deliveries of water for direct surface use, in
16 lieu of ground water production.

17 E. REVENUES

18 51. Production Assessment. Production assessments, on what-
19 ever basis, may be levied by Watermaster pursuant to the pooling
20 plan adopted for the applicable pool.

21 52. Minimal Producers. Minimal Producers shall be exempted
22 from payment of production assessments, upon filing of production
23 reports as provided in Paragraph 47 of this Judgment, and payment
24 of an annual five dollar (\$5.00) administrative fee as specified by
25 Watermaster rules.

26 53. Assessment Proceeds -- Purposes. Watermaster shall have
27 the power to levy assessments against the parties (other than
28 minimal pumpers) based upon production during the preceding period

1 of assessable production, whether quarterly, semi-annually or
2 annually, as may be determined most practical by Watermaster or the
3 affected Pool Committee.

4 54. Administrative Expenses. The expenses of administration
5 of this Physical Solution shall be categorized as either (a) gen-
6 eral Watermaster administrative expense, or (b) special project
7 expense.

8 (a) General Watermaster Administrative Expense shall
9 include office rental, general personnel expense, supplies and
10 office equipment, and related incidental expense and general
11 overhead.

12 (b) Special Project Expense shall consist of special
13 engineering, economic or other studies, litigation expense,
14 meter testing or other major operating expenses. Each such
15 project shall be assigned a Task Order number and shall be
16 separately budgeted and accounted for.

17 General Watermaster administrative expense shall be allocated
18 and assessed against the respective pools based upon allocations
19 made by the Watermaster, who shall make such allocations based upon
20 generally accepted cost accounting methods. Special Project
21 Expense shall be allocated to a specific pool, or any portion there-
22 of, only upon the basis of prior express assent and finding of
23 benefit by the Pool Committee, or pursuant to written order of the
24 Court.

25 55. Assessments -- Procedure. Assessments herein provided
26 for shall be levied and collected as follows:

27 (a) Notice of Assessment. Watermaster shall give
28 written notice of all applicable assessments to each party on

1 or before ninety (90) days after the end of the production
2 period to which such assessment is applicable.

3 (b) Payment. Each assessment shall be payable on or
4 before thirty (30) days after notice, and shall be the ob-
5 ligation of the party or successor owning the water production
6 facility at the time written notice of assessment is given,
7 unless prior arrangement for payment by others has been made
8 in writing and filed with Watermaster.

9 (c) Delinquency. Any delinquent assessment shall bear
10 interest at 10% per annum (or such greater rate as shall equal
11 the average current cost of borrowed funds to the Watermaster)
12 from the due date thereof. Such delinquent assessment and
13 interest may be collected in a show-cause proceeding herein
14 instituted by the Watermaster, in which case the Court may
15 allow Watermaster its reasonable costs of collection, includ-
16 ing attorney's fees.

17 56. Accumulation of Replenishment Water Assessment Proceeds.

18 In order to minimize fluctuation in assessment and to give Water-
19 master flexibility in purchase and spreading of replenishment
20 water, Watermaster may make reasonable accumulations of replen-
21 ishment water assessment proceeds. Interest earned on such re-
22 tained funds shall be added to the account of the pool from which
23 the funds were collected and shall be applied only to the purchase
24 of replenishment water.

25 57. Effective Date. The effective date for accounting and
26 operation under this Physical Solution shall be July 1, 1977, and
27 the first production assessments hereunder shall be due after July
28 1, 1978. Watermaster shall, however, require installation of

1 meters or measuring devices and establish operating procedures
2 immediately, and the costs of such Watermaster activity (not
3 including the cost of such meters and measuring devices) may be
4 recovered in the first administrative assessment in 1978.

6 VII. MISCELLANEOUS PROVISIONS

7 58. Designation of Address for Notice and Service. Each
8 party shall designate the name and address to be used for purposes
9 of all subsequent notices and service herein, either by its en-
10 dorsement on the Stipulation for Judgment or by a separate desig-
11 nation to be filed within thirty (30) days after Judgment has been
12 served. Said designation may be changed from time to time by
13 filing a written notice of such change with the Watermaster. Any
14 party desiring to be relieved of receiving notices of Watermaster
15 or committee activity may file a waiver of notice on a form to be
16 provided by Watermaster. Thereafter such party shall be removed
17 from the Active Party list. Watermaster shall maintain at all
18 times a current list of active parties and their addresses for
19 purposes of service. Watermaster shall also maintain a full
20 current list of names and addresses of all parties or their suc-
21 cessors, as filed herein. Copies of such lists shall be available,
22 without cost, to any party, the Advisory Committee or any Pool
23 Committee upon written request therefor.

24 59. Service of Documents. Delivery to or service upon any
25 party or active party by the Watermaster, by any other party, or by
26 the Court, of any item required to be served upon or delivered to
27 such party or active party under or pursuant to the Judgment shall
28 be made personally or by deposit in the United States mail, first

1 class, postage prepaid, addressed to the designee and at the
2 address in the latest designation filed by such party or active
3 party.

4 60. Intervention After Judgment. Any non-party assignee of
5 the adjudicated appropriative rights of any appropriator, or any
6 other person newly proposing to produce water from Chino Basin, may
7 become a party to this judgment upon filing a petition in inter-
8 vention. Said intervention must be confirmed by order of this
9 Court. Such intervenor shall thereafter be a party bound by this
10 judgment and entitled to the rights and privileges accorded under
11 the Physical Solution herein, through the pool to which the Court
12 shall assign such intervenor.

13 61. Loss of Rights. Loss, whether by abandonment, forfeiture
14 or otherwise, of any right herein adjudicated shall be accomplished
15 only (1) by a written election by the owner of the right filed with
16 Watermaster, or (2) by order of the Court upon noticed motion and
17 after hearing.

18 62. Scope of Judgment. Nothing in this Judgment shall be
19 deemed to preclude or limit any party in the assertion against a
20 neighboring party of any cause of action now existing or hereafter
21 arising based upon injury, damage or depletion of water supply
22 available to such party, proximately caused by nearby pumping which
23 constitutes an unreasonable interference with such complaining
24 party's ability to extract ground water.

25 63. Judgment Binding on Successors. This Judgment and all
26 provisions thereof are applicable to and binding upon not only the
27 parties to this action, but also upon their respective heirs,
28 executors, administrators, successors, assigns, lessees and

1 licensees and upon the agents, employees and attorneys in fact of
2 all such persons.

3 64. Costs. No party shall recover any costs in this pro-
4 ceeding from any other party.

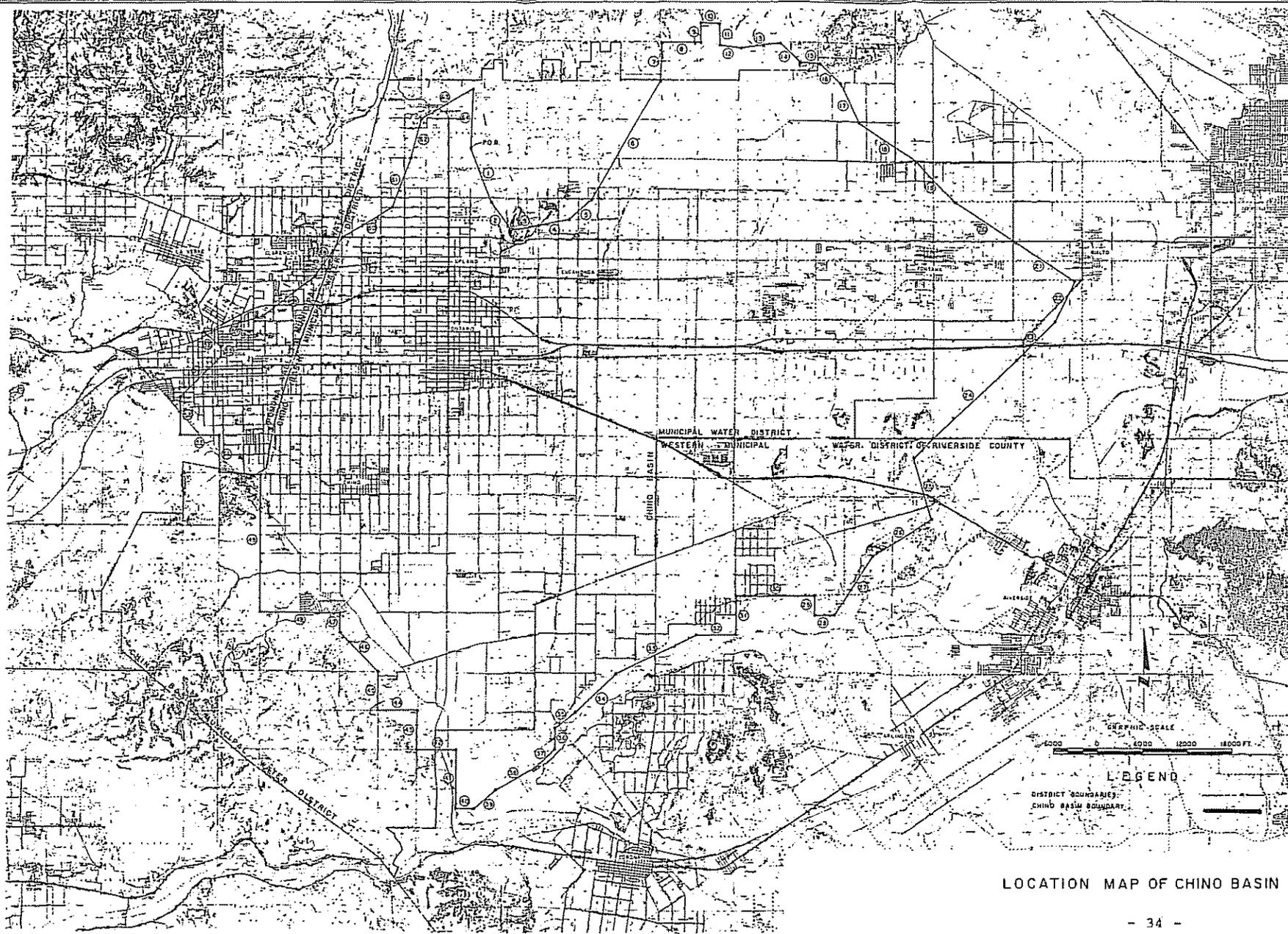
5 Dated: JAN 27 1978.

6
7 Arnold B. Weiss

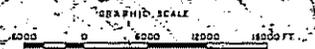
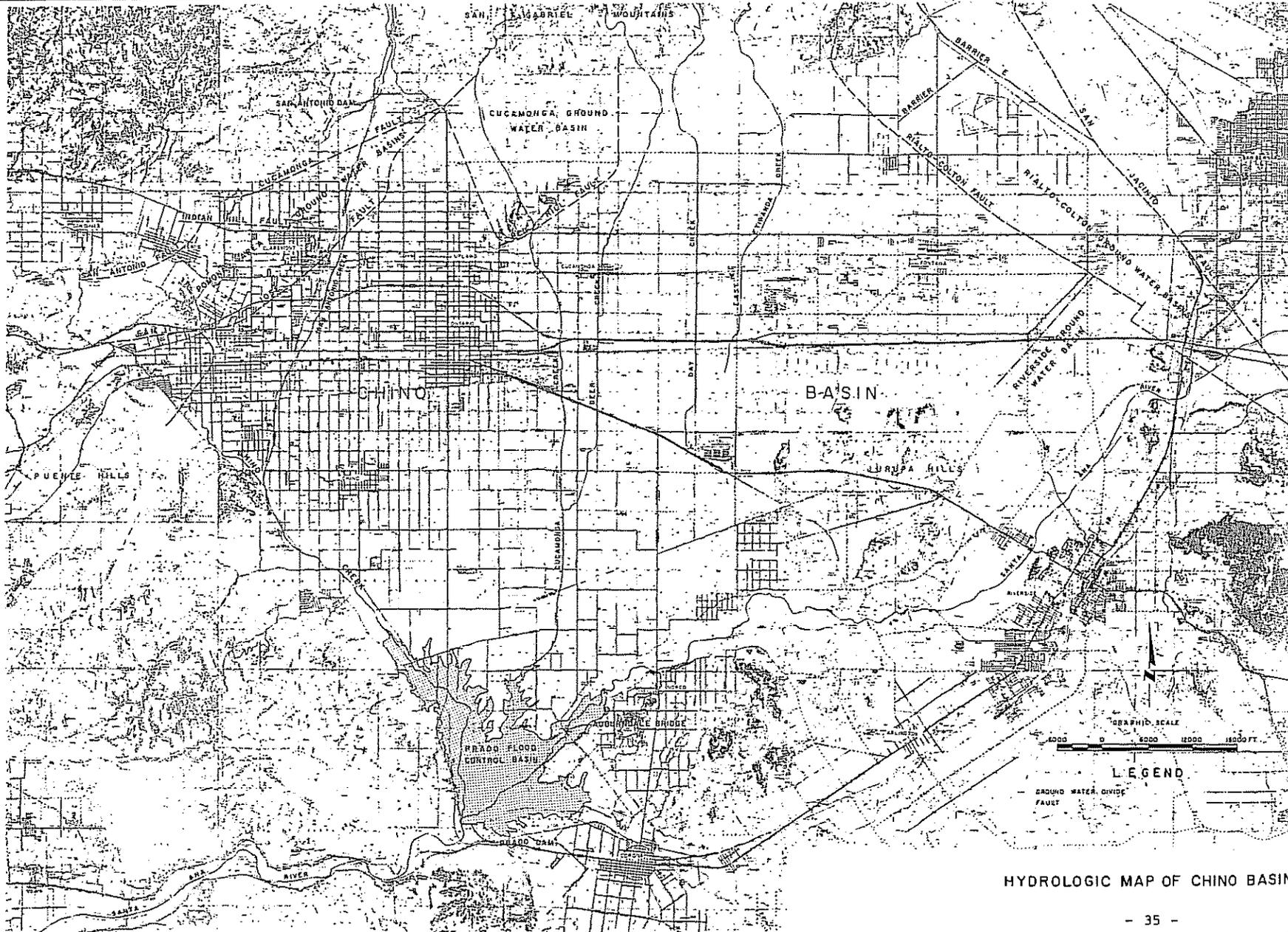
Judge

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LOCATION MAP OF CHINO BASIN



LEGEND
— GROUND WATER DIVIDE
— FAULT

HYDROLOGIC MAP OF CHINO BASIN

STIPULATING OVERLYING AGRICULTURAL PRODUCERS

1	STATE OF CALIFORNIA	Aphessetche, Xavier
2	COUNTY OF SAN BERNARDINO	Arena Mutual Water Assn.
3	Abacherli Dairy, Inc.	Armstrong Nurseries, Inc.
4	Abacherli, Frank	Arretche, Frank
5	Abacherli, Shirley	Arretche, Jean Pierre
6	Abbona, Anna	Arvidson, Clarence F.
7	Abbona, James	Arvidson, Florence
8	Abbona, Jim	Ashley, George W.
9	Abbona, Mary	Ashley, Pearl E.
10	Agliani, Amelia H.	Atlas Farms
11	Agman, Inc.	Atlas Ornamental Iron Works, Inc.
12	Aguerre, Louis B.	Aukeman, Carol
13	Ahmanson Trust Co.	Aukeman, Lewis
14	Akiyama, Shizuye	Ayers, Kenneth C., aka
15	Akiyama, Tomoo	Kelley Ayers
16	Akkerman, Dave	Bachoc, Raymond
17	Albers, J. N.	Baldwin, Edgar A.
18	Albers, Nellie	Baldwin, Lester
19	Alewyn, Jake J.	Banbury, Carolyn
20	Alewyn, Normalee	Bangma Dairy
21	Alger, Mary D.	Bangma, Arthur
22	Alger, Raymond	Bangma, Ida
23	Allen, Ben F.	Bangma, Martin
24	Allen, Jane F.	Bangma, Sam
25	Alta-Dena Dairy	Barba, Anthony B.
26	Anderson Farms	Barba, Frank
27	Anguiano, Sarah L. S.	Barcellos, Joseph
28	Anker, Gus	Barnhill, Maurine W.

EXHIBIT "C"

1	Barnhill, Paul	Boersma, Angie
2	Bartel, Dale	Boersma, Berdina
3	Bartel, Ursula	Boersma, Frank
4	Bartel, Willard	Boersma, Harry
5	Barthelemy, Henry	Boersma, Paul
6	Barthelemy, Roland	Boersma, Sam
7	Bassler, Donald V., M.D.	Boersma, William L.
8	Bates, Lowell R.	Bohlender & Holmes, Inc.
9	Bates, Mildred L.	Bokma, Peter
10	Beahm, James W.	Bollema, Jacob
11	Beahm, Joan M.	Boonstoo, Edward
12	Bekendam, Hank	Bootsma, Jim
13	Bekendam, Pete	Borba, Dolene
14	Bello, Eugene	Borba, Dolores
15	Bello, Olga	Borba, Emily
16	Beltman, Evelyn	Borba, George
17	Beltman, Tony	Borba, John
18	Bergquist Properties, Inc.	Borba, John & Sons
19	Bevacqua, Joel A.	Borba, John Jr.
20	Bevacqua, Marie B.	Borba, Joseph A.
21	Bidart, Bernard	Borba, Karen E.
22	Bidart, Michael J.	Borba, Karen M.
23	Binnell, Wesley	Borba, Pete, Estate of
24	Black, Patricia E.	Borba, Ricci
25	Black, Victor	Borba, Steve
26	Bodger, John & Sons Co.	Borba, Tom
27	Boer, Adrian	Bordisso, Alleck
28	Boersma and Wind Dairy	Borges, Angelica M.

1	Borges, Bernadette	Bothof, Roger W.
2	Borges, John O.	Bouma, Cornie
3	Borges, Linda L.	Bouma, Emma
4	Borges, Manual Jr.	Bouma, Henry P.
5	Borges, Tony	Bouma, Martin
6	Bos, Aleid	Bouma, Peter G. & Sons Dairy
7	Bos, Gerrit	Bouma, Ted
8	Bos, John	Bouman, Helen
9	Bos, John	Bouman, Sam
10	Bos, Margaret	Bower, Mabel E.
11	Bos, Mary	Boys Republic
12	Bos, Mary Beth	Breedyk, Arie
13	Bos, Tony	Breedyk, Jessie
14	Bosch, Henrietta	Briano Brothers
15	Bosch, Peter T.	Briano, Albert
16	Boschma, Betty	Briano, Albert Trustee for
17	Boschma, Frank	Briano, Albert Frank
18	Boschma, Greta	Briano, Lena
19	Boschma, Henry	Brink, Russell N.
20	Bosma, Dick	Brinkerhoff, Margaret
21	Bosma, Florence G.	Brinkerhoff, Robert L.
22	Bosma, Gerrit	Britschgi, Florence
23	Bosma, Jacob J.	Britschgi, Magdalena Garetto
24	Bosma, Jeanette Thea	Britschgi, Walter P.
25	Bosman, Frank	Brommer, Marvin
26	Bosman, Nellie	Brookside Enterprizes, dba
27	Bosnyak, Goldie M.	Brookside Vineyard Co.
28	Bosnyak, Martin	Brothers Three Dairy

1	Brown, Eugene	Chino Corona Investment
2	Brun, Martha M.	Chino Water Co.
3	Brun, Peter Robert	Christensen, Leslie
4	Buma, Duke	Christensen, Richard G.
5	Buma, Martha	Christian, Ada R.
6	Bunse, Nancy	Christian, Harold F.
7	Bunse, Ronnie L.	Christy, Ella J.
8	Caballero, Bonnie L.	Christy, Ronald S.
9	Caballero, Richard F.	Cihigoyenette, Jean
10	Cable Airport Inc.	Cihigoyenette, Leona
11	Cadlini, Donald	Cihigoyenette, Martin
12	Cadlini, Jesse R.	Clarke, Arthur B.
13	Cadlini, Marie Edna	Clarke, Nancy L.
14	Cambio, Anna	Clarke, Phyllis J.
15	Cambio, Charles, Estate of	Coelho, Isabel
16	Cambio, William V.	Coelho, Joe A. Jr.
17	Cardoza, Florence	Collins, Howard E.
18	Cardoza, Olivi	Collins, Judith F.
19	Cardoza, Tony	Collinsworth, Ester L.
20	Carnesi, Tom	Collinsworth, John E.
21	Carver, Robt M., Trustee	Collinsworth, Shelby
22	Cauffman, John R.	Cone Estate (05-2-00648/649)
23	Chacon Bros.	Consolidated Freightways Corp.
24	Chacon, Elvera P.	of Delaware
25	Chacon, Joe M.	Corona Farms Co.
26	Chacon, Robert M.	Corra, Rose
27	Chacon, Virginia L.	Costa, Dimas S.
28	Chez, Joseph C.	Costa, Laura

1	Costa, Myrtle	De Boer, L. H.
2	Costamagna, Antonio	De Boer, Sidney
3	Costamagna, Joseph	De Bos, Andrew
4	Cousyn, Claus B.	De Graaf, Anna Mae
5	Cramer, Carole F.	De Graaf, Gerrit
6	Cramer, William R.	De Groot, Dick
7	Crossroads Auto Dismantlers, Inc.	De Groot, Dorothy
8	Crouse, Beatrice I.	De Groot, Ernest
9	Crouse, Roger	De Groot, Henrietta
10	Crowley, Juanita C.	De Groot, Jake
11	Crowley, Ralph	De Groot, Pete Jr.
12	Cucamonga Vintners	De Haan, Bernadena
13	D'Astici, Teresa	De Haan, Henry
14	Da Costa, Cecilia B.	De Hoog, Adriana
15	Da Costa, Joaquim F.	De Hoog, Joe
16	Daloisio, Norman	De Hoog, Martin
17	De Berard Bros.	De Hoog, Martin L.
18	De Berard, Arthur, Trustee	De Hoog, Mitch
19	De Berard, Charles	De Hoog, Tryntje
20	De Berard, Chas., Trustee	De Jager, Cobi
21	De Berard, Helan J.	De Jager, Edward D.
22	De Berard, Robert	De Jong Brothers Dairy
23	De Berard, Robert, Trustee	De Jong, Cornelis
24	De Bie, Adrian	De Jong, Cornelius
25	De Bie, Henry	De Jong, Grace
26	De Bie, Margaret M.	De Jong, Jake
27	De Bie, Marvin	De Jong, Lena
28	De Boer, Fred	De Leeuw, Alice

LAW OFFICES
DONALD D. STARK
A PROFESSIONAL CORPORATION
SUITE 201
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IRVINE, CALIFORNIA 92715
(714) 752-8971

1	De Leeuw, Sam	Dirkse, Catherine
2	De Soete, Agnes	Dirkse, Charles C.
3	De Soete, Andre	Dixon, Charles E.
4	De Vries, Abraham	Dixon, Geraldine A.
5	De Vries, Case	Doesberg, Hendrica
6	De Vries, Dick	Doesburg, Theodorus P.
7	De Vries, Evelyn	Dolan, Marion
8	De Vries, Henry, Estate of	Dolan, Michael H.
9	De Vries, Hermina	Dominguez, Helen
10	De Vries, Jack H.	Dominguez, Manual
11	De Vries, Jane	Donkers, Henry A.
12	De Vries, Janice	Donkers, Nellie G.
13	De Vries, John	Dotta Bros.
14	De Vries, John J.	Douma Brothers Dairy
15	De Vries, Neil	Douma, Betty A.
16	De Vries, Ruth	Douma, Fred A.
17	De Vries, Theresa	Douma, Hendrika
18	De Wit, Gladys	Douma, Herman G.
19	De Wit, Peter S.	Douma, Narleen J.
20	De Wyn, Evert	Douma, Phillip M.
21	De Zoete, Hattie V.	Dow Chemical Co.
22	De Zoete, Leo A.	Dragt, Rheta
23	Decker, Hallie	Dragt, William
24	Decker, Henry A.	Driftwood Dairy Farm
25	Demmer, Ernest	Droogh, Case
26	Di Carlo, Marie	Duhalde, Marian
27	Di Carlo, Victor	Duhalde, Lauren
28	Di Tommaso, Frank	Duits, Henrietta

1	Duits, John	Excelsior Farms F.D.I.C.
2	Dunlap, Edna Kraemer,	Fagundes, Frank M.
3	Estate of	Fagundes, Mary
4	Durrington, Glen	Fernandes, Joseph Jr.
5	Durrington, William F.	Fernandes, Velma C.
6	Dusi, John, Sr.	Ferraro, Ann
7	Dykstra, Dick	Ferreira, Frank J.
8	Dykstra, John	Ferreira, Joe C. Jr.
9	Dykstra, John & Sons	Ferreira, Narcie
10	Dykstra, Wilma	Filippi, J. Vintage Co.
11	Dyt, Cor	Filippi, Joseph
12	Dyt, Johanna	Filippi, Joseph A.
13	E and S Grape Growers	Filippi, Mary E.
14	Eaton, Thomas, Estate of	Fitzgerald, John R.
15	Echeverria, Juan	Flameling Dairy Inc.
16	Echeverria, Carlos	Flamingo Dairy
17	Echeverria, Pablo	Foss, Douglas E.
18	Eilers, E. Myrle	Foss, Gerald R.
19	Eilers, Henry W.	Foss, Russel
20	El Prado Golf Course	Fred & John Troost No. 1 Inc.
21	Ellsworth, Rex C.	Fred & Maynard Troost No. 2 Inc.
22	Engelsma, Jake	Freitas, Beatriz
23	Engelsma, Susan	Freitas, Tony T.
24	Escojeda, Henry	Gakle, Louis L.
25	Etiwanda Grape Products Co.	Galleano Winery, Inc.
26	Euclid Ave. Investment One	Galleano, Bernard D.
27	Euclid Ave. Investment Four	Galleano, D.
28	Euclid Ave. Three Investment	Galleano, Mary M.

1	Garcia, Pete	Hansen, Raymond F.
2	Gardner, Leland V.	Hanson, Ardeth W.
3	Gardner, Lola M.	Harada, James T.
4	Garrett, Leonard E.	Harada, Violet A.
5	Garrett, Patricia T.	Haringa, Earl and Sons
6	Gastelluberry, Catherine	Haringa, Herman
7	Gastelluberry, Jean	Haringa, Rudy
8	Gilstrap, Glen E.	Haringa, William
9	Gilstrap, Marjorie J.	Harper, Cecilia de Mille
10	Godinho, John	Harrington, Winona
11	Godinho, June	Harrison, Jacqueline A.
12	Gonsalves, Evelyn	Hatanaka, Kenichi
13	Gonsalves, John	Heida, Annie
14	Gorzeman, Geraldine	Heida, Don
15	Gorzeman, Henry A.	Heida, Jim
16	Gorzeman, Joe	Heida, Sam
17	Govea, Julia	Helms, Addison D.
18	Goyenette, Albert	Helms, Irma A.
19	Grace, Caroline E.	Hermans, Alma I.
20	Grace, David J.	Hermans, Harry
21	Gravatt, Glenn W.	Hettinga, Arthur
22	Gravatt, Sally Mae	Hettinga, Ida
23	Greydanus Dairy, Inc.	Hettinga, Judy
24	Greydanus, Rena	Hettinga, Mary
25	Griffin Development Co.	Hettinga, Wilbur
26	Haagsma, Dave	Heublein, Inc., Grocery Products
27	Haagsma, John	Group
28	Hansen, Mary D.	Hibma, Catherine M.

1	Hibma, Sidney	Hohberg, Harold C.
2	Hicks, Kenneth I.	Hohberg, Harold W.
3	Hicks, Minnie M.	Holder, Arthur B.
4	Higgins Brick Co.	Holder, Dorothy F.
5	Highstreet, Alfred V.	Holmes, A. Lee
6	Highstreet, Evada V.	Holmes, Frances P.
7	Hilarides, Bertha as Trustee	Hoogeboom, Gertrude
8	Hilarides, Frank	Hoogeboom, Pete
9	Hilarides, John as Trustee	Hoogendam, John
10	Hindelang, Tillie	Hoogendam, Tena
11	Hindelang, William	Houssels, J. K. Thoroughbred Farm
12	Hobbs, Bonnie C.	
13	Hobbs, Charles W.	Hunt Industries
14	Hobbs, Hazel I.	Idsinga, Ann
15	Hobbs, Orlo M.	Idsinga, William W.
16	Hoekstra, Edward	Imbach Ranch, Inc.
17	Hoekstra, George	Imbach, Kenneth E.
18	Hoekstra, Grace	Imbach, Leonard K.
19	Hoekstra, Louie	Imbach, Oscar K.
20	Hofer, Paul B.	Imbach, Ruth M.
21	Hofer, Phillip F.	Indaburu, Jean
22	Hofstra, Marie	Indaburu, Marceline
23	Hogeboom, Jo Ann M.	Iseli, Kurt H.
24	Hogeboom, Maurice D.	Ito, Kow
25	Hogg, David V.	J & B Dairy Inc.
26	Hogg, Gene P.	Jaques, Johnny C. Jr.
27	Hogg, Warren G.	Jaques, Mary
28	Hohberg, Edith J.	Jaques, Mary Lou

1	Jay Em Bee Farms	Knevelbaard, John
2	Johnson Bro's Egg Ranches, Inc.	Knudsen, Ejnar
3	Johnston, Ellwood W.	Knudsen, Karen M.
4	Johnston, George F. Co.	Knudsen, Kenneth
5	Johnston, Judith H.	Knudson, Robert
6	Jones, Leonard P.	Knudson, Darlene
7	Jongsma & Sons Dairy	Koel, Helen S.
8	Jongsma, Diana A.	Koetsier, Gerard
9	Jongsma, Dorothy	Koetsier, Gerrit J.
10	Jongsma, George	Koetsier, Jake
11	Jongsma, Harold	Koning, Fred W.
12	Jongsma, Henry	Koning, Gloria
13	Jongsma, John	Koning, J. W. Estate
14	Jongsma, Nadine	Koning, James A.
15	Jongsma, Tillie	Koning, Jane
16	Jordan, Marjorie G.	Koning, Jane C.
17	Jordan, Troy O.	Koning, Jennie
18	Jorritsma, Dorothy	Koning, John
19	Juliano, Albert	Koning, Victor A.
20	Kamper, Cornelis	Kooi Holstein Corporation
21	Kamstra, Wilbert	Koolhaas, Kenneth E.
22	Kaplan, Lawrence J.	Koolhaas, Simon
23	Kasbergen, Martha	Koolhaas, Sophie Grace
24	Kasbergen, Neil	Koopal, Grace
25	Kazian, Angelen Estate of	Koopal, Silas
26	Kingsway Const. Corp.	Koopman, Eka
27	Klapps Market	Koopman, Gene T.
28	Kline, James K.	Koopman, Henry G.

1	Koopman, Ted	Leck, Arthur A.
2	Koopman, Tena	Leck, Evelyn M.
3	Koot, Nick	Lee, Harold E.
4	Koster, Aart	Lee, Helen J.
5	Koster, Frances	Lee, Henrietta C.
6	Koster, Henry B.	Lee, R. T. Construction Co.
7	Koster, Nellie	Lekkerkerk, Adriana
8	Kroes, Jake R.	Lekkerkerk, L. M.
9	Kroeze, Bros	Lekkerkerker, Nellie
10	Kroeze, Calvin E.	Lekkerkerker, Walt
11	Kroeze, John	Lewis Homes of California
12	Kroeze, Wesley	Livingston, Dorothy M.
13	Kruckenber, Naomi	Livingston, Rex E.
14	Kruckenber, Perry	Lokey, Rosemary Kraemer
15	L. D. S. Welfare Ranch	Lopes, Candida A.
16	Labrucherie, Mary Jane	Lopes, Antonio S.
17	Labrucherie, Raymond F.	Lopez, Joe D.
18	Lako, Samuel	Lourenco, Carlos, Jr.
19	Landman Corp.	Lourenco, Carmelina P.
20	Lanting, Broer	Lourenco, Jack C.
21	Lanting, Myer	Lourenco, Manual H.
22	Lass, Jack	Lourenco, Mary
23	Lass, Sandra L.	Lourenco, Mary
24	Lawrence, Cecelia, Estate of	Luiten, Jack
25	Lawrence, Joe H., Estate of	Luiz, John M.
26	Leal, Bradley W.	Luna, Christine I.
27	Leal, John C.	Luna, Ruben T.
28	Leal, John Craig	Lusk, John D. and Son a California corporation

1	Lyon, Gregory E.	Mickel, Louise
2	Lyon, Paula E.	Miersma, Dorothy
3	M & W Co. #2	Meirmsma, Harry C.
4	Madole, Betty M.	Minaberry, Arnaud
5	Madole, Larry B.	Minaberry, Marie
6	Marquez, Arthur	Mistretta, Frank J.
7	Marquine, Jean	Mocho and Plaa Inc.
8	Martin, Lelon O.	Mocho, Jean
9	Martin, Leon O.	Mocho, Noeline
10	Martin, Maria D.	Modica, Josephine
11	Martin, Tony J.	Montes, Elizabeth
12	Martins, Frank	Montes, Joe
13	Mathias, Antonio	Moons, Beatrice
14	Mc Cune, Robert M.	Moons, Jack
15	Mc Masters, Gertrude	Moramarco, John A. Enterprises
16	Mc Neill, J. A.	Moreno, Louis W.
17	Mc Neill, May F.	Moss, John R.
18	Mees, Leon	Motion Pictures Associates, Inc.
19	Mello and Silva Dairy	Moynier, Joe
20	Mello and Sousa Dairy	Murphy, Frances V.
21	Mello, Emilia	Murphy, Myrl L.
22	Mello, Enos C.	Murphy, Naomi
23	Mello, Mercedes	Nanne, Martin Estate of
24	Mendiondo, Catherine	Nederend, Betty
25	Mendiondo, Dominique	Nederend, Hans
26	Meth. Hosp. - Sacramento	Norfolk, James
27	Metzger, R. S.	Norfolk, Martha
28	Metzger, Winifred	Notrica, Louis

1	Nyberg, Lillian M.	Ormonde, Viva
2	Nyenhuis, Annie	Ortega, Adeline B.
3	Nyenhuis, Jim	Ortega, Bernard Dino
4	Occidental Land Research	Osterkamp, Joseph S.
5	Okumura, Marion	Osterkamp, Margaret A.
6	Okumura, Yuiche	P I E Water Co.
7	Oldengarm, Effie	Palmer, Eva E.
8	Oldengarm, Egbert	Palmer, Walter E.
9	Oldengarm, Henry	Parente, Luis S.
10	Oliviera, Manuel L.	Parente, Mary Borba .
11	Oliviera, Mary M.	Parks, Jack B.
12	Olson, Albert	Parks, Laura M.
13	Oltmans Construction Co.	Patterson, Lawrence E. Estate of
14	Omlin, Anton	Payne, Clyde H.
15	Omlin, Elsie L.	Payne, Margo
16	Ontario Christian School Assn.	Pearson, Athelia K.
17	Oord, John	Pearson, William C.
18	Oostdam, Jacoba	Pearson, William G.
19	Oostdam, Pete	Pene, Robert
20	Oosten, Agnes	Perian, Miller
21	Oosten, Anthonia	Perian, Ona E.
22	Oosten, Caroline	Petrissans, Deanna
23	Oosten, John	Petrissans, George
24	Oosten, Marinus	Petrissans, Jean P.
25	Oosten, Ralph	Petrissans, Marie T.
26	Orange County Water District	Pickering, Dora M.
27	Ormonde, Manuel	(Mrs. A. L. Pickering)
28	Ormonde, Pete, Jr.	Pierce, John

1	Pierce, Sadie	Righetti, A. T.
2	Pietszak, Sally	Riley, George A.
3	Pine, Joe	Riley, Helen C.
4	Pine, Virginia	Robbins, Jack K.
5	Pires, Frank	Rocha, John M.
6	Pires, Marie	Rocha, Jose C.
7	Plaa, Jeanne	Rodrigues, John
8	Plaa, Michel	Rodrigues, Manuel
9	Plantenga, Agnes	Rodrigues, Manuel, Jr.
10	Plantenga, George	Rodrigues, Mary L.
11	Poe, Arlo D.	Rodriquez, Daniel
12	Pomona Cemetery Assn.	Rogers, Jack D.
13	Porte, Cecelia, Estate of	Rohrer, John A.
14	Porte, Garritt, Estate of	Rohrer, Theresa D.
15	Portsmouth, Vera McCarty	Rohrs, Elizabeth H.
16	Ramella, Mary M.	Rossetti, M. S.
17	Ramirez, Concha	Roukema, Angeline
18	Rearick, Hildegard H.	Roukema, Ed.
19	Rearick, Richard R.	Roukema, Nancy
20	Reinalda, Clarence	Roukema, Siebren
21	Reitsma, Greta	Ruderian, Max J.
22	Reitsma, Louis	Russell, Fred J.
23	Rice, Bernice	Rusticus, Ann
24	Rice, Charlie E.	Rusticus, Charles
25	Richards, Karin	Rynsburger, Arie
26	(Mrs. Ronnie Richards)	Rynsburger, Berdena, Trust
27	Richards, Ronald L.	Rynsburger, Joan Adele
28	Ridder, Jennie Wassenaar	Rynsburger, Thomas

1	S. P. Annex, Inc.	Scott, Frances M.
2	Salisbury, Elinor J.	Scott, Linda F.
3	Sanchez, Edmundo	Scott, Stanley A.
4	Sanchez, Margarita O.	Scritsmier, Lester J.
5	Santana, Joe Sr.	Serl, Charles A.
6	Santana, Palmira	Serl, Rosalie P.
7	Satragni, John B. Jr.	Shady Grove Dairy, Inc.
8	Scaramella, George P.	Shamel, Burt A.
9	Schaafsma Bros.	Shelby, Harold E.
10	Schaafsma, Jennie	Shelby, John A.
11	Schaafsma, Peter	Shelby, Velma M.
12	Schaafsma, Tom	Shelton, Alice A.
13	Schaap, Andy	Sherwood, Robert W.
14	Schaap, Ids	Sherwood, Sheila J.
15	Schaap, Maria	Shue, Eva
16	Schacht, Sharon C.	Shue, Gilbert
17	Schakel, Audrey	Sieperda, Anne
18	Schakel, Fred	Sieperda, James
19	Schmid, Olga	Sigrist, Hans
20	Schmidt, Madeleine	Sigrist, Rita
21	Schoneveld, Evert	Silveira, Arline L.
22	Schoneveld, Henrietta	Silveira, Frank
23	Schoneveld, John	Silveira, Jack
24	Schoneveld, John Allen	Silveira, Jack P. Jr.
25	Schug, Donald E.	Simas, Dolores
26	Schug, Shirley A.	Simas, Joe
27	Schuh, Bernatta M.	Singleton, Dean
28	Schuh, Harold H.	Singleton, Elsie R.

1	Sinnott, Jim	Staal, John
2	Sinnott, Mildred B.	Stahl, Zippora P.
3	Slegers, Dorothy	Stampfl, Berta
4	Slegers, Hubert J.	Stampfl, William
5	Slegers, Jake	Stanley, Robert E.
6	Slegers, Jim	Stark, Everett
7	Slegers, Lenwood M.	Stellingwerf, Andrew
8	Slegers, Martha	Stellingwerf, Henry
9	Slegers, Tesse J.	Stellingwerf, Jenette
10	Smith, Edward S.	Stellingwerf, Shana
11	Smith, Helen D.	Stellingwerf, Stan
12	Smith, James E.	Stelzer, Mike C.
13	Smith, Keith J.	Sterk, Henry
14	Smith, Lester W.	Stiefel, Winifred
15	Smith, Lois Maxine	Stiefel, Jack D.
16	Smith, Marjorie W.	Stigall, Richard L.
17	Soares, Eva	Stigall, Vita
18	Sogioka, Mitsuyoshi	Stockman's Inn
19	Sogioka, Yoshimato	Stouder, Charlotte A.
20	Sousa, Sam	Stouder, William C.
21	Southern Pacific Land Co.	Struikmans, Barbara
22	Southfield, Eddie	Struikmans, Gertie
23	Souza, Frank M.	Struikmans, Henry Jr.
24	Souza, Mary T.	Struikmans, Henry Sr.
25	Spickerman, Alberta	Struikmans, Nellie
26	Spickerman, Florence	Swager, Edward
27	Spickerman, Rudolph	Swager, Gerben
28	Spyksma, John	Swager, Johanna

1	Swager, Marion	Terpstra, Theodore G.
2	Swierstra, Donald	Teune, Tony
3	Swierstra, Fanny	Teunissen, Bernard
4	Sybrandy, Ida	Teunissen, Jane
5	Sybrandy, Simon	Thomas, Ethel M.
6	Sytsma, Albert	Thommen, Alice
7	Sytsma, Edith	Thommen, Fritz
8	Sytsma, Jennie	Tillema, Allie
9	Sytsma, Louie	Tillema, Harold
10	Te Velde, Agnes	Tillema, Klaas D.
11	Te Velde, Bay	Timmons, William R.
12	Te Velde, Bernard A.	Tollerup, Barbara
13	Te Velde, Bonnie	Tollerup, Harold
14	Te Velde, Bonnie G.	Trapani, Louis A.
15	Te Velde, George	Trimlett, Arlene R.
16	Te Velde, George, Jr.	Trimlett, George E.
17	Te Velde, Harm	Tristant, Pierre
18	Te Velde, Harriet	Tuinhout, Ale
19	Te Velde, Henry J.	Tuinhout, Harry
20	Te Velde, Jay	Tuinhout, Hilda
21	Te Velde, Johanna	Tuls, Elizabeth
22	Te Velde, John H.	Tuls, Jack S.
23	Te Velde, Ralph A.	Tuls, Jake
24	Te Velde, Zwaantina, Trustee	Union Oil Company of California
25	Ter Maaten, Case	United Dairyman's Co-op.
26	Ter Maaten, Cleone	Urquhart, James G.
27	Ter Maaten, Steve	Usle, Cathryn
28	Terpstra, Carol	Usle, Faustino

1	V & Y Properties	Van Hofwegen, Clara
2	Vaile, Beryl M.	Van Hofwegen, Jessie
3	Valley Hay Co.	Van Klaveren, A.
4	Van Beek Dairy Inc.	Van Klaveren, Arie
5	Van Canneyt Dairy	Van Klaveren, Wilhelmina
6	Van Canneyt, Maurice	Van Klaveren, William
7	Van Canneyt, Wilmer	Van Leeuwen, Arie C.
8	Van Dam, Bas	Van Leeuwen, Arie C.
9	Van Dam, Isabelle	Van Leeuwen, Arlan
10	Van Dam, Nellie	Van Leeuwen, Clara G.
11	Van Den Berg, Gertrude	Van Leeuwen, Cornelia L.
12	Van Den Berg, Joyce	Van Leeuwen, Harriet
13	Van Den Berg, Marinus	Van Leeuwen, Jack
14	Van Den Berg, Marvin	Van Leeuwen, John
15	Van Der Linden, Ardith	Van Leeuwen, Letie
16	Van Der Linden, John	Van Leeuwen, Margie
17	Van Der Linden, Stanley	Van Leeuwen, Paul
18	Van Der Veen, Kenneth	Van Leeuwen, William A.
19	Van Diest, Anna T.	Van Ravenswaay, Donald
20	Van Diest, Cornelius	Van Ryn Dairy
21	Van Diest, Ernest	Van Ryn, Dick
22	Van Diest, Rena	Van Surksum, Anthonetta
23	Van Dyk, Bart	Van Surksum, John
24	Van Dyk, Jeanette	Van Veen, John
25	Van Foeken, Martha	Van Vliet, Effie
26	Van Foeken, William	Van Vliet, Hendrika
27	Van Hofwegan, Steve	Van Vliet, Hugo
28	Van Hofwegen, Adrian A.	Van Vliet, Klaas

1	Vande Witte, George	Vander Laan, Katie
2	Vanden Berge, Gertie	Vander Laan, Martin Jr.
3	Vanden Berge, Gertie	Vander Laan, Tillie
4	Vanden Berge, Jack	Vander Leest, Anna
5	Vanden Berge, Jake	Vander Leest, Ann
6	Vanden Brink, Stanley	Vander Meer, Alice
7	Vander Dussen, Agnes	Vander Meer, Dick
8	Vander Dussen, Cor	Vander Poel, Hank
9	Vander Dussen, Cornelius	Vander Poel, Pete
10	Vander Dussen, Edward	Vander Pol, Irene
11	Vander Dussen, Geraldine Marie	Vander Pol, Margie
12	Vander Dussen, James	Vander Pol, Marines
13	Vander Dussen, John	Vander Pol, William P.
14	Vander Dussen, Nelvina	Vander Schaaf, Earl
15	Vander Dussen, Rene	Vander Schaaf, Elizabeth
16	Vander Dussen, Sybrand Jr.	Vander Schaaf, Henrietta
17	Vander Dussen, Sybrand Sr.	Vander Schaaf, John
18	Vander Dussen Trustees	Vander Schaaf, Ted
19	Vander Eyk, Case Jr.	Vander Stelt, Catherine
20	Vander Eyk, Case Sr.	Vander Stelt, Clarence
21	Vander Feer, Peter	Vander Tuig, Arlene
22	Vander Feer, Rieka	Vander Tuig, Sylvester
23	Vander Laan, Ann	Vander Veen, Joe A.
24	Vander Laan, Ben	Vandervlag, Robert
25	Vander Laan, Bill	Vander Zwan, Peter
26	Vander Laan, Corrie	Vanderford, Betty W.
27	Vander Laan, Henry	Vanderford, Claud R.
28	Vander Laan, James	Vanderham, Adrian

1	Vanderham, Cornelius	Vestal, J. Howard
2	Vanderham, Cornelius P.	Visser, Gerrit
3	Vanderham, Cory	Visser, Grace
4	Vanderham, E. Jane	Visser, Henry
5	Vanderham, Marian	Visser, Jess
6	Vanderham, Martin	Visser, Louie
7	Vanderham, Pete C.	Visser, Neil
8	Vanderham, Wilma	Visser, Sam
9	Vasquez, Eleanor	Visser, Stanley
10	Veenendaal, Evert	Visser, Tony D.
11	Veenendaal, John H.	Visser, Walter G.
12	Veiga, Dominick Sr.	Von Der Ahe, Fredric T.
13	Verbree, Jack	Von Euw, George
14	Verbree, Tillie	Von Euw, Marjorie
15	Verger, Bert	Von Lusk, a limited partnership
16	Verger, Betty	Voortman, Anna Marie
17	Verhoeven, Leona	Voortman, Edward
18	Verhoeven, Martin	Voortman, Edwin J.
19	Verhoeven, Wesley	Voortman, Gertrude Dena
20	Vermeer, Dick	Wagner, Richard H.
21	Vermeer, Jantina	Walker, Carole R.
22	Vernola Ranch	Walker, Donald E.
23	Vernola, Anthonietta	Walker, Wallace W.
24	Vernola, Anthony	Wardle, Donald M.
25	Vernola, Frank	Warner, Dillon B.
26	Vernola, Mary Ann	Warner, Minnie
27	Vernola, Pat F.	Wassenaar, Peter W.
28	Vestal, Frances Lorraine	Waters, Michael

1	Weeda, Adriana	Wiersma, Jake
2	Weeda, Daniel	Wiersma, Otto
3	Weeks, O. L.	Wiersma, Pete
4	Weeks, Verona E.	Winchell, Verne H., Trustee
5	Weidman, Maurice	Wind, Frank
6	Weidman, Virginia	Wind, Fred
7	Weiland, Adaline I.	Wind, Hilda
8	Weiland, Peter J.	Wind, Johanna
9	Wesselink, Jules	Woo, Frank
10	West, Katharine R.	Woo, Sem Gee
11	West, Russel	Wybenga, Clarence
12	West, Sharon Ann	Wybenga, Gus
13	Western Horse Property	Wybenga, Gus K.
14	Westra, Alice	Wybenga, Sylvia
15	Westra, Henry	Wynja, Andy
16	Westra, Hilda	Wynja, Iona F.
17	Westra, Jake J.	Yellis, Mildred
18	Weststeyn, Freida	Yellis, Thomas E.
19	Weststeyn, Pete	Ykema-Harmsen Dairy
20	Whitehurst, Louis G.	Ykema, Floris
21	Whitehurst, Pearl L.	Ykema, Harriet
22	Whitmore, David L.	Yokley, Betty Jo
23	Whitmore, Mary A.	Yokley, Darrell A.
24	Whitney, Adolph M.	Zak, Zan
25	Wiersema, Harm	Zivelonghi, George
26	Wiersema, Harry	Zivelonghi, Margaret
27	Wiersma, Ellen H.	Zwaagstra, Jake
		Zwaagstra, Jessie M.
28	Wiersma, Gladys J.	Zwart, Case

NON-PRODUCER WATER DISTRICTS

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- Chino Basin Municipal Water District
- Chino Basin Water Conservation District
- Pomona Valley Municipal Water District
- Western Municipal Water District of Riverside County

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DEFAULTING OVERLYING AGRICULTURAL PRODUCERS

1		
2	Cheryl L. Bain	Roy W. Lantis
3	Warren Bain	Sharon I. Lantis
4	John M. Barcelona	Frank Lorenz
5	Letty Bassler	Dagney H. MacDonald
6	John Brazil	Frank E. Martin
7	John S. Briano	Ruth C. Martin
8	Lupe Briano	Connie S. Mello
9	Paul A. Briano	Naldiro J. Mello
10	Tillie Briano	Felice Miller
11	Arnie B. Carlson	Ted Miller
12	John Henry Fikse	Masao Nerio
13	Phyllis S. Fikse	Tom K. Nerio
14	Lewellyn Flory	Toyo Nerio
15	Mary I. Flory	Yuriko Nerio
16	L. H. Glazer	Harold L. Rees
17	Dorothy Goodman	Alden G. Rose
18	Sidney D. Goodman	Claude Rouleau, Jr.
19	Frank Grossi	Patricia M. Rouleau
20	Harada Brothers	Schultz Enterprises
21	Ellen Hettinga	Albert Shaw
22	Hein Hettinga	Lila Shaw
23	Dick Hofstra, Jr.	Cathy M. Stewart
24	Benjamin M. Hughey	Marvin C. Stewart
25	Frieda L. Hughey	Betty Ann Stone
26	Guillaume Indart	John B. Stone
27	Ellwood B. Johnston, Trustee	Vantoll Cattle Co., Inc.
28	Perry Kruckenberg, Jr.	Catherine Verburg

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- 1 Martin Verburg
- 2 Donna Vincent
- 3 Larry Vincent
- 4 Cliff Wolfe & Associates
- 5 Ada M. Woll
- 6 Zarubica Co.
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EXHIBIT "D"

OVERLYING NON-AGRICULTURAL RIGHTS

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<u>Party</u>	<u>Total Overlying Non-Agricultural Rights (Acre Feet)</u>	<u>Share of Safe Yield (Acre Feet)</u>
Ameron Steel Producers, Inc.	125	97.858
County of San Bernardino	171	133.870
Conrock Company	406	317.844
Kaiser Steel Corporation	3,743	2,930.274
Red Star Fertilizer	20	15.657
Southern California Edison Co.	1,255	982.499
Space Center, Mira Loma	133	104.121
Southern Service Co., dba		
Blue Seal Linen	24	18.789
Sunkist, Orange Products Division	2,393	1,873.402
Carlsberg Mobile Home Properties,		
Ltd. '73	593	464.240
Union Carbide Corporation	546	427.446
Quaker Chemical Co.	<u>0</u>	<u>0</u>
Totals	9,409	7,366.000

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EXHIBIT "E"
APPROPRIATIVE RIGHTS

<u>Party</u>	<u>Appropriative Right (Acre Feet)</u>	<u>Share of Initial Operating Safe Yield (Acre Feet)</u>	<u>Share of Operating Safe Yield (Percent)</u>
City of Chino	5,271.7	3,670.067	6.693
City of Norco	289.5	201.545	0.368
City of Ontario	16,337.4	11,373.816	20.742
City of Pomona	16,110.5	11,215.852	20.454
City of Upland	4,097.2	2,852.401	5.202
Cucamonga County Water District	4,431.0	3,084.786	5.626
Jurupa Community Ser- vices District	1,104.1	768.655	1.402
Monte Vista County Water District	5,958.7	4,148.344	7.565
West San Bernardino County Water District	925.5	644.317	1.175
Etiwanda Water Company	768.0	534.668	0.975
Felspar Gardens Mutual Water Company	68.3	47.549	0.087
Fontana Union Water Co.	9,188.3	6,396.736	11.666
Marygold Mutual Water Co.	941.3	655.317	1.195
Mira Loma Water Co.	1,116.0	776.940	1.417
Monta Vista Irr. Co.	972.1	676.759	1.234
Mutual Water Company of Glen Avon Heights	672.2	467.974	0.853
Park Water Company	236.1	164.369	0.300
Pomona Valley Water Co.	3,106.3	2,162.553	3.944
San Antonio Water Co.	2,164.5	1,506.888	2.748
Santa Ana River Water Company	1,869.3	1,301.374	2.373
Southern California Water Company	1,774.5	1,235.376	2.253
West End Consolidated Water Company	<u>1,361.3</u>	<u>947.714</u>	<u>1.728</u>
TOTAL	78,763.8	54,834.000	100.000

EXHIBIT "E"

EXHIBIT "F"
OVERLYING (AGRICULTURAL) POOL
POOLING PLAN

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3 1. Membership in Pool. The State of California and all pro-
4 ducers listed in Exhibit "C" shall be the initial members of this
5 pool, which shall include all producers of water for overlying
6 uses other than industrial or commercial purposes.

7 2. Pool Meetings. The members of the pool shall meet
8 annually, in person or by proxy, at a place and time to be desig-
9 nated by Watermaster for purposes of electing members of the Pool
10 Committee and conducting any other business of the pool. Special
11 meetings of the membership of the pool may be called and held as
12 provided in the rules of the pool.

13 3. Voting. All voting at meetings of pool members shall be
14 on the basis of one vote for each 100 acre feet or any portion
15 thereof of production from Chino Basin during the preceding year,
16 as shown by the records of Watermaster.

17 4. Pool Committee. The Pool Committee for this pool shall
18 consist of not less than nine (9) representatives selected at
19 large by members of the pool. The exact number of members of the
20 Pool Committee in any year shall be as determined by majority vote
21 of the voting power of members of the pool in attendance at the
22 annual pool meeting. Each member of the Pool Committee shall have
23 one vote and shall serve for a two-year term. The members first
24 elected shall classify themselves by lot so that approximately
25 one-half serve an initial one-year term. Vacancies during any
26 term shall be filled by a majority of the remaining members of the
27 Pool Committee.

28 5. Advisory Committee Representatives. The number of

1 representatives of the Pool Committee on the Advisory Committee
2 shall be as provided in the rules of the pool from time to time
3 but not exceeding ten (10). The voting power of the pool on the
4 Advisory Committee shall be apportioned and exercised as deter-
5 mined from time to time by the Pool Committee.

6 6. Replenishment Obligation. The pool shall provide funds
7 for replenishment of any production by persons other than members
8 of the Overlying (Non-agricultural) Pool or Appropriator Pool, in
9 excess of the pool's share of Safe Yield. During the first five
10 (5) years of operations of the Physical Solution, reasonable
11 efforts shall be made by the Pool Committee to equalize annual
12 assessments.

13 7. Assessments. All assessments in this pool (whether for
14 replenishment water cost or for pool administration or the allo-
15 cated share of Watermaster administration) shall be in an amount
16 uniformly applicable to all production in the pool during the
17 preceding year or calendar quarter. Provided, however, that the
18 Agricultural Pool Committee, may recommend to the Court modifica-
19 tion of the method of assessing pool members, inter se, if the
20 same is necessary to attain legitimate basin management objectives,
21 including water conservation and avoidance of undesirable socio-
22 economic consequences. Any such modification shall be initiated
23 and ratified by one of the following methods:

24 (a) Excess Production. In the event total pool
25 production exceeds 100,000 acre feet in any year, the Pool
26 Committee shall call and hold a meeting, after notice to all
27 pool members, to consider remedial modification of the
28 assessment formula.

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(b) Producer Petition. At any time after the fifth full year of operation under the Physical Solution, a petition by ten percent (10%) of the voting power or membership of the Pool shall compel the holding of a noticed meeting to consider revision of said formula of assessment for replenishment water.

In either event, a majority action of the voting power in attendance at such pool members' meeting shall be binding on the Pool Committee.

8. Rules. The Pool Committee shall adopt rules for conducting meetings and affairs of the committee and for administering its program and in amplification of the provisions, but not inconsistent with, this pooling plan.

EXHIBIT "G"
OVERLYING (NON-AGRICULTURAL) POOL
POOLING PLAN

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3 1. Membership in Pool. The initial members of the pool,
4 together with the decreed share of the Safe Yield of each, are
5 listed in Exhibit "D". Said pool includes producers of water for
6 overlying industrial or commercial (non-agricultural) purposes, or
7 such producers within the Pool who may hereafter take water pur-
8 suant to Paragraph 8 hereof.

9 2. Pool Committee. The Pool Committee for this pool shall
10 consist of one representative designated by each member of the
11 pool. Voting on the committee shall be on the basis of one vote
12 for each member, unless a volume vote is demanded, in which case
13 votes shall be allocated as follows:

14 The volume voting power on the Pool Committee shall
15 be 1,484 votes. Of these, 742 votes shall be allocated on
16 the basis of one vote for each ten (10) acre feet or fraction
17 thereof of decreed shares in Safe Yield. (See Exhibit "D".)
18 The remaining 742 votes shall be allocated proportionally
19 on the basis of assessments paid to Watermaster during the
20 preceding year.*

21 3. Advisory Committee Representatives. At least three (3)
22 members of the Pool Committee shall be designated by said committee
23 to serve on the Advisory Committee. The exact number of such
24 representatives at any time shall be as determined by the Pool
25 Committee. The voting power of the pool shall be exercised in the
26

27 *Or production assessments paid under Water Code Section
28 72140 et seq., as to years prior to the second year of operation
under the Physical Solution hereunder.

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1 Advisory Committee as a unit, based upon the vote of a majority of
2 said representatives.

3 4. Replenishment Obligation. The pool shall provide funds
4 for replenishment of any production in excess of the pool's share
5 of Safe Yield in the preceding year.

6 5. Assessment. Each member of this pool shall pay an assess-
7 ment equal to the cost of replenishment water times the number of
8 acre feet of production by such producer during the preceding year
9 in excess of (a) his decreed share of the Safe Yield, plus (b) any
10 carry-over credit under Paragraph 7 hereof. In addition, the cost
11 of the allocated share of Watermaster administration expense shall
12 be recovered on an equal assessment against each acre foot of
13 production in the pool during such preceding fiscal year or calen-
14 dar quarter; and in the case of Pool members who take substitute
15 ground water as set forth in Paragraph 8 hereof, such producer
16 shall be liable for its share of administration assessment, as if
17 the water so taken were produced, up to the limit of its decreed
18 share of Safe Yield.

19 6. Assignment. Rights herein decreed are appurtenant to the
20 land and are only assignable with the land for overlying use
21 thereon; provided, however, that any appropriator who may, directly
22 or indirectly, undertake to provide water service to such overlying
23 lands may, by an appropriate agency agreement on a form approved by
24 Watermaster, exercise said overlying right to the extent, but only
25 to the extent necessary to provide water service to said overlying
26 lands.

27 7. Carry-over. Any member of the pool who produces less than
28 its assigned water share of Safe Yield may carry such unexercised

1 right forward for exercise in subsequent years. The first water
2 produced during any such subsequent year shall be deemed to be an
3 exercise of such carry-over right. In the event the aggregate
4 carry-over by any pool member exceeds its share of Safe Yield, such
5 member shall, as a condition of preserving such surplus carry-over,
6 execute a storage agreement with Watermaster.

7 8. Substitute Supplies. To the extent that any Pool member,
8 at the request of Watermaster and with the consent of the Advisory
9 Committee, takes substitute surface water in lieu of producing
10 ground water otherwise subject to production as an allocated share
11 of Safe Yield, said party shall nonetheless remain a member of this
12 Pool.

13 9. Rules. The Pool Committee shall adopt rules for adminis-
14 tering its program and in amplification of the provisions, but not
15 inconsistent with, this pooling plan.
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EXHIBIT "H"
APPROPRIATIVE POOL
POOLING PLAN

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3 1. Qualification for Pool. Any city, district or other
4 public entity and public utility -- either regulated under Public
5 Utilities Commission jurisdiction, or exempt therefrom as a non-
6 profit mutual water company (other than those assigned to the
7 Overlying [Agricultural] Pool) -- shall be a member of this pool.
8 All initial members of the pool are listed in Exhibit "E", together
9 with their respective appropriative rights and acre foot allocation
10 and percentage shares of the initial and subsequent Operating Safe
11 Yield.

12 2. Pool Committee. The Pool Committee shall consist of one
13 (1) representative appointed by each member of the Pool.

14 3. Voting. The total voting power on the Pool Committee
15 shall be 1,000 votes. Of these, 500 votes shall be allocated in
16 proportion to decreed percentage shares in Operating Safe Yield.
17 The remaining 500 votes shall be allocated proportionally on the
18 basis of assessments paid to Watermaster during the preceding
19 year.* Routine business of the Pool Committee may be conducted on
20 the basis of one vote per member, but upon demand of any member a
21 weighted vote shall be taken. Affirmative action of the Committee
22 shall require a majority of the voting power of members in attend-
23 ance, provided that it includes concurrence by at least one-third
24 of its total members.

25 4. Advisory Committee Representatives. Ten (10) members of
26

27 *Or production assessments paid under Water Code Section 72140
28 et seq., as to years prior to the second year of operation under
the Physical Solution hereunder.

1 the Pool Committee shall be designated to represent this pool on
2 the Advisory Committee. Each major appropriator, i.e., the owner
3 of an adjudicated appropriative right in excess of 3,000 acre feet,
4 shall be entitled to one representative. The remaining members
5 representing the Appropriative Pool on the Advisory Committee shall
6 be elected at large by the remaining members of the pool. The
7 voting power of the Appropriative Pool on the Advisory Committee
8 shall be apportioned between the major appropriator representatives
9 in proportion to their respective voting power in the Pool Com-
10 mittee. The remaining two representatives shall exercise equally
11 the voting power proportional to the Pool Committee voting power
12 of all remaining appropriators; provided, however, that if any
13 representative fails to attend an Advisory Committee meeting, the
14 voting power of that representative shall be allocated among the
15 representatives of the Appropriator Pool in attendance in the same
16 proportion as their own respective voting powers.

17 5. Replenishment Obligation. The pool shall provide funds
18 for purchase of replenishment water to replace any production by
19 the pool in excess of Operating Safe Yield during the preceding
20 year.

21 6. Administrative Assessment. Costs of administration of
22 this pool and its share of general Watermaster expense shall be
23 recovered by a uniform assessment applicable to all production
24 during the preceding year.

25 7. Replenishment Assessment. The cost of replenishment water
26 required to replace production from Chino Basin in excess of
27 Operating Safe Yield in the preceding year shall be allocated and
28 recovered as follows:

1 (a) For production, other than for increased export,
2 within CBMWD or WMWD:

3 (1) Gross Assessment. 15% of such replenishment
4 water costs shall be recovered by a uniform assessment
5 against all production of each appropriator producing in
6 said area during the preceding year.

7 (2) Net Assessment. The remaining 85% of said
8 costs shall be recovered by a uniform assessment on each
9 acre foot of production from said area by each such
10 appropriator in excess of his allocated share of Oper-
11 ating Safe Yield during said preceding year.

12 (b) For production which is exported for use outside
13 Chino Basin in excess of maximum export in any year through
14 1976, such increased export production shall be assessed
15 against the exporting appropriator in an amount sufficient to
16 purchase replenishment water from CBMWD or WMWD in the amount
17 of such excess.

18 (c) For production within SBVMWD or PVMWD:

19 By an assessment on all production in excess of
20 an appropriator's share of Operating Safe Yield in an
21 amount sufficient to purchase replenishment water through
22 SBVMWD or MWD in the amount of such excess.

23 8. Socio-Economic Impact Review. The parties have conducted
24 certain preliminary socio-economic impact studies. Further and
25 more detailed socio-economic impact studies of the assessment
26 formula and its possible modification shall be undertaken for the
27 Appropriator Pool by Watermaster no later than ten (10) years from
28 the effective date of this Physical Solution, or whenever total

1 production by this pool has increased by 30% or more over the
2 decreed appropriative rights, whichever is first.

3 9. Facilities Equity Assessment. Watermaster may, upon
4 recommendation of the Pool Committee, institute proceedings for
5 levy and collection of a Facilities Equity Assessment for the
6 purposes and in accordance with the procedures which follow:

7 (a) Implementing Circumstances. There exist several
8 sources of supplemental water available to Chino Basin, each
9 of which has a differential cost and quantity available. The
10 optimum management of the entire Chino Basin water resource
11 favors the maximum use of the lowest cost supplemental water
12 to balance the supplies of the Basin, in accordance with the
13 Physical Solution. The varying sources of supplemental water
14 include importations from MWD and SBVMWD, importation of
15 surface and ground water supplies from other basins in the
16 immediate vicinity of Chino Basin, and utilization of re-
17 claimed water. In order to fully utilize any of such alter-
18 nate sources of supply, it will be essential for particular
19 appropriators having access to one or more of such supplies to
20 have invested, or in the future to invest, directly or in-
21 directly, substantial funds in facilities to obtain and
22 deliver such water to an appropriate point of use. To the
23 extent that the use of less expensive alternate sources of
24 supplemental water can be maximized by the inducement of a
25 Facilities Equity Assessment, as herein provided, it is to the
26 long-term benefit of the entire basin that such assessment be
27 authorized and levied by Watermaster.

28 (b) Study and Report. At the request of the Pool

1 Committee, Watermaster shall undertake a survey study of the
2 utilization of alternate supplemental supplies by members of
3 the Appropriative Pool which would not otherwise be utilized
4 and shall prepare a report setting forth the amount of such
5 alternative supplies being currently utilized, the amount of
6 such supplies which could be generated by activity within the
7 pool, and the level of cost required to increase such uses and
8 to optimize the total supplies available to the basin. Said
9 report shall contain an analysis and recommendation for the
10 levy of a necessary Facilities Equity Assessment to accomplish
11 said purpose.

12 (c) Hearing. If the said report by Watermaster contains
13 a recommendation for imposition of a Facilities Equity Assess-
14 ment, and the Pool Committee so requests, Watermaster shall
15 notice and hold a hearing not less than 60 days after dis-
16 tribution of a copy of said report to each member of the pool,
17 together with a notice of the hearing date. At such hearing,
18 evidence shall be taken with regard to the necessity and
19 propriety of the levy of a Facilities Equity Assessment and
20 full findings and decision shall be issued by Watermaster.

21 (d) Operation of Assessment. If Watermaster determines
22 that it is appropriate that a Facilities Equity Assessment be
23 levied in a particular year, the amount of additional supple-
24 mental supplies which should be generated by such assessment
25 shall be estimated. The cost of obtaining such supplies,
26 taking into consideration the investment in necessary
27 facilities shall then be determined and spread equitably among
28 the producers within the pool in a manner so that those

1 producers not providing such additional lower cost supple-
2 mental water, and to whom a financial benefit will result, may
3 bear a proportionate share of said costs, not exceeding said
4 benefit; provided that any producer furnishing such supple-
5 mental water shall not thereby have its average cost of water
6 in such year reduced below such producer's average cost of
7 pumping from the Basin. In so doing, Watermaster shall
8 establish a percentage of the total production by each party
9 which may be produced without imposition of a Facilities
10 Equity Assessment. Any member of the pool producing more
11 water than said percentage shall pay such Facilities Equity
12 Assessment on any such excess production. Watermaster is
13 authorized to transmit and pay the proceeds of such Facilities
14 Equity Assessment to those producers who take less than their
15 share of Basin water by reason of furnishing a higher per-
16 centage of their requirements through use of supplemental
17 water.

18 10. Unallocated Safe Yield Water. To the extent that, in any
19 five years, any portion of the share of Safe Yield allocated to
20 the Overlying (Agricultural) Pool is not produced, such water shall
21 be available for reallocation to members of the Appropriative Pool,
22 as follows:

23 (a) Priorities. Such allocation shall be made in the
24 following sequence:

25 (1) to supplement, in the particular year, water
26 available from Operating Safe Yield to compensate for any
27 reduction in the Safe Yield by reason of recalculation
28 thereof after the tenth year of operation hereunder.

1 (2) pursuant to conversion claims as defined in
2 Subparagraph (b) hereof.

3 (3) as a supplement to Operating Safe Yield,
4 without regard to reductions in Safe Yield.

5 (b) Conversion Claims. The following procedures may be
6 utilized by any appropriator:

7 (1) Record of Land Use Conversion. Any appro-
8 priator who undertakes, directly or indirectly, dur-
9 ing any year, to permanently provide water service to
10 lands which during the immediate preceding five (5)
11 consecutive years was devoted to irrigated agriculture
12 may report such change in land use or water service to
13 Watermaster. Watermaster shall thereupon verify such
14 change in water service and shall maintain a record and
15 account for each appropriator of the total acreage
16 involved and the average annual water use during said
17 five-year period.

18 (2) Establishment of Allocation Percentage. In
19 any year in which unallocated Safe Yield water from
20 the Overlying (Agricultural) Pool is available for such
21 conversion claims, Watermaster shall establish allocable
22 percentages for each appropriator based upon the total
23 of such converted acreage recorded to each such appro-
24 priator's account.

25 (3) Allocation and Notice. Watermaster shall
26 thereafter apply the allocated percentage to the total
27 unallocated Safe Yield water available for special
28 allocation to derive the amount thereof allocable to

1 each appropriator; provided that in no event shall the
2 allocation to any appropriator as a result of such
3 conversion claim exceed 50% of the average annual amount
4 of water actually applied to the areas converted by such
5 appropriator prior to such conversion. Any excess water
6 by reason of such limitation on any appropriator's right
7 shall be added to Operating Safe Yield. Notice of such
8 special allocation shall be given to each appropriator
9 and shall be treated for purposes of this Physical
10 Solution as an addition to such appropriator's share of
11 the Operating Safe Yield for the particular year only.

12 (4) Administrative Costs. Any costs of Water-
13 master attributable to administration of such special
14 allocations and conversion claims shall be assessed
15 against appropriators participating in such reporting.

16 11. In Lieu Procedures. There are, or may develop, certain
17 areas within Chino Basin where good management practices dictate
18 that recharge of the basin be accomplished, to the extent prac-
19 tical, by taking surface supplies of supplemental water in lieu of
20 ground water otherwise subject to production as an allocated share
21 of Operating Safe Yield.

22 (a) Method of Operation. Any appropriator producing
23 water within such designated in lieu area who is willing to
24 abstain for any reason from producing any portion of such
25 producer's share of Operating Safe Yield in any year may
26 offer such unpumped water to Watermaster. In such event,
27 Watermaster shall purchase said water in place, in lieu of
28 spreading replenishment water, which is otherwise required to

1 make up for over production. The purchase price for in lieu
2 water shall be the lesser of:

3 (1) Watermaster's current cost of replenishment
4 water, whether or not replenishment water is currently
5 then obtainable, plus the cost of spreading; or

6 (2) The cost of supplemental surface supplies to
7 the appropriator, less

8 a. said appropriator's average cost of
9 ground water production, and

10 b. the applicable production assessment
11 were the water produced.

12 Where supplemental surface supplies consist of MWD or
13 SBVMWD supplies, the cost of treated, filtered State
14 water from such source shall be deemed the cost of
15 supplemental surface supplies to the appropriator for
16 purposes of such calculation.

17 In any given year in which payments may be made pursuant to
18 a Facilities Equity Assessment, as to any given quantity of
19 water the party will be entitled to payment under this
20 section or pursuant to the Facilities Equity Assessment, as
21 the party elects, but not under both.

22 (b) Designation of In Lieu Areas. The first in lieu
23 area is designated as the "In Lieu Area No. 1" and consists
24 of an area wherein nitrate levels in the ground water gen-
25 erally exceed 45 mg/l, and is shown on Exhibit "J" hereto.
26 Other in lieu areas may be designated by subsequent order of
27 Watermaster upon recommendation or approval by Advisory
28 Committee. Said in lieu areas may be enlarged, reduced or

1 eliminated by subsequent orders; provided, however, that
2 designation of In Lieu Areas shall be for a minimum fixed
3 term sufficient to justify necessary capital investment. In
4 Lieu Area No. 1 may be enlarged, reduced or eliminated in
5 the same manner, except that any reduction of its original
6 size or elimination thereof shall require the prior order of
7 Court.

8 12. Carry-over. Any appropriator who produces less than his
9 assigned share of Operating Safe Yield may carry such unexercised
10 right forward for exercise in subsequent years. The first water
11 produced during any such subsequent year shall be deemed to be an
12 exercise of such carry-over right. In the event the aggregate
13 carry-over by any appropriator exceeds its share of Operating Safe
14 Yield, such appropriator shall, as a condition of preserving such
15 surplus carry-over, execute a storage agreement with Watermaster.
16 Such appropriator shall have the option to pay the gross assess-
17 ment applicable to such carry-over in the year in which it accrued.

18 13. Assignment, Transfer and Lease. Appropriative rights,
19 and corresponding shares of Operating Safe Yield, may be assigned
20 or may be leased or licensed to another appropriator for exercise
21 in a given year. Any transfer, lease or license shall be ineffec-
22 tive until written notice thereof is furnished to and approved as
23 to form by Watermaster, in compliance with applicable Watermaster
24 rules. Watermaster shall not approve transfer, lease or license of
25 a right for exercise in an area or under conditions where such
26 production would be contrary to sound basin management or detri-
27 mental to the rights or operations of other producers.

28 14. Rules. The Pool Committee shall adopt rules for

1 administering its program and in amplification of the provisions,
2 but not inconsistent with, this pooling plan.

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EXHIBIT "I"

ENGINEERING APPENDIX

1
2
3 1. Basin Management Parameters. In the process of imple-
4 menting the physical solution for Chino Basin, Watermaster shall
5 consider the following parameters:

6 (a) Pumping Patterns. Chino Basin is a common supply
7 for all persons and agencies utilizing its waters. It is an
8 objective in management of the Basin's waters that no pro-
9 ducer be deprived of access to said waters by reason of
10 unreasonable pumping patterns, nor by regional or localized
11 recharge of replenishment water, insofar as such result may
12 be practically avoided.

13 (b) Water Quality. Maintenance and improvement of
14 water quality is a prime consideration and function of
15 management decisions by Watermaster.

16 (c) Economic Considerations. Financial feasibility,
17 economic impact and the cost and optimum utilization of the
18 Basin's resources and the physical facilities of the parties
19 are objectives and concerns equal in importance to water
20 quantity and quality parameters.

21 2. Operating Safe Yield. Operating Safe Yield in any year
22 shall consist of the Appropriative Pool's share of Safe Yield of
23 the Basin, plus any controlled overdraft of the Basin which
24 Watermaster may authorize. In adopting the Operating Safe Yield
25 for any year, Watermaster shall be limited as follows:

26 (a) Accumulated Overdraft. During the operation of
27 this Judgment and Physical Solution, the overdraft accumu-
28 lated from and after the effective date of the Physical

1 Solution and resulting from an excess of Operating Safe Yield
2 over Safe Yield shall not exceed 200,000 acre feet.

3 (b) Quantitative Limits. In no event shall Operating
4 Safe Yield in any year be less than the Appropriative Pool's
5 share of Safe Yield, nor shall it exceed such share of Safe
6 Yield by more than 10,000 acre feet. The initial Operating
7 Safe Yield is hereby set at 54,834 acre feet per year.

8 Operating Safe Yield shall not be changed upon less than five
9 (5) years' notice by Watermaster.

10 Nothing contained in this paragraph shall be deemed to authorize,
11 directly or indirectly, any modification of the allocation of
12 shares in Safe Yield to the overlying pools, as set forth in
13 Paragraph 44 of the Judgment.

14 3. Ground Water Storage Agreements. Any agreements author-
15 ized by Watermaster for storage of supplemental water in the
16 available ground water storage capacity of Chino Basin shall
17 include, but not be limited to:

18 (a) The quantities and term of the storage right.

19 (b) A statement of the priority or relation of said
20 right, as against overlying or Safe Yield uses, and other
21 storage rights.

22 (c) The procedure for establishing delivery rates,
23 schedules and procedures which may include

24 [1] spreading or injection, or

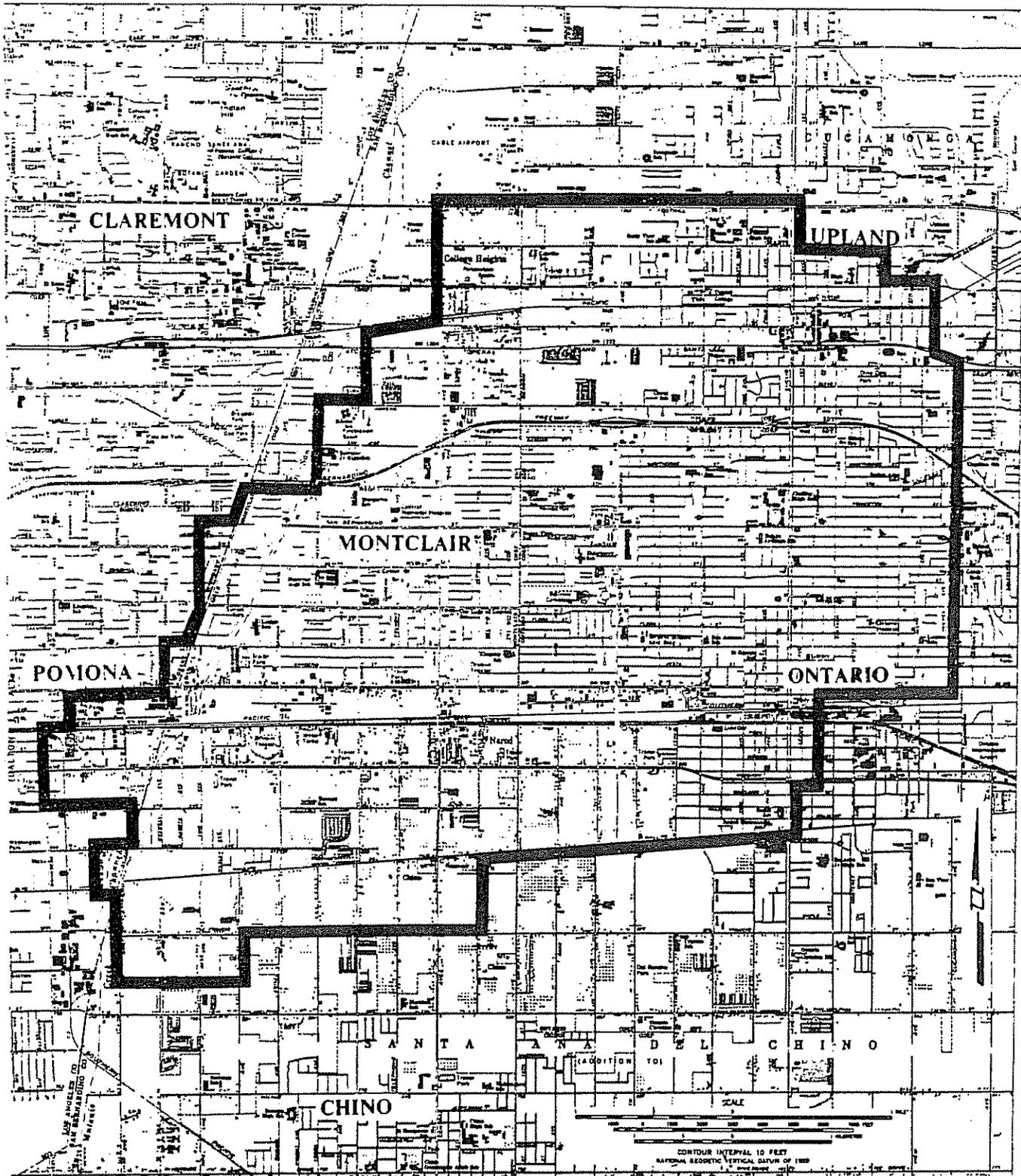
25 [2] in lieu deliveries of supplemental water for
26 direct use.

27 (d) The procedures for calculation of losses and annual
28 accounting for water in storage by Watermaster.

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(e) The procedures for establishment and adminis-
tration of withdrawal schedules, locations and methods.



**CHINO BASIN
IN LIEU AREA NO. 1**

LEGAL DESCRIPTION

OF CHINO BASIN

Preamble

All of the townships and ranges referred to in the following legal description are the San Bernardino Base and Meridian. Certain designated sections are implied as the System of Government Surveys may be extended where not established. Said sections are identified as follows:

Section 20, T1N, R8W is extended across Rancho Cucamonga;

Section 36, T1N, R8W is extended across the City of Upland;

Sections 2, 3, and 4, T1S, R7W are extended across Rancho Cucamonga;

Section 10, T1S, R8W is extended across the City of Claremont;

Sections 19, 20, 21, 30, 31 and 32, T1S, R8W are extended across the City of Pomona;

Sections 4, 5, and 28, T2S, R8W are extended across Rancho Santa Ana Del Chino;

Sections 15 and 16, T3S, R7W are extended across Rancho La Sierra; and

Sections 17 and 20, T3S, R7W are extended across Rancho El Rincon.

Description

Chino Basin is included within portions of the Counties of San Bernardino, Riverside and Los Angeles, State of California, bounded by a continuous line described as follows:

BEGINNING at the Southwest corner of Lot 241 as shown on Map of Ontario Colony Lands, recorded in Map Book 11, page 6, Office of the County Recorder of San Bernardino County, said corner being the Point of Beginning;

1. Thence Southeasterly to the Southeast corner

of Lot 419 of said Ontario Colony Lands;

2. Thence Southeasterly to a point 1300 feet North of the South line and 1300 feet East of the West line of Section 4, T1S, R7W;

3. Thence Easterly to a point on the East line of Section 4, 1800 feet North of the Southeast corner of said Section 4;

4. Thence Easterly to the Southeast corner of the Southwest quarter of the Northeast quarter of Section 3, T1S, R7W;

5. Thence Northeasterly to a point on the North line of Section 2, T1S, R7W, 1400 feet East of the West line of said Section 2;

6. Thence Northeasterly to the Southwest corner of Section 18, T1N, R6W;

7. Thence Northerly to the Northwest corner of said Section 18;

8. Thence Easterly to the Northeast corner of said Section 18;

9. Thence Northerly to the Northwest corner of the Southwest quarter of Section 8, T1N, R6W;

10. Thence Easterly to the Northeast corner of said Southwest quarter of said Section 8;

11. Thence Southerly to the Southeast corner of said Southwest quarter of said Section 8;

12. Thence Easterly to the Northeast corner of Section 17, T1N, R6W;

13. Thence Easterly to the Northeast corner of Section 16, T1N, R6W;

14. Thence Southeasterly to the Northwest corner of the Southeast quarter of Section 15, T1N, R6W;

15. Thence Easterly to the Northeast corner of said Southeast quarter of said Section 15;

16. Thence Southeasterly to the Northwest corner of the Northeast quarter of Section 23, T1N, R6W;

17. Thence Southeasterly to the Northwest corner

of Section 25, T1N, R6W;

18. Thence Southeasterly to the Northwest corner of the Northeast quarter of Section 31, T1N, R5W;

19. Thence Southeasterly to the Northeast corner of the Northwest quarter of Section 5, T1S, R5W;

20. Thence Southeasterly to the Southeast corner of Section 4, T1S, R5W;

21. Thence Southeasterly to the Southeast corner of the Southwest quarter of Section 11, T1S, R5W;

22. Thence Southwesterly to the Southwest corner of Section 14, T1S, R5W;

23. Thence Southwest to the Southwest corner of Section 22, T1S, R5W;

24. Thence Southwesterly to the Southwest corner of the Northeast quarter of Section 6, T2S, R5W;

25. Thence Southeasterly to the Northeast corner of Section 18 T2S, R5W;

26. Thence Southwesterly to the Southwest corner of the Southeast quarter of Section 13, T2S, R6W;

27. Thence Southwesterly to the Southwest corner of the Northeast quarter of Section 26, T2S, R6W;

28. Thence Westerly to the Southwest corner of the Northwest quarter of said Section 26;

29. Thence Northerly to the Northwest corner of said Section 26;

30. Thence Westerly to the Southwest corner of Section 21, T2S, R6W;

31. Thence Southerly to the Southeast corner of Section 29, T2S, R6W;

32. Thence Westerly to the Southeast corner of Section 30, T2S, R6W;

33. Thence Southwesterly to the Southwest corner of Section 36, T 2 S, R 7 W;

34. Thence Southwesterly to the Southeast corner

of Section 3, T3S, R7W;

35. Thence Southwesterly to the Southwest corner of the Northeast quarter of Section 10, T3S, R7W;

36. Thence Southerly to the Northeast corner of the Northwest quarter of Section 15, T3S, R7W;

37. Thence Southwesterly to the Southeast corner of the Northeast quarter of Section 16, T3S, R7W;

38. Thence Southwesterly to the Southwest corner of said Section 16;

39. Thence Southwesterly to the Southwest corner of the Northeast quarter of Section 20, T3S, R7W;

40. Thence Westerly to the Southwest corner of the Northwest quarter of said Section 20;

41. Thence Northerly to the Northwest corner of Section 17, T3S, R7W;

42. Thence Westerly to the Southwest corner of Section 7, T3S, R7W;

43. Thence Northerly to the Southwest corner of Section 6, T3S, R7W;

44. Thence Westerly to the Southwest corner of Section 1, T3S, R8W;

45. Thence Northerly to the Southeast corner of Section 35, T2S, R8W;

46. Thence Northwesterly to the Northwest corner of said Section 35;

47. Thence Northerly to the Southeast corner of Lot 33, as shown on Map of Tract 3193, recorded in Map Book 43, pages 46 and 47, Office of the County Recorder of San Bernardino County;

48. Thence Westerly to the Northwest corner of the Southwest quarter of Section 28, T2S, R8W;

49. Thence Northerly to the Southwest corner of Section 4, T2S, R8W;

50. Thence Westerly to the Southwest corner of Section 5, T2S, R8W;

51. Thence Northerly to the Southwest corner of Section 32, T1S, R8W;

52. Thence Westerly to the Southwest corner of Section 31, T1S, R8W;

53. Thence Northerly to the Southwest corner of Section 30, T1S, R8W;

54. Thence Northeasterly to the Southwest corner of Section 20, T1S, R8W;

55. Thence Northerly to the Northwest corner of the Southwest quarter of the Southwest quarter of said Section 20;

56. Thence Northwesterly to the Northeast corner of the Southeast quarter of the Southeast quarter of the Northwest quarter of Section 19, T1S, R8W;

57. Thence Easterly to the Northwest corner of Section 21, T1S, R8W;

58. Thence Northeasterly to the Southeast corner of the Southwest quarter of the Southwest quarter of Section 10, T1S, R8W;

59. Thence Northeasterly to the Southwest corner of Section 2, T1S, R8W;

60. Thence Northeasterly to the Southeast corner of the Northwest quarter of the Northwest quarter of Section 1, T1S, R8W;

61. Thence Northerly to the Northeast corner of the Northwest quarter of the Northeast quarter of Section 36, T1N, R8W;

62. Thence Northerly to the Southeast corner of Section 24, T1N, R8W;

63. Thence Northeasterly to the Southeast corner of the Northwest quarter of the Northwest quarter of Section 20, T1N, R7W; and

64. Thence Southerly to the Point of Beginning.

Sections Included

Said perimeter description includes all or portions of the following Townships, Ranges and Sections of San Bernardino Base and Meridian:

- T1N, R5W - Sections: 30, 31 and 32
- T1N, R6W - Sections: 8, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 and 36
- T1N, R7W - Sections: 19, 20, 24, 25, 26, 29, 30, 31, 32, 35 and 36
- T1N, R8W - Sections: 25 and 36
- T1S, R5W - Sections: 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 28, 29, 30, 31 and 32.
- T1S, R6W - Sections: 1 through 36, inclusive
- T1S, R7W - Sections: 1 through 36, inclusive
- T1S, R8W - Sections: 1, 2, 10, 11, 12, 13, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 and 36
- T2S, R5W - Sections: 6, 7 and 18
- T2S, R6W - Sections: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 29, 30 and 31
- T2S, R7W - Sections: 1 through 36, inclusive
- T2S, R8W - Sections: 1, 2, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, 35 and 36
- T3S, R7W - Sections: 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17 and 20
- T3S, R8W - Section: 1.



THE DOCUMENT TO WHICH THIS CERTIFICATION IS ATTACHED IS A FULL, TRUE AND PERFECT COPY OF THE ORIGINAL ON FILE AND OF RECORD IN MY OFFICE.

OCT 29 2002

ATTEST
Clerk of the Superior Court of the State of California, in and for the County of San Bernardino

Terry Wittenborn
Deputy

Terry Wittenborn

92 pages

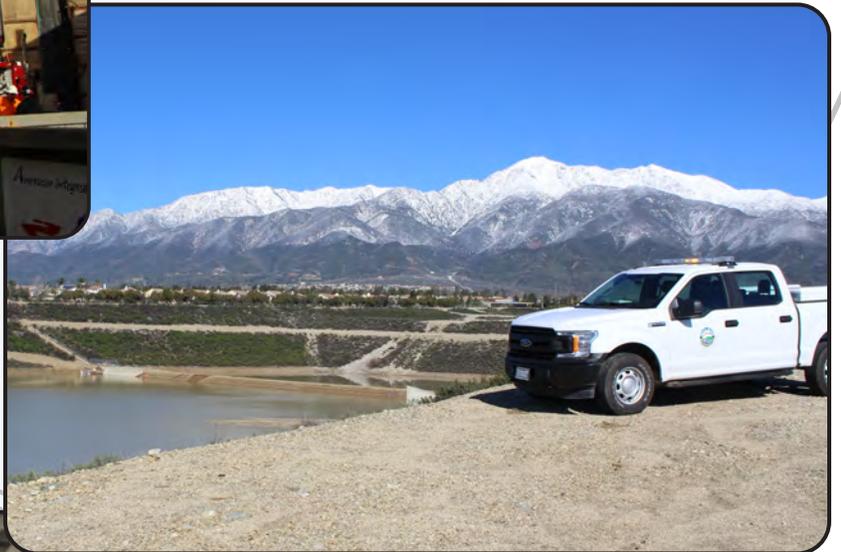
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Appendix E. Chino Basin 2020 Optimum Basin Management Program

2020

Optimum Basin Management Program Update Report

Prepared for:



January 2020



To: Chino Basin Watermaster Stakeholders
From: Watermaster 2020 OBMP Update Team
Subject: 2020 Optimum Basin Management Program Update Report
Date: Draft November 22, 2019; Final January 24, 2020

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Appendix A – *White Paper – 2020 Update to the Chino Basin Optimum Basin Management Program*

Appendix B – *Response to Comments on the November 22, 2019 Draft 2020 OBMP Update Report*

Appendix C – *2020 Optimum Basin Management Program Scoping Report*

Appendix D – *Stakeholder Participation Log*

Appendix E – *2020 Storage Management Plan*





List of Inset Tables

Table 1 – Program Element 1 – Implementation Actions Defined in the 2000 OBMP

Table 2 – Watermaster Monitoring and Reporting Requirements

Table 3 – Program Element 2 – Implementation Actions Defined in the 2000 OBMP

Table 4 – Program Element 3 – Implementation Actions Defined in the 2000 OBMP

Table 5 – Program Element 4 – Implementation Actions Defined in the 2000 OBMP

Table 6 – Program Element 5 – Implementation Actions Defined in the 2000 OBMP

Table 7 – Aggregate Water Supply Plan for Watermaster Parties: 2015 to 2040

Table 8 – Program Element 6 – Implementation Actions Defined in the 2000 OBMP

Table 9 – Program Element 7 – Implementation Actions Defined in the 2000 OBMP

Table 10 – Program Elements 8 and 9 – Implementation Actions Defined in the 2000 OBMP

Table 11 – Program Element 1 – 2020 OBMP Management Plan

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Table 14 – Program Element 5 – 2020 OBMP Management Plan

Table 15 – Program Element 6 – 2020 OBMP Management Plan

Table 16 – Program Element 7 – 2020 OBMP Management Plan

Table 17 – Program Element 8 and 9 – 2020 OBMP Management Plan





List of Attached Exhibits

- Exhibit 1 – Drivers, Trends and Implications
- Exhibit 2 – Comparison of the 2000 and 2020 OBMP Process
- Exhibit 3 – Issues, Needs and Wants of the Chino Basin Stakeholders
- Exhibit 4 – Activities for Consideration in the 2020 OBMP Update
- Exhibit 5 – OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities, and Nexus to Addressing the Issues Needs and Wants of the Stakeholders
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- Exhibit 13 – Nexus of the 2020 OBMP Update Activities to the 2000 OBMP Program Elements
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- Exhibit 15 – Limitations, Compliance Metrics, and Compliance Actions for the Chino Basin Maximum-Benefit Commitments
- Exhibit 16 – Ending Balances in Managed Storage in the Chino Basin
- Exhibit 17 – Implementation Actions for the 2020 Optimum Basin Management Program Update by Program Element





1.0 Introduction and Background

In September 2018, the Chino Basin Watermaster (Watermaster) initiated the process to update its Optimum Basin Management Program (OBMP) and the associated Implementation Plan. A detailed description of the development of the 2000 OBMP and the rationale for and process to prepare the 2020 OBMP Update was described in a white paper prepared for the stakeholders: *White Paper – 2020 Update to Chino Basin Optimum Basin Management Program* (OBMP White Paper). The OBMP White Paper is included herein as Appendix A.

The purpose of this *2020 Optimum Basin Management Program Update Report* (2020 OBMP Update Report) is to document the stakeholder process to update the OBMP and describe the recommended 2020 OBMP management plan. The management plan will form the foundation for Watermaster and the Chino Basin Judgment Parties (hereafter, Parties¹) to develop a final implementation plan (the 2020 OBMP Implementation Plan) and the agreements necessary to implement it. The draft 2020 OBMP Update Report was released for stakeholder review and comment on November 22, 2019. This version reflects changes made in response to comments received. A record of the comments received and the responses provided by Watermaster are included herein as Appendix B.

1.1 History of the OBMP and its Implementation

The Chino Basin Judgment invested Watermaster with the discretionary authority to develop an OBMP for the Chino Basin, including both water quantity and quality considerations. Paragraph 41 (within the Physical Solution), states:

41. Watermaster Control. Watermaster, with the advice of the Advisory and Pool Committees, is granted discretionary powers in order to develop an optimum basin management program for Chino Basin, including both water quantity and quality considerations. Withdrawals and supplemental water replenishment of Basin Water, and the full utilization of the water resources of Chino Basin, must be subject to procedures established by and administered through Watermaster with the advice and assistance of the Advisory and Pool Committees composed of the affected producers. Both the quantity and quality of said water resources may thereby be preserved and the beneficial utilization of the Basin maximized.²

1.1.1 The OBMP and the Peace Agreement

Watermaster, at the direction of the Court, began developing the OBMP in 1998 and completed it in July 2000. The OBMP was developed in a collaborative public process that identified the needs and wants of all stakeholders, described the physical state of the groundwater basin, defined a set of management goals, characterized impediments to those goals, and developed a series of actions that could be taken to remove the impediments and achieve the management goals. This work was documented in the *Optimum Basin Management Program – Phase I Report* (OBMP Phase 1 Report).³

¹ Defined terms in the Court Approved Management Agreements will appear with the first letter of each word capitalized.

² See Restated Judgment, ¶ 41

³ WEI. (1999). *Optimum Basin Management Program – Phase I Report*. Prepared for the Chino Basin Watermaster. August 19, 1999. [http://www.cbwm.org/docs/engdocs/OBMP%20-%20Phase%20I%20\(Revised%20DigDoc\).pdf](http://www.cbwm.org/docs/engdocs/OBMP%20-%20Phase%20I%20(Revised%20DigDoc).pdf)





The four goals of the 2000 OBMP included:

Goal 1 – Enhance Basin Water Supplies

Goal 2 – Protect and Enhance Water Quality

Goal 3 – Enhance Management of the Basin

Goal 4 – Equitably Finance the OBMP

The actions defined by the stakeholders to remove impediments to the OBMP goals were logically grouped into sets of coordinated activities called Program Elements (PEs), each of which included a list of implementation actions and an implementation schedule. The nine PEs defined in the 2000 OBMP included:

PE 1 – Develop and Implement Comprehensive Monitoring Program. The objectives of the comprehensive monitoring program are to collect the data necessary to support the implementation of the other eight PEs and periodic updates to the *State of the Basin Report*.⁴

PE 2 – Develop and Implement Comprehensive Recharge Program. The objectives of the comprehensive recharge program include increasing stormwater recharge to offset the recharge lost due to channel lining, to increase Safe Yield, and to ensure that there will be enough supplemental water recharge capacity available to Watermaster to meet its Replenishment Obligations.

PE 3 – Develop and Implement a Water Supply Plan for Impaired Areas. The objective of this program is to maintain and enhance Safe Yield with a groundwater desalting program that is designed to replace declining agricultural groundwater pumping in the southern part of the basin with new pumping to meet increasing municipal water demands in the same area, to minimize groundwater outflow to the Santa Ana River, and to increase Santa Ana River recharge into the basin.

PE 4 – Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1. The objectives of this land subsidence management program are to characterize the spatial and temporal occurrence of land subsidence, to identify its causes, and, where appropriate, to develop and implement a program to minimize or stop land subsidence.

PE 5 – Develop and Implement Regional Supplemental Water Program. The objective of this program is to improve the regional conveyance and availability of imported and recycled waters throughout the basin.

PE 6 – Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management. The objectives of this water quality management program are to identify water quality trends in the basin and the impact of the OBMP implementation on them, to determine whether point and non-point contamination sources are being addressed by water quality regulators, and to collaborate with water-quality regulators to identify and facilitate the cleanup of soil and groundwater contamination.

⁴ See for example: WEI (2019). *Optimum Basin Management Program 2018 State of the Basin Report*. Prepared for the Chino Basin Watermaster. June 2018.





PE 7 – Develop and Implement Salt Management Plan. The objectives of this salinity management program are to characterize current and future salt and nutrient conditions in the basin and to develop and implement a plan to manage them.

PE 8 – Develop and Implement Groundwater Storage Management Program. The objectives of this storage program are to implement and periodically update a storage management plan that prevents overdraft, protects water quality, and ensures equity among the Parties, and to periodically recalculate Safe Yield. This PE explicitly defined the storage management plan, including a “Safe Storage Capacity” for the managed storage of 500,000 acre-feet (af)–inclusive of Local and Supplemental Storage and Storage and Recovery Programs.

PE 9 – Develop and Implement Storage and Recovery Programs. The objectives of this conjunctive use program are to develop Storage and Recovery Programs that will provide broad mutual benefit to the Parties and ensure that Basin Water and storage capacity are put to maximum beneficial use while causing no Material Physical Injury (MPI).

The PEs and their associated implementation actions were incorporated into a recommended management plan. The Parties used the management plan as the basis for developing the OBMP Implementation Plan and an agreement (the Peace Agreement) to implement it. The OBMP Implementation Plan is Exhibit B to the Peace Agreement. The Peace Agreement was reviewed in a programmatic environmental impact report (PEIR) that was certified by the Inland Empire Utilities Agency (IEUA) in July 2000.

The Parties entered into the Peace Agreement in June 2000. Under Resolution 2000-05,⁵ Watermaster adopted the goals and plans of the OBMP Phase 1 Report and agreed to proceed in accordance with the Peace Agreement and the OBMP Implementation Plan. Following a July 2000 hearing, the Court directed Watermaster to proceed in a manner consistent with the Peace Agreement in order to implement the OBMP and received and filed the PEIR.

For the purposes of the discussions in this report, the term “OBMP” refers to the collective programs implemented by Watermaster and others (e.g. IEUA, Chino Basin Desalter Authority [CDA], etc.) pursuant to the Peace Agreements, the OBMP Implementation Plan, the PEIR, and any amendments to these documents.

1.1.2 2007 Supplement to the OBMP Implementation Plan and the Peace II Agreement

The work to develop the OBMP determined that the groundwater production of the Chino Basin Desalters would ultimately need to be 40,000 acre-feet per year (afy) to accomplish the goals of the OBMP. The Chino I Desalter production capacity prior to the Peace Agreement was 8 million gallons per day (mgd; 9,000 afy). The Peace Agreement provided for the expansion of the Chino I Desalter to up to 14 mgd (15,700 afy) and the construction of the Chino II Desalter, with a production capacity of 10 mgd. The Peace Agreement required a minimum combined Desalter production capacity of 20 mgd (22,400 afy) and it committed the Parties to developing expansion and funding plans for the remaining capacity within five years of approval of the Peace Agreement. The Parties developed the Peace II Agreement, which included provisions to expand the desalting capacity such that groundwater production reaches

⁵ Chino Basin Watermaster. (2002). *Twenty Fourth Annual Report Fiscal Year 2000-2001*; Appendix O <http://www.cbwm.org/docs/annualrep/24th%20Annual%20Report%20-%20Approved.pdf>





40,000 afy. The Peace II Agreement introduced Re-operation⁶ to achieve Hydraulic Control⁷ of the Chino Basin and maintain Safe Yield. Hydraulic Control is both a goal of the OBMP and a requirement of the maximum-benefit salt-and-nutrient management plan (maximum benefit SNMP) that was developed by Watermaster and the IEUA under PE 7 to enable the expansion of recycled water recharge and reuse throughout the basin under PEs 2 and 5.

The Parties executed the Peace II Agreement in 2007, which included a supplement to the OBMP Implementation Plan to expand the Chino Basin Desalters to 40,000 afy of groundwater pumping, to incorporate Re-operation and Hydraulic Control, and to resolve other issues. There were no changes to the storage management plan in the OBMP Implementation Plan.

The IEUA Board certified a supplemental environmental impact report (SEIR) for the Peace II Agreement in 2010.

1.1.3 2017 Addendum to the 2010 Peace II SEIR

In 2016, Watermaster identified the need to update the storage management plan in the OBMP Implementation Plan because the total amount of water in managed storage accounts was projected to exceed the Safe Storage Capacity (SSC) limit of 500,000 af defined in the 2000 OBMP. In 2017, the IEUA adopted an addendum to the SEIR to provide a “temporary increase in the Safe Storage Capacity from 500,000 af to 600,000 af for the period of July 1, 2017 through June 30, 2021 [...] until a comprehensive re-evaluation of the Safe Storage Capacity value/concept can be completed before June 30, 2021.”⁸ The addendum was supported with engineering work that demonstrated that this temporary increase in SSC would not cause MPI or loss of Hydraulic Control.

1.1.4 Grant Funding for OBMP Implementation

The OBMP provided the certainty necessary for Watermaster, the IEUA, the Parties, and regulators to mobilize for rapid implementation of the OBMP PEs as well as to attract significant outside funding for the design and construction of facilities. The following are a few examples:

- Under PE 2, having recharge master plans (RMPs) that clearly defined the financial and water-supply benefits of the projects enabled the IEUA to obtain about \$40 million in grant funding and \$16 million in low-interest loans to construct the recharge improvements recommended in the 2001 RMP and 2013 RMP Update, covering about 70 percent of the total capital costs.
- In support of PE 3, Watermaster, the IEUA and Western Municipal Water District successfully obtained about \$148 million in grants for the design and construction of the Chino Basin Desalters, including Desalter I expansion, Desalter II, the Chino Creek wellfield, and the current

⁶ Re-operation is the controlled overdraft of the basin by the managed withdrawal of groundwater pumping for the Chino Basin Desalters and the potential increase in the cumulative un-replenished pumping from the 200,000 acre-feet authorized by paragraph 3 of the Engineering Appendix Exhibit I to the Restated Judgment, to 600,000 acre-feet for the express purpose of securing and maintaining Hydraulic Control as a component of the Physical Solution.

⁷ Hydraulic Control is the elimination of groundwater discharge from the Chino-North Groundwater Management Zone to the Santa Ana River or its reduction to less than 1,000 afy.

⁸ Tom Dodson & Associates. (2017). *Addendum No. 1 to the Optimum Basin Management Program Project*. Page 2.



Desalter II expansion to incorporate treatment of point-source contamination associated with the South Archibald trichloroethene (TCE) plume. This funding has covered about 45 percent of the total capital costs of these facilities.

- In support of PEs 2 and 5, the IEUA successfully obtained about \$64 million in grants and \$115 million in low-interest loans for the construction of the recycled water distribution system, covering about 70 percent of the total capital costs.

In total, Watermaster and the IEUA have obtained over \$230 million in grant funding and over \$130 million in low-interest loans to implement the OBMP.

1.2 Need for the 2020 OBMP Update

The current OBMP contains a set of management programs that improve the reliability and long-term sustainability of the Chino Basin and the water supply reliability of the Judgment Parties. The framework for developing the OBMP—including the goals of the Parties, the hydrologic understanding of the basin, the institutional and regulatory environment, an assessment of the impediments to achieving the Parties' goals, and the actions required to remove the impediments and achieve the goals—were all based on 1998-1999 conditions.

As of 2019, many of the projects and management programs envisioned in the 2000 OBMP have been implemented; though some have not. The understanding of the hydrology and hydrogeology of the Chino Basin has improved since 2000, and new water-management issues have been identified. The strategic drivers and trends that shaped the goals and activities of the OBMP in the late 1990s have since changed. And, there are several drivers and trends in today's water management space that may challenge the ability of the Parties to protect their collective interests in the Chino Basin and their water supply reliability.

Exhibit 1 characterizes the drivers and trends shaping water management and their basin management implications for the Parties. "Drivers" are external forces that cause changes in the Chino Basin water space, such as climate change, regulations, and funding. Grouped under each driver are expected trends that emanate from that driver. For example, trends associated with climate change include reduced groundwater recharge, increased evaporation, and reduced imported water supply. The relationship of the drivers/trends to the management implications are shown by arcs that connect trends to implications. For example, a management implication of reduced groundwater recharge is the reduction of the Chino Basin Safe Yield.

The drivers, trends, and implications were first identified in the OBMP White Paper and served as the initial rationale for recommending an update to the OBMP. Exhibit 1 represents the final characterization of the drivers, trends, and implications, based on stakeholder input during the process to update the OBMP. The basin management implications that form the stakeholders' rationale for the 2020 OBMP Update are:

- Reductions in Chino Basin Safe Yield
- Reduced imported water availability and increased cost
- Imported water quality degradation
- Chino Basin water quality degradation
- Inability to pump groundwater with existing infrastructure
- Increased cost of groundwater use
- Recycled water quality degradation
- Reduced recycled water availability and increased cost



- Increased cost of Basin Plan compliance

Additionally, the PEIR and SEIR for the OBMP are nineteen and nine years old, respectively. Knowledge of the basin's characteristics has improved since these documents were adopted, water management challenges have intensified, and environmental considerations have changed. An updated PEIR will better support decision-making, investment, and grant applications for ongoing and new management actions under the OBMP.

Finally, it is anticipated that it will become increasingly difficult to secure grants and low-interest loans due to increased competition in the future. Most grant and low-interest loan programs require, or heavily favor, projects that are within watersheds and groundwater basins with adopted integrated regional management plans, groundwater sustainability plans, or their equivalents. The 2020 OBMP Update is equivalent to a regional water resources and groundwater management plan that, in addition to allowing the implementation of the Physical Solution, will enable the stakeholders to be competitive in applying for grants and low-interest loans.

For these reasons, Watermaster and the Parties need to update the OBMP and its Implementation Plan, and perform the CEQA process, to set the framework for the next 20 years of basin-management activities.

1.3 Stakeholder Process for the 2020 OBMP Update

The 2020 OBMP Update was facilitated using a collaborative stakeholder process like that employed for the development of the 2000 OBMP. Throughout 2019, Watermaster held a series of public listening sessions to support the development of the 2020 OBMP Update. The purpose of the listening sessions was to obtain information, ideas, and feedback from the stakeholders to define their issues, needs, and wants; their collective goals for the 2020 OBMP Update; impediments to achieving the goals; the management actions required to remove the impediments; and a proposed plan to implement the management actions.

Watermaster established an OBMP Update Team to facilitate the stakeholder process, composed of Watermaster staff, Watermaster legal counsel, engineers and scientists from Wildermuth Environmental Inc. (WEI; Watermaster's engineering consultant), and IEUA staff. The OBMP Update Team provided key information prior to and during each listening session to enable the stakeholders to provide their input on each topic discussed. The objectives were to communicate the process for updating the OBMP, to ensure that the ideas and opinions of every stakeholder were heard, to present the information that will be considered for inclusion in the OBMP Update, and to ensure the stakeholder feedback is captured correctly.

The OBMP Update Team held eight listening sessions on the following dates:

- Listening Session 1: January 15, 2019
- Listening Session 2: February 12, 2019
- Listening Session 3: March 21, 2019
- Listening Session 4: May 16, 2019
- Listening Session 5: July 31, 2019
- Listening Session 6: September 11, 2019
- Listening Session 7: October 17, 2019
- Listening Session 8: December 11, 2019

The objectives of the first four listening sessions were (1) to confirm the need to update the OBMP; (2) to identify the issues, needs, and wants of the stakeholders; (3) to define goals for the 2020 OBMP





Update; and (4) to identify new and revised activities that could be included in the 2020 OBMP Update to remove impediments to achieving the 2020 OBMP Update goals. The *2020 OBMP Scoping Report* (Scoping Report) summarized and integrated the work products of these four listening sessions and described the recommended scope of work to implement each of the “2020 OBMP Update Activities” defined by the stakeholders. The final Scoping Report, including responses to stakeholder comments, is included herein as Appendix C and is discussed further in Section 2.2 of this report.

The objectives of Listening Sessions 5 and 6 were to present and obtain feedback on the scopes of work described in Section 3 of the Scoping Report. The objective of Listening Session 7 was to present and obtain feedback on the integration of the 2020 OBMP Update Activities defined in the Scoping Report with the 2000 OBMP PEs. The objectives of Listening Session 8 were to present and obtain feedback on the recommended 2020 OBMP management plan documented in the *Draft 2020 OBMP Update Report* and to begin discussions on the 2020 OBMP Implementation Plan and implementation agreements.

Appendix D to this report documents the stakeholder attendance at the listening sessions. All documents related to the 2020 OBMP Update, including meeting materials from the listening sessions and report deliverables, are available on the [Watermaster’s website](#).⁹

1.4 Organization and Use of this Report

This *2020 OBMP Update Report* describes the 2020 OBMP Update process (Section 1), the OBMP goals and new activities for the 2020 OBMP Update (Section 2), the status of the OBMP PEs and ongoing activities within them (Section 3), and the recommended 2020 OBMP management plan – inclusive of ongoing and new activities (Section 4). The management plan in Section 4 will form the foundation for the Parties to develop a final implementation plan (2020 OBMP Implementation Plan) and the agreements necessary to implement it. Exhibit 2 shows the parallels between the 2000 and 2020 documentation and the subsequent processes to develop implementation plans and agreements for approval by the Court and environmental review under CEQA.

Implementation of the management plan described in Section 4 may or may not result in the construction of new facilities, and nothing in this document obligates Watermaster or the Parties to implement the optimization recommendations. However, some of the implementation actions included in the management plan are required by Watermaster to administer the Physical Solution or comply with other Watermaster or regulatory requirements. These required implementation actions may or may not result in the development and implementation of projects.

⁹ <http://www.cbwm.org/OBMPU.htm>



2.0 2020 OBMP Goals and Activities

2.1 OBMP Goals

The issues, needs, and wants of the stakeholders form the basis of the management goals of the 2020 OBMP Update and inform the identification of impediments to the goals as well as the action items to remove the impediments. Through the listening session process, 57 unique needs and wants were identified by the stakeholders. The classes of identified issues were effectively the same as the implications for basin management defined in Exhibit 1. Exhibit 3 is a matrix, summarizing the needs and wants of the stakeholders, organized by basin management issue (rows) and showing attribution to stakeholders that share each need/want (columns).

Through the assessment of basin management issues, needs, and wants, the stakeholders concluded that the goals defined in the 2000 OBMP are still relevant today. The Parties' intent for each goal of the 2020 OBMP Update, as documented in the Scoping Report, are:

Goal No. 1 - Enhance Basin Water Supplies. The intent of this goal is to increase the water supplies available for Chino Basin Parties and improve water supply reliability. This goal applies to Chino Basin groundwater and all other sources of water available for beneficial use.

Goal No.2 - Protect and Enhance Water Quality. The intent of this goal is to ensure the protection of the long-term beneficial uses of Chino Basin groundwater.

Goal No.3 - Enhance Management of the Basin. The intent of this goal is to encourage sustainable management of the Chino Basin to avoid Material Physical Injury, promote local control, and improve water-supply reliability for the benefit of all Chino Basin Parties.

Goal No. 4 - Equitably Finance the OBMP. The intent of this goal is to identify and use efficient and equitable methods to fund OBMP implementation.

The far right-hand column in Exhibit 3 illustrates the nexus of the OBMP goals to the needs and wants of the Parties.

2.2 New Activities to Achieve the Goals of the 2020 OBMP Update

There are physical, institutional, and financial impediments to achieving the 2020 OBMP goals. The issues, needs, and wants of the stakeholders shown in Exhibit 3 recognize these impediments. The stakeholders identified and described 12 activities that, if implemented, would address their issues, needs, and wants. The 12 activities, as initially defined by the stakeholders, are listed in Exhibit 4 (the activities are identified by the letters A through L). Exhibit 3 illustrates which of the 12 activities the stakeholders believe have the potential to address each of their needs and wants. 55 of the 57 needs and wants were identified as addressed by one or more of the proposed activities.

Exhibit 5 illustrates the nexus of the OBMP goals, the impediments to achieving these goals, the stakeholder-defined activities to remove the impediments, and the potential outcomes (i.e. the implications) of implementing each activity. Exhibit 5 also shows the nexus of each activity to addressing the issues, needs, and wants of the stakeholders, categorized by basin management issues. In the process of describing the nexus of the goals and activities shown in Exhibit 5, it was identified that some of the activities in Exhibit 4 are related enough to be combined into a single management activity. Nine of the activities (A, B, C, D, E, F, G, K, and L) were combined into seven basin management activities. The



remaining three activities (H, I, and J) were identified as actions that could either be accomplished by incorporating them into the scopes of work of every activity or were more appropriate for inclusion within an implementation agreement.¹⁰

The seven basin management activities described in the Scoping Report are:¹¹

Activity A – Increase the capacity to store and recharge storm and supplemental water

Activity B – Develop, implement, and optimize Storage and Recovery Programs

Activity CG – Identify and implement regional conveyance and treatment projects/programs and optimize the use of all water supply sources

Activity D – Maximize the reuse of recycled water produced by the IEUA and others

Activity EF – Develop and implement a groundwater-quality management plan to address contaminants of emerging concern

Activity K – Develop a management strategy within the maximum-benefit salt and nutrient management plan to ensure compliance with recycled water recharge dilution requirements.

Activity L – Perform the appropriate amount of monitoring and reporting required to fulfill basin management and regulatory compliance requirements

The Scoping Report described each of the seven activities at the detail required to define a scope of work to implement them. The potential outcomes described in Exhibit 5 provided the basis for the scope of each activity. For each activity, the Scoping Report includes: a description of the activity, the need and function of the activity—including supporting technical demonstrations, the activity’s relationship to the OBMP PEs, a recommended scope of work to perform the activity to achieve the desired outcomes, a preliminary schedule for implementing the tasks that comprise the scopes of work, and a budget-level cost estimate to implement the initial tasks that could reasonably be estimated on currently available information.

Each activity is a management process to optimize some aspect of basin management, such as water quality (EF, K) or managed recharge (A). Thus, the scope of work for each activity represents the methodical process to characterize and analyze the basin management challenge (including technical data and institutional information), to define potential management alternatives, and to select the optimum management solution(s). Each management process is generally composed of four phases:

- (1) Scoping (S) – In this phase, the stakeholders convene to precisely articulate the objectives of the management process and refine the scope of work, cost, and schedule to execute it.
- (2) Evaluate the need for projects or other management solutions (PN) – In this phase, available and/or new data and information are compiled and analyzed to characterize and demonstrate the need for management programs or projects to achieve the stakeholder objectives defined in the scoping phase.

¹⁰ See the *2020 OBMP Scoping Report* (included herein as Appendix C) for more details on how Activities H, I, and J can be incorporated in the activity scopes of work and/or the 2020 OBMP Implementation Plan agreement(s).

¹¹ The activity names listed here have been simplified from the original descriptions defined by the stakeholders and shown in Exhibit 4.



- (3) Define and evaluate management alternatives (PE) – The evaluation phase includes the following generalized steps: develop planning, screening, and evaluation criteria; identify the potential program or project alternatives; develop reconnaissance-level engineering design and operating plans for project alternatives; develop an engineering cost opinion for each alternative; describe how each alternative could be implemented and financed; evaluate alternatives based on the evaluation criteria; and select the preferred program or project alternative.
- (4) Implementation (I) – In this phase, the preferred program or project alternative is implemented subject to developing the necessary agreements between participating Parties. If a project is identified, implementation also includes: preparing the preliminary design of the recommended alternative, preparing the environmental documentation that will tier-off the 2020 OBMP Update PEIR, preparing a financial plan for constructing the recommended alternative, preparing final design of the recommended alternative, acquiring permits for constructing and operating the recommended alternative, and constructing the recommended alternative.

The end of each phase represents a check in point where the scope of work can be adapted to deal with changed conditions or an off-ramp where a go/no-go decision can be made to continue with the next phase of the management process. Thus, activities may or may not result in the design and implementation of management plans or facilities.

Exhibits 6 through 12 summarize the key features of each of the seven activities described in detail in the Scoping Report. For each activity, the exhibit summarizes the need and objectives, the scope of work, and a general implementation schedule with go/no-go decision points identified. The scopes of work are divided into tasks, and for each task, the following are identified: the corresponding management process phase (S, PN, PE, I), the expected outcomes, Watermaster’s role in implementing the task (if any), and whether Watermaster deems the outcomes as required to administer the Physical Solution or comply with other Watermaster or regulatory requirements.

Implementation of the management processes characterized in Exhibits 6 through 12 may or may not result in the construction of new facilities, and nothing in this document obligates Watermaster or the Parties to implement the scopes as described. In activity implementation, for those outcomes that are deemed necessary to administer the Physical Solution or comply with other requirements, Watermaster will provide for the opportunity to revise the scopes of work and cost in the scoping phase. Any revisions will be subject to the discretion of Watermaster to ensure that the final scope of work achieves the required outcomes.

The following sections summarize the seven 2020 OBMP Update Activities identified by the Parties and describes the new implementation actions for inclusion in the 2020 OBMP Update Management Plan (in Section 4) to accomplish the objectives of the activities.

2.2.1 Activity A – Increase the capacity to store and recharge storm and supplemental water

The stakeholders have identified a lost opportunity for stormwater recharge in the basin and a limitation of Watermaster and the IEUA’s existing economic selection criteria for new recharge projects. The use of the existing criteria resulted in a recommendation in the 2018 RMP Update (RMPU) that no new recharge projects be implemented. Thus, the Activity A objectives are (1) to maximize stormwater





capture pursuant to Watermaster's diversion permits,¹² (2) to promote the long-term balance of recharge and discharge, (3) to ensure sufficient supplemental water recharge capacity for future replenishment, (4) to reduce dependence on imported water by maintaining or enhancing Safe Yield, (5) to improve water quality, and (6) to ensure a supply of dilution water to comply with recycled water recharge permit requirements. For the remainder of this report, the term "recharge" is inclusive of diverting, storing, and recharging storm and supplemental waters.

The Scoping Report identified that based on the alignment of the scope of work to achieve the outcomes of Activity A with those of the RMPU process, implemented through OBMP PE 2, the outcomes of Activity A can be accomplished as part of the existing RMPU process, which is updated at least every five years as required by the Court. Thus, implementation of the scope of work characterized in the Scoping Report and summarized in Exhibit 6 will result in the completion of the required 2023 RMPU, including obtaining consensus on its objectives, developing an implementation and financing plan, preparing the report, and implementing recharge projects. These outcomes are required by Watermaster to ensure that the yield of the basin is maintained and that the supplemental recharge capacity is sufficient to meet Replenishment Obligations. Although not required, the next (or a future) RMPU process could accomplish the objectives of Activity A by updating the project selection criteria and considering projects that will meet other needs of the Parties, such as providing additional recharge capacity for Storage and Recovery Programs or addressing pumping sustainability issues.

Based on the scope of work and alignment with the existing PE 2 implementation actions, there are no new implementation actions required for inclusion in the 2020 OBMP Update to accomplish Activity A.

2.2.2 Activity B - Develop, implement, and optimize Storage and Recovery Programs

The Peace Agreement states that "Watermaster shall prioritize its efforts to regulate and condition the storage and recovery of water developed in a Storage and Recovery Program for the mutual benefit of the Parties to the Judgment and give first priority to Storage and Recovery Programs that provide broad mutual benefits."¹³ For this and other reasons, the Parties desire to develop "optimized" Storage and Recovery Programs that avoid potential MPI and provide broad benefits, such as increased water-supply reliability, protected or enhanced Safe Yield, improvements to water quality, and reduced cost of OBMP implementation.

The objective of Activity B is to prepare a Storage and Recovery Program guidance document in a collaborative setting that clearly articulates the specific objectives of the Parties and the required benefits to be realized from Storage and Recovery Programs. Implementation of the scope of work described in the Scoping Report and summarized in Exhibit 7 will result in: (1) consensus on the objectives and desired benefits of Storage and Recovery programs, (2) conceptual descriptions of various types of Storage and Recovery programs that achieve the defined objectives and benefits and are consistent with the *2020 Storage Management Plan*, (3) reconnaissance-level project designs and

¹² Watermaster holds three permits with the State Water Resources Control Board (State Board) for the diversion and recharge of stormwater in trust for the Parties. The San Bernardino County Flood Control District (SBCFCD) is a co-permittee for two of these permits, 19895 and 20753. Each permit defines a maximum diversion limit and the period over which diversions are allowed to occur each year (diversion season): (1) Permit 19895 has a diversion limit of 15,000 acre-feet (af) from November 1 to April 30, (2) Permit 20753 has a diversion limit of 27,000 af from October 1 to May 1, and (3) Permit 21225 has a diversion limit of 68,500 af from January 1 to December 31.

¹³ See Peace Agreement, § 5.2(c)



operating plans and the costs of the Storage and Recovery Program alternatives, and (4) the development of a *Storage and Recovery Program Master Plan* that will support the design of Storage and Recovery Programs that are consistent with the *2020 Storage Management Plan* and the Peace Agreement. Watermaster deems the development of a *Storage and Recovery Program Master Plan* a necessary outcome so that Watermaster is able to review, condition, and approve Storage and Recovery Program applications in a manner that is uniform, predictable, and consistent with the Peace Agreement.

Based on the scope of work, the new implementation actions for inclusion in the 2020 OBMP Update to accomplish Activity B are:

- Develop a *Storage and Recovery Master Plan* to support the design of optimized Storage and Recovery Programs that are consistent with the 2020 Storage Management Plan and to provide the Watermaster with criteria to review, condition, and approve applications in a manner that is consistent with the Judgment and the Peace Agreement.

2.2.3 Activity CG - Identify and implement regional conveyance and treatment projects/programs and optimize the use of all water supply sources

The stakeholders have identified basin management challenges, such as land subsidence and poor water quality, that could limit their ability to fully exercise their pumping rights using existing infrastructure. Thus, the Activity CG objectives are to optimize the use of all sources of water available to the Parties to meet their demands despite these basin management challenges and to potentially help mitigate these challenges. Implementation of the scope of work characterized in the Scoping Report and summarized in Exhibit 8 will result in (1) a plan that describes the universe of water reliability concerns of the Parties, the opportunities and limitations of existing/planned infrastructure to meet the reliability goals, conceptual project designs and operating plans, and the costs of the reliability alternatives; and (2) implementation of the selected reliability project(s). As identified in the Scoping Report, the Activity CG scope of work is effectively the same as the IEUA's existing Integrated Water Resources Plan (IRP) process that addresses water supply reliability for its member agencies. Activity CG is an expansion that would address the water supply reliability concerns of all Parties to the Judgment. Currently, IEUA is preparing its 2020 IRP and other related planning efforts with its member agencies. This effort, or future IRP updates could be expanded by others to include neighboring agencies, including Three Valleys Municipal Water District (TVMWD), Western Municipal Water District (WMWD), or others. To create a coordinated planning effort, any of these agencies could lead and coordinate the collaborative regional effort on behalf of the Parties.

Although this activity optimizes the management of all water supplies in the Chino Basin, Watermaster does not deem these outcomes necessary for administration of the Physical Solution or compliance with other Watermaster or regulatory requirements.

Based on the scope of work, and considering its overlap with IEUA planning efforts, the new implementation actions for inclusion in the 2020 OBMP Update to accomplish Activity CG are:

- The IEUA, the TVMWD, the WMWD, and/or other Party acting as a coordinating agency will establish and/or expand integrated water resources planning efforts to address water supply reliability for all Watermaster Parties.
- Watermaster will support the IEUA, TVMWD, WMWD, and/or others in their efforts to improve water supply reliability to ensure those efforts are integrated with Watermaster's groundwater management efforts.





These implementation actions are included as part of the 2020 OBMP Update to complement existing regional planning efforts, not to duplicate them.

2.2.4 Activity D - Maximize the reuse of recycled water produced by the IEUA and others

The objective of Activity D is to maximize the reuse of recycled water produced by the IEUA and other publicly owned treatment works (POTWs) in proximity to the Chino Basin to meet future demands and improve local water-supply reliability, especially during dry periods. Expanded reuse activities could include direct non-potable reuse (landscape irrigation or industrial uses), artificial recharge by spreading and/or injection (indirect potable reuse), and direct potable reuse. Increasing recycled water reuse is an integral part of the OBMP goal to enhance water supplies. The direct use of recycled water increases the availability of native and imported waters for higher-priority beneficial uses. And, the Judgment states that Watermaster shall give high priority to maximizing the beneficial use of recycled water for replenishment purposes.¹⁴ Implementation of the scope of work characterized in the Scoping Report and summarized in Exhibit 9 will result in (1) a plan that describes the objectives for optimizing and maximizing recycled water reuse, the demand and opportunities for increased recycled water reuse, the impacts of recycled water reuse and required mitigation, conceptual project designs and operating plans, and the costs of the reuse project alternatives; and (2) implementation of the selected recycled water reuse project(s).

As identified in the Scoping Report, the scope of work is similar to the IEUA's existing planning efforts for the IRP and Chino Basin Program (CBP) on behalf of its member agencies. These efforts, or similar future efforts, could be expanded by others to include neighboring agencies, including the TVMWD, the WMWD, or others. To create a coordinated planning effort, any of these agencies could lead and coordinate the collaborative regional effort to maximize recycled water reuse on behalf of the Parties.

Although this activity maximizes the management of recycled water supplies in the Chino Basin, Watermaster does not deem these outcomes necessary for administration of the Physical Solution or compliance with other Watermaster or regulatory requirements. However, any expansion of recycled water reuse would be subject to Watermaster review to ensure compliance with the maximum benefit SNMP.

Based on the scope of work, and considering its overlap with IEUA planning efforts, the new implementation actions for inclusion in the 2020 OBMP Update to accomplish Activity D are:

- IEUA, the TVMWD, the WMWD, and/or other Party acting as a coordinating agency will expand future recycled water reuse planning efforts to maximize the reuse of all available sources of recycled water.
- Watermaster will support the IEUA, TVMWD, WMWD, and/or others in their efforts to maximize recycled water reuse to ensure these efforts are integrated with Watermaster's groundwater and salinity management efforts.

These implementation actions are included as part of the 2020 OBMP Update to complement existing regional planning efforts, not to duplicate them.

¹⁴ See Restated Judgment, ¶ 49(a)





2.2.5 Activity EF - Develop and implement a groundwater-quality management plan to address contaminants of emerging concern

Groundwater contaminants are present across the Chino Basin, new contaminants are being discovered, and water-quality regulations are evolving and becoming more restrictive. These trends threaten to limit the beneficial use of groundwater and increase the cost of the water supply. The objectives of Activity EF are to characterize the water-quality challenges across the Chino Basin and identify the most efficient means to address these challenges, including the potential for multi-benefit collaborative projects to ensure that groundwater is put to beneficial use. Implementation of the scope of work described in the Scoping Report and summarized in Exhibit 10 will result in (1) the development and implementation of initial and long-term emerging contaminants monitoring plans, (2) a water-quality assessment of the Chino Basin that characterizes the need for a groundwater-quality management plan, and (3) the development and implementation of a *Groundwater-Quality Management Plan*. The *Groundwater-Quality Management Plan* would document the most current water-quality assessment, the long-term monitoring and analysis plan, the reconnaissance-level engineering designs and operating plans for alternative water quality improvement projects, the selected project(s) for implementation, and an implementation plan.

As previously noted, Paragraph 41 of the Judgment provides Watermaster the discretion to develop an OBMP that includes both water quantity and water quality considerations. If water quality is not effectively managed, the Parties may not be able to utilize their water rights, which could result in negative impacts to the basin, such as reductions in net recharge, loss of hydraulic control, and movement of contaminant plumes. Effective management of water quality in the Basin to preserve maximum beneficial use can only be accomplished through a systematic assessment of the emerging contaminant threats to the use of groundwater resources, and thoughtfully preparing a plan to respond to those threats. A *Groundwater-Quality Management Plan* would provide the Parties with the comprehensive data and information, including best practices for monitoring, required to understand and manage the future water-quality challenges that could impact the Parties' ability to fully utilize their pumping rights. Hence, Watermaster deems the outcomes of Activity EF as required for administration of the Physical Solution.

Based on the scope of work, the new implementation actions for inclusion in the 2020 OBMP Update to accomplish Activity EF are:

- Develop and implement an initial emerging contaminants monitoring plan.
- Prepare a water quality assessment of the Chino Basin to evaluate the need for a Groundwater Quality Management Plan.
- Develop and implement a long-term emerging contaminants monitoring plan.
- Develop and implement a Groundwater Quality Management Plan.

2.2.6 Activity K - Develop a management strategy within the maximum-benefit salt and nutrient management plan to ensure compliance with recycled water recharge dilution requirements

Watermaster and the IEUA are co-permittees for the Chino Basin maximum-benefit SNMP incorporated in the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan). The maximum-benefit SNMP was developed pursuant to PE 7 (see Section 3.2.7 for additional details) to enable the recharge and reuse of recycled water planned in PEs 2 and 5. It defines the management actions that Watermaster and IEUA must take to manage total dissolved solids (TDS) and nitrate concentrations in Chino Basin groundwater and in the IEUA's recycled water and the TDS and nitrate concentration limitations for recycled water reuse activities. The objective of Activity K is to determine if compliance



with the recycled water recharge dilution requirements defined in Watermaster and the IEUA's maximum-benefit SNMP can be achieved under existing management plans and, if not, to develop a plan to achieve compliance. Implementation of the scope of work described in the Scoping Report and summarized in Exhibit 11 will result in (1) the periodic characterization and understanding of the ability to comply with the TDS and nitrate dilution requirements in the short- and long-term; and if non-compliance is projected, (2) a plan that describes the conceptual designs, operating plans, and costs of alternative salt-offset programs or projects, and (3) implementation of the selected salt-offset program or projects. Because the maximum-benefit SNMP is an explicit requirement of Basin Plan, these are required outcomes for Watermaster and the IEUA to continue the recycled water recharge program.

Based on the scope of work, the new implementation actions for inclusion in the 2020 OBMP Update to accomplish Activity K are:

- Periodically prepare TDS and nitrate concentration projections to evaluate compliance with the maximum benefit SNMP dilution requirements, and, if necessary, based on the outcome of the evaluation, prepare a plan and schedule to implement a salt-offset compliance strategy.

2.2.7 Activity L – Perform the appropriate amount of monitoring and reporting required to fulfill basin management and regulatory compliance requirements

Watermaster conducts data-collection programs and prepares reports and data deliverables to comply with regulations, to fulfill its obligations under its agreements and Court orders, to comply with its requirements under CEQA, and to assess the performance of OBMP Implementation. The objective of Activity L is to refine the monitoring and reporting requirements of Watermaster to ensure that the objectives of each requirement are being met efficiently at a minimum cost. Implementation of the Activity L scope of work described in the Scoping Report and summarized in Exhibit 12 will result in (1) the comprehensive review of all monitoring/reporting programs in an open stakeholder process, (2) the development and periodic update of an *OBMP Monitoring and Reporting Work Plan*, and (3) potential revisions to Watermaster's non-discretionary monitoring and reporting programs. Watermaster is required to implement the monitoring and reporting programs to comply with the Judgment and other regulations and obligations; however, these specific outcomes are not required. This activity will allow the Parties to offer more direct input in the implementation of the required monitoring programs, but Watermaster does not deem this outcome necessary to comply with the monitoring requirements.

Based on the scope of work, the new implementation actions for inclusion in the 2020 OBMP Update to accomplish Activity L are:

- Perform review and update of Watermaster's regulatory and Court-ordered monitoring and reporting programs and document them in a work plan: *OBMP Monitoring and Reporting Work Plan*.
- Perform periodic review and update of *the OBMP Monitoring and Reporting Work Plan* and modify the monitoring and reporting programs, as appropriate.

If the above implementation actions are not initiated by the Parties, Watermaster staff and the Watermaster engineer would continue their existing process to periodically review and refine Watermaster's monitoring and reporting efforts to meet all requirements and achieve efficiencies.



3.0 Integration of the 2020 OBMP Update Activities with the 2000 OBMP Program Elements

3.1 Nexus of the 2020 OBMP Update Activities to the 2000 OBMP Program Elements

Through the process of defining the scopes of work to achieve the desired outcomes of the 2020 OBMP Update Activities, it became apparent that the PEs defined in the 2000 OBMP are still relevant today as the overarching program elements of a basin management program. Each of the seven activities in the Scoping Report had objectives and tasks that were directly related to one or more of the 2000 OBMP PEs. Exhibit 13 is a matrix that demonstrates the nexus between the PEs (rows) and the activities (columns) based on the PE objectives (listed in Section 1.1 herein) and the objectives of the 2020 OBMP Update Activities (described in Section 2.2 herein). The matrix is symbolized with anchors and dots. Anchors indicate a direct relationship between an activity and a PE (i.e. the activity and the PE have similar or identical objectives and thus the activity can be integrated into the existing PE). Dots indicate an indirect relationship between an activity and a PE (i.e. the activity has the potential to provide benefits to PEs).

Based on this finding, the nine PEs defined in the 2000 OBMP will be retained for the 2020 OBMP Update. Each of the seven activities, and the associated implementation actions, was mapped to the PE to which it is anchored in Exhibit 13. Based on the need for ongoing activities under the existing PE and the new activities defined by the stakeholders, the implementation actions were modernized and updated.

3.2 OBMP Program Elements – Progress and Ongoing Management Actions

For each of the nine PEs, this section describes the objectives and implementation actions of the PE as established in 2000, implementation progress since 2000, and ongoing management activities, including the new actions to be incorporated in the 2020 OBMP, as identified in Section 2.2 of this report.

3.2.1 Program Element 1. Develop and Implement Comprehensive Monitoring Program

The 2000 OBMP included PE 1—*Develop and Implement Comprehensive Monitoring Program*—to provide the information necessary to support the implementation of all other OBMP PEs and to evaluate their performance. The types of monitoring programs called for by PE 1 in the OBMP included:

- Groundwater-level monitoring
- Groundwater-quality monitoring
- Groundwater-production monitoring
- Surface-water discharge and quality monitoring (including managed artificial recharge)
- Ground-level monitoring
- Well construction, abandonment, and destruction

The implementation actions incorporated into the 2000 OBMP Implementation Plan are summarized in Table 1 below. Each implementation action in Table 1 is categorized as a one-time or ongoing action, and the right-most column of the table indicates if the action was implemented.





Table 1. Program Element 1 – Implementation Actions Defined in the 2000 OBMP*

Implementation Actions and Schedule	One-time/ Ongoing	Implemented?
Years 1 through 3		
*Perform initial tasks to survey sites and design and set up all long-term monitoring programs for groundwater level, groundwater quality, ground level, surface water, and recharge monitoring programs.	One-time	✓
Complete initial meter installation program for overlying agricultural pool.	One-time	✓
Develop agreements with county and state agencies regarding notification of new well drilling. Well construction and related information will be requested as new wells are constructed. Prepare and update a list of abandoned wells and coordinate with the counties to ensure that abandoned wells are destroyed properly.	One-time	✓
Years 4 through 50		
*Start and continue all groundwater level, groundwater production, groundwater quality, ground level (including remote sensing), surface water, and well construction/destruction monitoring programs. Key wells should be relocated as necessary.	Ongoing	✓

Note: Actions marked with “” are combined from multiple actions in the OBMP Implementation Plan.

3.2.1.1 Implementation Progress since 2000

Watermaster began implementing its monitoring programs as part of the development of the OBMP. Pursuant to the OBMP Implementation Plan, long-term plans for monitoring groundwater production, groundwater level, groundwater quality, ground level (including remote sensing), surface water, and well construction/destruction monitoring programs have been developed, implemented, and updated as necessary.

The monitoring programs have evolved over time to ensure that the data and information acquired not only meet the OBMP requirements, but also other regulatory requirements and Watermaster obligations under agreements, Court orders, and CEQA. In some instances, the monitoring programs were expanded to satisfy new basin-management initiatives and regulations. In other instances, the scope of the monitoring programs has been reduced with periodic reevaluation and redesign to achieve the monitoring objectives at reduced cost. Table 2 below is a list of each Watermaster monitoring and reporting requirement and the entities that require the monitoring and reporting. The Scoping Report provides a comprehensive overview of the status of the monitoring programs as of 2018.

Watermaster developed a centralized environmental database to store, manage, and visualize its datasets. Data management includes a detailed quality assurance and quality control protocol. The database and the database-management procedures ensure the quality and accuracy of the data, allow for efficient data exploration and analysis, and include standardized reports and data exports in formats for regulatory data deliverables or further analysis (e.g. creation of model input files).





Table 2. Watermaster Monitoring and Reporting Requirements

Monitoring and Reporting Requirement	Requiring Entity					
	Court	State Board	Regional Board	California DFW	California DWR	CEQA
Water Rights Compliance Annual Reports		X		X		
SGMA Annual Report for Adjudicated Basins					X	
Biannual Evaluation of the Cumulative Effect of Transfers	X					
Biannual Evaluation of the Balance of Recharge and Discharge	X					
Annual Finding of Substantial Compliance with the Recharge Master Plan	X					
Annual Report of Compliance with SB 88 and SWRCB Regulations for Measurement and Reporting of Diverted Surface Water		X				
Safe Yield Recalculation	X					
Recharge Master Plan Update (RMPU)	X					
State of the Basin Report	X					
California Statewide Groundwater Elevation Monitoring Program (CASGEM)					X	
Chino Basin Maximum Benefit Annual Report			X			
Annual Report of the Prado Basin Habitat Sustainability Committee						X
Water Recycling Requirements for the Chino Basin Recycled Water Groundwater Recharge Program			X			
Annual Report of the Ground-Level Monitoring Committee	X					
OBMP Semi-Annual Status Reports	X					

3.2.1.2 Ongoing implementation actions for the 2020 OBMP

The following summarizes each of the Watermaster’s monitoring and data-collection programs that need to continue to be implemented to satisfy the requirements of the OBMP and the other requirements summarized in Table 2 above. Section 4.1 of this report summarizes the 2020 OBMP Management Plan for PE 1.

Groundwater-production monitoring. Watermaster uses groundwater-production data to quantify and levy assessments pursuant to the Judgment. Estimates of production are also essential inputs to recalibrate Watermaster’s groundwater flow model, which is used to inform the recalculation of Safe





Yield, evaluate the state of Hydraulic Control, perform MPI evaluations, and support many other Watermaster initiatives. Members of the Appropriative and Overlying Non-Agricultural Pools and CDA record their own meter data and submit them to Watermaster. For Agricultural Pool wells, Watermaster performs a field program to install totalizing flow meters, repair or replace broken meters, and visit the wells quarterly to record the metered data. Watermaster has determined that for some Agricultural Pool wells it is not practical to repair, replace or install new meters. In these cases, Watermaster applies a water-duty based method to estimate production on an annual basis.

Groundwater-level monitoring. Watermaster's groundwater-level monitoring program supports many Watermaster management functions, including: groundwater model development and recalibration, periodic recalculations of Safe Yield, evaluating the cumulative impacts of transfers and the balance of recharge and discharge, subsidence management, MPI evaluations, estimation of storage change, other scientific demonstrations required for groundwater management, and many regulatory requirements, such as the demonstration of Hydraulic Control, the triennial recomputation of ambient water quality, and Prado Basin habitat sustainability. The monitoring program includes field monitoring programs implemented by Watermaster staff at private wells and monitoring wells, and cooperative programs to compile and store data from well owners and other entities managing monitoring programs, including municipal water agencies, private water companies, the California Department of Toxic Substance Control (DTSC), the County of San Bernardino, and various private consulting firms. To continue to support assessments of Hydraulic Control, and other analyses, it is anticipated that new monitoring wells will need to be constructed to replace the currently monitored private wells that will be lost as land is converted from agricultural uses to urban uses.

Groundwater-quality monitoring. Watermaster's groundwater-quality monitoring program supports many Watermaster management and regulatory-compliance functions, including: compliance with the maximum benefit SNMP, characterization of non-point source contamination and plumes associated with point-source discharges, support for ground-water modeling, characterization of groundwater/surface-water interactions in the Prado Basin area, and characterization of basin-wide trends in groundwater quality as part of the Watermaster's biennial State of the Basin report. The monitoring program includes field monitoring programs implemented by Watermaster staff at private wells and monitoring wells, and cooperative programs to compile and store data from well owners and other entities managing monitoring programs (see examples noted for groundwater-level monitoring). To continue to support the triennial ambient water quality recomputation, and other analyses, it is anticipated that new monitoring wells will need to be constructed to replace the currently monitored private wells that will be lost as land is converted from agricultural uses to urban uses.

Surface-water and climate monitoring. Watermaster's surface-water and climate monitoring program supports many Watermaster management functions, including: groundwater model development and recalibration, periodic recalculations of Safe Yield, evaluating the cumulative impacts of transfers and the balance of recharge and discharge, MPI evaluations, recharge master planning, evaluating Prado Basin habitat sustainability, and evaluating compliance with the SWRCB diversion permits, the maximum benefit SNMP, and the recycled-water recharge permits. Most of the datasets are collected from publicly available sources, including POTW discharge data, USGS stream gaging station data, and precipitation and temperature data measured at public weather stations or downloaded from spatially gridded datasets. Chino Basin stormwater, imported water, and recycled water recharge data are collected by the IEUA and shared with Watermaster. Watermaster staff also performs field surface water monitoring of the Santa Ana River in compliance with the maximum-benefit SNMP.

Ground-level monitoring. Watermaster's ground-level monitoring program is conducted pursuant to the *Chino Basin Subsidence Management Plan*. The ground-level monitoring program consists of high-





frequency, groundwater level monitoring at wells, monitoring of the vertical component of aquifer system compression and expansion at Watermaster extensometer facilities, and measurement of horizontal ground-surface deformation across areas that are experiencing differential land subsidence by electronic distance measurements (EDMs) to understand the potential threats and locations of ground fissuring.

Biological monitoring. Watermaster’s biological monitoring program is conducted pursuant to the adaptive monitoring program (AMP) for the Prado Basin Habitat Sustainability Program (PBHSP). The objective of the PBHSP is to ensure that the groundwater-dependent ecosystem in Prado Basin will not incur unforeseeable significant adverse impacts due to implementation of the Peace II Agreement. The monitoring program produces a time series of data and information on the extent and quality of the riparian habitat in the Prado Basin over a historical period that includes both pre- and post-Peace II implementation. Two types of monitoring and assessment are performed: regional and site-specific. Regional monitoring and assessment of the riparian habitat is performed by mapping the extent and quality of riparian habitat over time using multi-spectral remote-sensing data and air photos. Site-specific monitoring performed in the Prado Basin includes field vegetation surveys and seasonal ground-based photo monitoring.

Water-supply and water-use monitoring. Watermaster compiles water supply and water-use data from the Parties to support two required reporting efforts: the Watermaster Annual Report to the Court and annual reporting requirements for adjudicated basins pursuant to the Sustainable Groundwater Management Act (SGMA). The data are also used to support calibration of Watermaster’s surface water and groundwater models. Monthly water use volumes for supply sources other than Chino Basin groundwater are collected from the Parties; this includes groundwater from other basins, recycled water, imported water, and native surface water.

Planning information. Watermaster periodically collects and compiles information on the Parties’ best estimates of their future demands and associated water supply plans. The data are used for future planning investigations that require the use of Watermaster’s surface and groundwater models, such as Safe Yield recalculations and RMP updates. These data include:

- Water demands and water-supply plans of the Watermaster Parties:
 - i. Projected total water demand
 - ii. Projected amount of each water supply by source to meet the projected water demand
 - iii. Monthly distribution of water supplies used to meet the demand
 - iv. Projected groundwater pumping at each existing well and future planned wells
 - v. Groundwater pumping schedules (i.e. well use priorities and capacities)
 - vi. Pumping capacities, required pumping combinations, and sustainable pumping levels (pumping sustainability metric) at each well
- Assumptions for how:
 - i. Managed storage will be used to meet Replenishment Obligations
 - ii. Lands currently in agricultural uses will be converted to urban uses
 - iii. Additional potential conservation above that currently required for new land development
- Future projections of location and magnitude of stormwater and supplemental water recharge

Well construction, abandonment, and destruction. Watermaster maintains a database on wells in the basin and performs periodic well inspections. Sometimes, Watermaster staff identifies a new well while





implementing its monitoring programs. Well owners must obtain permits from the appropriate county and state agencies to drill a well and to put the well in use. Watermaster has developed cooperative agreements with the State Water Board’s Division of Drinking Water (DDW) and the Counties of Los Angeles, Orange, Riverside, and San Bernardino to ensure that the appropriate entities know that a new well has been constructed. Watermaster staff makes best efforts to obtain well design information, lithologic and geophysical logs, groundwater level and quality data, and aquifer stress test data.

The presence of abandoned wells is a threat to groundwater supply and a physical hazard. Watermaster staff periodically reviews its database, makes appropriate inspections, consults with well owners, maintains a list of abandoned wells in the Chino Basin, and provides this list to the counties for follow-up and enforcement. The owners of the abandoned wells are requested to properly destroy their wells following the ordinances developed by the county in which they are located.

3.2.2 Program Element 2. Develop and Implement Comprehensive Recharge Program

The 2000 OBMP included PE 2—*Develop and Implement Comprehensive Recharge Program*—to reverse the loss of yield caused by urbanization and the concrete lining of natural streams overlying the Chino Basin. PE 2 is also meant to ensure that there will be enough supplemental water recharge capacity available to Watermaster to meet Replenishment Obligations.

The implementation actions incorporated into the 2000 OBMP Implementation Plan are summarized in Table 3 below. Each implementation action in Table 3 is categorized as a one-time or ongoing action, and the right-most column of the table indicates if the action was implemented.

Table 3. Program Element 2 – Implementation Actions Defined in the 2000 OBMP

Implementation Action	One-time/ Ongoing	Implemented?
Years 1 through 3		
Watermaster advisory committee will form an ad-hoc committee to coordinate with CBWCD and SBCFCD.	One-time	✓
Implement all high priority recharge projects that involve only re-operation of existing recharge/flood control facilities.	One-time	✓
Complete the RMP.	One-time	✓
Complete design and construction of early action recharge projects identified in the first year of the implementation of the OBMP.	One-time	✓
Years 4 through 50		
By year 5 implement all high priority projects that involve construction and re-operation at existing facilities.	One-time	✓
Implement all other recharge projects based on need and available resources.	Ongoing	✓
Update the comprehensive recharge program every five years.	Ongoing	✓





3.2.2.1 Implementation Progress since 2000

The scope of work defined under PE 2 was to continue the recharge master plan study initiated by Watermaster and the Chino Basin Water Conservation District (CBWCD) in 1998. The implementation plan for PE 2 includes the preparation of a recharge master plan update (RMPU) at least every five years. The objectives and scope of each RMPU are defined at the beginning of each update and are derived from several guiding documents: the Peace Agreement, the Peace II Agreement, and the Special Referee's December 2007 Report. Pursuant to these guiding documents, the general objectives of the RMPU are to ensure there is enough recharge capacity and supplemental water available to meet future replenishment requirements, to balance the recharge and discharge in every area and subarea, to maximize the recharge of recycled and storm waters where feasible, and to protect or enhance Safe Yield. To meet these objectives, the RMPUs must consider and address recharge requirement projections, the availability of storm and supplemental waters for recharge and replenishment, and the physical means to satisfy these recharge projections. To the extent that new or modified facilities are required to meet the objectives, the RMPUs include a schedule for the planning, design, and construction of recharge improvements. The 2001 Recharge Master Plan and subsequent RMPUs (2010, 2013, and 2018) were developed in open and transparent planning processes that were convened by Watermaster through an ad-hoc committee. As part of the *2013 Amendment to the 2010 RMPU* (2013 RMPU), the RMPU Steering Committee, now referred to as the Recharge Investigations and Projects Committee (RIPComm), was created to assist Watermaster and the IEUA in preparing RMPUs. The RIPComm is open to all interested stakeholders and meets regularly through the development of RMPUs. The outcomes of the 2001 Recharge Master Plan and subsequent RMPUs (2010, 2013, and 2018) are summarized below:

- 2001 Recharge Master Plan: Watermaster, in collaboration with the IEUA, constructed the first set of recharge facilities to exercise its rights pursuant to its diversion permits, increasing average annual stormwater recharge by about 9,500 afy. As part of this work, Watermaster and the IEUA modified seventeen existing flood retention facilities to increase diversion rates, conservation storage, and recharge, and constructed two new recharge facilities. The cost of these recharge improvements was about \$60 million. The IEUA and Watermaster paid for about half of this cost, while the other half was funded through Proposition 13 grants and other grant programs.
- 2010 RMPU and 2013 Update: As of this writing, Watermaster and the IEUA are completing the final design/construction of five of the recommended 2013 RMPU facilities, and they should be online in 2021. These facilities are expected to increase stormwater recharge by about 4,700 afy.
- 2018 RMPU: The 2018 RMPU did not recommend any new recharge projects. One of the findings of the 2018 recharge master plan update was that Watermaster has enough supplemental water recharge capacity to it meet its Replenishment Obligations via wet-water recharge through 2050.

Upon completion of the 2013 RMPU facilities, the annual average stormwater recharge performed pursuant its diversion permits is expected to be about 14,950 afy.¹⁵ Thus, in the first 20 years of OBMP

¹⁵ WEI (2018). Recharge Master Plan Update. September 2018.
http://www.cbwm.org/docs/engdocs/2018%20RMPU/20180914_2018_RMPU_final.pdf



implementation, stormwater recharge will have increased by about 14,150 afy, and supplemental water recharge capacity will have increased by 27,600 afy. And, the IEUA has increased the recharge of recycled water from about 500 afy in 2000 to about 16,000 afy in 2018. The next RMPU must be completed and submitted to the Court by October 2023.

3.2.2.2 Ongoing implementation actions for the 2020 OBMP

The RMPU process is an ongoing requirement of the 2000 OBMP Implementation Plan. The next RMPU is due to the Court by October 2023 and must be updated no less frequently than every five years thereafter. As identified in Activity A, the Parties have expressed interest in maximizing the recharge of recycled, imported, and storm waters where feasible. Although meeting these objectives is not a requirement for the RMPU, the next (or a future) RMP process could accomplish the objectives of Activity A by considering projects that will meet other needs of the Parties, such as providing additional recharge capacity for Storage and Recovery Programs or addressing pumping sustainability issues. As summarized below and described in further detail in the Scoping Report, there are opportunities and challenges for increasing these efforts in the future:

- The theoretical average annual stormwater discharge available for diversion under the existing water rights permits is about 74,000 afy (ranging from 21,400 to 110,500 afy for the combined permitted diversions) and the annual average stormwater recharge performed pursuant to these permits is expected to be about 14,950 afy. The difference between these two values, about 60,000 afy, is a lost opportunity for stormwater recharge. Improvements to existing facilities and operations and/or new facilities are required to achieve the stormwater recharge potential.
- New recharge facilities and/or improvements to existing facilities may be needed if Parties want to increase supplemental water recharge.
- Based on Watermaster and the IEUA's existing economic selection criteria (projects are selected for implementation only if the melded unit cost of stormwater recharge resulting from the projects is less than the avoided unit cost of purchasing imported water from the Metropolitan Water District of Southern California [Metropolitan]), no new recharge projects were recommended for implementation in the 2018 RMPU. If the Parties desire to develop a list of projects that will increase recharge in the basin, the economic criteria for selecting projects needs to be reevaluated.
- Finally, the criteria on how and where to conduct recharge needs to be updated to more effectively address existing basin management issues, including: land subsidence, maintaining Hydraulic Control, and pumping sustainability. Historically, Watermaster has attempted to manage the recharge of storm and supplemental water to promote the balance of recharge and discharge. This method of managing recharge does not specifically address current basin management issues, such as existing land subsidence in Management Zone 1 (MZ-1) and parts of MZ-2 and pumping sustainability issues in the Jurupa Community Services District (JCSD) and CDA well fields. There is a need to define additional criteria on how and where to conduct recharge to better address existing basin management issues.

Thus, during the scoping phase of the next RMPU, the Parties should determine if the economic and physical criteria for project evaluation should be reevaluated to accomplish Activity A.

Section 4.2 of this report summarizes the 2020 OBMP Management Plan for PE 2.





3.2.3 Program Element 3. Develop and Implement a Water Supply Plan for Impaired Areas

The 2000 OBMP included PE 3—*Develop and Implement a Water Supply Plan for Impaired Areas*—to maintain and enhance Safe Yield and maximize beneficial uses of groundwater. The OBMP recognized that urban land uses would ultimately replace agricultural land uses, which had been the primary land use in the southern portion of the basin throughout the 20th century, and that if municipal pumping did not replace agricultural pumping, groundwater levels would rise and discharge to the Santa Ana River. The potential consequences would be the loss of Safe Yield and the outflow of high-TDS and -nitrate groundwater from the Chino Basin to the Santa Ana River—the latter of which could impair downstream beneficial uses in Orange County. The OBMP estimated that to maintain the Safe Yield, approximately 40,000 afy of groundwater would need to be produced to replace Agricultural Pool pumping in the southern part of the basin. The Chino Basin Desalters were identified as the optimal multi-benefit project to replace the expected decrease in agricultural production to maintain or enhance Safe Yield, to pump and treat high-salinity groundwater in support of PE 7, to meet growing municipal demands in support of PE 5, and to protect the beneficial uses of the Santa Ana River. Additionally, PE 6 envisioned that the Chino Basin Desalters could also be used to clean up the volatile organic compound (VOC) plumes that would eventually be intercepted by the Desalter wells.

The implementation actions incorporated into the 2000 OBMP Implementation Plan are summarized in Table 4 below. Each implementation action in Table 4 is categorized as a one-time or ongoing action, and the right-most column of the table indicates if the action was implemented.

Table 4. Program Element 3 – Implementation Actions Defined in the 2000 OBMP

Implementation Action	One-time/ Ongoing	Implemented?
Years 1 through 3		
Complete the Water Facilities Plan Report for the Expansion of the Chino I Desalter and the construction of the Chino II Desalter. It should be noted that this action is entirely consistent with the OBMP, and is being taken prior to completion of the OBMP.	One-time	✓
Start expansion of the Chino I Desalter and the construction of the Chino II Desalter in early 2001.	One-time	✓
Years 4 through 50		
Complete construction and start up of the expanded Chino I and new Chino II Desalters.	One-time	✓
Watermaster, IEUA and WMWD will periodically review the Regional Water Supply Plan and the need for new Desalter capacity in the southern water-quality impaired part of the Basin, and initiate the construction of new Desalter capacity as determined by Watermaster. Expansion of the Desalter capacity will occur as agricultural production in the southern water-quality impaired part of the basin declines.	Ongoing	✓





3.2.3.1 Implementation Progress since 2000

The OBMP established that desalter production would ultimately need to be increased to 40,000 afy to protect Safe Yield. The Peace Agreement provided for the expansion of the Chino I Desalter to a design capacity of up to 14 mgd (15,700 afy) and the construction of the Chino II Desalter, with a capacity of 10 mgd. The Parties executed the Peace II Agreement in 2007, which included a supplement to the OBMP Implementation Plan to expand the Chino Desalter pumping to 40,000 afy (36 mgd) and introduce Re-operation.

The construction and operation of the Chino Basin Desalters also became a fundamental component of the Chino Basin maximum-benefit SNMP developed pursuant to PE 7.¹⁶ Watermaster and the IEUA are jointly responsible for the implementation of the maximum benefit SNMP, which enables the recycled-water reuse and recharge programs in the Chino Basin in support of PEs 2 and 5. The SNMP includes nine “maximum-benefit commitments.” One commitment is the achievement and attainment of Hydraulic Control to limit groundwater outflow from the Chino-North Groundwater Management Zone (GMZ) to *de minimis* levels to protect downstream beneficial uses. Hydraulic Control is also necessary to maximize the Safe Yield. The operation of the Chino Basin Desalters is necessary to attain Hydraulic Control. Three of the nine maximum-benefit commitments are related to the design and construction of the Chino Basin Desalters.

As of the writing of this report, there are 31 Chino Desalter wells with the capacity to pump about 34 mgd (37,600 afy) of groundwater from the southern portion of the Chino Basin, though not all wells are currently in operation. Pumped groundwater is conveyed to two treatment facilities (the Chino-I and Chino-II Desalters) that treat the groundwater with reverse osmosis and ion exchange to reduce TDS and nitrate concentrations. The treated water is then delivered to a conveyance system that serves the CDA’s member agencies. The brine created in the treatment process is discharged to the Inland Empire Brine Line. Over the last five years, total desalter production has ranged from about 28,100 to 30,000 afy, averaging 29,200 afy. The following describes the history of the expansion of the Chino Basin Desalters:

- The Chino-I Desalter, which included 11 production wells, began operating in 2000 with a design capacity of 8 million gallons per day (mgd; about 9,000 afy).
- In 2005, the Chino-I Desalter capacity was expanded to 14 mgd (about 16,000 afy) with the construction of three additional wells.
- The Chino-II Desalter, which included eight production wells, began operating in June 2006 with a design capacity of 15 mgd (about 17,000 afy).
- In 2012, the CDA completed construction of the Chino Creek Well Field (CCWF) in the western portion of the basin which added five wells and additional capacity of about 1.3 mgd (1,500 afy) to the Chino-I Desalter; four of these wells began pumping between 2014 and 2016.
- In 2015, two additional Chino-II Desalter wells were constructed, and pumping began in 2018. These two wells, plus one additional well that is planned for construction, are part of the final expansion of the Chino Basin Desalters to meet the 40,000 afy pumping requirement of the OBMP, Peace Agreements, and maximum benefit SNMP. This final expansion is expected to be completed by 2021.

¹⁶ Refer to Section 3.2.7 of this report for a complete overview of the maximum-benefit SNMP.





The Chino Basin Desalters are also being used to support the clean-up of point-source contamination in the southern Chino Basin:

- Two of the Chino-II Desalter expansion wells and CDA Well I-11 will be pumped to capture groundwater contaminants from the South Archibald plume. The Chino-II Desalter, which will be modified to treat the volatile organic compounds (VOCs) associated with the plume (see Section 3.2.6).
- The use of two of the CCWF wells is being evaluated for use as part of the remediation solution for the Chino Airport plume; however, the evaluation of the remediation alternatives is ongoing (see Section 3.2.6).

3.2.3.2 Ongoing implementation actions for the 2020 OBMP

The capacity to pump the Chino Basin Desalter goal of 40,000 afy is expected to be achieved by 2021. Operation at this capacity, once all agricultural land uses have converted to urban uses, would fulfill the objectives of PE 3. As previously noted, the operation of the Chino Basin Desalters is necessary to attain Hydraulic Control, which is a regulatory requirement of the maximum benefit SNMP. Thus, the ongoing implementation actions for the 2020 OBMP related to the operation of the Chino Basin Desalters are included under PE 7 (see Sections 3.2.7 and 4.7).

3.2.4 Program Element 4. Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1

The 2000 OBMP included PE 4—*Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1*—to characterize land subsidence spatially and temporarily, identify its causes, and, where appropriate, develop and implement a program to manage it. The 2000 OBMP identified pumping-induced decline of groundwater levels and subsequent aquifer-system compaction as the most likely cause of the land subsidence and ground fissuring observed in the southwestern portion of MZ-1 in the early 1990s. PE 4 recognized that the occurrence of land subsidence and ground fissuring in MZ-1 is not acceptable and should be reduced to tolerable levels or stopped.

PE 4 called for the development and implementation of an interim management plan for MZ-1 that would: minimize subsidence and fissuring in the short-term, collect the information necessary to understand the extent, rate, and mechanisms of subsidence and fissuring, and formulate a long-term management plan to prevent future subsidence and fissuring or reduce it to tolerable levels.

The implementation actions for PE 4 that were incorporated into the 2000 OBMP Implementation Plan are summarized in Table 5 below. Each implementation action in Table 5 is categorized as a one-time or ongoing action and the right-most column of the table indicates if the action was implemented.



Table 5. Program Element 4 – Implementation Actions Defined in the 2000 OBMP

Implementation Action	One-time/ Ongoing	Implemented?
Years 1 through 5		
Arrange for the physical recharge of 6,500 afy of Supplemental Water at MZ1 spreading facilities. Evaluate for the continued need after FY2004-05.	Ongoing	✓
Convene a MZ1 technical committee to develop a recommended interim management plan to minimize subsidence while data is collected and a long-term subsidence management plan is developed.	One time	✓
Implement the interim management plan, including appropriate monitoring, annual assessment of data from monitoring programs, and modification of monitoring programs, if necessary.	One time	✓
Develop a long-term subsidence management plan.	One time	✓
Implement the long-term subsidence management plan and adapt if necessary.	Ongoing	✓
Years 6 through 50		
Assess data from the monitoring program every three years and modify the subsidence management plan, if necessary.	Ongoing	✓
Implement the long-term subsidence management plan and adapt if necessary.	Ongoing	✓

3.2.4.1 Implementation Progress since 2000

Supplemental Water Recharge

Since the development of the OBMP, Watermaster has exercised best efforts to arrange for the physical recharge of 6,500 afy of supplemental water at the MZ-1 spreading facilities. And, pursuant to the Peace II Agreement, Watermaster committed to continue the physical recharge of at least 6,500 afy of supplemental water as an annual average through the term of the Peace Agreement.

Subsidence Management Plan

From 2001 to 2005, Watermaster developed, coordinated, and conducted the *MZ-1 Interim Monitoring Program (IMP)*¹⁷ under the guidance of the MZ-1 Technical Committee. The MZ-1 Technical Committee was comprised of representatives from all major MZ-1 producers and their technical consultants, including the Agricultural Pool; the Cities of Chino, Chino Hills, Ontario, Pomona, and Upland; the Monte Vista Water District; the Golden State Water Company; and the California Institution for Men (CIM).

The IMP consisted of three main monitoring elements for use in analyzing subsidence: ground-level surveys, remote-sensing (InSAR), and aquifer-system monitoring. The ground-level surveys and InSAR

¹⁷ Chino Basin Watermaster. (2003). *Optimum Basin Management Program, Management Zone 1 Interim Monitoring Program*. Prepared by Wildermuth Environmental, Inc. January 8, 2003.



analyses were used to characterize vertical ground motion. Aquifer-system monitoring of hydraulic and mechanical changes within the aquifer-system was used to characterize the causes of aquifer-system deformation.

The IMP was implemented in two phases: the Reconnaissance Phase and the Comprehensive Phase.

1. The Reconnaissance Phase consisted of constructing 11 piezometers screened at various depths at Ruben S. Ayala Park (Ayala Park) in the City of Chino and installing pressure transducer data-loggers in nearby pumping wells and monitoring wells to measure hydraulic head. Following installation of the monitoring network, several months of aquifer-system monitoring and testing were conducted. Testing included aquifer-system stress tests at pumping wells in the area.
2. The Comprehensive Phase consisted of constructing a dual-borehole pipe extensometer at Ayala Park (Ayala Park Extensometer), near the area of historical fissuring. Following installation of the Ayala Park Extensometer, two aquifer-system stress tests were conducted, followed by passive aquifer-system monitoring.

The IMP provided enough information for Watermaster to develop "Guidance Criteria" for the MZ-1 Parties that, if followed, would minimize the potential for subsidence and fissuring in the investigation area. The methods, results, and conclusions of the IMP, including the Guidance Criteria, were described in detail in the *MZ-1 Summary Report*.¹⁸ The Guidance Criteria formed the basis for the long-term management plan, documented as the *MZ-1 Subsidence Management Plan (MZ-1 Plan)*,¹⁹ which was prepared under the guidance of the MZ-1 Technical Committee. To minimize the potential for future subsidence and fissuring in the Managed Area, the MZ-1 Plan recommended that the MZ-1 Parties manage their groundwater pumping pursuant to the Guidance Criteria. The MZ-1 Plan was approved by the Watermaster Board in October 2007 and the Court in November 2007.

Implementation of the MZ-1 Plan began in 2008. The MZ-1 Plan called for the continuation of monitoring, data analysis, annual reporting, and adjustments to the MZ-1 Plan, as warranted by the data. Additionally, the MZ-1 Plan expanded monitoring of the aquifer-system and land subsidence into other areas of the Chino Basin where the IMP indicated concerns for future subsidence and ground fissuring. These so-called "Areas of Subsidence Concern" are: Central MZ-1, Northwest MZ-1, Northeast Area, and Southeast Area.

The MZ-1 Plan described the following potential expanded investigation: (1) more intensive monitoring of horizontal strain across the zone of historical ground fissuring to assist in developing management strategies related to fissuring, (2) injection feasibility studies within the Managed Area, (3) additional pumping tests to refine the Guidance Criteria, (4) computer-simulation modeling of groundwater flow and subsidence, and (5) the development of alternative pumping plans for the MZ-1 Parties affected by the MZ-1 Plan. The MZ-1 Technical Committee (now called the Ground-Level Monitoring Committee or GLMC) discussed these potential future efforts, and if deemed prudent and necessary, they were

¹⁸ Chino Basin Watermaster. (2006). *Optimum Basin Management Program, Management Zone 1 Interim Monitoring Program, MZ-1 Summary Report*. Prepared by Wildermuth Environmental, Inc. February 2006. http://www.cbwm.org/docs/engdocs/Land%20Subsidence/20071017_MZ1_Plan%20--%20Appendix_A_MZ1_SummaryReport_20060226.pdf

¹⁹ Chino Basin Watermaster. (2007). *Chino Basin Optimum Basin Management Program, Management Zone 1 Subsidence Management Plan*. October 2007. http://www.cbwm.org/docs/engdocs/Land%20Subsidence/20071017_MZ1_Plan.pdf





recommended to Watermaster for implementation. Watermaster and the MZ-1 Parties have performed work to implement (1), (2), and (4) above, but have not performed work on (3) and (5).

The MZ-1 Plan stated that if data from existing monitoring efforts in the Areas of Subsidence Concern indicate the potential for adverse impacts due to subsidence, Watermaster would revise the plan to avoid those adverse impacts. The 2014 Annual Report of the GLMC²⁰ recommended that the MZ-1 Plan be updated to better describe Watermaster's land subsidence efforts and obligations, including areas outside of MZ-1. As such, the update included a name change to the *2015 Chino Basin Subsidence Management Plan* (Subsidence Management Plan)²¹ and a recommendation to develop a subsidence management plan for Northwest MZ-1. Land subsidence in Northwest MZ-1 was first identified as a concern in 2006 in the MZ-1 Summary Report and again in 2007 in the MZ-1 Plan. Since then, Watermaster has been monitoring vertical ground motion in this area via InSAR and groundwater levels with pressure transducers at selected wells.

Of particular concern is that subsidence across the San Jose Fault in Northwest MZ-1 has occurred in a pattern of concentrated differential subsidence—the same pattern of differential subsidence that occurred in the Managed Area during the time of ground fissuring. Ground fissuring is the main subsidence-related threat to infrastructure. Because of the threat for ground fissuring, Watermaster increased monitoring efforts in Northwest MZ-1 beginning in FY 2012/13 to include ground elevation surveys and EDMs to monitor ground motion and the potential for fissuring.

In 2015, the GLMC developed the *Work Plan to Develop a Subsidence Management Plan for the Northwest MZ-1 Area* (Work Plan).²² The Work Plan is an ongoing Watermaster effort and includes a description of a multi-year scope-of-work, a cost estimate, and an implementation schedule. The Work Plan was included in the Subsidence Management Plan as Appendix B. Implementation of the Work Plan began in 2015.

Pursuant to the Subsidence Management Plan, each year, Watermaster has produced the *Annual Report of the GLMC* that contains the results of ongoing monitoring efforts, interpretations of the data, and recommended adjustments to the Subsidence Management Plan, if any. The annual report includes the results and interpretations for the data collected during the prior year as well as recommendations for Watermaster's ground-level monitoring program for the subsequent fiscal year. The Watermaster publishes the annual reports on its website. The most recent annual report was finalized in October 2019.

²⁰ WEI. (2015). *2014 Annual Report of the Ground-Level Monitoring Committee*. July 2015. http://www.cbwm.org/docs/engdocs/2014%20Final%20Report%20-%20Ground%20Level%20Monitoring%20Committee/Final_2014_Annual%20Report_July2015.pdf

²¹ Chino Basin Watermaster. (2015). *Chino Basin Subsidence Management Plan*. July 23, 2015. http://www.cbwm.org/docs/engdocs/Land%20Subsidence/20150724%20-%20Chino%20Basin%20Subsidence%20Management%20Plan%202015/FINAL_2015_CBSMP.pdf

²² Chino Basin Watermaster. (2015). *Work Plan, Develop a Subsidence-Management Plan for the Northwest MZ-1 Area*. July 23, 2015. http://www.cbwm.org/docs/engdocs/Land%20Subsidence/20150724%20-%20Chino%20Basin%20Subsidence%20Management%20Plan%202015/FINAL_CBSMP_Appendix_B.pdf





3.2.4.2 Ongoing implementation actions for the 2020 OBMP

Supplemental Water Recharge

Pursuant to the Peace II Agreement, Watermaster will continue to arrange for the physical recharge of at least 6,500 afy of Supplemental Water in MZ-1 as an annual average through the term of the Peace Agreement.

Subsidence Management Plan

The Chino Basin will always be susceptible to the future occurrence of land subsidence and ground fissuring, so Watermaster will continue to implement the Subsidence Management Plan pursuant to PE 4, which includes:

- Conducting the ground-level monitoring program pursuant to the Subsidence Management Plan and the recommendations of the GLMC (The monitoring program includes the monitoring of groundwater pumping, recharge, groundwater levels, aquifer-system deformation, and vertical and horizontal ground motion across the western portion of the Chino Basin. The then-current description of the ground-level monitoring program is always included in each Annual Report of the GLMC [third bullet below]).
- Convening the GLMC annually to review and interpret the data from the ground-level monitoring program.
- Preparing annual reports of the GLMC that include recommendations for changes to the monitoring program (The annual report describes recommended activities for the monitoring program for the future fiscal year[s] in the form of a proposed scope-of-work, schedule, and budget. The recommended scope-of-work, schedule, and budget is run through Watermaster's budgeting process for revisions [if needed] and approval. The final scope-of-work, schedule, and budget for the upcoming fiscal year is included in the final annual report.)
- A key element of the Subsidence Management Plan is the verification of its protective nature against land subsidence and ground fissuring in the Chino Basin. This verification is accomplished through continued monitoring, testing, and reporting by the GLMC (as described above), and revision of the Subsidence Management Plan when appropriate. In this sense, the Subsidence Management Plan is adaptive. (The process of annual data analysis and reporting includes the evaluation of the effectiveness of the Subsidence Management Plan to minimize or stop land subsidence and ground fissuring and, if warranted by the data, a recommendation to update the Subsidence Management Plan. The GLMC will make these recommendations within its annual reports and prepare a draft revised Subsidence Management Plan that will be run through the Watermaster process for revisions and/or approval. Upon Watermaster Board approval, the revised Subsidence Management Plan will be submitted to the Court.)

3.2.5 Program Element 5. Develop and Implement Regional Supplemental Water Program

The 2000 OBMP included PE 5—*Develop and Implement Regional Supplemental Water Program*—to improve regional conveyance and the availability of imported and recycled waters throughout the basin. The OBMP recognized that water demands of the Parties would increase. The demand projections at the time estimated that water demands would reach 348,000 afy by 2000 and increase to 418,000 afy by 2020. The increase was assumed to be driven by municipal and industrial demands. Agriculture demands were expected to decrease from about 48,000 afy in 2000 to 8,000 afy by 2020. The OBMP also recognized the limitations to the traditional supplies, such as imported water from Metropolitan, and the need to find alternative supplies such as recycled water.





The implementation actions incorporated into the 2000 OBMP Implementation Plan are summarized in Table 6 below. Each implementation action in Table 6 is categorized as a one-time or ongoing action and the right-most column of the table indicates if the action was implemented.

Table 6. Program Element 5 – Implementation Actions Defined in the 2000 OBMP

Implementation Action	One-time/ Ongoing	Implemented?
Years 4 through 50		
IEUA will construct recycled water facilities to meet the demand for recycled water and for replenishment.	Ongoing	✓

It should be noted that early in the development of the PE 5 implementation plan, the stakeholders discussed the development of a regional water facilities plan that, when implemented, would enable the Parties to maximize the use of imported water in years when Metropolitan has surplus water and to be able to rely completely on local supplies during years when Metropolitan supplies are low or completely interrupted due to planned or catastrophic outages. This plan involved the construction of new wells and groundwater treatment and regional conveyance improvements; the water produced in this plan would be used exclusively by the Parties. The stakeholders ultimately did not include this plan in the 2000 OBMP Implementation Plan, preferring at that time to focus on expanding groundwater desalting in the lower Chino Basin (PE 3), increasing stormwater recharge (PE 2), and implementing a large-scale recycled water program to maximize its reuse (PEs 2 and 5).

3.2.5.1 Implementation Progress since 2000

Although the water demands of the Parties increased at a slower rate than projected when the OBMP was developed, Watermaster and the IEUA have aggressively pursued programs to improve water supply reliability through the implementation of PEs 2, 3, and 5. Since 2000, the IEUA has constructed and operated a recycled water conveyance system throughout the basin, enabling it to provide recycled water to its member agencies. The IEUA owns and operates four wastewater treatment facilities: Regional Plant No. 1 (RP-1), Regional Plant No. 4 (RP-4), Regional Plant No. 5 (RP-5), and the Carbon Canyon Water Reclamation Facility (CCWRF). Recycled water produced by these plants is used for direct uses, groundwater recharge, and discharged to Chino Creek or Cucamonga Creek, which are tributaries to the Santa Ana River. Historically, the IEUA’s operating plan has prioritized the use of recycled water as follows: (1) to meet the IEUA’s discharge obligation to the Santa Ana River (17,000 afy), (2) to meet direct reuse demands for recycled water, and (3) to recharge the remaining recycled water.

Although recycled water had been reused since the 1970s, the growth of the IEUA’s recycled water reuse programs started in 1997, and in 2005 the OBMP enabled the IEUA’s recycled water reuse program to be aggressively expanded. When the OBMP was completed in 2000, the IEUA was recharging about 500 afy of recycled water and utilizing about 3,200 afy for non-potable direct uses. The incorporation of Watermaster and the IEUA’s maximum benefit SNMP into the Basin Plan in 2004 triggered the ability to rapidly increase recycled water reuse. Over the last five years, the annual direct reuse of recycled water ranged from 17,000 afy to 24,600 afy and averaged 20,600 afy. And, the annual recycled water recharge ranged from 10,800 to 13,900 afy and averaged 13,000 afy.

The recycled water provided by the IEUA has replaced a like amount of groundwater and imported water that would have otherwise been used for non-potable purposes. Much of the post-2000 increase





in supplemental water storage in the Chino Basin is attributable to the increased availability and recharge of recycled water.

3.2.5.2 Ongoing implementation actions for the 2020 OBMP

Recycled Water Reuse

The IEUA is continuing to expand its recycled-water distribution system and recharge facilities throughout the Chino Basin for direct non-potable uses and recharge. Growth is still occurring in the Chino Basin and will result in additional wastewater flows to the IEUA's treatment plants. Much of this supply will be used to meet increasing non-potable demands as the currently remaining agricultural land uses convert to urban uses.

The IEUA is currently performing planning efforts for the CBP, which is a large Storage and Recovery Program to provide for regional, dry-year water supplies and associated infrastructure. The CBP was conditionally awarded approximately \$207 million of Proposition 1 Water Storage Investment Program funding. Over its 25-year project life, the CBP would increase recycled water recharge in the Chino Basin by 15,000 afy, and during dry years, the water in storage would subsequently be recovered and pumped into Metropolitan's system for use in Southern California in lieu of imported water from the State Water Project. The planned sources of recycled water for the CBP are currently being evaluated by the IEUA, but it is certain additional supplies beyond those produced by the IEUA will be needed. Thus, the objective to maximize the reuse of recycled water produced by the IEUA and others as envisioned by Activity D is currently being pursued by the IEUA on behalf of the Parties and with the support of Watermaster and other regional entities.

As part of the CBP, the IEUA, together with regional agencies, is developing a significant body of work to evaluate opportunities to acquire the surplus recycled water supplies needed for the CBP. The CBP is still undergoing planning and evaluation, and its implementation is not certain. If the CBP is not implemented, the significant body of work developed by the IEUA can be leveraged to support future planning efforts to maximize recycled water reuse in a manner that is consistent with the Judgment and the maximum-benefit SNMP.

Water Reliability

In addition to the efforts to maximize recycled water reuse, the IEUA and its member agencies are currently preparing the 2020 IRP, which will serve as a regional implementation strategy for long-term water resources management within the IEUA's service area. The objective of the IRP is to identify the facilities needed to ensure that the IEUA's water supplies over the next 25 years are reliable, cost-effective, and environmentally responsible.

As described in the Scoping Report, the total water demand of the Chino Basin Parties is projected to grow from about 290,000 afy in 2015 to about 420,000 afy by 2040, an increase of about 130,000 afy. The projected growth in water demand by the Appropriative Pool Parties drives the increase in aggregate water demand as some Appropriative Pool Parties are projected to serve new urban water demands created by the conversion of agricultural and vacant land uses to urban uses, a similar challenge observed during the development of PEs 3 and 5 in the 2000 OBMP. Table 7 below shows the historical (2015) and projected aggregate water demand and supply plan for all Parties by water source.





Table 7. Aggregate Water Supply Plan for Watermaster Parties: 2015 to 2040²³

Water Source	2015 (Actual)	2020	2025	2030	2035	2040
Volume (af)						
Chino Basin Groundwater	147,238	145,904	153,804	157,716	168,987	176,652
Non-Chino Basin Groundwater	51,398	55,755	63,441	64,999	66,691	68,483
Local Surface Water	8,108	15,932	15,932	18,953	18,953	18,953
Imported Water from Metropolitan	53,784	86,524	93,738	100,196	102,166	109,492
Other Imported Water	8,861	9,484	10,095	10,975	11,000	11,000
Recycled Water for Direct Reuse	20,903	24,008	24,285	26,583	29,836	33,223
Total	290,292	337,607	361,295	379,422	397,633	417,803
Percentage						
Chino Basin Groundwater	51%	43%	43%	42%	42%	42%
Non-Chino Basin Groundwater	18%	17%	18%	17%	17%	16%
Local Surface Water	3%	5%	4%	5%	5%	5%
Imported Water from Metropolitan	19%	26%	26%	26%	26%	26%
Other Imported Water	3%	3%	3%	3%	3%	3%
Recycled Water for Direct Reuse	7%	7%	7%	7%	8%	8%
Total	100%	100%	100%	100%	100%	100%

Each of the water sources available to the Chino Basin Parties listed has its limitations:

- The ability to produce groundwater from the Chino Basin is limited by current basin management issues, such as ongoing land subsidence in MZ-1 and parts of MZ-2, pumping sustainability issues in the JCSD and CDA well field areas, and water quality.
- The challenges to imported water include reliability of its supply and infrastructure and the local capacity to treat it for municipal supply.
- The reliability of non-Chino Basin groundwater depends on water quality, water rights, and infrastructure to convey it to Parties' water systems.
- The reliability of local surface water depends on the hydrologic characteristics of the individual supplies, water quality, water rights, and infrastructure to convey it from points of diversion to a Party's water system.
- The challenges to maximizing the reuse of recycled water include: the timing of recycled water availability and complying with the maximum benefit SNMP and water quality regulations.

²³ Sourced from: WEI. (2018). *Storage Framework Investigation*. October 2018; revised January 2019. This document is available on Watermaster's FTP site at <http://www.cbwm.org/>





In addition to the challenges to specific water sources, climate change is likely to result in higher temperatures, longer dry periods, and shorter more intense wet periods, which can ultimately affect the availability and management of all water supply sources. For example, shorter more intense precipitation periods are expected to result in reduced recharge, and longer dry periods are expected to result in reduced imported water supplies (as occurred with State Water Project supplies in the recent drought from 2013 to 2016). And, many of the challenges are interrelated and compounding. For example, the reliability of imported water (and other non-groundwater supplies) not only affects the imported water supply but also the groundwater supplies that are dependent on imported water for blending.

As previously mentioned, the IEUA is currently developing the 2020 IRP, which will serve as a foundational regional implementation strategy for long-term water resources management within IEUA’s service area and can be expanded by the Chino Basin Parties for the benefit of the region. Although the TVMWD and WMWD member agencies and Watermaster are participants in the development in the 2020 IRP, the current planning effort could be expanded to address regional reliability and to enhance integration with Watermaster’s groundwater management efforts.

3.2.6 Program Element 6. Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management

The 2000 OBMP included PE 6—*Develop and Implement Cooperative Programs with the Regional Board and other Agencies to Improve Basin Management*—to assess water quality trends in the basin, to evaluate the impact of OBMP implementation on water quality, to determine whether point and non-point contamination sources are being addressed by water quality regulators, and to collaborate with water quality regulators to identify and facilitate the cleanup of soil and groundwater contamination.

The implementation actions for PE 6 incorporated into the 2000 OBMP Implementation Plan are summarized in Table 8 below. Each implementation action in Table 8 is categorized as a one-time or ongoing action and the right-most column of the table indicates if the action was implemented.

Table 8. Program Element 6 – Implementation Actions Defined in the 2000 OBMP

Implementation Action	One-time/ Ongoing	Implemented?
Years 1 through 3		
Watermaster will form an ad hoc committee, hereafter water quality committee. The schedule and frequency of the meeting will be developed with the Regional Board during the first year of OBMP implementation.	Both	✓
Watermaster will refine its monitoring efforts to support the detection and quantification of water quality anomalies. This may require additional budgeting for analytical staff/support.	One-time	✓
If necessary, Watermaster will conduct investigation to assist the Regional Board in accomplishing mutually beneficial objectives.	Ongoing	✓
Watermaster will seek funding from outside sources to accelerate detection and cleanup efforts.	Ongoing	✓





Implementation Action	One-time/ Ongoing	Implemented?
Years 4 through 50		
Continue monitoring coordination efforts with the Regional Board.	Ongoing	✓
Annually update priority list and schedule for cleaning up known water quality anomalies.	Ongoing	
Continue to seek funding from outside sources to accelerate cleanup efforts.	Ongoing	✓
Implement projects of mutual interest.	Ongoing	✓

3.2.6.1 Implementation Progress since 2000

During the development of the OBMP, Watermaster was conducting a multi-year comprehensive basin-wide water quality monitoring program (from 1999-2001) to sample every well possible to support the development and implementation of the OBMP. The comprehensive water quality monitoring program included collecting data from all Appropriators and cooperators in the Chino Basin and adjacent basins and performing monitoring at all private wells in the southern portion of the basin. During this time, Watermaster performed monitoring at 602 private wells. Data from this comprehensive water quality monitoring program established a baseline on the state of groundwater quality at the start of OBMP implementation. These data also became the foundation for achieving the objectives of PE 6: to assess water quality trends in the basin, to evaluate the impact of OBMP implementation on water quality, and to determine whether point and non-point contamination sources are being addressed by water quality regulators. Since 2000, Watermaster’s groundwater quality monitoring efforts have continued in alignment with the Groundwater Quality Monitoring Program described in PE 1 and have been periodically refined as needed to support the detection and quantification of water quality anomalies and contaminants of concern, such as perchlorate, hexavalent chromium, and 1,2,3-trichloroethene (1,2,3-TCP). Watermaster has regularly assessed groundwater quality in the Chino Basin using data compiled through its own monitoring at private production wells and dedicated monitoring wells and the monitoring efforts of others. Watermaster reports on water quality trends and findings in several reports, including the State of the Basin Reports, which are prepared and submitted to the Court every two years.

In 2003, the Water Quality Committee was convened to coordinate many of the activities performed under PE 6. The Committee met intermittently through 2010. The main activities of the Water Quality Committee included investigations to characterize and address point and non-point sources of groundwater contamination in the Chino Basin and collaboration with the Santa Ana Regional Water Quality Control Board (Regional Board) in its efforts to facilitate the cleanup of groundwater contamination. Some of the significant groundwater quality investigations performed under the guidance of the committee included: the characterization of groundwater contamination in MZ-3 near the former Kaiser Steel Mill and Alumax facilities, tracking studies on the source and extent of the Chino Airport plume, the identification of sources and responsible Parties for the South Archibald plumes, and the identification of the sources of legacy perchlorate contamination in groundwater throughout the basin. The investigations were coordinated through the Water Quality Committee for the Chino Airport and South Archibald plumes and contributed to the definitive identification of responsible Parties and the issuance of cleanup and abatement orders by the Regional Board.





Since 2010, Watermaster has continued to perform monitoring for contaminants related to point-source and non-point source contamination, to assist the Regional Board with the investigation and regulation of point source contaminant sites in the Chino Basin, and to prepare status reports on the monitoring and remediation of point-source contaminant sites in the basin. Periodic status reports have been prepared for: the Chino Airport and South Archibald plumes²⁴ and the General Electric (GE) Test Cell plume, the GE Flatiron plume, the former Kaiser Steel Mill Facility plume, the CIM plume, the Stringfellow plume, and the Milliken Landfill plume. Updated delineations of the spatial extent of the plumes in the Chino Basin are prepared every two years by Watermaster and are included in the plume status reports and biennial State of the Basin Reports.

Currently, the responsible Parties for the Chino Airport plume and South Archibald plume are initiating remedial strategies that include the use of the Chino Basin Desalters for pumping and treating the contaminated groundwater associated with these plumes. This use of the Chino Basin Desalters as a mutually beneficial project was recognized in the OBMP Implementation Plan as a potential management strategy and provides cost sharing benefits to all involved Parties. Additionally, the CDA and IEUA have acquired over \$85 million in federal and state grant funds for the Chino Basin Desalter Phase III expansion project that is planned to be used for portions of the remediation of the Chino Airport and South Archibald plumes.

3.2.6.2 Ongoing implementation actions for the 2020 OBMP

Pursuant to the PE 6 implementation plan, Watermaster will continue to perform the following to ensure that point-source contamination is being adequately addressed: monitor water quality at monitoring wells and private wells within the basin and collect data from others to support the quantification of point-source contaminant plumes, prepare updated delineations of the plume extents for the biennial State of the Basin Reports, and track and report on the status of remediation in the recurrent plume status reports and other ad-hoc investigations as needed to support the Regional Board in their efforts to address groundwater contamination. Watermaster will also continue to support the Regional Board or other Parties to identify and implement mutually beneficial projects for addressing groundwater contamination cleanup and identify outside sources to finance the cleanup efforts, such as the funds awarded for the Chino Desalter expansion project. Watermaster will continue to characterize and report on water-quality since OBMP implementation in the biennial State of the Basin Reports using data collected for the PE 1 Groundwater Quality Monitoring Program.

While PE 6 in the 2000 OBMP Implementation Plan provides a strategy to support the Regional Board in its efforts to address groundwater contamination cleanup in the Chino Basin, there are emerging contaminants with regulatory water quality standards set by the DDW that can impact the beneficial uses of groundwater. As described in the Scoping Report for Activity EF, there are contaminants in groundwater that limit its direct use for drinking water supply and reductions in pumping due to water quality challenges can result in negative impacts to the basin, such as reductions in net recharge, loss of hydraulic control, and movement of contaminant plumes. The enforceable drinking water standards developed by the DDW are continuously evolving and becoming more stringent as laboratory analytical technologies to detect contaminants are advancing. Hence, it is likely that new contaminants will be identified and regulated. The *Groundwater Quality Management Plan* envisioned for Activity EF is a

²⁴ Status reports for the Chino Airport and South Archibald plumes were prepared monthly in 2013; quarterly from 2014-2017; and semi-annually effective in 2018. Status reports for the other plumes and sites are prepared annually effective 2018.





refinement on PE 6 from the 2000 OBMP in that it is a proactive and basin-wide approach to address emerging contaminants to prepare the Parties for addressing compliance with new and increasingly stringent drinking water regulations defined by the DDW and ensure the long-term maximum beneficial use of the Basin.

3.2.7 Program Element 7. Develop and Implement Salt Management Plan

The 2000 OBMP included PE 7—*Develop and Implement Salt Management Plan*—to characterize current and future salt and nutrient conditions in the basin and to subsequently develop and implement a plan to manage them. Such a management strategy was necessary to address historical salt and nutrient accumulation from agricultural operations and to support the aggressive expansion of recycled water recharge and reuse envisioned in PEs 2 and 5.

The implementation actions incorporated into the 2000 OBMP Implementation Plan are summarized in Table 9 below. Each implementation action in Table 9 is categorized as a one-time or ongoing action, and the right-most column of the table indicates if the action was implemented.

Table 9. Program Element 7 – Implementation Actions Defined in the 2000 OBMP

Implementation Action	One-time/ Ongoing	Implemented?
Years 1 through 3		
Develop salt budget goals, develop the salt budget tool and review all the OBMP actions.	One-time	✓
Watermaster will continue to monitor the nitrogen and salt management activities within the basin.	Ongoing	✓
Years 4 through 50		
As part of periodic updates of the OBMP, re-compute the salt budget using the salt budget tool. The salt budget tool will be used to reassess future OBMP actions to ensure the salt management goals are attained.	Ongoing	✓
Watermaster will continue to monitor the nitrogen and salt management activities within the basin.	Ongoing	✓

3.2.7.1 Implementation Progress since 2000

In 2002, recognizing that implementing the recycled water reuse program would require large-scale treatment and mitigation of salt loading under the then-current antidegradation objectives for TDS and nitrate defined in the Basin Plan, Watermaster and the IEUA petitioned the Regional Board to establish a maximum-benefit-based SNMP that involved (1) increasing the TDS and nitrate objectives for the Chino-North GMZ²⁵ to numerically higher values to enable maximization of recycled water reuse and (2) committing to a program of salt and nutrient management activities and projects (“maximum benefit

²⁵ The Chino-North GMZ has a maximum-benefit TDS objective of 420 mg/l and is a combination of the Chino-1, Chino-2, and Chino-3 antidegradation GMZs that have lower TDS objectives, ranging from 250 to 280 mg/l.





commitments”) that ensure the protection of beneficial uses of the Chino-North GMZ and downgradient waters (the Santa Ana River and the Orange County GMZ). The technical work performed to support the maximum-benefit SNMP proposal included the development and use of an analytical salt budget tool to project future TDS and nitrate concentrations in the Chino-North GMZ with and without the maximum-benefit SNMP. The maximum-benefit SNMP was incorporated into the Basin Plan by the Regional Board in January 2004.

Implementation of the maximum-benefit SNMP is a regulatory requirement of the Basin Plan. The requirement is also incorporated into Watermaster and the IEUA’s recycled water recharge program permit (R8-2007-0039) and the IEUA’s recycled water discharge and direct reuse permit (R8-2015-0021; NPDES No. CA 8000409). There are nine maximum-benefit commitments included in the Basin Plan and recycled water permits:

1. The development and implementation of a surface-water monitoring program
2. The development and implementation of a groundwater monitoring program
3. The expansion of the Chino-I Desalter to 10 mgd and the construction of the Chino-II Desalter with a design capacity of 10 mgd
4. The additional expansion of desalter capacity to a total capacity of 40 mgd pursuant to the OBMP and the Peace Agreement
5. The construction of the recharge facilities included in the Chino Basin Facilities Improvement Program
6. The management of recycled water quality to ensure that the IEUA agency-wide, 12-month running average wastewater effluent quality does not exceed 550 milligrams per liter (mg/l) for TDS and 8 mg/l for total inorganic nitrogen (TIN)
7. The management of the basin-wide, volume-weighted TDS and nitrate concentrations of artificial recycled, storm, and imported waters to concentrations that are less than or equal to the maximum-benefit objectives as a five-year rolling average
8. The achievement and maintenance of the Hydraulic Control of groundwater outflow from the Chino Basin, specifically from the Chino-North GMZ, to protect the water quality of the Santa Ana River and downstream beneficial uses
9. The triennial recalculation of ambient TDS and nitrate concentrations of the Chino Basin GMZs

These commitments are all activities that were planned to be implemented under the OBMP through implementation actions within PEs 1, 2, 3, 5, and 7.

Watermaster and the IEUA are also required to prepare an annual report to the Regional Board on the status of implementation of the maximum-benefit commitments, including reporting of annual data collected through the monitoring program and assessments of compliance with the groundwater and recycled water-quality limits defined in the SNMP. If the maximum-benefit commitments are not implemented to the Regional Board’s satisfaction, the antidegradation objectives would apply for regulatory purposes. The application of the antidegradation objectives would result in a finding of no assimilative capacity for TDS and nitrate in the Chino-North GMZ, and the Regional Board would require mitigation for all recycled water discharges to Chino-North that exceeded the antidegradation objectives retroactively to January 1, 2004. The retroactive mitigation for past discharges would be required to be completed within a ten-year period, following the Regional Board’s finding that the maximum-benefit commitments were not met.





Watermaster has prepared and submitted annual reports to the Regional Board every year since 2005. As of the most recent annual report for CY 2018, Watermaster and the IEUA remain in compliance with all requirements of the maximum-benefit commitments.²⁶ A more detailed summary of the commitments and progress towards implementation is provided in Exhibit 14.

3.2.7.2 Ongoing implementation actions for the 2020 OBMP

Compliance with the maximum benefit commitments is an ongoing requirement of the Basin Plan. The ongoing actions to implement the maximum-benefit SNMP as currently defined in the basin, and thus PE 7, will include:

- Continue implementation of the surface and groundwater monitoring programs.
- Complete the expansion of the Chino Basin Desalter pumping capacity to 40,000 afy (expected in 2020).
- Maintain Hydraulic Control of the Chino-North GMZ through operation of the Chino Basin Desalters and other means, as necessary.
- Continue the storm and imported water recharge program to comply with recycled water recharge dilution requirements.
- Periodically analyze and report groundwater, surface water, and recycled water quality data to assess compliance with the metrics established in the maximum-benefit SNMP.
- Construct treatment and/or salt-offset facilities *if* one or more of the compliance metrics is exceeded.

There are three water-quality limitations and associated compliance metrics established in the maximum-benefit SNMP. When these metrics are exceeded, Watermaster and the IEUA must develop a plan and schedule to achieve compliance. The limitations, compliance metrics, and compliance actions are summarized in Exhibit 15.

The management actions for achieving compliance with the metrics once they are exceeded could include, but are not limited to: desalting recycled water to reduce TDS concentrations, increasing the recharge of low-TDS supply sources (storm or imported waters), or additional desalting of high-TDS groundwater as a salt offset.

With the exception of the ambient nitrate concentration of the Chino-North GMZ, which has exceeded the objective of 5.0 mg/l since it was established in 2004, none of the other TDS and nitrate limitations have been exceeded. That said, the ambient TDS and nitrate concentrations in the Chino-North GMZ continue to increase due to legacy agricultural activities, recycled water reuse, and current irrigation practices. The current ambient TDS and nitrate concentrations are 360 and 10.3 mg/l, respectively. Based on the rate of increase of the ambient TDS concentration since 1997, which has been about three mg/l per year, the maximum-benefit objective of 420 mg/l is not expected to be exceeded until about 2035.

More recently, the TDS concentration of recycled water has approached the compliance metric defined in commitment number 6. During the 2012 to 2016 drought, the 12-month running-average IEUA agency-wide TDS concentration in recycled water approached the 545 mg/l action limit that would require the IEUA and Watermaster to submit a water-quality improvement plan and schedule. In analyzing the available data, the IEUA determined that the primary drivers for the increasing recycled

²⁶ WEI. (2019). *Optimum Basin Management Program Chino Basin Maximum Benefit Annual Report 2018*. April 2019.



water TDS concentration were the increase in the TDS concentration of the water supplies used by its member agencies and an increase of the TDS waste increment due to indoor water conservation. Similarly, drought conditions also threaten the ability to comply with the recycled water recharge dilution requirements. During drought conditions there is: a reduction in the amount of high-quality stormwater recharge, limited or no availability of imported water for recharge, an increase in the TDS concentrations of imported water, and a concomitant increase in the TDS concentrations of the recycled water. Not only are the two primary sources of low-TDS recharge water less available during drought periods, but the source water quality of municipal water supplies is also higher in TDS due to increases in imported water TDS and indoor water conservation practices. A more detailed discussion of this issue is provided in the Scoping Report. The Scoping Report discussion demonstrated the meaningful impact that drought has on compliance with the various recycled water quality metrics and indicates that climate change, which is expected to result in longer drier droughts, could potentially threaten future compliance with the limits.

Although the 12-month running-average IEUA agency-wide TDS concentration declined from the 2015 peak before reaching the 545 mg/l action limit, it was an important indicator that the TDS concentration of recycled water is likely to approach or exceed the recycled water action limit during the next prolonged dry period and trigger the planning for recycled water quality improvements. In May 2017, recognizing the potential cost of implementing recycled water quality improvements for what might be only short-term exceedances of the action limit, Watermaster and the IEUA petitioned the Regional Board to consider updating the maximum-benefit SNMP to incorporate a revised compliance metric for recycled water TDS and nitrate specifically to allow a longer-term averaging period. The Regional Board agreed that an evaluation of the recycled water compliance metric is warranted and directed Watermaster and the IEUA to develop a technical scope of work to demonstrate the potential impacts of the revised compliance metric.

The primary objectives of the technical work to support the maximum-benefit SNMP and permit updates are: to develop and use an updated groundwater solute-transport model to evaluate the TDS and nitrate concentrations of the Chino Basin (e.g. a new salt-budget tool), to define alternative salinity management scenarios, and to project the future TDS and nitrate concentrations in the Chino Basin for each scenario. The results will be used to work with the Regional Board to develop a regulatory compliance strategy that potentially includes a new compliance metric based on a longer-term averaging period for recycled water TDS, contingent on the ongoing modeling and analysis efforts. The regulatory compliance strategy can also address any projected challenges in complying with the recycled water dilution requirements. The work began in September 2017 and is expected to be completed in 2020.

The Regional Board has indicated that in accepting any proposal to modify the recycled water compliance metrics, it will require Watermaster and the IEUA to add a new maximum-benefit commitment to the Basin Plan that involves updating the TDS and nitrate projections every five years. Thus, the need for the proactive planning to achieve compliance, as envisioned by Activity K, is a required ongoing activity under PE 7 and the maximum-benefit SNMP.

3.2.8 Program Element 8. Develop and Implement Groundwater Storage Management Program *and* Program Element 9. Develop and Implement Storage and Recovery Programs

The Judgment recognized the existence of unused storage space within the Chino Basin that could be used to store water for subsequent beneficial use. The Judgment requires that the use of such storage capacity be undertaken only under Watermaster control and regulation to protect all stored water, to





protect Safe Yield, and to avoid adverse impacts to groundwater pumpers. The Judgment prioritizes the use of storage space by the Parties over the use of storage space for the export of stored water.

The 2000 OBMP included two PEs to address the management and use of storage space:

Program Element 8. Develop and Implement Groundwater Storage Management Program

Program Element 9. Develop and Implement Storage and Recovery Programs

The objectives of PE 8 are (1) to develop and implement a storage management plan that prevents overdraft, protects water quality, and ensures equity among the Parties, and (2) to periodically recalculate Safe Yield. The objective of PE 9 is to develop Storage and Recovery Programs that benefit all Parties in the basin and ensure that basin waters and storage capacity are put to maximum beneficial use without causing MPI to any producer or the basin.

The 2000 OBMP storage management plan in PE 8 consists of managing groundwater production, replenishment, recharge, and storage such that total storage within the basin ranges from a low of 5,300,000 af to a high of 5,800,000 af. The following definitions are included in the OBMP Implementation Plan to describe the storage management plan:

- Operational Storage Requirement (OSR) is the storage or volume in the Chino Basin that is necessary to maintain the Safe Yield. The OSR was estimated in the development of the OBMP to be about 5.3 million af.²⁷
- Safe Storage is an estimate of the maximum amount of storage space in the basin that can be used and not cause significant water-quality and/or high-groundwater related problems. Safe Storage was estimated in the development of the OBMP to be about 5.8 million af.
- SSC is the difference between Safe Storage and the OSR and is the storage space that can be safely used by producers and Watermaster for storage programs. Based on the above, the SSC is about 500,000 af, including water in existing storage accounts. The allocation and use of storage space in excess of the SSC will preemptively require mitigation; that is, mitigation must be defined and resources committed to mitigation prior to its allocation and use.

The Peace Agreement describes the actions, programs, and procedures Watermaster will take in performance of Storage and Recovery Programs.²⁸

The implementation plan for PEs 8 and 9 were combined in the OBMP Implementation Plan. The implementation actions incorporated into the 2000 OBMP Implementation Plan are summarized in Table 10 below. Each implementation action is categorized as a one-time or ongoing action and the right-most column of the table indicates if the action was implemented.

²⁷ This storage value was set as the estimated storage in the basin in 1997. See Page 2-11 of the OBMP Phase 1 Report.

²⁸ See Peace Agreement, § 5.2





Table 10. Program Elements 8 and 9 – Implementation Actions Defined in the 2000 OBMP

Implementation Action	One-time/ Ongoing	Implemented?
Years 1 through 3		
Evaluate the need to modify Watermaster UGRR* regarding storage management plans and procedures.	One-time	✓
Determine the operational storage requirement and safe storage.	One-time	✓
Years 4 through 50		
Start assessing losses at 2% per year in year 2005. This amount will be subject to modification in future years.	Ongoing	✓
In year 2010/11 and every ten years thereafter, compute Safe Yield and storage loss rate for prior ten-year period, and reset Safe Yield and storage loss rates for the next ten-year period. Reassess storage management plan and modify Watermaster UGRR, if needed.	Ongoing	✓

*UGRR stands for Uniform Groundwater Rules and Regulations. The UGRR was incorporated in the Watermaster’s Rules and Regulations and is no longer a stand along document.

3.2.8.1 Implementation progress since 2000 and ongoing implementation actions for the 2020 OBMP

A final SSC of 500,000 af was established in the OBMP Implementation Plan. The water occupying the SSC includes Carryover, Excess Carryover, Local Storage, and Supplemental Waters stored by the Parties, including water stored for Storage and Recovery Programs. Carryover, Excess Carryover, Local Storage, and Supplemental Waters in storage accounts are referred to collectively as “managed storage.”

Storage Agreements and Existing Managed Storage

The Restated Judgment provides that the Basin’s groundwater storage capacity may be utilized for the storage and conjunctive use of supplemental water only under Watermaster control and regulation and that no use of such capacity be made except pursuant to written agreement with Watermaster.²⁹ The Pooling Plans of the Overlying (Non-Agricultural) Pool³⁰ and the Appropriative Pool³¹ each require a Party to have an agreement with Watermaster as a condition of storing Excess Carryover water within the Basin. Watermaster has developed rules and regulations, standard storage agreements, and related forms pursuant to the Judgment and Peace Agreement.

There are three types of storage agreements that result in five types of storage accounts: Excess Carryover, Local Supplemental-Recycled, Local Supplemental-Imported, Pre-2000 Quantified Supplemental, and Storage and Recovery. An Excess Carryover account includes a Party’s unproduced rights in the Safe Yield (Safe Yield for Overlying Non-Agricultural Pool Parties and Operating Safe Yield for Appropriative Pool Parties) and Basin Water acquired from other Parties. A Local Supplemental Water account includes imported and recycled water that is recharged by a Party and similar water acquired from other Parties. A Storage and Recovery account includes Supplemental Water and the

²⁹ See Restated Judgment, ¶ 11, 12 and Peace Agreement, § 5.2(a)

³⁰ See Restated Judgment Exhibit “G”

³¹ See Restated Judgment Exhibit “H”





Peace Agreement requires that Watermaster shall give first priority to Storage and Recovery Programs that produce a “broad and mutual benefit to the Parties to the Judgment.”³²

In evaluating applications for storage agreements, Watermaster conducts an investigation to determine if the water stored and recovered under a proposed storage agreement has the potential to cause MPI to a Party or the basin. If Watermaster determines that implementation of the proposed storage agreement has the potential to cause MPI, the applicant must revise its application and demonstrate that there will be no MPI, or Watermaster must impose conditions in the storage agreement to ensure there is no MPI. Watermaster cannot approve a storage agreement that has the potential to cause MPI.

The Parties, amongst themselves, are also actively involved in water transfers of annual unproduced rights in the Safe Yield and water in their storage accounts. Watermaster has an application and review process for transfers that is similar to the storage agreement application process. Transfers are one way that the Parties recover water held in storage accounts.

The only active Storage and Recovery Program in the basin is the Metropolitan Dry-Year Yield Program (DYYP). The DYYP can store up to 100,000 af with maximum puts of 25,000 afy and maximum takes of 33,000 afy. The DYYP Storage and Recovery agreement provides that puts and takes can exceed these values if agreed to by Watermaster (as was done in fiscal years 2018 and 2009, respectively). The agreement that authorizes the DYYP will expire in 2028.

Watermaster tracks the puts, takes, losses, transfers, and end of year storage totals for all of these storage accounts, and reports on this accounting in the annual assessment process. Starting in 2005, pursuant to the Peace Agreement and OBMP IP, Watermaster began assessing losses in stored water at a rate of 2.0 percent per year. In February 2016, Watermaster changed the loss rate to 0.07 percent per year, based on the estimated groundwater discharge from the Chino-North GMZ to the Santa Ana River (a finding of the Safe Yield recalculation).

Exhibit 16 summarizes the amount of water in managed storage by the Parties and for the DYYP. The total volume of water in managed storage as of June 30, 2019 was about 549,200 af, which includes about 46,000 af stored in the DYYP account. As previously stated, and described below, in 2017, the IEUA adopted an addendum to the Peace II SEIR that provided a temporary increase in the SSC to 600,000 af through June 30, 2021 and required Watermaster to update the storage management plan.

Safe Yield Reset

Starting in 2011, Watermaster began the technical effort to recalculate the Safe Yield of the basin, which at that time was set at 140,000 afy. This work involved updating the hydrogeologic conceptual model of the basin, updating the historical hydrology, updating and recalibrating numerical models that simulate the surface and groundwater hydrology of the Chino Basin area, and projecting the surface and groundwater response of the basin to future management plans that included storage management. Watermaster’s methodology for calculating Safe Yield was approved by the Court in April 2017.

This work is documented in *2013 Chino Basin Groundwater Model Update and Recalculation of Safe Yield Pursuant to the Peace Agreement*³³ (hereafter, Safe Yield report). The results of that work yielded a

³² See Peace Agreement, §5.2(c)(iv)(b)

³³ WEI. (2015). *2013 Chino Basin Groundwater Model Update and Recalculation of Safe Yield Pursuant to the Peace Agreement*. October 2015.

http://www.cbwm.org/docs/engdocs/WEI%202013%20CBWM%20Recalculation%20Model%20Update/20151005WEI_2013_CBWM_Recal_Model_Final_low.pdf





reassessment of the hydrology of the basin from 1961 through 2011 and projections of basin hydrology through 2050, based on the best available planning information. And, based on the investigation results in the Safe Yield report, the Safe Yield was estimated to be 135,000 afy for the period FY 2010/11 to FY 2019/20.

The conclusions of the Safe Yield report related to storage management were:

- On July 1, 2000, the total water in storage in the basin was about 5,935,000 af, inclusive of about 236,000 af of managed storage. This is about 635,000 af greater than the OSR of 5,300,000 af that was established in the OBMP Implementation Plan.
- Managed storage was projected to increase from 487,000 af in 2016 to about 663,000 af by 2030 (exceeding the SSC by 163,000 af) and decline thereafter to zero af by 2051. Managed storage was projected to be used to meet future Replenishment Obligations.
- Total storage was projected to fall below the OSR of 5.3 million af in 2041.

Based on these findings, Watermaster conducted an investigation to determine if the use of managed storage up to 663,000 af would cause potential MPI and concluded it would not. Subsequently, the IEUA adopted an addendum to the Peace II SEIR to temporarily increase the SSC to 600,000 through June 30, 2021 to enable Watermaster and the Judgment Parties to update the OBMP storage management plan.

The next effort to recalculate Safe Yield is currently underway, and Watermaster is using the same Court-approved methodology used in the Safe Yield report to recalculate Safe Yield for the period FY 2020/21 to FY 2029/30.

2020 Storage Management Plan

The 2000 OBMP storage management plan is based on fixed storage volumes (e.g. the OSR, the SSC, and the Safe Storage), and its technical basis is not supported by new information available after the storage management plan was first developed. Review of the new information developed pursuant to the OBMP since 1999 indicated that it is possible to use more storage space than contemplated in the 2000 OBMP. This new information includes: an updated hydrogeologic conceptual model; 20 years of intensive monitoring of basin operations (not available in 1999), including monitoring the basin response as the total volume of managed storage approached 500,000 af; and groundwater model-based projections of the basin response to future management plans where the managed storage exceeded 500,000 af. The new information developed since 1999 also suggests that the use of managed storage to satisfy future desalter and other Replenishment Obligations could cause potential MPI and other adverse impacts: it has the potential to exacerbate land subsidence and pumping sustainability challenges, impact net recharge and Safe Yield, increase groundwater discharge through the CCWF and cause a loss of Hydraulic Control, and change the direction and speed of the contaminant plumes. Thus, Watermaster initiated a process to update the OBMP storage management plan to enable increased storage by the Parties and to include features that will ensure there is no MPI to a Party or the basin caused by the conjunctive-use activities of the Parties and Storage and Recovery Programs.

The *Storage Framework Investigation* (SFI) was completed in 2018 to provide the technical information required to update the storage management plan.³⁴ In the SFI, future projections of the use of managed storage were estimated and evaluated for potential MPI. The SFI projected that for the

³⁴ WEI. (2018). *Storage Framework Investigation – Final Report*. Prepared for the Chino Basin Watermaster. October 2018.





planned use of up to 700,000 af of managed storage by the Parties that Hydraulic Control would be maintained, that there would be no MPI, and that there would be an adverse impact from the reduction of net recharge and Safe Yield attributable to the use of managed storage. The 2018 SFI also projected that for Storage and Recovery Programs that would operate in an identical manner to the existing Metropolitan DYYP and using the managed storage space between 700,000 af and 800,000 af. The SFI also evaluated the impacts of prospective Storage and Recovery Programs that would use up to an additional 200,000 af of storage space (total storage of 1,000,000 af) and projected that MPI and other adverse impacts could occur and described the potential facilities and operating concepts that, if implemented, would minimize potential MPI. The results of the SFI, together with the *Final 2020 Storage Management Plan White Paper*,³⁵ were used to inform the development of the *2020 Storage Management Plan (SMP)*.

The Watermaster completed the 2020 SMP in December 2019, and it is included herein as Appendix E. The 2020 SMP no longer includes the management concepts of Safe Storage, OSR, and SSC that were a part of the 2000 OBMP storage management plan. The provisions of the 2020 SMP are described below.

The 2020 SMP includes the following provisions regarding the use of storage space in the basin:

- An aggregate amount of 800,000 af is reserved for the Parties' conjunctive-use activities (includes Carryover, Excess Carryover, and Supplemental Accounts) and Metropolitan's DYYP. This amount is referred to as the "First Managed Storage Band" (FMSB).
- An aggregate amount of 800,000 af is reserved for the Parties' conjunctive-use activities (includes Carryover, Excess Carryover, and Supplemental Accounts) and Metropolitan's DYYP. This amount is referred to as the "First Managed Storage Band" (FMSB).
- The managed storage space between 800,000 and 1,000,000 af is reserved for Storage and Recovery Programs.
 - Storage and Recovery Programs that utilize the managed storage space above 800,000 af will be required to mitigate potential MPI and other adverse impacts as if the 800,000 af in the FMSB is fully used.
 - Renewal or extension of the DYYP agreement will require the DYYP to use storage space above the 800,000 af of the FMSB.
- The allocation of storage space for use by Parties and for Storage and Recovery Programs may be revised in subsequent updates of the SMP.
- The use of managed storage greater than 1,000,000 af may be possible provided the storing entity submits a Storage and Recovery Program application, demonstrates that the program has broad mutual benefit, demonstrates that the program's mitigation measures will meet the mitigation requirements of the Watermaster to ensure there will be no MPI and other adverse impacts³⁶, complies with CEQA, and obtains approval from the Watermaster.

The 2020 SMP includes the following provisions regarding the use of spreading basin facilities for storage programs:

³⁵ WEI. (2019). *Final 2020 Storage Management Plan White Paper*. Prepared for the Chino Basin Watermaster. July 2019.

³⁶ Adverse impacts include reductions in net recharge and Safe Yield; and an increase in the groundwater discharge from the Chino North GMZ to the Santa Ana River contributing to a loss of Hydraulic Control.





- Watermaster will prioritize the use of spreading basins to satisfy Watermaster's recharge and Replenishment Obligations over the use of spreading basins for other uses subject to limitations provided in existing agreements with the owners of the facilities.

The 2020 SMP includes the following provisions specific to the Parties and Storage and Recovery Program:

- With regard to the storage management activities of the Parties:
 - Watermaster acknowledges transfers or leases of water rights and water held in managed storage (hereafter transfers) from Parties that are situated such that they pump groundwater outside of MZ-1 to Parties that pump in MZ-1 have the potential to cause potential MPI.
 - Any reduction in net recharge caused by storage in the FMSB is an adverse impact, and Watermaster considers this adverse impact to be mitigated by the prospective calculation of Safe Yield.
- With regard to the Storage and Recovery Programs:
 - Puts and takes should be prioritized to occur in MZ-2 and MZ-3 to avoid new land subsidence and interfering with land subsidence management in MZ-1, to minimize pumping sustainability challenges, to minimize the impact of Storage and Recovery operations on solvent plumes, to preserve the state of Hydraulic Control, and to take advantage of the larger and more useful storage space in MZ-2 and MZ-3.
 - Watermaster will review each Storage and Recovery Program application, estimate the surface and ground water systems response, prepare a report that describes the response and potential MPI, and develop mitigation requirements to mitigate MPI caused by the proposed Storage and Recovery Program. The Storage and Recovery Program applicant will develop mitigation measures pursuant to these requirements and incorporate them into their Storage and Recovery Program application. Upon approval by Watermaster, these mitigation measures will be incorporated into the Storage and Recovery Program storage agreement.
 - Adverse impacts due to a Storage and Recovery Program must be mitigated. Adverse impacts include but are not limited to reductions in net recharge and Safe Yield and an increase in the groundwater discharge from the Chino-North GMZ to the Santa Ana River contributing to a loss of Hydraulic Control.
 - As part of the Storage and Recovery Program application review process, Watermaster will: make a projection of the program's expected impact on net recharge and Safe Yield and on the state of Hydraulic Control and review these impacts and develop mitigation requirements for the proposed Storage and Recovery Program.
 - The Storage and Recovery Program applicant will develop mitigation measures pursuant to these requirements and incorporate them into their Storage and Recovery Program application. Upon approval by Watermaster, these mitigation measures will be incorporated into the Storage and Recovery Program storage agreement.





- Watermaster will estimate the reduction in net recharge and Safe Yield for each Storage and Recovery Program and deduct it from water stored in each Storage and Recovery Program storage account to compensate for its impact on net recharge and Safe Yield.
- Watermaster will periodically review current and projected basin conditions and compare this information to the projected basin conditions prepared in the evaluation of the Storage and Recovery Program applications; compare the projected Storage and Recovery Program operations to actual Storage and Recovery Program operations; make findings regarding the efficacy of related mitigation of MPI and other adverse impact requirements and measures in the Storage and Recovery Program storage agreements; and based on its review and findings, require changes in the Storage and Recovery Program agreements to mitigate MPI and adverse impacts.

The 2020 SMP includes the following provisions regarding the Storage Agreement Application Process:

- Watermaster will modify the existing Form 8 Local Storage Agreements to be consistent with an “evergreen agreement” paradigm and establish that the evergreen agreements will be valid for the duration of the Peace Agreement and will be automatically adjusted upon Watermaster’s approval of each subsequent Assessment Package so long as the cumulative amount of water in storage is less than the quantity reserved for the Parties’ conjunctive-use operations and Metropolitan’s DYYP (cumulatively, the FMSB) and Watermaster has made no finding that MPI is threatened to occur as a result of the increase in the quantity of water in storage.

The 2020 SMP includes the following provisions regarding the update of the SMP:

- Watermaster will periodically review and update the SMP at a frequency of no less than a once every five years, when the Safe Yield is recalculated, when it determines a review and update is warranted based new information and/or the needs of the Parties or the basin, and at least five years before the aggregate amount of managed storage by the Parties is projected to fall below 340,000 af.





4.0 2020 OBMP Update Management Plan

This section describes the recommended 2020 OBMP management plan for each of the nine PEs. The management plan is based on the ongoing 2000 OBMP implementation actions of each PE described in Section 3 and includes the new implementation actions listed in Section 2 for each of the 2020 OBMP Update Activities. For each management plan, the implementation action items are assigned a general schedule over a 20-year implementation period, and the actions are characterized as one-time or ongoing. Additionally, for each PE, the entities responsible for implementation of the PE management actions are identified.

The complete 2020 OBMP Update management plan, inclusive of all PEs, is summarized in Exhibit 17. Exhibit 17 lists each implementation action and characterizes if they originated from the 2000 OBMP or the 2020 OBMP Update and whether Watermaster deems their implementation required to administer the Physical Solution of the Judgment or comply with other regulatory or Watermaster requirements, including the basis for the requirements.





4.1 Program Element 1. Develop and Implement Comprehensive Monitoring Program

The objective of PE 1 is to collect the data and information necessary to support the implementation of all other OBMP PEs and to satisfy other regulations and Watermaster’s obligations under its agreements, Court orders, and CEQA. Watermaster is responsible for the implementation of PE 1. The implementation actions and general schedule for implementation are summarized in Table 11 below.

Table 11. Program Element 1 – 2020 OBMP Management Plan

Implementation Action	One-time/ Ongoing
Years 1 through 3	
Watermaster will continue to conduct the required monitoring and reporting programs, including collection of: groundwater production, groundwater level, groundwater quality, ground level, surface water, climate, water supply planning, biological, and well construction/destruction monitoring data.	Ongoing
Perform review and update of Watermaster’s regulatory and Court-ordered monitoring and reporting programs and document in a work plan: <i>OBMP Monitoring and Reporting Work Plan</i> .	One-time
Years 4 through 20	
Watermaster will continue to conduct the required monitoring and reporting programs pursuant to the <i>OBMP Monitoring and Reporting Work Plan</i> (or other guidance documents developed by Watermaster).	Ongoing
Perform periodic review and update of the <i>OBMP Monitoring and Reporting Work Plan</i> (or other guidance documents developed by Watermaster) and modify the monitoring and reporting programs, as appropriate.	Ongoing





4.2 Program Element 2. Develop and Implement Comprehensive Recharge Program

The objectives of PE 2 are to increase stormwater recharge to offset the recharge lost due to channel lining, to ensure there will be enough supplemental water recharge capacity available to Watermaster to replenish overdraft, and to maximize the recharge of recycled and supplemental waters to protect or enhance Safe Yield.

Watermaster, the IEUA, the CBWCD, and the SBCFCD are partners in conducting recharge in the Chino Basin and are jointly responsible for the implementation of PE 2. The implementation actions and general schedule for implementation are summarized in Table 12 below.

Table 12. Program Element 2 – 2020 OBMP Management Plan

Implementation Action	One-time/ Ongoing
Years 1 through 3	
Continue to convene the Recharge Investigations and Projects Committee.	Ongoing
Complete the 2023 Recharge Master Plan Update (RMPU).	One-time
Years 4 through 20	
Implement recharge projects based on need and available resources.	Ongoing
Continue to convene the Recharge Investigations and Projects Committee.	Ongoing
Update the RMPU no less than every five years (2028, 2033, 2038).	Ongoing





4.3 Program Element 3. Develop and Implement a Water Supply Plan for Impaired Areas

The objectives of PE 3 in the 2000 OBMP were to maintain and enhance Safe Yield and maximize beneficial uses of groundwater by constructing and operating the Chino Basin Desalters at an ultimate capacity of 40,000 afy. As described in Section 3.2.3, the final facilities to reach the ultimate capacity of 40,000 afy are under construction and are expected to be completed by 2021. Operation at this capacity, once all agricultural land uses have converted to urban uses, will fulfill the objectives of PE 3. Because the operation of the Chino Basin Desalters is necessary to attain Hydraulic Control, which is a regulatory requirement of the maximum benefit SNMP under PE 7, the implementation actions related to the ongoing operation of the Chino Basin Desalters are contained in PE 7. Thus, there are no separate implementation actions for PE 3 for the 2020 OBMP Update.





4.4 Program Element 4. Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1

The objective of PE 4 is to reduce or stop the occurrence of land subsidence and prevent ground fissuring in the Chino Basin or reduce it to tolerable levels. PE 4 achieves this objective by implementing the Watermaster’s Subsidence Management Plan and updating the plan as warranted by data, analyses, and interpretations. Watermaster is responsible for the implementation of PE 4 with guidance from the GLMC.

The implementation actions for PE 4 and the general schedule for implementation are summarized in Table 13 below.

Table 13. Program Element 4 – 2020 OBMP Management Plan

Implementation Action	One-time/ Ongoing
Years 1 through 20	
Implement Watermaster’s Subsidence Management Plan, and adapt it as necessary.	Ongoing
Watermaster will arrange for the physical recharge of at least 6,500 afy of Supplemental Water in MZ-1 as an annual average. Watermaster may re-evaluate the minimum annual quantity of Supplemental Water recharge in MZ-1 and may increase this quantity through the term of the Peace Agreement.	Ongoing





4.5 Program Element 5. Develop and Implement Regional Supplemental Water Program

The objective of this PE is to improve the regional conveyance and availability of imported and recycled waters throughout the basin. This is a basin-wide activity that involves the Parties, the IEUA, the TVMWD, and the WMWD. IEUA will continue to lead the efforts to maximize the reuse of IEUA recycled water in the Chino Basin. There are other current and forthcoming water supply reliability planning efforts by the IEUA, the Parties, and neighboring agencies that provide a prime opportunity to expand coordination and leverage the efforts for broad, regional benefit. Currently, the IEUA is preparing the 2020 IRP and conducting other related planning efforts with its member agencies. This effort could be expanded by neighboring agencies, including the TVMWD, the WMWD, or other Parties. Any of these agencies could lead and coordinate the collaborative, regional planning effort on behalf of the Parties. Watermaster would participate in the planning efforts, to ensure that any water supply or recycled water projects that are recommended for implementation are integrated with its groundwater management planning efforts and are consistent with the Judgment, Peace Agreements and other agreements, the Watermaster Rules and Regulations.

The implementation actions and general schedule for implementation are summarized in Table 14 below. Each action is categorized as one-time or ongoing.

Table 14. Program Element 5 – 2020 OBMP Management Plan

Implementation Action	One-time/ Ongoing
Years 1 through 20	
The IEUA will maximize the reuse of its recycled water in the Chino Basin.	Ongoing
The IEUA, the TVMWD, the WMWD, and/or other Party acting as a coordinating agency will establish or expand future recycled water planning efforts to maximize the reuse of all available sources of recycled water.	Ongoing
Watermaster will support the IEUA, the TVMWD, the WMWD, and/or others in their efforts to maximize recycled water reuse to ensure these efforts are integrated with Watermaster’s groundwater and salinity management efforts.	Ongoing
The IEUA, the TVMWD, the WMWD, and/or other Party acting as a coordinating agency will establish or expand future integrated water resources planning efforts to address water supply reliability for all Watermaster Parties.	Ongoing
Watermaster will support the IEUA, the TVMWD, the WMWD, and/or others in their efforts to improve water supply reliability to ensure those efforts are integrated with Watermaster’s groundwater management efforts.	Ongoing





4.6 Program Element 6. Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management

The objectives of PE 6 are to perform routine and coordinated water quality monitoring to characterize water quality in the Chino Basin so that there is adequate information to ensure that contamination sources are being addressed by water quality regulators and to help address compliance with new and increasingly stringent drinking water regulations for emerging contaminants established by the DDW.

The implementation actions and general schedule for implementation are summarized in Table 15 below.

Table 15. Program Element 6 – 2020 OBMP Management Plan

Implementation Action	One-time/ Ongoing
Years 1 through 3	
Re-convene the water quality committee and meet periodically to update groundwater quality management priorities.	Ongoing
Develop and implement an initial emerging contaminants monitoring plan.	One-time
Prepare a water quality assessment of the Chino Basin to evaluate the need for a Groundwater Quality Management Plan and prepare a long-term emerging contaminants monitoring plan.	One-time
Continue to support the Parties in identifying funding from outside sources to finance cleanup efforts.	Ongoing
Years 4 through 20	
Develop and implement a Groundwater Quality Management Plan and periodically update it.	Ongoing
Implement long-term emerging contaminants monitoring plan.	One-time
Continue to conduct investigations to assist the Parties and/or the Regional Board in accomplishing mutually beneficial objectives as needed.	Ongoing
Implement projects of mutual interest.	Ongoing

Watermaster will convene the Water Quality Committee and lead the stakeholder process to achieve the implementation actions for PE 6, including the development and implementation of a Groundwater Quality Management Plan and perform the initial and long-term water-quality monitoring at the monitoring and private wells sampled by Watermaster pursuant to PE 1.

Projects of mutual interest will be implemented pursuant to agreements among the implementing Parties with Watermaster support, as needed.





4.7 Program Element 7. Develop and Implement Salt Management Plan

The objective of PE 7 is to implement, and periodically update, the maximum-benefit SNMP. The SNMP is a management program to monitor, characterize, and manage current and future salt and nutrient conditions in the Chino Basin. The maximum-benefit SNMP enables the implementation of the recycled water recharge program in PE 2 and the direct reuse of recycled water in PE 5.

Watermaster and the IEUA are co-permittees for the maximum-benefit SNMP and the recycled water recharge program and will be jointly responsible for implementation of PE 7. The implementation actions and general schedule for implementation are summarized in Table 16 below.

Table 16. Program Element 7 – 2020 OBMP Management Plan

Implementation Action	One-time/ Ongoing
Years 1 through 3	
Complete the 2020 update of TDS and nitrate projections to evaluate compliance with maximum benefit salt and nutrient management plan, and, if necessary, based on the outcome, prepare a plan and schedule to implement a salt offset compliance strategy.	One-time
Continue to implement the maximum-benefit salt and nutrient management plan pursuant to the Basin Plan, including: <ul style="list-style-type: none"> • Implement monitoring program and reporting requirements • Maintain Hydraulic Control through operation of the Chino Basin Desalters and other means, as necessary • Increase and maintain desalter pumping at 40,000 afy • Continue storm and imported water recharge program to comply with recycled water recharge dilution requirements • Comply with recycled water TDS and TIN limitations • Compute ambient water quality every three years • Construct treatment and/or salt-offset facilities <i>if</i> one or more of the compliance limits are exceeded 	Ongoing
Years 4 through 20	
Continue to implement the maximum-benefit salt and nutrient management plan pursuant to the Basin Plan, and any amendments thereto.	Ongoing
Starting in 2025 and every five years thereafter, update water quality projections to evaluate compliance with the maximum-benefit salt and nutrient management plan.	Ongoing





4.8 Program Element 8. Develop and Implement Groundwater Storage Program *and* Program Element 9. Develop and Implement Storage and Recovery Programs

The objectives of PEs 8 and 9 are to:

- Implement, and periodically update, a storage management plan that: (1) is based on the most current information and knowledge of the basin, (2) prevents unauthorized overdraft, (3) prioritizes the use of storage space to meet the needs and requirements of the lands overlying the Chino Basin and of the Parties over the use of storage space to store water for export.
- Support the development and implementation of Storage and Recovery Programs in the Chino Basin that provide defined benefits to the Parties and the basin.

Watermaster is responsible for the implementation of PEs 8 and 9. The implementation actions and general schedule for implementation are summarized in Table 17 below.

Table 17. Program Elements 8 and 9 – 2020 OBMP Management Plan

Implementation Action	One-time/ Ongoing
Years 1 through 3	
Complete and submit to the Court the 2020 Safe Yield Recalculation.	One-time
Complete and submit to the Court the 2020 Storage Management Plan.	One-time
Develop a <i>Storage and Recovery Master Plan</i> to support the design of optimized Storage and Recovery Programs that are consistent with the 2020 Storage Management Plan and provide the Watermaster with criteria to review, condition, and approve applications in a manner that is consistent with the Judgment and the Peace Agreement.	One-time
Assess losses from storage accounts based on the findings of the 2020 Safe Yield Recalculation.	Ongoing
Years 4 through 20	
Update the Storage Management Plan in 2025 and every five years thereafter and when: <ul style="list-style-type: none"> • the Safe Yield is recalculated, • Watermaster determines a review and update is warranted based new information and/or the needs of the Parties or the basin, and • at least five years before the aggregate amount of managed storage by the Parties is projected to fall below 340,000 af 	Ongoing
Perform Safe Yield recalculation every 10 years (2030, 2040).	Ongoing
Update the storage loss rate following each recalculation of Safe Yield (2030, 2040) and during periodic updates of the SMP.	Ongoing



Exhibit 1 – Drivers and Trends and Their Implications 2020 OBMP Update

Drivers

Trends

Implications

Drivers

Trends

Implications

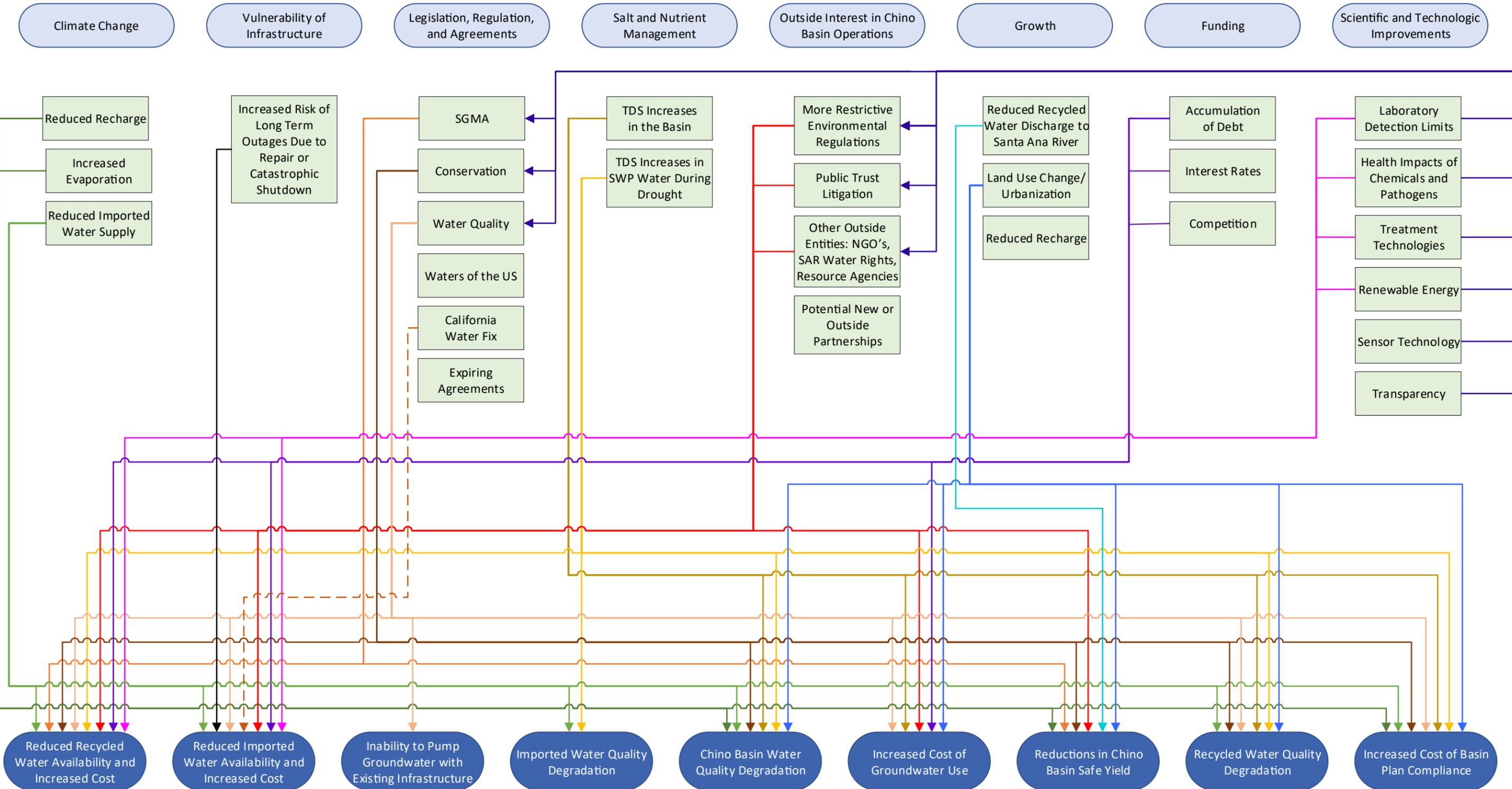


Exhibit 2 Comparison of the 2000 and 2020 OBMP Process

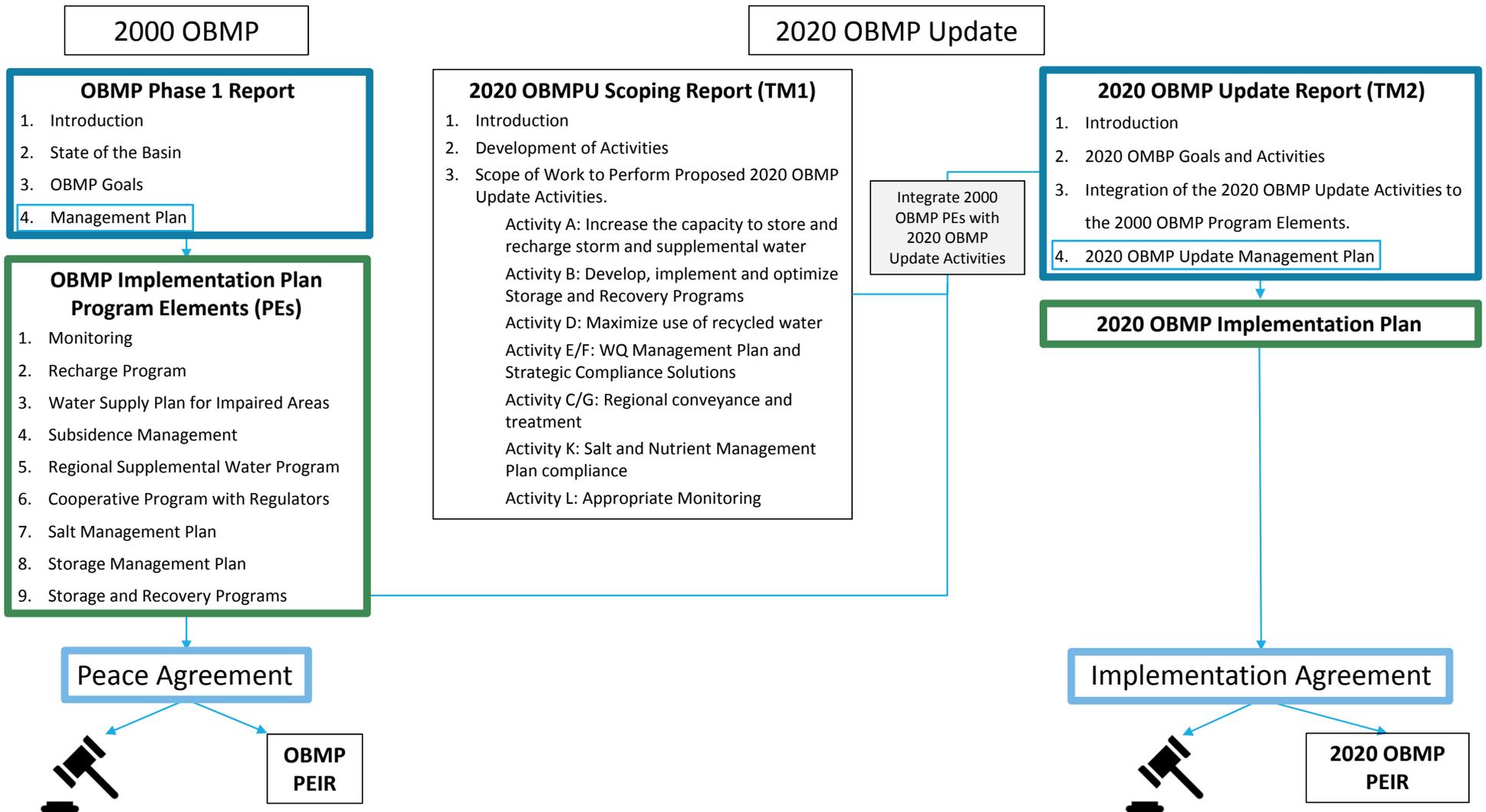


Exhibit 3
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

*The letter in this column corresponds with the letter ID of the Activities listed in Table 3

Needs and Wants Categorized by Basin Management Issues	Pool Parties												Overlying Non-Ag	Others					Addressed by Activities in Table 3*	Alignment with 2000 OBMP Goals	
	Appropriative									Agricultural											
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy		State of CA	IEUA	TVMWD	WMWD	Metropolitan			CBWCD
Reductions in Chino Basin Safe Yield																					
Develop a storage management plan to optimize the use of unused storage space in the basin, avoid undesirable results, and encourage Storage and Recovery Programs	●	●		●	●			●	●	●	●	●	●		●	●				B, C	1, 2, 3
Design storage management and storage & recovery programs that maintain or enhance Safe Yield	●	●						●	●	●			●		●	●			●	B, C	1, 3
Maintain or enhance the Safe Yield of the basin without causing undesirable results	●	●		●	●			●	●	●	●			●	●				●	B, D	1, 3
Manage the basin Safe Yield for the long-term viability and reliability of groundwater supply	●	●						●	●	●	●		●			●	●		●	A, B, C	1, 3
Reassess the frequency of the Safe Yield recalculation	●				●											●				I	3
Continue to model and track Safe Yield, but utilize other management strategies to address a decline.																●				B	1, 3
Develop recharge programs that maintain or enhance Safe Yield	●	●					●	●	●	●				●	●				●	A, B	1, 3
Develop more facilities to capture, store, and recharge water	●	●					●			●	●			●	●					A, B, D	1, 2
Enhance recharge in northeast MZ-3	●		●						●						●					A, C	1, 3
Maximize use of existing recharge facilities	●	●						●	●	●										A, C, F, G	3
Establish incentives to encourage recharge of high-quality imported water	●		●																	H, I	2, 3
Develop an OBMP Update that is consistent with the Physical Solution and allows access to the basin for users to meet their requirements	●	●				●		●												C, E	3
Engage with regional water management planning efforts in the Upper Santa Ana River Watershed that have the potential to impact Chino Basin operations or Safe Yield	●													●	●				●	I, D	3



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Issues, Needs and Wants of the Chino Basin Stakeholders

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	Appropriative									Agricultural											
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy		State of CA	IEUA	TVMWD	WMWD	Metropolitan			CBWCD
Inability to Pump Groundwater with Existing Infrastructure																					
Pursue collaborative, regional partnerships to implement regional solutions to water management challenges	●			●	●		●							●	●	●	●	●	●	B, E, F, G, I	3
Ensure that sufficient, reliable water supplies will be available to meet current and future water demands	●	●	●	●			●	●	●	●				●	●	●	●	●		A, B, D, G	1, 3
Develop conjunctive use agreements that provide certainty in the ability to perform during put and take years by clearly defining facilities/infrastructure and operating plans, and that leverage the lessons learned from obstacles encountered during the implementation of the current Dry Year Yield program	●						●	●	●					●		●	●			B, G, I	1, 2, 3
Develop management strategies that enable the Parties to produce or leverage their respective water rights that may be impacted by physical basin challenges like land subsidence or water quality	●						●	●						●		●				A, C, D, E, F, G, I	3
Design storage management and storage & recovery programs to raise funding to build infrastructure	●			●										●		●				B, D, I, J	3, 4
Develop process to support/facilitate project implementation	●																			F, H, J	4
Design subsidence management plans to allow flexibility in the location and volume of groundwater production in MZ-1 and MZ-2	●						●	●	●				●	●						A, C, G	3



Exhibit 3
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

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Needs and Wants Categorized by Basin Management Issues	Pool Parties													Overlying Non-Ag	Others					Addressed by Activities in Table 3*	Alignment with 2000 OBMP Goals	
	Appropriative										Agricultural				IEUA	TVMWD	WMWD	Metropolitan	CBWCD			CDA
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy	State of CA									
<i>Increased Cost of Groundwater Use</i>																						
Seek supplemental financial resources to support the implementation of the OBMP Update	●	●		●			●	●	●	●					●	●	●			D, F, G, I, J	4	
Develop regional partnerships to help reduce costs	●			●			●	●	●						●	●	●			F, G, I, J	4	
Monetize agencies' unused water rights for equitable balance of basin assets			●																	G, H	4	
Decrease Watermaster assessment costs	●				●			●												I, J	4	
Support to develop a justification for increases in water rates and developer fees to invest in needed water infrastructure	●	●							●								●			F, G, H		
Develop an equitable distribution of costs/benefits of the OBMP	●	●		●		●	●	●	●	●				●	●					H, J	4	
Watermaster assessments for implementation of the OBMP should be allocated based on benefits received	●				●															H	4	
Continue or enhance incentives to pump groundwater from the Chino Basin			●																	G, I	3, 4	
Improve flexibility for Parties to execute water rights transfers														●						G, I	4	



Exhibit 3
Issues, Needs and Wants of the Chino Basin Stakeholders

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	Appropriative										Agricultural										
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy	State of CA		IEUA	TVMWD	WMWD	Metropolitan	CBWCD		
Chino Basin Water Quality Degradation																					
Develop a water quality management plan to ensure ability to produce groundwater rights	●	●		●			●	●	●	●				●	●	●	●			E, F, G, J	2, 3
Develop regional infrastructure to address water quality contamination and treatment				●	●		●													A, B, C, E, F, G, I, J	2
Plan for and be prepared for new drinking water quality regulations that may result in an increase in groundwater treatment and costs	●	●	●	●			●	●	●	●				●		●				E, F	2
Be more proactive and engaged in the process to develop new drinking water quality regulations							●													A, B, D, E, G, J	2
Recycled Water Quality Degradation																					
Maintain compliance with recycled water and dilution requirements pursuant to the Chino Basin groundwater recharge permit		●					●	●	●	●				●	●					A, B, D, E, G, J	2
Increased Cost of Basin Plan Compliance																					
Develop management strategy to ensure sufficient supplies to blend with recycled water and comply with Salt and Nutrient Management Plan	●	●									●			●	●					G, K	2
Perform the minimum amount of monitoring/reporting that is required for basin management and regulatory compliance	●			●			●	●												L	3, 4



Exhibit 3
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

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	Appropriative									Agricultural				IEUA	TVMWD	WMWD	Metropolitan	CBWCD			CDA					
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy										State of CA				
Reduced Recycled Water Availability and Increased Cost																										
Fully utilize IEUA recycled water resources		●		●			●	●		●					●							A, D, E, F, G	1			
Maximize the use of recycled water for direct use or recharge	●	●		●			●	●	●	●					●							A, D, E, F, G	1			
Evaluate the potential for direct potable reuse of recycled water	●								●						●							D, E, F	1			
Develop alternative management strategies to comply with the recycled water discharge obligations to the Santa Ana River	●	●		●			●	●		●					●		●					D, E, F	1, 3			
Utilize non-IEUA sources of recycled water that are not being put to beneficial use	●	●					●	●	●	●					●		●					D, E, F	1			
Other																										
Coordinate timing of agreements, grants, etc. to ensure implementation of the OBMP Update	●							●	●	●					●	●	●					F, G, H, I, J				
Improve communication between the Parties	●			●				●							●		●					F, H, I				
Educate elected officials and decision makers on the need and urgency to address the water management challenges	●	●							●						●	●	●					F, G, H, I, J				
Consider a long-term planning horizon of up to 50 years	●								●	●					●							F, G, H, I, J	3			



Exhibit 3
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

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Needs and Wants Categorized by Basin Management Issues	Pool Parties													Overlying Non-Ag	Others					Addressed by Activities in Table 3*	Alignment with 2000 OBMP Goals	
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	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy	State of CA									
Reduced Imported Water Availability and Increased Cost																						
Ensure that there is a reliable local water supply to replace imported water during shut down of imported water delivery infrastructure for maintenance and longer-term emergency outages	●	●	●	●			●	●	●	●					●	●	●	●			B, C, G	1, 3
Identify and utilize new sources of supplemental water	●	●		●			●	●	●	●					●	●	●				A, B	1, 3
Construct inter-basin and intra-basin connections for the benefit of regional water supply and conjunctive use	●	●		●			●	●	●		●				●	●	●	●			C, G	1, 3
Understand how imported water reliability from Metropolitan Water District will be affected with and without the California Water Fix	●							●	●						●	●	●				-	1, 3
Develop management strategies that ensure Parties will meet future Chino Basin Desalter Replenishment Obligation and have the money to fund it	●	●		●			●		●								●			●	H, I, J	3
Increase water-supply reliability at the lowest possible cost	●			●			●	●			●			●	●	●					A, B, D, J	3
Need a better understanding of the water management plans of the Parties to be able to better plan for imported water needs and to assure reliability of Metropolitan Water District water supply	●			●					●		●				●	●	●	●			A	3
Analyze water management scenarios that plan for unexpected challenges and emergencies	●							●	●	●					●	●	●				E, G	3
Ensure that sufficient supplemental water supplies will be available to meet future replenishment requirements							●		●		●				●					●	A	1, 3
Despite the best efforts of the Parties to decrease reliance on imported water, the cost of the total water supply continues to increase	●																				-	3
Use more recycled water for Replenishment Obligation	●			●			●		●								●				A, D, E, F	3
Continue to build collaborative programs between the Metropolitan Water District and Chino Basin	●						●	●	●						●	●	●				B, I	3



Exhibit 4
Activities for Consideration in the 2020 OBMP Update

ID	Activity
A	Construct new facilities and improve existing facilities to increase the capacity to store and recharge storm and supplemental water, particularly in areas of the basin that will promote the long-term balance of recharge and discharge
B	Develop, implement, and optimize Storage-and-Recovery Programs to increase water-supply reliability, protect or enhance Safe Yield, and improve water quality.
C	Identify and implement regional conveyance and treatment projects/programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence.
D	Maximize the reuse of recycled water produced by IEUA and others
E	Develop and implement a water-quality management plan to address current and future water-quality issues and protect beneficial uses
F	Develop strategic regulatory-compliance solutions to comply with new and evolving drinking water standards that achieve multiple benefits in managing water quality
G	Optimize the use of all sources of water supply by improving the ability to move water across the basin and amongst stakeholders, prioritizing the use of existing infrastructure.
H	Develop an equitable distribution of costs/benefits of the OBMP Update and include in the OBMP update agreements
I	Develop regional partnerships to implement the OBMP Update and reduce costs and include in OBMP Update agreement
J	Continue to identify and pursue low-interest loans and grants or other external funding sources to support the implementation of the OBMP Update
K	Develop management strategy within the Salt and Nutrient Management Plan to ensure ability to comply with dilution requirements for recycled water recharge
L	Perform the appropriate amount of monitoring and reporting required to fulfill basin management and regulatory compliance



**Exhibit 5
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders**

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities							
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost
Goal 1 - Enhance Basin Water Supplies										
<p>1a • Not all of the stormwater runoff available to the Chino Basin is diverted and recharged; failure to divert and recharge stormwater is a permanently lost opportunity.</p> <ul style="list-style-type: none"> • The existing methodology to select recharge projects for implementation is based on the cost of imported water. There are currently no known projects with a unit cost lower than the cost of imported water, hindering expansion of stormwater capture and recharge • Pumping capacity in some areas of the basin is limited due to low groundwater levels, land subsidence, and water quality 	<p>A Construct new facilities and improve existing facilities to increase the capacity to store and recharge storm and supplemental water, particularly in areas of the basin that will promote the long-term balance of recharge and discharge</p>	<ul style="list-style-type: none"> • Increases recharge of high-quality stormwater that will: <ul style="list-style-type: none"> • protect/enhance the Safe Yield, • improve water quality, • reduce dependence on imported water, • increase pumping capacity in areas of low groundwater levels and areas of subsidence concern, and • provide new supply of blending water to support the recycled-water recharge program. • Provides additional supplemental-water recharge capacity for replenishment and implementation of Storage and Recovery Programs. • Provides additional surface water storage capacity. • Revised economic criteria for selecting recharge projects for implementation. 	✓	✓	✓	✓	✓	✓	✓	



**Exhibit 5
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders**

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities								
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost	
Goal 1 - Enhance Basin Water Supplies											
<p>1b • There is a surplus of recycled water potentially available to the Chino Basin Parties that is not being put to beneficial use.</p> <ul style="list-style-type: none"> Existing infrastructure limits the expansion or reuse and recharge of recycled water in the Chino Basin. Existing requirements to discharge recycled water to the Santa Ana River limit the amount of IEUA recycled water available for reuse and recharge The Department of Drinking Water and the Regional Board blending requirements for recycled water recharge could limit expanded recharge opportunities 	<p>D Maximize the reuse of recycled water produced by IEUA and others</p>	<ul style="list-style-type: none"> Results in a new, consistent volume of in-lieu and/or wet water recharge that will: <ul style="list-style-type: none"> protect/enhance the Safe Yield, reduce dependence on imported water, improve water-supply reliability, especially during dry periods, and increase pumping capacity in areas of low groundwater levels and areas of subsidence concern. Identify additional sources of water to satisfy IEUA discharge requirements pursuant to the Santa Ana River Judgment. 		✓	✓					✓	✓



Exhibit 5
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities							
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost
Goal 2 - Protect and Enhance Water Quality										
2a • Areas of the basin are contaminated with VOCs, nitrate, perchlorate and other contaminants of emerging concern (CECs). • Water-quality regulations are evolving and becoming more restrictive, which limits the beneficial uses of groundwater. • Groundwater treatment may be necessary to meet beneficial uses, but can be expensive to build and operate. • The basin is hydrologically closed, which causes accumulation and concentration of salts, nutrients, and other contaminants. • Some stored water in the Chino Basin cannot be used due to water quality and insufficient treatment capacity • Recharge sources may contribute CECs to the groundwater basin	E Develop and implement a water-quality management plan to address current and future water-quality issues and protect beneficial uses	<ul style="list-style-type: none"> Proactively addresses new and near-future drinking water regulations. Enables the Parties to make informed decisions on infrastructure improvements for water-quality management and regulatory compliance. Removes groundwater contaminants from the Chino Basin and thereby improves groundwater quality. 								
	F Develop strategic regulatory-compliance solutions to comply with new and evolving drinking water standards that achieve multiple benefits in managing water quality	<ul style="list-style-type: none"> Enables the Parties to produce or leverage their water rights that may be constrained by water quality. Ensures that groundwater is pumped and thereby protects/enhances the Safe Yield. 	✓	✓	✓	✓				✓
2b • Water-quality regulations are evolving and generally becoming more stringent, which could limit the reuse and recharge of recycled water.	K Develop management strategy within the Salt and Nutrient Management Plan to ensure ability to comply with dilution requirements for recycled water recharge	<ul style="list-style-type: none"> Enables the continued and expanded recharge of recycled water, which will: <ul style="list-style-type: none"> protect water quality, improve water-supply reliability, especially during dry periods, and protect/enhance the Safe Yield. 	✓			✓	✓	✓	✓	



**Exhibit 5
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders**

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities							
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost
Goal 3 - Enhance Management of the Basin										
<p>3a • Existing infrastructure (pumping and treatment capacity and conveyance) is insufficient to conduct puts and takes under proposed storage programs.</p> <ul style="list-style-type: none"> • There is unused storage space in the Basin the use of which is constrained by the storage limits defined in existing CEQA documentation. • Watermaster's current storage management plan is not optimized to protect/enhance basin yield, improve water quality, avoid new land subsidence, ensure balance of recharge and discharge, maintain Hydraulic Control, etc. • Storage and recovery operations could be limited by contaminant plumes or other CECs in groundwater 	<p>B Develop, implement, and optimize Storage and Recovery Programs to increase water-supply reliability, protect or enhance Safe Yield, and improve water quality.</p>	<ul style="list-style-type: none"> • Storage programs that protect/enhance basin yield, improve water quality, avoid new land subsidence, ensure balance of recharge and discharge, maintain Hydraulic Control, etc. • New regional infrastructure to optimize put and take operations • Leverages unused storage space in the Basin. • Reduces reliance on imported water, especially during dry periods. • Potentially provides outside funding sources to implement the OBMP Update. • Improves water quality through the recharge of high quality water. 		✓	✓	✓	✓			✓



**Exhibit 5
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders**

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities							
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost
Goal 3 - Enhance Management of the Basin										
3b • Land subsidence in northwest MZ1 may limit the ability for Parties to pump their respective rights in this area. • Poor water quality and increasingly restricting water quality regulations limits the ability for some Parties to pump their respective rights. • Low groundwater levels impact pumping capacity	C Identify and implement regional conveyance and treatment projects/programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence.	<ul style="list-style-type: none"> Enables producers in MZ1 and MZ2 to obtain water through regional conveyance, which supports management of groundwater levels to reduce the potential for subsidence and ground fissuring. Enables the Parties to increase production in areas currently constrained by poor water quality. Removes groundwater contaminants from the Chino Basin and thereby improves water quality. 	✓	✓	✓	✓				✓
	G Optimize the use of all sources of water supply by improving the ability to move water across the basin and amongst stakeholders, prioritizing the use of existing infrastructure.	<ul style="list-style-type: none"> Protects/enhances the Safe Yield. Maximizes the use of existing infrastructure, which will minimize costs. Provides infrastructure that can also be used to implement Storage and Recovery Programs. 								
3c • Watermaster needs information to comply with regulations and its obligations under its agreements and Court orders, yet financial resources to collect this information are limited.	L Perform the appropriate amount of monitoring and reporting required to fulfill basin management and regulatory compliance	<ul style="list-style-type: none"> Ensures full compliance with regulatory requirements. Ensures full support of basin management initiatives. 	✓	✓	✓	✓	✓	✓	✓	✓
		<ul style="list-style-type: none"> Enables Parties to monitor the performance of the OBMP Update. Continual review and revision of requirements and monitoring program to ensure cost efficiency 								



Exhibit 5
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities							
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost
Goal 4 - Equitably Finance the OBMP										
<p>4a • The distribution of benefits associated with the OBMP Update is not defined.</p> <ul style="list-style-type: none"> • Funding needed for the OBMP implementation activities of the Watermaster is not projected beyond the current year budget, which limits Parties ability to plan required funding for the future. • There is currently no formal process to evaluate and adapt the OBMP implementation plan, schedule and cost. 	H Develop an equitable distribution of costs/benefits of the OBMP Update and include in the OBMP update agreements	<ul style="list-style-type: none"> • Provides transparency as to the benefits of the OBMP Update activities • Identifies Watermaster roles and costs to the Parties • Formal process to revisit implementation plan and adjust priorities and schedule as necessary to address changed conditions • Periodic updates of cost projections for OBMP implementation needed to plan financial resources. • Improves readiness to apply for grants as they become available • Improves the likelihood that the OBMP will be implemented. 			✓		✓	✓	✓	
<p>4b • Limited financial resources constraint the implementation of the OBMP.</p> <ul style="list-style-type: none"> • Future reliability of grant funding is uncertain 	I Develop regional partnerships to implement the OBMP Update and reduce costs and include in OBMP Update agreement	<ul style="list-style-type: none"> • Lowers the cost of OBMP implementation. • Improves the likelihood that the OBMP will be implemented. 		✓		✓	✓	✓		
	J Continue to identify and pursue low-interest loans and grants or other external funding sources to support the implementation of the OBMP Update			✓		✓	✓	✓		



Exhibit 6
2020 OBMP Update - Activity A:

Construct new facilities and improve existing facilities to increase the capacity to store and recharge storm and supplemental waters, particularly in areas of the basin that will promote the long-term balance of recharge and discharge

Need and Objectives: The objectives of Activity A are (1) to maximize stormwater capture pursuant to Watermaster’s diversion permits, (2) to promote the long-term balance of recharge and discharge, (3) to ensure sufficient supplemental water recharge capacity for future replenishment, (4) to reduce dependence on imported water by maintaining or enhancing Safe Yield, (5) to improve water quality, and (6) to ensure a supply of dilution water to comply with recycled water recharge permit requirements. Based on the alignment of the objectives of Activity A with those of the RMPU, Activity A can be accomplished through the existing RMPU process.

Phase	Task	Outcomes	Watermaster Role	Are these outcomes necessary for Watermaster to Administer the Physical Solution or Comply with Other Requirements ?
S	1 – Define objectives and refine scope of work	Consensus on objectives of 2023 RMPU	Convene the Recharge Investigations and Projects Committee	The process to perform these steps is required to the extent that additional recharge capacity is needed to meet replenishment obligations. If, in scoping the committee does not establish the additional need to evaluate projects beyond replenishment capacity, those projects are not required to be evaluated.
PN	2 – Develop planning, screening, and evaluation criteria	New criteria for selecting projects	Technical support role	
PAE	3 – Describe recharge enhancement opportunities 4 – Develop reconnaissance-level engineering design and operating plan	Conceptual design, operating plans, and costs of recharge alternatives Project implementation and financing plan	Technical support role	
I	5 – Plan, design, and construct selected recharge projects	New recharge projects	Technical support role	Yes, to the extent that additional recharge capacity is needed for replenishment.

**Phase Descriptions: S = Scoping PN = Evaluate need for project PAE = Project alternative evaluation I = Implementation*

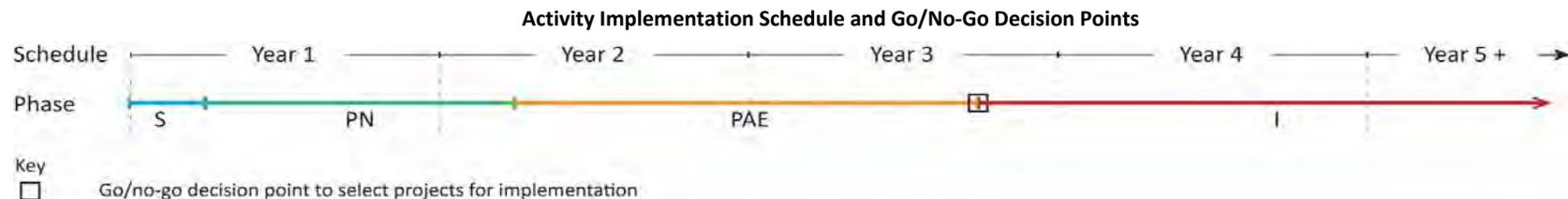


Exhibit 7
2020 OBMP Update - Activity B

Develop, implement, and optimize Storage and Recovery Programs to increase water-supply reliability, protect or enhance Safe Yield, and improve water quality

Need and Objectives: The parties desire to develop and implement “optimized” Storage and Recovery Programs that avoid potential MPI and provide broad benefits, such as increased water-supply reliability, protected or enhanced Safe Yield, improvements to water quality, and reduced cost for OBMP implementation. The objectives of Activity B are to prepare a *Storage and Recovery Master Plan* in a collaborative setting that clearly articulates the specific objectives of the parties and the required benefits to be realized from storage and recovery programs. The master plan will assist the parties and their storing partners to select and implement Storage and Recovery Programs that achieve the their objectives and the desired benefits.

Phase*	Task	Outcomes	Watermaster Role	Are these outcomes necessary for Watermaster to Administer the Physical Solution or Comply with Other Requirements ?
S	1 – Convene the Storage and Recovery Program Committee, define objectives, and refine scope of work	Consensus on objectives and desired benefits of Storage and Recovery Programs	Convene committee	Section 5.2.c.iv.(b) of the Peace Agreement states that “Watermaster shall prioritize its efforts to regulate and condition the storage and recovery of water developed in a Storage and Recovery Program for the mutual benefit of the Parties to the Judgment and give first priority to Storage and Recovery Programs that provide broad mutual benefits.” Watermaster must document the basis by which it will review, condition, and approve applications in a manner that is predictable, uniform, and consistent with the Peace Agreement and the 2020 SMP. A master plan is the most efficient process to do this.
PN	2 – Develop conceptual alternatives for Storage and Recovery Programs at various scales	Conceptual descriptions of various types of Storage and Recovery Programs that achieve the objectives defined in Task 1	Assist in the development and documentation of conceptual alternatives	
PAE	3 – Describe and evaluate reconnaissance-level facility plans and costs for Storage and Recovery Program alternatives	Conceptual design, operating plans, and costs for various Storage and Recovery Program alternatives	Assist in development of alternatives Groundwater modeling to estimate basin response	
I	4 – Prepare <i>Storage and Recovery Program Master Plan</i>	<i>Storage and Recovery Program Master Plan</i> that will support Storage and Recovery Program selection, solicitation of storing partners, applications for funding, and Watermaster approvals	Prepare draft and final master plan	

*Phase Descriptions: S = Scoping PN = Evaluate need for project PAE = Project alternative evaluation I = Implementation

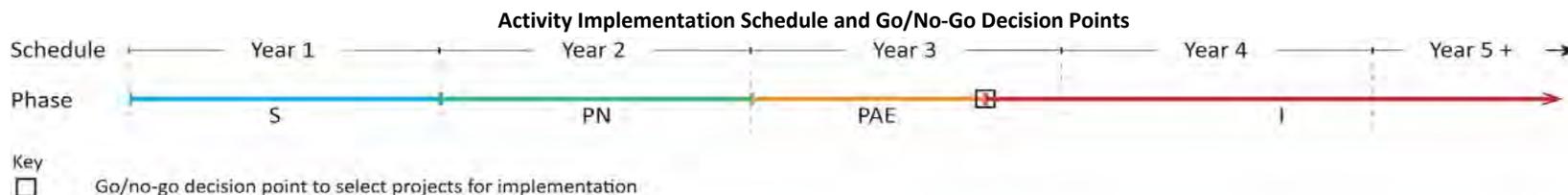


Exhibit 8

2020 OBMP Update - Activity CG:

Identify and implement regional conveyance and treatment projects/programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence AND Optimize the use of all sources of water supply by improving the ability to move water across the basin and amongst stakeholders, prioritizing the use of existing infrastructure

Need and Objectives: The parties have identified that there are basin management challenges, such as land subsidence and poor water quality, that could limit their ability to exercise their pumping rights using existing infrastructure. Additionally, there are numerous challenges to the reliability of the non-Chino Basin groundwater water supplies available to the Chino Basin parties and the infrastructure that deliver them. The objectives of Activity CG is to optimize the use of all sources of water available to the parties to meet their demands despite these challenges and potentially help mitigate them.

Phase	Task	Outcomes	Watermaster Role	Are these outcomes necessary for Watermaster to Administer the Physical Solution or Comply with Other Requirements ?
S	1 - Form the Water Supply Reliability Committee, define objectives, and refine scope	Mutual understanding of the universe of water reliability concerns of parties	Work with IEUA or other activity lead	Although these actions optimize the management of all available water supplies to achieve water supply reliability, they are not required outcomes.
PN	2 - Characterize water demands, water supply plans, and existing/planned infrastructure and its limitations	Identify opportunities and limitations in the existing/planned infrastructure to meet reliability goals defined in Task 1	Work with IEUA or other activity lead	
PAE	3 – Develop planning, screening, and evaluation criteria	Conceptual design, operating plans, and costs of reliability alternatives	Work with IEUA or other activity lead	
	4 – Identify and describe water supply reliability opportunities 5 – Develop reconnaissance-level engineering design and operating plan	Project implementation and financing plan		
I	6 – Plan, design, and build water reliability projects	New water reliability projects	None	

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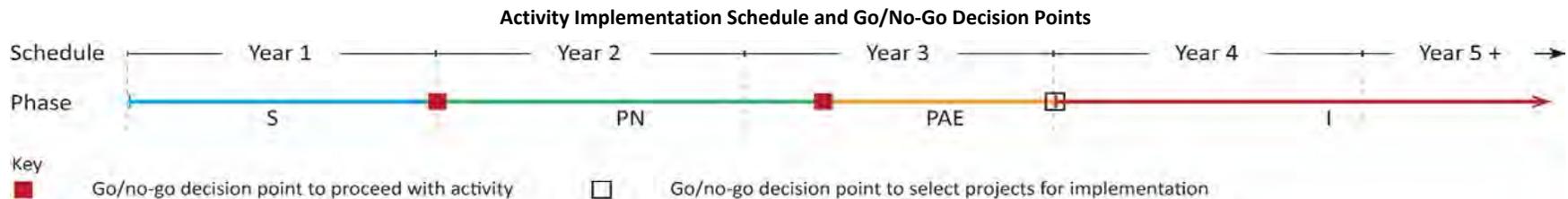


Exhibit 9
2020 OBMP Update - Activity D:

Maximize the reuse of recycled water produced by IEUA and others

Need and Objectives: The objective is to maximize the reuse of recycled water produced by the IEUA and other publicly owned treatment works (POTWs) in proximity to the Chino Basin to meet future demands and improve local water-supply reliability, especially during dry periods. Expanded reuse activities could include direct non-potable reuse (landscape irrigation or industrial uses), groundwater recharge (indirect potable reuse), and direct potable reuse. Increasing recycled water reuse is an integral part of the OBMP’s goal to enhance water supplies. The direct use of recycled water increases the availability of native and imported waters for higher-priority beneficial uses.

Phase	Task	Outcomes	Watermaster Role	Are these outcomes necessary for Watermaster to Administer the Physical Solution or Comply with Other Requirements ?
S	1 – Convene Recycled Water Projects Committee, define objectives and refine scope of work	Consensus on the objectives for optimizing and maximizing recycled water reuse	Work with IEUA or other activity lead	Although these actions optimize the management of all available recycled water supplies to achieve water supply reliability, they are not required outcomes.
PN	2 – Characterize the availability of all recycled water supplies and demands	Understanding of demand and opportunities for increased recycled water reuse	Work with IEUA or other activity lead	
PAE	3 – Develop planning, screening, and evaluation criteria	Conceptual design, operating plans, and costs of reuse projects	Work with IEUA or other activity lead	
	4 – Identify and describe potential projects for evaluation	Characterization of SNMP impacts of reuse projects		
	5 – Conduct a reconnaissance-level study for the proposed projects	Project implementation and financing plan		
I	6 – Plan, design, and construct selected projects	New recycled water reuse projects	None	

**Phase Descriptions: S = Scoping PN = Evaluate need for project PAE = Project alternative evaluation I = Implementation*

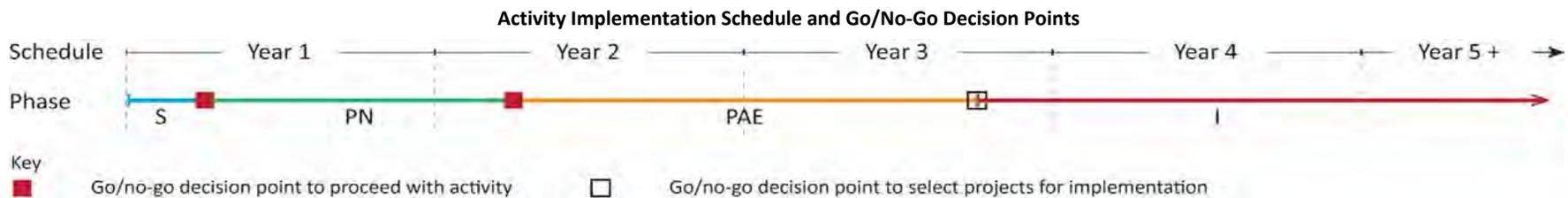


Exhibit 10

2020 OBMP Update - Activity EF

*Develop and implement a water-quality management plan to address current and future water-quality issues and protect beneficial uses AND
Develop strategic regulatory-compliance solutions that achieve multiple benefits in managing water quality*

Need and Objectives: Groundwater contaminants are present across the Chino Basin, new contaminants are being discovered, and water-quality regulations are evolving and becoming more restrictive. These trends are limiting the beneficial use of groundwater and increasing the cost of the water supply. The objectives of Activity EF are to characterize the water-quality challenges across the Chino Basin and identify the most efficient means to address the water-quality challenges, including the potential for multi-benefit collaborative projects, to ensure that groundwater can be put to beneficial use.

Phase*	Task	Outcomes	Watermaster Role	Are these outcomes necessary for Watermaster to Administer the Physical Solution or Comply with Other Requirements ?
S	1 - Convene the Water Quality Committee, define objectives, and refine scope of work	Mutual understanding of the universe of water quality concerns of parties	Convene committee	Paragraph 41 of the Judgement provides for both water quantity and quality considerations to maximize the beneficial utilization of the Basin. If water quality is not effectively managed, the Parties may not be able to utilize their water rights, which could result in negative impacts to the basin. Effective management of water quality can only be accomplished through a systematic assessment of the emerging contaminant threats to the use of groundwater resource and a development of a plan to respond to those threats.
PN	2 - Develop and implement an initial emerging-contaminants monitoring plan	Data	Prepare monitoring plan; collect and compile data	
PN	3 – Perform a water quality assessment and prepare a scope to develop and implement a <i>Groundwater Quality Management Plan</i>	Understanding of scale of problem; scope/cost to evaluate project alternatives; long-term monitoring plan	Perform characterization	
PAE	4 – Develop planning, screening, and evaluation criteria	Conceptual design and operating plans for project alternatives	Technical support role to evaluate project alternatives and characterize potential for MPI (if necessary)	
	5 – Identify and describe potential projects for evaluation	Understanding of cost to manage Chino Basin groundwater quality with and without collaborative projects	Technical support role to prepare the <i>Groundwater Quality Management Plan</i>	
	6 – Conduct a reconnaissance-level study for the proposed projects	Management plan to document project implementation plan and supporting info		
	7 – Prepare the <i>Groundwater Quality Management Plan</i>			
I	8 – Plan, design, and build water quality management projects	New groundwater quality improvement projects	None	

*Phase Descriptions: S = Scoping PN = Evaluate need for project PAE = Project alternative evaluation I = Implementation

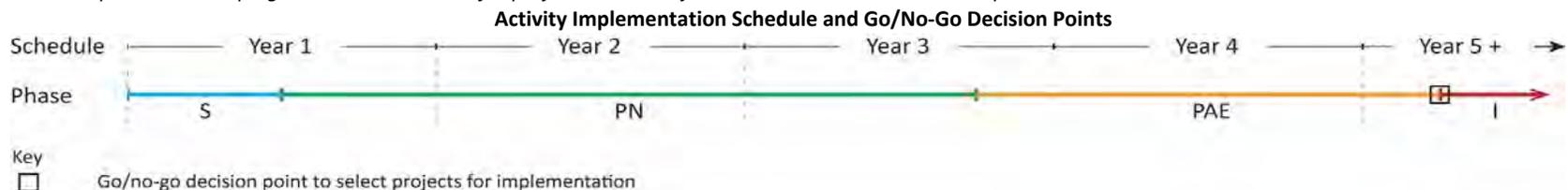


Exhibit 11
2020 OBMP Update - Activity K:

Develop a management strategy within the salt and nutrient management plan to ensure the ability to comply with the dilution requirements for recycled water recharge

Need and Objectives: The Watermaster and IEUA implement a recycled water recharge program to improve supply reliability. The Maximum Benefit SNMP requires that the recharge be diluted with other sources of low-salinity water to comply with Basin Plan Objectives. If sufficient dilution supplies are not available to comply with the dilution metric, treatment of recycled water, or other salt offset program will be required by the Regional Board. The objective of this activity is to determine if compliance with the Maximum Benefit SNMP recycled water recharge dilution requirements can be achieved under existing management plans, and if not, to develop a plan to achieve compliance.

Phase	Task	Outcomes	Watermaster Role	Are these outcomes necessary for Watermaster to Administer the Physical Solution or Comply with Other Requirements ?
S/PN	1 – Prepare projection to evaluate compliance with recycled water dilution requirements 5 – Periodically reevaluate compliance with dilution requirements	Understanding of ability to comply with the TDS and nitrate dilution requirements in the SNMP (near-term and long-term)	Perform technical work in collaboration with IEUA	Yes. Watermaster and IEUA have already begun this project and are required to complete it by the Regional Board to obtain a revised recycled water compliance program related to total dissolved solids concentrations. If approved, the Regional Board will require the study to be updated every five years to re-evaluate the need for revised compliance strategies.
PAE	2 – Identify alternative compliance strategies 3 – Evaluate alternative compliance strategies	Conceptual design, operating plans, and costs of project alternatives Report to document compliance plan and supporting info	Technical support role to IEUA to evaluate hydrogeologic impacts of project alternatives	
I	4 – Implement the selected compliance strategy	Compliance project (or other compliance action)	Level of support depends on the compliance action	

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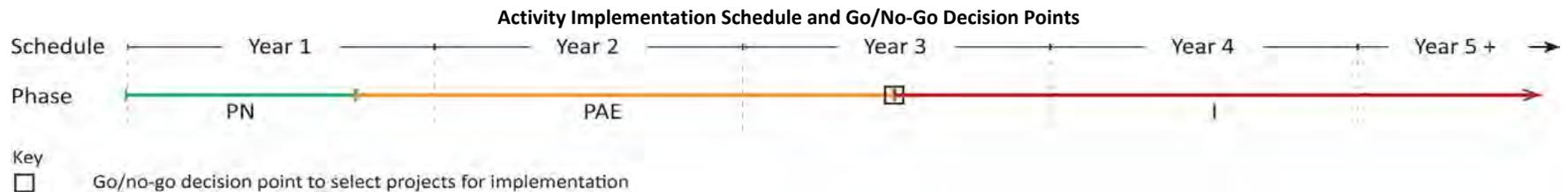


Exhibit 12

2020 OBMP Update - Activity L

Perform the appropriate amount of monitoring and reporting required to fulfill basin management and regulatory compliance

Need and Objectives: Watermaster conducts data-collection programs and prepares reports and data deliverables to comply with regulations, to fulfill its obligations under its agreements and Court orders, to comply with its requirements under CEQA, and to assess the performance of the evolving OBMP IP, including the 2020 OBMP Update. These monitoring and reporting efforts are described in the Scoping Report, and will need to continue. The objective of Activity L is to refine the monitoring and reporting requirements of Watermaster to ensure that the objectives of each requirement are being met efficiently at a minimum cost.

Phase*	Task	Outcomes	Watermaster Role	Are these outcomes necessary for Watermaster to Administer the Physical Solution or Comply with Other Requirements?
S, PN	1 – Convene Monitoring and Reporting Committee and prepare the <i>Monitoring and Reporting Work Plan</i>	Understanding of all monitoring/reporting programs <i>Monitoring and Reporting Work Plan</i> <i>Recommended Revisions to Watermaster’s Non-Discretionary Monitoring and Reporting Programs</i>	Convene committee Prepare work plan	No, however, monitoring and reporting are required to implement the Judgment and comply with regulations and Watermaster obligations. Since the beginning of OBMP implementation, Watermaster staff and engineer have continually refined the monitoring and reporting efforts to meet all requirements and achieve efficiencies and will continue to do so. This activity continues these refinement efforts in closer collaboration with the parties.
I	2 – Implement recommendations in <i>Monitoring and Reporting Work Plan</i>	Revisions to Watermaster’s non-discretionary monitoring and reporting programs Future updates to the <i>Monitoring and Reporting Work Plan</i>	Perform technical demonstrations to gain approval for revisions to the monitoring/reporting program Update work plan, when necessary	
PN, I	3 – (recurring future task) – Bi-Annual review of scope of work and cost to implement the <i>Monitoring and Reporting Work Plan</i> in the subsequent fiscal year	Update to <i>Monitoring and Reporting Work Plan</i> A scope of work and budget for the subsequent fiscal year	Update the work plan Prepare scope and budget recommendation for subsequent year	

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Activity Implementation Schedule and Go/No-Go Decision Points

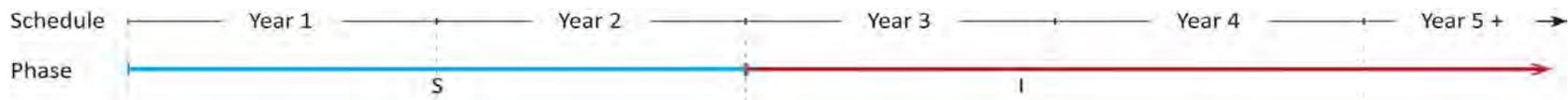


Exhibit 13

Nexus of the 2020 OBMP Update Activities to the 2000 OBMP Program Elements

2000 OBMP Program Elements (PEs)	2020 OBMP Update Activities						
	A - Increase Recharge	B - Optimize Storage and Recovery	CG - Regional Conveyance	D - Maximize RW Reuse	EF - Water Quality Mgmt.	K - Plan for SNMP Dilution Compliance	L - Monitoring
1 - Monitoring							⚓
2 - Recharge Program	⚓	●					●
3 - Impaired Areas		●			●	●	●
4 - Subsidence Mgmt.	●	●	●				●
5 - Supplemental Water		●	⚓	⚓	●		●
6 - Water Quality	●	●	●	●	⚓	●	●
7 - SNMP				●		⚓	●
8 – Storage Mgmt. Plan		●					●
9 – S&R Programs	●	⚓	●				●



Direct relationship between an activity and a PE (i.e. the activity and the PE have similar or identical objectives and thus the activity can be integrated into the existing PE)



Indirect relationship between an activity and a PE (i.e. the activity has the potential to provide benefits to PEs)

Exhibit 14
Status of Compliance with the Chino Basin Maximum-Benefit Commitments

Description of Commitment	Compliance Date – as soon as possible, but no later than	Status of Compliance
<p>1. Surface Water Monitoring Program¹</p> <p>a. Submit draft Monitoring Program to Regional Board</p> <p>b. Implement Monitoring Program</p> <p>c. Submit Draft Revised Monitoring Program to Regional Board</p> <p>d. Implement Revised Monitoring Program</p> <p>e. Submit Draft Revised Monitoring Program(s) (subsequent to that required in “c”, above) to Regional Board</p> <p>f. Implement Revised Monitoring Program(s)</p> <p>g. Annual data report submittal</p>	<p>a. January 23, 2005</p> <p>b. Within 30 days from the date of Regional Board approval of the monitoring plan</p> <p>c. 15 days from 2012 Basin Plan Amendment (BPA) approval</p> <p>d. Upon Regional Board approval</p> <p>e. Upon notification of the need to do so from the Regional Board Executive Officer and in accordance with the schedule prescribed by the Executive Officer</p> <p>f. Upon Regional Board approval</p> <p>g. April 15th</p>	<p>a. Draft work plan submitted to the Regional Board on January 23, 2005</p> <p>b. Monitoring plan initiated prior to Regional Board approval</p> <p>c. Draft work plan submitted to the Regional Board on February 16, 2012, six days after 2012 BPA approval</p> <p>d. Revised monitoring program began in December 2012 after the BPA was approved by the Office of Administrative Law on December 6, 2012</p> <p>e. No revisions requested by the Regional Board</p> <p>f. n/a</p> <p>g. All annual reports submitted by April 15 of each year since 2006</p>
<p>2. Groundwater Monitoring Program¹</p> <p>a. Submit Draft Monitoring Program to Regional Board</p> <p>b. Implement Monitoring Program</p> <p>c. Plan and schedule for demonstrating Hydraulic Control</p>	<p>a. January 23, 2005</p> <p>b. Within 30 days from the date of Regional Board approval of the monitoring plan</p> <p>c. By December 31, 2013</p>	<p>a. Draft monitoring plan submitted to Regional Board on January 23, 2005</p> <p>b. Monitoring program initiated prior to Regional Board approval</p> <p>c. Plan and schedule for demonstrating Hydraulic Control submitted in the 2014 Work Plan to the Regional Board on December 23, 2013</p>

¹ The commitments related to surface water and groundwater monitoring were revised by a Basin Plan amendment approved by the Regional Board on February 10, 2012. The commitments and status of compliance shown in this table reflect the amended commitments for surface water and groundwater monitoring.



Exhibit 14
Status of Compliance with the Chino Basin Maximum-Benefit Commitments

Description of Commitment	Compliance Date – as soon as possible, but no later than	Status of Compliance
<ul style="list-style-type: none"> d. Implement Hydraulic Control demonstration e. Submit Draft Revised Monitoring Program(s) (subsequent to that required in “a”, above) to Regional Board f. Implement revised monitoring plans (s) g. Annual data report submittal 	<ul style="list-style-type: none"> d. Upon Regional Board approval e. Upon notification of the need to do so from the Regional Board Executive Officer and in accordance with the schedule prescribed by the Executive Officer f. Upon Regional Board approval g. April 15th 	<ul style="list-style-type: none"> d. Hydraulic Control demonstration reported in all annual reports e. No revisions requested by Regional Board f. n/a g. All annual reports submitted by April 15 of each year
<ul style="list-style-type: none"> 3. Chino Desalters <ul style="list-style-type: none"> a. Chino-I Desalter expansion to 10 mgd b. Chino-II Desalter construction to 10 mgd capacity 	<ul style="list-style-type: none"> a. Prior to the recharge of recycled water b. Recharge of recycled water allowed once award of contract and notice to proceed issued for construction of desalter treatment plant 	<ul style="list-style-type: none"> a. Chino-I Desalter expansion to about 14 mgd was completed in April 2005 and operation began in October 2005; recycled water recharge began in July 2005. b. Contract for Chino-II Desalter awarded in early 2005; construction was completed to a capacity of 15 mgd, and the facility went online in June 2006.
<ul style="list-style-type: none"> 4. Submittal of future desalters plan and schedule 	<p>October 1, 2005</p> <p>Implement plan and schedule upon Regional Board approval</p>	<p>Several plans for desalter expansion have been submitted to the Regional Board since 2005. The capacity of the constructed desalter wells in 2015 was about 27 mgd (about 30,000 afy). Watermaster and the IEUA submitted a plan to the Regional Board on June 30, 2015 to construct three additional wells to achieve the ultimate capacity of 36 mgd (40,000 afy), per the Peace and Peace II Agreements. The first two wells are constructed and began operating in 2018. The construction of the the third well is anticipated to begin in late 2019.</p>



Exhibit 14
Status of Compliance with the Chino Basin Maximum-Benefit Commitments

Description of Commitment	Compliance Date – as soon as possible, but no later than	Status of Compliance
5. Recharge facilities (17) built and in operation	June 30, 2005	Watermaster and the IEUA partnered with the San Bernardino County Flood Control District and the Chino Basin Water Conservation District for completion of the Chino Basin Facilities Improvement Program to construct and/or improve eighteen recharge sites. There are currently 17 basins in the Chino Basin Groundwater Recharge Program.
6. Submittal of IEUA wastewater quality improvement plan and schedule	60 days after agency-wide, 12-month running average effluent TDS quality equals or exceeds 545 mg/l for 3 consecutive months, or after agency-wide, 12-month running average TIN equals or exceeds 8 mg/l in any month Implement plan and schedule upon approval by Regional Board	These threshold events have not occurred; therefore, a wastewater quality improvement plan has not been submitted
7. Recycled water will be blended with other recharge sources such that the volume-weighted, 5-year running average TDS and nitrate-nitrogen concentrations of recharge are equal to or less than the maximum benefit water quality objectives. a. Submit a report that documents the location, amount of recharge, and TDS and nitrogen quality of storm water recharge before the OBMP recharge improvements were constructed and what is projected to occur after the recharge improvements are completed.	Compliance must be achieved by the end of the 5 th year after initiation of recycled water recharge operations. a. Prior to initiation of recycled water recharge	a. No documentation of water quality data or quantity for storm water prior to OBMP initiation exists. Storm water has been monitored for flow, TDS, and nitrogen since 2005.



Exhibit 14
Status of Compliance with the Chino Basin Maximum-Benefit Commitments

Description of Commitment	Compliance Date – as soon as possible, but no later than	Status of Compliance
<p>b. Submit documentation of the amount and TDS and nitrogen quality of all sources of recharge and recharge locations. For storm water recharge used for blending, submit documentation that the recharge is the result of OBMP enhanced recharge facilities.</p>	<p>b. Annually, by April 15th, after initiation of construction of basins/other facilities to support enhanced storm water recharge</p>	<p>b. The volume-weighted, 5-year running average TDS and nitrate-nitrogen concentrations of Chino Basin recharge are less than the maximum-benefit water quality objectives</p>
<p>8. Hydraulic Control Failure</p> <p>a. Plan and schedule to correct loss of Hydraulic Control</p> <p>b. Achievement and maintenance of Hydraulic Control</p> <p>c. Mitigation plan for temporary failure to achieve/maintain Hydraulic Control</p>	<p>a. 60 days from Regional Board finding that Hydraulic Control is not being maintained</p> <p>b. In accordance with plan and schedule approved by the Regional Board</p> <p>c. By January 23, 2005</p>	<p>a. No mitigation plan and schedule for the loss of Hydraulic Control has been requested.</p> <p>b. Hydraulic Control has been achieved to the east of Chino-I Desalter Well 20.</p> <p>Groundwater model estimates published in 2015 indicate that production at the CCWF will achieve Hydraulic Control in the west to <i>de minimis</i> levels (<1,000 afy of groundwater flow past the CCWF well field to the Prado Basin Management Zone). Full production at the CCWF was achieved in 2016.</p> <p>Watermaster and the IEUA submitted a plan on June 30, 2015 to the Regional Board to construct three additional wells to achieve the ultimate Desalter capacity of 40,000 afy. Construction of two wells is completed and they began operating in 2018. Construction of the third well is anticipated to begin in late 2019.</p>

Exhibit 14
Status of Compliance with the Chino Basin Maximum-Benefit Commitments

Description of Commitment	Compliance Date – as soon as possible, but no later than	Status of Compliance
		c. Plan submitted to the Regional Board on March 3, 2005. No mitigation action has been triggered.
9. Ambient groundwater quality determination	July 1, 2005 and every three years thereafter	Watermaster and the IEUA have participated in the regional triennial ambient water quality determinations coordinated through Basin Monitoring Program Task Force, administered through the Santa Ana Watershed Project Authority. Watermaster and the IEUA provide their fair share of funds and substantial groundwater data for this effort.



Exhibit 15

Limitations, Compliance Metrics, and Compliance Actions for the Chino Basin Maximum-Benefit Commitments

Source Waters with Water Quality Limitations in the Chino Basin SNMP	Water Quality Limitation	Compliance Metric	Action Limit	Required Compliance Action when Compliance Metric Exceeds the Action Limit
IEUA Recycled Water (Commitment 6)	TDS: 550 mg/l	The agency-wide, 12-month running-average concentration	When the compliance metric exceeds 545 mg/l for three consecutive months	Submit to the Regional Board for approval a plan and schedule to comply with the water quality limitations within 60 days.
	TIN: 8 mg/l		When the compliance metric exceeds 8 mg/l in any month	
Combined water sources used for managed recharge: storm, imported and recycled waters (Commitment 7)	TDS: 420 mg/l Nitrate: 5 mg/l	The five-year, volume-weighted running-average concentration of all sources of managed recharge	TDS: 420 mg/l Nitrate: 5 mg/l	Prepare a salt offset plan to mitigate salt loading from recharge greater than 420 mg/l. Offsets could include desalting of recycled water or groundwater, or increased recharge of low-TDS waters.
Groundwater (Commitment 9)	TDS: 420 mg/l	The volume-weighted concentration of groundwater in the Chino North GMZ (computed every three years)	TDS: 420 mg/l	Reduce the TDS concentration of IEUA recycled water to comply with the maximum-benefit TDS objective or prepare a salt offset plan to mitigate loading from the use of recycled water than 420 mg/l.
	Nitrate: 5 mg/l		n/a	This action limit was already exceeded when the objective was established. So long as all other maximum benefit commitments are met, no compliance action is required.



Exhibit 16
Ending Balances in Managed Storage in the Chino Basin¹
(af)

Fiscal Year ending June 30	Appropriative Pool				Overlying Non-Agricultural Pool			Total Managed Storage by Parties (8) = (7) + (4)	Dry Year Yield Program Storage (9)	Total Managed Storage (10) = (9) + (8)
	Carryover (1)	Excess Carryover (2)	Local Supplemental Storage (3)	Subtotal (4)	Carryover (5)	Excess Carryover (6)	Subtotal (7)			
2000	28,911	170,342		199,253	6,541	31,031	37,572	236,825	0	236,825
2001	15,940	77,907	92,813	186,660	5,301	32,330	37,631	224,291	0	224,291
2002	13,521	70,103	87,801	171,425	5,285	33,727	39,012	210,437	0	210,437
2003	18,656	71,329	81,180	171,165	6,743	36,850	43,593	214,758	7,738	222,496
2004	21,204	70,503	80,963	172,670	7,177	40,881	48,058	220,728	26,300	247,028
2005	21,289	76,080	88,849	186,218	7,227	45,888	53,115	239,333	38,754	278,087
2006	32,062	56,062	86,170	174,294	7,227	49,178	56,405	230,699	58,653	289,352
2007	34,552	50,895	83,184	168,631	7,084	51,476	58,560	227,191	77,116	304,307
2008	41,626	83,962	81,520	207,108	6,819	45,248	52,067	259,175	74,877	334,052
2009	42,795	101,908	79,890	224,593	6,672	46,600	53,272	277,865	34,494	312,359
2010	41,263	120,897	90,133	252,293	6,934	47,732	54,666	306,959	8,543	315,502
2011	41,412	146,074	98,080	285,566	6,959	49,343	56,302	341,868	0	341,868
2012	42,614	209,981	116,138	368,733	6,914	13,993	20,907	389,640	0	389,640
2013	39,413	225,068	116,378	380,859	7,073	15,473	22,546	403,405	0	403,405
2014	41,708	224,496	123,484	389,688	6,478	12,812	19,290	408,978	0	408,978
2015	40,092	239,517	127,994	407,603	6,823	12,225	19,048	426,651	0	426,651
2016	39,733	248,013	131,522	419,267	7,195	9,949	17,144	436,411	0	436,411
2017	38,340	260,682	143,552	442,575	7,226	8,292	15,519	458,093	6,315	464,408
2018	34,582	254,221	155,018	443,821	7,198	10,775	17,973	461,795	41,380	503,174
2019	38,605	279,033	166,406	484,044	7,227	12,004	19,231	503,275	45,969	549,244

1 -- WEI. (2019). Draft Storage Management Plan.



Exhibit 17

Implementation Actions for the 2020 Optimum Basin Management Program Update by Program Element

Implementation Actions for the Next 20 Years by Program Element	Action Added in 2000* or 2020?	Schedule (Yr 1-3, 4-20, or 1-20)	Is the Action Required by Watermaster to Administer the Physical Solution or Comply with Other Regulatory or Court Requirements?	
			Yes/No	Basis
Program Element 1 - Develop and Implement Comprehensive Monitoring Program				
Watermaster will continue to conduct the required monitoring and reporting programs, including collection of: groundwater production, groundwater level, groundwater quality, ground level, surface water, climate, water supply planning, biological, and well construction/destruction monitoring data.	2000*	Years 1-20	Yes	This action included in the 2000 OBMP IP is required by the July 2000 Court Order to implement the Peace Agreement. The monitoring requirements have evolved over time. The requirements are described in Table 2 of the OBMP Update Report, which lists each Watermaster monitoring and reporting program and the associated entity (e.g. Court, Regional Board, etc.) requiring each program.
Perform review and update of Watermaster’s regulatory and Court-ordered monitoring and reporting programs and document in a work plan: <i>OBMP Monitoring and Reporting Work Plan</i> .	2020	Years 1-3	No	These actions will allow the Parties to offer more direct input in the implementation of the required monitoring programs, but it is not necessary for Watermaster to convene this process to comply with the monitoring requirements. Watermaster annually reviews ongoing monitoring to achieve efficiency.
Perform periodic review and update of the <i>OBMP Monitoring and Reporting Work Plan</i> (or other guidance documents developed by Watermaster) and modify the monitoring and reporting programs, as appropriate.	2020	Years 4-20	No	
Program Element 2 - Develop and Implement Comprehensive Recharge Program				
Continue to convene the Recharge Investigations and Projects Committee.	2000	Years 1-20	Yes	These actions included in the 2000 OBMP IP are required by the July 2000 Court Order to implement the Peace Agreement. The Peace II Agreement and the Special Referee’s December 2007 Report further establish the requirement and need for the recharge program. In its December 2007 Order, the Court ordered the implementation of the Peace II Agreement.
Complete the 2023 Recharge Master Plan Update (RMPU).	2000*	Years 1-3	Yes	
Implement recharge projects based on need and available resources.	2000	Years 1-20	Yes	
Update the RMPU no less than every five years (2028, 2033, 2038).	2000	Years 4-20	Yes	
Program Element 3 - Develop and Implement a Water Supply Plan for Impaired Areas				
n/a				As described in Section 3.2.3.2 of the 2020 OBMP Update report, there are no separate implementation actions for PE3 in the 2020 OBMP. The ongoing operation of the Chino Basin Desalters, which were the subject of the implementation actions of PE 3 in the 2000 OBMP is now part of PE 7 to Develop and Implement a Salt Management Program.
Program Element 4 - Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1				
Implement Watermaster’s Subsidence Management Plan, and adapt it as necessary.	2000*	Years 1-20	Yes	These actions included in the 2000 OBMP are required by the July 2000 Court Order to implement the Peace Agreement. The Peace II Agreement established further requirements for the continued recharge in MZ-1 through the term of the Peace Agreement.
Watermaster will arrange for the physical recharge of at least 6,500 any of Supplemental Water in MZ-1 as an annual average. Watermaster may re-evaluate the minimum annual quantity of Supplemental Water recharge in MZ-1 and may increase this quantity through the term of the Peace Agreement.	2000*	Years 1-20	Yes	



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Implementation Actions for the 2020 Optimum Basin Management Program Update by Program Element

Implementation Actions for the Next 20 Years by Program Element	Action Added in 2000* or 2020?	Schedule (Yr 1-3, 4-20, or 1-20)	Is the Action Required by Watermaster to Administer the Physical Solution or Comply with Other Regulatory or Court Requirements?	
			Yes/No	Basis
Program Element 5 - Develop and Implement Regional Supplemental Water Program				
The IEUA will maximize the reuse of its recycled water in the Chino Basin.	2000*	Years 1-20	Yes	Pursuant to the Basin Plan, IEUA and Watermaster are required to maximize recycled water reuse in the Chino-North GMZ consistent with the Maximum Benefit SNMP.
The IEUA, the TVMWD, the WMWD, and/or other Party acting as a coordinating agency will establish or expand future recycled water planning efforts to maximize the reuse of all available sources of recycled water.	2020	Years 1-20	No	Although these actions optimize the management of all available recycled water supplies to achieve water supply reliability, they are not required by Watermaster to administer the Physical Solution or other regulatory requirements. These implementation actions are included as part of the 2020 OBMP Update to complement regional planning efforts, not to duplicate them.
Watermaster will support the IEUA, the TVMWD, the WMWD, and/or others in their efforts to maximize recycled water reuse to ensure these efforts are integrated with Watermaster's groundwater and salinity management efforts.	2020	Years 1-20	No	
The IEUA, the TVMWD, the WMWD, and/or other Party acting as a coordinating agency will establish or expand future integrated water resources planning efforts to address water supply reliability for all Watermaster Parties.	2020	Years 1-20	No	Although these actions optimize the management of all available water supplies to achieve water supply reliability, they are not required by Watermaster to administer the Physical Solution or other regulatory requirements. These implementation actions are included as part of the 2020 OBMP Update to complement regional planning efforts, not to duplicate them.
Watermaster will support the IEUA, the TVMWD, the WMWD, and/or others in their efforts to improve water supply reliability to ensure those efforts are integrated with Watermaster's groundwater management efforts.	2020	Years 1-20	No	
Program Element 6 - Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management				
Re-convene the water quality committee and meet periodically to update groundwater quality management priorities.	2000*	Years 1-3	Yes	Paragraph 41 of the Judgment states: "Watermaster Control. Watermaster, with the advice of the Advisory and Pool Committees, is granted discretionary powers in order to develop an optimum basin management program for Chino Basin, including both water quantity and quality considerations. Withdrawals and supplemental water replenishment of Basin Water, and the full utilization of the water resources of Chino Basin, must be subject to procedures established by and administered through Watermaster with the advice and assistance of the Advisory and Pool Committees composed of the affected producers. Both the quantity and quality of said water resources may thereby be preserved and the beneficial utilization of the Basin maximized." (Pgs. 19-20 of the Restated Judgment) If water quality is not considered and effectively managed, the Parties may not be able to utilize their water rights, which could result in negative impacts to the basin, such as reductions in net recharge, loss of hydraulic control, and movement of contaminant plumes. Effective management of water quality in the Basin to preserve maximum beneficial use can only be accomplished through a systematic assessment of the emerging contaminant threats to the use of groundwater resources, and thoughtfully preparing a plan to respond to those threats.
Develop and implement an initial emerging contaminants monitoring plan.	2020	Years 1-3	Yes	
Prepare a water quality assessment of the Chino Basin to evaluate the need for a <i>Groundwater Quality Management Plan</i> and prepare a long-term emerging contaminants monitoring plan.	2020	Years 1-3	Yes	
Develop and implement a <i>Groundwater Quality Management Plan</i> and periodically update it.	2020	Years 4-20	Yes	
Implement long-term emerging contaminants monitoring plan.	2020	Years 4-20	Yes	
Continue to conduct investigations to assist the parties and/or the Regional Board in accomplishing mutually beneficial objectives as needed.	2000	Years 1-20	Yes	This action included in the 2000 OBMP is required by the July 2000 Court Order to implement the Peace Agreement. Recommendations for investigations will be made to Watermaster by the Water Quality Committee.
Continue to support the Parties in identifying funding from outside sources to finance cleanup efforts.	2000	Years 1-20	Yes	This action included in the 2000 OBMP is required by the July 2000 Court Order to implement the Peace Agreement. Requests for support will be made to Watermaster by the Water Quality Committee.
Implement projects of mutual interest.	2000	Years 1-20	No	The implementation of projects is not required by the 2000 OBMP IP, however Watermaster is required to support the Parties, as requested by the Committee, and as appropriate.



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Implementation Actions for the 2020 Optimum Basin Management Program Update by Program Element

Implementation Actions for the Next 20 Years by Program Element	Action Added in 2000* or 2020?	Schedule (Yr 1-3, 4-20, or 1-20)	Is the Action Required by Watermaster to Administer the Physical Solution or Comply with Other Regulatory or Court Requirements?	
			Yes/No	Basis
Program Element 7 - Develop and Implement Salt Management Plan				
Continue to implement the maximum benefit salt and nutrient management plan pursuant to the Basin Plan.	2000*	Years 1-20	Yes	Watermaster and IEUA must perform these actions pursuant to the maximum benefit SNMP in the Basin Plan.
Complete the 2020 update of TDS and nitrate projections to evaluate compliance with maximum benefit salt and nutrient management plan, and, if necessary, based on the outcome, prepare a plan and schedule to implement a salt offset compliance strategy.	2020	Years 1-3	Yes	Watermaster and IEUA have already begun this project and are required to complete it by the Regional Board to obtain a revised recycled water compliance program related to total dissolved solids concentrations.
Starting in 2025 and every five years thereafter, update water quality projections to evaluate compliance with the maximum benefit salt and nutrient management plan.	2020	Years 4-20	Yes	Watermaster and IEUA will be required to perform these actions pursuant to an anticipated amendment to the maximum benefit SNMP in the Basin Plan.
Program Element 8/9 - Develop and Implement Groundwater Storage Program <i>and</i> Develop and Implement Storage and Recovery Programs				
Complete and submit to the Court the 2020 Safe Yield Recalculation.	2000*	Years 1-3	Yes	The 2000 OBMP IP identified the ten-year recalculation requirement, which is binding on Watermaster through the 2000 Court Order. Additionally, section 4.2 of the April 2017 Court Order that followed the 2015 Safe Yield Reset further establishes the date by which the next 10-year updates must occur (2020) and affirms the 10-year update frequency.
Complete and submit to the Court the 2020 Storage Management Plan (SMP).	2020	Years 1-3	Yes	Paragraph 41 of the Judgment requires "...procedures to be established and administered through Watermaster with the advice and assistance of the Advisory and Pool Committees for the withdrawals and supplemental water replenishment of Basin water..." The SMP in the 2000 OBMP is insufficient to meet the needs of the Parties as storage already exceeds the limits in the established procedures. A new SMP is required to issue storage agreements as of July 1, 2020. And, the CEQA coverage for the existing SMP expires in July 2021.
Develop a <i>Storage and Recovery Master Plan</i> to support the design of optimized storage and recovery programs that are consistent with the 2020 Storage Management Plan and provide the Watermaster with criteria to review, condition, and approve applications in a manner that is consistent with the Judgment and the Peace Agreement.	2020	Years 1-3	Yes	Section 5.2.c.iv.(b) of the Peace Agreement states that "Watermaster shall prioritize its efforts to regulate and condition the storage and recovery of water developed in a Storage and Recovery Program for the mutual benefit of the Parties to the Judgment and give first priority to Storage and Recovery Programs that provide broad mutual benefits." Watermaster must document the basis by which it will review, condition, and approve applications in a manner that is predictable, uniform, and consistent with the Peace Agreement and the 2020 SMP. A master plan is the most efficient process to do this.
Assess losses from storage accounts based on the findings of the 2020 Safe Yield Recalculation.	2000*	Years 1-3	Yes	Section 5.2.b.xii of the Peace Agreement requires that Watermaster shall set the annual rate of loss from Local Storage for parties to the Judgment at zero through 2005. Thereafter, the rate of loss from Local Storage for parties to the Judgment will be 2% until recalculated based upon the based available scientific information. Losses will be deducted annually from each party to the Judgment's storage account. The loss rate is assessed as part of the Safe Yield recalculation.
Update the Storage Management Plan in 2025 and every five years thereafter, and when: the Safe Yield is recalculated, Watermaster determines a review and update is warranted based new information and/or the needs of the parties or the basin, and at least five years before the aggregate amount of managed storage by the parties is projected to fall below 340,000 af.	2020	Years 4-20	Yes	The 2020 SMP is based on present planning projections and technical understanding of the basin. This information can change over time and the limits established in the 2020 SMP must be revisited from time to time to ensure it meets the needs of the Parties. These triggers for updating the SMP are defined in the 2020 SMP.
Perform Safe Yield recalculation every 10 years.	2000	Years 4-20	Yes	See above basis for the 2020 Safe Yield recalculation.
Update the storage loss rate following each recalculation of Safe Yield and during periodic updates of the SMP.	2020	Years 4-20	Yes	See above basis for assessing losses based on the 2020 Safe Yield recalculation. The loss rate may also be evaluated in future SMP updates.

For the 2000 OBMP implementation actions annotated with a "", the description of the action has been modernized to reflect current terminology, reports, and requirements established after the 2000 OBMP was finalized.



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White Paper – 2020 Update to the Chino Basin
Optimum Basin Management Program

White Paper – 2020 Update to the Chino Basin Optimum Basin Management Program

Introduction

This white paper describes the Optimum Basin Management Program (OBMP) that was developed in 2000 and updated in 2007, the efficacy of the OBMP, and the need to update it. This paper is organized as follows:

- Existing OBMP – this section describes the history and accomplishments of the OBMP that was developed in 2000 and updated in 2007.
- Need to Update the OBMP – this section summarizes the need to update the OBMP.
- Benefits from Updating the OBMP – this section summarizes the benefits from updating the OBMP.
- Process to Update the OBMP – this section summarizes the process to update the OBMP.

Existing OBMP

The Chino Basin Judgment gave Watermaster the authority to develop an OBMP for the Chino Basin, including both water quantity and quality considerations. Watermaster, with direction from the Court, began the development of the OBMP in 1998 and completed it in July 2000. The OBMP was developed in a collaborative public process that identified the needs and wants of all stakeholders, described the physical state of the groundwater basin, developed a set of management goals, identified impediments to those goals, developed a series of actions that could be taken to remove those impediments and achieve the management goals, and developed agreements to implement the OBMP. The OBMP goals and the activities to achieve them were stated in the OBMP Phase I report as follows¹:

- “Goal 1 - Enhance Basin Water Supplies. This goal applies not only to local groundwater but also to all sources of water available for the enhancement of the Chino Groundwater Basin. The following activities enhance basin water supplies:
 - Enhance recharge of storm water runoff. Increasing the recharge of storm water in the basin will increase the water supplies in the Chino Basin. The relatively low TDS and nitrate concentrations of storm flow will improve groundwater quality.
 - Increase the recharge of recycled water. The recharge of recycled water above that required for replenishment obligations can be used for safe yield augmentation and/or conjunctive use.
 - Develop new sources of supplemental water. New sources of supplemental water, including surface and groundwater from other basins, can be used to meet Chino Basin area demands, reduce dependency on Metropolitan supplies, and improve drought reliability.

¹ See Optimum Basin Management Program, Phase 1 Report, August 1999, pages 3-2 to 3-4. Document is located here: [http://www.cbwm.org/docs/engdocs/OBMP%20-%20Phase%20I%20\(Revised%20DigDoc\).pdf](http://www.cbwm.org/docs/engdocs/OBMP%20-%20Phase%20I%20(Revised%20DigDoc).pdf)

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- Promote the direct use of recycled water. Promoting the direct use of recycled water for non-potable uses will make more native groundwater available for higher-priority beneficial uses.
- Promote the treatment and use of contaminated groundwater. In some parts of the basin, groundwater is not produced because of contamination problems and thus the yield of the basin may be reduced. The yield of the basin can be maintained and enhanced by the production and treatment of these contaminated waters.
- Reduce groundwater outflow. Increasing groundwater production near the Santa Ana River will increase the streambed percolation of the Santa Ana River into the groundwater basin and reduce groundwater outflow from the basin and thereby increase the supply of groundwater in the basin.
- Re-determine safe yield. Recent studies suggest that the safe yield may be greater than the 140,000 acre-ft as stated in the Judgment. The activities listed above will cause the yield to increase further. Continuing to operate the basin at 140,000 acre- ft/yr will cause groundwater in the basin to be lost to the Santa Ana River. The safe yield will be re-determined on an as-needed basis to maximize the current yield and to cause future increases in yield.
- Goal 2 - Protect and Enhance Water Quality. This goal will be accomplished by implementing activities that capture and dispose of contaminated groundwater, treat contaminated groundwater for direct high-priority beneficial uses, and encourage better management of waste discharges that impact groundwater. The following activities will protect and enhance water quality:
 - Treat contaminated groundwater to meet beneficial uses. Groundwater in some parts of the basins is not produced because of contamination problems. Groundwater quality can be protected by intercepting contaminants before they spread. Intercepted groundwater could be treated and used directly for high priority beneficial uses or injected back into the aquifer.
 - Monitor and manage the basin to reduce contaminants and to improve water quality. Actively assisting and coordinating with the Regional Board, the EPA, and other regulatory agencies in water quality management activities would help improve water quality in the basin.
 - Manage salt accumulation through dilution or blending and the export of salt.
 - Address problems posed by specific contaminants.
- Goal 3 - Enhance Management of the Basin. This goal will be accomplished by implementing activities that will lead to the optimal management of the Chino Basin. The following activities will protect and enhance the management of the basin:
 - Develop policies and procedures that will encourage stable, creative, and fair water resources management in the basin.
 - Optimize the use of local groundwater storage. Policies and procedures for local storage, cyclic storage, and other types of storage accounts will be created to maximize drought protection and improve water quality, and to create an

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- efficient system to transfer water from producers with surplus water to producers that need water.
- Develop and/or encourage production patterns, well fields, treatment and water transmission facilities, and alternative water supply sources to ensure maximum and equitable availability of groundwater and to minimize land subsidence. Develop conjunctive-use programs with others to optimize the use of the Chino Basin for in-basin producers and the people
- Goal 4 - Equitably Finance the OBMP. This goal is based on the following principles:
 - The primary source of revenue to finance the implementation will be consumers of Chino Basin groundwater.
 - Consumers in the Chino Basin must be treated equitably by passing the cost of the OBMP on a per acre-foot basis or by other methods, based on formulas to be determined.
 - Financial incentives and disincentives will be established to assure that existing groundwater is pumped out of the basin and a higher quality of water is used to replenish the basin.
 - Opportunities for creativity will be provided to the producers so that they are motivated to use their assets and abilities in the implementation of the OBMP.
 - Recover value from utilization of storage of supplemental water and from rising water outflow.”

The actions to remove the impediments to the OBMP goals were logically grouped into sets of coordinated activities called Program Elements. Each Program Element contains a list of definitive actions and an implementation schedule. The OBMP Implementation Plan consists of nine Program Elements. The relationship of the goals to the Program Elements is shown in the following table.

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Relationship of Goals and Program Elements in the 2000 OBMP

Program Element	Goal 1 - Enhance Basin Water Supplies	Goal 2 - Protect and Enhance Water Quality	Goal 3 - Enhance Management of the Basin	Goal 4 - Equitably Finance the OBMP
Program Element 1. Develop and Implement Comprehensive Monitoring Program (Comprehensive Monitoring Program)	X	X	X	X
Program Element 2. Develop and Implement Comprehensive Recharge Program (Comprehensive Recharge)	X	X	X	X
Program Element 3. Develop and Implement a Water Supply Plan for Impaired Areas (Groundwater Desalting)	X	X	X	X
Program Element 4. Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1 (Land Subsidence Management)			X	X
Program Element 5. Develop and Implement Regional Supplemental Water Program (Recycled Water Reuse)	X	X	X	X
Program Element 6. Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management (Water Quality Management)	X	X	X	X
Program Element 7. Develop and Implement Salt Management Plan (Salt and Nutrient Management Plan)	X	X	X	X
Program Element 8. Develop and Implement Groundwater Storage Program (Groundwater Storage Management)	X	X	X	X
Program Element 9. Develop and Implement Conjunctive Use Program (Conjunctive Use)	X	X	X	X

Since October 2000, Watermaster, the Judgment parties, the IEUA, the TVMWD, and the WMWD have implemented most of the actions described in the Program Elements and the OBMP goals have been partially achieved. Some of the requirements and scope of the Program Elements have changed over time as impediments to the goals have been refined by new

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information, evolving technological and institutional challenges, and funding opportunities. The accomplishments from the implementation of the 2000 OBMP are summarized below.

Program Element 1. Develop and Implement Comprehensive Monitoring Program (Comprehensive Monitoring Program)

The objectives of this Program Element are to collect the data necessary to support the implementation of the other eight Program Elements and periodic updates to the state of the basin. The types of data collected include: groundwater data from wells (location, construction, lithology, pumping, water level and water quality); surface water (measuring location, discharge, recharge and water quality); ground level (vertical displacement from remote sensing, ground survey and extensometers, horizontal displacement from ground surveys); climatic data (precipitation from terrestrial stations, PRISM, NEXRAD, bias corrected and spatially disaggregated projections of future precipitation, evaporation, ET and temperature); land use and vegetation maps; normalized difference vegetation index mapping; facilities information (drainage maps, sewershed, water systems and facilities details); aerial photography; and LIDAR surveys. All these data are in stored in a relational database, GIS or other digital formats. The monitoring requirements have been reviewed annually and modified to ensure that the monitoring program delivered the minimum data required for OBMP implementation.

Program Element 2. Develop and Implement Comprehensive Recharge Program (Comprehensive Recharge)

The objectives of this Program Element include increasing stormwater recharge to offset the recharge lost due to channel lining, increase Safe Yield and to ensure that there will be enough supplemental water recharge capacity available to Watermaster to replenish overdraft. Recharge master plans were completed in 2001, 2013, and 2018. Watermaster and the IEUA implemented the 2001 recharge master plan and constructed recharge improvements that increased storm water recharge by about 9,000 afy. Watermaster and the IEUA completed a recharge master plan update in 2013 (2013 RMPU), and they are currently in the process of designing and constructing the recommended 2013 RMPU recharge projects. When completed in 2021, the 2013 RMPU projects will increase stormwater recharge by another 4,800 afy and recycled water recharge capacity by 7,100 afy. Finally, Watermaster and the IEUA completed a recharge master plan update in 2018 that recommended no new recharge projects. In the first 20 years of OBMP implementation, stormwater recharge will have increased about 13,800 afy, and supplemental water recharge capacity will have increased by 27,600 afy. One of the findings of the 2018 recharge master plan update is that Watermaster has enough supplemental water recharge capacity to it meet its replenishment obligations through wet-water recharge through 2050. The IEUA has increased the recharge of recycled water from about 500 afy in 2000 to about 16,000 afy in 2018.

Program Element 3. Develop and Implement a Water Supply Plan for Impaired Areas (Groundwater Desalting)

The objectives of this Program Element are to maintain and enhance the Safe Yield of the basin. The groundwater desalting program was designed to replace declining agricultural groundwater

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pumping in the southern part of the basin with new groundwater pumping to meet increasing municipal water demands in the same area. The new wells used in the groundwater desalting program were constructed in strategic locations to minimize groundwater outflow to the Santa Ana River and to increase the Santa Ana River recharge into the basin. In 2000, the groundwater desalting program included a 6,000 afy treatment plant and a series of wells constructed in the southern part of the Chino Basin near the Chino Airport. Under the OBMP, as of 2018, the desalting program has grown to two treatment plants and additional wells that in aggregate pump and treat about 30,000 afy degraded groundwater, and the program will reach the OBMP objective of 40,000 afy in 2019. The groundwater desalting program facilities are owned by the Chino Basin Desalter Authority (CDA) whose members include the Cities of Chino, Chino Hills, Ontario, and Norco; the Jurupa Community Services District; the Santa Ana River Water Company; the IEUA; and the WMWD.

Program Element 4 Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1 (Land Subsidence Management)

The objectives of this Program Element include the spatial and temporal characterization of land subsidence, identification of its causes, and, where appropriate, the development and implementation of a program to minimize or abate land subsidence. In the early 2000s, Watermaster constructed specialized monitoring wells to characterize land subsidence in the City of Chino. This work yielded two things: a successful voluntary management plan specific to certain wells located within a designated “Managed Area in the City of Chino; and a monitoring and investigative plan to characterize land subsidence throughout MZ1 and a part of MZ2. As of 2018, land subsidence monitoring is ongoing, and a focused effort is underway to develop a land subsidence management plan for the northwestern part of MZ1.

Program Element 5 Develop and Implement Regional Supplemental Water Program (Recycled Water Reuse)

The objective of this Program Element is to improve the regional conveyance and availability of imported and recycled waters throughout the basin. Since 2000, the IEUA has constructed and operated a recycled water conveyance system throughout the basin enabling it to provide recycled water to its member agencies. Recycled water deliveries grew from about 3,400 afy in 2000 to about 34,000 afy in 2017. The recycled water provided by the IEUA has replaced a like amount of groundwater and imported water that would have otherwise been used for non-potable purposes. Much of the post-2000 increase in supplemental water storage in the Chino Basin is attributable to the increased availability of recycled water. Recycled water is more reliable than imported water, and thus using it in lieu of imported water has improved the sustainability of the Chino Basin and water supply reliability. Improvements in the regional conveyance and availability of imported water were not achieved.

Program Element 6 Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management (Water Quality Management)

The objectives of this Program Element are the identification of water quality trends in the basin and the impact of the OBMP implementation on them, the determination of whether point and non-point contamination sources are being addressed by water quality regulators,

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and to collaborate with water quality regulators to identify and facilitate the cleanup of soil and groundwater contamination. Since 2000, Watermaster, through its own monitoring activities and the efforts of cooperating entities, has compiled surface and ground water quality and related data, assessed water quality trends, and periodically reported its findings to the Judgment parties. Watermaster has collaborated with the Regional Board in its efforts to work with dischargers to facilitate the cleanup of soil and groundwater contamination in the basin. The 2000 OBMP Implementation Plan identified the opportunities to use the Chino Desalters to assist in the remediation of the Chino Airport and South Archibald plumes, which, as of this writing, is coming to fruition.

Program Element 7 Develop and Implement Salt Management Plan (Salt and Nutrient Management Plan)

The objectives of this Program Element are to characterize current and future salt and nutrient conditions in the basin and to subsequently develop and implement a plan to manage them. Watermaster and the IEUA developed an innovative salt and nutrient management plan (SNMP) for the Chino Basin that created assimilative capacity for total dissolved solids (TDS) and that when combined with the planned new recharge of stormwater and imported water, groundwater desalting, achievement of Hydraulic Control, and monitoring, enabled the use of recycled water without treatment to reduce the TDS concentration in recycled water. The SNMP was initiated in 2004. Ambient TDS and nitrate concentrations continue to increase in the Chino Basin due to legacy agricultural activities and current irrigation practices.

Program Element 8 Develop and Implement Groundwater Storage Program (Groundwater Storage Management)

The objectives of this Program Element are to develop and implement a storage management program that is protective of water quality, prevents overdraft, and ensures equity among the Judgment parties. This Program Element also includes the recalculation of Safe Yield. The storage management plan in the OBMP implementation plan was implemented in 2000 and revised in 2016, raising the Safe Storage Capacity for managed storage from 500,000 af to 600,000 af through June 2021. Safe yield was recalculated in 2015 and, as of this writing, has not been approved by the Court. Losses from storage were initially assigned to zero through 2005, estimated at 2 percent from 2006 through 2017, and reduced to 0.07 percent thereafter with the achievement of Hydraulic Control. Watermaster conducted a Storage Framework Investigation in 2017 and 2018 to provide technical information to support the development of a new storage management plan in 2019. Technical work has commenced to recalculate the Safe Yield in 2020.

Program Element 9 Develop and Implement Conjunctive Use Program (Conjunctive Use)

The objective of this Program Element is to develop Storage and Recovery programs that will provide broad mutual benefit to the Judgment parties and reduce the cost of OBMP implementation. Watermaster, the IEUA, the TVMWD, the WMWD, and the Metropolitan Water District of Southern California (Metropolitan) implemented a 100,000 af storage program called the Dry-Year Yield Program (DYYP) in 2005. This program runs through 2028. Other than the DYYP, no Storage and Recovery programs have been implemented since 2000. IEUA is

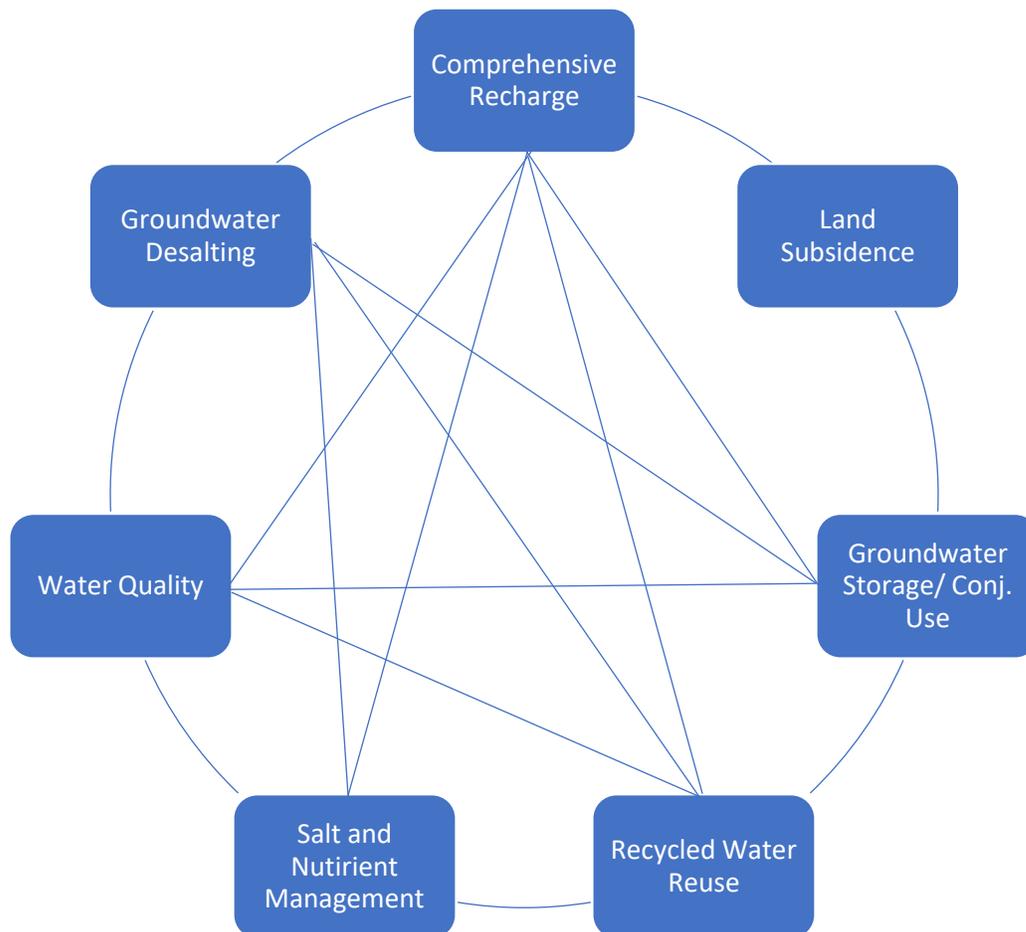
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currently working to obtain a \$207 million grant to develop and implement a Storage and Recovery program that will provide broad mutual benefit to the Judgment parties and state.

The 2000 OBMP Program Elements are highly related as is shown in the figure below. For example, the management activities associated with groundwater recharge impact land subsidence (a possible land subsidence management tool), groundwater storage and conjunctive use (recharge as a means to get water into storage), recycled water reuse (recharge as a means to get recycled and dilution water into the basin), and the salt and nutrient management plan (managed recharge must be blended to meet SNMP requirements). Furthermore, recharge impacts water quality directly, it has the potential to displace contaminant plumes, and future recharge increases with high quality storm and imported waters will be used to increase pumping rights and reduce future desalting requirements.

Relationship of the 2000 OBMP management activities



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Peace Agreements and CEQA

The 2000 OBMP and the Peace Agreement were completed in 1999 and 2000, respectively. The operable features of the OBMP were incorporated into the OBMP Implementation Plan. The OBMP Implementation Plan is Exhibit B to the Peace Agreement. The Peace Agreement was reviewed in a programmatic environmental impact report (PEIR), completed by the IEUA in July 2000.

Subsequent to the PEIR, Watermaster and the Judgment parties developed revisions to the OBMP based on the need to expand the desalting capacity to the 40,000 afy of groundwater pumping required in the OBMP Implementation Plan. Concurrently, the IEUA and Watermaster worked with the Santa Ana Regional Water Quality Control Board (Regional Board) to revise the total dissolved solids (TDS) and nitrate objectives for the Chino North Management Zone to enable the reuse of the IEUA's recycled water without desalting it for a period estimated to be at least 30 years and without impairing the beneficial use of groundwaters in the Chino and Orange County Basins (Program Element 7). One of the Regional Board's conditions for raising the TDS and nitrate objectives was the achievement of Hydraulic Control. Hydraulic Control is the elimination of groundwater discharge from the Chino North Management Zone to the Santa Ana River or its reduction to less than 1,000 afy. Hydraulic Control is a goal of the OBMP with the intent of maintaining and enhancing the Safe Yield of the basin by ensuring that agricultural groundwater pumping in the southern half of the basin will be replaced by groundwater pumping for municipal uses as the land use in that area transitions from agricultural uses to urban uses. Through extensive investigations, the expansion of desalter groundwater pumping to 40,000 afy and Reoperation were determined necessary to achieve Hydraulic Control and maintain the Safe Yield.

The Peace II Agreement was developed to implement the changes in the OBMP required to expand the desalters to 40,000 afy of groundwater pumping, to incorporate Reoperation and Hydraulic Control, and to resolve other issues. There was no change to the storage management plan in the OBMP Implementation Plan to address the implications of the reduction in storage of basin water by 400,000 af as provided for by Reoperation.

The IEUA completed and subsequently adopted a supplemental environmental impact report (SEIR) for the Peace II Agreement in 2010. The technical investigations conducted to support the expansion of desalter groundwater pumping to 40,000 afy and Reoperation also indicated that the Safe Yield of the Chino Basin had become less than that stated in the Chino Basin Judgment due to changes in cultural conditions in the watershed overlying and tributary to the Chino Basin.

Starting in 2011, Watermaster began the technical effort to recalculate the Safe Yield. This work involved updating the hydrogeologic conceptual model of the basin, updating the historical hydrology, updating and recalibrating numerical models that simulate the surface and ground water hydrology of the Chino Basin area, and projecting the surface and groundwater response of the basin to future management plans that included storage management. This work is

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documented in *2013 Chino Basin Groundwater Model Update and Recalculation of Safe Yield Pursuant to the Peace Agreement* (WEI, 2015; hereafter, Safe Yield report)².

In 2017, the IEUA adopted an addendum to the Peace II SEIR to revise the storage management plan in the OBMP through June 30, 2021. The addendum was supported with engineering work that demonstrated that the Safe Storage Capacity could be safely increased from 500,000 af to 600,000 af with the commitment that Watermaster would update the OBMP storage management plan by June 30, 2021.

Need to Update the OBMP

Understanding of the basin hydrogeology and hydrology has improved since 2000, and new water management challenges have been identified that need to be addressed to ensure long-term groundwater pumping sustainability. The strategic drivers/trends that shaped the OBMP in the late 1990s have since changed. There are several drivers and trends that will challenge the ability of the Judgment parties to rely on the OBMP environmental documentation and court approved management agreements (CAMA) to protect their collective interests in the Chino Basin and their water supply reliability. Exhibit 1 graphically illustrates these drivers, associated trends, and their basin management implications. The term “driver” as used herein corresponds to external forces that cause changes in the Chino Basin water space. Grouped under each driver are expected trends that emanate from each driver. The management implications of the drivers/trends on the present and future Chino Basin management are located on the bottom of Exhibit 1. The relationship of the drivers/trends to the management implications are shown by arcs that connect trends to implications. There may be other important drivers/trends and they will be identified in the OBMP update process. The text below summarizes the drivers, trends and management implication shown in Exhibit 1.

Climate Change

Reduced recharge. Present predictions of future precipitation indicate that precipitation patterns will change with more precipitation falling over shorter periods of time and that future droughts will be longer in duration and occur more frequently. This translates into a reduction in precipitation-based recharge to the basin and, if not mitigated, a decline in Safe Yield.

Reduced availability of imported water. Imported water supplies from the State Water Project and surface water sources in the Santa Ana River Watershed will become less reliable with climate change. The availability of imported groundwater from adjacent basins will be reduced for the same reason the Safe Yield of the Chino Basin will likely be reduced.

Legislation and Regulation

Climate science is advancing and generally reporting that the impacts of anthropogenic climate change will occur faster and be more severe than previously anticipated. New laws and regulations will be enacted to reduce greenhouse gas emissions and to mitigate climate change

² This report is located here:

http://www.cbwm.org/docs/engdocs/WEI%202013%20CBWM%20Recalculation%20Model%20Update/20151005_WEI_2013_CBWM_Recal_Model_Final_low.pdf

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impacts. These new laws and regulations will likely place additional restrictions on water use to extend existing water supplies and to protect habitat.

Sustainable Groundwater Management Act (SGMA). Pursuant to SGMA, the Chino Basin is exempt from the development of a Groundwater Sustainability Plan (GSP). Currently, Watermaster is required to annually provide limited information to the state. In the near future, it is likely that adjudicated basins will come under greater scrutiny and be required to demonstrate sustainable groundwater management like that required for non-adjudicated basins.

Conservation. New laws and regulations to increase water conservation will reduce the deep infiltration of precipitation and applied water to the basin and, unless mitigated, will decrease the Safe Yield. Conservation may also impact a party's ability to make use of its pumping rights.

Water quality. Drinking water regulations will continue to become more stringent in the future due to new information on the health effects of various chemical and pathogenic constituents and the ability to measure constituents at increasingly lower detection levels.

Salt and Nutrient Management

TDS Increases in the Basin. Watermaster and the IEUA are co-permittees for the use of recycled water in the Chino Basin. The use of recycled water could become more difficult in the future because the ambient TDS concentration in the Chino Basin is increasing and thereby reducing assimilative capacity. Increases in ambient TDS concentrations in the future will cause an increase in the TDS concentration in recycled water produced by the IEUA and will eventually cause the IEUA to desalt its' recycled water when assimilative capacity for TDS is lost in the Chino North Management Zone. When assimilative capacity for TDS is lost under the current SNMP, the IEUA will be required to desalt its recycled water to the TDS groundwater objective of 420 mg/L prior to reuse in the Chino Basin.

TDS Increases in SWP Water during Droughts. The TDS concentration in the IEUA's recycled water increased during the recent drought due to concurrent increases in TDS concentration in SWP water and almost triggered a requirement, pursuant to the current SNMP in the Basin Plan, to start the planning process to desalt recycled water. Future droughts will likely be longer in duration and occur more frequently. Unless the SNMP is updated, the requirement to implement recycled water desalting could start with the next drought.

Outside Interest in Chino Basin Operations

There is increasing interest from outside entities in how the regional water agencies and Judgment parties operate the Chino Basin. The State of California consistently enacts more restrictive laws and regulations to protect the environment and to improve habitat sustainability. Public Trust related litigation has been used to halt project development and limit water rights. The Resource Agencies, non-governmental organizations, and Santa Ana River parties are showing renewed interest in Santa Ana River discharges for habitat, water supply, and water rights.

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Grant and Low-Interest Loan Project Funding

California voters have a recent history of passing bond initiatives to support water resources projects. The accumulating debt at the national and state level will make it more difficult in the future to obtain grant and low-interest loan funding for water projects. Competition for available funding will increase. Projects approved and constructed in the next few years are more likely to obtain grants and low-interest loans over projects that are deferred into the future.

Improvements in Science and Technology

Laboratory Detection Limits. Improvements in laboratory methods will reduce the detection limits for water quality constituents.

Health Impacts of Chemicals and Pathogens. The number of regulated chemicals will increase, and regulatory standards, based on new research, will become more stringent.

Treatment Technologies. Water treatment technology will improve, enabling water agencies to treat water to more restrictive drinking water standards.

Renewable Energy. The amount of renewable energy available will increase as will the need/requirement to incorporate renewable energy into new projects.

Sensor Technology. There is an increasing trend in the development, cost-efficient availability, and deployment of new terrestrial, aircraft-borne and space-borne sensors that enable the monitoring of the basin and assessment of hydrologic and ecological trends; this will result in improved hydrologic understanding of the basin.

Transparency. Federal and state agencies are requiring that water agencies submit monitoring and other data to them and that these data be made available to the public. The proliferation of these and other publicly available data sources will lead to greater regulatory scrutiny and interest by environmental organizations

The water resource management implications of these drivers and trends for the Judgment parties include:

- reductions in Chino Basin safe yield,
- Chino Basin water quality degradation,
- increased cost of groundwater use,
- reduced imported water availability,
- imported water quality degradation,
- reduced recycled water availability and increased cost,
- recycled water quality degradation, and
- increased cost of Basin Plan compliance.

Mitigation of these implications requires a proactive integrated approach to updating the OBMP.

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The OBMP CEQA Document Needs to Be Updated

The PEIR and SEIR for the OBMP are eighteen and eight years old, respectively: knowledge of the basin's characteristics has improved since these documents were adopted, water management challenges have intensified, and environmental considerations have changed. The PEIR and SEIR are not sufficiently current to support present decision-making and further investment. The existing environmental clearance is too old to be relied upon for receiving state grant and low interest loan funding and render Watermaster and the IEUA to make decisions relying on the earlier environmental evaluations that are vulnerable to collateral attack.

Accordingly, Watermaster needs to review and update (if necessary) its groundwater management goals, articulate impediments to those goals, update the OBMP and its implementation agreement as required by Paragraph 41 of the Judgment, and complete a new CEQA process.

Benefits from Updating the OBMP

The current OBMP contains a set of management activities that improve the reliability and long-term sustainability of the Chino Basin and the water supply reliability of the Judgment parties. The OBMP was developed in 1998 and 1999, based on the goals of the Judgment parties, the hydrologic understanding of the basin, the institutional and regulatory environment, an assessment of the impediments to achieving the Judgment parties' goals, and the actions required to remove the impediments and achieve the goals.

The Judgment parties need to consider whether the OBMP goals have changed, update them, and define the impediments to achieving the goals based on the present and expected hydrologic conditions in the basin, and current and projected trends in the institutional, regulatory, and financing spaces. The parties can then develop an action plan to overcome impediments to achieve the updated OBMP goals. In the absence of an updated OBMP, it will grow increasingly difficult to maintain current and projected groundwater pumping and recycled water reuse and to utilize the unused storage capacity in the basin. An updated OBMP will provide the Judgment parties with: a program-level water resources management plan that maximizes their pumping rights, use of recycled water, use of storage space, and an updated CEQA document to provide certainty for implementation.

Process to Update the OBMP

The process for the development of the 2000 OBMP involved the description of the state of the Chino Basin, the articulation of the Judgment parties' "issues, needs and wants," the Judgment parties' development of OBMP management goals, the articulation of the impediments to achieving the goals, the description of the actions required to remove the impediments, the development of an implementation plan and an agreement among the Judgment parties to fund and implement the OBMP, and the preparation of CEQA documentation. The table below summarizes the effort for the 2000 OBMP and the OBMP update. The text that follows summarizes the update process.

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Steps involved in OBMP development

OBMP Development Step		2000	2020
1	Prepare state of the basin assessment	X	
2	Articulate “issues, needs and wants” and management goals	X	X
3	Describe impediments to management goals	X	X
4	Develop actions to remove impediments	X	X
5	Develop implementation plan	X	X
6	Develop implementation agreement	X	X
7	Prepare CEQA documentation	X	X
8	Court approval	X	X
9	Prepare financing plan		X

1. The combination of the existing 2016 State of the Basin Report, annual report of the Ground Level Monitoring Committee, 2018 Recharge Master Plan Update report, and 2018 Storage Framework report are sufficient to understand the current state of the basin. Also, the 2018 State of Basin report is currently in preparation and will be available to the Judgment parties during the OBMP update process.
2. One to two listening sessions will be held to enable the Judgment parties to articulate their “issues, needs and wants” and their recommended goals for basin management. Watermaster staff will prepare documents that combine and systematize these items and obtain concurrence from the parties that their concerns and goals expressed at these listening sessions have been captured in the planning documents.
3. One to two listening sessions will be held to describe the impediments to achieving the goals. Watermaster staff will prepare documents that combine and systematize the impediments and obtain concurrence from the parties that the impediments expressed at these workshops have been captured in the planning documents.
4. Watermaster staff will develop an initial set of actions that if taken will remove the impediments to the OBMP goals, prepare reconnaissance-level cost estimates to implement the actions, and document this work in a draft TM. Up to three listening sessions will be held to present the actions to the Judgment parties, obtain their comments and suggestions, revise the actions, and subsequently finalize the TM.
5. Watermaster staff will create a draft implementation plan for the OBMP update and document it in a draft TM. One or two listening sessions will be held to present the implementation plan to the Judgment parties, obtain their comments and suggestions, and subsequently incorporate them into the draft TM.

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6. Watermaster will provide a facilitated process for the Judgment parties to develop an agreement to implement the OBMP update.
7. The IEUA will prepare the appropriate CEQA documentation for the OBMP update.
8. Upon completion of the implementation agreement and CEQA, Watermaster and the Judgment parties will seek Court approval of the OBMP update.
9. After the CEQA document is adopted by the IEUA, the Judgment parties, the IEUA, and interested entities will prepare a financing plan.

OBMP Update Schedule

Steps 1 through 5, ending with the development of the OBMP implementation plan, will be completed in the period of January 2019 through December 2019. The development of the OBMP implementation agreement and CEQA will be completed in the period of January 2020 through June 2020. Court approval and the development of a financing plan will occur thereafter.

Appendix B

Response to Comments on the November 22, 2019
Draft 2020 OBMP Update Report

NOTE: In addition to any changes made to the 2020 OBMP Update Report based on the following comments, the text of Section 3.2.8.1 was edited to align with the final 2020 SMP published on December 11, 2019.

2020 OBMP Update Report Comments

Overlying Non-Agricultural Pool – Comments reported out of 12/12/19 Confidential Session

- 1. *The Pool requests further clarification on its comment #2 regarding conjunctive use and its definitions in the Storage Management Plan:
Page 1-4 and Page 2-1 – Conjunctive-Use. Section 1.2 and Section 2.1 talk about conjunctive-use. How is conjunctive-use defined? What is included and excluded?***

RESPONSE: Page 1-4 of the final 2020 Storage Management Plan describes the conjunctive use activities of the Parties as “storing Basin and Supplemental Waters that are in excess of their demands and subsequently recover that water as their individual needs arise”. More generally speaking, conjunctive use is the coordinated use of surface and groundwater resources such that surface water is used to augment groundwater storage (direct or in-lieu) in wet years and groundwater is used in dry years. For the SMP, this term is being used as a descriptive term, and not a term that requires definition.

City of Chino – Comments Provided by Dave Crosley (via email 12/19/19)

1. ***Typos are noted on scanned copies of pages 4, 8, 19, 24, and 35 (attached).***

RESPONSE: Typos have been noted and corrected.

2. ***The draft OBMP Update indicates that some of the described implementation actions are required for Watermaster to properly administer the Judgment. Stakeholder agreement that these actions are “required” may be the subject of some continuing discussion. We suggest the OBMP Update remain in draft form designation until such discussion has concluded.***

RESPONSE: The rationale for identifying implementation actions associated with the OBMP Update activities as “required” is described in part in Section 2 of the 2020 OBMP Update Report. During the forthcoming drafting sessions for the Implementation Plan Update, Watermaster will respond to questions about the basis for any specific action. To provide additional clarity, a new table (Exhibit 17) has been added to Section 4 of the final report that includes a description of the rationale for each required action in the management plan.

3. ***It would be helpful to expand Program Element tables 11 -17, describing proposed 2020 OBMP Implementation Actions, to include an additional column describing anticipated/estimated annual expense associated with the implementation of each activity (e.g. as presented in various tables included in the scoping report).***

RESPONSE: The cost estimates for the activity scopes of work in the 2020 OBMP Update Scoping Report (TM1) were developed based on many assumptions, and should be used as very general guidance as to potential costs based a specific scope of work. These estimates have been provided only to describe a concept, i.e. the conceptual phases envisioned by Watermaster staff/consultants in developing the Implementation Actions’ scope, and are not a fixed number or a budgetary commitment. The Committees envisioned to oversee the management processes will ultimately guide the actual efforts (i.e. scope, expense, schedule) similar to the GLMC. Estimated cost ranges have been described in TM1, which are included in the OBMP Update Report (TM2) as Appendix B. The draft OBMP IP Update (under preparation by Watermaster staff, to be released late January) will include a consolidated listing of the proposed new Implementation Actions and their associated cost estimates to assist the parties.

4. ***To the extent that information obtained from technical analyses performed in support of, and described in, the 2000 OBMP have been updated by more recent technical analyses, the more recently developed and updated information should be included in the draft 2020 OBMP Update to clarify the current understanding of basin circumstances.***

RESPONSE: We understand that your question is in regard to the concept of the Safe Storage Capacity (SSC). The SSC was part of the storage management construct in the 2000 OBMP. As described in the 2018 Storage Framework Investigation, and summarized in the 2020 OBMP Update Report, the new hydrogeologic understanding of the basin developed through implementation of the OBMP has indicated that the management construct in the 2000 OBMP is no longer valid and the concept of SSC is not included in the new 2020 Storage Management Plan. The text of Section 3.2.8.1 of the 2020 OBMP Update Report has been modified to more

clearly articulate this. This section was also edited to align with the final 2020 SMP published on December 11, 2019.

5. *The draft 2020 Storage Management Plan (SMP) indicates a reduction in net recharge is believed (based on modeling) to be caused by storage, and that Watermaster considers this impact to be mitigated by the prospective calculation of Safe Yield. [a] Related to this circumstance, the SMP indicates that storage accounts may be adjusted based on findings of the 2020 Safe Yield recalculation. As the 2020 Safe Yield recalculation is currently a work-in-progress, the suggestion that storage accounts may be adjusted is premature at this time. [b] Additionally, the OBMP Update should clarify that storage is only one of several contributing factors (cultural conditions) that may have an effect on net recharge.*

RESPONSE: 5(a) The final 2020 SMP does not state that Watermaster will adjust the storage accounts of the Parties based their water in managed storage. It does say that it will debit the storage accounts for each Storage and Recovery Program for its storage impact on net recharge and Safe Yield caused by the Storage and Recovery Program. The loss rate (reduction in net recharge caused by storage) will be established uniquely for each Storage and Recovery Program and is independent of the 2020 Safe Yield recalculation.

5(b) Comment noted. Please see the final 2020 SMP, Appendix B2, City of Chino comment number 3 and Watermaster staff response.

6. *The draft OBMP Update describes, pertinent to various Activities, the formation of new, or reconvening of past/existing, specific committees for the purpose of focusing attention on matters related to the subject Activity. These committees should have responsibility for recommending the scope and frequency of tasks pertinent to Activity implementation.*

REPOSNE: Comment noted. This is the intent for implementation of each management process, as articulated in Section 2, page 12, in the last paragraph, sub-bullet (1).

Overlying (Agricultural) Pool – Comments Provided by Robert Feenstra (12/20/19 letter)

- 7. Watermaster staff have requested comments on the draft 2020 OBMP Update Report (Technical Memorandum 2) (Update Report) by close of business on Friday, December 20, 2019. The Overlying (Agricultural) Pool (Ag Pool) has reviewed the draft Update Report, which incorporates the 2020 Storage Management Plan. The Ag Pool has consistently expressed concern regarding water storage that has been accumulating and used without adequate storage management, including contesting the Watermaster's continued approval of water storage and transfer/sale agreements of the Appropriative Pool. The 2020 Storage Management Plan is not complete as it must still be finalized and approved as part of the 2020 OBMP Update. The Ag Pool urges Watermaster to move forward expeditiously with the final adoption and approval of the OBMP Update including storage management.**

RESPONSE: Comment noted

- 8. Section 1.2 of the Update Report (at page 8) uses two new terms, "water management space" and "Chino Basin water space." These new terms should be defined.**

RESPONSE: The terms are being used as descriptive terms, and not terms that require definition.

- 9. Section 2.1. Page 11 in the Updated Report describes the attached Exhibit 3 as "a matrix, summarizing the needs and wants of the stakeholders..." But the attached Exhibit 3 does not accurately represent the Ag Pool's needs and wants as a Pool or as Pool subgroups of "Crops, Dairy, and State." The items shown in Exhibit 3 represent comments made by individuals in an early OBMP listening session/workshop that included comments from most of the other Basin stakeholders. After the initial meeting/listening session, the Ag Pool indicated to Watermaster that it preferred to report out its needs and wants as a Pool rather than as subgroups, but the Ag Pool did not complete the matrix after seeing the progress and direction of the OBMP Update process in subsequent listening sessions/workshops. Consequently, Exhibit 3 for the Ag Pool's "needs and wants" should be considered incomplete because not all needs and wants are represented and there is also mutual support between each Ag Pool subgroup (i.e., Crops, Dairy, and State) for the needs and wants indicated by the other subgroups.**

RESPONSE: Comment noted; the OAP has been invited to offer edits to Exhibit 3 that would fully represent its Issues/Needs/Wants.

- 10. Section 3.2.3.1. At page 28 in the draft Updated Report, the first sentence of the first full paragraph uses the term "brackish." However, the term "brackish" covers a wide range of total dissolved solids (TDS), from freshwater to sea water (500 to 30,000 milligrams per Liter). We suggest being more specific or defining the general range of TDS concentrations.**

COMMENT: The text will be adjusted for clarity.

Monte Vista Water District – Comments Provided by Justin Scott-Coe (12/23/19 letter)

- 11. If a subsequent and new OBMP Implementation Plan is agreed to by the Peace Agreement parties, will all parties initially be required to pay for the planning and management efforts (not including CEQA costs) envisioned in the OBMPU Update? If so, how will future project participants reimburse non-participants for their share of associated CEQA coverage and OBMPU planning and management costs (i.e., beneficiary pays)?**

RESPONSE: The development of the OBMP Update to date has assumed that the existing methodology for sharing OBMP expenses will continue. Should the parties wish to share costs differently in the future, Watermaster will assess the parties accordingly.

- 12. As part of Program Element No.6, the implementation action of "develop and implement an initial emerging contaminants monitoring plan and prepare a water quality assessment of the Chino Basin to evaluate the need for a Groundwater Quality Management Plan and prepare a long-term emerging contaminants monitoring plan" has been identified as a required Watermaster action. The language of Judgment paragraph 41 does not seem to require Watermaster to perform this action. Please identify what court approved document and its language make the said implementation action a requirement.**

RESPONSE: Paragraph 41 of the Judgment states: "*Watermaster Control. Watermaster, with the advice of the Advisory and Pool Committees, is granted discretionary powers in order to develop an optimum basin management program for Chino Basin, including both water quantity and quality considerations. Withdrawals and supplemental water replenishment of Basin Water, and the full utilization of the water resources of Chino Basin, must be subject to procedures established by and administered through Watermaster with the advice and assistance of the Advisory and Pool Committees composed of the affected producers. Both the quantity and quality of said water resources may thereby be preserved and the beneficial utilization of the Basin maximized.*" (Pgs. 19-20 of the Restated Judgment)

Paragraph 41 states that maximization of the beneficial use of the Basin requires consideration of both water quantity and water quality considerations. The Judgment could not and does not prescribe every conceivable water quality management action necessary to address every potential contaminant. It does recognize that If water quality is not effectively managed, Parties may not be able to utilize their water rights, which could result in negative impacts to the basin, such as reductions in net recharge, loss of hydraulic control, and movement of contaminant plumes. Program Element 7 of the 2000 OBMP, the salt and nutrient management plan, is an example of a water quality management program not specifically named in the Judgment that has been a successfully implemented to avoid the negative impacts of reduced/re-located pumping to avoid high-TDS and high-nitrate groundwater. Effective management of water quality in the Basin to preserve maximum beneficial use can only be accomplished through a systematic assessment of the emerging contaminant threats to the use of groundwater resources, and thoughtfully preparing a plan to respond to those threats.

- 13. *The Storage and Recovery Master Plan, found in Program Elements 8/9, should not be considered required by Watermaster, and request that the "required" label be removed from this proposed activity in the final version of the OBMP Update and associated documentation.***

RESPONSE: Please refer to the response to City of Chino comment #2.

- 14. *MVWD encourages the Watermaster to pursue the CEQA process which will allow the up to 1 million acre-feet of storage within the basin, premised in part on the completed Storage Framework Investigation.***

RESPONSE: Comment Noted. Watermaster is proceeding with the analysis of storage of up to 1 million acre-feet, consistent with the Appropriative Pool recommendation.

- 15. *Our understanding is that, while Watermaster has discretion in managing storage through agreements, the current Storage Management Plan that Watermaster has agreed and been ordered by the Court to follow is part of the OBMP Implementation Plan, which is a component of a negotiated settlement and agreement among the parties to the Peace Agreement. Therefore, adoption of a new Storage Management Plan should be seen as an amendment to this negotiated settlement/agreement and follow the process for amending the Peace Agreement. Please confirm if this understanding is correct.***

RESPONSE: Updating the Storage Management Plan, an element of the 2000 OBMP IP that is an Exhibit to the Peace Agreement, is an update of the OBMP IP. Other than the Peace Agreement's requirement of unanimous approval for amendments, as have been done on two past occasions, Watermaster is not aware of any specific procedures for amending the Peace Agreement.

- 16. *Before drafting and publishing the Draft OBMP Implementation Plan, MVWD encourages Watermaster to have dialog with Peace Agreement parties to determine what elements those parties would want included in such plan.***

RESPONSE: The implementation actions arising from the parties identification of their issues, needs, and wants have been publicly available and were last distributed during the December Advisory Committee meeting. The planned process of developing a draft Implementation Plan, as has been discussed during the Listening Sessions, and Committee meetings, includes the initiation of drafting sessions (as needed) in early February where all concerns related to the implementation plan can be openly discussed amongst all stakeholders.

City of Ontario – Comments Provided by Scott Burton (12/20/19 letter)

17. The draft Optimum Basin Management Plan (OBMP) Update report represents a comprehensive set of ideas related to water management in the region including topics such as water resources, water infrastructure, emerging water quality requirements and protecting the groundwater basin. The listening sessions and guided input have provided ample opportunity for participating stakeholders to share their ideas. It is important to note that while stakeholders have had the opportunity to comment, the disposition, vetting and deliberation of varying stakeholder views was largely deferred to a later date. Currently, the draft OBMP Update report reflects the recommendations of Watermaster staff planned for the Watermaster Board.

RESPONSE: The OBMP Update reflects stakeholder input received by Watermaster during Listening Sessions held in 2019. The document is a compilation of all input and Watermaster staff and consultants believes it represents a collective view of what could be done to manage the Basin. The document reflects Watermaster staff conclusions of which implementation actions (management processes) are required for Watermaster to perform its duties, and captures all the suggestions offered by stakeholders.

18. The draft OBMP Update report includes a list of activities whose outcomes are identified as either optional or necessary for Watermaster. A number of these activities are already underway in various retail and regional forums peripheral to Watermaster. Examples include storage and recovery, movement of water between retail agencies, regional water treatment and conveyance, water supply reliability and water quality management. While the City of Ontario (Ontario) agrees that there are necessary activities in managing this critical water resource, there are some activities defined by Watermaster staff as necessary which we think may be more at the option of the stakeholders. It is highly recommended that this definitional distinction be vetted and deliberated with the stakeholders prior to the Watermaster Board acting on the OBMP Update report.

RESPONSE: Please refer to the response to the City of Chino comment #2.

19. Ontario supports the effort to consider and update the OBMP implementation with some of these new and continued ideas and believes that, consistent with the Peace Agreement, it is a step toward the meet and confer process in the 25th year of the agreement to discuss any new or modified terms. While Watermaster staff seems to consider the draft OBMP Update report substantially complete, the most critical and in-depth phase of the OBMP implementation update is just beginning. The next step is for the stakeholders to develop an Implementation Plan and Implementing Agreement(s) that reflect the common interests of the parties to the Judgement. This may differ from what is envisioned by Watermaster staff. It is Ontario's hope that to the extent there are differences, they can be reconciled prior to Watermaster Board action on the OBMP Update report.

RESPONSE: As with prior amendments to the Peace Agreement, Watermaster staff understands that an update of the 2000 OBMP IP can be undertaken through a focused effort as to this narrow set of issues, without addressing unrelated portions of the Peace Agreement.

Watermaster staff envisions the same next steps of creating an IP Update and crafting an amendment to the Peace Agreement to move forward. The process will begin in early February, during which all the stakeholders can weigh in on their interests and concerns on each component of the implementation plan.

- 20. As we have discussed, there are activities within the draft OBMP Update report that Ontario believes are either not necessary, already underway or may be more appropriately stakeholder managed outside of the Watermaster forum. As part of determining the OBMP implementation scope, Ontario intends to consider things such as cost-benefit analysis, prioritizing available financial resources in the context of other retail agency needs, the optimal forum for various activities to occur, avoidance of redundant efforts, determination of appropriate stakeholder funding, impact on the cost to produce groundwater, and assurance towards a reliable and sustainable groundwater basin. For activities currently required by the Peace Agreements, the Stakeholders may decide to modify or otherwise update the requirement. In addition, Ontario will need to complete its internal review process and timeline to facilitate Ontario's City Council making an informed decision on behalf of the public they represent.**

RESPONSE: Comment noted.

- 21. The very important work ahead includes decisions still to be discussed, deliberated, and formalized in an amended Peace Agreement. Taking the technical ideas from draft report to a completed Implementation Plan and Implementing Agreement(s) requires flexibility, finesse and collaboration. Ontario is concerned that prioritizing the schedule above all else may compromise the result. As a next step, Ontario requests that the stakeholders be provided the opportunity to collaborate with Watermaster staff in setting a reasonable and realistic schedule and approach to enhance a successful outcome for this effort and the investments that will follow.**

RESPONSE: Watermaster has engaged the stakeholders in a process designed to meet the short term needs as well as enable long term management of the Basin for the interest of the stakeholders. The City, as all stakeholders, is encouraged to provide feedback on the schedule and approach necessary to achieve a successful outcome for this effort.

Appropriative Pool – Comments provided by Tom Harder (01/22/2020 letter)

- 22. Section 3.2.8 Program Element 8. Develop and Implement a Storage Management Program and Program Element 9. Develop and Implement Storage and Recovery Programs: In Table 10 or preceding text, please define UGRR**

RESPONSE: The term means “Uniform Groundwater Rules and Regulations”. The UGRR is now part of the Watermaster Rules and Regulations. A footnote will be added to the table for clarification.

- 23. Section 3.2.8.1 Implementation Progress Since 2000 and Ongoing Implementation Actions for the 2020 OBMP:**

Pg. 47, section that starts, “The 2020 SMP includes the following provisions specific to the Parties and Storage and Recovery Program:” Second minor bullet under second major bullet:

- *With regard to the storage management activities of the Parties:*

o ~~The~~ Any reduction in net recharge caused by storage in the FMSB is an adverse impact, and Watermaster considers this adverse impact to be mitigated by the prospective calculation of Safe Yield.

As written, this sentence makes it sound like reduction in net recharge is a given if the volume of groundwater in storage changes. Groundwater pumping patterns also impact net recharge. This is why the change indicated in red above is recommended.

RESPONSE: The text has been modified to reflect this suggested change.

- 24. Pg. 47, last bulleted item, “Watermaster will periodically review current and projected basin conditions and compare this information to the projected basin conditions...”**

It is recommended that future reviews of the impact of storage and recovery projects be done on an annual basis.

RESPONSE: Comment noted

- 25. Section 4 2020 OBMP Update Management Plan**

In general, it is noted multiple places in Section 4 reference the preparation of work plans and management plans. Program Element 1 (Table 11) describes the need to prepare an OBMP Monitoring and Reporting Work Plan. Elsewhere in the document, there are other water quality and monitoring/management work plans identified under Program Element 6, including:

- *Emerging Contaminants Monitoring Plan (Table 15 – 2nd and 3rd Row)*
- *Groundwater Quality Management Plan (Table 15 – 5th Row).*

In addition, the Salt and Nutrient Management Plan (SNMP) under Program Element 7 includes monitoring and reporting of groundwater quality data. [A] Is it possible to combine the monitoring and reporting work plans into one comprehensive document instead of multiple individual plans? [B] Are there any negative consequences of doing so? [C] Would the

existing OBMP Maximum Benefit Monitoring Program 2014 Work Plan be replaced by the OBMP Monitoring and Reporting Work Plan?**RESPONSE:**

[A] and [B] The intent is to have one single monitoring program work plan, the OBMP Monitoring and Reporting Work Plan, that covers all of the Watermaster programs listed in Table 2 of the OBMP Update Report, with the exception of the initial emerging contaminant (EC) monitoring program included in PE 6. The initial EC monitoring program is envisioned as a stand-alone work plan as it is intended to be a short-term, one-time effort to collect the data needed to evaluate ECs in the Chino Basin. PE 6 also provides for the development of a long-term EC monitoring plan as part of the development of the Groundwater Quality Management Plan. This long-term EC monitoring plan, once developed, would be incorporated into the OBMP Monitoring and Reporting Work Plan.

[C] Yes, if the Parties elect to prepare the OBMP Monitoring and Reporting Work Plan, the existing 2014 OBMP Maximum Benefit Monitoring Program Work Plan would be incorporated as part of the new work plan. Note that Watermaster and IEUA are currently working on an update to the Chino Basin maximum benefit SNMP commitments, which could result in changes to the monitoring plan described in the 2014 OBMP Maximum Benefit Monitoring Program Work Plan. Once the SNMP update work is completed and any recommended changes are approved by the Regional Board, these changes would be documented in the governing work plan.

Appendix C

2020 Optimum Basin Management Program Scoping Report

Appendix C

To: Chino Basin Watermaster Stakeholders

From: Watermaster 2020 OBMP Update Team

Subject: 2020 OBMP Update: Scoping Report – Development of Activities for Consideration

Date: Draft Part 1, July 24, 2019; Draft Part 2, August 22, 2019;
Final November 22, 2019

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1. Introduction and Background

Objectives and Purpose of the Scoping Report

The Chino Basin Watermaster (Watermaster) is in the process of updating its Optimum Basin Management Program (OBMP) and its implementation plan. The objectives of this first Technical Memorandum, *2020 OBMP Update: Scoping Report – Development of Activities for Consideration* (Scoping Report), are: (1) to describe the stakeholder process to develop the 2020 OBMP Update, (2) to document the key outcomes of the stakeholder process to date, and (3) to describe the proposed scope of work, implementation actions, schedule, and cost to perform the following eight activities developed by the stakeholders for consideration for inclusion in the 2020 OBMP Update:

1. Construct new facilities and improve existing facilities to increase the capacity to store and recharge storm and supplemental water—particularly in areas of the basin that will promote the long-term balance of recharge and discharge (Activity A).
2. Develop, implement, and optimize Storage and Recovery Programs to increase water-supply reliability, protect or enhance Safe Yield, and improve water quality (Activity B)
3. Maximize the reuse of recycled water produced by IEUA and others (Activity D).
4. Develop and implement a water-quality management plan to address current and future water-quality issues, protect beneficial uses, and develop strategic regulatory-compliance solutions to comply with new and evolving drinking water standards that achieve multiple benefits (Activity E/F).
5. Develop a management strategy within the salt and nutrient management plan to ensure the ability to comply with the dilution requirements for recycled water recharge (Activity K).
6. Identify and implement regional conveyance and treatment projects/programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence and optimize the use of all water supply sources (Activity C/G).
7. Perform the appropriate amount of monitoring and reporting required to fulfill basin management and regulatory compliance (Activity L).
8. Develop a process to provide for the equitable distribution of the costs and benefits of the OBMP Update, to encourage regional partnerships for implementation to reduce costs, and to identify and pursue low-interest loans, grants, or other external funding sources to support the implementation of the OBMP Update (Activity H/I/J).

The purpose of the Scoping Report is to provide the Parties with an understanding of the work that would need to be performed to accomplish the desired outcomes of each of the 2020 OBMP Update activities. To the extent that the scopes of work described herein are already being partly or completely performed by Watermaster or others, this Scoping Report acknowledges such. The next steps in the process to prepare the 2020 OBMP Update will focus on the review and revision of the activities scoped herein and the integration of the ongoing activities with the existing OBMP. The recommended 2020 OBMP Implementation Plan, inclusive of ongoing and new activities will be documented in a subsequent report, *2020 Optimum Basin Management Program Update Report*, and will form the foundation for the Parties to develop a final implementation plan and agreements to implement the OBMP Update.



History of the OBMP

The Chino Basin Judgment gave Watermaster the discretionary authority to develop an OBMP for the Chino Basin, including both water quantity and quality considerations. Watermaster, with direction from the Court, began developing the OBMP in 1998 and completed it in July 2000. The OBMP was developed in a collaborative public process that identified the needs and wants of all stakeholders, described the physical state of the groundwater basin, defined a set of management goals, characterized impediments to those goals, and developed a series of actions that could be taken to remove the impediments and achieve the management goals. This work was documented in the *Optimum Basin Management Program – Phase I Report*.¹

The four goals of the 2000 OBMP included:

Goal 1 – Enhance Basin Water Supplies

Goal 2 – Protect and Enhance Water Quality

Goal 3 – Enhance Management of the Basin

Goal 4 – Equitably Finance the OBMP

The actions defined by the stakeholders to remove impediments to the OBMP goals were logically grouped into sets of coordinated activities called Program Elements (PEs), each of which included a list of implementation actions and an implementation schedule. The nine PEs defined in the 2000 OBMP included:

PE 1 – Develop and Implement Comprehensive Monitoring Program. The objectives of the comprehensive monitoring program are to collect the data necessary to support the implementation of the other eight PEs and periodic updates to the *State of the Basin Report*².

PE 2 – Develop and Implement Comprehensive Recharge Program. The objectives of the comprehensive recharge program include increasing stormwater recharge to offset the recharge lost due to channel lining, to increase Safe Yield, and to ensure that there will be enough supplemental water recharge capacity available to Watermaster to meet its Replenishment Obligations.

PE 3 – Develop and Implement a Water Supply Plan for Impaired Areas. The objective of this program is to maintain and enhance Safe Yield with a groundwater desalting program that is designed (1) to replace declining agricultural groundwater pumping in the southern part of the basin with new pumping to meet increasing municipal water demands in the same area (2) to minimize groundwater outflow to the Santa Ana River, and (3) to increase the Santa Ana River recharge into the basin.

PE 4 – Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1. The objectives of this land subsidence management program are to characterize the

¹ WEI. (1999). *Optimum Basin Management Program – Phase I Report*. Prepared for the Chino Basin Watermaster. August 19, 1999. [http://www.cbwm.org/docs/engdocs/OBMP%20-%20Phase%20I%20\(Revised%20DigDoc\).pdf](http://www.cbwm.org/docs/engdocs/OBMP%20-%20Phase%20I%20(Revised%20DigDoc).pdf)

² See for example: WEI (2019). *Optimum Basin Management Program 2018 State of the Basin Report*. Prepared for the Chino Basin Watermaster. June 2018. This document is available on Watermaster’s website at <http://www.cbwm.org/>



spatial and temporal occurrence of land subsidence, to identify its causes, and, where appropriate, to develop and implement a program to minimize or stop land subsidence.

PE 5 – Develop and Implement Regional Supplemental Water Program. The objective of this program is to improve the regional conveyance and availability of imported and recycled waters throughout the basin.

PE 6 – Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management. The objectives of this water quality management program are to identify water quality trends in the basin and the impact of the OBMP implementation on them, to determine whether point and non-point contamination sources are being addressed by water quality regulators, and to collaborate with water-quality regulators to identify and facilitate the cleanup of soil and groundwater contamination.

PE 7 – Develop and Implement Salt Management Plan. The objectives of this salinity management program are to characterize current and future salt and nutrient conditions in the basin and to develop and implement a plan to manage them.

PE 8 – Develop and Implement Groundwater Storage Management Program. The objectives of this storage program are (1) to implement, and periodically update, a storage management plan that prevents overdraft, protects water quality, and ensures equity among the Parties and (2) to periodically recalculate Safe Yield. This PE explicitly defined the storage management plan, including a “Safe Storage Capacity” for managed storage of 500,000 acre-feet (af) – inclusive of local and supplemental storage and Storage and Recovery Programs.

PE 9 – Develop and Implement Storage and Recovery Programs. The objectives of the conjunctive use program are to develop Storage and Recovery Programs that will provide broad mutual benefit to the Parties and ensure that basin water and storage capacity are put to maximum beneficial use while causing no Material Physical Injury (MPI).

The PEs and their associated implementation actions were incorporated into the OBMP Implementation Plan (OBMP IP). The Chino Basin Judgment Parties (Parties) then developed an agreement—the Peace Agreement—to implement it. The OBMP IP is Exhibit B to the Peace Agreement. The Peace Agreement was reviewed in a programmatic environmental impact report (PEIR), completed by the Inland Empire Utilities Agency (IEUA) in July 2000.

For purposes of the discussions in this report, the term OBMP refers to the collective programs implemented by Watermaster and others (e.g. IEUA, the Chino Basin Desalter Authority, etc.) pursuant to the Peace Agreements, the OBMP Implementation Plan, the PEIR, and any amendments to these documents.

2007 Supplement to the OBMP IP and the Peace II Agreement

The work to develop the OBMP determined that the groundwater pumping capacity of the Chino Basin Desalters would ultimately need to be 40,000 acre-feet per year (afy) to accomplish the goals of the OBMP; however the Peace Agreement only provided for the development of the first 20,000 afy of this capacity and the Parties committed to developing expansion and funding plans the remaining capacity within five years of approval of the Peace Agreement. The Parties developed the Peace II Agreement that included provisions to expand the desalting capacity to 40,000 afy. The Peace II agreement introduced Re-



operation³ to achieve Hydraulic Control⁴ of the Chino Basin and maintain Safe Yield. Hydraulic Control is both a goal of the OBMP and a requirement of the maximum benefit salt-and-nutrient management plan (SNMP) that was developed by Watermaster and IEUA under PE 7 to enable the expansion of recycled water recharge and reuse throughout the basin under PEs 2 and 5.

The Parties executed the Peace II Agreement in 2007, which included a supplement to the OBMP Implementation Plan to expand the Chino Basin Desalters to 40,000 af of groundwater pumping, to incorporate Re-operation and Hydraulic Control, and to resolve other issues. There were no changes to the storage management plan in the OBMP Implementation Plan to address the implications of the reduction in storage of basin water by 400,000 af as provided for by Re-operation.

The IEUA completed and adopted a supplemental environmental impact report (SEIR) for the Peace II Agreement in 2010.

2017 Addendum to the 2010 Peace II SEIR

In 2016, Watermaster identified the need to update the OBMP storage management plan because the total amount of water in managed storage accounts was projected to exceed the Safe Storage Capacity limit of 500,000 af defined in the 2000 OBMP. In 2017, the IEUA adopted an addendum to the Peace II SEIR to revise the storage management plan in the OBMP through June 30, 2021. The addendum was supported with engineering work that demonstrated that the Safe Storage Capacity could be safely increased to 600,000 af with the commitment that Watermaster would update the OBMP storage management plan by June 30, 2021.

Need for the 2020 OBMP Update

As of 2019, many of the projects and management programs envisioned in the 2000 OBMP have been implemented, while some have not. The understanding of the hydrology and hydrogeology of the Chino Basin has improved since 2000, and new water-management issues have been identified that need to be addressed to protect the collective interests of the Parties and their water supply reliability. For these reasons, the Parties are updating the OBMP to set the framework for the next 20 years of basin-management activities.

A more detailed description of the development of the 2000 OBMP and the rationale for and process to prepare the 2020 OBMP Update is included in a white paper prepared for the stakeholders: *White Paper – 2020 Update to Chino Basin Optimum Basin Management Program* (OBMP White Paper). The OBMP White Paper, and all documents relevant to the 2020 OBMP Update, are available on the [Watermaster's website](#).⁵

³ Re-operation is the controlled overdraft of the Basin by the managed withdrawal of groundwater pumping for the Desalters and the potential increase in the cumulative un-replenished pumping from the 200,000 acre-feet authorized by paragraph 3 of the Engineering Appendix Exhibit I to the Judgment, to 600,000 acre-feet for the express purpose of securing and maintaining Hydraulic Control as a component of the Physical Solution.

⁴ Hydraulic Control is the elimination of groundwater discharge from the Chino North Management Zone to the Santa Ana River or its reduction to less than 1,000 af.

⁵ <http://www.cbwm.org/OBMPU.htm>



Stakeholder Process for the 2020 OBMP Update

The 2020 OBMP Update is being conducted using a collaborative stakeholder process like that employed for the development of the 2000 OBMP. A series of public listening sessions are being held by the Watermaster throughout 2019 to support the 2020 OBMP Update. The purpose of the listening sessions is to obtain information, ideas, and feedback from the stakeholders to define their issues needs and wants, their collective goals for the 2020 OBMP Update, the impediments to achieving the goals, the management actions required to remove the impediments, and an implementation plan for the management actions.

The Watermaster has established an OBMP Update Team to facilitate the stakeholder process. The OBMP Update Team is composed of Watermaster staff, Watermaster legal counsel, engineers and scientists from Wildermuth Environmental Inc. ([WEI] Watermaster’s engineering consultant), and staff from the IEUA. The OBMP Update Team is providing key information prior to and during each listening session to enable the stakeholders to provide their input on each topic discussed. The objective is for the ideas and opinions of every stakeholder to be heard. Participation in the listening sessions is critical to the development of the 2020 OBMP Update.

The work documented in this Scoping Report is based on the discussions and feedback from the first four listening sessions, which were held on the following dates:

- Listening Session #1: January 15, 2019
- Listening Session #2: February 12, 2019
- Listening Session #3: March 21, 2019
- Listening Session #4: May 16, 2019

The objectives of the first four listening sessions were (1) to confirm the need to update the OBMP, (2) to identify the issues, needs, and wants of the stakeholders, (3) to define goals for the 2020 OBMP Update, and (4) to identify the new and revised activities that could be included in the 2020 OBMP Update to remove impediments to achieving the 2020 OBMP Update goals. Listening Session memorandums were prepared to document the outcomes of Listening Sessions 1, 2, and 3. The listening session memorandums are included as appendices herein. This Scoping Report summarizes and integrates the work products of the first four listening sessions and provides new information on the recommended scope of work to implement the 2020 OBMP Update activities defined by the stakeholders.

The next series of listening sessions will focus on the review and revision of the activities scoped herein and the integration of those activities with the existing OBMP. The outcomes will be integrated into a recommended implementation plan for the 2020 OBMP Update. The second TM, *2020 Optimum Basin Management Program Update Report*, will form the foundation for the Parties to develop a final implementation plan and agreements to implement the OBMP Update.



2. Development of Activities for Consideration in the 2020 OBMP Update Drivers, Trends and Implications for Basin Management

The strategic drivers and trends that shaped the goals and activities of the OBMP in the late 1990s have since changed. There a several drivers and trends in today’s water management space that will challenge the ability of the Parties to protect their collective interests in the Chino Basin and their water supply reliability. Figure 1 characterizes the drivers and trends shaping water management, and their basin management implications for the Parties. “Drivers” are external forces that cause changes in the Chino Basin water space, such as climate change, regulations, and funding. Grouped under each driver are expected trends that emanate from that driver. For example, trends associated with climate change include reduced groundwater recharge, increased evaporation, and reduced imported water supply. The relationship of the drivers/trends to the management implications are shown by arcs that connect trends to implications. For example, a management implication of reduced groundwater recharge is the reduction of the Chino Basin Safe Yield.

The drivers, trends, and implications were first identified in the OBMP White Paper and served as the initial rationale for recommending an update to the OBMP. Figure 1 represents the final characterization of the drivers, trends, and implications, based on stakeholder input. The basin management implications that form the stakeholders’ rationale for the 2020 OBMP Update are:

- Reductions in Chino Basin Safe Yield
- Reduced imported water availability and increased cost
- Imported water quality degradation
- Chino Basin water quality degradation
- Inability to pump groundwater with existing infrastructure
- Increased cost of groundwater use
- Recycled water quality degradation
- Reduced recycled water availability and increased cost
- Increased cost of Basin Plan compliance

Issues, Needs, and Wants of the Chino Basin Stakeholders

The issues, needs, and wants of the stakeholders form the basis of the management goals of the 2020 OBMP Update and inform the identification of impediments to the goals as well as the action items to remove the impediments. Through the listening session process, 57 unique needs and wants were identified by the stakeholders. The classes of issues identified were effectively the same as the implications for basin management defined in Figure 1 and listed above. Table 1 is a matrix that summarizes: the needs and wants of the Parties, organized by basin management issue (rows) and attribution to stakeholders that share each need/want (columns).

2020 OBMP Goals

Through the assessment of the basin management issues, needs, and wants, the stakeholders concluded that the goals defined in the 2000 OBMP are still relevant today. The following is the statement of intent developed for each goal in the 2020 OBMP Update:

Goal No. 1 - Enhance Basin Water Supplies. The intent of this goal is to increase the water supplies available for Chino Basin Parties and improve water supply reliability. This goal applies to Chino Basin groundwater and all other sources of water available for beneficial use.



Goal No.2 - Protect and Enhance Water Quality. The intent of this goal is to ensure the protection of the long-term beneficial uses of Chino Basin groundwater.

Goal No.3 - Enhance Management of the Basin. The intent of this goal is to encourage sustainable management of the Chino Basin to avoid Material Physical Injury, promote local control, and improve water-supply reliability for the benefit of all Chino Basin Parties.

Goal No. 4 - Equitably Finance the OBMP. The intent of this goal is to identify and use efficient and equitable methods to fund OBMP implementation.

The far right-hand column of Table 1 (issues, needs, and wants) illustrates the nexus of the goals to the needs and wants of the Parties.

Activities for Consideration in the 2020 OBMP Update

There are physical, institutional, and financial impediments to achieving the 2020 OBMP's goals. The issues, needs, and wants of the stakeholders shown in Table 1 recognize these impediments. The stakeholders identified and described 12 new and revised activities that will be considered for inclusion in the 2020 OBMP Update. The 12 activities are listed in Table 2. Table 1 illustrates which of the 12 activities (identified by the letters A through L, as characterized in Table 2) the stakeholders believe have the potential to address each of their needs and wants. 55 of the 57 needs and wants were identified as addressed by one or more of the proposed activities.

Nexus Between the 2020 OBMP Update Goals, Their Impediments, and the Activities Recommended for Consideration

Table 3 illustrates the nexus of the OBMP goals, the impediments to achieving these goals, the activities to remove the impediments, and the potential outcomes (i.e. the implications) of implementing each activity. Table 3 also shows the nexus of each activity to addressing the issues needs and wants of the stakeholders, categorized by basin management issues. In the process of developing Table 3, it was identified that some of the activities defined in Table 2 are related enough to be combined into single activities. The 12 activities were condensed into eight activities. The statements of impediments, expected outcomes, and grouping of the activities were initially proposed by the 2020 OBMP Update Team, based on stakeholder input in Listening Sessions #1 through #3, and were subsequently revised, based on the feedback obtained from stakeholders during Listening Session #4.

The eight activity groups scoped out herein are:

1. Construct new facilities and improve existing facilities to increase the capacity to store and recharge storm and supplemental water, particularly in areas of the basin that will promote the long-term balance of recharge and discharge (Activity A).
2. Develop, implement, and optimize Storage and Recovery Programs to increase water-supply reliability, to protect or enhance Safe Yield, and to improve water quality (Activity B)
3. Maximize the reuse of recycled water produced by the IEUA and others (Activity D).
4. Develop and implement a water-quality management plan to address current and future water-quality issues, protect beneficial uses, and develop strategic regulatory-compliance solutions to comply with new and evolving drinking water standards that achieve multiple benefits (Activity EF).
5. Develop a management strategy within the salt and nutrient management plan to ensure ability to comply with dilution requirements for recycled water recharge (Activity K).



6. Identify and implement regional conveyance and treatment projects/programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence and to optimize the use of all water supply sources (Activity CG).
7. Perform the appropriate amount of monitoring and reporting required to fulfill basin management and regulatory compliance (Activity L).
8. Develop a process to provide for the equitable distribution of the costs and benefits of the OBMP Update, to encourage regional partnerships for implementation to reduce costs, and to identify and pursue low-interest loans, grants, or other external funding sources to support the implementation of the OBMP Update (Activity HIJ).



3. Scope of Work to Perform Proposed 2020 OBMP Update Activities

In this section, each of the eight activities identified by the stakeholders will be described in detail. The potential outcomes Table 3 provide the basis for intended scope of each activity. For each activity the following is described:

- Description of the activity
- Need and function of the activity
- Relationship to the PEs in the 2000 OBMP and OBMP IP
- Scope of work to perform the activity
- Schedule of the implementation actions
- Budget-level cost estimate to implement the initial implementation actions

Assumptions Applied in Defining the Scope of Work, Schedule, and Cost of the OBMP Activities

In order to develop the scope of work, schedule, and cost of the activities, the following assumptions were made:

Basis for scope of work and cost. The scopes of work and associated costs to perform the 2020 OBMP Update activities are based on the current understanding of the stakeholders’ desired outcomes as articulated during the 2020 OBMP Update listening sessions and described in Section 2 in this TM1. The precise scopes of work and costs defined in this section are preliminary and will likely change during implementation. Each scope of work includes an introductory process to refine the objectives of the activity and to refine the scope of work, schedule, and costs, as necessary. The scopes of work will be performed by engineers hired by Watermaster, the IEUA or others responsible for implementing the OBMPU.

Estimated costs of engineering services. The estimated engineering services costs are based on 2019 WEI rates and rounded to the nearest \$1,000. The estimated costs will need to be adjusted in implementation based on the final recommended scope and schedule.

Participating agency costs are not included. The staff labor costs and other direct costs incurred by agencies participating in the activities are not included in the implementation cost estimates contained herein.

Stand-alone costs. The recommended scope of work and cost for each OBMP activity were developed assuming that the activities were unrelated, or that they could be implemented independently. Once the final set of activities and scopes are selected for inclusion in the 2020 OBMP Update, the scopes will be reviewed to identify overlapping tasks among the activities and will be refined to integrate the work and reduce costs.

Existing OBMP activities. The recommended scopes of work assume that the ongoing activities of the 2000 OBMP and the 2007 supplement to the OBMP IP will continue unless otherwise specified, including, the Recharge Master Plan updates, the ongoing monitoring program under PE1, the Ground Level Monitoring Program, the maximum benefit salt and nutrient management plan, and the Prado Basin Habitat Sustainability Program.

Leveraging existing work. The recommended scopes of work and costs were assumed to leverage existing work being performed by Watermaster, such as the Safe Yield recalculation. There may be opportunities to leverage work done by other agencies to reduce the cost of implementing the recommended scope of

Appendix C



work. In implementation, when the activity objectives and scopes of work are being refined, the ability to leverage the work of others would need to be identified and considered to eliminate redundancies and reduce cost.

Schedule. Unless otherwise stated, the schedule to implement the activities is provided in a general context (Year 1, Year 2, Year 5, etc.) and not assigned to a specific start or end date.



- Maximize the recharge of recycled and storm waters where feasible. Both of these supplies are reliable: they are under local control and are less costly when compared to imported water supplies.
- Balance the recharge and discharge in every area and subarea. This provision in the Peace Agreement was included to enable Watermaster to use its discretion when conducting recharge and replenishment operations to prioritize the location and magnitude of recharge and replenishment to improve the Hydrologic Balance, to ensure pumping sustainability, and to help manage land subsidence.

To meet these objectives, the RMPUs must consider and address recharge requirement projections, the availability of storm and supplemental waters for recharge and replenishment, and the physical means to satisfy these recharge projections. To the extent that new or modified facilities are required to meet the objectives, the RMPUs include a schedule for planning, design, and construction of recharge improvements. The 2002 Recharge Master Plan and subsequent RMPUs (2010, 2013, and 2018) were developed in open and transparent planning processes that were convened by Watermaster. As part of the *2013 Amendment to the 2010 RMPU* (2013 RMPU), the RMPU Steering Committee was created to assist Watermaster and the IEUA in preparing RMPUs. The Steering Committee is open to all interested stakeholders and meets regularly through the development of RMPUs. Since the implementation of the OBMP began, Watermaster has achieved the following through the RMPU process:

- Modified seventeen existing flood retention facilities to increase diversion rates, conservation storage, and recharge, and constructed two new recharge facilities. These improvements increased average annual stormwater recharge by about 9,500 acre-feet per year (afy). The cost of these recharge improvements was about \$60 million, IEUA and Watermaster paid for about half of this cost, while the other half was funded through Proposition 13 grants and other grant programs.
- Completed the design of five recharge improvement projects, expected be completed and in operation by 2021. These projects are expected to increase average annual stormwater recharge by an additional 4,700 afy.
- Ensured sufficient supplemental water recharge capacity is available to meet its Replenishment Obligations through 2050.

The next RMPU must be completed and submitted to the Court by October 2023. Based on the alignment of the objectives of Activity A with those of the RMPU, Activity A can be accomplished through the existing RMPU process. The sections below describe the limitations of the existing RMPU process to fully achieve the objectives of Activity A and the recommended scope to refine the RMPU process to accomplish the objectives.

Need and Function of Activity A

Watermaster holds three permits with the State Water Resources Control Board (State Board) for the diversion and recharge of stormwater in trust for the Parties. The San Bernardino County Flood Control District (SBCFCD) is a co-permittee for two of these permits, 19895 and 20753. Each permit defines a maximum diversion limit and the period over which diversions are allowed to occur each year (diversion season):

- Permit 19895 has a diversion limit of 15,000 acre-feet (af) from November 1 to April 30,
- Permit 20753 has a diversion limit of 27,000 af from October 1 to May 1, and
- Permit 21225 has a diversion limit of 68,500 af from January 1 to December 31.



When combined, these permits allow up to 110,500 af per year (afy) of diversion and recharge. Exhibit A-1 shows the locations where stormwater may be diverted from the stream systems (points of diversion [PODs]) as defined in Permits 19895, 20753, and 21225. The PODs for Permit 19895 are located on the Day Creek system, the PODs for Permit 20753 are located on the San Sevaine Creek system, and the PODs for Permit 21225 are located on the San Antonio/Chino Creek, Cucamonga Creek, Day Creek, and San Sevaine Creek systems. Permit 21225 includes PODs that are also listed in Permits 19895 and 20753, but expands the allowable diversion season.

From 2003 to 2005, Watermaster, working in collaboration with the IEUA, constructed the first set of recharge facilities to exercise its rights pursuant to these permits, increasing average annual stormwater recharge by about 9,500 afy. In 2013, Watermaster and the IEUA completed the 2013 RMPU, which included five new recharge facility improvement projects. As of this writing and as stated above, Watermaster and the IEUA are completing the final design/construction of the 2013 RMPU facilities, and they should be online in 2021. These facilities are expected to increase stormwater recharge by about 4,700 afy.⁶ Upon completion of the 2013 RMPU facilities, the annual average stormwater recharge performed pursuant to these three permits is expected to be about 14,950 afy.⁷ Exhibit A-2 shows the locations of the existing and planned facilities.

Exhibit A-3 lists the existing recharge facilities and shows the historical average stormwater recharge from 2005 to 2018, the theoretical maximum supplemental water recharge capacity, and the total theoretical maximum recharge capacity for each facility. As shown in Exhibit A-3, actual stormwater recharge has averaged about 10,150 afy which is about 10 percent of the combined diversion limit and 15 percent of the total theoretical maximum recharge capacity. The differences between the historical average stormwater recharge and the diversion limit and total theoretical maximum recharge capacity suggests lost opportunity for stormwater recharge. Because the existing diversion structures are used at their instantaneous capacities, the limitations to increasing the capture and recharge of stormwater are diversion capacity and storage capacity. Hence, Activity A has been identified to increase the capacity to divert, store, and recharge additional surface water.

Availability of Additional Stormwater for Recharge

To better understand the lost opportunity for recharge, Watermaster used its Wasteload Allocation Model (WLAM) to estimate the daily stormwater discharge available for diversion over each permit's respective diversion season, based on the historical hydrology for the 63-year period of 1950 to 2012.⁸ The WLAM uses daily precipitation, evapotranspiration, evaporation, and land use data to estimate stormwater discharge entering the stream systems. The WLAM then uses hydraulic design data for channels and stormwater management facilities to computationally route the stormwater discharge through the channels, diversion works, and recharge facilities. The stormwater discharge available for diversion was determined to be the flow at the most downstream PODs on each stream system.

Exhibits A-4 and A-5 show comparisons of stormwater discharge available for diversion, model-estimated stormwater recharge, and permitted diversion limits. Exhibit A-4 presents a direct comparison of the annual time series of stormwater discharge—divided into stormwater diverted for recharge and

⁶ Note that Watermaster completed its 2018 RMPU in October 2018, but no projects were selected for implementation.

⁷ 2018 Recharge Master Plan Update. WEI. September 2018.

⁸ WEI. (2018). *Support for Watermaster's response to State Board request for information for petition for extensions of time*. Prepared for Chino Basin Watermaster. March 7, 2018.



stormwater not diverted for recharge—and the total annual diversion limit. Exhibit A-5 presents a cumulative frequency plot that shows: (1) the probability that stormwater discharge is equal to or greater than a specified value, (2) the probability that stormwater recharge for existing and projected 2013 RMPU facilities is equal to or greater than a specified value, and (3) the permitted diversion limit. Based on Exhibit A-5, the theoretical average annual stormwater discharge is estimated to be about 74,000 afy and the projected average annual stormwater recharge with existing and projected 2013 RMPU facilities is about 14,500 afy. The difference between these two values, 60,000 afy, is the lost opportunity for stormwater recharge.

Through the RMPU process, the Steering Committee analyzes and recommends projects that can increase stormwater diversion and storage capacity and increase stormwater recharge, up to the permit limit, for Watermaster approval. Historically, Watermaster and the IEUA have selected projects for implementation only if the melded unit cost of stormwater recharge resulting from the projects was less than the avoided unit cost of purchasing imported water from the Metropolitan Water District of Southern California (Metropolitan). Over time, more expensive stormwater recharge projects will meet the criteria as the unit cost of imported water increases in the future. The use of this economic criterion alone ignores the economic value of the greater reliability of stormwater relative to imported water.

Exhibit A-6 lists the potential new stormwater recharge projects evaluated in the 2018 RMPU. The locations of these potential projects are shown in Exhibit A-7. The projects listed in Exhibit A-6 were reviewed, and their capital and unit stormwater recharge costs were projected to 2023 costs, which is the year when the next RMPU is due to be completed. The unit cost of new stormwater recharge for the projects listed in Exhibit A-6 ranges from \$2,000 to \$6,000 per af, and the estimated new stormwater recharge from these projects ranges from 7 to 5,000 afy. Exhibit A-8 is a time history chart showing the historical and projected cost of imported water purchased from Metropolitan compared to the projected unit stormwater recharge cost of the projects shown in Exhibit A-6. In all cases, the projected unit cost of new stormwater recharge projects listed in Exhibit A-6 exceeds the projected cost of imported water that could be supplied by Metropolitan in 2023 (about \$900 per af⁹) and through the foreseeable future. Based on Watermaster and the IEUA's historical selection process, no project in Exhibit A-6 was recommended for implementation in the 2018 RMPU. To accomplish the goals of Activity A, the economic criteria for selecting projects would have to be reevaluated.

Supplemental Recharge Capacity

As part of the RMPU process, Watermaster also needs to ensure that there is sufficient supplemental water recharge capacity in the basin to meet Replenishment Obligations. As shown in Exhibit A-3, the theoretical maximum supplemental water recharge capacity under the current IEUA maintenance operations averages about 56,000 afy.¹⁰ For comparison, during FY 2017/18, about 47,000 af of supplemental water was recharged in spreading basins, using about 85 percent of the existing supplemental water recharge capacity. This suggests that new recharge facilities and/or improvements to existing facilities may be needed if Parties want to increase supplemental water recharge.

Balance of Recharge and Discharge

Historically, Watermaster has attempted to manage the recharge of storm and supplemental water to promote the balance of recharge and discharge. This method of managing recharge does not specifically

⁹ WEI. (2018). *2018 Recharge Master Plan Update*. Prepared for the Chino Basin Watermaster. September 2018.

¹⁰ This estimate corresponds to continuous use between maintenance periods and is less than the recharge capacity that would occur if the recharge basins were used less frequently.



address current basin management issues, such as existing land subsidence in Management Zone 1 (MZ1) and parts of MZ2 and pumping sustainability issues in the Jurupa Community Services District (JCS D) and Chino Basin Desalter Authority (CDA) well fields. There is a need to define additional criteria on how and where to conduct recharge to better address existing basin management issues.

Summary

Based on the information summarized herein, the opportunities and challenges in conducting Activity A are:

- The theoretical average annual stormwater discharge available for diversion under the existing water rights permits is about 74,000 afy ranging from 21,400 to 110,500 afy (combined permitted diversion), and existing facilities divert about 14,500 afy. The difference between these two values, about 60,000 afy, is a lost opportunity for stormwater recharge. Improvements to existing facilities and/or new facilities are required to achieve the stormwater recharge potential.
- Based on Watermaster and the IEUA's existing economic selection criteria, no new recharge projects were recommended for implementation in the 2018 RMPU. To accomplish the goals of Activity A, the economic criteria for selecting projects needs to be reevaluated.
- The criteria on how and where to conduct recharge needs to be updated to more effectively address the existing basin management issues, including: land subsidence, maintaining Hydraulic Control, and pumping sustainability.

These challenges can be addressed through the existing RMPU process. The section below describes the recommended scope for developing the 2023 RMPU, refined from past RMPU scopes, to better meet the current needs of the Parties defined for Activity A.

Scope of Work for Activity A

Activity A—Construct new facilities and improve existing facilities to increase the capacity to store and recharge surface water, particularly in areas of the basin that will promote the long-term balance of recharge and discharge—will be accomplished through the RMPU implementation process. The scope of work summarized below is for developing the 2023 RMPU and conducting the necessary work to achieve the objectives of Activity A. The scope of work consists of five tasks:

- Task 1 – Define objectives and refine scope of work
- Task 2 – Develop planning, screening, and evaluation criteria
- Task 3 – Describe recharge enhancement opportunities
- Task 4 – Develop reconnaissance-level engineering design and operating plan
- Task 5 – Plan, design, and construct selected recharge projects

Task 1 – Define objectives and refine scope of work. The objective of this task is to obtain consensus on the objectives of Activity A and the impediments this activity is meant to overcome. During this process, the Steering Committee will address questions raised by stakeholders during the OBMP Update, such as:

- (1) Should Watermaster have a process in Activity A to identify vacant land for purchase even if there is no specified project or it becomes available outside the “call for projects” window of the RMPU process?
- (2) Should Watermaster have a process to encourage developers to utilize infiltration to manage on-site runoff pursuant to the Municipal Storm (MS4) permit?

A detailed scope, cost, and schedule will be prepared to meet the defined objectives. Two meetings will be conducted (1) to define the objectives and impediments and (2) to define the scope, cost, and schedule.



Task 2 – Develop planning, screening, and evaluation criteria. The objectives of this task are to develop criteria to determine how and where new recharge capacity can be constructed and to evaluate and select a subset of projects to evaluate. The criteria developed to evaluate potential projects in Task 4 will include qualitative criteria, such as reliability, and quantitative criteria that include business case evaluations, expressed as net present value, unit cost, and others. The recharge projects with the best cost-benefit ratio at the time were constructed in earlier recharge improvement efforts in the 2000 OBMP implementation. The types of new stormwater projects required to meet the objectives described herein and subsequently refined in Task 1 will likely be more expensive than the avoided cost of purchasing imported water from Metropolitan. The Steering Committee will (1) review and refine criteria used in past RMPUs and (2) review the current projected basin management challenges to develop “smart” recharge criteria. The smart recharge criteria will ensure that project designs and operations are complementary to other Watermaster management activities, such as protecting and enhancing Safe Yield, management of land subsidence, promoting pumping sustainability, ensuring dilution supplies to comply with recycled water recharge permits, water quality improvement, maintenance of Hydraulic Control, and others.

Included in this scope is estimating future Replenishment Obligations, updating the estimated supplemental water recharge capacity, and characterizing the availability of imported and recycled water. Future Replenishment Obligations will be estimated in the 2020 Safe Yield recalculation effort and will be subsequently used as a criterion for planning supplemental water recharge. Two meetings will be scheduled to review and refine the criteria with the stakeholders.

Task 3 – Describe recharge enhancement opportunities. The objectives of this task are to identify potential projects, to screen them using the criteria developed in Task 2, and to subsequently develop a set of stormwater and supplemental water recharge projects for detailed evaluation. Two meetings will be conducted: (1) to develop a list of potential projects that can be implemented and (2) to review the screening of the projects defined during the first meeting and select projects to evaluate in Task 4.

Task 4 – Develop reconnaissance-level engineering design and operating plan. The objective of this task is to characterize the performance and costs of new recharge projects—individually and as a group/system. A reconnaissance-level engineering design and operating plan will be developed for each project. Each project design will include the approximate size, location, and alignment of major stormwater utilities, and will describe any potential implementation barriers. A cost opinion, stormwater recharge performance, and supplemental water recharge capacity will be determined for each project. The task includes evaluating the projects based on the criteria developed in Task 2 and recommending a set of projects for implementation. The deliverable of this task will be the *2023 Recharge Master Plan Update* report, summarizing the work performed under Tasks 1 through 4, and it will include an implementation plan and a plan to finance the preliminary design and CEQA documentation. Four meetings will be conducted: (1) to review the designs and estimated benefits of the projects, (2) to review the evaluation of the projects based on the criteria developed in Task 2 and the recommended list of projects for implementation, (3) to review the implementation plan, and (4) to review the 2023 RMPU report.

Task 5 – Plan, design, and construct selected recharge projects. The objective of this task is to implement the recommendations from the 2023 RMPU report. This task includes (1) developing and implementing necessary agreements between participating Parties, (2) preparing the preliminary design of the recommended recharge projects, (3) preparing the environmental documentation for the recommended recharge projects that will tier off the 2020 OBMP Update PEIR, (4) preparing a financial plan for constructing the recommended recharge projects, (5) preparing final designs of the recommended recharge projects, (6) acquiring necessary permits for constructing and operating the recommended recharge projects, and (7) constructing the recommended recharge projects.



Future Tasks – Repeat Tasks 1 through 5 every five years as required by the Court

Cooperative Efforts with Appropriate Entities to Implement Activity A

The IEUA, Watermaster, the CBWCD, and the SBCFCD are partners in conducting recharge in the Chino Basin. The four agencies have an agreement to implement the existing recharge program. They also collaborate to update the recharge master plan at least every five years with the guidance of the Steering Committee. Activity A will be achieved within the existing RMPU process and will maintain the existing institutional organization as follows:

- **Watermaster:** Leads the stakeholder process to define the objectives in Task 1, to develop the criteria in Task 2, and to estimate the recharge benefit of the projects using the its existing modeling tools in Task 4.
- **IEUA:** Leads the development of the list of projects for evaluation in Task 3 and preparing cost opinions for the projects in Task 4. Additionally, the IEUA will collaborate with Watermaster in leading Tasks 1 and 2.
- **CBWCD:** Collaborates with Watermaster in leading Tasks 1 and 2. The CBWCD is responsible for reviewing and permitting all of the engineering designs developed under Task 5 for their facilities.
- **SBCFCD:** Collaborates with Watermaster in leading Tasks 1 and 2. The SBCFCD is responsible for reviewing and permitting all of the engineering designs developed under Task 5 for their facilities.

The four Parties will continue to collaborate in the RMPU process and in conducting recharge in the Chino Basin.

Implementation Actions, Schedule, and Costs for Activity A

The recommended schedule to complete the scope of work described herein is described below:

Year one (FY 2020/21):

- Convene Steering Committee.
- Conduct a meeting regarding “current conditions” of groundwater recharge.
- Define objectives of Activity A and the RMP update (Task 1):
 - Define scope and schedule of RMP update.
- Develop criteria on how and where to conduct recharge (Task 2).
- Develop new criteria for evaluation and selection of recharge projects (Task 2).

Year two (FY 2021/22):

- Develop list of projects for evaluation (Task 3).
- Conduct a reconnaissance-level engineering study for the proposed projects (Task 4).

Year three (FY 2022/23):

- Select project(s) for implementation (Task 4).
- Prepare 2023 RMPU Report (Task 4).

Year four (FY 2023/24):

- Watermaster approves the 2023 RMPU Report by October 2023.
- Watermaster and the IEUA project implementation agreement. The objective of this agreement is to define the roles of Watermaster and the IEUA in the planning, permitting, design, and implementation of the projects, and the financing plan.



- SBCFCD and CBWCD Agreement. The Parties to this agreement include the SBCFCD, Watermaster, and the IEUA and potentially others. The objectives of this agreement are to define the terms and conditions to jointly explore and construct new conservation works on SBCFCD and IEUA properties and to conduct flood control and water conservation activities utilizing those same conservation works. The agreement will define the project sites, facility improvements, construction and maintenance cost allocations, user or license fees, operating criteria (with flood control purposes taking priority over conservation for joint use facilities), and other conditions. The SBCFCD will require Watermaster and the IEUA to fund SBCFCD engineering studies and analyses to demonstrate that all conservation improvements at flood control facilities will not negatively impact the operation and maintenance of SBCFCD facilities or reduce the level of the designed flood protection. All engineering studies and analyses shall be done and provided to SBCFCD for review and approval, and an encroachment permit shall be obtained from SBCFCD before the construction of any conservation improvements can commence. The SBCFCD will require that all applicable Environmental Agencies' permits and approvals be obtained and submitted to the SBCFCD before an encroachment permit can be issued.
- Agreement with property owners. Develop an agreement among a property owner, the IEUA, and Watermaster on the terms for use of land where land is required for a recharge project.
- In addition to these agreements, Watermaster will determine whether it is necessary to submit a Petition for Change with the State Board for selected projects that are not included in the Watermaster's current diversion permits. The duration of the Petition for Change process is unknown but would likely be more than one year.

Years five and six (FY 2024/25 and FY 2025/2026):

- Preliminary design of recommended projects. The level of design will be such that it enables the preparation of environmental documentation pursuant to CEQA, provides information for identifying and acquiring construction and related permits, and produces updated New Yield and cost estimates.
- Prepare environmental documentation for recommended projects. CEQA will cover the recommended projects at the project level and the deferred projects at a programmatic level, based on the project descriptions developed in Task 5. This documentation will tier off from the 2020 OBMP Update programmatic environmental impact report. Watermaster will conduct a MPI analysis in parallel with the CEQA process.
- Begin 2028 RMPU process (first year of the 2028 RMP update).

Years seven and eight (FY 2026/27 and FY 2027/28):

- Prepare Final Designs and Acquire Necessary Permits for the Selected Projects.

Years nine and ten (FY 2028/29 and FY 2029/30):

- Construct 2023 RMPU Selected Projects.

Exhibit A-9 shows the estimated budget-level engineering cost to complete Tasks 1 through 4, which is about \$575,000. The cost of Task 5 cannot be estimated until the completion of Task 4. Exhibit A-9 also shows how Tasks 1 through 4 and their associated costs will be scheduled over the first three years of implementation. Note that because Watermaster and the IEUA are required to complete the RMPU at least every five years, the cost to perform the Activity A scope of work is not a new cost to the Parties.



Activity B

Description of Activity B

Activity B defined by the stakeholders is:

Develop, implement, and optimize Storage and Recovery Programs to increase water-supply reliability, protect or enhance Safe Yield, and improve water quality.

The objective of Activity B is to develop and implement Storage and Recovery Programs in the Chino Basin that provide defined benefits to the Parties and the basin.

Through the listening session process, the stakeholders identified the following desired outcomes from Activity B:

- Storage and Recovery Programs that are optimized: to protect/enhance Safe Yield, to improve water quality, to avoid land subsidence, to ensure balance of recharge and discharge, and to maintain Hydraulic Control.
- Leverage unused storage space in the basin.
- Reduce reliance on imported water, especially during dry periods.
- Potentially provide opportunity for outside funding sources to implement the OBMP Update.

The Judgment recognized the existence of unused storage space within the Chino Basin that could be used by a person or a public entity to store water for subsequent beneficial use. The Judgment requires that the use of such storage capacity be undertaken only under Watermaster control and regulation to protect all stored water, to protect Safe Yield, and to avoid adverse impacts to groundwater pumpers. The Judgment prioritizes the use of storage space by the Parties over the use of storage space for the export of stored water.

The Peace Agreement defined a " Storage and Recovery Program" as the use of available storage capacity in the Chino Basin by any person to store supplemental water in the basin pursuant to a Groundwater Storage Agreement with Watermaster, including the right to export that water for use outside the basin.

Activity B has similar objectives and desired outcomes to those of PE 9 of the 2000 OBMP—*Develop and Implement Storage and Recovery Programs*. PE 9 was included in the 2000 OBMP to implement Storage and Recovery Programs to “benefit all Parties in the basin and ensure that basin waters and storage capacity are put to maximum beneficial use while causing no MPI to any producer or the basin.” The implementation plan for PE 9 was combined with PE 8—*Develop and Implement Groundwater Storage Management Program*—in the OBMP IP and Peace Agreement.

The OBMP IP included a storage management plan that allowed the Parties to utilize a 500,000 af band of storage space in the basin and requires them to mitigate adverse impacts from its use. In 2017, the IEUA adopted an addendum to the 2010 Peace II SEIR that provided a temporary increase in the useable storage space to 600,000 af through June 30, 2021. Pursuant to the OBMP IP, Watermaster shall: (1) prioritize its efforts to regulate and condition Storage and Recovery Programs for the mutual benefit of the Parties and (2) give first priority to proposed Storage and Recovery Programs that provide broad mutual benefits to the Parties.



In 2018, Watermaster conducted a *Storage Framework Investigation*,¹¹ where future projections of the use of storage were estimated and evaluated for potential MPI. The *Storage Framework Investigation* projected that MPI could occur due to the implementation of prospective Storage and Recovery Programs and described potential facilities and operating concepts that, if implemented, would minimize potential MPI. The *Storage Framework Investigation* is being used to inform the development of the *2020 Storage Management Plan*. The *2020 Storage Management Plan* is in preparation, and when completed, it will inform the development of future Storage and Recovery Programs.

Need and Function of Activity B

Activity B describes the Parties’ desires to implement “optimized” Storage and Recovery Programs that avoid potential MPI and provide benefits, such as:

- *Increased water-supply reliability.* Imported water is stored in the basin during times of imported-water surplus and can be recovered during times of water-supply shortage (e.g. prolonged drought, imported water shortages/outages, etc.) to supplement local supplies.
- *Protected or enhanced Safe Yield.* The operation of Storage and Recovery Programs needs to be implemented to minimize reductions in net recharge and potentially increase net recharge to the basin.
- *Improvements to water quality.* Recovery operations could be programmed to occur in areas of impaired water quality, thereby removing groundwater contaminants. This would require groundwater treatment facilities. Supplemental water recharge may provide a slight water quality improvement.
- *Reduced cost of OBMP implementation.* Leave behind water, revenue, credits, investment in facilities, external funding, or other contributions produced by a Storage and Recovery Program can be used to offset Watermaster assessments and provide other benefits.

Watermaster, the IEUA, and the Parties have tried to develop and implement Storage and Recovery Programs since the Peace Agreement came into effect in 2000. The first attempt included the issuance of a request for proposals, declaring that the Chino Basin was ready to develop Storage and Recovery Programs with water agencies outside the basin. Very few proposals were received, and the proposals that were submitted did not provide the benefits desired by the Parties.

Metropolitan developed a program called the Dry-Year Yield Program (DYYP) and offered it to its member agencies in the Metropolitan service area. As key feature of the DYYP, Metropolitan offered funding to construct and operate new facilities that would enable Metropolitan to store imported water in a groundwater basin and recover it when needed. In 2003, Metropolitan, the IEUA, Watermaster, and the TVMWD entered into an agreement to implement a 100,000 af of DYYP in the Chino Basin that was consistent with the DYYP parameters required by Metropolitan. The DYYP is the only Storage and Recovery Program that has been implemented within the Chino Basin since 2000, and the DYYP agreement expires in 2028. As part of the DYYP, the Parties received compensation from Metropolitan for the construction and operation of numerous facilities across Chino Basin that are used for recovery operations during “take” cycles of the DYYP. The Parties can use these facilities for their own purposes at all other times. In 2010, Metropolitan, the IEUA, Watermaster, and the TVMWD began discussions to expand the DYYP to 150,000 af of storage but decided against expansion. The Parties have expressed that the DYYP presented an opportunity to fund certain capital improvement projects that added groundwater

¹¹ WEI. (2019). *Storage Framework Investigation – Final Report*. Prepared for the Chino Basin Watermaster. October 2018, revised January 2019.



pumping capacity; however, the anticipated long-term benefits, such as improved water-supply reliability through dry periods, were not sufficiently planned for and agreed upon during the development of DYYP and ultimately were not realized by the Parties.

Currently, there are two new efforts underway to develop Storage and Recovery Programs: (1) the Chino Basin Water Bank being developed by some of the Parties and the IEUA and (2) the Chino Basin Program (CBP) being led by the IEUA. The latter is in response to a \$207 million conditional funding opportunity awarded to IEUA under Proposition 1 for the construction and operation of storage programs that create environmental benefits in the Sacramento-San Joaquin Delta, while providing local water quality benefits.

Summary

What is common to all past efforts to develop and implement Storage and Recovery Programs is the belief that Chino Basin storage is a valuable resource that can and should be leveraged to benefit the Parties. What was missing in past efforts was an initial effort to clearly articulate the objectives of the Parties and the required benefits to be realized from Storage and Recovery Programs.

Activity B should follow a more deliberate planning process that will enable the Parties and their storing partners to select and implement Storage and Recovery Programs that achieve the objectives of the Parties and the desired benefits. To do this, the planning process should answer the following questions:

- (1) Why do the Parties want to conduct Storage and Recovery Programs? And, what are the Parties' objectives for Storage and Recovery Programs?
- (2) What were the obstacles to implementing Storage and Recovery Programs in the past? How do we avoid or overcome them in the future?
- (3) What are the benefits desired by the Parties? How can such benefits be quantified?
- (4) What are the potential source waters for Storage and Recovery Programs in the Chino Basin? What is the availability and what are the volumes of these potential source waters?
- (5) Who are the entities that would be interested in obtaining water from a Storage and Recovery Programs? How would they take delivery of the stored water?
- (6) How could put and take operations be performed to match the availability of the source waters with the demand for the stored water and be consistent with the *2020 Storage Management Plan*?
- (7) How can existing infrastructure be used to perform put and take operations? Are new facilities required? What are the capital and O&M costs associated with the use of existing and new facilities?
- (8) What are the practical alternatives for implementing Storage and Recovery Programs?
- (9) What institutional arrangements are necessary to implement Storage and Recovery Programs?

The Watermaster should convene a Storage and Recovery Program Committee for the purposes of answering these questions and ultimately developing and implementing a *Storage and Recovery Program Master Plan*. The *Storage and Recovery Program Master Plan* will enable the Parties and other potential storing partners: (1) to reference a common set of objectives for Storage and Recovery Programs and align the objectives with requirements in grant applications and other funding opportunities, (2) to assess the potential for implementing Storage and Recovery Programs in the Chino Basin at various scales, (3) to solicit interest in participation in Storage and Recovery Programs, and (4) to develop Storage and Recovery Programs that are consistent with the *2020 Storage Management Plan*.



Scope of Work for Activity B

The scope of work to achieve the objectives of Activity B—*Develop, implement, and optimize Storage and Recovery Programs to increase water-supply reliability, protect or enhance Safe Yield, and improve water quality*—is designed to answer the questions listed above and will consist of the following four tasks:

- Task 1 – Convene the Storage and Recovery Program Committee and articulate the program objectives
- Task 2 – Develop conceptual alternatives for Storage and Recovery Programs at various scales
- Task 3 – Describe and evaluate reconnaissance-level facility plans and costs for Storage and Recovery Program alternatives
- Task 4 – Prepare *Storage and Recovery Program Master Plan*

Prior work has been performed for the *Storage Framework Investigation*, the Chino Basin Water Bank, and the Chino Basin Program. These past efforts can be leveraged after Watermaster completes Task 1. At the end of Task 4, Watermaster and the Parties will have a master plan for Storage and Recovery Programs, know what is reasonably possible, know what is a “stretch” program, and know how to subsequently implement the master plan.

The scope of work described below for Task 1 is a necessary first step. If the Parties cannot agree upon the objectives for Storage and Recovery Programs, Tasks 2 through 4 will not be executed. If the process moves beyond Task 1, the precise scope and level of effort required to perform Tasks 2 through 4 will greatly depend on the outcomes of Task 1. Tasks 2 through 4 are generally described below, but the cost to perform these tasks is not estimated herein. The precise scope of work for Tasks 2 through 4 will be developed in detail as part of Task 1.

Task 1 – Convene the Storage and Recovery Program Committee, define objectives, and refine scope of work.

In this task, the Storage and Recovery Program Committee will be convened. The Committee’s initial task is to obtain consensus on the objectives and desired benefits of Storage and Recovery Programs and, if consensus is achieved, scope the effort to prepare a *Storage and Recovery Program Master Plan*. To execute this task, the Committee will address the following questions:

- (1) Why do the Parties want to conduct Storage and Recovery Programs and what should be their objectives?
- (2) What were the obstacles to implementing Storage and Recovery Programs in the past, what are the current objectives, and how we can overcome them in the future?
- (3) What are the benefits desired by the Parties and how should they be quantified?

Four Committee meetings will be conducted (1) to define the objectives and impediments, (2) to define a set of mutual benefits that are expected/required from Storage and Recovery Programs, and (3) to develop the preliminary scope, cost, and schedule for the work (Tasks 2 through 4 below) to develop the *Storage and Recovery Program Master Plan*.

Task 2 – Develop conceptual alternatives for Storage and Recovery Programs at various scales. The objective of this task is to describe a set of conceptual alternatives for Storage and Recovery Programs at various scales that will achieve the objectives defined in Task 1. The set of conceptual alternatives will be described and evaluated in greater detail in Task 3.

To execute this task, the Committee will address the following questions:

- (4) What are the potential source waters for Storage and Recovery Programs in the Chino Basin? What is the availability and what are the volumes of these potential source waters?



- (5) What entities are interested in obtaining water from a Storage and Recovery Program? How would they take delivery of the stored water?
- (6) How could put and take operations be performed to match the availability of the source waters with the demand for the stored water and be consistent with the 2020 Storage Management Plan?

Five to six Committee meetings will be needed to answer these questions, describe various conceptual alternatives for Storage and Recovery Programs, and evaluate and select a set of these alternatives for further development, evaluation, and ranking in Task 3.

Work involved in this task will likely include: (1) collecting, compiling, and reviewing existing and new information; (2) identifying potential source waters for Storage and Recovery Programs in the Chino Basin; (3) characterizing the availability and volumes of these potential source waters; (4) identifying the entities that would be interested in obtaining water from a Storage and Recovery Programs; (5) characterizing how the entities would take delivery of the stored water; (6) identifying and characterizing institutional challenges to program implementation; (7) developing planning criteria to formulate and rank the conceptual Storage and Recovery Program alternatives; (8) describing several conceptual alternatives for Storage and Recovery Programs of various scales; and (9) selecting a set of alternatives for further development, evaluation, and ranking in Task 3.

Each alternative will describe, at a conceptual level, the operating parameters for put and take operations in the Chino Basin that match the available source waters with the demand for stored water. The alternatives must be consistent with the Watermaster's 2020 Storage Management Plan and the objectives for Storage and Recovery Programs defined in Task 1.

Task 3 – Describe and evaluate reconnaissance-level facility plans and costs for Storage and Recovery Program alternatives. The objective of this task is to describe and evaluate reconnaissance-level facility plans, operational plans, and cost opinions to implement the various Storage and Recovery Program alternatives described in Task 2.

To execute this task, the Committee will need to answer the following questions:

- (7) How can existing infrastructure be used to perform put and take operations? Are new facilities required? What are the capital and O&M costs associated with the use of existing and new facilities?
- (8) What are the practical alternatives for implementing Storage and Recovery Programs?

Three to four Committee meetings will be needed to answer these questions and to describe, evaluate, and rank the various Storage and Recovery Program alternatives.

For each alternative, two sub-alternatives will be developed: one alternative that uses both existing and new facilities and one that is based only on new facilities. Potential implementation barriers will be described. Capital and O&M cost opinions will be prepared for each alternative, utilizing criteria developed in Task 2.

To characterize the performance of the Storage and Recovery Program alternatives: (1) the Watermaster's groundwater model will be utilized to estimate the physical response of the basin and to assess the potential for MPI, and (2) the benefits of the Storage and Recovery Program will be quantified and assessed. Each alternative will be ranked using this and any other criteria developed in Task 2.

Task 4 – Prepare Storage and Recovery Program Master Plan. The objective of this task is to prepare a *Storage and Recovery Program Master Plan* that will enable the Parties and other potential storing



partners: (1) to reference a common set of objectives for Storage and Recovery Programs and align the objectives with requirements in grant applications and other funding opportunities, (2) to assess the potential for implementing Storage and Recovery Programs in the Chino Basin at various scales, (3) to solicit interest in participation in Storage and Recovery Programs, and (4) to develop storage and recovery programs that are consistent with the *2020 Storage Management Plan*.

The plan will describe the results and recommendations of Tasks 1 through 3 and will include a discussion of the institutional arrangements required to implement Storage and Recovery Programs in the Chino Basin. Three to four Committee meetings will be needed (1) to finalize the discussion on what was learned in prior tasks, (2) to gain consensus on the recommendations, and (3) to review, revise, and finalize the *Storage and Recovery Program Master Plan*.

Cooperative Efforts with Appropriate Entities to Implement Activity B

This is a basin-wide activity that involves the Parties, IEUA, TVMWD, and WMWD. Potential storing partners located outside of the Chino Basin will need to be consulted but need not participate on the Storage and Recovery Program Committee. Watermaster's role will be to convene the Storage and Recovery Program Committee, coordinate and administer its activities and meetings, and ensure that the recommendations derived from this effort are consistent with the Judgment, Peace Agreements and other agreements, the 2020 Storage Management Plan, and the Watermaster Rules and Regulations.

Implementation Actions, Schedule, and Costs for Activity B

The recommended schedule to complete the scope of work described herein is described below:

Year one:

- Convene Storage and Recovery Program Committee and articulate the program objectives (Task 1).

Year two:

- Develop conceptual alternatives for Storage and Recovery Programs at various scales (Task 2).

Year three:

- Describe and evaluate reconnaissance-level facility plans and costs for Storage and Recovery Program alternatives (Task 3).
- Prepare *Storage and Recovery Program Master Plan* (Task 4).

Year four and thereafter:

- Develop and implement Storage and Recovery Program with guidance and assistance from the *Storage and Recovery Program Master Plan*.
- Update the *Storage and Recovery Program Master Plan* as needed to be consistent with periodic updates to the Storage Management Plan.

Exhibit B-1 shows the estimated budget-level cost opinion to complete Task 1, which is about \$105,000. The cost of Tasks 2 through 4 cannot be estimated until the completion of Task 1. Exhibit B-1 also shows how Tasks 1 through 4 will be scheduled over the first three years of implementation.



Activity D

Description of Activity D

Activity D defined by the stakeholders is:

Maximize the reuse of recycled water produced by IEUA and others.

The objective of Activity D is to maximize the reuse of recycled water produced by the IEUA and other publicly owned treatment works (POTWs) in proximity to the Chino Basin to meet future demands and improve local water-supply reliability, especially during dry periods. Expanded reuse activities could include direct non-potable reuse (landscape irrigation or industrial uses), artificial recharge by spreading or injection (indirect potable reuse), and direct potable reuse. Increasing recycled water reuse is an integral part of the OBMP's goal to enhance water supplies, and, the Judgment states that Watermaster shall give high priority to maximizing the beneficial use of recycled water for replenishment purposes (Judgment ¶ 49(a)). The direct use of recycled water increases the availability of native and imported waters for higher-priority beneficial uses.

Through the listening session process, the stakeholders identified the following as potential outcomes of performing Activity D:

- Provide a new, reliable volume of in-lieu and/or wet water recharge that could:
 - Protect or enhance Safe Yield,
 - reduce dependence on imported water,
 - improve water-supply reliability, especially during dry periods, and
 - increase pumping capacity in areas of low groundwater levels and areas of subsidence concern.
- Provide for alternative sources of recycled water that can be used to satisfy the IEUA's requirement to discharge a minimum of 17,000 afy of water to the Santa Ana River pursuant to the Santa Ana River Judgment and associated agreements with the Western Municipal Water District (WMWD).

Activity D has similar objectives to those of PE 5 of the 2000 OBMP—*Develop and Implement Regional Supplemental Water Program*. Recognizing that growth in the Chino Basin was going to result in a more than 30 percent increase in then-current water demands, PE 5 was included in the 2000 OBMP to improve regional conveyance and availability of imported and recycled waters throughout the basin. Recycled water is more reliable than imported water, and using it in lieu of imported water improves the sustainability of Chino Basin and water supply reliability. The implementation plan for PE 5 was combined with PE 3—*Develop and Implement Water Supply Plan for the Impaired Areas of the Basin* in the OBMP and Peace Agreement.

The PE 3/PE 5 implementation action defined in the Peace Agreement related to recycled water reuse was for the IEUA to construct recycled water facilities to meet recycled water demands for direct use and for groundwater recharge. Since 2000, the IEUA has constructed and operated a recycled water conveyance system throughout the basin, enabling it to provide recycled water to its member agencies. Recycled water deliveries grew from about 3,400 afy in 2000 to about 34,000 afy in 2017 and have replaced a like amount of groundwater and imported water that would have otherwise been used for non-potable purposes.

The expansion of the recycled water reuse program was made possible—and economically feasible—through the SNMP activities performed pursuant to PE 7—*Develop and Implement Salt Management Plan*.



The SNMP, discussed as part of Activity K, will be an integral management tool to enable the maximization of recycled water reuse pursuant to Activity D.

Need and Function of Activity D

History of Recycled Water Discharge and Reuse in the Chino Basin

The IEUA owns and operates four wastewater treatment facilities: Regional Plant No. 1 (RP-1), Regional Plant No. 4 (RP-4), Regional Plant No. 5 (RP-5), and the Carbon Canyon Water Reclamation Facility (CCWRF). Recycled water produced by these plants is reused for direct uses, groundwater recharge, and discharged to Chino Creek or Cucamonga Creek, which are tributaries to the Santa Ana River. Exhibit D-1 shows the location of the IEUA’s treatment plants, discharge points to surface water, recharge facilities receiving recycled water, and recycled water distribution pipelines for direct use deliveries. Historically, the IEUA’s operating plan has prioritized the use of recycled water as follows: (1) to meet the IEUA’s discharge obligation to the Santa Ana River (17,000 afy), (2) to meet direct reuse demands for recycled water, and (3) to recharge the remaining recycled water.

Exhibit D-2 shows the time history of the IEUA’s annual discharges to the Santa Ana River since FY 1977/78. The increase in recycled water discharges from 20,000 afy in FY 1977/78 to about 60,000 afy by FY 1996/97 is illustrative of the population growth in the Chino Basin over this period. Although recycled water had been reused since the 1970s, the growth of IEUA’s recycled water reuse programs started in 1997. Total recycled water discharge remained at 60,000 afy through 2005 after which it declined as a result of OBMP implementation. Specifically, the incorporation of Watermaster and the IEUA’s maximum benefit SNMP into the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) in 2004, triggered the ability to rapidly increase recycled water reuse. Since 2014, recycled water discharge has been less than 20,000 afy and has averaged about 18,600 afy over the last five years.

Exhibit D-3 characterizes the total reuse of recycled water for direct use and recharge in the Chino Basin from FY 1996/97 through FY 2017/18. When the OBMP was completed in 2000, the IEUA was recharging about 500 afy of recycled water and utilizing about 3,200 afy for non-potable direct uses. Recycled water reuse peaked at about 38,200 af in FY 2013/14. Total recycled water reuse in the Chino Basin declined about 5,600 to 32,700 af in FY 2017/18.

Direct Reuse. Recycled water from the IEUA’s facilities is reused directly for: irrigation of crops, animal pastures, freeway landscape, parks, schools, and golf courses; commercial laundry and car washes; outdoor cleaning and construction; toilet plumbing; and industrial processes. The direct use of recycled water increased from about 3,500 af in FY 1999/00 to about 24,600 af in FY 2013/2014 and has since declined to about 19,400 af as of FY 2017/18. The recent decline is due to the mindful reduction in use by the City of Chino to accommodate changes in IEUA policy related to the use of recycled water base entitlements and conversions of land from agricultural to urban uses. Exhibit D-4 is a map of IEUA’s recycled water deliveries for direct use in FY 2017/18.

Recharge. In 2005, the IEUA initiated its recycled water recharge program and recycled water has since become an important component of annual recharge to the Chino Basin. In FY 2017/18, recycled water recharge was 13,200 af and has averaged about 13,000 afy over the past five years. The locations of the recharge facilities receiving recycled water are shown in Exhibit D-4.

Recycled Water Reuse Projections and the Availability of Additional Recycled Water for Reuse

The IEUA is continuing to expand its recycled-water distribution system and recharge facilities throughout the Chino Basin for direct non-potable uses and recharge. Growth is still occurring in the Chino Basin and will result in additional wastewater flows to the IEUA’s treatment plants. Much of this supply will be used



to meet increasing non-potable demands as the currently remaining agricultural land uses convert to urban uses. The increasing demand for recycled water reuse will constrain the IEUA's ability to continue to use recycled water to meet its discharge obligations pursuant to the Santa Ana River Judgment.

Projected Recycled Water Supplies and Demands. Exhibit D-5 shows the IEUA's latest projections of recycled water production, expressed as a range (low and high) and projections of direct reuse and recharge through 2040.¹² Also shown in Exhibit D-5 is the calculation of surplus supply available for expanded reuse and/or discharge. Under the "high" recycled water production projections, there is sufficient surplus supply to meet the Santa Ana River discharge obligations and expand recycled water reuse. Under the "low" recycled water production projections, there is insufficient supply to meet the Santa Ana River discharge obligations through at least 2025, suggesting that the IEUA may need to find supplemental supplies to meet both recycled water demands and its discharge obligations.

Supplemental recycled water supply. In addition to the recycled water available from the IEUA, other nearby POTWs are not currently reusing recycled water and may have surplus recycled water that could be acquired and conveyed to the Chino Basin. The surplus recycled water from these POTWs could be utilized to increase reuse in the Chino Basin if it is economical to convey the water to the desired end uses or used to meet discharge obligations. The nearby POTWs with potential surplus supply include the Pomona Water Reclamation Facility (WRF), the Western Riverside County Regional Wastewater Authority (WRCRWA), the City of Rialto, RIX, and the City of Riverside. The locations of these facilities are shown in Exhibit D-1. Currently, the availability of recycled water from these or other POTWs is not precisely known.

Capacity for Expanded Recycled Water Recharge at Existing Facilities. As described for Activity A, Watermaster and the IEUA operate a set of recharge facilities in the Chino Basin to conduct storm, recycled, and imported water recharge. The IEUA and Watermaster prioritize¹³ the use of these facilities as follows: (1) maximize stormwater capture and recharge, (2) meet Watermaster's replenishment and recharge obligations as required by the Judgment and Peace Agreements, and (3) recharge other supplemental water for groundwater storage and management. Exhibit D-6 shows the theoretical maximum supplemental water recharge capacity¹⁴ that can be used for recycled water recharge, subject to Watermaster's priority need for recharge and replenishment.¹⁵ The table also shows actual FY 2017/18 recycled water recharge (13,200 af) and planned recycled water recharge for FY 2019/20 through FY 2029/30.¹⁶ As the table shows, the planned volume of recycled water recharge of 16,400 af is less than one-half of the theoretical maximum supplemental water recharge capacity. This suggests that there is sufficient capacity to recharge future surplus recycled water supply that will not be used for direct non-potable uses, subject to Watermaster's need for recharge and replenishment and the ability to comply with the dilution requirements defined in Watermaster and the IEUA's maximum benefit SNMP.

¹² These projections are based on information published by the IEUA to support the development of the Chino Basin Program: *Sources of Water Supply for the Chino Basin Program*. Memo to Member Agencies. February 20, 2019. These projections differ slightly from the latest water supply planning projections published in Watermaster's *Storage Framework Investigation* and the *2018 RMPU*, both of which were published in 2018.

¹³ Note that the primary goal of multipurpose facilities is to attenuate flood peak discharge.

¹⁴ There are two estimates of theoretical supplemental water recharge capacity. The first is corresponds to the 10-month period directly after a cleaning. The second corresponds to continuous use between maintenance periods and is less than the recharge capacity that would occur if the recharge basins are used less frequently.

¹⁵ WEI, (2019). *2018 Recharge Master Plan Update*. Prepared for the Chino Basin Watermaster. September 2018.

¹⁶ The projection cited here is based on the recycled water projection included in the 2018 RMPU, which was published before the CBP planning memo projection of 18,700 afy.

*Considerations and Challenges for Maximizing Recycled Water Reuse*

There are various factors that should be considered in determining how to maximize the reuse of recycled water produced by the IEUA and other POTWs. These are summarized as follows.

Existing Planning Efforts. The IEUA is currently performing planning efforts for the CBP, which is a large Storage and Recovery Program to provide for regional, dry-year water supplies and associated infrastructure. The CBP was conditionally awarded approximately \$207 million of Proposition 1 Water Storage Investment Program funding. Over its 25-year project life, the CBP would increase recycled water recharge in the Chino Basin by 15,000 afy, and during dry years, the water in storage would subsequently be recovered and pumped into Metropolitan’s system for use in Southern California in lieu of imported water from the State Water Project. The planned sources of recycled water for the CBP are currently being evaluated by the IEUA, but it is certain additional supplies beyond those produced by the IEUA will be needed. The CBP is still undergoing planning and evaluation, and its implementation is not certain. Regardless of whether the CBP is implemented, the significant body of work being led by the IEUA together with regional agencies can be leveraged to accomplish Activity D.

Timing of Recycled Water Availability. A common challenge with maximizing recycled water reuse is the mismatch in the timing of non-potable water demands and recycled water supply availability. It will be important to characterize in detail the seasonality of outdoor water demands and availability of recharge capacity given that surplus recycled water may only be available in winter months when outdoor demand is low and recharge capacity is otherwise being utilized for stormwater recharge. These relationships will also vary based on climate conditions (wet versus dry periods). Fully maximizing recycled water supplies will require an understanding of these complex relationships to optimize the design and operation of projects. Fully maximizing recycled water reuse may require storage facilities.

Salt and Nutrient Management. Watermaster and the IEUA have an existing maximum benefit SNMP that enables the reuse and recharge of IEUA recycled water in the Chino Basin (refer to Activity K for more details). This SNMP, which is incorporated into the Basin Plan for the Santa Ana Region, did not contemplate the use of non-IEUA sources of recycled water in the Chino Basin. Some of the available recycled water sources have TDS and/or nitrate concentrations that are numerically higher than those of IEUA’s current or permitted TDS and nitrate limits, which could impact compliance with the SNMP or trigger additional mitigation measures to protect beneficial uses. Detailed water quality projections would be required to demonstrate the impacts of reuse of non-IEUA sources of recycled water in the Chino Basin. The existing SNMP contains provisions for mitigation at such time that the TDS and/or nitrate concentration of recycled water or groundwater exceeds the regulatory limits defined in the Basin Plan.

Water Quality. Water quality regulations are constantly evolving as new contaminants of potential concern are identified and studied. In recent years, the presence of pharmaceutical and personal care products (PPCPs) in recycled water has been an area of focused research to determine potential health impacts that could result from reuse of recycled water for recharge in groundwater basins. A new set of emerging contaminants of concern is a group of chemicals known as poly- and per-fluorinated compounds (PFAS). PFAS are known to be present in recycled water, and any new regulatory standards for PFAS in drinking water could impact the ability to reuse recycled water without treatment (see discussion in Activity EF for additional details on PFAS).

Direct Potable Reuse (DPR). The direct potable reuse of recycled water, although only currently being done at a very limited pilot scale in California, is emerging as a potential future municipal water supply. The State Board has released a framework for regulating DPR through reservoir and raw water augmentation, but regulatory criteria for DPR projects will not be adopted for many years. The State Board will prioritize developing regulations for reservoir augmentation and will follow with raw water augmentation in the



future after more research is completed to determine the criteria necessary to ensure protection of public health. DPR will require advanced treatment of any recycled water source used.

Santa Ana River Judgment. Historically the IEUA has used recycled water to meet its obligations under the Santa Ana River Judgment. As demand for recycled water increases, the IEUA will have to rely on other sources of water to meet this obligation. If the IEUA were able to obtain access to additional water supplies (recycled or other supplemental), alternative plans should be evaluated to optimize which sources are used to ensure that the IEUA meets its annual discharge volume and water quality requirements pursuant to the Judgment.

Summary

The process to achieve the objective of Activity D to maximize the reuse of recycled water produced by IEUA and others should include: (1) a characterization of the availability of all recycled water supplies, (2) a characterization of the direct recycled water demands of the Parties, (3) identification of project opportunities and the planning and screening criteria to evaluate them, and (4) development of reconnaissance-level engineering design and operating plans. This information could then be used to evaluate, prioritize, and select projects for implementation. To optimize the expansion of recycled water reuse, the Parties should convene a Recycled Water Projects Committee for the purposes of evaluating project opportunities and developing a plan to implement them. The Committee could be comprised of representatives from all interested stakeholders and could be led by IEUA, Watermaster, and/or others. The scope of work to implement such a process is described below.

Scope of Work for Activity D

The scope of work to achieve the objectives of Activity D—*Maximize the reuse of recycled water produced by IEUA and others*—consists of six tasks:

- Task 1 – Convene Recycled Water Projects Committee, define objectives and refine scope of work
- Task 2 – Characterize the availability of all recycled water supplies and demands
- Task 3 – Develop planning, screening, and evaluation criteria
- Task 4 – Describe recycled water reuse project opportunities
- Task 5 – Develop reconnaissance-level engineering design and operating plan
- Task 6 – Plan, design, and construct selected recycled water projects

The IEUA already performs various efforts to characterize recycled water supply and demand within its service area, including the periodic update of its Integrated Resources Plan (IRP). And, as previously noted, the IEUA is performing a significant amount of work to evaluate opportunities to acquire surplus recycled water supplies for recharge as part of the CBP, and this work could be leveraged to reduce the effort required to implement the scope of work for Activity D.

Task 1 – Convene Recycled Water Projects Committee, define objectives and refine scope of work. In this task, a Recycled Water Projects Committee will be convened. The Committee’s initial tasks are (1) to obtain consensus on the objectives for maximizing recycled water reuse, (2) to refine the preliminary scope of work defined in the 2020 OBMP Update (Tasks 2-7 below), and (3) to update the schedule and cost to perform the work. Two Committee meetings will be conducted to accomplish these tasks.

Task 2 – Characterize the availability of all recycled water supplies and demands. The objectives of this task are: (1) to characterize the future water demands of the Parties to estimate the IEUA’s recycled water production, (2) to prepare updated projections of the direct recycled water reuse demands of the Parties, (3) to identify other available sources of recycled water, (4) to characterize the use and potential availability of each recycled water supply (IEUA and others), and (5) to identify the institutional and



physical challenges for acquiring each source of surplus supply. The recycled water availability and direct reuse demands will be characterized on a monthly basis for various climate conditions to enable the characterization of potential storage needs to fully maximize recycled water reuse. One meeting will be conducted to review the characterization of recycled water availability.

Task 3 – Develop planning, screening, and evaluation criteria. The objective of this task is to develop the criteria that will be used to evaluate recycled water reuse projects in Tasks 4 and 5. The types of criteria developed to evaluate potential projects will include:

- Watermaster criteria that include no potential MPI, balance of recharge and discharge; and others;
- regulatory criteria that include compliance with salt and nutrient management plans, DDW regulations, and others;
- qualitative criteria that include institutional complexity, reliability of non-IEUA recycled water sources, overall water supply reliability and others; and
- quantitative criteria that include business case evaluations expressed as net present value, unit cost, and others.

Two meetings will be conducted to review and refine the criteria with the Recycled Water Projects Committee.

Task 4 – Describe recycled water reuse project opportunities. The objectives of this task include identifying potential recycled water project alternatives, screening them using the criteria developed in Task 3, and selecting a set of projects for detailed evaluation. Three meetings will be conducted to develop the list of potential projects that can be implemented, to review the screening of the projects, and to select the projects to evaluate in Task 5.

Task 5 – Develop reconnaissance-level engineering design and operating plan. The objective of this task is to characterize the performance and costs of new recycled water projects for reuse, individually and as a group/system. A reconnaissance-level engineering design and operating plan will be developed for each project. Each project design will include the approximate size, location, and alignment of major recycled water utilities, and will describe any potential implementation barriers for the project. A cost opinion will be determined for each project. This task includes evaluating projects based on the criteria developed in Task 2 and recommending a set of projects for implementation. The deliverable of this task will be a technical report that summarizes the work performed under Tasks 1 through 4, and it will include an implementation plan as well as a plan to finance the preliminary design and CEQA documentation. Five meetings will be conducted to review the design and estimated benefit of the projects; review the evaluation of the projects, based on the criteria developed in Task 2, and review the recommended list of projects for implementation; review the implementation plan; and review the technical report.

Task 6 – Plan, design, and construct selected recycled water projects. The objective of this task is to implement the recommendations of the technical report. This task includes (1) developing and implementing necessary agreements between participating Parties, (2) preparing the preliminary design of the recommended projects, (3) preparing the environmental documentation for the recommended projects that will tier-off the 2020 OBMP Update PEIR, (4) preparing a financial plan for constructing the recommended projects, (5) preparing final designs of the recommended projects, (6) acquiring necessary permits for constructing and operating the recommended projects, and (7) constructing the recommended projects.

Task 7 – Periodically re-evaluate availability of recycled water supplies for reuse. As agencies update water supply and demand projections, project economics change, and other changes occur in the Basin, the



ability to maximize the reuse of recycled water may also change. As such, Task 2 should be updated periodically. A first step in this task would be to scope out a process to periodically update the characterization of recycled water supply and demands. Following each future assessment, the Recycled Water Projects Committee would determine the need to perform the steps in Tasks 3 through 6 again.

Cooperative Efforts with Appropriate Entities to Implement Activity D

This is a basin-wide activity that involves the Parties in the IEUA, TVMWD, and WMWD service areas. Given its current efforts, the IEUA would be the logical entity to lead the implementation of Activity D on behalf of all Parties in these service areas, but the process could be led by others. In this role, the agency leading the project on behalf of the Parties would: convene the Recycled Water Projects Committee, characterize recycled water demands, identify additional recycled water supplies and conduct discussions with the owners of those supplies, and contract for planning and engineering services as required. Watermaster's role would be to work with project lead, on the implementation of Activity D (1) to review and evaluate the basin management implications of the recycled water projects, including but not limited to compliance with the maximum benefit SNMP and (2) to ensure that its implementation is consistent with the Judgment, Peace Agreements and other agreements, and the Watermaster Rules and Regulations.

Implementation Actions, Schedule, and Costs for Activity D

The recommended schedule to complete the scope of work described herein is described below:

Year one:

- Convene Recycled Water Projects Committee and refine scope of work, schedule and budget (Task 1).
- Characterize the availability of all recycled water supplies (Task 2).
- Develop planning, screening, and evaluation criteria for recycled water projects (Task 3).
- Conduct five committee meetings to review and refine the work products of Tasks 1 through 3.

Year two:

- Develop list of recycled water projects for evaluation (Task 4).
- Begin reconnaissance-level engineering study for the proposed projects (Task 5).
- Conduct four workshops to review and refine work products of Tasks 4 and 5.

Year three:

- Complete reconnaissance-level engineering study for the proposed projects (Task 5).
- Select project(s) for implementation.
- Prepare final report documenting work performed in Tasks 1 through 5.

Years four through six:

- Watermaster, the IEUA, and other potential partners develop a project implementation agreement. The objective of this agreement is to define the roles of each partner in the planning, permitting, design, and implementation of the projects, and the cost allocations.
- Preliminary design of recommended projects. The level of design will be such that it enables the preparation of environmental documentation pursuant to CEQA, provides information for identifying and acquiring construction and related permits, and produces an updated recycled water capacity benefit.



- Prepare environmental documentation for projects. CEQA will cover the recommended projects at the project level and the deferred projects at a programmatic level (PEIR), based on the project descriptions developed in Task 5. This documentation will tier-off from the 2020 OBMP Update PEIR. Watermaster will conduct an MPI analysis in parallel with the CEQA process.

Years seven and eight:

- Prepare final designs and acquire necessary permits for the selected projects.

Years nine and beyond:

- Construct selected Projects.

Exhibit D-7 shows the estimated budget-level engineering cost to complete Tasks 1 through 5, which is about \$620,000. The cost of Tasks 6 and 7 cannot be estimated until the completion of Task 5. Exhibit D-7 also shows how Tasks 1 through 5 and their associated costs will be scheduled over the first three years of implementation.

As previously discussed, because the IEUA performs various efforts to estimate the recycled water supply and demands of its member agencies and is currently developing estimates of recycled water availability in the region and developing a list of project concepts for recycled water reuse as part of the CBP, the cost to perform Activity D may be lower than estimated herein.



Activity EF

Description of Activity EF

Activities E and F defined by the stakeholders are both are intended to address impediments to groundwater management that are related to groundwater quality, specifically contaminants of emerging concern. Activity E of the OBMP Update is:

Develop and implement a water-quality management plan to address current and future water-quality issues and protect beneficial uses.

Activity F of the OBMP Update is:

Develop strategic regulatory-compliance solutions that achieve multiple benefits in managing water quality.

The objective of the management plan envisioned for Activity E is to collect and analyze the data and information needed to characterize and proactively plan for the water quality challenges to pumping groundwater for municipal supply in a constantly evolving regulatory environment. The objective of Activity F is to evaluate the treatment and related infrastructure improvements, including the potential for multi-benefit collaborative projects, that can be implemented to ensure groundwater can be pumped for beneficial use as new drinking water regulations are adopted by the State Board’s Division of Drinking Water (DDW¹⁷).

Through the listening session process, the stakeholders identified the following as potential outcomes of performing Activities E and F:

- Proactively address challenges and solutions to comply with new and potential future drinking water regulations.
- Enable the Parties to make informed decisions on infrastructure improvements for water-quality management and regulatory compliance.
- Remove groundwater contaminants from the Chino Basin and thereby improve groundwater quality.
- Enable the Parties to produce or leverage their water rights that may be constrained by water quality.
- Ensure that groundwater is pumped and thereby protect/enhance Safe Yield.

The 2000 OBMP included multiple PEs to protect and enhance water quality. PE 6—*Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management*—was included to assess water quality trends in the basin, to evaluate the impact of OBMP implementation on water quality, to determine whether point and non-point contamination sources are being addressed by water quality regulators, and to collaborate with water quality regulators to identify and facilitate the cleanup of soil and groundwater contamination. PE 7—*Develop and Implement Salt Management Plan*—was included to characterize current and future salt and nutrient conditions in the basin and to subsequently develop and implement a plan to manage them. PE 3—*Develop and Implement a Water Supply Plan for Impaired Areas*—provided for the construction and operation of regional groundwater desalters, the Chino Basin Desalters (Desalters), to pump and treat high-salinity

¹⁷ The DDW regulates public drinking water systems in California; prior to June 2014 it was the California Department of Public Health which was formally known as the Department of Health Services. All references to the actions of DDW herein include its predecessors.



analytical technologies to detect contaminants in water advance over time, it can be expected that new contaminants of concern will be identified, and some will ultimately become regulated. In response, municipal water agencies will need to construct treatment facilities or implement changes in existing pumping operations to address the newly regulated contaminants. With each new regulation there are increasing constraints on existing water supply infrastructure that can limit a Parties' ability to pump their groundwater rights and stored water and conflict with other basin management issues that include, but are not limited to, groundwater recharge, maintaining Safe Yield, and maintaining Hydraulic Control.

Occurrence of Contaminants in the Chino Basin

Exhibit EF-1 summarizes the occurrence of drinking water contaminants with a Primary MCL in groundwater pumped from active municipal supply wells in the Chino Basin for the five-year period of 2014 to 2018. For this discussion, "active municipal supply wells" includes the 141 municipal supply wells that pumped groundwater anytime within the two-year period of 2017 to 2018. For comparison, this table also summarizes the number of wells with exceedances of the MCL for: all existing municipal supply wells whether they are recently active or not and all existing wells in the basin, including private agricultural, non-agricultural, municipal supply, and monitoring wells, whether they are recently active or not. The three most common contaminants that exceed a primary MCL in the Chino Basin at active municipal supply wells are nitrate (71 wells), 1,2,3-trichloropropane (1,2,3-TCP) (33 wells), and perchlorate (27 wells).

Exhibit EF-2 shows the locations of active municipal supply wells and symbolizes them based on the number of regulated drinking water contaminants that have been detected in exceedance of their respective primary MCLs. Of the 141 recently active municipal supply wells, 45 have at least one drinking water contaminant, 17 wells have two contaminants, 14 have three contaminants, five have four contaminants, and five have five contaminants. The wells with regulated drinking water contaminants are primarily located in the southern (south of the 60 freeway) and western (west of Euclid Avenue) areas of the Basin. Exhibits EF-3, EF-4, and EF-5 show the spatial distribution of the maximum observed nitrate, 1,2,3-TCP, and perchlorate concentrations at all wells in the Chino Basin for the five-year period of 2014 to 2018.

The occurrence of 1,2,3-TCP in nearly 25 percent of active municipal supply wells is noteworthy. The MCL for 1,2,3-TCP is 0.005 micrograms per liter ($\mu\text{g/l}$), which is 5 parts per trillion (ppt). This is the lowest numerical value for a MCL established to date in the State of California. And, unlike past newly adopted MCLs, the MCL for 1,2,3-TCP became immediately effective upon its adoption in December 2017. As a result, municipal water agencies were immediately required to either cease using active wells that pump groundwater with 1,2,3-TCP concentrations in excess of the new MCL or implement treatment (typically blending) to ensure their water supplies have a 1,2,3-TCP concentration below the MCL. Prior to 2018, municipal water supplies were not routinely tested for 1,2,3-TCP even though there was an existing NL for 1,2,3-TCP of 0.005 $\mu\text{g/l}$. And, when testing occurred it was not always done using the lowest available detection limit that was equal to the NL. For this reason, upon adoption of the MCL, the DDW also required municipal water agencies to perform quarterly compliance monitoring in 2018 using laboratory detection limits low enough to test for concentrations equivalent to the MCL of 0.005 $\mu\text{g/l}$. Exhibit EF-4 includes the quarterly monitoring results from 2018 and represents the most comprehensive characterization of the occurrence of 1,2,3-TCP in the Chino Basin to date. The wells producing groundwater with 1,2,3-TCP concentrations equal to or greater than the MCL are primarily located in the western half of the Basin. The following agencies have had to shut down supply wells or modify operations as a result of the new MCL: the City of Chino Hills, CDA, City of Chino, City of Pomona, Monte Vista Water District (MVWD), and JCS.



Exhibit EF-6 summarizes the occurrence of drinking water contaminants with a California NL in groundwater pumped from active municipal supply wells in the Chino Basin for the five-year period of 2014 to 2018. For comparison, this table also summarizes the number of wells with exceedances of the NLs for: all existing municipal supply wells whether recently active or not and all existing wells in the basin, including private agricultural, non-agricultural, municipal supply, and monitoring wells whether they are recently active or not. Exhibit EF-7 shows the location of the active municipal supply wells and symbolizes them based on the number of contaminants that have been detected in exceedance of a NL. Of the 141 recently active municipal supply wells, only two wells show an exceedance of an NL for one contaminant: groundwater sampled from both wells exceed the NL for 1,4-dioxane. It is likely there are more occurrences of NL exceedances for 1,4- dioxane and other contaminants in the Chino Basin, but because the DDW does not require monitoring for contaminants with an NL and/or testing is not performed using analytical methods with the numerically lowest detection limits that are equal to or lower than the NLs, the potential impact to the Parties posed by the adoption of MCLs based on existing NLs cannot be characterized.

Readiness to Address Future Drinking Water Regulations

Since the implementation of the 2000 OBMP, the DDW has adopted three new Primary MCLs that have impacted municipal water agencies the Chino Basin, including perchlorate, hexavalent chromium, and 1,2,3-TCP. And, as demonstrated by the newest MCL for 1,2,3-TCP, the timeline for complying with new drinking water quality regulations is becoming more restrictive. To prepare for the challenges of complying with potential future MCLs, it will be increasingly important for municipal supply agencies to understand which emerging contaminants of concern are candidates for regulation, potential regulatory limits, and the occurrence of those contaminants in local and regional water supplies. Tracking emerging contaminants that are being considered for regulation and performing monitoring to characterize their occurrence in the Chino Basin will help to identify and plan for optimal solutions to manage groundwater quality for drinking water supply.

Since 2000, under PE 6, Watermaster has assessed groundwater quality in the Chino Basin using data compiled through its own monitoring activities and the efforts of other cooperating entities, and has reported on the water quality trends and findings related to regulated contaminants and contaminants of emerging concern in its biannual State of the Basin reports. For the municipal water agencies, monitoring groundwater for emerging contaminants is, for the most part, a voluntary activity. There are periodic monitoring requirements under the Federal Environmental Protection Agency's (EPA) Unregulated Contaminant Monitoring Rule (UCMR), which is implemented to collect occurrence data for selected contaminants of emerging concern that have documented potential public health effects. Monitoring under the UCMR program is performed every five years and the results are used, in part, to support determinations of whether or not to regulate a contaminant in drinking water to protect public health. For each UCMR cycle, the EPA defines the municipal water agencies that must perform monitoring and the analytical methods and detection limits that should be used for each contaminant on the UCMR list. Generally, the UCMR does not require municipal water agencies to test all of their water supply sources and, as to groundwater, may only require a subset of wells be sampled. And, the UCMR does not always require the use of analytical methods with the numerically lowest detection limits, which in some cases means that analysis is done using detection limits for reporting (DLR) that are above potential regulatory limits, as was the case for UCMR monitoring of 1,2,3-TCP. Once a UCMR monitoring event is over, no additional requirements for testing for the contaminants of emerging concern are required. In the State of California, the monitoring of unregulated contaminants with established NLs is recommended but not required. And as with UCMR monitoring, the use of analytical methods with the numerically lowest detection limits are often not used. Because monitoring for unregulated contaminants is voluntary and



there are various analytical methods used, it is generally difficult to characterize the basin-wide occurrence of contaminants of emerging concern.

The occurrence of three contaminants in the Chino Basin that are subject to revised or new drinking water regulations are discussed below.

Perchlorate and Hexavalent Chromium

Currently, in the State of California, there are two drinking water contaminants with primary MCLs that are well characterized in the Chino Basin that are undergoing review and consideration by the DDW for an MCL revision: perchlorate and hexavalent chromium.

Perchlorate. As previously described, perchlorate is one of the top three drinking water contaminants in the Chino Basin. An MCL of 6 µg/l was established in 2007. In 2015, the Office of Environmental Health Hazard Assessment (OEHHA) revised the Public Health Goal (PHG¹⁸) for perchlorate from 6 µg/l to 1 µg/l, based on new scientific literature that indicates possible health effects to infants from exposure to perchlorate in drinking water. This revision prompted the DDW to review the current MCL and determine if it should be lowered to a value closer to the revised PHG. To support its review and decision, the DDW has recommended that the required DLR for analysis of municipal drinking water supplies be lowered from the current DLR of 4 µg/l to equal to or less than 1 µg/l and occurrence data be collected across the state.

Exhibit EF-8 shows the spatial distribution of the maximum observed perchlorate concentration for all wells in the Chino Basin for the five-year period of 2014 through 2018 along with the locations of the 141 active municipal supply wells. Exhibit EF-8 differs from Exhibit EF-5 in that the symbology of the perchlorate concentration at wells is based on the PHG of 1 µg/l and not the MCL of 6 µg/l. Exhibit EF-8 also indicates which of the wells in the basin characterized as having “non-detect” concentrations have not been tested using detection limits that are less than or equal to the PHG of 1 µg/l (DLR = 4 µg/l). Most of the wells that have not been tested at the lower DLR are private wells south of the 60 freeway. Exhibit EF-8 shows that 95 percent of the of the detectable concentrations of perchlorate in the basin are above the PHG of 1 µg/l and that perchlorate is prevalent throughout the entire Chino Basin. As such, compliance with the drinking water standard could require treatment facilities across most of the Chino Basin if the MCL is lowered from 6 µg/l.

Hexavalent Chromium. The PHG for hexavalent chromium is 0.02 µg/l. In 2014, the DDW established an MCL of 10 µg/l, which was subsequently challenged in court. In 2017, the Superior Court of Sacramento County issued a judgment invalidating the Primary MCL for drinking water because the DDW failed to properly consider the economic feasibility of complying with it. The court ordered the DDW to conduct an economic evaluation and establish and adopt a new MCL, which could be the same or different from the prior and now invalidated MCL of 10 µg/l. Exhibit EF-9 shows the spatial distribution of the maximum observed hexavalent chromium concentration for all wells in the Chino Basin for the five-year period of 2014 through 2018. The symbology of the observed hexavalent chromium concentrations is based on the prior MCL of 10 µg/l. Seven percent of all wells sampled have a concentration above 10 µg/l: 127 of the 141 active municipal supply wells have a detectable concentration of hexavalent chromium, and nine of the 141 active municipal wells exceeded 10 µg/l. Hexavalent chromium is not a widespread compliance issue

¹⁸ A PHG is the level of a chemical contaminant in drinking water that does not pose a significant risk to health. PHGs are not regulatory standards, but State of California law requires the DDW to set MCLs for a contaminant as close as technologically and economically possible to the PHG.



based on the old 10 µg/l MCL, but compliance could be problematic in the future if the DDW establishes a new MCL less than 10 µg/l.

Poly- and Per-fluorinated Compounds. An example of emerging contaminants that were part of the UCMR and are currently receiving notable regulatory attention on both State and Federal levels include two PFAS compounds: — perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). In 2009, the EPA published provisional Health Advisory Levels (HAL) for PFOA and PFOS of 400 nanograms per liter (ngl) and 200 ngl, respectively (or 400 and 200 parts per trillion [ppt]). The 2012 UCMR 3 contaminant monitoring list included six PFAS, including PFOA and PFOS. The required DLRs for PFOA and PFOS were 20 and 40 ngl, respectively. In 2016, following the UCMR 3 monitoring, the EPA significantly lowered the HAL for PFOA and PFOS to a combined 70 ngl, a 90 percent reduction. And, in 2018, the DDW established NLs for PFOA and PFOS of 14 and 13 ngl, respectively. That same year, laboratory methods with detection limits numerically less than these NLs became available. As part of the NL guidelines, the DDW established an interim Response Level of 70 ngl for PFOA and PFOS combined, consistent with the EPA’s interim HAL. If the DDW recommends that the water source be removed from service or that treatment be implemented to get levels below the Response Level. The PFOA and PFOS Response Level is five times the NL for one of them individually; this is more stringent than other Response Levels established by the DDW, which as previously noted are typically ten to 100 times the NL.

Exhibit EF-10 shows the occurrence of PFOA and PFOS in groundwater and some blending sources for the recycled water recharge in the Chino Basin as of March 2019, based on all monitoring performed since 1998. The exhibit shows that the majority of wells in the Chino Basin have not been sampled for PFOA and/or PFOS. The 30 wells in the Chino Basin that have been sampled for PFOA and PFOS were tested during UCMR 3 using the laboratory detection limits of 20 and 40 ngl, which are higher than the current NLs. Monitoring of recycled water recharge blending sources shows that many of the sources sampled have detectable concentrations of PFOA and PFOS, and some are above the NLs. The EPA and the DDW have both indicated that they are moving forward with the process to adopt MCLs for PFOA and PFOS in the near future. The occurrence of PFOA and PFOS in Chino Basin groundwater as of March 2019 is not well characterized at concentrations equivalent to or below the current NLs, and there are recharge water sources with concentrations of PFOA and PFOS above the NLs. Widespread monitoring for PFOA and PFOS using lower-detection limit laboratory methods is necessary to understand the occurrence of PFOA and PFOS in the basin in order to plan for compliance with potential new drinking water regulations.

Basin Management and Water Rights Implications of More Stringent Water Quality Regulations

To maintain yield and limit losses to the Santa Ana River, the Chino Basin is managed as hydrologically closed: the primary discharge of groundwater from the Chino Basin is groundwater pumping. Maintaining Hydraulic Control in this way is also a requirement of the maximum benefit SNMP. Operating the Chino Basin as a closed system contributes to the accumulation of salts, nutrients, and other contaminants in groundwater, which are primarily removed by groundwater pumping. The constantly evolving regulatory environment described above threatens the ability of the Parties to pump groundwater, and some Parties are not or will not be able to pump their groundwater rights due to the presence of contaminants and the lack of treatment facilities to comply with drinking water quality standards.

As is currently occurring in response to the immediate enforcement of the new MCL for 1,2,3-TCP, it is likely that the initial response actions for compliance with new MCLs will be to shut-down pumping at wells with concentrations that exceed the MCL until a treatment plan is developed and implemented, which for some agencies could take years. Prolonged reductions in groundwater pumping due to groundwater contamination have the effect of reducing Safe Yield and potentially contributing to the loss of Hydraulic Control and the spread of contamination. Therefore, it will become increasingly necessary to



pump and treat groundwater to comply with drinking water standards and maintain Safe Yield and Hydraulic Control of the Chino Basin.

With the exception of the Desalters, groundwater treatment facilities in the Chino Basin have been constructed and operated by individual municipal water supply agencies, and the construction and operations and maintenance costs are borne by the agency alone. There is potential for cost savings and other benefits to basin management, such as protecting Safe Yield, and maintaining Hydraulic Control, if regional groundwater treatment and conveyance systems are implemented to address groundwater contamination.

Summary

In order to achieve the objectives of Activities E and F to effectively plan for compliance with future water quality regulations, a *Groundwater Quality Management Plan* should be developed (1) to continually track the UCMR monitoring program, DDW regulatory activities, and others to stay informed of which groundwater contaminants are potential candidates for future MCLs; (2) to implement a long-term basin-wide monitoring plan—including protocols for the use of consistent laboratory methods by all agencies—to collect data on the occurrence of the contaminants of emerging concern; (3) to periodically characterize the potential for compliance challenges on a basin-wide scale; and (4) to develop and evaluate individual and regional compliance solutions to address these challenges. Such a process will enable the Parties to prioritize the most cost-effective compliance solutions that provide for multiple benefits in achieving the goals of the OBMP. The *Groundwater Quality Management Plan* could be developed and implemented by reconvening the Water Quality Committee. The scope of work to develop the *Groundwater Quality Management Plan* is described below.

Scope of Work for Activity EF

The scope of work to develop and implement a *Groundwater Quality Management Plan* consistent with the objectives of Activity EF consists of eight tasks.

- Task 1 – Convene the Water Quality Committee, define objectives, and refine scope of work
- Task 2 – Develop and implement an initial emerging-contaminants monitoring plan
- Task 3 – Perform a water quality assessment and prepare a scope to develop and implement a Groundwater Quality Management Plan
- Task 4 – Develop planning, screening, and evaluation criteria
- Task 5 – Identify and describe potential projects for evaluation
- Task 6 – Conduct a reconnaissance-level study for the proposed projects
- Task 7 – Prepare the *Groundwater Quality Management Plan*
- Task 8 – Plan, design, and build water quality management projects

Task 1 will develop the administrative and stakeholder process and refine the objectives and scope for developing the *Groundwater Quality Management Plan*. Tasks 2 and 3 will include an initial monitoring program and the characterization of current water quality conditions to determine the appropriate long-term monitoring and assessment program and to support the development and implementation of the groundwater quality management plan. Tasks 4 through 8 contain the efforts to fully develop and implement a groundwater quality management plan. The precise scope and level of effort required to perform Tasks 4 through 8 will greatly depend on the assessment in Task 3. At present, there is not enough information to fully scope out these later tasks. The activities for Tasks 4 through 8 are generally described below, but the cost estimate to perform these tasks is not estimated herein. For completeness, a scoping effort to perform Tasks 4 through 7 will be included as a work-product of Task 3. The scoping effort for Task 8 cannot be completed until Task 7 is completed.



Task 1 – Convene the Water Quality Committee, define objectives, and refine scope of work. The objective of this task is to reestablish the Water Quality Committee, which will be comprised of representatives from all interested stakeholders for the purposes of developing and implementing a groundwater quality management plan. The Committee will precisely articulate the objectives of a groundwater quality management plan and refine the scope of work described below in Tasks 2 and 3 to develop and implement an initial monitoring plan, to perform an assessment of the current water quality condition, and to scope the remaining tasks to develop a groundwater quality management plan. After the scope of work has been refined, the cost and implementation schedule will be updated. Four Committee meetings will be conducted to obtain consensus on the objectives and scope of work.

Task 2 – Develop and implement an initial emerging-contaminants monitoring plan. The objective of this task is to develop a monitoring plan to support the initial assessment of water quality conditions related to contaminants of emerging concern in the Chino Basin. The intent is to conduct monitoring using consistent laboratory methods and detection limits at all wells (including those sampled by Watermaster and municipal water agencies) and to use methods with detection limits that are capable of quantifying concentrations at levels equal to relevant regulatory criteria such as PHGs, NLs, or MCLs.

The initial emerging contaminants monitoring plan will include: a list of wells to be sampled, the list of contaminants to analyze, and a quality assurance project plan (QAPP) that defines the monitoring procedures, quality assurance and quality control (QAQC) protocols for data collection and review, and other requirements. The list of wells will include all municipal supply wells and all monitoring and private wells that are in the capture zone of the municipal supply wells. The QAPP will ensure that Watermaster and each municipal water agency that tests its own wells will collect and analyze samples in a consistent manner. The monitoring plan may include the collection and analysis of groundwater in adjacent groundwater basins that are tributary to the Chino Basin and other sources of recharge to the groundwater basin. At a minimum, the initial emerging contaminants monitoring plan should consist of a one-time sampling event at each well identified in the plan. Two Committee meetings will be conducted to obtain consensus on the scope, cost, and schedule to perform the initial monitoring.

Once consensus is achieved, the initial emerging contaminants monitoring plan will be executed by Watermaster and all participating agencies at the selected wells. The labor and laboratory costs to conduct the initial monitoring at municipal wells will be incurred by the well owners. The labor and laboratory cost to conduct the initial monitoring at monitoring wells or private wells in the capture zone of municipal supply wells will be incurred by Watermaster.¹⁹ All monitoring data will be collected, processed, reviewed for QA/QC, and uploaded to a centralized database maintained by Watermaster for the Chino Basin. The Committee will use the data collected for the initial emerging contaminants monitoring plan, along with other groundwater quality data collected and maintained by Watermaster for the basin-wide groundwater quality monitoring program, to perform the initial water quality assessment in Task 3.

Task 3 – Perform a water quality assessment and prepare a scope to develop and implement a Groundwater Quality Management Plan. The objectives of this task are to prepare a comprehensive assessment of current water quality conditions related to contaminants of emerging concern in the Chino Basin and perform a scoping effort to develop and implement a groundwater quality management plan. Task 3 will begin once the initial emerging contaminants monitoring plan developed in Task 2 has been completed.

The water quality assessment will characterize:

¹⁹ This scope of work assumes 40 monitoring and private wells will be sampled by Watermaster.



- basin-wide concentrations of constituents analyzed pursuant to the initial emerging contaminants monitoring plan;
- current and foreseeable challenges to pumping groundwater for municipal supply based on the results of initial monitoring and other data;
- actions currently being implemented by the Parties to mitigate and/or adapt to current or foreseeable water quality challenges; and
- areas where there are no actions being implemented or planned to mitigate and/or adapt to current or foreseeable water quality challenges.

The water quality assessment will support the scoping effort (1) to implement a long-term monitoring and assessment program and (2) to complete the *Groundwater Quality Management Plan* (e.g. perform Tasks 4 through 7 to identify, evaluate, and select projects to address groundwater quality).

The long-term monitoring and assessment program should be adaptive and include a process to update it at a selected frequency and/or when triggered, based on the needs of the Water Quality Committee, observed trends in water quality, or new or potential regulations.

The deliverable of this task will be a technical report that documents the initial monitoring program, the basin-wide characterization of water quality, the recommended scope of work, schedule and cost to implement a long-term monitoring and assessment program, and the scope of work, schedule, and cost to complete the groundwater quality management plan (Tasks 4 through 7). Four Committee meetings will be conducted to complete the work necessary for Task 3.

Task 4 – Develop planning, screening, and evaluation criteria. The objectives of this task are to develop criteria to evaluate water quality improvement projects. The types of criteria developed to evaluate potential projects in Task 4 will include:

- Watermaster criteria that include no potential MPI, balance of recharge and discharge, and others;
- regulatory criteria that include compliance with DDW regulations and others;
- qualitative criteria that include institutional complexity, overall water supply reliability, and others; and
- quantitative criteria that include business case evaluations expressed as net present value, unit cost, and others.

Task 5 – Identify and describe potential projects for evaluation. The objectives of this task are to identify groundwater quality treatment projects using existing and new facilities, to screen them using the criteria developed in Task 4, and to select a final list of projects for detailed evaluation in Task 6. The list of potential projects should include concepts using existing infrastructure and new infrastructure, solutions for individual agencies, and collaborative solutions.

Task 6 – Conduct a reconnaissance-level study for the proposed projects. The objective of this task is to characterize the performance and the groundwater treatment projects selected for evaluation in Task 5, individually and as a group/system. A reconnaissance-level engineering design and operating plan will be developed for each project. Each project design will include the approximate location, target contaminants, treated volumes, and conveyance systems, and will describe any potential implementation barriers. A cost opinion will be determined for each project. The cost opinion will include a comparison of the cost to implement treatment projects by individual municipal agencies to those of collaborative projects. This task will include a recommended set of projects for implementation, based on the criteria developed under Task 4. The final deliverable of this task will be an implementation plan that includes a



schedule and plan to finance preliminary design and CEQA documentation of the projects selected for implementation.

Task 7 – Prepare the Groundwater Quality Management Plan. The objective of this task is to prepare the *Groundwater Quality Management Plan*, which will document the most current water quality assessment, the long-term monitoring and analysis plan, the reconnaissance-level engineering design plan, the selected projects for implementation, and an implementation plan. New regulatory requirements and the compliance challenges that result can occur at random, so the groundwater quality management plan should include a strategy to trigger an update to address pending or newly adopted regulations. Water quality results reported out of the long-term monitoring and assessment program could also trigger the need to update the management plan. The implementation plan will include a process to initiate the development and implementation of an update to the *Groundwater Quality Management Plan*.

Task 8 – Plan, design, and build water quality management projects. The objective of this task is to implement the recommended projects in the *Groundwater Quality Management Plan*. This task includes (1) developing and implementing necessary agreements between participating Parties, (2) preparing preliminary designs of the recommended projects, (3) preparing the environmental documentation for the recommended projects (this will tier-off from the 2020 OBMP Update PEIR), (4) preparing financial plans to construct the recommended projects, (5) preparing final designs of the recommended projects, (6) acquiring necessary permits for constructing and operating the recommended projects, and (7) constructing the recommended projects.

Cooperative Efforts with Appropriate Entities to Implement Activity EF

Watermaster and the IEUA will collaborate to support the development of the *Groundwater Quality Management Plan*. Based on the scope of work described above, the following is a description of the recommended roles of each agency:

- **Watermaster.** Convenes the Water Quality Committee, leads the stakeholder process to define the initial emerging contaminants monitoring plan, performs monitoring at Watermaster monitoring wells and private wells pursuant to the initial and long-term monitoring plans, collects and maintains the data collected by the municipal agencies and other stakeholders as part of the initial and long-term monitoring plans, performs water quality assessments of the Chino Basin, and prepares the final groundwater quality management plan.
- **IEUA.** Leads stakeholders in the process of identifying and describing potential projects, conducting a reconnaissance-level engineering study for the proposed projects, and project implementation.

Implementation Actions, Schedule, and Costs for Activity EF

The recommended schedule to complete the scope of work described herein is described below:

Year one:

- Convene the Water Quality Committee, define objectives, and refine scope of work for Tasks 2 and 3 (Task 1).
- Develop initial emerging contaminants monitoring plan (Task 2).

Year two:

- Implement initial emerging contaminants monitoring plan (Task 2).
- Begin preparing the water quality assessment of the Chino Basin (Task 3).



Year three:

- Complete the water quality assessment of the Chino Basin, recommendations for a long-term monitoring and assessment program, and the scoping effort for Tasks 4 through 7 (Task 3).

Year four:

- Implement long-term monitoring and assessment program (continues every year thereafter, subject to periodic modifications).
- Develop planning, screening, and evaluation criteria to review potential projects (Task 4).
- Identify and describe potential projects for evaluation (Task 5).
- Begin the reconnaissance-level study of selected projects (Task 6).

Year five:

- Complete the reconnaissance-level study of selected projects (Task 6).
- Select project/s for implementation (Task 6).
- Begin to prepare the *Groundwater Quality Management Plan* (Task 7).
- Conduct the long-term monitoring and assessment plan as defined in Task 3.

Years six and seven:

- Complete the final *Groundwater Quality Management Plan* (Task 7).
- Prepare necessary agreements to implement selected projects.
- Prepare preliminary design reports for the recommended projects. The level of design will be such that it enables the preparation of environmental documentation pursuant to CEQA, provides information for identifying and acquiring construction and related permits, and produces updated cost estimates (Task 8).
- Conduct the long-term monitoring and assessment plan as defined in Task 3.

Years eight to ten:

- Prepare final designs and acquire necessary permits for the selected projects (Task 8).
- Construct selected projects.
- Conduct the long-term monitoring and assessment plan as defined in Task 3.

Exhibit EF-11 shows the estimated budget-level engineering cost to complete Tasks 1 through 3, which is about \$295,000. The cost of Tasks 4 through 7 cannot be estimated until the completion of Task 3, and the cost of Task 8 cannot be estimated until the completion of Task 7. Exhibit EF-11 also shows how Tasks 1 through 3 and their associated costs will be scheduled over the first three years of implementation.



Activity CG

Description of Activity CG

Activities C and G, defined by the stakeholders, are both intended to address the need for infrastructure to optimize the use of water supplies. Activity C defined by the stakeholders is:

Identify and implement regional conveyance and treatment projects/programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence.

Activity G defined by the stakeholders is:

Optimize the use of all sources of water supply by improving the ability to move water across the basin and amongst stakeholders, prioritizing the use of existing infrastructure.

The two activities were combined into Activity CG.

The Parties have identified that there are basin management challenges, such as land subsidence and poor water quality, that could limit the ability to fully exercise their pumping rights using existing infrastructure. The intent of Activity CG is to optimize the use of all sources of water available to the Parties to meet their demands despite these basin management challenges and potentially help to mitigate them.

Through the listening session process, the stakeholders identified the following as potential outcomes of performing Activity CG:

- Enable producers with infrastructure in MZ1 and MZ2 to obtain water through regional conveyance, which supports the management of groundwater levels to reduce the potential for land subsidence and ground fissuring.
- Enable the Parties to increase pumping in areas currently constrained by poor water quality.
- Remove groundwater contaminants from the Chino Basin and thereby improve water quality.
- Protect and/or enhance Safe Yield.
- Maximize the use of existing infrastructure, which will minimize investments in new facilities.
- Provide infrastructure that can also be used to implement Storage and Recovery Programs.

Activity CG has similar objectives to those of PE 5 of the 2000 OBMP – *Develop and Implement Regional Supplemental Water Program*. Recognizing that growth in the Chino Basin was going to result in a more than 30 percent increase in then-current water demands, PE 5 was included in the 2000 OBMP to improve regional conveyance and the availability of imported and recycled waters throughout the basin. The implementation plan for PE 5 was combined with PE 3 – *Develop and Implement Water Supply Plan for the Impaired Areas of the Basin* in the OBMP and Peace Agreement.

Early in the development of the PE 3/5 implementation plan, the stakeholders discussed the development of a regional water facilities plan that, when implemented, would enable the Parties to maximize the use of imported water in years when Metropolitan has surplus water and to be able to rely completely on local supplies during years when Metropolitan supplies are low or completely interrupted due to planned or catastrophic outages. This plan involved the construction of new wells and groundwater treatment and regional conveyance improvements; the water produced in this plan would be used exclusively by the Parties. The stakeholders ultimately did not include this plan in the 2000 OBMP IP, preferring at that time to focus on expanding groundwater desalting in the lower Chino Basin, increasing stormwater recharge, and implementing a large-scale recycled water program to maximize its reuse.

The IEUA and its member agencies are currently preparing the *2020 Integrated Water Resources Plan* (IRP), which will serve as a regional implementation strategy for long-term water resources management



within IEUA’s service area. The objective of the IRP is to ensure that the IEUA’s water supplies over the next 25 years are reliable, cost-effective, and environmentally responsible. The 2020 IRP is in development, and there is a significant body of engineering planning being performed that can be leveraged to accomplish the objectives of Activity CG for all Chino Basin Parties.

Need and Function of Activity CG

In addition to Chino Basin groundwater, the sources of water available to the Parties include:

- Imported water purchased from Metropolitan (through the IEUA and TVMWD) and the San Bernardino Valley Municipal Water District (Valley District).
- Non-Chino Basin groundwater from adjacent groundwater basins, including the Six, Spadra, Cucamonga, Rialto, Lytle, and Riverside Basins.
- Local surface water from San Antonio, Cucamonga, Day, Etiwanda, East Canyon, and Lytle Creeks, and some tunnels and springs located in the San Gabriel Mountains.
- Recycled water from the IEUA and the Los Angeles Sanitation District.

Watermaster periodically compiles the Parties’ future water supply plans. The data collected as part of that process represent the Parties’ best estimates of their demands and associated water supply plans. The most recent effort by Watermaster to characterize the water supply plans was during the development of the *Storage Framework Investigation*.^{20,21} Exhibit CG-1 shows the historical (2015) and projected aggregate water demand and supply plan for all Parties. Total water demand is projected to grow from about 290,000 afy in 2015 to about 420,000 afy by 2040, and increase of about 130,000 afy. The projected growth in water demand by the Appropriative Pool Parties drives the increase in aggregate water demand as some Appropriative Pool Parties are projected to serve new urban water demands created by the conversion of agricultural and vacant land uses to urban uses. Chino Basin groundwater and imported water together make up about 70 percent of the aggregate water supplies of the Parties.

Each of the water sources shown in Exhibit CG-1 has its limitations; they are described below.

Chino Basin groundwater and basin management issues

Chino Basin groundwater is the largest source of supply used to meet the demands of the Watermaster Parties. Exhibit CG-1 shows that Chino Basin groundwater makes up about 40 to 50 percent of the total aggregate supply. Groundwater pumping was about 147,000 afy in 2015 and is projected to increase to about 177,000 afy by 2040, an increase of about 30,000 afy. The ability to produce groundwater from the Chino Basin is limited by current basin management issues, such as ongoing land subsidence in MZ1 and parts of MZ2, pumping sustainability issues in the JCSD and CDA well field areas, and water quality.

Land subsidence. One of the earliest indications of land subsidence in the Chino Basin was the appearance of ground fissures within the City of Chino in MZ1. These fissures appeared as early as 1973, but an accelerated occurrence of ground fissuring ensued after 1991 and resulted in damage to existing infrastructure. The OBMP IP called for a management plan to reduce or abate the subsidence and fissuring problems to the extent that it may be caused by pumping in MZ1. Watermaster has been conducting land

²⁰ The water demand and supply plans developed in 2017 were based in part on 2015 Urban Water Management Plans and updated to 2017 conditions. The Storage Framework Investigation can be found on Watermaster’s website. This document is available on Watermaster’s FTP site at <http://www.cbwm.org/>

²¹ Watermaster is currently compiling future water supply plans for the Safe Yield Recalculation.



subsidence investigations in the Chino Basin since September 2000 to implement PE 4 of the OBMP IP.²² The results of the investigations have indicated that the potential occurrence of pumping-induced land subsidence and ground fissuring is confined to MZ1 and MZ2. Watermaster has defined five specific Areas of Subsidence Concern within MZ1 and MZ2: the Managed Area, Northwest MZ1, Central MZ1, the Northeast Area, and the Southeast Area. Exhibit CG-2 shows the locations of the Areas of Subsidence Concern and recent measurements of land subsidence from 2011 to 2019.

For the Managed Area, Watermaster utilized the results of the land subsidence investigations to develop and implement a Subsidence Management Plan (SMP)²³ to minimize the potential for future subsidence and ground fissuring. The SMP established a specific groundwater level at a monitoring well in the Managed Area (the “Guidance Level” at well PA-7 at the Ayala Park Extensometer facility) and recommended that the pumpers with wells in the Managed Area manage their groundwater production such that the groundwater levels at PA-7 remain above the Guidance Level. The main pumpers in the Managed Area are the City of Chino Hills, City of Chino, and State of California. They have voluntarily managed their pumping as recommended in the SMP, and as a result, the rate of land subsidence has declined to de minimis levels within the Managed Area.

Exhibit CG-2 shows that the maximum rate of recent land subsidence from 2011-2019 has occurred in Northwest MZ1. Of particular concern is that the subsidence in Northwest MZ1 has occurred in a pattern of concentrated differential subsidence across the San Jose Fault—the same pattern of differential subsidence that occurred in the Managed Area during the time of ground fissuring in the 1990s. Ground fissuring is the main subsidence-related threat to infrastructure. Exhibit CG-2 also shows the occurrence of subsidence across broad areas in Central MZ1 and the Northeast Area during 2011-2019. Watermaster is monitoring and investigating the relationships between pumping, recharge, groundwater levels and land subsidence in Northwest MZ1, and investigating pumping and recharge strategies to minimize or abate the occurrence of the differential land subsidence. These efforts are being implemented pursuant to the *Work Plan to Develop a Subsidence-Management Plan for the Northwest MZ-1 Area*,²⁴ which is an appendix to the SMP.

The main groundwater producers in Northwest MZ1, Central MZ1, and the Northeast Area are the City of Pomona, the MVWD, Golden State Water Company (GSWC), the City of Chino, and the City of Ontario. Interim work performed in Northwest MZ1 to support the development of a subsidence management plan for this area suggests that land subsidence could be reduced or abated if recharge in Northwest MZ1 is increased by at least 20,000 afy, pumping is decreased by at least 20,000 afy, or some combination of both totaling about 20,000 afy.²⁵ Exhibit CG-3 is a time-series chart of groundwater pumping, wet-water recharge, and land subsidence (represented as negative vertical ground motion) in Northwest MZ1 from

²² Detailed information on Watermaster’s land subsidence investigations, the causes of subsidence and ground fissuring, Watermaster’s subsidence management plan for the so-called “Managed Area” in the City of Chino, annual monitoring reports, and ongoing investigations to develop a subsidence management plan for Northwest MZ1 can be found on Watermaster’s website at: <http://www.cbwm.org/>

²³ Chino Basin Watermaster. 2015. *Chino Basin Subsidence Management Plan*. July 2015. This document is available on Watermaster’s FTP site at <http://www.cbwm.org/>

²⁴ Chino Basin Watermaster. 2015. *Work Plan to Develop a Subsidence Management Plan for the Northwest MZ-1 Area*. This document is available on Watermaster’s FTP site at <http://www.cbwm.org/>

²⁵ Chino Basin Watermaster. 2017. *Task 3 and Task 4 of the Work Plan to Develop a Subsidence Management Plan for the Northwest MZ-1 Area: Development and Evaluation of Baseline and Initial Subsidence-Management Alternatives*.



1978-2019. Recent pumping in Northwest MZ1 has decreased significantly: 2017-2019 pumping averaged about 12,000 afy compared to about 19,000 afy since the implementation of the OBMP (2001-2016), a reduction of about 7,000 afy. The reduced pumping is mainly due to water quality issues. Additionally, recent wet-water recharge in Northwest MZ1 has increased: 2017-2019 recharge averaged about 15,000 afy compared to about 9,000 afy since the implementation of the OBMP (2001-2016), an increase of about 6,000 afy. Exhibit CG-3 shows that these recent decreases in pumping and increases in recharge, totaling about 13,000 afy, appear to coincide with reduced rates of land subsidence in Northwest MZ1. This suggests that reduced pumping and/or increased recharge can abate land subsidence in Northwest MZ1. If the subsidence management plan for the Northwest MZ1 area recommends a combination of reduced pumping and wet-water recharge to minimize and abate the ongoing land subsidence, the pumpers in this area who elect to reduce pumping in accordance with the plan may have difficulty in fully utilizing their water rights with existing infrastructure.

Pursuant to the Peace Agreement, new land subsidence is considered MPI and would require mitigation. New land subsidence refers to additional land subsidence caused by the reduction of pressure head in the coarse-grain sediments to levels lower than historical lows. Through the Watermaster's recent *Storage Framework Investigation*, a groundwater-elevation metric was defined as a minimum threshold for the occurrence of new land subsidence in MZ1.²⁶ Based on the modeling results of the *Storage Framework Investigation*, new land subsidence is not projected to occur through 2050 in MZ1 under Scenario 1A, which is based on the Parties' best estimates of how future supplies would be used to meet demands. However, the investigation is limited to new land subsidence and does not address ongoing land subsidence in Northwest MZ1.

Pumping sustainability. The term *pumping sustainability*, as used herein, refers specifically to the ability to pump water from a specific well at a desired pumping rate, given the groundwater level at that well and its specific well construction and equipment details. The pumping sustainability metrics for all Appropriator wells were recently updated as part of the *Storage Framework Investigation*. Groundwater pumping at a well is presumed to be sustainable if the groundwater level at that well is greater than the sustainability metric. If the groundwater level falls below the sustainability metric, the owner will either need to lower the pumping equipment in their well or reduce the well's pumping rate. Groundwater levels at wells in the JCSD and CDA well fields and a part of the FWC service area are currently below the pumping sustainability metric and therefore have limited pumping capacity. Exhibit CG-4 shows the projected difference between the groundwater levels and the pumping sustainability metric in FY 2030 for Scenario 1A. Groundwater levels in Scenario 1A are projected to be above the pumping sustainability metric in 2030 over the entire basin except for the areas with existing pumping sustainability issues, identified by the red circles in Exhibit CG-4. This suggests that projected basin operations will not improve nor exacerbate pumping sustainability issues that currently exist in these areas and that the JCSD and CDA well fields and one well in the FWC service area will continue to have limitations on pumping due to groundwater levels.

Water quality. As described for Activity EF, throughout most of the Chino Basin, there are contaminants in groundwater that can limit its direct use for drinking water supply in the absence of treatment. The constantly evolving regulatory environment described under Activity EF, threatens the ability of the

²⁶ The metric is based on historical groundwater levels and is represented as a groundwater level control surface throughout MZ1 that defines the likelihood of initiating new subsidence: if groundwater levels are higher than the metric, then new land subsidence would not occur; if groundwater levels fall below the metric, then new land subsidence could occur and cause MPI.



Parties to pump groundwater. Some Parties are not, or will not be, able to pump their groundwater rights due to the presence of contaminants and the lack of treatment facilities to comply with drinking water standards. For example, the regulatory-required response action for compliance with the new MCL for 1,2,3-TCP is to shut-down pumping at wells with concentrations that exceed the MCL until a treatment plan is implemented.

Exhibit EF-2 shows the locations of active municipal supply wells, symbolized by the number of regulated drinking water contaminants that have been detected in exceedance of their respective primary MCLs. A subset of these wells is currently offline due to these exceedances. According to the interim results from Based on the 2020 IRP, the Parties in the IEUA service area that are impacted by water quality such that some of their production capacity is offline or requires blending are the Cities of Chino, Chino Hills, Upland, and Ontario; the CVWD; the MWVD; and Fontana Water Company. Based on Exhibit EF-2, other Parties that are impacted by water quality and have wells with one or more constituents that exceed an MCL are the City of Pomona, GSWC, JCSD, and Marygold Mutual Water Company. As new drinking water regulations come into effect, additional wells and/or Parties will be impacted if there is no plan to address the contaminants.

Imported water.

Imported water is projected to account for about 20 to 30 percent of the aggregate water supplies of the Parties, as shown in Exhibit CG-1. Imported water demand was about 63,000 afy in 2015 and is projected to increase to about 120,000 afy by 2040, an increase of about 58,000 af. The challenges to imported water include reliability of its supply and infrastructure and the local capacity to treat it for municipal supply.

Supply reliability. In January 2016, Metropolitan completed its *2015 Integrated Resources Plan Update (2015 IRP)*²⁷, which reported that, if the plan is fully implemented, shortages of imported water supplies will occur about nine percent of the time under 2020 conditions, four percent of the time under 2025 conditions, and zero percent under 2030 conditions. “Shortage” is defined herein as Metropolitan’s inability to fully meet its demands. If Metropolitan does not fully implement its 2015 IRP, shortages in Metropolitan supplies are projected to occur about 12 percent of the time under 2020 conditions, and the occurrence of a shortage is projected to increase to 80 percent under 2040 conditions. Therefore, by 2040, Metropolitan is assumed to be able to fully meet its demands 90 percent of the time (nine out of ten years) with the full implementation of its 2015 IRP and 20 percent of the time (one out five years) without it. As of this writing, the implementation of some projects identified in the 2015 IRP, such as the California WaterFix tunnel project, are uncertain. Failure to fully implement the 2015 IRP in a timely manner will result in less imported water available to the Parties.

Infrastructure reliability. Metropolitan is planning to rehabilitate the Rialto Feeder pipeline, and according to its draft schedule, construction will occur from 2029 to 2033. During construction, continuous six- to nine-month shutdowns are planned to occur. Because the Rialto Feeder pipeline is the main source of imported water deliveries to the IEUA and TVMWD, long-term shutdowns will cause significant reductions in water supplies to the Parties and will require them to rely more heavily on Chino Basin groundwater or other supplies during this period.

In addition to planned infrastructure shutdowns, catastrophic events, such as earthquakes, can cause unplanned outages. Metropolitan recently published its three primary goals to contribute to seismic

²⁷ Metropolitan. (2016). *Integrated Water Resources Plan: 2015 Update*. January 2016.



resilience: (1) conducting a Rialto Feeder pipeline alternative supply needs study, (2) completing a re-evaluation of its emergency storage needs, and (3) completing a comprehensive evaluation of its storage programs.²⁸ According to Metropolitan, the latest projections for the worst case scenario under a seismic catastrophic event suggest that the Metropolitan’s East Branch of the SWP, which includes the Rialto Feeder pipeline, can be repaired within 12 to 24 months. This means, that under such an event, the Parties would be required to find alternative sources of water to meet 20 to 30 percent of their total demands for up to two consecutive years.

Capacity limitations. The capacity to treat imported water to meet future municipal supply demands is limited for some Parties in the Chino Basin. The Water Facilities Authority (WFA) treats imported water purchased from the IEUA at the Agua de Lejos treatment plant (WFA plant) and delivers it to the Cities of Chino, Chino Hills, Ontario, and Upland, and the MVWD. Each of these WFA member agencies has a contracted share of the plant’s total capacity of 81 million gallons per day (mgd), which is equivalent to 90,700 afy. The WFA plant’s current capacity is less than its rated capacity of 81 mgd due to solids handling limitations.²⁹ According to the WFA, the current capacity of the WFA plant is about 40 mgd in the summer months and about 20 mgd in the winter months. This suggests that even when imported water is available to the WFA, there is a limitation in the ability to treat the water and deliver it for municipal use.

Other supply reliability issues

Other reliability issues that can affect the Parties include:

- Non-Chino-Basin groundwater supplies. Non-Chino-Basin groundwater is projected to account for 16 to 18 percent of the Parties’ aggregate water supplies. This source of water is not available to all the Parties. The reliability of non-Chino-Basin groundwater depends on water quality, water rights, and infrastructure to convey it to a Parties’ water systems.
- Local surface water supplies. Local surface water is projected to account for 3 to 5 percent of the aggregate water supplies of the Parties. This water source is not available to all Parties. The reliability of local surface water depends on the hydrologic characteristics of the individual supplies, water quality, water rights, and infrastructure to convey it from points of diversion to a Party’s water system.
- Recycled water supply. Recycled water is projected to account for about 7 to 8 percent of the aggregate water supplies of the Parties. The challenges to maximizing the reuse of recycled water are described under Activity D and include: timing of recycled water availability, salt and nutrient management, water quality regulations, and the Santa Ana River Judgment.
- Climate change. Climate change is likely to result in higher temperatures, longer dry periods, and shorter more intense wet periods, which can ultimately affect the availability and management of all water supply sources. For example, shorter more intense precipitation periods are expected to result in reduced recharge, and longer dry periods are expected to result in reduced imported water supplies (as occurred with SWP supplies in the recent drought from 2013 to 2016).

Summary

The water demands of the Chino Basin Parties are expected to increase by 44 percent by 2040, and as illustrated above, there are numerous challenges to the reliability of the supplies and the infrastructure that deliver them. Many of the challenges are interrelated and compounding. And, the impacts to individual Parties and associated costs to manage them are not equal. For example, the reliability of

²⁸ Metropolitan. (2018). *Seismic Resilience, First Biennial Report*. February 2018.

²⁹ Email from Terry Catlin, April 10, 2018.



imported water (and other non-groundwater supplies) not only affects the imported water supply but also the groundwater supplies that are dependent on imported water for blending. According to draft results from IEUA's 2020 IRP, the Parties that require blending are: the MVWD, CVWD, FWC, and the Cities of Pomona, Upland, Chino, Chino Hills, Ontario.

In the Chino Basin, prolonged reductions in groundwater pumping due to land subsidence, groundwater sustainability, or groundwater contamination have the effect of reducing Safe Yield, potentially contributing to the loss of Hydraulic Control and the spread of contamination. The ability to convey water from areas that are not subject to these limitations to areas that may provide flexibility to the Parties to pump their respective Chino Basin groundwater rights.

Activity CG will require a planning process that will ensure that the recommended infrastructure that results from it will meet the Parties' needs. To do this, the planning process should answer the following questions:

- 1) How do the Parties define reliability? How can this be quantified?
- 2) What is the desired level of reliability? How is it articulated at the regional and individual Party levels? For example, the level of reliability could be articulated as: the ability to meet all or a percentage of the potable water demands of the Parties under a full interruption of SWP supplies delivered by Metropolitan.
- 3) What are the other benefits of optimization desired by the Parties? How can such benefits be quantified?
- 4) What existing/planned infrastructure could be used to optimize the use of all sources of water and how would it be used?
- 5) What new infrastructure would be required to achieve the desired level of reliability and other benefits?
- 6) How would the existing/planned/new infrastructure be operated to achieve the desired level of reliability and other benefits?
- 7) Are the capital and O&M costs of optimization less than the cost to agencies to manage the supply and infrastructure challenges on their own?
- 8) What institutional arrangements are necessary to operate the facilities to achieve the benefits?

As previously mentioned, the IEUA is currently developing the 2020 IRP, which will serve as a regional implementation strategy for long-term water resources management within IEUA's service area. As part of this work, the IEUA retained INTERA to model the existing major infrastructure of the IEUA's service area and develop scenarios to identify opportunities and vulnerabilities in the existing infrastructure of its member agencies. The IRP is in development, and there is a significant body of work being performed by the IEUA and its member agencies that can be leveraged to accomplish the objectives of Activity CG for all of the Parties. The IEUA is also currently conducting preliminary engineering and planning for the CBP, which is a large Storage and Recovery Program to provide regional, dry-year water supplies and associated infrastructure. The project concepts envisioned in the CBP could meet, at least in part, the objectives of Activity CG. Regardless, the work currently in development can be leveraged to reduce the cost of implementing Activity CG.

In order to optimize the use of all sources of water and identify and implement water supply reliability projects, the Parties should convene a Water Supply Reliability Committee for the purposes of accomplishing the objectives of Activity CG for all Parties. The scope of work is described below.

Scope of Work for Activity CG

The scope of work to develop and implement Activity CG consists of six tasks.



- Task 1 – Form the Water Supply Reliability Committee, define objectives, and refine scope
- Task 2 – Characterize water demands, water supply plans, and existing/planned infrastructure and its limitations
- Task 3 – Develop planning, screening, and evaluation criteria
- Task 4 – Describe water supply reliability opportunities
- Task 5 – Develop reconnaissance-level engineering design and operating plan
- Task 6 – Plan, design, build water reliability alternatives

The tasks are described below.

Task 1 – Form the Water Supply Reliability Committee, define objectives, and refine scope. In this task, a Water Supply Reliability Committee will be convened. The Committee’s initial tasks are: (1) to clearly articulate and obtain consensus on the objectives for optimizing the use of all sources of water; (2) to define reliability, benefits, and performance criteria for the Parties; and (3) to refine the preliminary scope of work, schedule, and cost defined for Tasks 2 through 6 to fully leverage the existing data and planning efforts of Watermaster, the IEUA, and others. Four Committee meetings will be conducted to accomplish these tasks. In step (2), the Committee will address the following questions:

- 1) How do the Parties define reliability? How can this be quantified?
- 2) What is the desired level of reliability? How is it articulated at the regional and the individual Party levels?
- 3) What are the other benefits of optimization desired by the Parties? How can such benefits be quantified?

Task 2 – Characterize water demands, water supply plans, and existing/planned infrastructure and their limitations. The objectives of this task are: (1) to characterize the water demands and supply plans of the Parties; (2) to characterize existing/planned infrastructure to convey, treat, and distribute the supplies to meet demands; and (3) to identify opportunities and limitations in the existing/planned infrastructure consistent with the objectives of Activity CG defined in Task 1. The water demands and supply plans will be characterized on a monthly basis for various climate conditions. One committee meeting and one individual meeting with each participating Party will be conducted to review the characterization of water demands and supply plans and existing/planned infrastructure. Two additional meetings will be conducted to identify opportunities and limitations in the existing/planned infrastructure consistent with the objectives of Activity CG defined in Task 1.

Task 3 – Develop planning, screening, and evaluation criteria. The objective of this task is to develop the criteria that will be used to evaluate water reliability projects in Tasks 4 and 5. Criteria to evaluate potential projects will include:

- Watermaster criteria that include no potential MPI, balance of recharge and discharge, and others;
- qualitative criteria that include institutional complexity and others; and
- quantitative criteria that include business case evaluations, expressed as net present value, unit cost, and others.

Task 4 – Describe water supply reliability opportunities. The objectives of this task include identifying potential water supply reliability project alternatives, screening them using the screening criteria developed in Task 3, and developing project alternatives for detailed evaluation. Three meetings will be conducted to develop a list of potential projects that can be implemented, to review the screening of these projects, and to select projects to evaluate in Task 5. In executing this task, the Committee will address the following questions:



- 4) What existing/planned infrastructure could be used to optimize the use of all sources of water and how would it be used?
- 5) What new infrastructure would be required to achieve the desired level of reliability and other benefits?

Task 5 – Develop reconnaissance-level engineering design and operating plan. The objective of this task is to characterize the performance and costs of the water supply reliability alternatives developed in Task 4. A reconnaissance-level engineering design and operating plan will be developed for each alternative. Each alternative design will include the approximate size, location, and alignment of major infrastructure, and will describe any potential implementation barriers for the project. A cost opinion will be determined for each alternative. This task includes evaluating alternatives based on the alternative evaluation criteria developed in Task 3, describing how the alternative could be implemented and financed, and recommending an alternative for implementation. The deliverable of this task will be a technical report that summarizes the work performed under Tasks 1 through 5, and it will include a plan to pay for the preliminary design and CEQA documentation of the recommended alternative. Five meetings will be conducted to review the design and estimated benefit of the recommended alternative; review the evaluation of the projects, based on the criteria developed in Task 3; and review the recommended list of projects for implementation; review the implementation plan; and review the technical report. In executing this task, the Committee will address the following questions:

- 6) How would the existing/planned/new infrastructure be operated to achieve the desired level of reliability and other benefits?
- 7) Are the capital and O&M costs of optimization less than the cost to agencies to manage supply and infrastructure challenges on their own?
- 8) What institutional arrangements are necessary to operate the facilities to achieve the benefits?

Task 6 – Plan, design, build water reliability alternatives. The objective of this task is to implement the recommendations of the technical report. This task includes (1) developing and implementing necessary agreements between participating Parties, (2) preparing the preliminary design of the recommended alternative, (3) preparing the environmental documentation for the recommended alternative and other alternatives that will tier-off the 2020 OBMP Update PEIR, (4) preparing a financial plan for constructing the recommended alternative, (5) preparing final design of the recommended alternative, (6) acquiring permits for constructing and operating the recommended alternative, and (7) constructing the recommended alternative.

Cooperative Efforts with Appropriate Entities to Implement Activity CG

This is a basin-wide activity that involves the Parties, the IEUA, the TVMWD, and the WMWD. Given its current efforts, the IEUA would be the logical entity to lead the implementation of Activity D on behalf of all Parties in these service areas, but the process could be led by others. In this role, the agency leading the project on behalf of the Parties would contract for planning and engineering services as required. Watermaster, TVMWD and WMWD would work with IEUA as needed to support the expansion of the planning efforts to cover non-IEUA member agencies. Watermaster would also participate in the process to ensure that Activity CG implementation is consistent with the Judgment, Peace Agreements and other agreements, and the Watermaster Rules and Regulations.

Implementation Actions, Schedule, and Costs for Activity CG

The recommended schedule to complete the scope of work described herein is described below:



Year one:

- Convene Water Supply Reliability Committee, define reliability and other benefits, and refine scope of work, schedule, and budget (Task 1).

Year two:

- Characterize the water demand, water supply plans, and existing/planned infrastructure and its limitations; and identify conceptual facilities and operational improvements that achieve reliability and other benefits defined in Task 1 (Task 2).
- Develop planning, screening, and evaluation criteria for water supply reliability projects (Task 3).
- Develop water reliability alternatives for evaluation (Task 4).

Year three:

- Conduct reconnaissance-level engineering study for the alternatives (Task 5).

Years four through seven:

- Recommend alternative for implementation (Task 5).
- Prepare final report, documenting work performed in Tasks 1 through 5 (Task 5).
- Watermaster, the IEUA, and other potential partners develop a project implementation agreement. The objective of this agreement is to define the roles of each partner in the planning, permitting, design, and implementation of the projects, and the cost allocations.
- Preliminary design of recommended projects. The level of design will be such that it enables the preparation of environmental documentation pursuant to CEQA and provides information for identifying the permits required for construction and operation.
- Prepare environmental documentation for alternatives. CEQA will cover the recommended alternative and other alternatives at the project level, based on the project descriptions developed in Task 5. This documentation will tier-off from the 2020 OBMP Update PEIR. Watermaster will conduct an MPI analysis in parallel with the CEQA process.

Years eight and nine:

- Prepare final designs and acquire permits for the selected alternative.

Years ten and beyond:

- Construct recommended alternative.

Exhibit CG-5 shows the estimated budget-level engineering cost to complete Tasks 1 and 2 which is about \$305,000. The cost of Tasks 3 through 6 cannot be estimated until the completion of Task 2. And, because the IEUA is currently conducting its 2020 IRP (the scope of work for which overlaps with scope recommended herein), the cost may be lower than estimated if its work is leveraged.

Some of the facilities and associated operating plans identified under this activity may overlap with those envisioned in Activity EF and/or Activity B. If Activity EF and/or B and CG move forward, there will be cost savings related to facilities planning.



Activity K

Description of Activity K

Activity K defined by the stakeholders is:

Develop a management strategy within the salt and nutrient management plan to ensure the ability to comply with the dilution requirements for recycled water recharge.

The objective of Activity K is to determine if compliance with recycled water recharge dilution requirements, defined in Watermaster and the IEUA's maximum benefit SNMP, can be achieved under existing management plans, and if not, to develop a plan to achieve compliance.

Through the listening session process, the stakeholders identified the following as potential outcomes of performing Activity K:

- Enable the continued and expanded recharge of recycled water, which will:
 - protect water quality,
 - improve water-supply reliability, especially during dry periods, and
 - protect/enhance Safe Yield.

The 2000 OBMP included PE 7—*Develop and Implement Salt Management Plan*—to characterize current and future salt and nutrient conditions in the basin and to subsequently develop and implement a plan to manage them. Such a management strategy was necessary to address historical salt and nutrient accumulation from agricultural operations and to support the aggressive expansion of recycled water recharge and reuse envisioned in PE 2 and PE 3/5. Recognizing that implementing the recycled water reuse program would require large scale treatment and mitigation of salt loading under the then-current antidegradation objectives for total dissolved solids (TDS) and nitrate, defined in the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan), Watermaster and the IEUA petitioned the Regional Board to establish a maximum benefit-based salt and nutrient management plan (maximum benefit SNMP) that involved (1) increasing the TDS and nitrate objectives for the Chino-North groundwater management zone³⁰ (GMZ) to numerically higher values to enable recycled water reuse without mitigation or treatment and (2) committing to a program of salt and nutrient management activities and projects (“maximum benefit commitments”) that ensure the protection of the beneficial uses of the Chino-North GMZ and downgradient water resources (the Santa Ana River and the Orange County GMZ). The maximum benefit commitments included the implementation of a monitoring, analysis, and reporting program to track TDS and nitrate trends; the construction and future expansion of the Chino Basin Desalters to attain Hydraulic Control of the Chino-North GMZ to protect the Santa Ana River; the construction of recharge facilities to increase storm and recycled water recharge; and a commitment to future treatment of recycled water and/or groundwater, as needed, to protect beneficial uses and comply with the maximum benefit TDS and nitrate objectives. These are all activities that were planned to be implemented under the OBMP. The maximum benefit SNMP was incorporated into the Basin Plan in January 2004.

Activity K, as envisioned by the stakeholders, would entail an expansion on the existing analysis requirements in the maximum benefit SNMP to incorporate a forward-looking assessment of the ability to comply with the maximum benefit commitments. It would set up Watermaster and the IEUA to more

³⁰ The Chino-North GMZ has a maximum-benefit TDS objective of 420 mg/l and is a combination of the Chino-1, Chino-2, and Chino-3 antidegradation GMZs that have lower TDS objectives ranging from 250 to 280 mg/l.



proactively prepare a compliance plan as opposed to reacting to a trigger event that requires short-term, time-certain response actions.

Need and Function of Activity K

Maximum benefit SNMP commitments

Implementation of the maximum benefit SNMP is a regulatory requirement of the Basin Plan. It's also incorporated into Watermaster and the IEUA's recycled water recharge program permit (R8-2007-0039) and the IEUA's recycled water discharge and direct reuse permit (R8-2015-0021; NPDES No. CA 8000409). There are nine maximum benefit commitments included in the Basin Plan and recycled water permits:

1. The development and implementation of a surface-water monitoring program
2. The development and implementation of a groundwater monitoring program
3. The expansion of the Chino-I Desalter to 10 million gallons per day (mgd) and the construction of the Chino-II Desalter with a design capacity of 10 mgd
4. The additional expansion of desalter capacity to a total capacity of 40 mgd pursuant to the OBMP and the Peace Agreement
5. The construction of the recharge facilities included in the Chino Basin Facilities Improvement Program
6. The management of recycled water quality to ensure that the IEUA agency-wide, 12-month running average wastewater effluent quality does not exceed 550 mg/l for TDS and 8 mg/l for total inorganic nitrogen (TIN)
7. The management of the basin-wide, volume-weighted TDS and nitrate concentrations of artificial recycled, storm, and imported waters to concentrations that are less than or equal to the maximum benefit objectives as a five-year rolling average
8. The achievement and maintenance of Hydraulic Control of groundwater outflow from the Chino Basin, specifically from the Chino-North GMZ, to protect the water quality of the Santa Ana River and downstream beneficial uses
9. The periodic redetermination of "current" ambient TDS and nitrate concentrations of the Chino Basin GMZs (every three years).

Additionally, Watermaster and the IEUA are required to prepare an annual report to the Regional Board on the status of compliance with the maximum benefit commitments. If the maximum benefit commitments are not met to the Regional Board's satisfaction, the antidegradation objectives would apply for regulatory purposes. The application of the antidegradation objectives would result in a finding of no assimilative capacity for TDS and nitrate in the Chino-North GMZ, and the Regional Board would require mitigation for recycled water discharges to Chino-North that exceed the antidegradation objectives. Furthermore, the Regional Board would require that Watermaster and the IEUA mitigate the effects of discharges of recycled water that took place in excess of the antidegradation objectives under the maximum benefit objectives retroactively to January 2004. The mitigation for past discharges would be required to be completed within a ten-year period following the Regional Board's finding that the maximum benefit commitments were not met.

*Current compliance with the recycled water dilution requirements of the maximum benefit SNMP*

Commitment number 7 of the maximum benefit SNMP is the stakeholders’ stated focus of Activity K. This commitment defines a compliance limit that if met, allows for the continued recharge of recycled water without mitigation. Hereafter, the limit will be referred to as the “dilution limit.” Commitment number 7 requires that recycled water recharge be limited to the amount that can be blended, on a basin-wide, volume-weighted basis, with other sources of supplemental recharge to achieve five-year running-average concentrations that are less than or equal to the dilution limits. The dilution limits are the maximum benefit objectives: 420 mg/l for TDS and 5 mg/l for nitrate (as nitrogen). If the five-year, volume-weighted TDS or nitrate concentrations (hereafter, dilution metrics) exceeds the dilution limits, then Watermaster and the IEUA must develop a plan to come into compliance. Compliance options could include, but are not limited to, increasing the recharge of low-salinity supply sources (storm or imported waters), desalting recycled water to reduce salinity, or desalting groundwater as a salt offset.

Watermaster and the IEUA annually analyze and report on “current” compliance with the dilution limit as part of the *Chino Basin Maximum Benefit Annual Report*. The most recent annual report was submitted to the Regional Board in April 2019 and reported on compliance through December 2018.³¹ Exhibits K-1 and K-2 are time-series charts that characterize compliance with the dilution limit since the recycled water recharge program began in 2005. The exhibits show the monthly recharge volumes and TDS and nitrate concentrations of each recharge source, the dilution metrics, and the dilution limits. Note that because recycled water recharge began in July 2005, the first five-year period for which the dilution metric was computed was July 2005 through June 2010.

Exhibits K-1 and K-2 illustrate that the TDS and nitrate dilution limits have never been exceeded. From June 2010 to December 2016, the TDS dilution metric increased from about 203 to 354 mg/l. During the same period the nitrate dilution metric increased from 1.1 to 3.0 mg/l. After December 2016, the TDS and nitrate dilution metrics decreased to 281 mg/l and 2.0 mg/l, respectively. As of 2018, the five-year, volume-weighted TDS dilution metric was 139 mg/l less than the dilution limit, and the nitrate dilution metric was 3 mg/l below the dilution limit.

Threats to compliance with the dilution limits

As suggested by Exhibit K-1, the primary threats to compliance with the TDS dilution limit are the availability of imported and storm waters for recharge. Increases in the TDS concentration of recycled water are also a threat to compliance. The threat of exceeding the nitrate dilution limit is far less given that the nitrate concentration of the recycled water recharge is typically less than the nitrate dilution limit of 5 mg/l.

Imported water is a low-TDS source of recharge and has an important influence on the dilution metric. As shown in Exhibit K-1, the TDS concentration of imported water used for recharge ranged from 87 to 367 mg/l. In mid-2016, the rate of increase of the TDS dilution metric rose significantly from about 1.3 mg/l per month to 12 mg/l per month through October 2016 when the metric peaked at 354 mg/l. In October 2016, the five-year dilution metric calculation included almost no imported water recharge: the last significant period of imported water recharge occurred in May through September of 2011 (3,700 to 7,800 af). After peaking in October 2016, the dilution metric for TDS began to decrease and stabilize due to a large imported water recharge event that occurred from October 2016 through January 2018 (46,000 total af).

³¹ WEI. (2019). *Optimum Basin Management Program Chino Basin Maximum Benefit Annual Report 2018*. April 2019.



A similar trend was observed for the dilution metric for nitrate, as shown in Exhibit K-2. These observations demonstrate the importance of imported water recharge to compliance with the dilution metric.

Stormwater is a more consistent source of recharge, but it occurs in smaller volumes than imported water recharge. Over the most recent five-year period (January 2014 to December 2018), the total volume of stormwater recharge was 39,000 af compared to 47,000 af of imported water. And, while stormwater TDS concentrations are typically low in the wet winter months (50 to 150 mg/l), the TDS of dry-weather flows diverted to recharge in summer months are typically greater than 300 mg/l. The implementation of the 2013 RMPU is expected to increase the annual average stormwater recharge volume, but even with increased recharge capacity, multiyear drought conditions with limited stormwater recharge opportunities could lead to compliance challenges.

During drought conditions there is: a reduction in the amount of high-quality stormwater recharge; limited or no availability of imported water for recharge; an increase in the TDS concentrations of imported water, if it is available for recharge; and a concomitant increase in the TDS concentrations of the recycled water. Not only are the two primary sources of low-TDS water less available during drought periods, but the source water quality of municipal water supplies is also higher in TDS due to increases in imported water TDS and indoor water conservation practices. Exhibit K-1 shows the influence of the most recent statewide drought, which occurred over 2013 to 2016, on the dilution metric. During this time the dilution metric for TDS steadily increased from about 210 mg/l to 350 mg/l. This analysis demonstrates the meaningful impact that drought has on compliance with the dilution metric and indicates that climate change, which is expected to result in longer, drier droughts, could potentially threaten future compliance with the dilution limit.

Other maximum benefit SNMP compliance challenges

There are other metrics in the maximum benefit SNMP commitments that would require the evaluation of potential salt offset projects to achieve compliance. Commitment number 6 requires that when the IEUA's agency-wide, 12-month, running-average recycled water effluent TDS concentrations exceeds 545 mg/l for three consecutive months or the TIN concentrations exceeds 8 mg/l in any one month, Watermaster and the IEUA must submit a water quality improvement plan and schedule to the Regional Board. The plan must demonstrate how the 12-month running-average IEUA agency-wide recycled water effluent will remain in compliance with its discharge permit limits of 550 mg/l and 8 mg/l for TDS and TIN, respectively.

Exhibit K-3 shows the monthly and 12-month running-average IEUA agency-wide effluent TDS and TIN concentrations for 2005 through 2018. In 2015, the 12-month running-average IEUA agency-wide TDS concentration in recycled water approached the 545 mg/l action limit that would require the IEUA and Watermaster to submit a water quality improvement plan and schedule. In analyzing the available data, the IEUA determined that the primary drivers for the increasing recycled water TDS concentration were the increase in the TDS concentration of the water supplies used by its member agencies and an increase of the TDS waste increment from indoor water conservation.

Although the 12-month running-average IEUA agency-wide TDS concentration declined from the 2015 peak before reaching the 545 mg/l action limit, it was an important indicator that the TDS concentration of recycled water is likely to approach or exceed the recycled water compliance limit during the next prolonged dry period and require the planning for recycled water quality improvements. In May 2017, recognizing the potential cost of implementing recycled water quality improvements for what might be only short-term exceedances of the 545 mg/l action limit, Watermaster and the IEUA petitioned the Regional Board to consider updating the maximum benefit SNMP to incorporate a revised 12-month compliance metric for recycled water effluent (commitment number 6) specifically to allow a longer-term



averaging period. The Regional Board agreed that an evaluation of the recycled water compliance metric is warranted and directed Watermaster and the IEUA to develop a technical scope of work to demonstrate the potential impacts of the revised compliance metric. The work began in September 2017 and is ongoing as of the writing of this Scoping Report. If the investigation finds that changing the recycled water compliance metric will not impact beneficial uses in the Chino Basin or cause downgradient water supplies to exceed water quality objectives, then it is likely that the alternative recycled water compliance metric will be approved. If approved, the Regional Board would amend the Basin Plan and the IEUA’s permits to incorporate the revised maximum benefit commitments.

The primary objectives of the technical work to support the maximum benefit SNMP and permit updates are: to develop and use an updated groundwater solute transport model to evaluate the TDS and nitrate concentrations of the Chino Basin, to define alternative salinity management scenarios, and to project the future TDS and nitrate concentrations of the Chino Basin for each scenario. The results will be used to develop a regulatory compliance strategy that includes a longer-term average period for recycled water TDS concentrations that is acceptable to the Regional Board. The Regional Board has indicated that in accepting a proposal to modify the recycled water compliance limit, it will require Watermaster and the IEUA to add a new maximum benefit commitment to the Basin Plan that involves updating the TDS and nitrate projections every five years.

The compliance approach being pursued by Watermaster, the IEUA, and the Regional Board illustrates that the Regional Board may be willing to consider adopting an alternative dilution metric—e.g. a longer averaging period—for recycled and supplemental water recharge so long as there are no unmitigated impacts to beneficial uses. The work that is being performed to support the maximum benefit SNMP update can be directly leveraged to achieve the objective of Activity K.

Process required to evaluate potential future dilution compliance challenges

To achieve the objective of Activity K, it is necessary to prepare projections of the dilution metric to evaluate potential compliance challenges and to determine if and when it will be necessary to develop a plan to achieve compliance. The table below summarizes the planning data that are needed to prepare such projections and the existing Watermaster or IEUA programs that produce the planning data.³²

Planning Data	Existing Watermaster and IEUA Efforts that Compile or Produce the Required Planning Data
Recycled water recharge volumes	Projections prepared through the RMPU process, the Recycled Water Program Strategy, and other efforts.
Recycled water quality	There is no current effort to prepare this projection at the requisite level of detail on a regular basis, but it can be calculated from projections of water supply quality; such a projection was just completed to support the maximum benefit SNMP update.
Imported water recharge volumes	Projections prepared through the RMPU process.

³² Some additional planning data not listed here would also be required to run the Chino Basin Groundwater Model, which is updated and recalibrated at least every five years.

Appendix C



Planning Data	Existing Watermaster and IEUA Efforts that Compile or Produce the Required Planning Data
Imported water recharge quality	There is no current effort to prepare this projection at the requisite level of detail, but it can be estimated based on historical data; such a projection was just completed to support the maximum benefit SNMP update.
Stormwater recharge volumes	Projections prepared through the RMPU process.
Stormwater recharge quality	Estimates can easily be produced based on historical data.
Groundwater supply volumes	Water supply plans of the Parties are compiled at least once every five years for various Watermaster and IEUA efforts.
Groundwater supply quality	There is no current effort to prepare this projection at the requisite level of detail, which requires the use of a numerical groundwater solute transport model; such a model was just built to support the maximum benefit SNMP update and is being used to prepare groundwater quality projections.
Other water supply volumes	Water supply plans of the Parties are compiled at least once every five years for various Watermaster and IEUA efforts.
Other water supply quality	There is no current effort to prepare this projection at the requisite level of detail, but it can be estimated based on historical data; such a projection was just completed to support the maximum benefit SNMP update.

The planning data would be used to prepare projections of: municipal water supply and quality, imported water quality, recycled water quality, groundwater quality, and ultimately the TDS and nitrate dilution metrics. The projections would be done assuming a range of future cultural conditions (land use changes, population growth, etc.) and climate conditions. These projections would be analyzed to produce best-case and worst-case five-year, ten-year, 15-year, and 20-year recharge projections for imported and storm waters. The best- and worst-case projections of the dilution metric would be appended to the historical record to produce a bracketed series of dilution metric time histories to evaluate the risk of exceeding the dilution metric over a range of potential climate conditions in the short (5-year) and long (20-year) term.

If there is no projected compliance challenge in the next five to ten years, then no additional work would be needed to develop a compliance plan. It would be necessary to update the planning data and modeling tools to evaluate projections at a minimum of every five years. A five-year frequency is consistent with the State Board’s 2018 amendments to the SNMP guidelines within its Recycled Water Policy.³³

If a compliance challenge is projected, then it will be necessary to develop a plan to ensure compliance with the blending metric in the future. As previously noted, the compliance plan could include treatment

³³ The *Water Quality Control Policy for Recycled Water* is available at:
https://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy/



of the recycled water, increased recharge of high-quality imported water and/or stormwater, increase in groundwater desalting as a salt offset, or an update to the maximum benefit SNMP to change the compliance metric to a longer averaging period. For the latter, it would first be necessary to demonstrate to the Regional Board that a change to the compliance metric will not harm beneficial uses.

Alignment of Activity K with the current investigation to support the update to the maximum benefit SNMP

All of the above steps to analyze compliance challenges with the dilution metric are currently being performed in support of the update to the maximum benefit SNMP. Watermaster and the IEUA anticipate that the compliance strategy for the SNMP update will be finalized during FY 2020/2021. When completed the potential compliance challenges with the dilution limit will be known and a range of compliance plans will have been evaluated at a conceptual level. Thus, it may not be necessary to perform any work pursuant to Activity K, unless it is determined that some form salt offset is required. If no compliance challenges arise, or remain at the completion of the SNMP update, no significant work would need to be performed pursuant to Activity K for at least five years. If a salt offset is required, Watermaster and the IEUA would need to begin reconnaissance-level engineering planning in FY 2021/22.

Summary

In order to achieve the objectives of Activity K to ensure the ability to comply with the maximum benefit SNMP dilution metric in the future, Watermaster and the IEUA should expand the existing analysis and reporting efforts to periodically (every five-years), prepare future projections of recharge volumes and quality to determine if there is a compliance challenge, and if necessary, evaluate compliance alternatives. Projections of the dilution metric and an evaluation of compliance challenges in the future are currently being developed for the investigation to support the update to the maximum benefit SNMP described above. The scope of work to implement Activity K can leverage that work.

Scope of Work for Activity K

The scope of work to achieve the objectives of Activity K—*Develop a management strategy within the salt and nutrient management plan to ensure the ability to comply with the dilution requirements for recycled water recharge*—consists of five tasks:

- Task 1 – Prepare projection to evaluate compliance with recycled water dilution requirements
- Task 2 – Identify alternative compliance strategies
- Task 3 – Evaluate alternative compliance strategies
- Task 4 – Implement the alternative compliance strategy
- Task 5 – Periodically reevaluate compliance with dilution requirements

Task 1 – Prepare projection to evaluate compliance with recycled water recharge dilution requirements. The objective of this task is to prepare projections of compliance with the dilution metric for TDS and nitrate in the maximum benefit SNMP and determine if there is a compliance challenge in the future. In this task, all planning data will be compiled, Watermaster’s groundwater solute transport model will be updated and used to estimate future groundwater and recycled water quality, and projections of the dilution metric will be prepared. The planning data will be used to evaluate the dilution metric for best-case and worst-case recharge conditions over a twenty-year period. If there are no projected compliance challenges within the next five years, then Tasks 2 through 4 will not need to be performed. If there is a compliance challenge within the next five years, then Tasks 2 through 4 will need to be performed. Task 5 would be performed regardless of the outcome.



Task 2 – Identify alternative compliance strategies. The objective of this task is to identify potential alternative compliance strategies to address foreseeable challenges with complying with the dilution limit in the future. This task includes the following subtasks:

- Develop planning, screening, and evaluation criteria for projects to comply with the maximum benefit SNMP dilution limit.
- Identify potential alternative compliance strategies.
- Perform initial screening of the alternative compliance strategies based on the evaluation criteria.
- Select alternative compliance strategies to evaluate in Task 3.

Task 3 – Evaluate alternative compliance strategies. The objective of this task is to characterize the performance and costs of the alternative compliance strategies defined in Task 2. A reconnaissance-level engineering design and operations will be developed for each alternative. The reconnaissance-level engineering work will include a description of the activity, description of facilities (if required), its ability to comply with the dilution limits, its impact on the TDS and nitrate concentrations of the Chino Basin, and the estimated cost to implement the project alternatives. The projects will be evaluated and ranked based on the criteria developed in Task 2, and an alternative compliance strategy will be selected. The deliverable for this task will include a technical document that describes the reconnaissance-level engineering design and operations, the selected alternative compliance strategy, and the scope of work and cost estimate to implement the selected alternative compliance strategy.

Task 4 – Implement the alternative compliance strategy. The objective of this task is to implement the selected alternative compliance strategy. This task includes (1) developing and implementing necessary agreements between participating Parties; (2) preparing a Basin Plan amendment, if necessary; (3) preparing preliminary designs of the recommended projects; (4) preparing the environmental documentation for the recommended projects (this will tier-off from the 2020 OBMP Update PEIR); (5) preparing financial plans to construct the recommended projects; (6) preparing final designs of the recommended projects; (7) acquiring necessary permits for constructing and operating the recommended projects; and (8) constructing the recommended projects.

Task 5 – Periodically re-evaluate compliance with dilution requirements. The objective of this task is to proactively evaluate future compliance with the maximum benefit SNMP recycled water dilution limit to address any foreseen compliance challenges. The task includes two efforts:

- (1) Prepare projections of the dilution metric on a five-year frequency. This includes updating the model, collecting planning data, preparing the requisite projections (see Task 1), and evaluating if there is a compliance challenge. If it is determined that there is a compliance challenge, then Tasks 2 through 4 will be performed. If it is determined that there is not a compliance challenge, this evaluation will be redone in another five years.
- (2) Annually report on current and future compliance with the dilution limit. Annual reporting of current compliance with the dilution metric is already done in the Chino Basin Maximum Benefit Annual Reports. This task would simply involve expanding that reporting discussion to include a comparison of the current dilution metric to the bracketed projections of the dilution metric prepared in Task 1. If the current dilution metric suggests there is a potential compliance challenge that was not predicted by Task 1, Watermaster and the IEUA would initiate a process to determine if additional evaluation of compliance alternatives is warranted.

Cooperative Efforts with Appropriate Entities to Implement Activity K

As co-permittees to the maximum benefit SNMP and recycled water recharge program, this activity involves Watermaster and the IEUA. Similar to the existing implementation of the maximum benefit



SNMP, Watermaster would lead the technical and reporting efforts, and any engineering planning work would be led by IEUA.

Implementation Actions, Schedule, and Costs for Activity K

As previously described, all the work required in Task 1 is currently being performed as part of Watermaster and the IEUA's investigation to support an update to the maximum benefit SNMP to change the recycled water TDS compliance metric to a longer averaging period. Watermaster and the IEUA anticipate that the work to update the compliance strategy for the maximum benefit SNMP will be completed during FY 2020/21. When completed the potential compliance challenges with the dilution limit will be known, and a range of compliance plans will have been evaluated at a conceptual level. Thus, it may not be necessary to perform any work pursuant to Activity K unless it is determined that some form salt offset project is required to address near-term compliance challenges. If no compliance challenges are identified or are resolved through the completion of the SNMP update, no significant work would need to be performed pursuant to Activity K for at least five years. If a salt offset project is required to address anticipated near-term compliance challenges, Watermaster and the IEUA will need to begin reconnaissance-level engineering planning in FY 2021/22 (Tasks 2 through 4).

The recommended schedule to complete the scope of work described herein is described below:

Year one:

- Wait for Watermaster and the IEUA to complete the maximum benefit SNMP update.

Year two:

- Identify alternative compliance strategies, if needed (Task 2).
- Start the evaluation of alternative compliance strategies, if needed (Task 3).
- Report the annual dilution metric compared to dilution limits and projections (Task 5).

Year three:

- Complete the evaluation of alternative compliance strategies, if needed (Task 3).
- Select preferred compliance plan and begin preparing implementation agreements, if needed (Task 4).
- Report the annual dilution metric compared to dilution limits and projections (Task 5).

Year four:

- Begin implementation the of compliance plan, if needed (Task 4).
- Report the annual dilution metric compared to dilution limits and projections (Task 5).

Year five and beyond:

- Reevaluate compliance with dilution requirements every five years (Task 5).

Exhibit K-4 shows the estimated budget-level engineering cost to complete Tasks 1 through 5. Given the ability to leverage the existing work being performed by Watermaster and the IEUA, there is no cost (\$0) to perform Task 1. A cost estimate for Task 2 through 4 cannot be prepared because the outcome of the SNMP update is not yet known. It is premature to estimate the cost for performing the five-year update of the projections in Task 5, and there is no increased cost to performing the additional recommended annual reporting.



Activity L

Description of Activity L

Activity L defined by the stakeholders is:

Perform the appropriate amount of monitoring and reporting required to fulfill basin management and regulatory compliance.

The objective of Activity L is to refine the monitoring and reporting requirements of Watermaster to ensure that the objectives of each requirement are being met efficiently at a minimum cost. Through the listening session process, the stakeholders identified the following desired outcomes for Activity L:

- Ensure full compliance with regulatory requirements.
- Ensure full support of basin management initiatives.
- Enable the Parties to monitor the performance of the OBMP IP and related Court orders and regulatory obligations.
- Ensure cost efficiency.

The OBMP IP included PE 1 – *Develop and Implement Comprehensive Monitoring Program*. PE 1 was included in the OBMP to provide the information necessary to support the implementation of all other OBMP program elements and to evaluate their performance. The types of monitoring programs called for by PE 1 in the OBMP IP included:

- Groundwater-level monitoring
- Groundwater-quality monitoring
- Groundwater-production monitoring
- Surface-water discharge and quality monitoring (including managed artificial recharge)
- Ground-level monitoring
- Well construction, abandonment, and destruction

Activity L has identical objectives and desired outcomes to those of PE 1 because Watermaster continues to need data and information to comply with regulations, to fulfill its obligations under its agreements and Court orders, to comply with its requirements under CEQA, and to assess the performance of the evolving OBMP IP, including the 2020 OBMP Update. Financial resources to conduct these monitoring and reporting programs are limited, so through Activity L, the Parties desire to ensure cost efficiency in Watermaster’s monitoring and reporting programs.

Need and Function of Activity L

Watermaster monitoring and reporting programs

Data and information acquired in Watermaster’s monitoring and data-collection programs are used to prepare reports and data deliverables that are required by regulations and Watermaster’s obligations under its agreements, Court orders, and CEQA. The table below is a list of each Watermaster monitoring and reporting requirement and the regulatory entities that require the monitoring and reporting.

Appendix C



Monitoring and Reporting Requirement	Regulatory Entity					
	Court	State Board	Regional Board	California DFW	California DWR	CEQA
Water Rights Compliance Annual Report		X		X		
SGMA Annual Report for Adjudicated Basins					X	
Biannual Evaluation of the Cumulative Effect of Transfers	X					
Biannual Evaluation of the Balance of Recharge and Discharge	X					
Annual Finding of Substantial Compliance with the Recharge Master Plan	X					
Annual Report of Compliance with SB 88 and SWRCB Regulations for Measurement and Reporting of Diverted Surface Water		X				
Safe Yield Recalculation	X					
Recharge Master Plan Update (RMPU)	X					
State of the Basin Report	X					
California Statewide Groundwater Elevation Monitoring Program (CASGEM)					X	
Chino Basin Maximum Benefit Annual Report			X			
Annual Report of the Prado Basin Habitat Sustainability Committee						X
Water Recycling Requirements for the Chino Basin Recycled Water Groundwater Recharge Program			X			
Annual Report of the Ground-Level Monitoring Committee	X					
OBMP Semi-Annual Status Reports	X					

Exhibit L-1 is a comprehensive description of each monitoring and reporting requirement listed in the table above, the associated data types required to meet the reporting requirement, the data analyses performed, the reporting content, and past efforts by Watermaster to reduce the scope and cost of the monitoring and/or reporting requirements.

The scope of the monitoring programs under PE 1 have evolved over time to satisfy new requirements associated with regulations and Watermaster obligations under its agreements, Court orders, and CEQA. In some instances, the monitoring programs have expanded to satisfy new basin-management initiatives and regulations. In some instances, the scope of the monitoring programs has been reduced with periodic reevaluation and redesign to achieve the monitoring objectives with reduced cost.



The following summarizes each of Watermaster’s existing monitoring and data-collection programs. Watermaster compiles, checks, and stores the data collected under most of these programs in a centralized environmental database. The database and the database-management procedures ensure the quality and accuracy of the data, allow for efficient data exploration and analysis, and include standardized reports and data exports in formats for regulatory data deliverables or further analysis (e.g. creation of model input files).

Groundwater-production monitoring. Since 1978, Watermaster has collected information to estimate total groundwater production from the Chino Basin. Watermaster uses groundwater-production data to quantify and levy assessments pursuant to the Judgment. Estimates of production are also essential inputs to recalibrate Watermaster’s groundwater flow model, which is used to inform redeterminations of the Safe Yield of the Chino Basin, evaluate the state of Hydraulic Control, perform MPI assessments, and support many other Watermaster initiatives. The Watermaster Rules and Regulations require groundwater producers that produce in excess of 10 afy to install and maintain meters on their well(s). Well owners that pump less than 10 afy are considered “Minimal Producers” and are not required to meter or report to the Watermaster. Exhibit L-2 depicts the groundwater-production monitoring program as of 2018. Members of the Appropriative and Overlying Non-Agricultural Pools and CDA record their own meter data and submit them to Watermaster staff on a quarterly basis. For Agricultural Pool wells, Watermaster performed a well-metering program to equip Agricultural Pool wells with in-line flow meters, where feasible. Watermaster staff visit and record production data from the meters at these wells on a quarterly basis. For the remaining unmetered Agricultural Pool wells, including Minimal Producer wells, Watermaster applies a “water duty” method to estimate their production on an annual basis. Watermaster continues its efforts to implement the well-metering program and improve its methods to estimate pumping at un-metered wells.

Groundwater-level monitoring. Watermaster’s groundwater-level monitoring program supports many Watermaster management functions, including: the periodic assessment of Safe Yield, groundwater model development and recalibration, evaluating the cumulative impacts of transfers and the balance of recharge and discharge, subsidence management, MPI assessments, estimation of storage change, other scientific demonstrations required for groundwater management, and many regulatory requirements, such as the demonstration of Hydraulic Control and the triennial recomputation of ambient water quality. The wells within the southern portion of the basin were selected for inclusion in the monitoring program to assist in Watermaster’s analyses of Hydraulic Control, land subsidence, desalter impacts to private well owners, and riparian vegetation in the Prado Basin. The density of groundwater-level monitoring near the CDA well fields is greater than in outlying areas because hydraulic gradients are expected to be steeper near the CDA well fields, and these data are needed to assess the state of Hydraulic Control. In FY 2017/2018, about 1,300 wells comprised Watermaster’s groundwater-level monitoring program. Exhibit L-3 depicts the groundwater-level monitoring network of wells. At about 1,050 of these wells, well owners measure water levels and provide data to Watermaster. These well owners include municipal water agencies, private water companies, the California Department of Toxic Substance Control (DTSC), the County of San Bernardino, and various private consulting firms. The remaining 250 wells are private or dedicated monitoring wells that are mostly located in the southern portion of the Basin. Watermaster staff measures water levels at these wells once a month or with pressure transducers that record water levels once every 15 minutes. Wells monitored by transducers were preferentially selected to support Watermaster’s monitoring programs for Hydraulic Control, Prado Basin habitat sustainability, land subsidence, and others where such high-frequency data are necessary to fulfill program objectives. To continue to support assessments of Hydraulic Control, and other analyses, it is anticipated that new monitoring wells will need to be constructed to replace the currently monitored private wells that will be lost as land is converted from agricultural uses to urban uses.



Groundwater-quality monitoring. The Watermaster’s groundwater-quality monitoring program supports compliance for two maximum benefit commitments: the triennial ambient water quality recomputation and the analysis of Hydraulic Control. Groundwater-quality data are also used for Watermaster’s biennial State of the Basin report, to support ground-water modeling, to characterize non-point source contamination and plumes associated with point-source discharges, to characterize groundwater/surface-water interactions in the Prado Basin area, and to characterize basin-wide trends in groundwater quality. Exhibit L-4 depicts the groundwater-quality monitoring network of wells. The groundwater-quality monitoring program relies on municipal producers, government agencies, and others to supply groundwater-quality data on a cooperative basis. Watermaster supplements these data through its own sampling and analysis program at private wells and monitoring wells in the area generally south of State Route 60. These wells include:

- *Private Wells:* Watermaster collects groundwater quality samples at about 85 private wells, located predominantly in the southern portion of the Basin. The wells are sampled at various frequencies based on their proximity to known point-source contamination plumes. 77 wells are sampled on a triennial basis, and eight wells near contaminant plumes are sampled on an annual basis.
- *Watermaster/IEUA Monitoring Wells:* Watermaster collects groundwater quality samples at 22 multi-nested monitoring sites located throughout the southern Chino Basin. There is a total of 53 well casings at these sites. These include nine HCMP monitoring sites constructed to support the demonstration of Hydraulic Control, nine sites constructed to support the Prado Basin Habitat Sustainability Program (PBHSP), and four sites that fill spatial data gaps near contamination plumes in MZ3. Each nested well site contains up to three wells in the borehole. The HCMP and MZ3 wells are sampled annually. The PBHSP wells are sampled quarterly to triennially.
- *Other Wells:* Watermaster collects samples from four near-river wells quarterly. The data are used to characterize the interaction of the Santa Ana River and groundwater in this area. These shallow monitoring wells along the Santa Ana River consist of two former USGS wells and two Santa Ana River Water Company wells.

For the period 2013 to 2018, water quality data were obtained from a total of 1,357 wells within and adjacent to the Chino Basin. Of those, 650 wells were sampled during FY 2017/2018. To continue to support the triennial ambient water quality recomputation, and other analyses, it is anticipated that new monitoring wells will need to be constructed to replace the currently monitored private wells that will be lost as land is converted from agricultural uses to urban uses.

Surface-water and climate monitoring. Watermaster’s surface-water and climate monitoring program supports many Watermaster management functions, including: groundwater model development and recalibration, the periodic assessment of Safe Yield, evaluating the cumulative impacts of transfers and the balance of recharge and discharge, MPI assessments, recharge master planning, the PBHSP, compliance with the recycled-water recharge permit, and the maximum benefit program, among others. Exhibit L-5 depicts the surface-water and climate monitoring network of surface-water discharge sites and atmospheric monitoring stations. Much of these data are collected from publicly available datasets, including POTW discharge data, USGS stream gaging station data, and precipitation and temperature data measured at public weather stations or downloaded from spatially gridded datasets. Watermaster collects stormwater, imported water, and recycled water recharge data from the IEUA. Watermaster also collects quarterly surface-water quality samples from two sites along the Santa Ana River to support the Maximum Benefit program.



Ground level monitoring. The Watermaster’s ground-level monitoring program is conducted pursuant to the Chino Basin Subsidence Management Plan. The objective of the plan is to minimize or abate the occurrence of land subsidence and groundwater fissuring within the Chino Basin. Exhibit L-6 depicts the ground-level monitoring program, which is focused across the western portion of Chino Basin within defined Areas of Subsidence Concern—areas of Chino Basin that are susceptible to land subsidence. The ground-level monitoring program consists of the following:

- Watermaster conducts high-frequency, piezometric level monitoring at about 60 wells as part of its ground-level monitoring program. A pressure-transducer/data-logger is installed at each of these wells and records one water-level measurement every 15 minutes. Data loggers also record depth-specific piezometric levels at the piezometers located at Watermaster’s Ayala Park Extensometer and Chino Creek Extensometer facilities once every 15 minutes.
- Watermaster installed two extensometers in the MZ1 Managed Area to support the MZ1 Interim Monitoring Program and two extensometers in the Southeast Area understand the effects of pumping at the newly constructed Chino Creek Well Field. Both extensometer facilities record the vertical component of aquifer system compression and expansion once every 15 minutes, synchronized with the piezometric measurements, to understand the relationships between piezometric changes and aquifer-system deformation.
- Watermaster monitors vertical ground-motion via traditional elevation surveys at benchmark monuments and via remote sensing (InSAR) techniques established during the IMP. Elevation surveys are typically conducted in the MZ1 Managed Area, Northwest MZ1 Area, Northeast Area, and Southeast Area once per year. Vertical ground-motion data, based on InSAR, are collected about every two months and analyzed once per year.
- Watermaster monitors horizontal ground-surface deformation across areas that are experiencing differential land subsidence to understand the potential threats and locations of ground fissuring. These data are obtained by electronic distance measurements (EDMs) between benchmark monuments in two areas: across the historical zone of ground fissuring in the MZ1 Managed Area and across the San Jose Fault Zone in Northwest MZ1.

Watermaster convenes a Ground-Level Monitoring Committee (GLMC) annually to review and interpret data from the ground-level monitoring program. The GLMC prepares annual reports that include recommendations for changes to the monitoring program and/or the Subsidence Management Plan, if such changes are demonstrated to be necessary to achieve the objectives of the plan.

Biological monitoring. The Watermaster’s biological monitoring program is conducted pursuant to the adaptive monitoring program (AMP) for the Prado Basin Habitat Sustainability Program (PBHSP). The objective of the PBHSP is to ensure that groundwater-dependent riparian habitat in Prado Basin will not incur unforeseeable significant adverse effects due to implementation of the Peace II Agreement. Exhibit L-7 depicts the Riparian Habitat Monitoring Program (RHMP) for the PBHSP. It produces a time series of data and information on the extent and quality of the riparian habitat in the Prado Basin over a historical period that includes both pre- and post-Peace II implementation. Two types of monitoring and assessment are performed: regional and site-specific. Regional monitoring and assessment are appropriate because the main potential stress associated with Peace II activities is the regional drawdown of groundwater levels. The intent of site-specific monitoring and assessment is to verify and complement the results of the regional monitoring.

- Regional monitoring of riparian habitat: Regional monitoring and assessment of the riparian habitat is performed by mapping the extent and quality of riparian habitat over time using: (i)



multi-spectral remote-sensing data, Normalized Difference Vegetation Index (NDVI), and (ii) air photos.

- Site-specific monitoring of riparian habitat: Site-specific monitoring performed in the Prado Basin includes field vegetation surveys and seasonal ground-based photo monitoring. The most current vegetation survey conducted for the PBHSP was performed by the United State Bureau of Reclamation (USBR) in 2016, consisting of 38 sites in the Prado Basin: 24 previously established USBR sites and 14 new sites primarily located near the PBHSP monitoring wells.

Watermaster convenes the Prado Basin Habitat Suitability Committee (PBHSC) annually to review and interpret data from the RHMP. The PBHSC prepares annual reports that include recommendations for RHMP and other monitoring for the PBHSP, if such changes are demonstrated to be necessary to achieve the objectives of the PBHSP.

Water-supply and water-use monitoring. Watermaster compiles water supply and use data from the Parties to support two required reporting efforts: the Watermaster Annual Report to the Court and annual reporting requirements for adjudicated basins pursuant to the Sustainable Groundwater Management Act (SGMA). Monthly water use volumes for supply sources other than Chino Basin groundwater are collected from the Parties; this includes groundwater from other basins, recycled water, imported water, and native surface water. This data is collected and compiled twice per year to support fiscal year reporting for the Annual Report and water year reporting for the SGMA.

Planning information. Watermaster periodically compiles future water supply plans from the Parties. The data collected as part of that process represents the Parties’ best estimates of their demands and associated water supply plans and are used for future planning investigations (e.g. Safe Yield recalculations and recharge master plan updates). The data collected includes:

- Water supply plans of the Watermaster Parties, including:
 - i. Projected total water demand
 - ii. Projected amount of each water supply by source to meet the projected water demand
 - iii. Monthly distribution of demand and water supplies used to meet the demand
 - iv. Projected groundwater pumping at each currently active well and future planned wells
 - v. Groundwater pumping schedules (well use priorities and capacities)
 - vi. Pumping capacities, required pumping combinations, and sustainable pumping levels (pumping sustainability metric) at each well
- Assumptions for how:
 - vii. Managed storage will be used to meet Replenishment Obligations.
 - viii. Lands currently in agricultural uses will be converted to urban uses.
 - ix. Additional potential conservation above that currently required for new land development will occur.
- Future projections of location and magnitude of storm and Supplemental Water recharge

Well construction, abandonment, and destruction. Watermaster maintains a database on wells in the basin and Watermaster staff makes periodic well inspections. Watermaster staff sometimes finds a new well while implementing its monitoring programs. Watermaster needs to know when new wells are constructed as part of its administration of the Judgment. Valuable information for use in managing the Chino Basin is developed when wells are constructed, including: well design, lithologic and geophysical logs, groundwater level and quality data, and aquifer stress test data. Well owners must obtain permits from the appropriate county and state agencies to drill a well and to put the well in use. Watermaster has



developed cooperative agreements with the Counties of Los Angeles, Orange, Riverside, and San Bernardino, and DDW to ensure that the appropriate entities know that a new well has been constructed. Watermaster staff makes best efforts to obtain well design, lithologic and geophysical logs, groundwater level and quality data, and aquifer stress test data. The presence of abandoned wells is a threat to groundwater supply and a physical hazard. Watermaster staff periodically reviews its database, makes appropriate inspections, consults with well owners, maintains a list of abandoned wells in the Chino Basin, and provides this list to the counties for follow-up and enforcement. The owners of the abandoned wells are requested to properly destroy their wells following the ordinances developed by the county in which the abandoned well is located.

Considerations for updating the monitoring and reporting programs

Financial resources are limited, and the Parties desire to conduct these monitoring and reporting programs to satisfy each requirement efficiently at minimum cost. As documented in Exhibit L-1, the scope of Watermaster’s monitoring and reporting programs has evolved over time with new or changing regulations, obligations, and management initiatives.

Watermaster staff and its engineer continually review and revise the monitoring programs to collect the minimum data necessary to meet the objectives of the monitoring and reporting requirements. In some instances, Watermaster convenes special committees to analyze monitoring data and develop recommendations for revisions to the programs. What has not been performed by Watermaster in the recent past is a comprehensive review of all monitoring and reporting programs in an open stakeholder process.

To achieve the Parties’ desire to satisfy all monitoring and reporting requirements at minimum cost, Activity L should begin with a comprehensive review of each of Watermaster’s requirements for monitoring and reporting and a discussion of if and how the programs could be revised. The review should be performed in an open stakeholder process should consider:

- the objectives of the monitoring and reporting program,
- the minimum datasets required to meet the objectives,
- the prospective loss of private (or other) wells that are currently used in the Watermaster’s monitoring programs and how they can be cost-effectively replaced over time,
- the methods used to analyze the data, and
- the reporting frequency and content.

In some cases, revision of the monitoring and reporting programs will require Court approvals, regulatory approvals, or modification/amendment to CEQA documents.

Ultimately, Activity L will produce a *Monitoring and Reporting Work Plan* that documents the programs and will be used to define the Watermaster’s annual monitoring scope and budget. The *Monitoring and Reporting Work Plan* will be updated as needed to respond to changed conditions within any of the programs with opportunity for input and feedback from the Parties.

Scope of Work for Activity L

The scope of work for Activity L – *Perform the appropriate amount of monitoring and reporting required to fulfill basin management and regulatory compliance* consists of the following tasks:

- Task 1 – Convene Monitoring and Reporting Committee and prepare the *Monitoring and Reporting Work Plan*
- Task 2 – Implement recommendations in *Monitoring and Reporting Work Plan*



- Task 3 (recurring future task) – Conduct monitoring and reporting programs and prepare annual updates to Monitoring and Reporting Work Plan

Task 1 – Convene Monitoring and Reporting Committee and prepare the Monitoring and Reporting Work Plan. The objectives of this task are to:

- Update the Parties on all Watermaster monitoring and reporting requirements associated with regulations and obligations under its agreements, Court orders, and CEQA.
- Review the current monitoring and reporting programs that are designed to satisfy all Watermaster requirements.
- Develop recommendations for a revised monitoring and reporting program, including a scope of work and cost estimates to implement the recommendations.
- Document all Watermaster monitoring and reporting programs in a *Monitoring and Reporting Work Plan*. For each monitoring program, the work plan will include: a statement of objectives/requirements, the monitoring program to satisfy the requirements, the methods for evaluating data, the frequency for data analysis and reporting, and a schedule for initiating future updates to the plan, including construction of new monitoring wells (if needed).
- Prepare a technical memorandum to document the recommendations and a proposed process to revise the monitoring and reporting programs that require specific regulatory and/or Court approvals for modification. The memorandum will describe the anticipated cost savings that the Parties will realize if the revisions to the monitoring and reporting programs are approved. The memorandum will be titled: *Recommended Revisions to Watermaster’s Non-Discretionary Monitoring and Reporting Programs*.

A series of six committee meetings will be conducted over an 18-month period to achieve these objectives.

Task 2 – Implement recommended revisions to Watermaster’s non-discretionary monitoring and reporting programs. In this task, the plan described in the *Recommended Revisions to Watermaster’s Non-Discretionary Monitoring and Reporting Programs* will be implemented. This task will likely require technical demonstrations to the appropriate regulatory body (e.g. Regional Board, the Court, etc.) to gain approval for revisions to the monitoring program, report content, and/or report frequency. This task may be a multi-step, multi-year process to implement all recommended revisions. The results of this task will result in future updates to the *Monitoring and Reporting Work Plan*. Updates will be incorporated as they are approved.

Task 3 (recurring future task) – Bi-Annual review of scope of work and cost to implement the Monitoring and Reporting Work Plan in the subsequent fiscal year. In the first quarter of every other calendar year, the Monitoring and Reporting Committee will meet to review any changes to the *Monitoring and Reporting Work Plan* and the scope of work and budget for the subsequent fiscal year. The work plan updates and subsequent fiscal year budget will incorporate the recommendations made by special committees (such as the Ground-Level Monitoring Committee), any approved changes resulting from work performed in Task 2, and other changed conditions of the monitoring and reporting programs. The annual review can also include discussion and consideration of additional recommendations for efficiencies suggested by the Parties.

Cooperative Efforts with Appropriate Entities to Implement Activity L

This is a basin-wide activity that involves the Parties. Watermaster’s role will be to convene the Monitoring and Reporting Committee; to coordinate and administer its activities and meetings; to ensure that the recommendations derived from this effort are consistent with the Judgment, Peace Agreements and other



agreements, Court orders, state and federal regulations, and CEQA requirements; and to execute the *Recommended Revisions to Watermaster’s Non-Discretionary Monitoring and Reporting Programs*.

Implementation Actions, Schedule, and Costs for Activity L

The recommended schedule to complete the scope of work is described below:

Year one and two:

- Convene Monitoring and Reporting Committee and prepare the *Monitoring and Reporting Work Plan*.
- Prepare memorandum: *Recommended Revisions to Watermaster’s Non-Discretionary Monitoring and Reporting Programs*.

Year three and beyond:

- Implement *Recommended Revisions to Watermaster’s Non-Discretionary Monitoring and Reporting Programs*.
- Perform bi-annual review of scope of work and cost to implement the *Monitoring and Reporting Work Plan*.

Exhibit L-8 shows the estimated budget-level cost opinion to complete Task 1, which is about \$165,000. The cost of Tasks 2 and 3 cannot be estimated until the completion of Task 1.



Activities H, I, and J

Description of Activities H, I, and J

Activities H, I, and J as defined by the stakeholders are intended to equitably allocate and minimize the cost of OBMP implementation. The fourth goal of the 2000 OBMP and the 2020 OBMP Update is to *Equitably Finance the OBMP*. As described in Section 3 of this Scoping Report, the intent of this goal is to identify and use efficient and equitable methods to fund OBMP implementation. Three of the activities defined by the stakeholders address equity and cost.

Activity H is to:

Develop an equitable distribution of costs/benefits of the OBMP Update and include in the OBMP Update agreements

Activity I is to:

Develop regional partnerships to implement the OBMP Update and reduce costs and include in the OBMP Update agreements

Activity J is to:

Continue to identify and pursue low-interest loans and grants or other external funding sources to support the implementation of the OBMP Update

Through the listening session process, the stakeholders identified the following desired outcomes from Activities H, I, and J:

- Provide transparency as to the benefits of the OBMP Update activities, including identification of who benefits.
- Clearly identify Watermaster's roles in OBMP implementation and the associated future assessment costs to the Parties.
- Provide information needed to plan financial resources, such as cost projections similar to a Master Plan process.
- A formal process to revisit the OBMP implementation plan and adjust priorities and schedules as necessary to address changed conditions.
- Improve readiness to apply for grants as they become available.
- Increase the likelihood that the OBMP will be implemented.
- Keep the cost of OBMP implementation as low as possible by obtaining grants and low-interest loans.

As noted above, the fourth goal of the 2000 OBMP is to equitably finance the OBMP, however there were no PEs in the OBMP IP related to this goal. The Peace and Peace II Agreements and OBMP project implementation agreements established cost allocations for certain activities. The benefit and cost allocations included in these agreements were based on negotiations among the Parties and encouraged the use of grant funding to build projects. These funding agreements were deemed equitable when they were developed, and they are in use today.

Together, the management framework of the OBMP IP and implementation agreements enabled the Parties to obtain tens of millions of dollars in grants and other outside funding to implement the 2000 OBMP, including for the Chino Basin Desalters, RMPU recharge facilities, and the recycled water recharge program. In 2018, a contingent grant in the amount of \$200 million was awarded to IEUA for the regional CBP Storage and Recovery Program.



Need and Function of Activities of H, I, and J

Benefits of the OBMP

To support the Parties’ consideration of the Peace II Agreement, Watermaster contracted with Dr. David L. Sunding to prepare the *Report on the Distribution of Benefits to Basin Agencies from the Major Program Elements Encompassed by the Peace Agreement and Non-Binding Term Sheet*. The economic analysis estimated the costs and benefits of the implementation of the PEs encompassed by the Peace I and Peace II Agreements to the ten Chino Basin appropriator Parties with the largest water rights in the Judgment (they are listed in the table below). These ten Parties account for 91.2 percent of the Operating Safe Yield. The allocation of aggregate costs and benefits to the individual agencies in the basin was computed based on a complex set of legal rules (such as share of Operating Safe Yield), cost-sharing arrangements for implementation, and market forces. The estimated net present value benefits, expressed in 2007 dollars (2007\$), to the Parties were primarily based on the value of (1) the gains in pumping created by implementation of the agreements and (2) the offset of the purchase of Tier 2 supplies from Metropolitan for replenishment. The study estimated that together the Peace I and Peace II Agreements would provide over \$904 million dollars in net present value benefits to the Parties (2007\$) for the implementation period of 2007 to 2030. The following table summarizes the net benefits to the ten agencies, as reported by Sunding:

Party	Net Benefit (2007\$)
Chino	\$95,966,000
Chino Hills	\$73,537,000
Ontario	\$232,271,000
Upland	\$44,086,000
CVWD	\$278,128,000
Fontana	\$30,268,000
MVWD	\$40,480,000
SAWCo	\$7,136,000
Jurupa	\$35,254,000
Pomona	\$67,537,000
Total	\$904,663,000
Average	\$90,466,300

Based, at least in part, on these expected benefits, the Parties executed the Peace II Agreement.

During the listening session process, some stakeholders expressed opinions that the distribution of benefits projected by the Sunding work had not come to fruition, that there is a lack of clarity as to the distribution of benefits of the various PEs in the OBMP IP, and that the allocation of the cost of OBMP implementation may not be equitable. And, some stakeholders have expressed concern about participating in new or expanded efforts without first understanding the benefits received to date,



performing an analysis of potential future benefits, and assessing the equitable allocation of benefits and costs.

Since the Sunding report was published, no additional work has been done to quantify the benefits that have resulted from OBMP implementation or to update the projection of benefits based on changed conditions. In 2013, the Appropriative Pool Parties discussed performing an updated economic analysis, but ultimately, they elected not to do it.

Costs of the OBMP

The costs of OBMP implementation include, among others:

- Watermaster expenses for engineering work to implement the OBMP IP, including implementation costs of certain projects (e.g. monitoring/reporting and construction of extensometers and monitoring wells)
- Watermaster expenses for other project costs, including recharge debt payments, improvement projects, recharge operations and maintenance costs, recharge, and the Pomona Credit
- Desalter replenishment and related monitoring expenses
- IEUA recycled water recharge costs
- Individual agency costs for water management activities impacted by the OBMP

As previously noted, the Peace and Peace II Agreements and OBMP project implementation agreements established cost allocations for certain activities. Watermaster-related costs for OBMP implementation are assessed annually as part of the Assessment Package. No calculation of the total OBMP costs incurred to date has been performed.

Benefits and costs of the 2020 OBMP Update

Some of the tasks within the 2020 OBMP Update activities provide broad benefit to the Parties and are essential to the Watermaster to do its job to implement the Physical Solution. Some 2020 OBMP Update activities could result in the construction of projects that will provide benefits to all stakeholders or may only provide benefits to a subset of stakeholders.

Based on the scopes of work described herein for the 2020 OBMP Update activities (A, B, CG, D, EF, K and L), there are at least 2-4 years of scoping and preliminary engineering work that would need to be performed to evaluate and select projects envisioned by the 2020 OBMP Update activities and to develop the level of detail required to quantify the benefits and costs from project implementation. Exhibit HIJ-1 illustrates the four phases of work and associated schedule for each of the 2020 OBMP Update activities, assuming that all activities would be initiated in July 2020.³⁴ The phases shown are: (1) scoping, (2) evaluation of the need for projects, (3) project alternatives evaluation, and (4) project implementation. The exhibit also illustrates the go-no-go decision points to proceed with the activity.

The detail required to quantify the benefits and costs of projects (including ongoing needs for monitoring and assessment) would be developed during the project alternatives evaluation phase. Once the benefits and costs for projects are quantified, the Parties will be able to review them, consider whether or not they want to participate in projects that provide benefits to participants only, and establish equitable cost allocations for the implementation actions that provide specific benefits.

³⁴ This exhibit is for demonstrative purposes as the parties have yet to finalize the activities for inclusion in the OBMP Update or define a scheduled to implement them.



Grant funding and regional partnerships to minimize the costs of OBMP implementation

In the future, it is anticipated that it will become increasingly difficult to secure grants and low-interest loans due to increased competition. Most grant and low-interest loan programs require, or heavily favor, projects that are within watersheds and groundwater basins with adopted integrated regional management plans, groundwater sustainability plans, or their equivalents. The 2020 OBMP Update is equivalent to a regional water resources and groundwater management plan. The first three phases of each activity described in the prior subsection and shown in Exhibit HIJ-1 should be completed to maximize the ability to be competitive when applying for grants and low-interest loans, or in securing regional funding partners. Assessing cost/benefit at a level of detail appropriate to meet the needs of the stakeholders in establishing equitable cost allocations during the project alternatives evaluation phase will enable the Parties (1) to evaluate projects in a manner that is comprehensive and clear and (2) to enter into regional partnerships and apply for grant opportunities with greater certainty as to the expected benefits and costs.

Scope of Work for Activities H, I, and J

The objectives for Activities H, I, and J can be efficiently met by incorporating tasks within the other activities to characterize the benefits and costs of the projects produced by the activities. This section describes how the scopes of work of the other 2020 OBMP Update activities can accomplish the objectives of Activities H, I, and J.

As described throughout this Scoping Report, each activity has tasks related to identifying and evaluating project alternatives to achieve the activity's objectives (e.g. project evaluation). The project evaluation phase includes the following generalized steps:

1. Develop planning, screening, and evaluation criteria for projects
2. Identify the potential project alternatives
3. Develop reconnaissance-level engineering design and operating plans for each alternative
4. Develop an engineering cost opinion for each alternative
5. Describe how each alternative could be implemented and financed
6. Evaluate project alternatives based on the evaluation criteria
7. Select the preferred project alternative

At such time that each activity reaches the project evaluation phase, the scope of work for project evaluation should include a process to articulate and value the benefits of interest to the stakeholders in establishing equitable cost allocations, considering whether a project has broad basin management benefits and the benefits to specific Parties. Examples of benefits include new yield, water supply reliability, and water quality improvements. The project benefits to analyze and value would be defined during the first step to develop criteria for selecting projects. In step five, the alternative evaluation would include a characterization of implementation benefits and costs (Watermaster expenses and other costs) and their allocation to participants under various levels of participation and cost allocation methods. The benefit and cost projections, together with the other engineering analyses, could then be used by the Parties to select a cost allocation method, prepare projections of costs to support planning of financial resources for implementation, and develop a project implementation agreement that will clearly establish the allocation of benefits and costs to each Party. With regard to the identification and valuation of benefits, the Parties could address this on a case-by-case (project-by-project) basis, or by developing and agreeing to a standard set of benefits to analyze and quantify for every project to achieve equitable cost allocations.



The steps to achieve an equitable allocation of benefits and costs should be addressed in the agreement that will be developed by the Parties to implement the 2020 OBMP Update. The 2020 OBMP implementation agreement could be designed to ensure that the desired extent of cost/benefit assessments are performed to support equitable cost allocations in the implementation of activity scopes of work, to anticipate and accommodate the development of project implementation agreements that define the project-specific cost/benefit allocation, and to periodically update cost projections for implementation of the 2020 OBMP Update activities and associated projects to support planning of financial resources.

Cooperative Efforts with Appropriate Entities to Implement Activities H, I, and J

The Parties that will participate in projects developed through the implementation of the 2020 OBMP Update activities would need to agree to an allocation of costs for the implementation of the projects and document the allocation in the project implementation agreements. Watermaster’s role will be to assess certain costs associated with implementation. Watermaster will continue to assess the costs of ongoing OBMP implementation efforts that provide broad benefits to the Parties pursuant to existing agreements and would allocate costs of the implementation of new activities/projects based on the new implementation agreements developed for the 2020 OBMP Update.

Implementation Actions, Schedule, and Costs for Activities H, I, J

Other than the performance of tasks associated with the assessment of benefits and costs within each 2020OBMP Update activity, there are no separate implementation actions associated with this activity as the future implementation agreements will make such considerations. Depending on the types of benefits that need to be quantified and valued to define equitable cost allocations, the project evaluation costs estimated herein for Activities A and D could be higher. (Note that these are the only two activities that have budget-level cost-estimates for project evaluation).

The *2020 OBMP Update: Implementation Plan Report*, which is the next work product of the 2020 Update, will include an implementation plan and schedule for each of the 2020 OBMP Update activities selected for implementation by the stakeholders and a projection of associated Watermaster costs to support the planning of financial resources for implementation.

Appendix C

Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

*The letter in this column corresponds with the letter ID of the Activities listed in Table 3

Needs and Wants Categorized by Basin Management Issues	Pool Parties												Overlying Non-Ag	Others					Addressed by Activities in Table 3*	Alignment with 2000 OBMP Goals	
	Appropriative									Agricultural											
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy		State of CA	IEUA	TVMWD	WMWD	Metropolitan			CBWCD
Reductions in Chino Basin Safe Yield																					
Develop a storage management plan to optimize the use of unused storage space in the basin, avoid undesirable results, and encourage Storage and Recovery Programs	●	●		●	●			●	●	●	●	●	●							B, C	1, 2, 3
Design storage management and storage & recovery programs that maintain or enhance Safe Yield	●	●						●	●	●			●						●	B, C	1, 3
Maintain or enhance the Safe Yield of the basin without causing undesirable results	●	●		●	●			●	●	●	●		●						●	B, D	1, 3
Manage the basin Safe Yield for the long-term viability and reliability of groundwater supply	●	●						●	●	●	●		●			●	●		●	A, B, C	1, 3
Reassess the frequency of the Safe Yield recalculation	●				●											●				I	3
Continue to model and track Safe Yield, but utilize other management strategies to address a decline.																●				B	1, 3
Develop recharge programs that maintain or enhance Safe Yield	●	●					●	●	●	●			●		●				●	A, B	1, 3
Develop more facilities to capture, store, and recharge water	●	●					●			●	●		●		●					A, B, D	1, 2
Enhance recharge in northeast MZ-3	●		●						●						●					A, C	1, 3
Maximize use of existing recharge facilities	●	●						●	●	●										A, C, F, G	3
Establish incentives to encourage recharge of high-quality imported water	●		●																	H, I	2, 3
Develop an OBMP Update that is consistent with the Physical Solution and allows access to the basin for users to meet their requirements	●	●				●		●												C, E	3
Engage with regional water management planning efforts in the Upper Santa Ana River Watershed that have the potential to impact Chino Basin operations or Safe Yield	●												●		●				●	I, D	3

Appendix C

Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

*The letter in this column corresponds with the letter ID of the Activities listed in Table 3

Needs and Wants Categorized by Basin Management Issues	Pool Parties												Overlying Non-Ag	Others					Addressed by Activities in Table 3*	Alignment with 2000 OBMP Goals	
	Appropriative									Agricultural											
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy		State of CA	IEUA	TVMWD	WMWD	Metropolitan			CBWCD
Inability to Pump Groundwater with Existing Infrastructure																					
Pursue collaborative, regional partnerships to implement regional solutions to water management challenges	●			●	●		●							●	●	●	●	●	●	B, E, F, G, I	3
Ensure that sufficient, reliable water supplies will be available to meet current and future water demands	●	●	●	●			●	●	●	●				●	●	●	●	●		A, B, D, G	1, 3
Develop conjunctive use agreements that provide certainty in the ability to perform during put and take years by clearly defining facilities/infrastructure and operating plans, and that leverage the lessons learned from obstacles encountered during the implementation of the current Dry Year Yield program	●						●	●	●					●		●	●			B, G, I	1, 2, 3
Develop management strategies that enable the Parties to produce or leverage their respective water rights that may be impacted by physical basin challenges like land subsidence or water quality	●						●	●						●		●				A, C, D, E, F, G, I	3
Design storage management and storage & recovery programs to raise funding to build infrastructure	●			●										●		●				B, D, I, J	3, 4
Develop process to support/facilitate project implementation	●																			F, H, J	4
Design subsidence management plans to allow flexibility in the location and volume of groundwater production in MZ-1 and MZ-2	●						●	●	●				●	●						A, C, G	3

Appendix C

Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

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<i>Increased Cost of Groundwater Use</i>																					
Seek supplemental financial resources to support the implementation of the OBMP Update	●	●		●			●	●	●	●				●	●			●		D, F, G, I, J	4
Develop regional partnerships to help reduce costs	●			●			●	●	●					●	●	●			●	F, G, I, J	4
Monetize agencies' unused water rights for equitable balance of basin assets			●																	G, H	4
Decrease Watermaster assessment costs	●				●			●												I, J	4
Support to develop a justification for increases in water rates and developer fees to invest in needed water infrastructure	●	●							●							●				F, G, H	
Develop an equitable distribution of costs/benefits of the OBMP	●	●		●		●	●	●	●	●				●	●					H, J	4
Watermaster assessments for implementation of the OBMP should be allocated based on benefits received	●				●															H	4
Continue or enhance incentives to pump groundwater from the Chino Basin			●																	G, I	3, 4
Improve flexibility for Parties to execute water rights transfers													●							G, I	4

Appendix C

Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

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	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy	State of CA		IEUA	TVMWD	WMWD	Metropolitan	CBWCD		
Chino Basin Water Quality Degradation																					
Develop a water quality management plan to ensure ability to produce groundwater rights	●	●		●			●	●	●	●				●	●	●	●			E, F, G, J	2, 3
Develop regional infrastructure to address water quality contamination and treatment				●	●		●													A, B, C, E, F, G, I, J	2
Plan for and be prepared for new drinking water quality regulations that may result in an increase in groundwater treatment and costs	●	●	●	●			●	●	●	●				●		●				E, F	2
Be more proactive and engaged in the process to develop new drinking water quality regulations							●													A, B, D, E, G, J	2
Recycled Water Quality Degradation																					
Maintain compliance with recycled water and dilution requirements pursuant to the Chino Basin groundwater recharge permit		●					●	●	●	●				●	●					A, B, D, E, G, J	2
Increased Cost of Basin Plan Compliance																					
Develop management strategy to ensure sufficient supplies to blend with recycled water and comply with Salt and Nutrient Management Plan	●	●									●			●	●					G, K	2
Perform the minimum amount of monitoring/reporting that is required for basin management and regulatory compliance	●			●			●	●												L	3, 4

Appendix C

Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

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Needs and Wants Categorized by Basin Management Issues	Pool Parties													Overlying Non-Ag	Others					Addressed by Activities in Table 3*	Alignment with 2000 OBMP Goals
	Appropriative									Agricultural			IEUA		TVMWD	WMWD	Metropolitan	CBWCD	CDA		
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy									
Reduced Recycled Water Availability and Increased Cost																					
Fully utilize IEUA recycled water resources		●		●			●	●	●						●					A, D, E, F, G	1
Maximize the use of recycled water for direct use or recharge	●	●		●			●	●	●	●					●					A, D, E, F, G	1
Evaluate the potential for direct potable reuse of recycled water	●								●						●					D, E, F	1
Develop alternative management strategies to comply with the recycled water discharge obligations to the Santa Ana River	●	●		●			●	●		●					●		●			D, E, F	1, 3
Utilize non-IEUA sources of recycled water that are not being put to beneficial use	●	●					●	●	●	●					●		●			D, E, F	1
Other																					
Coordinate timing of agreements, grants, etc. to ensure implementation of the OBMP Update	●							●	●	●					●	●	●			F, G, H, I, J	
Improve communication between the Parties	●			●			●							●	●		●			F, H, I	
Educate elected officials and decision makers on the need and urgency to address the water management challenges	●	●							●						●	●	●			F, G, H, I, J	
Consider a long-term planning horizon of up to 50 years	●								●	●					●					F, G, H, I, J	3

Appendix C

Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

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	Appropriative										Agricultural										
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy	State of CA		IEUA	TVMWD	WMWD	Metropolitan	CBWCD		
Reduced Imported Water Availability and Increased Cost																					
Ensure that there is a reliable local water supply to replace imported water during shut down of imported water delivery infrastructure for maintenance and longer-term emergency outages	●	●	●	●			●	●	●	●				●	●	●	●			B, C, G	1, 3
Identify and utilize new sources of supplemental water	●	●		●			●	●	●	●				●	●	●				A, B	1, 3
Construct inter-basin and intra-basin connections for the benefit of regional water supply and conjunctive use	●	●		●			●	●	●		●			●	●	●	●			C, G	1, 3
Understand how imported water reliability from Metropolitan Water District will be affected with and without the California Water Fix	●							●	●					●	●	●				-	1, 3
Develop management strategies that ensure Parties will meet future Chino Basin Desalter Replenishment Obligation and have the money to fund it	●	●		●			●		●							●		●		H, I, J	3
Increase water-supply reliability at the lowest possible cost	●			●			●	●			●		●	●	●					A, B, D, J	3
Need a better understanding of the water management plans of the Parties to be able to better plan for imported water needs and to assure reliability of Metropolitan Water District water supply	●			●					●		●			●	●	●	●			A	3
Analyze water management scenarios that plan for unexpected challenges and emergencies	●							●	●	●				●	●	●				E, G	3
Ensure that sufficient supplemental water supplies will be available to meet future replenishment requirements							●		●		●			●				●		A	1, 3
Despite the best efforts of the Parties to decrease reliance on imported water, the cost of the total water supply continues to increase	●																			-	3
Use more recycled water for Replenishment Obligation	●			●			●		●							●				A, D, E, F	3
Continue to build collaborative programs between the Metropolitan Water District and Chino Basin	●						●	●	●					●		●	●			B, I	3

Appendix C

Table 2
Activities for Consideration in the 2020 OBMP Update

ID	Activity
A	Construct new facilities and improve existing facilities to increase the capacity to store and recharge storm and supplemental water, particularly in areas of the basin that will promote the long-term balance of recharge and discharge
B	Develop, implement, and optimize Storage-and-Recovery Programs to increase water-supply reliability, protect or enhance Safe Yield, and improve water quality.
C	Identify and implement regional conveyance and treatment projects/programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence.
D	Maximize the reuse of recycled water produced by IEUA and others
E	Develop and implement a water-quality management plan to address current and future water-quality issues and protect beneficial uses
F	Develop strategic regulatory-compliance solutions to comply with new and evolving drinking water standards that achieve multiple benefits in managing water quality
G	Optimize the use of all sources of water supply by improving the ability to move water across the basin and amongst stakeholders, prioritizing the use of existing infrastructure.
H	Develop an equitable distribution of costs/benefits of the OBMP Update and include in the OBMP update agreements
I	Develop regional partnerships to implement the OBMP Update and reduce costs and include in OBMP Update agreement
J	Continue to identify and pursue low-interest loans and grants or other external funding sources to support the implementation of the OBMP Update
K	Develop management strategy within the Salt and Nutrient Management Plan to ensure ability to comply with dilution requirements for recycled water recharge
L	Perform the appropriate amount of monitoring and reporting required to fulfill basin management and regulatory compliance

Appendix C

Table 3
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities							
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost
Goal 1 - Enhance Basin Water Supplies										
<p>1a • Not all of the stormwater runoff available to the Chino Basin is diverted and recharged; failure to divert and recharge stormwater is a permanently lost opportunity.</p> <ul style="list-style-type: none"> • The existing methodology to select recharge projects for implementation is based on the cost of imported water. There are currently no known projects with a unit cost lower than the cost of imported water, hindering expansion of stormwater capture and recharge • Pumping capacity in some areas of the basin is limited due to low groundwater levels, land subsidence, and water quality 	<p>A Construct new facilities and improve existing facilities to increase the capacity to store and recharge storm and supplemental water, particularly in areas of the basin that will promote the long-term balance of recharge and discharge</p>	<ul style="list-style-type: none"> • Increases recharge of high-quality stormwater that will: <ul style="list-style-type: none"> • protect/enhance the Safe Yield, • improve water quality, • reduce dependence on imported water, • increase pumping capacity in areas of low groundwater levels and areas of subsidence concern, and • provide new supply of blending water to support the recycled-water recharge program. • Provides additional supplemental-water recharge capacity for replenishment and implementation of Storage and Recovery Programs. • Provides additional surface water storage capacity. • Revised economic criteria for selecting recharge projects for implementation. 	✓	✓	✓	✓	✓	✓	✓	✓

Appendix C

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Goal 1 - Enhance Basin Water Supplies										
1b • There is a surplus of recycled water potentially available to the Chino Basin Parties that is not being put to beneficial use. • Existing infrastructure limits the expansion or reuse and recharge of recycled water in the Chino Basin. • Existing requirements to discharge recycled water to the Santa Ana River limit the amount of IEUA recycled water available for reuse and recharge •The Department of Drinking Water and the Regional Board blending requirements for recycled water recharge could limit expanded recharge opportunities	D Maximize the reuse of recycled water produced by IEUA and others	<ul style="list-style-type: none"> Results in a new, consistent volume of in-lieu and/or wet water recharge that will: <ul style="list-style-type: none"> protect/enhance the Safe Yield, reduce dependence on imported water, improve water-supply reliability, especially during dry periods, and increase pumping capacity in areas of low groundwater levels and areas of subsidence concern. Identify additional sources of water to satisfy IEUA discharge requirements pursuant to the Santa Ana River Judgment. 	✓	✓					✓	✓

Appendix C

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Goal 2 - Protect and Enhance Water Quality										
2a • Areas of the basin are contaminated with VOCs, nitrate, perchlorate and other contaminants of emerging concern (CECs). • Water-quality regulations are evolving and becoming more restrictive, which limits the beneficial uses of groundwater. • Groundwater treatment may be necessary to meet beneficial uses, but can be expensive to build and operate. • The basin is hydrologically closed, which causes accumulation and concentration of salts, nutrients, and other contaminants. • Some stored water in the Chino Basin cannot be used due to water quality and insufficient treatment capacity • Recharge sources may contribute CECs to the groundwater basin	E Develop and implement a water-quality management plan to address current and future water-quality issues and protect beneficial uses	<ul style="list-style-type: none"> Proactively addresses new and near-future drinking water regulations. Enables the Parties to make informed decisions on infrastructure improvements for water-quality management and regulatory compliance. Removes groundwater contaminants from the Chino Basin and thereby improves groundwater quality. 								
	F Develop strategic regulatory-compliance solutions to comply with new and evolving drinking water standards that achieve multiple benefits in managing water quality	<ul style="list-style-type: none"> Enables the Parties to produce or leverage their water rights that may be constrained by water quality. Ensures that groundwater is pumped and thereby protects/enhances the Safe Yield. 	✓	✓	✓	✓				✓
2b • Water-quality regulations are evolving and generally becoming more stringent, which could limit the reuse and recharge of recycled water.	K Develop management strategy within the Salt and Nutrient Management Plan to ensure ability to comply with dilution requirements for recycled water recharge	<ul style="list-style-type: none"> Enables the continued and expanded recharge of recycled water, which will: <ul style="list-style-type: none"> protect water quality, improve water-supply reliability, especially during dry periods, and protect/enhance the Safe Yield. 	✓			✓	✓	✓	✓	

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OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
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Goal 3 - Enhance Management of the Basin										
3a • Existing infrastructure (pumping and treatment capacity and conveyance) is insufficient to conduct puts and takes under proposed storage programs. • There is unused storage space in the Basin the use of which is constrained by the storage limits defined in existing CEQA documentation. • Watermaster's current storage management plan is not optimized to protect/enhance basin yield, improve water quality, avoid new land subsidence, ensure balance of recharge and discharge, maintain Hydraulic Control, etc. • Storage and recovery operations could be limited by contaminant plumes or other CECs in groundwater	B Develop, implement, and optimize Storage and Recovery Programs to increase water-supply reliability, protect or enhance Safe Yield, and improve water quality.	<ul style="list-style-type: none"> Storage programs that protect/enhance basin yield, improve water quality, avoid new land subsidence, ensure balance of recharge and discharge, maintain Hydraulic Control, etc. New regional infrastructure to optimize put and take operations Leverages unused storage space in the Basin. Reduces reliance on imported water, especially during dry periods. Potentially provides outside funding sources to implement the OBMP Update. Improves water quality through the recharge of high quality water. 		✓	✓	✓	✓			✓

Appendix C

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Goal 3 - Enhance Management of the Basin										
3b • Land subsidence in northwest MZ1 may limit the ability for Parties to pump their respective rights in this area. • Poor water quality and increasingly restricting water quality regulations limits the ability for some Parties to pump their respective rights. • Low groundwater levels impact pumping capacity	C Identify and implement regional conveyance and treatment projects/programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence.	<ul style="list-style-type: none"> Enables producers in MZ1 and MZ2 to obtain water through regional conveyance, which supports management of groundwater levels to reduce the potential for subsidence and ground fissuring. Enables the Parties to increase production in areas currently constrained by poor water quality. Removes groundwater contaminants from the Chino Basin and thereby improves water quality. 	✓	✓	✓	✓				✓
	G Optimize the use of all sources of water supply by improving the ability to move water across the basin and amongst stakeholders, prioritizing the use of existing infrastructure.	<ul style="list-style-type: none"> Protects/enhances the Safe Yield. Maximizes the use of existing infrastructure, which will minimize costs. Provides infrastructure that can also be used to implement Storage and Recovery Programs. 								
3c • Watermaster needs information to comply with regulations and its obligations under its agreements and Court orders, yet financial resources to collect this information are limited.	L Perform the appropriate amount of monitoring and reporting required to fulfill basin management and regulatory compliance	<ul style="list-style-type: none"> Ensures full compliance with regulatory requirements. Ensures full support of basin management initiatives. Enables Parties to monitor the performance of the OBMP Update. Continual review and revision of requirements and monitoring program to ensure cost efficiency 	✓	✓	✓	✓	✓	✓	✓	✓

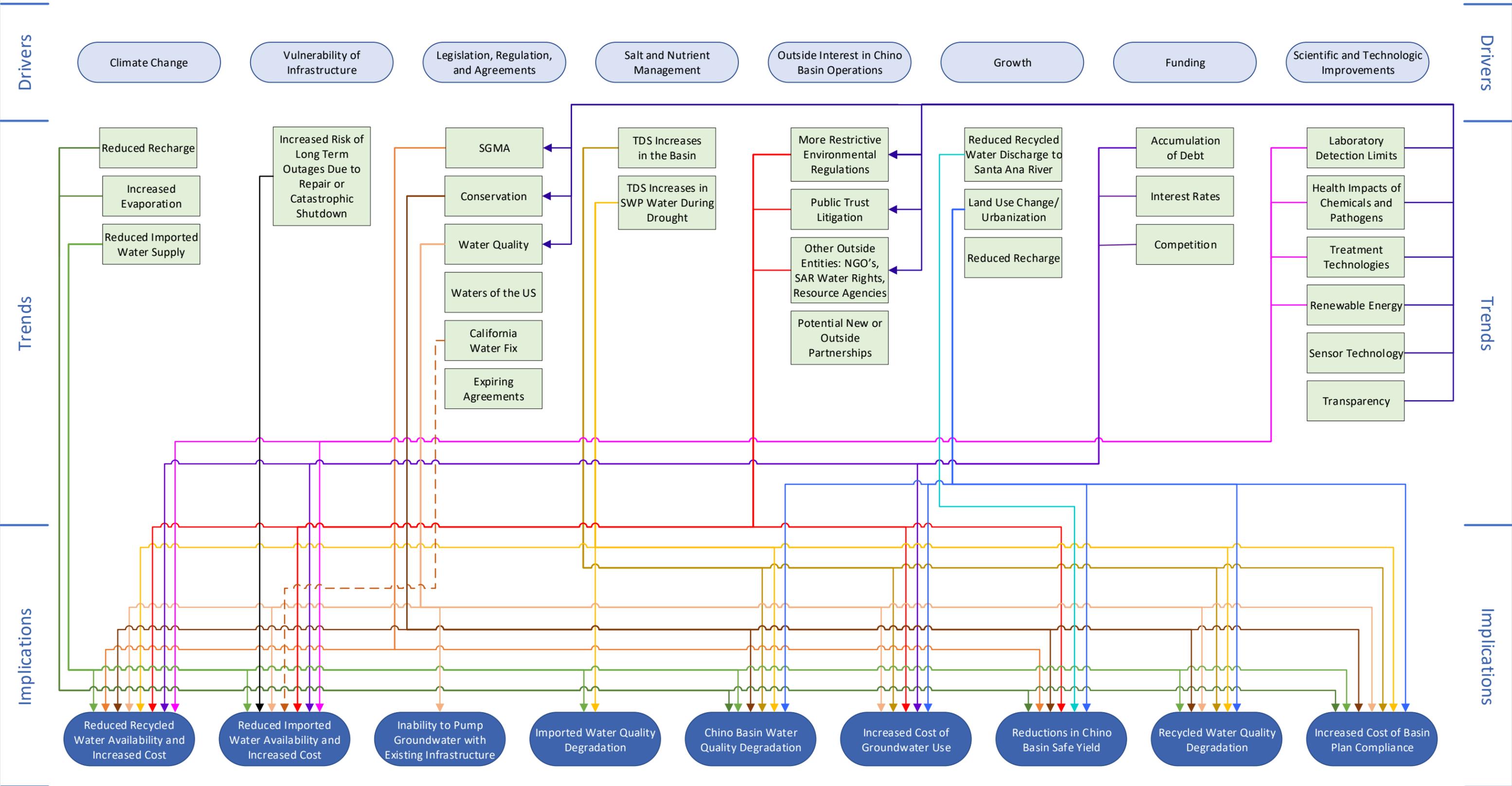
Appendix C

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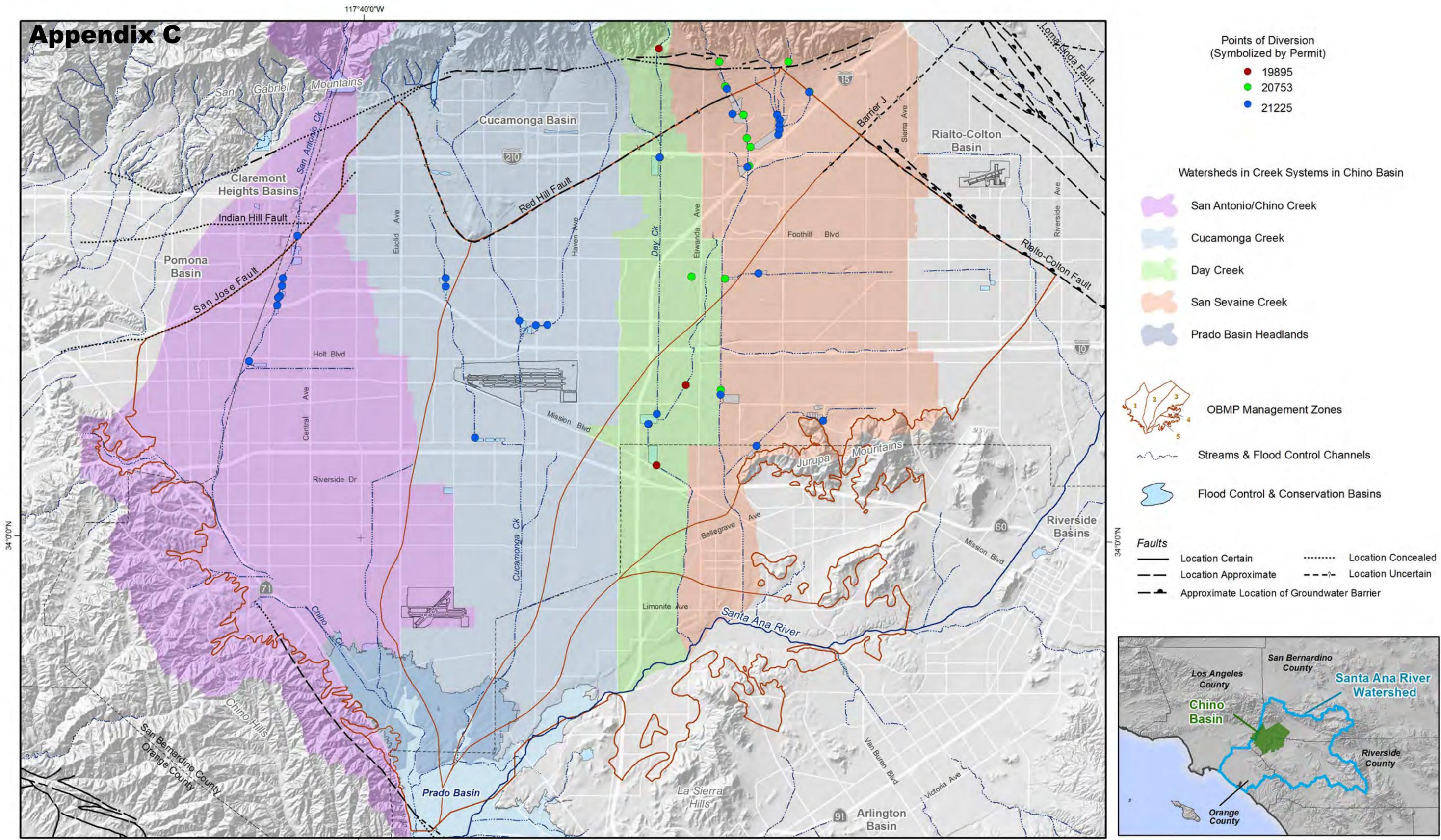
Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities							
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Goal 4 - Equitably Finance the OBMP										
4a • The distribution of benefits associated with the OBMP Update is not defined. • Funding needed for the OBMP implementation activities of the Watermaster is not projected beyond the current year budget, which limits Parties ability to plan required funding for the future. • There is currently no formal process to evaluate and adapt the OBMP implementation plan, schedule and cost.	H Develop an equitable distribution of costs/benefits of the OBMP Update and include in the OBMP update agreements	<ul style="list-style-type: none"> Provides transparency as to the benefits of the OBMP Update activities Identifies Watermaster roles and costs to the Parties Formal process to revisit implementation plan and adjust priorities and schedule as necessary to address changed conditions Periodic updates of cost projections for OBMP implementation needed to plan financial resources. Improves readiness to apply for grants as they become available Improves the likelihood that the OBMP will be implemented. 			✓		✓	✓	✓	
4b • Limited financial resources constraint the implementation of the OBMP. • Future reliability of grant funding is uncertain	I Develop regional partnerships to implement the OBMP Update and reduce costs and include in OBMP Update agreement	<ul style="list-style-type: none"> Lowers the cost of OBMP implementation. Improves the likelihood that the OBMP will be implemented. 			✓		✓	✓	✓	
	J Continue to identify and pursue low-interest loans and grants or other external funding sources to support the implementation of the OBMP Update				✓		✓	✓	✓	

Appendix C

Figure 1 – Drivers and Trends and Their Implications
2020 OBMP Update



Appendix C



- Points of Diversion
(Symbolized by Permit)
- 19895
 - 20753
 - 21225

Watersheds in Creek Systems in Chino Basin

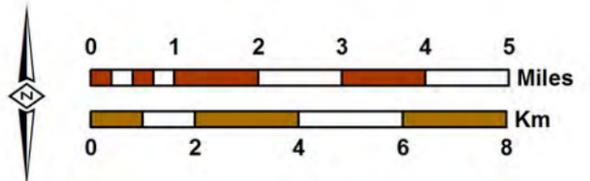
- San Antonio/Chino Creek
- Cucamonga Creek
- Day Creek
- San Sevaine Creek
- Prado Basin Headlands

- OBMP Management Zones
- Streams & Flood Control Channels
- Flood Control & Conservation Basins

- Faults
- Location Certain
 - Location Concealed
 - Location Approximate
 - Location Uncertain
 - Approximate Location of Groundwater Barrier



Prepared by:
 Author: CS
 Date: 11/22/2019
 File: Exhibit_A-1_PODs.mxd

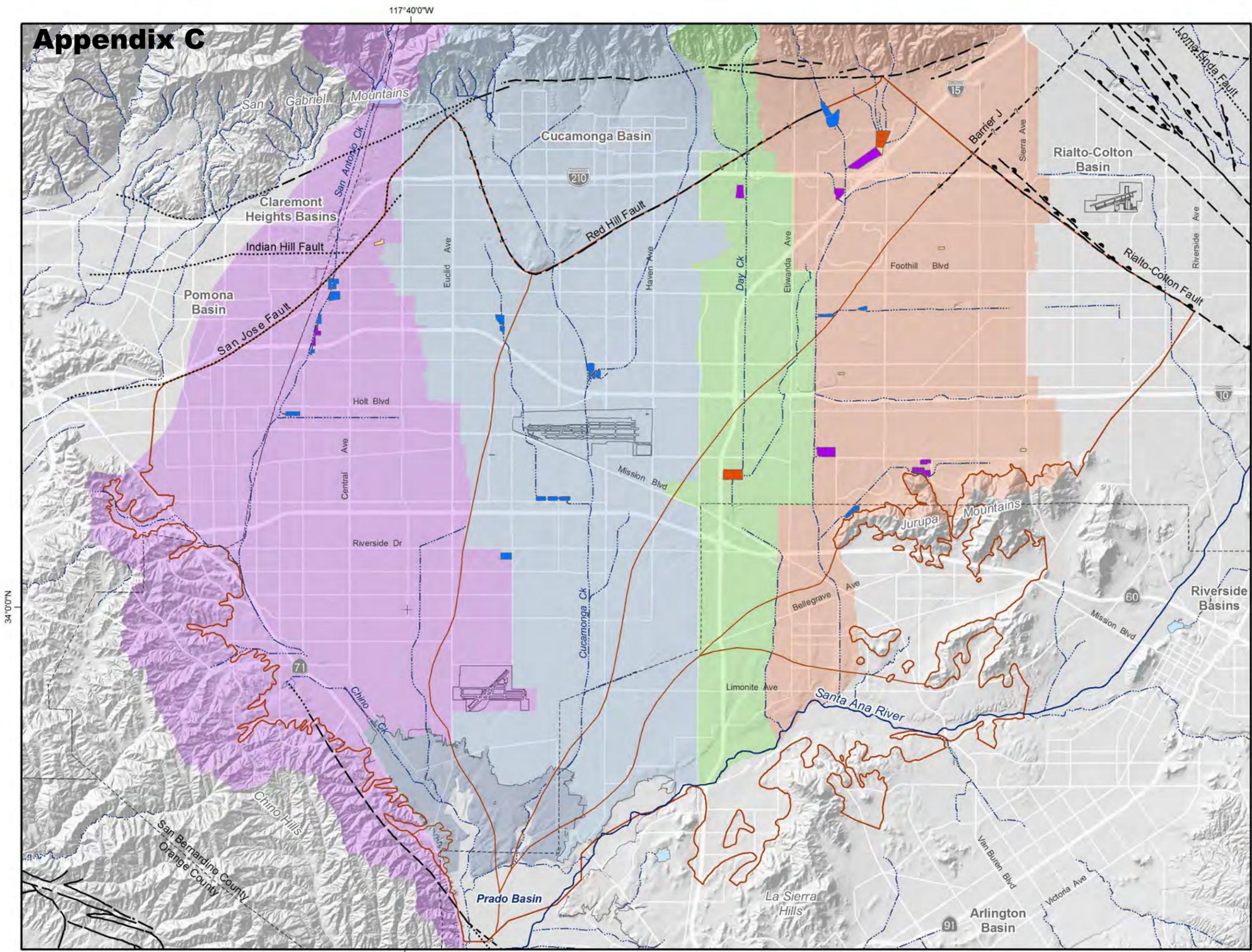


Prepared for:
OBMP 2020 Update
 Scoping Report

Watermaster Points of Diversion

Permits 19895, 20753, 21225

Appendix C

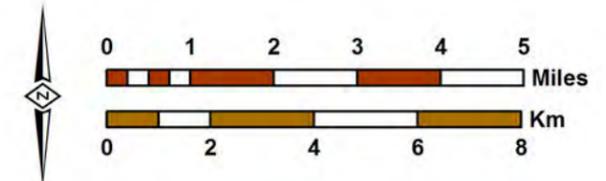


- Watersheds in Creek Systems in Chino Basin**
- San Antonio/Chino Creek
 - Cucamonga Creek
 - Day Creek
 - San Sevaine Creek
 - Prado Basin Headlands
- Recharge Facilities in the Chino Basin and Associated Projects**
- Projects in the 2002 Recharge Master Plan (2002 RMP)
 - Projects in 2013 Amendment to the 2010 Recharge Master Plan Update (2013 RMPU)
 - Projects in both 2002 RMP and 2013 RMPU
 - Projects considered in 2013 RMPU and deferred to a future RMPU
- OBMP Management Zones**
-
- Streams & Flood Control Channels**
-
- Faults**
- Location Certain
 - Location Concealed
 - Location Approximate
 - Location Uncertain
 - Approximate Location of Groundwater Barrier



Prepared by:
WEI
 WILDERMUTH ENVIRONMENTAL, INC.

Author: CS
 Date: 11/22/2019
 File: Exhibit_A-2_RMPUprojects.mxd



Prepared for:
OBMP 2020 Update
 Scoping Report

Recharge Improvements in the Chino Basin Since Implementation of the OBMP

Appendix C

Exhibit A-3 Average Stormwater Recharge and Supplemental Water Recharge Capacity Estimates

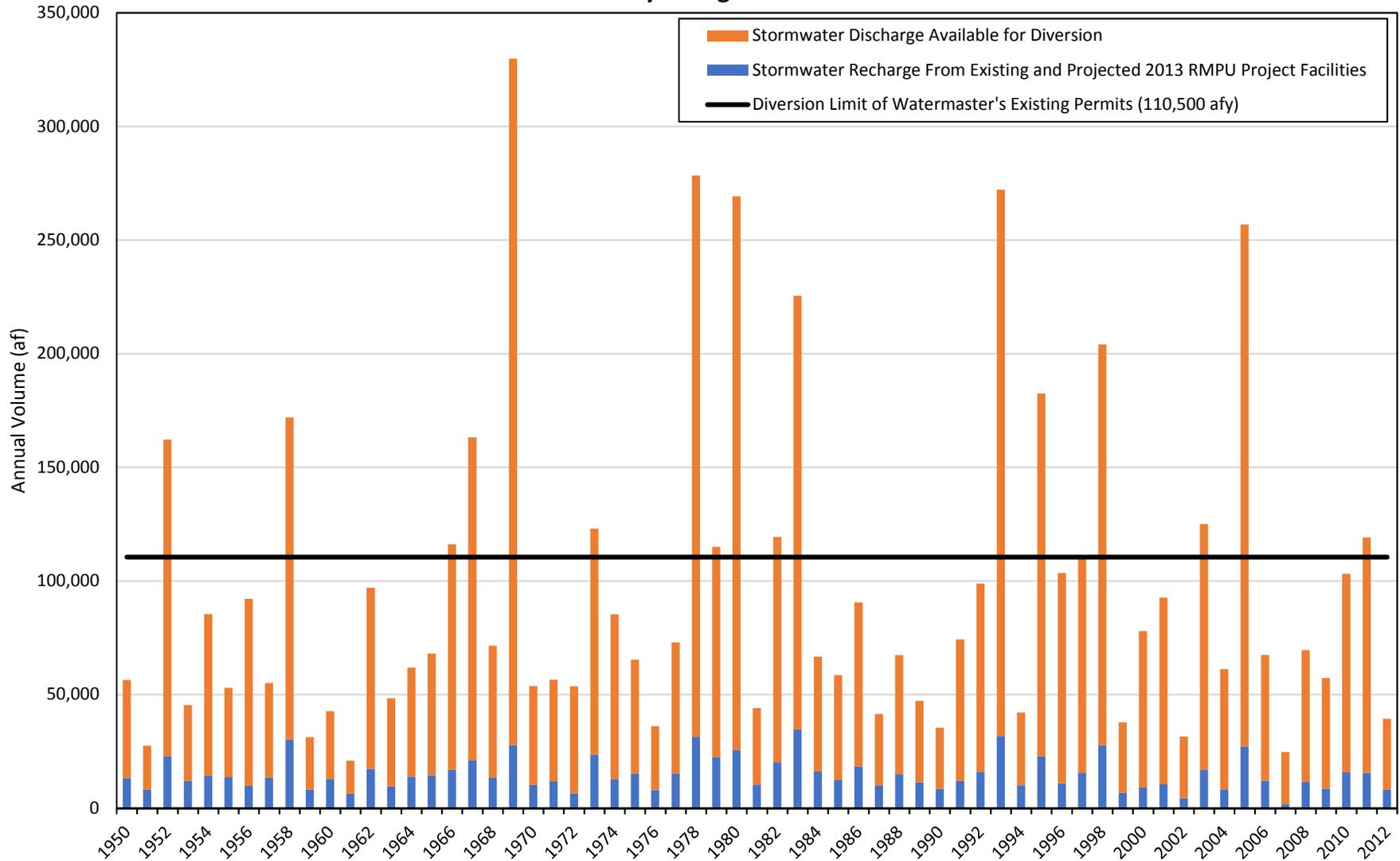
Recharge Facility	Average Stormwater Recharge FY 2004/05 through FY 2016/17	Theoretical Maximum Supplemental Water Recharge Capacity	Theoretical Maximum Recharge Capacity
	(afy)	(afy)	(afy)
Brooks Street Basin	489	1,658	2,147
College Heights Basin - East	78	5,816	7,958
College Heights Basin - West		2,064	
Montclair Basin 1	953	409	5,617
Montclair Basin 2		2,940	
Montclair Basin 3		400	
Montclair Basin 4		915	
Eighth Street Basin	1,069	3,426	5,665
Seventh Street Basin		1,170	
Upland Basin	430	891	1,321
<i>Subtotal Management Zone 1</i>	<i>3,019</i>	<i>19,689</i>	<i>22,708</i>
Ely	1,120	4,501	5,621
Grove Basin	305	-	305
Etiwanda Debris Basin	212	2,908	3,120
Hickory Basin East	361	856	2,637
Hickory Basin West		1,420	
Lower Day Basin Cell 1	513	983	1,496
Lower Day Basin Cell 2			
Lower Day Basin Cell 3			
San Sevaine No. 1	816	114	6,025
San Sevaine No. 2		2,869	
San Sevaine No. 3		2,226	
Turner Basin No. 1	1,527	577	4,084
Turner Basin No. 2		227	
Turner Basin No. 3		418	
Turner Basin No. 4A		981	
Turner Basin No. 4B		164	
Turner Basin No. 4C		191	
Victoria Basin		309	
<i>Subtotal Management Zone 2</i>	<i>5,163</i>	<i>20,713</i>	<i>25,876</i>
Banana Basin	258	1,790	2,048
Declez Basin Cell 1	582	1,235	3,409
Declez Basin Cell 2		823	
Declez Basin Cell 3		770	
IEUA RP3 Basin Cell 1	1,129	4,653	12,716
IEUA RP3 Basin Cell 3		3,266	
IEUA RP3 Basin Cell 4		3,669	
<i>Subtotal Management Zone 3</i>	<i>1,969</i>	<i>16,204</i>	<i>18,173</i>
Total	10,151	56,606	66,757

Source: 2018 Recharge Master Plan (WEI 2018)



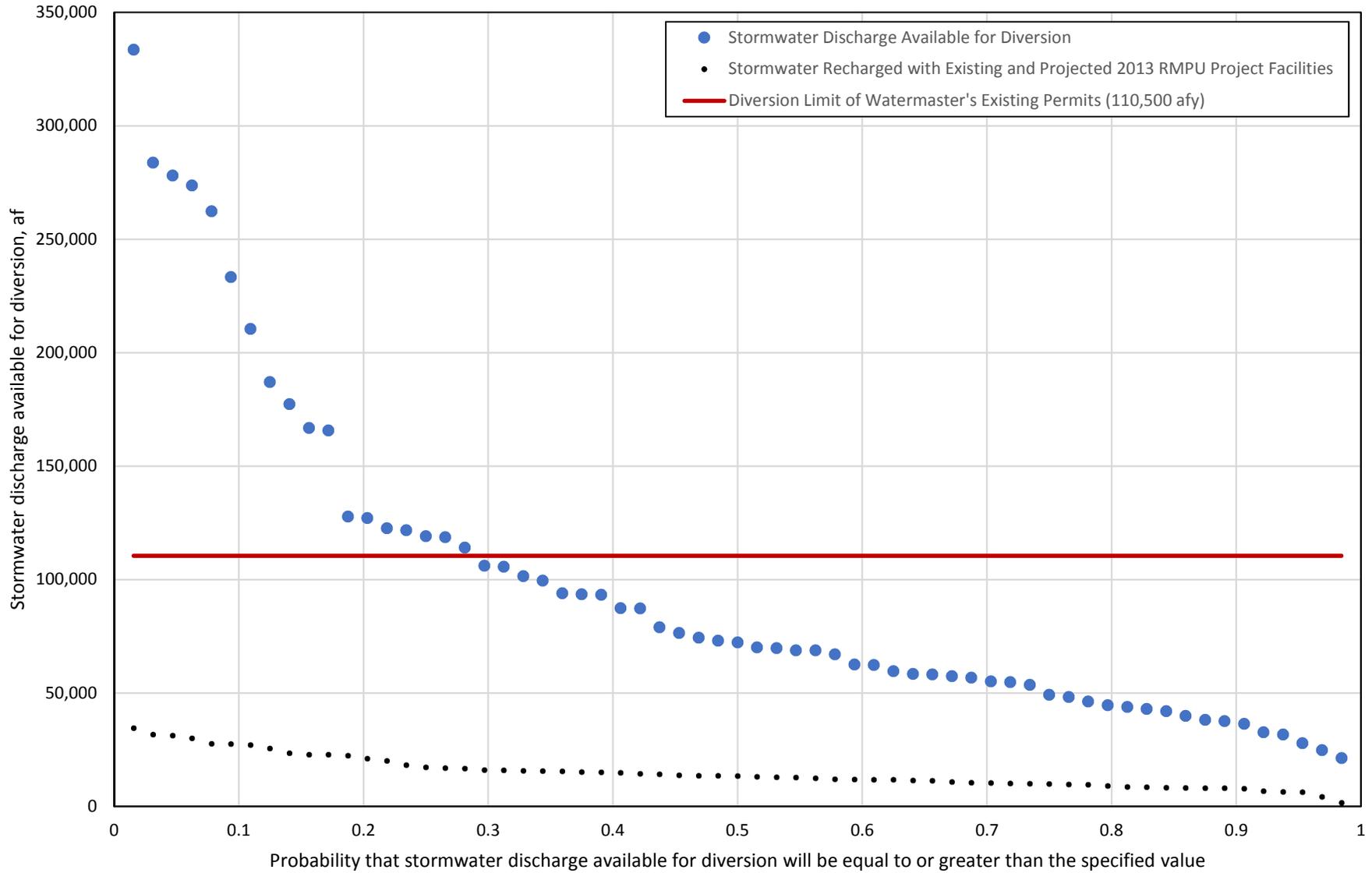
Appendix C

Exhibit A-4 Model-Projected Estimates of Total Stormwater Discharge and Recharge in the Chino Basin for the Hydrologic Period of 1950 to 2012



Appendix C

Exhibit A-5 Exceedance Frequency Curve of Stormwater Discharge Available for Diversion in the Chino Basin for the Hydrologic Period of 1950-2012



Appendix C

Exhibit A-6

Projects Considered and Not Recommended Due to Cost in the 2013 RMPU and New Conceptual Recharge Projects Considered and Not Recommended in the 2018 RMPU¹

PID ²	Project	Source	New Stormwater Recharge (afy)	Projected Costs in 2018	
				2018 RMPU Estimated Unit Stormwater Recharge Cost (\$/af)	2018 RMPU Estimated Capital Cost
1a	Montclair Basins - Transfer water between Montclair Basins and deepen MC 4	2013 RMPU	71	\$5,980	\$6,526,000
5	North West Upland Basin - Increase drainage area and basin enlargement	2013 RMPU	93	\$4,620	\$6,574,000
15	Ely Basin - Basin enlargement and increased drainage area	2013 RMPU	101	\$1,990	\$3,017,000
24	Vulcan Basin - Construct new inflow and outflow structures	2013 RMPU	857	\$2,560	\$33 million
26	Sultana Avenue - Deepen basin by 10 feet	2013 RMPU	7	\$5,620	\$601,000
n/a	Regional Recharge Distribution System	2013 RMPU	5,000	\$2,810	\$184 million
n/a	Vineyard Managed Aquifer Recharge	2018 RMPU	n/a	n/a	n/a
n/a	CBWCD Confluence Project ³	2018 RMPU	n/a	n/a	n/a

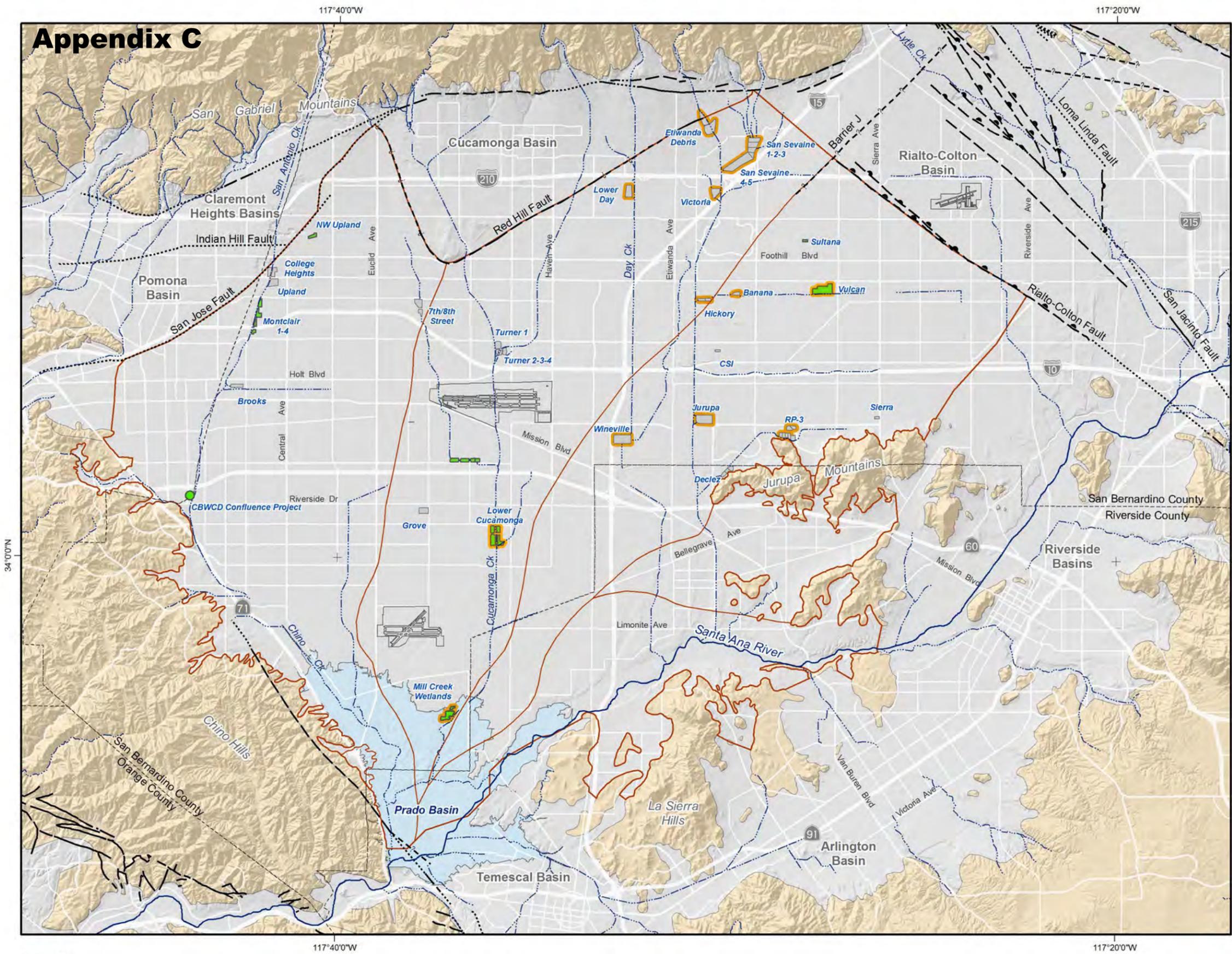
¹ With the exception of the last two projects listed, projects in this table were included in the 2013 RMPU and were considered in the 2018 RMPU based on the following criteria: projected yield is greater than zero (excluding projects for which yield was not quantified); project was not already implemented; project was determined to be technically and institutionally feasible; project was not recommended for final implementation in the 2013 RMPU

² 2013 Project Identification (PID) number; n/a - No PID assigned.

³ Per an email from Steve Sentas at CBWCD dated August 16, 2018, the potential new stormwater recharge for the Confluence Project is 2,940 afy at a cost of about \$17 million (excluding land acquisition costs). The estimated unit stormwater recharge cost is \$650/af. This information was not vetted through the CBWM Steering Committee process during the development of the 2018 RMPU.



Appendix C

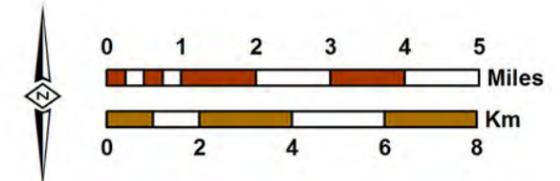


- Recharge Facilities in the Chino Basin and Associated Projects
- Potential New Stormwater Recharge Projects That Were Evaluated in the 2018 RMPU and Not Recommended Due to Cost
 - Other Existing Stormwater Management Facilities
 - Stormwater Management Facility in the Regional Recharge Distribution System Project
 - OBMP Management Zones
 - Streams & Flood Control Channels
- Geology**
- Water-Bearing Sediments**
- Quaternary Alluvium
- Consolidated Bedrock**
- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks
- Faults**
- Location Certain
 - Location Concealed
 - Location Approximate
 - Location Uncertain
 - Approximate Location of Groundwater Barrier



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Author: CS
 Date: 11/22/2019
 File: Exhibit_A-7_Potential new facilities.mxd

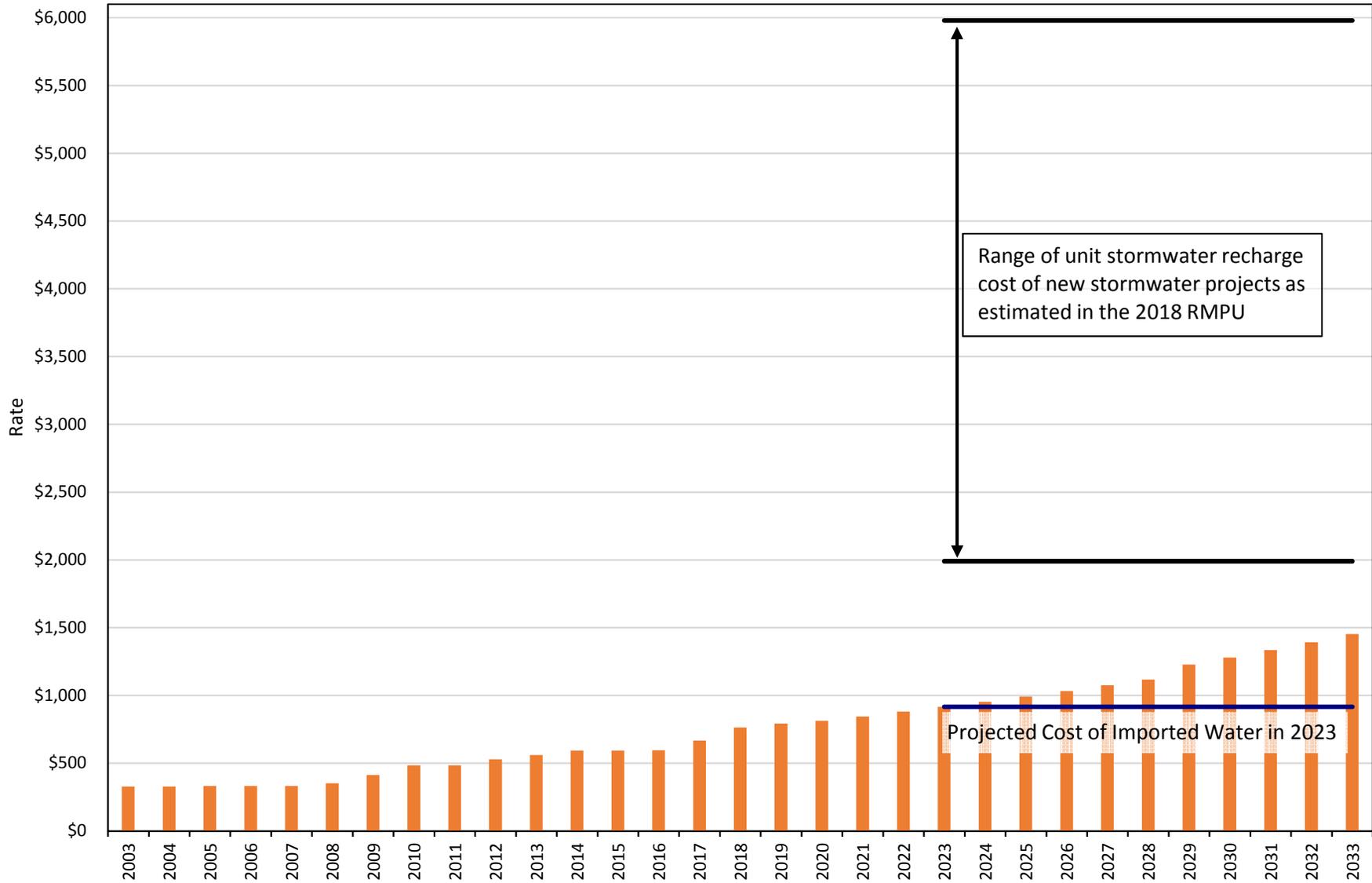


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Potential New Stormwater Recharge Projects Considered in the 2018 RMPU

Appendix C

Exhibit A-8 Projected Imported Water Rates Compared to Estimated Unit Cost of New Stormwater Recharge Projects



Appendix C

Exhibit A-9
Cost-Estimate and Schedule to Implement Activity A

Task and Subtask Description	Engineering Cost	FY 2020/21				FY 2021/22				FY 2022/23				FY 2023/24 and beyond
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Task 1 Define objectives and refine scope of work <ul style="list-style-type: none"> Define objectives of Activity A Refine scope described in TM1 Refine detailed cost and schedule 	\$45,000	\$45,000												
Task 2 Develop planning, screening, and evaluation criteria <ul style="list-style-type: none"> Develop criteria on how and where to conduct recharge Develop criteria to evaluate project cost and benefit Review and finalize criteria 	\$125,000	\$125,000												
Task 3 Describe recharge enhancement opportunities <ul style="list-style-type: none"> Identify potential stormwater recharge projects Select projects for reconnaissance level recharge study 	\$80,000				\$80,000									
Task 4 Develop reconnaissance-level engineering design and operating plan <ul style="list-style-type: none"> Characterize potential recharge alternatives Rank Alternatives Prepare finance plan for soft-costs Prepare report 	\$325,000					\$220,000				\$105,000				
Task 5 Plan, design, and construct selected recharge projects <ul style="list-style-type: none"> Prepare preliminary design report and CEQA documentation Prepare finance plan for project implementation Obtain permits and agreements and prepare final design Construct selected projects 	\$ TBD													\$ TBD
Total Cost and Cost by FY	\$575,000	\$170,000				\$300,000				\$105,000				\$ TBD

TBD -- To be determined



Appendix C

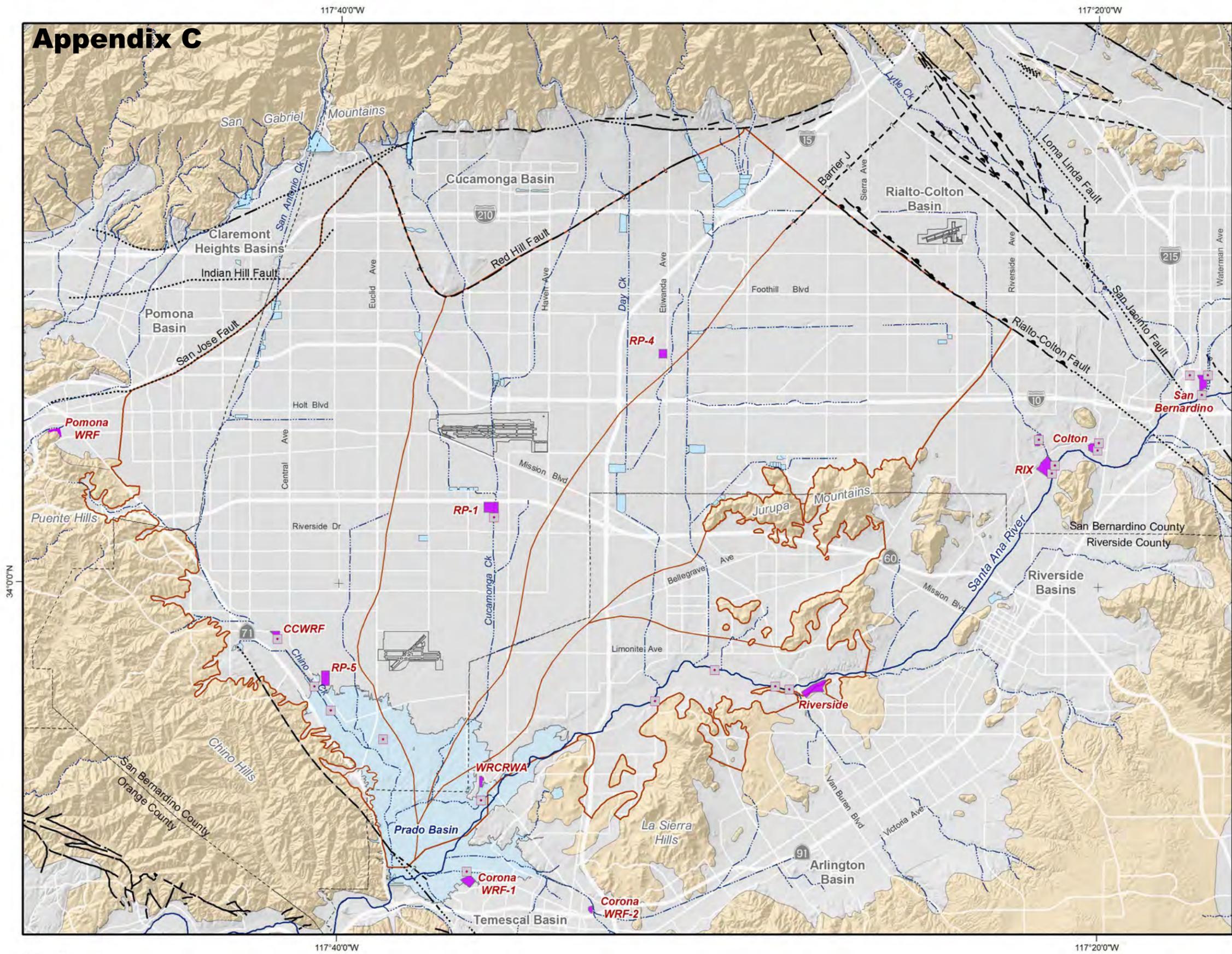
Exhibit B-1
Cost-Estimate and Schedule to Implement Activity B

Task and Subtask Description	Engineering Cost	FY 2020/21				FY 2021/22				FY 2022/23				FY 2023/24 and beyond
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Task 1 Convene the Storage and Recovery Program Committee, define objectives, and refine scope of work <ul style="list-style-type: none"> Convene Storage and Recovery Program Committee Define objectives and impediments for developing Storage and Recovery Programs Define mutual benefits expected from Storage and Recovery Programs Develop scope, schedule, and cost to prepare a <i>Storage and Recovery Program Master Plan</i> 	\$105,000	\$105,000												
Task 2 Develop conceptual alternatives for Storage and Recovery Programs at various scales <ul style="list-style-type: none"> Identify and characterize potential source waters Identify potential storing partners and delivery methods Identify and characterize institutional challenges Develop planning criteria Describe several conceptual Storage and Recovery Programs alternatives Evaluate and select alternatives for Task 3 	\$ TBD					\$ TBD								
Task 3 Describe and evaluate reconnaissance-level facility plans and costs for Storage and Recovery Program alternatives <ul style="list-style-type: none"> Describe alternative facility plans, operations, and costs Characterize basin response, potential MPI, benefits Describe potential implementation barriers Assess feasibility and rank alternatives 	\$ TBD									\$ TBD				
Task 4 Prepare <i>Storage and Recovery Program Master Plan</i> <ul style="list-style-type: none"> Describe results and recommendations of Tasks 1 through 3 Achieve consensus on the recommendations Prepare <i>Storage and Recovery Program Master Plan</i> 	\$ TBD												\$ TBD	\$ TBD
Total Cost and Cost by FY	\$105,000	\$105,000				\$ TBD				\$ TBD				\$ TBD

TBD -- To be determined



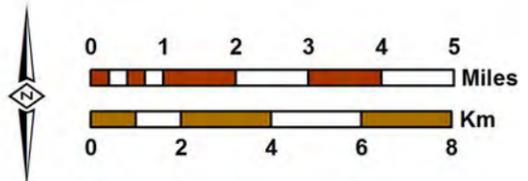
Appendix C



- Recycled Water Treatment Plant
- Recycled Water Discharge Point
- OBMP Management Zones
- Streams & Flood Control Channels
- Flood Control & Conservation Basins
- Faults**
 - Location Certain
 - Location Concealed
 - Location Approximate
 - Location Uncertain
 - Approximate Location of Groundwater Barrier
- Geology**
 - Water-Bearing Sediments**
 - Quaternary Alluvium
 - Consolidated Bedrock**
 - Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks



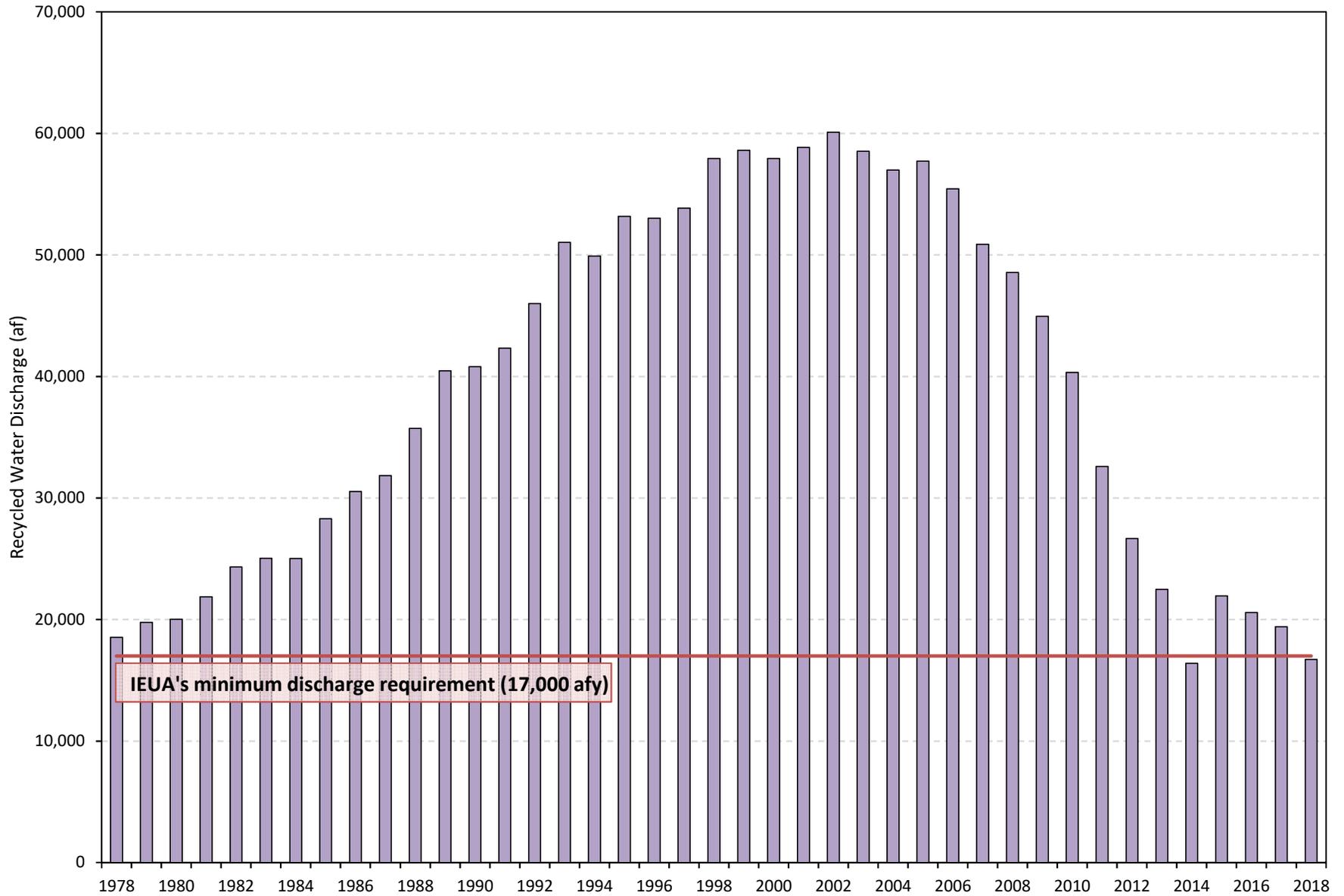
Prepared by:
 Author: SO
 Date: 11/22/2019
 File: Exhibit D-1_RWTreatment Plants.mxd



Recycled Water Treatment Plants and Discharge Points

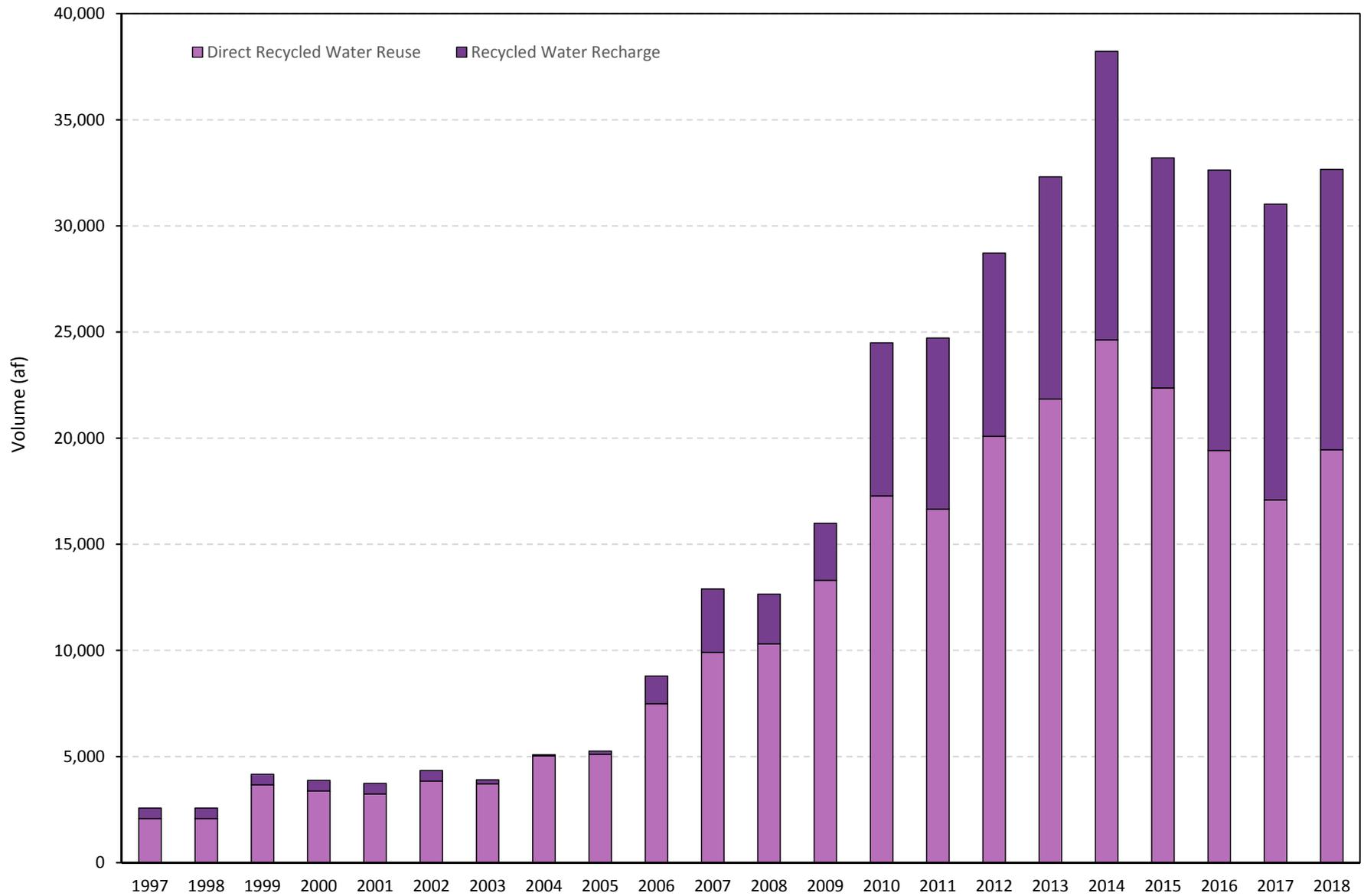
Appendix C

Exhibit D-2 IEUA Recycled Water Discharge to Santa Ana River FY 1977/78 to 2017/18

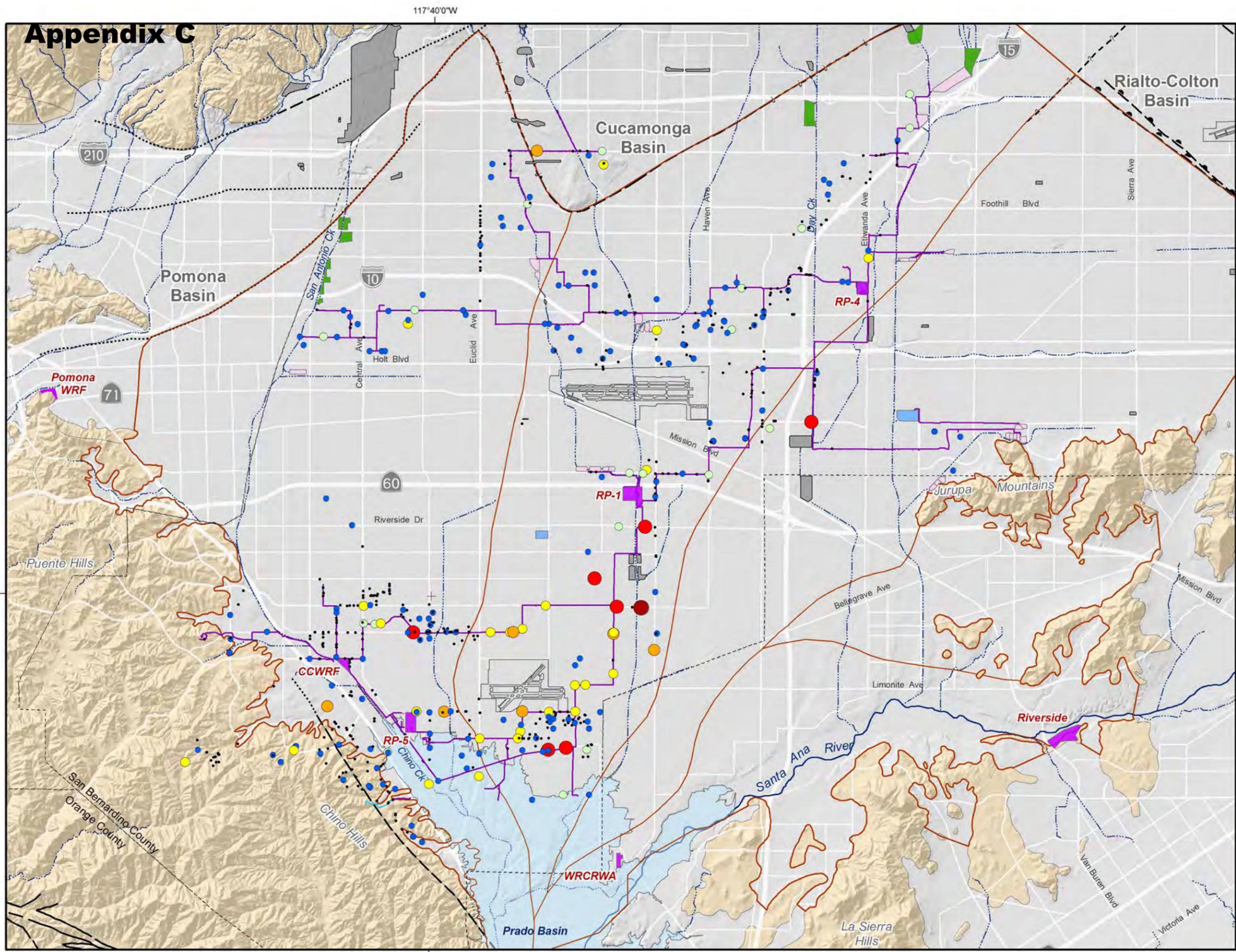


Appendix C

Exhibit D-3 Recycled Water Recharge and Direct Recycled Water Reuse FY 1996/97 to 2017/18



Appendix C



Recycled Water Deliveries for Direct Non-Potable Use Fiscal Year 2017/18 (af)

- < 10
- 10 - 50
- 50 - 100
- 100 - 250
- 250 - 500
- 500 - 1,000
- > 1,000

Recycled Water Pipelines (Symbolized by Status)

- Existing
- In Construction
- Treatment Plant

Recharge Basins

- Storm, Imported and Recycled Water
- Storm and Imported Water
- Stormwater
- Stormwater Facilities Not Managed Under the OBMP Recharge. Incidental Recharge Only

Streams & Flood Control Channels

- Flood Control & Conservation Basins

Faults

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- - - - Location Uncertain

Geology

Water-Bearing Sediments

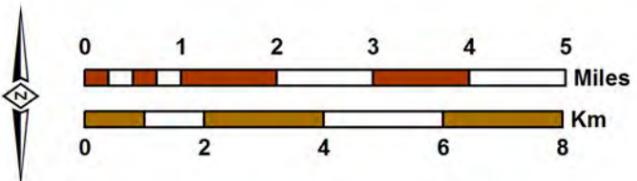
- Quaternary Alluvium

Consolidated Bedrock

- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks



Author: CS
Date: 20170215
File: Exhibit D-4_RW Deliveries



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IEUA Recycled Water Delivery System for Direct Reuse
FY 2017/18

Appendix C

**Exhibit D-5
IEUA Projections of Recycled Water Production and Reuse through 2040**

Recycled Water (af)		FY 2017/18 (Actual)	2020	2025	2030	2040
Production - High*	a	49,369	64,400	70,400	75,200	83,000
Production - Low*			54,400	61,000	67,700	74,700
Direct Reuse*	b	19,450	24,000	27,500	30,000	30,000
Recharge*	c	13,212	16,900	18,700	18,700	18,700
Surplus Supply Available for Reuse and/or Discharge - High	d = a - (b + c)	16,708	23,500	24,200	26,500	34,300
Surplus Supply Available for Reuse and/or Discharge - Low			13,500	14,800	19,000	26,000

* Source: Inland Empire Utilities Agency. *Sources of Water Supply for the Chino Basin Program* . Memo to Member Agencies. February 20, 2019.



Appendix C

Exhibit D-6 Actual and Projected¹ Annual Recycled Water Recharge (afy)

Basin Permitted for Recycled Water Recharge	Theoretical Maximum Supplemental Water Recharge Capacity ²		Actual FY 2017/18 Recharge	Projected Annual Recharge for FY 2019/20 to FY 2029/30
	Directly After Cleaning ³	Average Between Maintenance Periods ⁴		
Brooks Street Basin	2,825	1,658	1,268	2,000 ⁵
Seventh and Eighth Street Basins	5,045	4,596	1,037	1,490
<i>Subtotal Management Zone 1</i>			<i>2,305</i>	<i>3,490</i>
Ely Basins	7,375	4,501	1,511	1,100
Hickory Basin	2,433	2,276	1,399	1,650
San Sevaime Basins 1-5	9,637	5,209	0	840
Turner Basins 1-4	3,674	2,557	1,526	1,110
Victoria Basin	2,436	2,279	793	1,530
<i>Subtotal Management Zone 2</i>			<i>5,228</i>	<i>6,230</i>
Banana Basin	1,913	1,790	2,131	1,050
Declez Basin	3,032	2,827	588	1,250
IEUA RP3 Ponds	12,389	11,587	2,960	4,400
<i>Subtotal Management Zone 3</i>			<i>5,679</i>	<i>6,700</i>
Total	50,760	39,280	13,212	16,420

n/a - not applicable

¹ Source - Andy Campbell, IEUA, June 2016

² Subject to Watermaster needs for recharge and replenishment

³ Total recharge from the 10-month period directly after a cleaning.

⁴ Average annual recharge over the span between maintenance. The average cleaning frequency of each recharge facility was provided by the IEUA. This estimate corresponds to continuous use between maintenance periods and is less than the recharge capacity that would occur if the recharge basins are used less frequently.

⁵ The projected recharge at Brooks Basin is larger than the theoretical maximum average supplemental water recharge capacity between maintenance periods, but the capacity can increase up to 2,825 afy if the maintenance frequency is increased.



Appendix C

Exhibit D-7
Cost-Estimate and Schedule to Implement Activity D

Task and Subtask Description	Engineering Cost	FY 2020/21				FY 2021/22				FY 2022/23				FY 2023/24 and beyond
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Task 1 Convene Recycled Water Projects Committee, define objectives and refine scope of work · Convene Recycled Water Projects Committee · Define objectives of Activity D · Refine scope described in TM1 · Refine detailed cost and schedule	\$50,000	\$50,000												
Task 2 Characterize the availability of all recycled water supplies and demands · Review 2020 Urban Water Management Plans · Develop water supply and demand projections · Characterize timing and magnitude of recycled water available	\$135,000		\$135,000											
Task 3 Develop planning, screening, and evaluation criteria · Develop Watermaster criteria · Develop regulatory criteria · Develop criteria to evaluate project cost and benefit · Review and finalize criteria	\$40,000				\$40,000									
Task 4 Describe recycled water reuse project opportunities · Identify potential recycled water reuse projects · Select projects for reconnaissance level recharge study	\$85,000					\$85,000								
Task 5 Develop reconnaissance-level engineering design and operating plan · Characterize potential project alternatives · Rank alternatives · Prepare finance plan for soft-costs · Prepare report	\$310,000						\$130,000			\$180,000				
Task 6 Plan, design, and construct selected recycled water projects · Prepare preliminary design report and CEQA documentation · Prepare finance plan for project implementation · Obtain permits and agreements and prepare final design · Construct selected projects	\$ TBD													\$ TBD
Total Cost and Cost by FY	\$620,000	\$225,000				\$215,000				\$180,000				\$ TBD

TBD -- To be determined



Appendix C

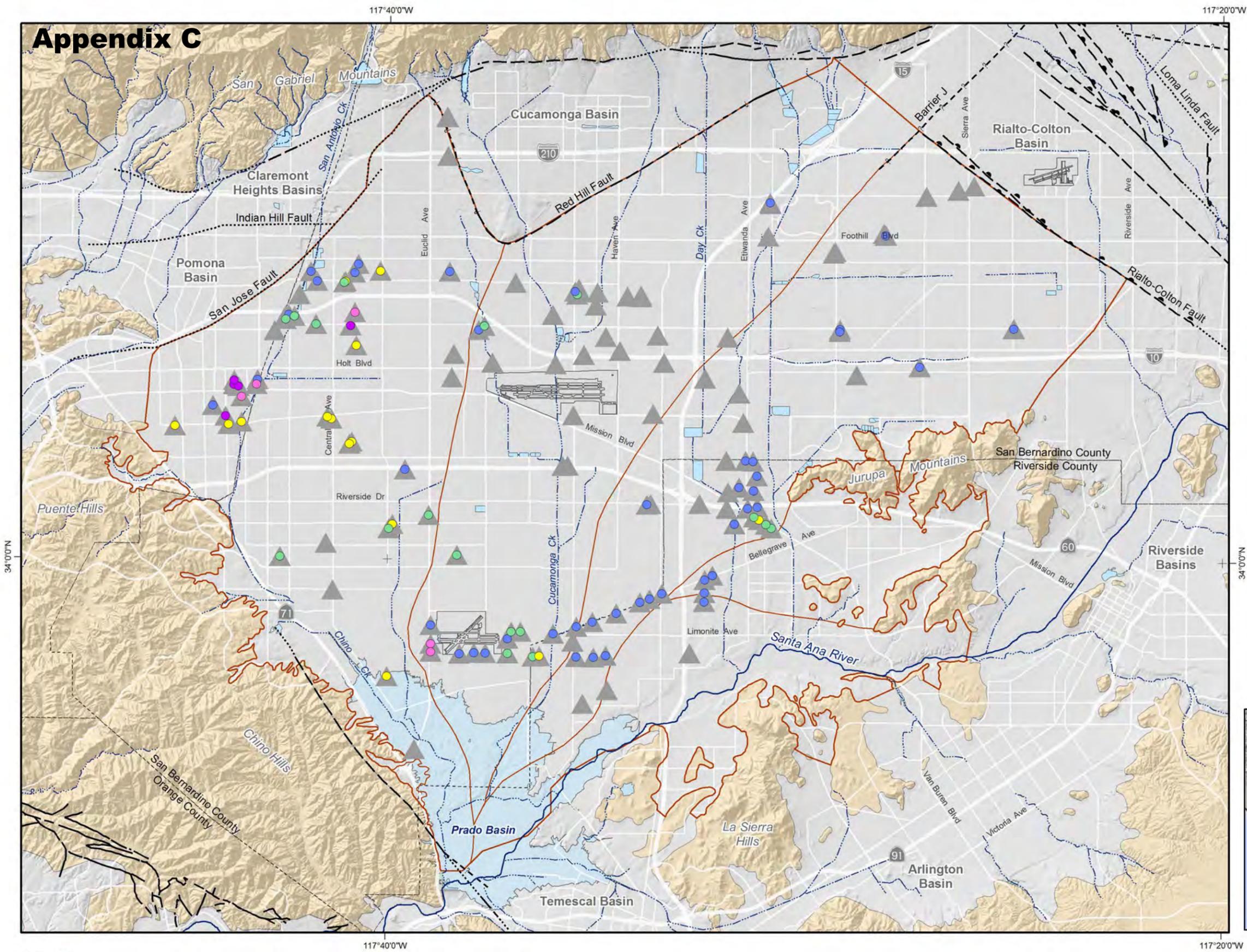
Exhibit EF-1

Summary of Drinking Water Contaminants with Primary MCLs in Municipal Supply Wells FY 2013/14 - 2017/18

Analyte	Primary CA MCL	Number of Active Municipal Supply Wells with Exceedance of MCL	Number of Municipal Supply Wells with Exceedance of MCL	Number of Total Wells in the Chino Basin with Exceedance of MCL
Nitrate-Nitrogen	10 mg/l	71	80	555
1,2,3-Trichloropropane	0.005 µg/l	33	36	111
Perchlorate	6 µg/l	27	30	387
Trichloroethylene (TCE)	5 µg/l	11	14	269
Gross Alpha	15 pCi/L	6	7	14
Chromium	50 µg/l	4	4	4
Arsenic	0.01 mg/l	3	5	74
1,2-Dibromo-3-chloropropane	0.2 µg/l	3	3	4
Tetrachloroethene (PCE)	5 µg/l	3	3	96
Trihalomethanes	10 µg/l	2	3	2
Nitrite-Nitrogen	1 mg/l	2	2	17
1,1-Dichloroethene (1,1-DCE)	5 µg/l	1	1	13
Dichloromethane (Freon 30)	5 µg/l	1	1	91
Uranium	20 pCi/L	1	1	1



Appendix C



- ▲ Active Municipal Supply Well
- Number of Contaminants that Exceeded a MCL
- 1
 - 2
 - 3
 - 4
 - 5

- OBMP Management Zones
- Streams & Flood Control Channels
- Flood Control & Conservation Basins

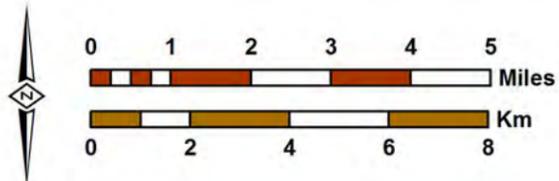
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- Water-Bearing Sediments**
- Quaternary Alluvium
- Consolidated Bedrock**
- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

- Faults**
- Location Certain
 - Location Approximate
 - Location Concealed
 - Location Uncertain
 - Approximate Location of Groundwater Barrier



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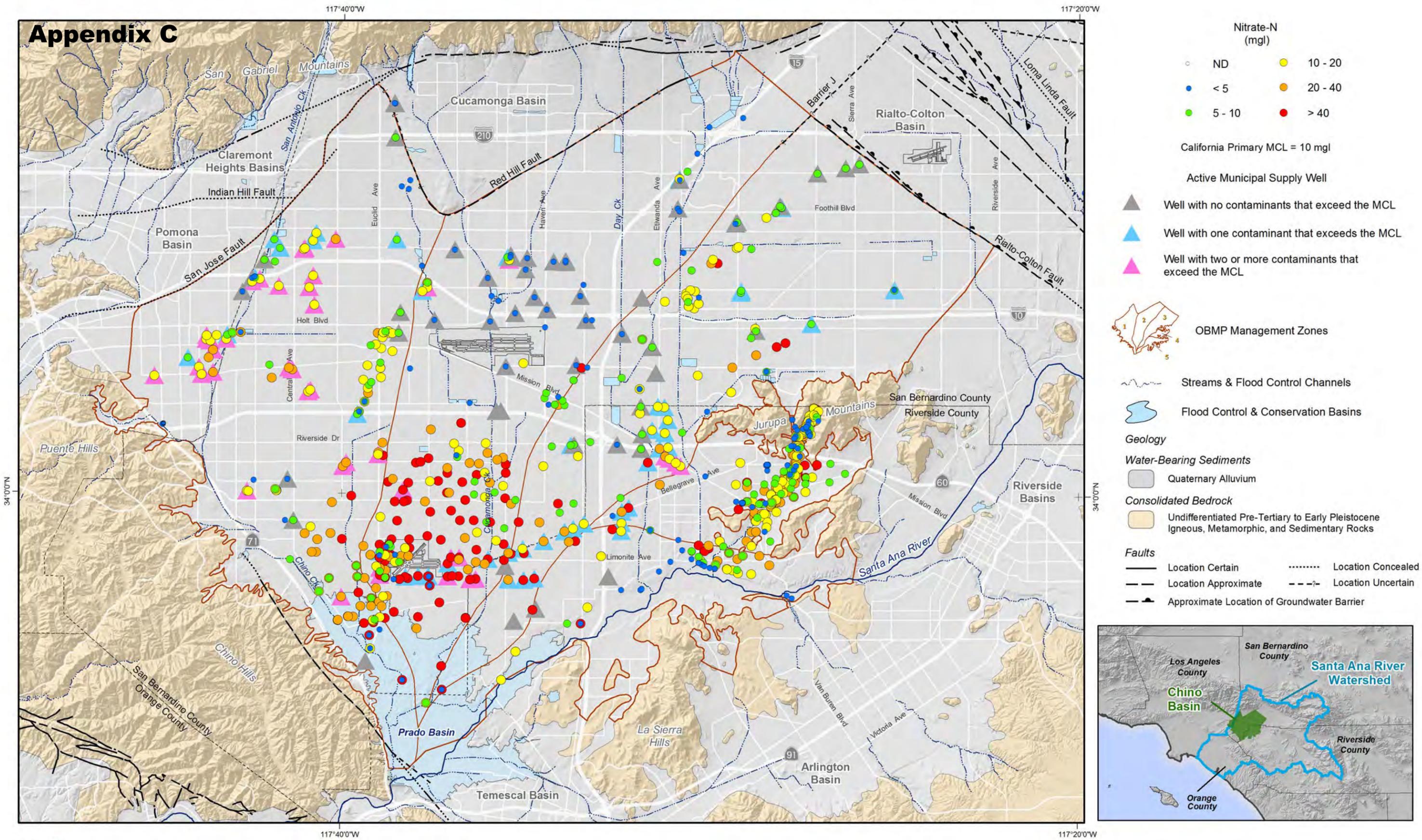
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 Date: 11/22/2019
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Occurrence of Drinking Water Contaminants in Active Municipal Supply Wells in Chino Basin 2014-2018

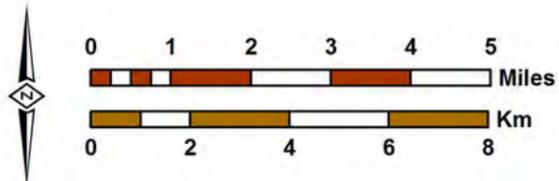
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Prepared by:

WILDERMUTH ENVIRONMENTAL, INC.

Author: CS
 Date: 11/22/2019
 File: Exhibit_EF-3_NO3_2014-2018.mxd



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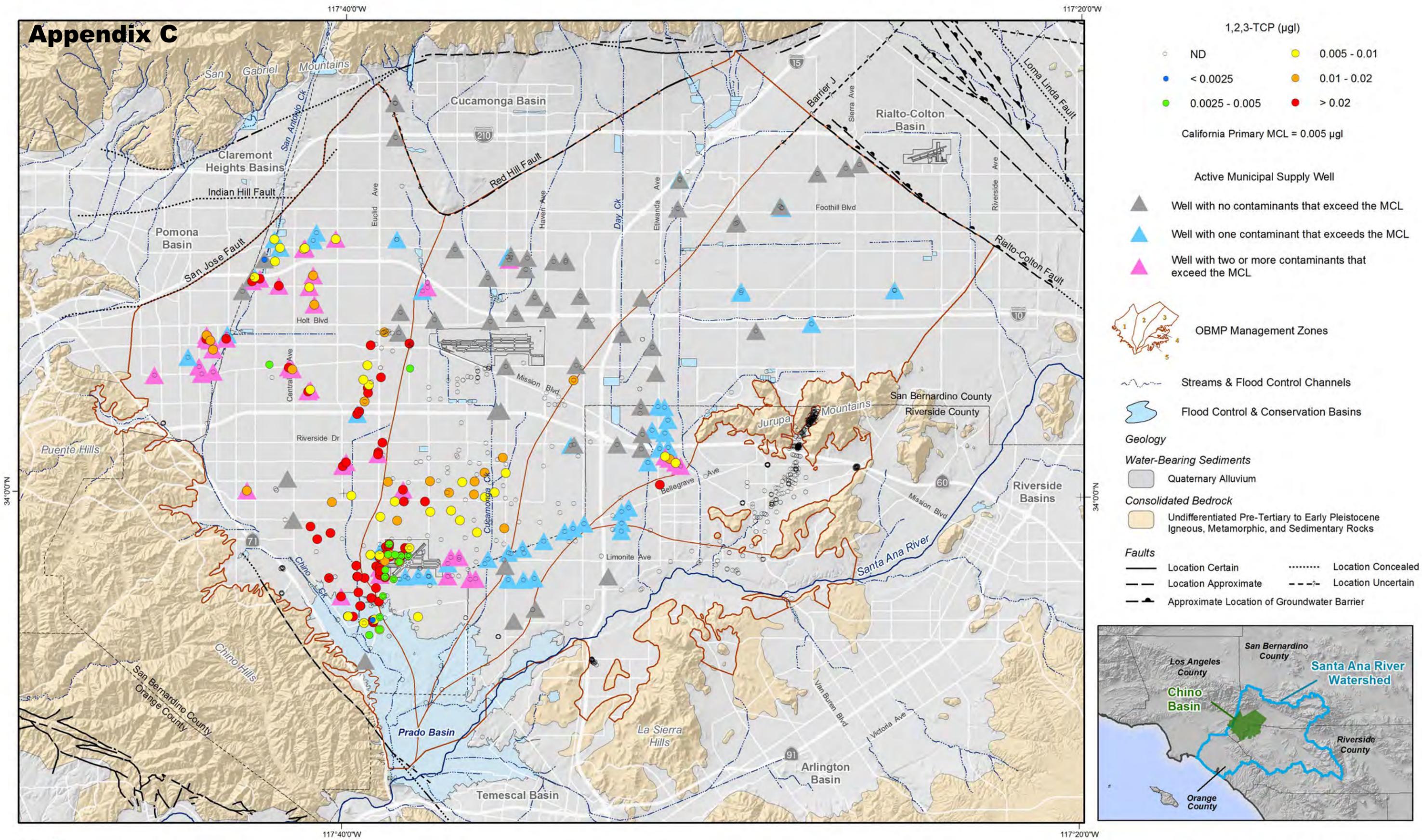
OBMP 2020 Update

Scoping Report

Maximum Nitrate Concentration

2014-2018

Appendix C



1,2,3-TCP (µg/l)

- ND
- < 0.0025
- 0.0025 - 0.005
- 0.005 - 0.01
- 0.01 - 0.02
- > 0.02

California Primary MCL = 0.005 µg/l

▲ Active Municipal Supply Well

- ▲ Well with no contaminants that exceed the MCL
- ▲ Well with one contaminant that exceeds the MCL
- ▲ Well with two or more contaminants that exceed the MCL

OBMP Management Zones

Streams & Flood Control Channels

Flood Control & Conservation Basins

Geology

Water-Bearing Sediments

- Quaternary Alluvium

Consolidated Bedrock

- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

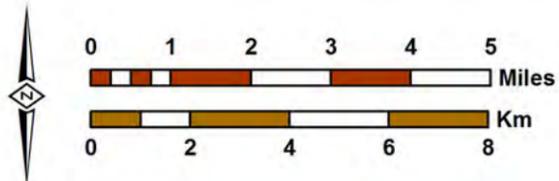
Faults

- Location Certain
- - - Location Concealed
- · - Location Approximate
- · - · Location Uncertain
- · - · - Approximate Location of Groundwater Barrier



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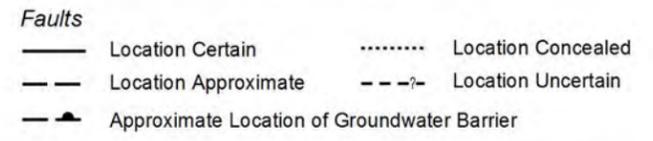
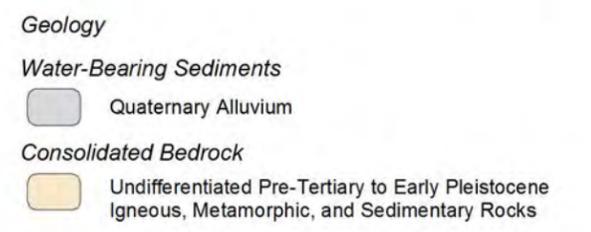
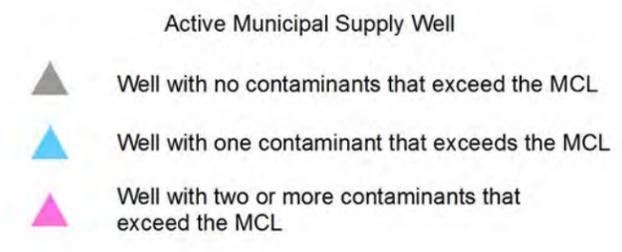
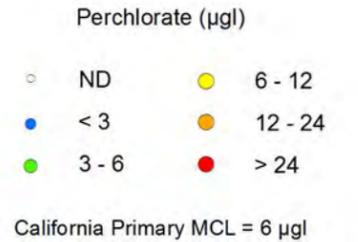
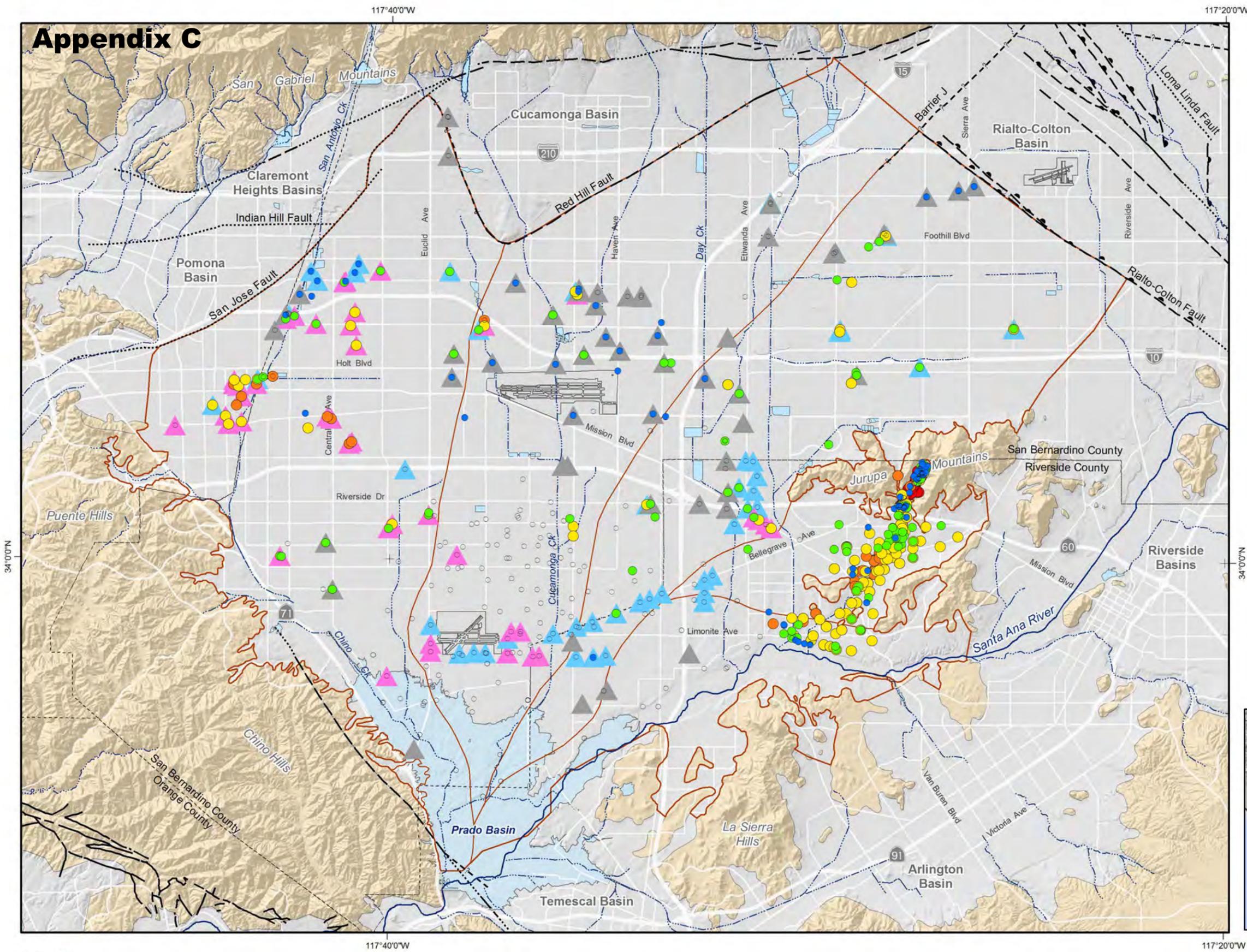
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 Date: 11/22/2019
 File: Exhibit_EF-4_1,2,3-TCP_2014-2018.mxd



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 Scoping Report

Maximum 1,2,3-Trichloropropane (1,2,3-TCP) Concentration
 2014-2018

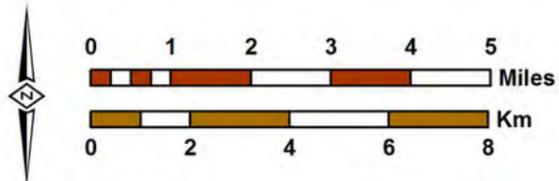
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Author: CS
 Date: 11/22/2019
 File: Exhibit_EF-5_CLO4_MCL_2014-2018.mxd



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Maximum Perchlorate Concentration

2014-2018

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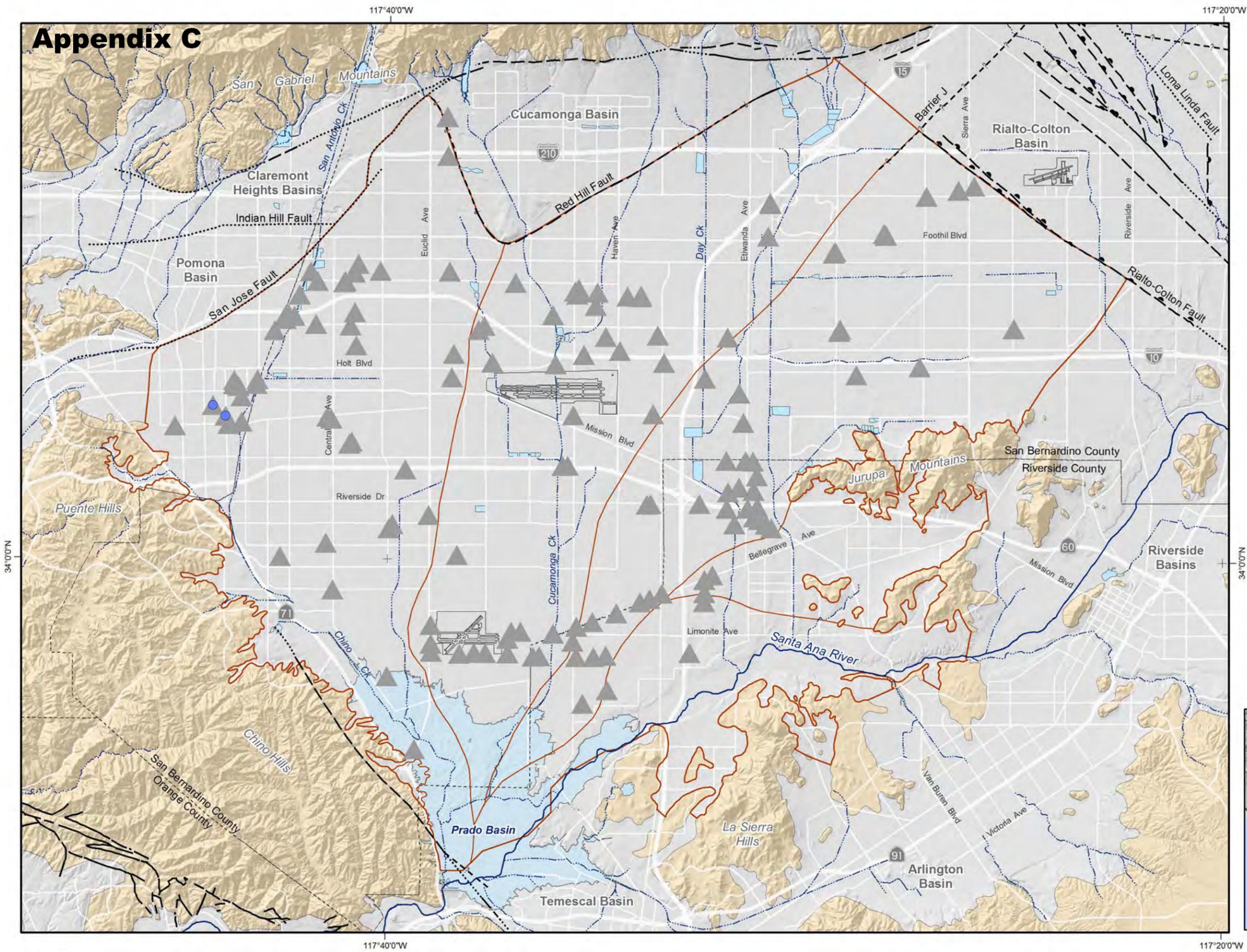
Exhibit EF-6

Summary of Drinking Water Contaminants with Notification Levels in Municipal Supply Wells FY 2013/14 - 2017/18

Analyte	CA Drinking Water NL	Number of Active Municipal Supply Wells with Exceedance of NL	Number of Municipal Supply Wells with Exceedance of NL	Number of Total Wells in the Chino Basin with Exceedance of NL
1,4-Dioxane	1 µgl	2	2	133
Manganese	0.5 mgl	0	0	118
N-Nitrosodimethylamine (NDMA)	0.01 µgl	0	0	60
Vanadium	0.05 mgl	0	0	55
Naphthalene	0.017 mgl	0	0	48
1,2,4-Trimethylbenzene	0.33 mgl	0	0	26
1,3,5-Trimethylbenzene	0.33 mgl	0	0	19
Methyl Isobutyl Ketone	0.12 mgl	0	0	11
n-Propylbenzene	0.26 mgl	0	0	11
HMX (Octogen)	0.35 mgl	0	0	11
Chlorate	0.8 mgl	0	0	4
Formaldehyde	0.1 mgl	0	0	3
N-Nitrosodiethylamine (NDEA)	0.01 µgl	0	0	3
Ethylene Glycol	14 mgl	0	0	1
n-Butylbenzene	0.26 mgl	0	0	1



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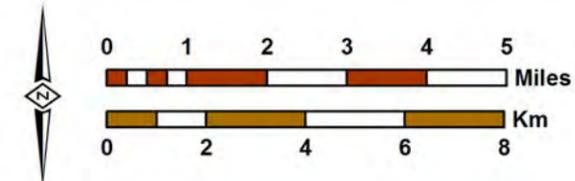


-  Active Municipal Supply Well
-  Well exceeds NL of 1 µg/l for 1,4-Dioxane

-  OBMP Management Zones
-  Streams & Flood Control Channels
-  Flood Control & Conservation Basins
- Geology**
- Water-Bearing Sediments**
-  Quaternary Alluvium
- Consolidated Bedrock**
-  Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks
- Faults**
-  Location Certain
-  Location Approximate
-  Location Concealed
-  Location Uncertain
-  Approximate Location of Groundwater Barrier

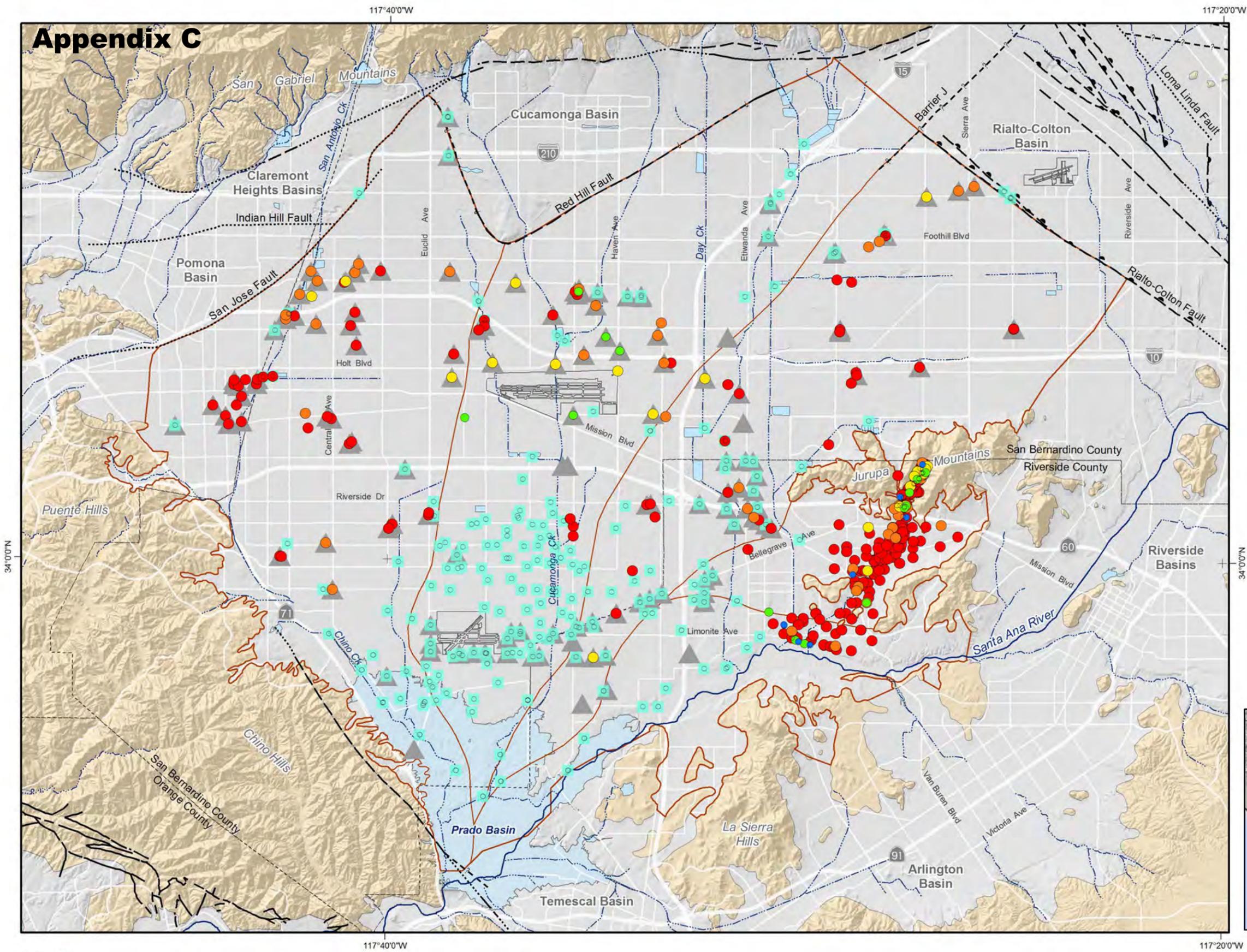


Prepared by:
 Author: CS
 Date: 11/22/2019
 File: Exhibit_EF-7_Exceedance_Count_NL.mxd



**Contaminants that Exceed the NL
 in Active Municipal Supply Wells
 in Chino Basin**
 2014-2018

Appendix C



California MCL = 6 $\mu\text{g/l}$
California PHG = 1 $\mu\text{g/l}$

- Well Sampled for Perchlorate but the Method Detection Limit was Greater than the PHG of 1 $\mu\text{g/l}$
- ▲ Active Municipal Supply Well



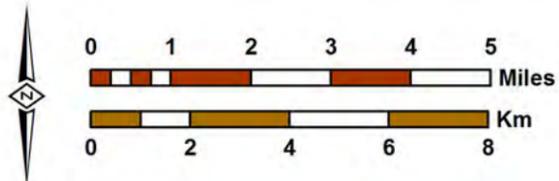
- Streams & Flood Control Channels
- Flood Control & Conservation Basins

- Geology**
- Water-Bearing Sediments**
- Quaternary Alluvium
- Consolidated Bedrock**
- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

- Faults**
- Location Certain
 - Location Approximate
 - Location Concealed
 - Location Uncertain
 - Approximate Location of Groundwater Barrier

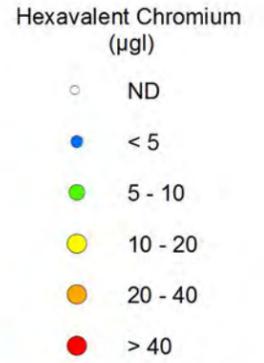
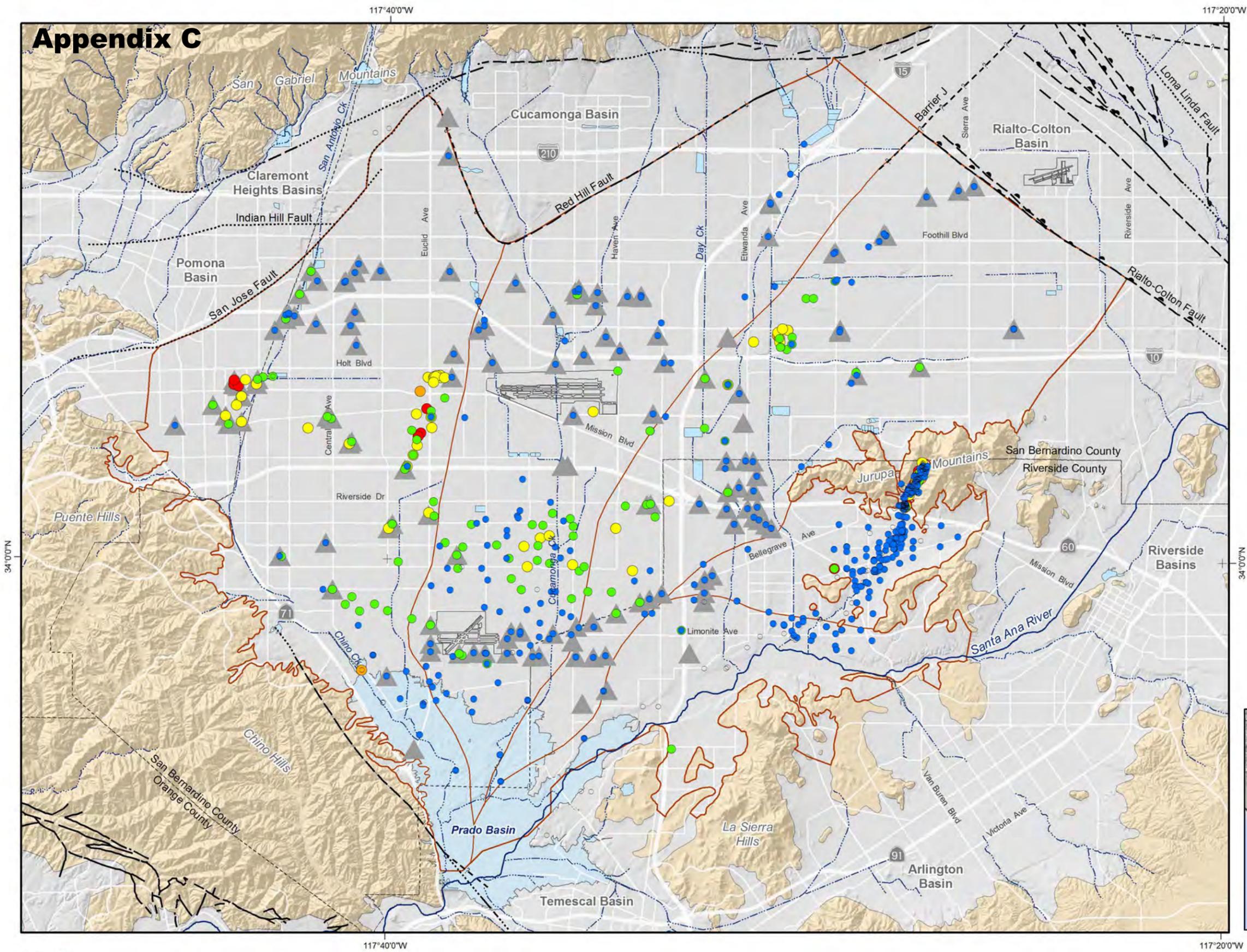


Author: CS
Date: 11/22/2019
File: Exhibit_EF-8_CLO4_PHG_2014-2018.mxd



Maximum Perchlorate Concentration
2014-2018

Appendix C



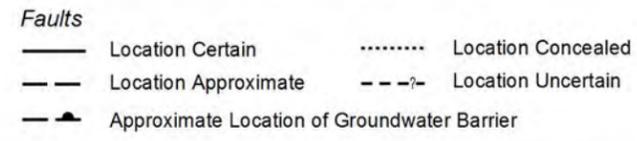
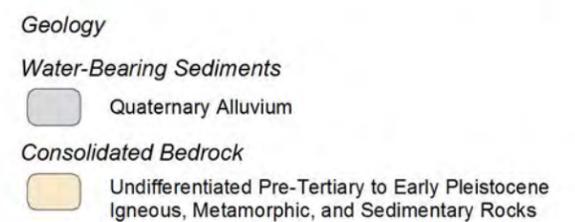
A MCL for Hexavalent Chromium of 10 µg/l was established in 2014, and later invalidated by the court in 2017

▲ Active Municipal Supply Well

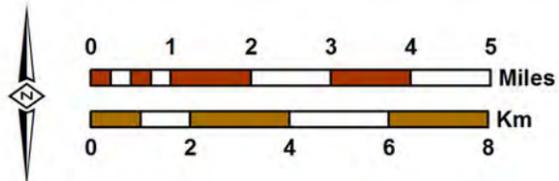


~ Streams & Flood Control Channels

☪ Flood Control & Conservation Basins

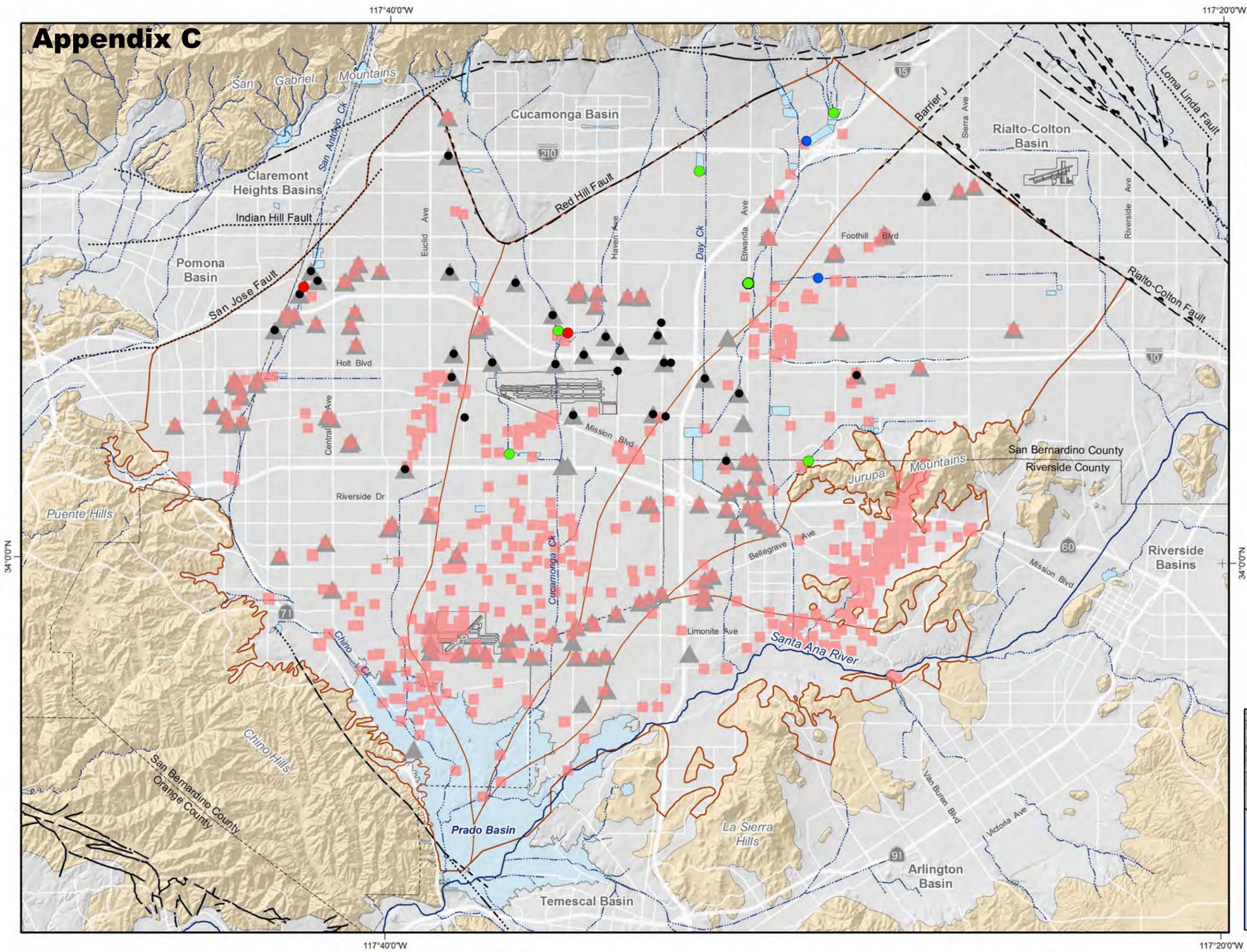


Author: CS
Date: 11/22/2019
File: Exhibit_EF-9_HexCr_2014-2018.mxd



Maximum Hexavalent Chromium
2014-2018

Appendix C



Occurrence of PFOA and PFOS in Groundwater

- Well not Sampled for PFOA or PFOS
- Well Sampled for UCMR3 between 2013-2015 Using Detection Limits of 20 and 40 ngl, higher than the Current Notification Levels (NL) of 13 and 14 ngl

Occurrence of PFOA and PFOS in Blending Sources for Recycled Water Recharge

- Source Non-Detect for PFOA and PFOS
- Source with Detected Concentration Below the NLs of 13 and 14 ngl
- Source exceeding the NLs of 13 and 14 ngl
- ▲ Active Municipal Supply Well

OBMP Management Zones

- Streams & Flood Control Channels
- Flood Control & Conservation Basins

Geology

Water-Bearing Sediments

- Quaternary Alluvium

Consolidated Bedrock

- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

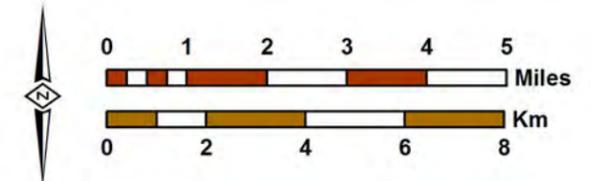
Faults

- Location Certain
- Location Approximate
- Location Concealed
- Location Uncertain
- Approximate Location of Groundwater Barrier



Prepared by:
WEI
 WILDERMUTH ENVIRONMENTAL, INC.

Author: CS
 Date: 11/22/2019
 File: Exhibit_EF-10_PFAS_1998-2019.mxd



Prepared for:
OBMP 2020 Update
 Scoping Report

PFOA and PFOS Concentrations
 Through March 2019

Exhibit EF-10

Appendix C

**Exhibit EF-11
Cost-Estimate and Schedule to Implement Activity EF**

Task and Subtask Description	Engineering Cost	FY 2020/21				FY 2021/22				FY 2022/23				FY 2023/24 and beyond
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Task 1 Convene the Water Quality Committee, define objectives, and refine scope of work · Convene Water Quality Committee · Define objectives of Activity EF · Refine scope described in TM1 · Refine detailed cost and schedule	\$65,000	\$65,000												
Task 2 Develop and implement an initial emerging-contaminants monitoring plan · Determine contaminants of interest · Develop initial monitoring plan · Implement initial monitoring plan	\$95,000			\$50,000		\$45,000								
Task 3 Perform a water quality assessment and prepare a scope to develop and implement a Groundwater Quality Management Plan · Describe current and future challenges and solutions · Develop recommendations for long-term monitoring and assessment · Prepare scope to develop and implement a groundwater quality management plan · Prepare final assessment	\$135,000					\$80,000				\$55,000				
Task 4 Develop planning, screening, and evaluation criteria · Develop criteria to evaluate project cost and benefit · Review and finalize criteria	\$ TBD												\$ TBD	\$ TBD
Task 5 Identify and describe potential projects for evaluation · Identify potential projects · Select projects for reconnaissance level study	\$ TBD													\$ TBD
Task 6 Conduct a reconnaissance-level study for the proposed projects · Characterize potential treatment projects · Evaluate Projects · Prepare finance plan for soft-costs · Prepare implementation plan	\$ TBD													\$ TBD
Task 7 Prepare the <i>Groundwater Quality Management Plan</i> · Prepare draft plan · Prepare final plan	\$ TBD													\$ TBD
Task 8 Plan, design, and build water quality management projects · Prepare preliminary design report and CEQA documentation · Prepare finance plan for project implementation · Obtain permits and agreements and prepare final design · Construct selected projects	\$ TBD													\$ TBD
Total Cost and Cost by FY	\$295,000	\$115,000				\$125,000				\$55,000				\$ TBD

TBD -- To be determined



Appendix C

Exhibit CG-1 Aggregate Water Supply Plan for Watermaster Parties

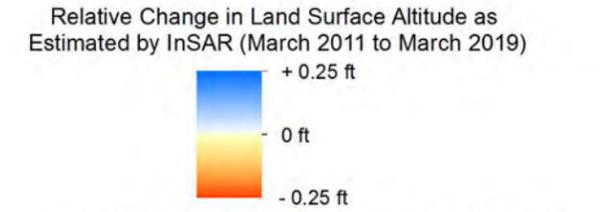
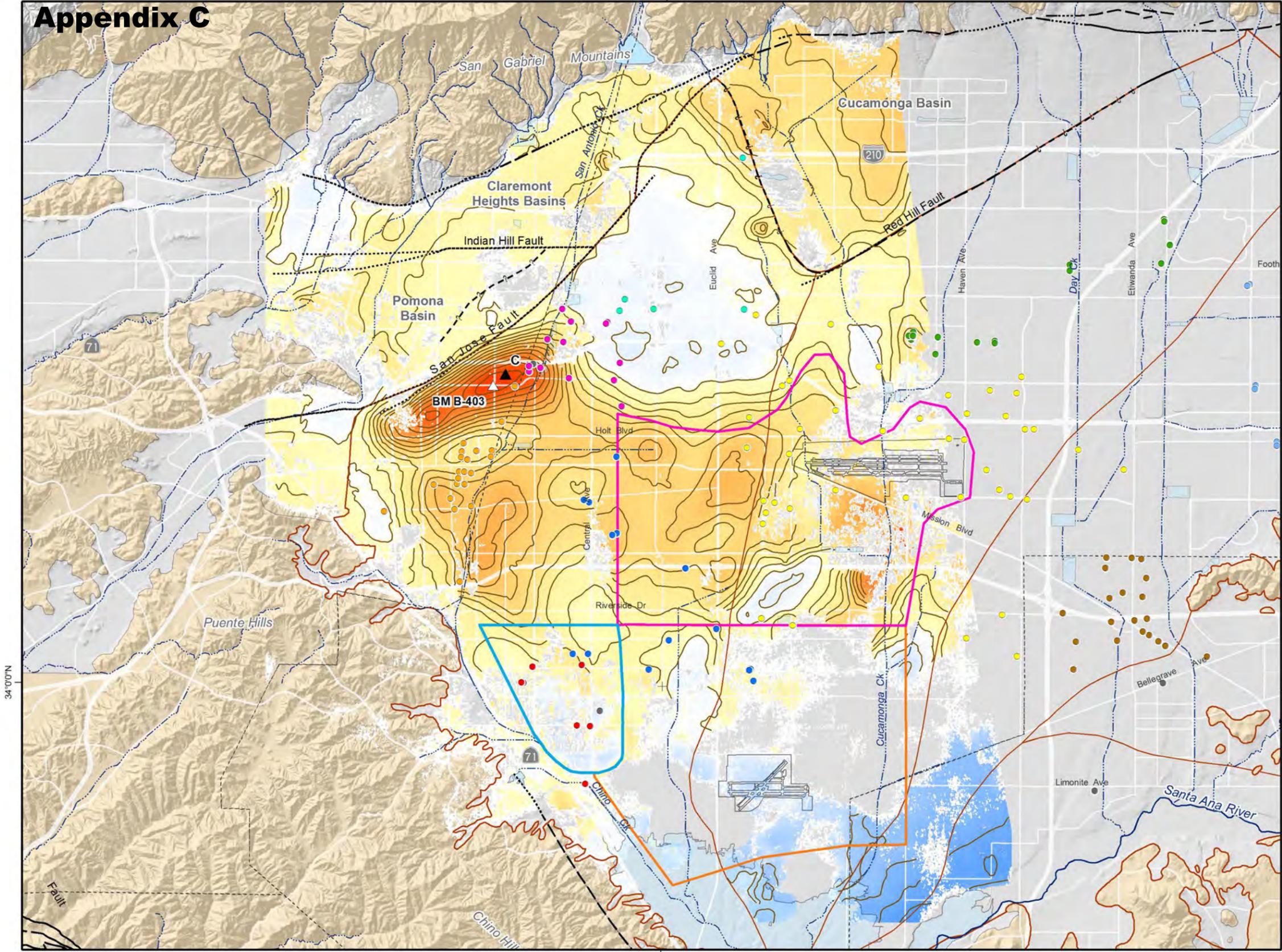
Water Source	2015	2020	2025	2030	2035	2040
Volume (af)						
Chino Basin Groundwater	147,238	145,904	153,804	157,716	168,987	176,652
Non-Chino Basin Groundwater	51,398	55,755	63,441	64,999	66,691	68,483
Local Surface Water	8,108	15,932	15,932	18,953	18,953	18,953
Imported Water from Metropolitan	53,784	86,524	93,738	100,196	102,166	109,492
Other Imported Water	8,861	9,484	10,095	10,975	11,000	11,000
Recycled Water for Direct Reuse	20,903	24,008	24,285	26,583	29,836	33,223
Total	290,292	337,607	361,295	379,422	397,633	417,803
Percentage						
Chino Basin Groundwater	51%	43%	43%	42%	42%	42%
Non-Chino Basin Groundwater	18%	17%	18%	17%	17%	16%
Local Surface Water	3%	5%	4%	5%	5%	5%
Imported Water from Metropolitan	19%	26%	26%	26%	26%	26%
Other Imported Water	3%	3%	3%	3%	3%	3%
Recycled Water for Direct Reuse	7%	7%	7%	7%	8%	8%
Total	100%	100%	100%	100%	100%	100%

Source: Storage Framework Investigation - WEI, 2018



Appendix C

117°40'0"W



▲ Location of InSAR with Time Series of Ground Surface Elevation
 △ Location of Benchmark with Time Series of Ground Surface Elevation

- Appropriative Pool Pumping Wells
- City of Chino
 - City of Chino Hills
 - City of Ontario
 - City of Pomona
 - City of Upland
 - Cucamonga Valley Water District
 - Fontana Water Company
 - Jurupa Community Services District
 - Monte Vista Water District
 - Other Appropriators

- Areas of Subsidence Concern
- Northwest MZ-1
 - Central MZ-1
 - Managed Area
 - Northeast Area
 - Southeast Area

- 1 2 3 4 5 OBMP Management Zones
- Streams & Flood Control Channels
- Flood Control & Conservation Basins

- Geology
- Water-Bearing Sediments
- Quaternary Alluvium
- Consolidated Bedrock
- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks
- Faults
- Location Certain
 - Location Concealed
 - - - Location Approximate
 - - - Location Uncertain
 - - - Approximate Location of Groundwater Barrier

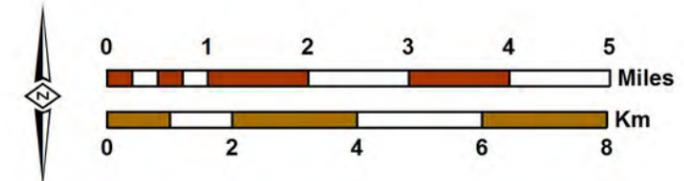
34°0'0"N



117°40'0"W

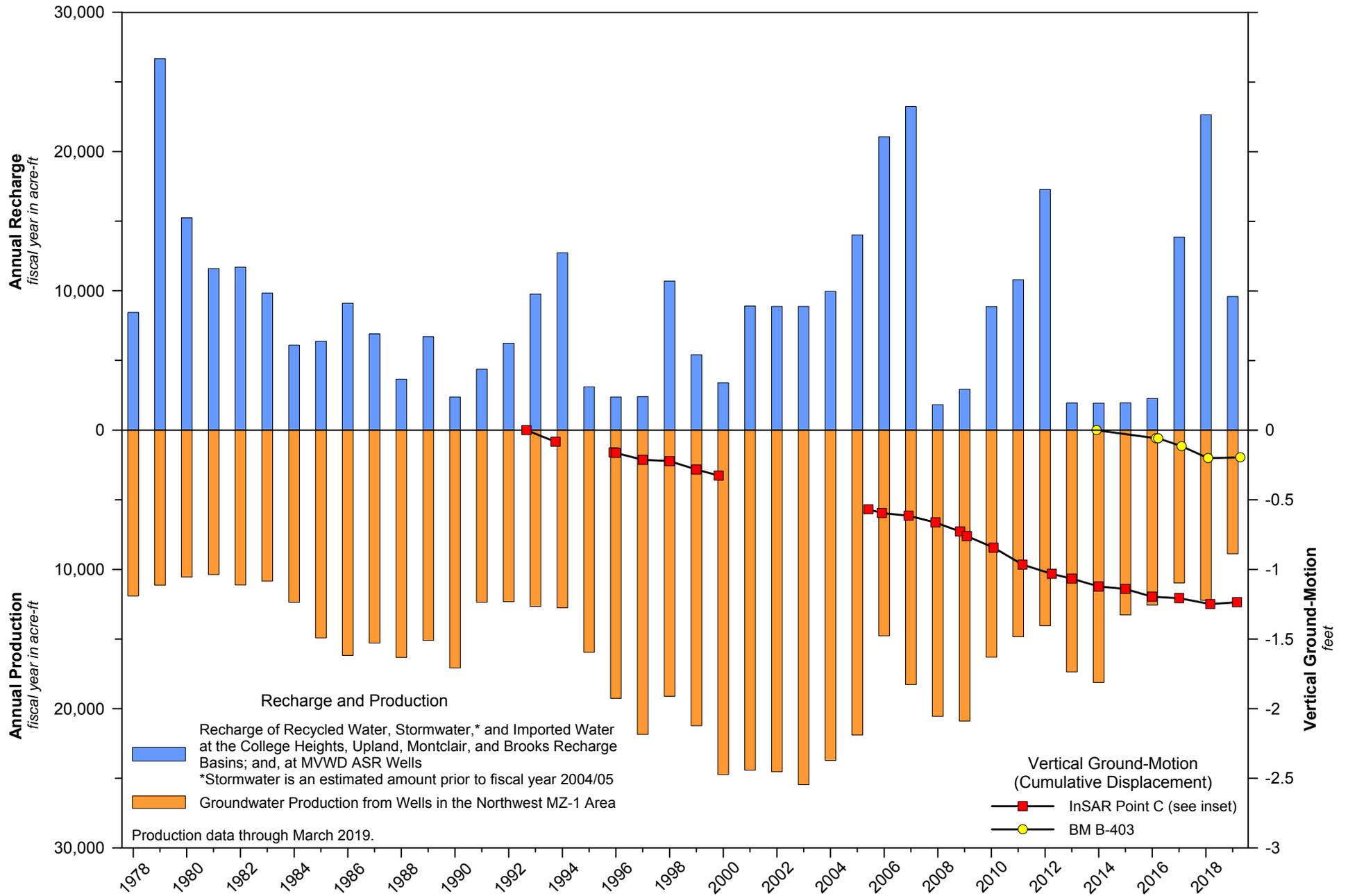


Prepared by:
 Author: CS
 Date: 8/20/2019
 File: Exhibit_CG-2_Land_Subsidence.mxd



Areas of Land Subsidence 2011-2019

Appendix C



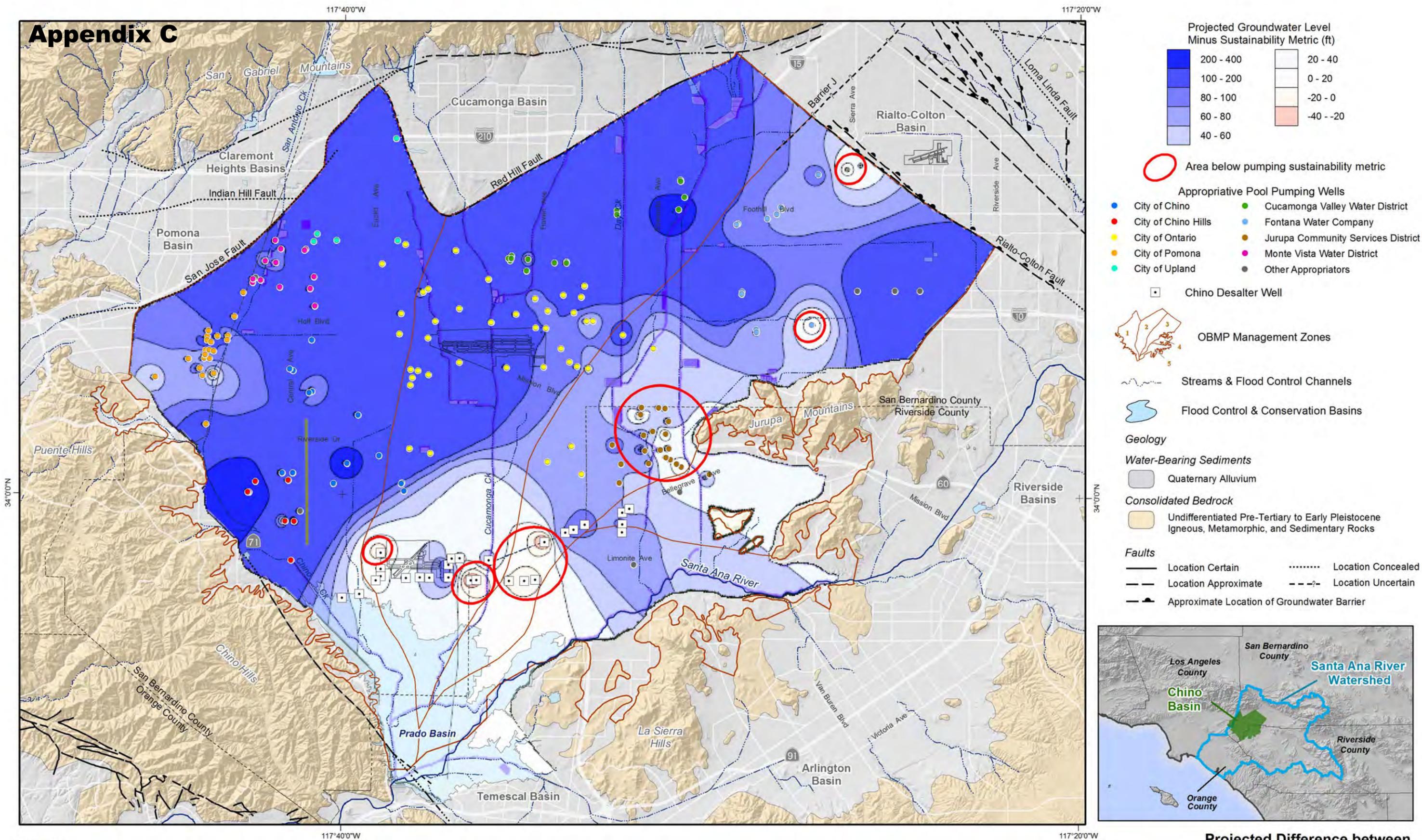
Prepared for:
OBMP 2020 Update
 Scoping Report



Pumping, Recharge and Land Subsidence in the Northwest MZ-1 Area

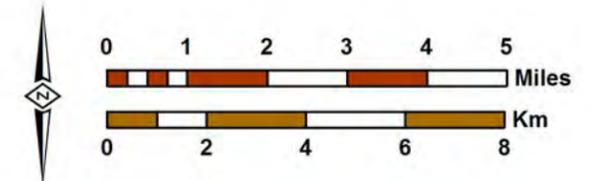
Exhibit CG-3

Appendix C



Prepared by:
WEI
 WILDERMUTH ENVIRONMENTAL, INC.

Author: CS
 Date: 8/20/2019
 File: Exhibit_CG-4_Prj_Difference_in_GWLs.mxd



Prepared for:
OBMP 2020 Update
 Scoping Report

Projected Difference between Groundwater Levels and the Pumping Sustainability Metric
 Scenario 1A - FY 2029/30

Appendix C

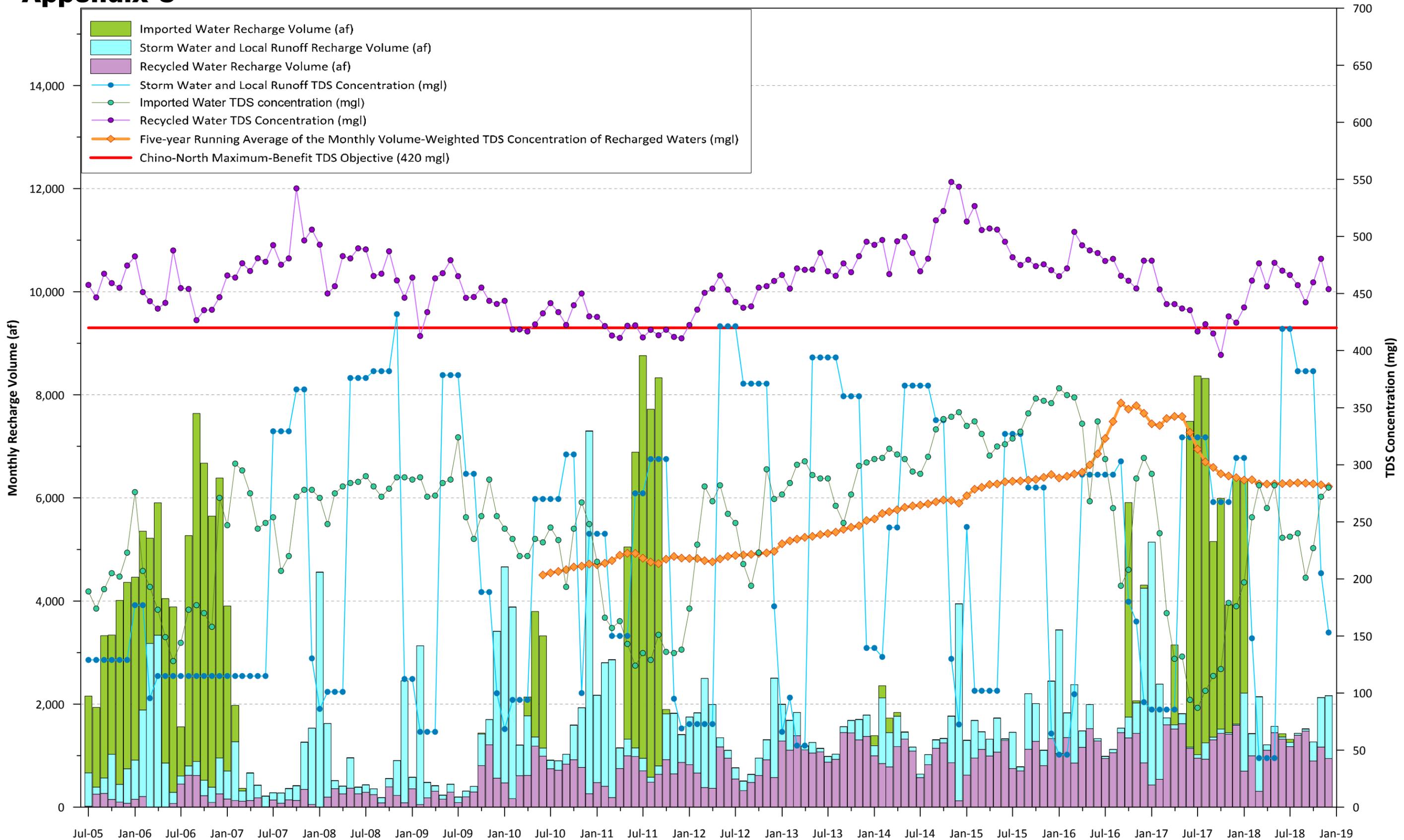
**Exhibit CG-5
Cost-Estimate and Schedule to Implement Activity CG**

Task and Subtask Description	Engineering Cost	FY 2020/21				FY 2021/22				FY 2022/23				FY 2023/24 and beyond
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Task 1 Convene the Water Supply Reliability Committee, define objectives, and refine scope of · Convene Water Supply Reliability Committee · Define objectives of Activity CG · Define reliability and other benefits expected from Activity CG · Refine scope described in TM1 · Refine detailed cost and schedule	\$95,000	\$95,000												
Task 2 Characterize water demands, water supply plans and existing/planned infrastructure and their · Characterize the water supplies and future water demands · Characterize exiting infrastructure to convey, treat, and distribute the supplies to meet the demands · Identify limitations to the existing infrastructure	\$210,000				\$70,000	\$140,000								
Task 3 Develop planning, screening, and evaluation · Develop criteria to evaluate project cost and benefit · Review and finalize criteria	\$ TBD							\$ TBD						
Task 4 Describe water supply reliability opportunities · Identify potential projects · Select projects for reconnaissance level study	\$ TBD								\$ TBD					
Task 5 Develop reconnaissance-level engineering design and operating plan · Characterize potential water supply reliability projects · Evaluate Projects · Prepare finance plan for soft-costs · Prepare implementation plan	\$ TBD									\$ TBD				\$ TBD
Task 6 Plan, design, and build water supply reliability alternatives · Prepare preliminary design report and CEQA documentation · Prepare finance plan for project implementation · Obtain permits and agreements and prepare final design · Construct selected projects	\$ TBD													\$ TBD
Total Cost and Cost by FY	\$305,000	\$165,000				\$140,000				\$TBD				\$ TBD

TBD -- To be determined



Appendix C



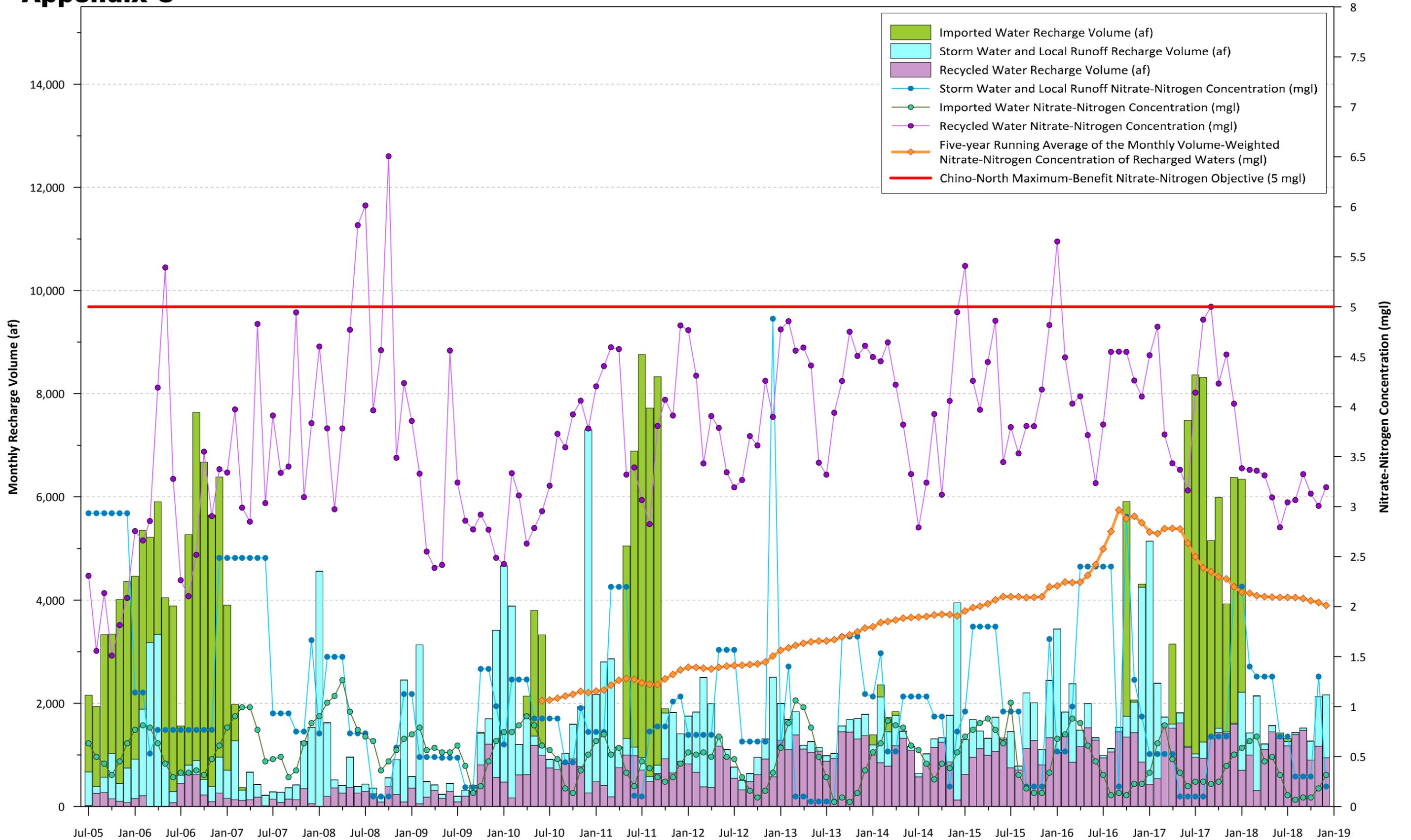
Volume and Total Dissolved Solids (TDS) Concentrations of Recharge Water Sources in the Chino Basin 2005-2018



Prepared for:
OBMP 2020 Update
 Scoping Report



Appendix C

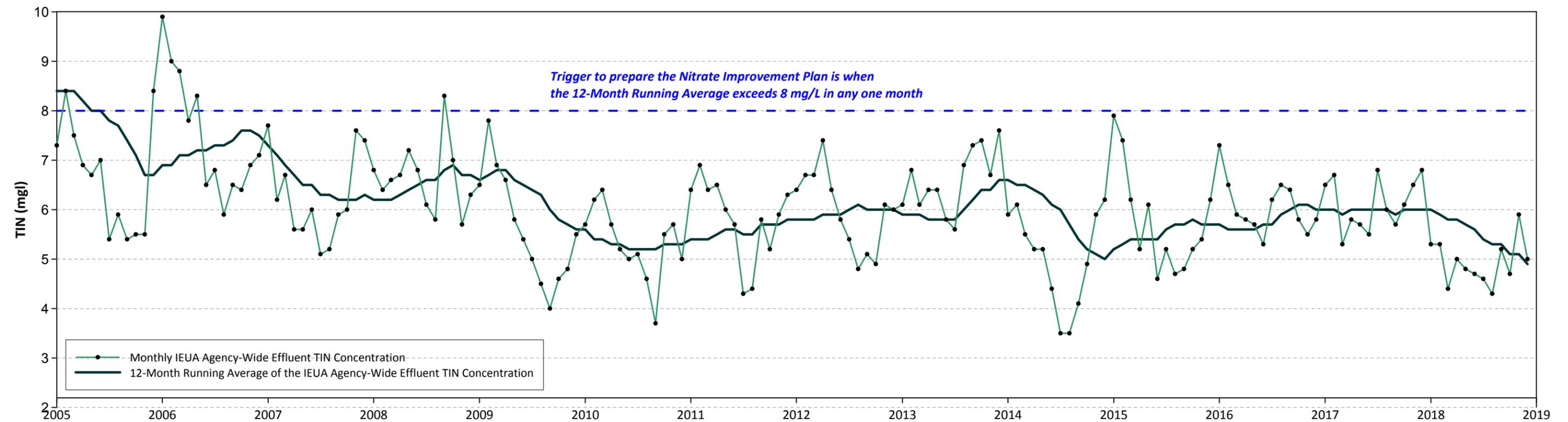
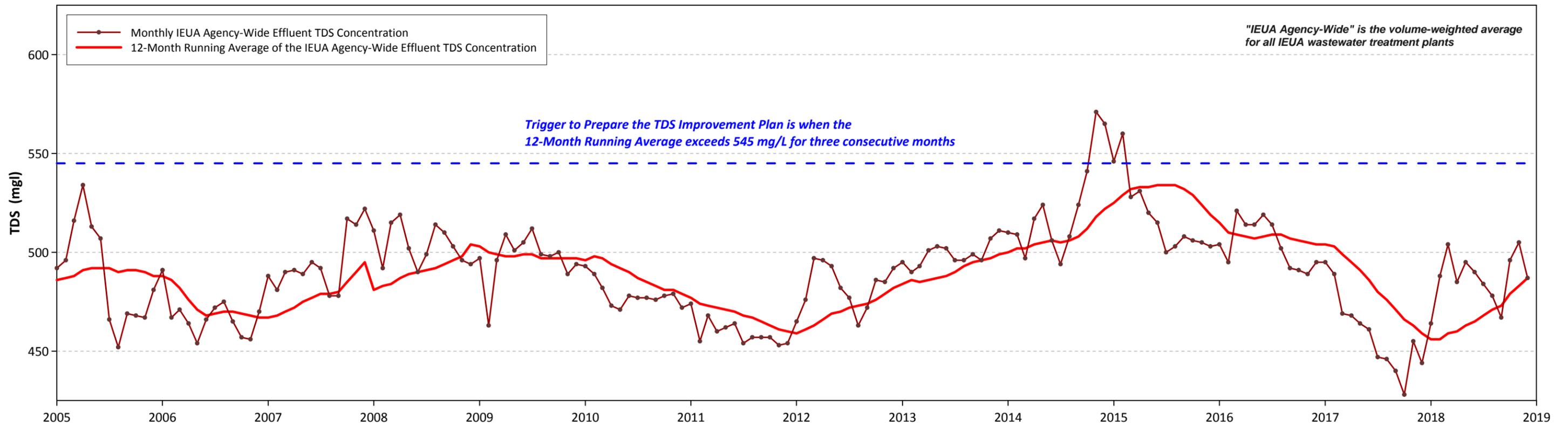


Prepared for:
OBMP 2020 Update
Scoping Report



Volume and Nitrate-Nitrogen Concentrations of Recharge Water Sources in the Chino Basin
 2005-2018

Appendix C



Appendix C

Exhibit K-4
Cost Estimate and Schedule to Implement Activity K

Task and Subtask Description	Engineering Cost	FY 2020/21				FY 2021/22				FY 2022/23				FY 2023/24 and beyond
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Task 1 Prepare projection to evaluate compliance with recycled water recharge dilution requirements. <ul style="list-style-type: none"> · Prepare projections · Evaluate projections for future wet and dry periods within 5 and 10 years · Determine the if there is a compliance challenge 	\$0	\$0												
Task 2 Identify alternative compliance strategies <ul style="list-style-type: none"> · Identify potential compliance strategies · Select projects for reconnaissance level study 	\$ TBD					\$ TBD								
Task 3 Evaluate alternative compliance strategies <ul style="list-style-type: none"> · Characterize alternative compliance startegies · Rank alternatives · Prepare finance plan for soft-costs · Prepare report 	\$ TBD								\$ TBD	\$ TBD				\$ TBD
Task 4 Implement the alternative compliance strategy <ul style="list-style-type: none"> · Prepare preliminary design report and CEQA documentation · Prepare finance plan for project implementation · Obtain permits and agreements and prepare final design · Construct selected projects 	\$ TBD													\$ TBD
Task 5 Periodically re-evaluate compliance with dilution requirements <ul style="list-style-type: none"> · Prepare projections of the dilution metric on a five-year frequency · Annually report current and future compliance with the dilution limit 	\$ TBD													\$ TBD
Total Cost and Cost by FY	\$0	\$0				\$ TBD				\$ TBD				\$ TBD

TBD -- To be determined



Appendix C

Exhibit L-1

Chino Basin Watermaster -- Monitoring and Reporting Requirements, Data Types, Analyses Performed, Report Contents, and Past Efforts to Reduce Scope/Cost

Purpose/Requirement/Schedule	Data Types									Analyses Performed	Report Content	Past Efforts to Reduce Scope and Cost
	GWP	GWL	GWQ	SW	GL	GEOL	BIO	WS/WU	PLAN			
<p>Water Rights Compliance Monitoring. Pursuant to Term 20 of Watermaster's Water Rights Permit 21225 and an agreement with the California Department of Fish and Wildlife (DFW), Watermaster must prepare an annual report of estimates of monthly changes in discharge in each tributary to the Santa Ana River that resulted from diversions of storm water and dry-weather flow for recharge in the Chino Basin. The annual report covers the 12-month period of July 1 through June 30, and is submitted to the DFW by October 1 of each year.</p>				X						<p>Watermaster Engineer prepares the report with review and input from Watermaster Counsel, which includes the following efforts:</p> <ol style="list-style-type: none"> 1. Measured data and Watermaster's surface-water model are used to estimate the discharge in flood control channels that cross the Chino Basin and the diversions for recharge. 2. To compute the differences in discharge caused by the diversions for recharge, the discharge from the tributaries to the Santa Ana River is estimated with and without the Watermaster diversions. 	<p>A letter report is prepared, including text and exhibits, that describes the data, methods, and results of the analysis.</p>	<p>This report has become standardized and the scope has been reduced to the minimum required for compliance. The cost to complete this work has not increased over the last four years.</p>
<p>Sustainable Groundwater Management Act (SGMA). The SGMA requires that the Watermaster of an adjudicated basin identified in WC Section 10720.8(a) submit specific data, information, and annual reports for the previous water year to the California Department of Water Resources (DWR) by April 1.</p> <p>Pursuant to SGMA WC Section 10720.8(f), Watermaster is required to submit:</p> <p>(A) Groundwater elevation data unless otherwise submitted pursuant to WC Section 10932</p> <p>(B) Annual aggregated data identifying groundwater extraction</p> <p>(C) Surface water supply used for or available for use for groundwater recharge or in-lieu use</p> <p>(D) Total water use</p> <p>(E) Change in groundwater storage</p> <p>(F) The annual report submitted to the court</p>	X	X		X				X		<p>Watermaster Engineer prepares a technical memorandum, which includes the following efforts:</p> <p>Item (A) is already submitted for the California Statewide Groundwater Elevation Monitoring (CASGEM) Program, so no further data is reported pursuant to SGMA. Items (B), (C), (D) and (F) are compiled from the appropriators, the IEUA, and Watermaster.</p> <p>Item (E) is completed using the Chino Basin groundwater model to simulate storage change over the past water year.</p>	<p>A technical memorandum explicitly documenting the information for required items (A) through (F). The memorandum is included in the agenda packets for review by the Watermaster Pools, Advisory Committee, and Board. The memorandum and its contents are then submitted to the DWR via its online Adjudicated Basin Annual Reporting System.</p>	<p>Watermaster provides the minimum information required by DWR</p>
<p>Biannual Evaluation of the Cumulative Effect of Transfers. Pursuant to the Peace Agreement, page 20, Section 5.1 (e) (iv); the OBMP Implementation Plan, page 21, paragraph 11 (d); and the Rules and Regulations, page 51, Section 9.3, Watermaster will evaluate for the potential for any Material Physical Injury that may result from the cumulative effects of transfers of water in storage or any water rights proposed in place of physical recharge of water to the Chino Basin. The purpose of this evaluation is to provide guidance to Watermaster for future recharge activities. Reporting on this evaluation is required biannually beginning on July 1, 2003.</p>	X	X		X				X		<p>Watermaster Engineer performs this evaluation:</p> <ol style="list-style-type: none"> 1. If necessary, re-calibrate the Chino Basin groundwater-flow model for the prior two years. 2. Evaluate Watermaster assessment packages to determine which transfers resulted in an avoided wet-water replenishment and prepare a hypothetical historical model scenario that replaces transfers with wet-water replenishment. 3. Simulate the hypothetical historical model scenario with the groundwater-flow model over the period of the Peace Agreement (since 2000). 4. Compare the results of the new model simulation with the calibrated model results to characterize the cumulative effects of transfers since the Peace Agreement. 	<p>Watermaster's Engineer prepares one report that documents: (i) any model updates that were performed, (ii) the evaluation of the Balance of Recharge and Discharge, and (iii) the evaluation of the Cumulative Effects of Transfers. The evaluation of the Cumulative Effects of Transfers characterizes the differences in: water levels (especially in areas where low water levels and subsidence are a concern); storage; the achievement and maintenance of Hydraulic Control; Santa Ana River discharge at Prado Dam; and the developed yield of the Chino Basin.</p>	
<p>Biannual Evaluation of the Balance of Recharge and Discharge. Pursuant to Section 7 of the Rules and Regulations, page 35, 7.1 (b) (iii) and (iv) and the Peace Agreement, page 20, Section 5.1 (e) (iii), Watermaster will conduct an evaluation of the Hydrologic Balance of recharge and discharge in the Chino Basin. The purpose of this evaluation is to provide guidance to Watermaster for future recharge activities to promote the goal of equal access to groundwater in each area and sub-area of the Chino Basin. Reporting on this evaluation is required biannually beginning on July 1, 2003.</p>								X		<p>Watermaster Engineer performs this evaluation:</p> <ol style="list-style-type: none"> 1. Use the same version of the groundwater-flow model that is used for the evaluate of the Cumulative Effect of Transfers. 2. Prepare an updated planning scenario that includes groundwater production projections to comport with the latest Urban Water Management Plans, the IEUA-TVMWD-WMWD planning projections, state mandated water conservation, and climate change projections. 3. Simulate the updated planning scenario with the groundwater-flow model over long-term future period. 4. Evaluate the model results with respect to changes in water levels, the areal balance of recharge and discharge and provide Watermaster with recommendations on the future locations and magnitudes of supplemental water recharge necessary to improve the balance of recharge and discharge. 	<p>Watermaster's Engineer prepares one report that documents: (i) any model updates that were performed, (ii) the evaluation of the Balance of Recharge and Discharge, and (iii) the evaluation of the Cumulative Effects of Transfers. The evaluation of the Balance of Recharge and Discharge characterizes long-term changes in water levels across the Chino Basin under the plans of the Parties and the Watermaster, and characterizes the balance of recharge and discharge.</p>	<p>Watermaster completed this work in 2003, 2005 and 2015 -- four reports were skipped. Watermaster evaluates the balance of recharge and discharge in other efforts that include 2007 Peace II engineering work, 2009 Production Optimization investigation, 2013 RMPU, Safe Yield reset, Storage Framework Investigation and the forthcoming 2020 Safe Yield reset.</p>



Appendix C

Exhibit L-1

Chino Basin Watermaster -- Monitoring and Reporting Requirements, Data Types, Analyses Performed, Report Contents, and Past Efforts to Reduce Scope/Cost

Purpose/Requirement/Schedule	Data Types									Analyses Performed	Report Content	Past Efforts to Reduce Scope and Cost	
	GWP	GWL	GWQ	SW	GL	GEOL	BIO	WS/WU	PLAN				
<p>Annual Finding of Substantial Compliance with the Recharge Master Plan. Pursuant to Sections 7.3 and 8.1 of the Peace II Agreement, Watermaster must make an annual finding that it is in substantial compliance with a Court-approved Recharge Master Plan, particularly regarding the sufficiency of Replenishment capability to satisfy reasonable projections of future Desalter Replenishment Obligations following the completion of Basin Re-Operation and its associated forgiveness of Desalter Replenishment Obligations.</p>				X						X	<p>Watermaster Engineer performs this work:</p> <ol style="list-style-type: none"> 1. Describe Watermaster's projections of future Replenishment Obligations based on the most recent production plans of the Parties. These production plans are typically extracted from Watermaster's most current groundwater modeling efforts. 2. Describe Watermaster's projections of future Replenishment capacity as documented in the Recharge Master Plan and/or current RMP implementation efforts. 3. Compare the projections of Replenishment Obligations vs. Replenishment capacity to assess compliance with the Recharge Master Plan. 	<p>A letter report is prepared to document the data, methods, and findings of the evaluation of substantial compliance with the Recharge Master Plan.</p>	<p>This report has become standardized, updated content derived from other Watermaster work resulting in reduced scope and reduced cost.</p>
<p>Annual Report of Compliance with SB 88 and SWRCB Regulations for Measurement and Reporting of Diverted Surface Water. Watermaster holds three diversion permits, issued by the SWRCB, that provide authorization to Watermaster to divert and recharge storm and dry-weather discharge. Watermaster reports annually on the amount of water diverted for recharged to the SWRCB pursuant to its permits and SWRCB regulations in Title 23, Chapter 2.7.</p> <p>SB 88 was signed into law by Governor Brown on June 24, 2015. Sections 15 through 18 of that law add new measurement and reporting requirements for a substantial number of diverters, including the Chino Basin Watermaster. Watermaster must demonstrate to the SWRCB its compliance with SB88. Reports are due annually by April 1, the reporting period is calendar year.</p>				X							<p>Watermaster Engineer performs this work:</p> <ol style="list-style-type: none"> 1. Collect, compile, and summarize estimates of diversion and recharge volumes for the calendar year for each point of diversion for each permit. Much of these data and information are borrowed from the data collected and analyzed for Watermaster's <i>Water Rights Compliance Reporting</i> report. 2. Collect information from IEUA on the measurement scheme for each point of diversion (device, accuracy, methods of measurement and calculation, recording frequency). Evaluate each point of diversion for compliance with SB88. If any point of diversion is not in compliance with SB88, develop and document a plan to comply. 	<ol style="list-style-type: none"> 1. Prepare a progress report of the estimates of diversion and recharge volumes for the calendar year for each point of diversion, and submit the estimates to the SWRCB electronically on its website. 2. To comply with SB 88, Watermaster must annually report the following in addition to (1.) above: <ul style="list-style-type: none"> • Information on the device or method used to calculate the amount of water diverted. • Water diversion measurement, either direct diversion or diversion to storage, including the type of device(s) used, additional technology used, who installed the device(s), and any alternative method(s) used in measuring water diversion. 	<p>As to the progress report, this work has been reduced to filling out a form on SWRCB water rights portal. As to SB88 compliance, this is a new regulation and Watermaster staff has approached regulations in a way to minimize compliance cost.</p>
<p>Safe Yield Recalculation. Pursuant to the OBMP Implementation Plan and Section 6.5 of Watermaster's Rules and Regulations, Watermaster is required to recalculate and reset the Safe Yield of the Chino Basin in fiscal year 2010/11 and every ten years thereafter. The purpose of the recalculation and reset is to prevent Overdraft, and continue to operate the Chino Basin pursuant to the Physical Solution of the Judgment.</p>	X	X	X	X	X	X		X	X		<p>Watermaster Engineer performs the analysis, and prepares the report. Pursuant to the Safe Yield Reset Technical Memorandum, the methodology to recalculate Safe Yield is:</p> <ol style="list-style-type: none"> 1. Collect new hydrogeologic information collected since the last model calibration and all the historical hydrologic and water use data, revise conceptual and numerical models and recalibrate groundwater model. 2. Update existing and projected cultural conditions and determine if future projections will be based on: (a) long-term historical record of precipitation falling or (b) precipitation projections based on Global System Models to estimate the long-term average net recharge to the Basin. 3. Update pumping projections and all recharge and discharge components that are input to the models. 4. With the information generated in [1] through [3] above, use the groundwater-flow model to project the net recharge for existing current and projected future cultural conditions. 5. Qualitatively evaluate whether the groundwater production at the net recharge rate estimated in [4] above will cause or threaten to cause "undesirable results" or "Material Physical Injury". If so, identify mitigation measures or an alternative Safe Yield to prevent "undesirable results" or "Material Physical Injury." 	<p>The report documents the data collected, the model re-calibration, and the analyses performed to calculate net recharge and Safe Yield.</p>	<p>Watermaster developed a task memorandum in 2015 entitled Methodology to Reset Safe Yield Using Long-Term Average Hydrology and Current and Projected Future Cultural Conditions that defines the methodology for the recently approved Safe Yield. This methodology was used to develop the scope and budget for the 2020 Safe Yield reset work and reduces the cost of the 2020 Safe Yield reset relative to the past effort.</p>



Appendix C

Exhibit L-1

Chino Basin Watermaster -- Monitoring and Reporting Requirements, Data Types, Analyses Performed, Report Contents, and Past Efforts to Reduce Scope/Cost

Purpose/Requirement/Schedule	Data Types									Analyses Performed	Report Content	Past Efforts to Reduce Scope and Cost
	GWP	GWL	GWQ	SW	GL	GEOL	BIO	WS/WU	PLAN			
<p>Recharge Master Plan Update (RMPU). The 2010 RMPU was prepared pursuant to requirements of the Peace II Agreement and the December 2007 Court Order that approved and directed Watermaster to implement the Peace II Agreement. The Court directed Watermaster to amend the 2010 RMPU to include updated information on water demands and future replenishment projections. Watermaster completed this amendment on time in September 2013. In approving the 2013 RMPU amendment, the Court directed Watermaster to prepare recharge master plan updates on a five-year cycle. Subsequently, the 2018 RMPU was completed in October 2018 and the next report due in 2023 and every five years thereafter.</p>				X					X	<p>The requirements of the work to be performed in the RMPU are defined in the Peace Agreements and the 2007 report of the Special Referee (see the introduction to the 2013 RMPU amendment) Watermaster Engineer conducts the assessment, which includes:</p> <ol style="list-style-type: none"> 1. Collect data related to basin management including future groundwater pumping plans, stormwater management, planned supplemental water recharge, legislation and regulations that affect recharge and prepare an assessment of how the water management has changed since the last RMP. 2. Prepare an assessment of the future Replenishment Obligations. 3. Inventory all existing recharge facilities, update their performance information, estimate the supplemental water recharge capacity of each facility and assess: (a) the adequacy of existing recharge facilities to meet future Replenishment Obligations and recharge goals and (b) the adequacy of existing recharge facilities to enable Watermaster to balance recharge and discharge. 4. Develop and analyze new projects to mitigate deficits identified in 3 above and identify new stormwater projects to increase basin yield. 5. Develop and apply criteria to screen and prioritize the recharge projects identified in 4 above and make recommendations for their implementation. 6. Prepare implementation plan. 	<p>The report documents the RMPU requirements, the data collected and planning assumption, the existing recharge capabilities, the need for additional supplemental water recharge capacity, project alternatives, screening and prioritization of alternatives and recommendations on project implementation..</p>	<p>This report has become standardized and the scope has been reduced to the minimum required for compliance, resulting in reduced cost relative to the 2010 and 2013 reports.</p>
<p>State of the Basin Report. Pursuant to Section 2.21 of the Rules and Regulations and the November 15, 2001 Court Order, Watermaster prepares a State of the Basin report every two years to describe the status of individual OBMP related activities and document how the basin has physically responded during OBMP implementation (i.e. since September 2000). The report is typically finalized by June 30.</p>	X	X	X	X	X				X	<p>Watermaster Engineer prepares this report. Most of the data and information utilized to prepare the report are acquired from other Watermaster monitoring and reporting efforts. Text, tables, charts, and maps are prepared to characterize: hydrology, production, recharge (replenishment and other recharge), groundwater levels and quality, point-source groundwater contamination, land subsidence, Hydraulic Control, desalter planning and engineering, and production meter installation.</p>	<p>The report includes annotated maps, charts, and tables that characterize the physical state of the basin and how it has changed since 2000. The report is published as a tabloid-sized map atlas and a PDF file for online viewing.</p>	<p>This report has evolved over time from a complex engineering report to simpler, graphically-intense and more readable report. In this process the scope and cost to produce the report was reduced.</p>
<p>California Statewide Groundwater Elevation Monitoring Program (CASGEM). Pursuant to Water Code section 10920, Watermaster must measure and report groundwater-elevation data from a subset of wells to the Department of Water Resources' CASGEM website twice per year (January 1 and July 1) for the Chino (8-2.01) and Cucamonga (8-2.02) Groundwater Subbasins of the Upper Santa Ana Valley Groundwater Basin (8-2).</p>		X								<p>Watermaster Engineer reviews time-series charts of groundwater elevations from a defined set of 37 wells in the Chino Basin and nine (9) wells in the Cucamonga Basin, and selects and compiles monthly measurements for a six-month period (summer/fall and winter/spring) that are representative of non-pumping water levels. This effort is performed in HydroDaVE Explorer. The selected data is exported from HydroDaVE in a file format for seamless upload to the CASGEM website.</p>	<p>The selected groundwater elevations for summer/fall and winter/spring are uploaded to the CASGEM website twice per year.</p>	<p>Watermaster staff reports the required groundwater-elevation data directly from its database to minimize effort and cost.</p>



Appendix C

Exhibit L-1

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	GWP	GWL	GWQ	SW	GL	GEOL	BIO	WS/WU	PLAN			
<p>Chino Basin Maximum Benefit Annual Report. This annual report is required by the Regional Board pursuant to Chapter 5 of the Basin Plan and Order No R8-2012-0026. There are a total of nine (9) maximum benefit commitments required of the Watermaster and IEUA in exchange for obtaining elevated TDS and nitrate objectives for the Chino-North Groundwater Management Zone. The Maximum Benefit commitments are:</p> <ol style="list-style-type: none"> 1. The implementation of a surface-water monitoring program. 2. The implementation of a groundwater monitoring program. 3. The expansion of the Chino-I Desalter to 10 million gallons per day (mgd) and the construction of the Chino-II Desalter with a design capacity of 10 mgd. 4. The additional expansion of desalter capacity (20 mgd) pursuant to the OBMP and the Peace Agreement. 5. The completion of the recharge facilities included in the Chino Basin Facilities Improvement Program. 6. The management of recycled water quality to ensure that the agency-wide, 12-month running average wastewater effluent quality does not exceed 550 mg/L and 8 mg/L for TDS and total inorganic nitrogen (TIN), respectively. 7. The management of basin-wide, volume-weighted TDS and nitrogen concentrations in artificial recharge to less than or equal to the maximum-benefit objectives. 8. The achievement and maintenance of the "Hydraulic Control" of groundwater outflow from the Chino Basin to protect Santa Ana River water quality. 9. The determination of ambient TDS and nitrogen concentrations of Chino Basin groundwater every three years. <p>The purpose of the annual report is to describe and document compliance with the Maximum Benefit commitments. The report is due by April 15th, and the reporting period is the calendar year.</p>	X	X	X	X					X	<p>Watermaster Engineer prepares the report, including the following efforts:</p> <ol style="list-style-type: none"> 1. Collect, check, and upload groundwater-level, groundwater-quality, and surface water-quality data to Watermaster databases. These data are used in the analyses required to demonstrate Hydraulic Control and compute ambient water quality. 2. Review and summarize CDA progress reports on completion of the desalter well fields to achieve 40,000 afy of groundwater-production. 3. Calculate: (i) the 12-month running average of IEUA's effluent TDS concentration to determine whether it has exceeded 545 mg/L for 3 consecutive months, and (ii) the 12-month running average of IEUA's effluent TIN concentration to determine whether it has exceeded 8 mg/L in any one month. 4. Calculate: the 5-year running volume-weighted concentration of TDS and nitrate in recharged recycled water, supplemental water, and new storm water, and determine if the average is less than the TDS and nitrate Maximum Benefit objectives of the Chino-North GMZ. 5. Use groundwater-elevation contours prepared in the State of the Basin Report (every 2 years) to show the extent of Hydraulic Control. 6. Use Watermaster's groundwater-flow model (updated and recalibrated every five years) to determine if the volume of groundwater flowing past the desalter well field is <i>de minimis</i> (<1,000 afy). 7. Report on the status of the Recomputation of ambient groundwater quality for the Chino Basin groundwater management zones, which is performed once every three years (for TDS and nitrate-nitrogen). 8. Utilize data from the Santa Ana River Watermaster's Annual Reports to characterize the influence of rising groundwater from the Chino Basin on the flow and quality of the Santa Ana River. 	<p>Text and exhibits that describe the status of compliance with the Maximum Benefit commitments.</p> <p>The data collected each calendar year are submitted to the Regional Board as an attachment to the report.</p>	<p>In 2012 Watermaster staff took the lead to substantially reduce the monitoring and reporting effort required under Maximum Benefit. In particular, the surface-water monitoring and quarterly reporting components of the program were virtually eliminated and the scope of annual reporting was reduced to eliminate redundancies. These efforts resulted in an estimated \$250,000 per year in cost savings (2012\$).</p>
<p>Annual Report of the Prado Basin Habitat Sustainability Committee. The monitoring and mitigation requirements of the Peace II CEQA SEIR (Biological Resources/Land Use & Planning—Section 4.4-3) call for the IEUA, Watermaster, and the Orange County Water District to form the Prado Basin Habitat Sustainability Committee (PBHSC) to ensure that the Peace II Agreement actions will not significantly or adversely impact the Prado Basin riparian habitat. One of the responsibilities of the PBHSC is to prepare annual reports by June 30 of each year.</p>	X	X	X	X		X	X		X	<p>Watermaster Engineer prepares the annual report, which includes the following efforts:</p> <ol style="list-style-type: none"> 1. Preparation of maps and data graphics that characterize the extent and quality of the riparian habitat in Prado Basin. 2. Preparation of maps and data graphics that characterize the trends in groundwater levels, climate and weather, surface water, and other factors that can affect the riparian habitat. This information is compared to the changes in the extent and quality of the riparian habitat to identify cause-and-effect relationships. 3. Groundwater-level change maps from existing results of Watermaster's groundwater-flow modeling are used to identify prospective areas of concern for the riparian habitat. 	<p>Summary of activities conducted for the PBHSC.</p> <p>Documentation of measured loss or prospective loss of riparian habitat (if any) with attribution of cause.</p> <p>Recommendations for ongoing monitoring and a scope of work and budget for the following fiscal year.</p> <p>Recommended adaptive management actions, if any, required to mitigate any measured loss or prospective loss of riparian habitat that is attributable to the Peace II activities.</p>	<p>After the completion of the first report in 2016, Watermaster identified efficiencies in monitoring and reporting, reducing the cost by almost 50 percent.</p>



Appendix C

Exhibit L-1

Chino Basin Watermaster -- Monitoring and Reporting Requirements, Data Types, Analyses Performed, Report Contents, and Past Efforts to Reduce Scope/Cost

Purpose/Requirement/Schedule	Data Types									Analyses Performed	Report Content	Past Efforts to Reduce Scope and Cost
	GWP	GWL	GWQ	SW	GL	GEOL	BIO	WS/WU	PLAN			
<p>Water Recycling Requirements for the Chino Basin Recycled Water Groundwater Recharge Program. IEUA and Watermaster have a permit from the Regional Water Quality Control Board (Order R8-2007-0039, amended as R8-2009-0057) for recycled water recharge at 13 sites in the Chino Basin (Phase I and Phase II). The permit requires implementation of a monitoring and reporting program, and the submittal of the following reports: Quarterly and Annual Groundwater Recharge (GWR) Monitoring Reports, five-year Engineering Reports, and Basin Start-up Period Reports.</p>	X	X	X	X						<p>IEUA staff performs the analyses and prepares the reports. The analyses include the following efforts:</p> <p>Collect recycled water, diluent water, and groundwater data and compare to regulatory limits and specifications in the permit; report on recharge operations and any non-compliance events due to water quality, including records of any operational problems, plant upset and equipment breakdowns or malfunctions, and any diversions of off specification recycled water and the locations of final disposal; report of corrective or preventive action(s) taken; certification that no groundwater has been pumped for domestic water supply use from the buffer zone that extends 500 feet and 6-months underground travel time from the recharge basin(s) where recycled water is applied; mass balance calculations to ensure bleeding is occurring in the aquifer; and estimates of approximate travel times of recharged recycled water in the aquifer at each basin.</p> <p>Watermaster, as the co-permittee, has its Engineer provide technical support and review and comment on all reports before they are submitted to the permitting agencies.</p>	<p>Quarterly GWR Monitoring Reports: Summaries of the data in tabular form to demonstrate compliance with permit limits and specifications. Summary of recharge operations and any operational problems and preventive and/or corrective actions taken.</p> <p>Annual GWR Reports: Summaries of recycled water and groundwater monitoring efforts for the year. Demonstration of recycled water recharge and diluent water in-aquifer blending by 120-month mass-balance calculations presented in Recycled Water Contribution (RWC) Management Plans and analysis of monitoring well water quality data. Estimates of approximate travel times of recharged recycled water in the aquifer.</p> <p>Five-year Engineering Reports: Address all project changes over the last five years.</p> <p>Basin Start-up Period Reports: Determination of percolation rates, soil aquifer treatment efficiency, lysimeter monitoring program, and initial maximum average RWC limits.</p>	<p>This report has become standardized and the scope has been reduced to the minimum required for compliance, resulting in reduced cost.</p>
<p>Annual Report of the Ground-Level Monitoring Committee. The MZ-1 Subsidence Management Plan (MZ-1 Plan) was developed by the MZ-1 Technical Committee (now named the Ground-Level Monitoring Committee) and approved by Watermaster in October 2007. In November 2007, the Court approved the MZ-1 Plan and ordered its implementation. The MZ-1 Plan was updated in 2015 and is now called the Chino Basin Subsidence Management Plan (SMP). Pursuant to the SMP, Watermaster prepares an annual report that includes the results of ongoing monitoring efforts, interpretations of the data, and recommended adjustment to the SMP, if any.</p>	X	X		X	X	X			X	<p>Watermaster Engineer prepares the annual report, which includes the following efforts:</p> <p>Preparation and interpretation of maps and graphics of data generated from the Ground-Level Monitoring Program including: the basin stresses of groundwater pumping and recharge, and the basin responses of changes in groundwater levels, aquifer-system deformation, and ground motion.</p>	<p>Background information on the program.</p> <p>Summary of activities conducted for the Ground-Level Monitoring Program.</p> <p>Analysis and interpretation of data.</p> <p>Conclusions and recommendations for ongoing monitoring and a scope of work and budget for the following fiscal year.</p> <p>Recommended updates to the SMP, if any.</p>	<p>The GLMC meets annually to review data and develop an appropriate scope of work for the monitoring program for the subsequent year. The monitoring program has continually evolved to identify and implement efficiencies, address the concerns of the GLMC, and meet the requirements of the SMP.</p>
<p>OBMP Semi-Annual Status Reports. Pursuant to the July 13, 2000 Court Order that approves Watermaster's adoption of the Peace Agreement and the OBMP Implementation Plan, Watermaster is required to prepare semi-annual status reports to the Court on OBMP implementation. The purpose of the report is to provide the Court with updates on progress in implementing the OBMP.</p>	X	X	X	X	X	X	X	X	X	<p>Watermaster staff, with the assistance of Watermaster Engineer and Counsel, prepare text descriptions of activities that were conducted to implement the OBMP for the prior six months.</p>	<p>Descriptions of activities that implement the OBMP program elements for the prior six months.</p>	<p>This report has become standardized and the scope has been reduced to the minimum required for compliance, resulting in reduced cost.</p>
<p>Semi-Annual Reports to the Watermaster Pools, Advisory Committee, and Board meetings. The Parties have requested semi-annual reports that summarize the status of: (i) the groundwater contaminant plumes in the Chino Basin and (ii) the activities of the Ground-Level Monitoring Committee.</p>	X	X	X		X					<p>Watermaster Engineer prepares text descriptions of activities performed during the previous quarter.</p>	<p>A text description of status of each of the known plumes within the Chino Basin and the activities of the Ground-Level Monitoring Committee.</p>	<p>This report has become standardized and the scope has been reduced to the minimum required for compliance, resulting in reduced cost.</p>

Key for Data Types:

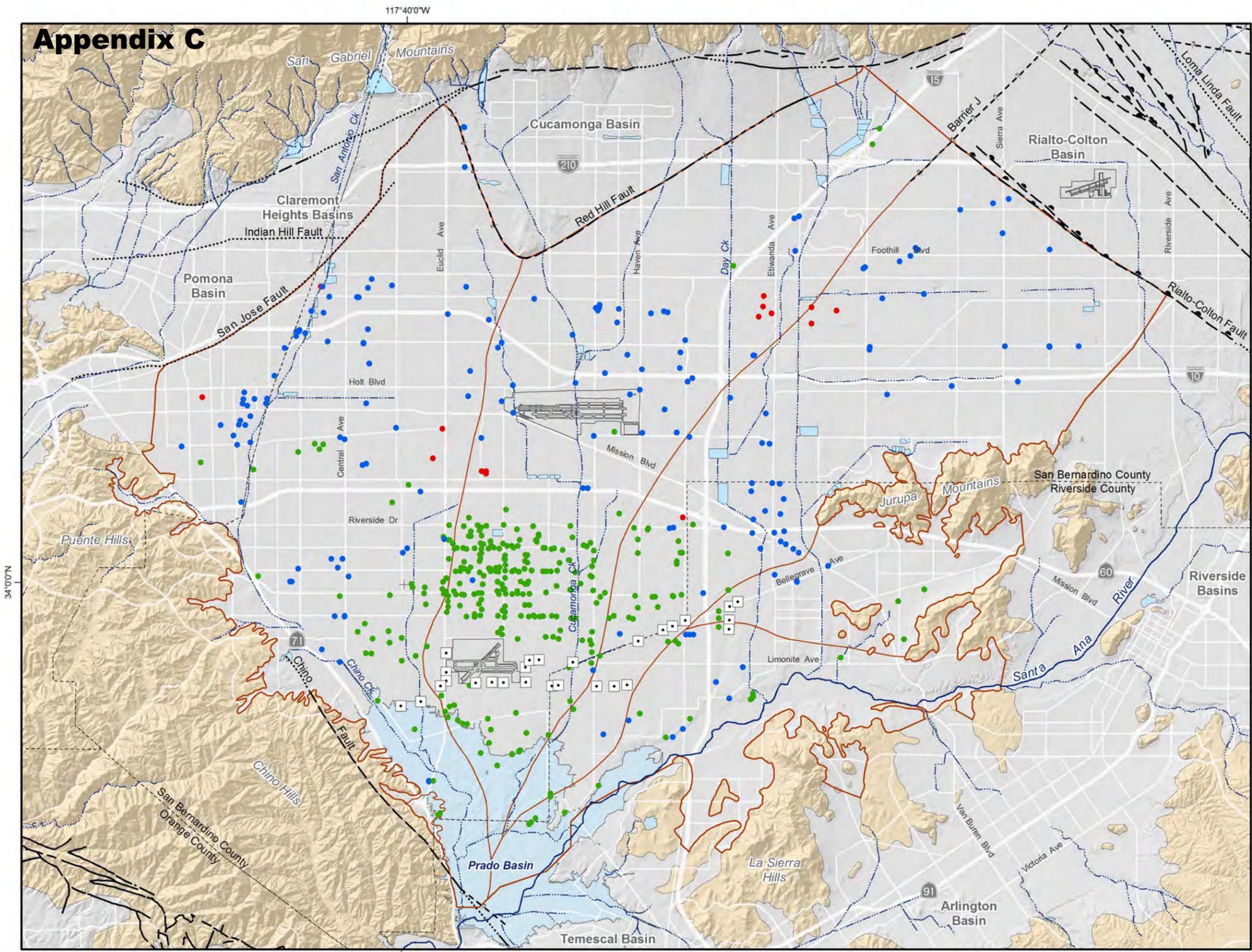
GWP -- Groundwater-production monitoring
 GWL -- Groundwater-level monitoring
 GWQ -- Groundwater-quality monitoring

SW -- Surface-water and climate monitoring
 GL -- Ground-level (subsidence) monitoring
 GEOL -- Well construction, abandonment, and destruction monitoring

BIO -- Biological monitoring
 WS/WU -- Water-supply and water use monitoring
 PLAN -- Planning information



Appendix C



Groundwater Production Wells by Pool

- Agricultural Pool (Pool 1 - 276 Wells)
- Overlying Non-Agricultural Pool (Pool 2 - 13 Wells)
- Appropriative Pool (Pool 3 - 143 Wells)
- Chino Basin Desalter Authority (25 Wells)

OBMP Management Zones

Streams & Flood Control Channels

Flood Control & Conservation Basins

Geology

Water-Bearing Sediments

- Quaternary Alluvium

Consolidated Bedrock

- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

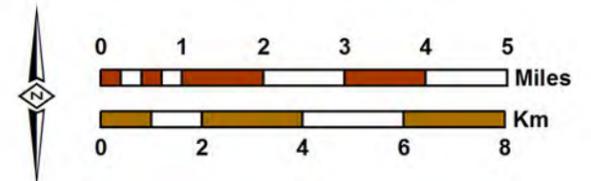
Faults

- Location Certain
- Location Concealed
- - - Location Approximate
- - - Location Uncertain
- - - Approximate Location of Groundwater Barrier



Prepared by:
WEI
 WILDERMUTH ENVIRONMENTAL, INC.

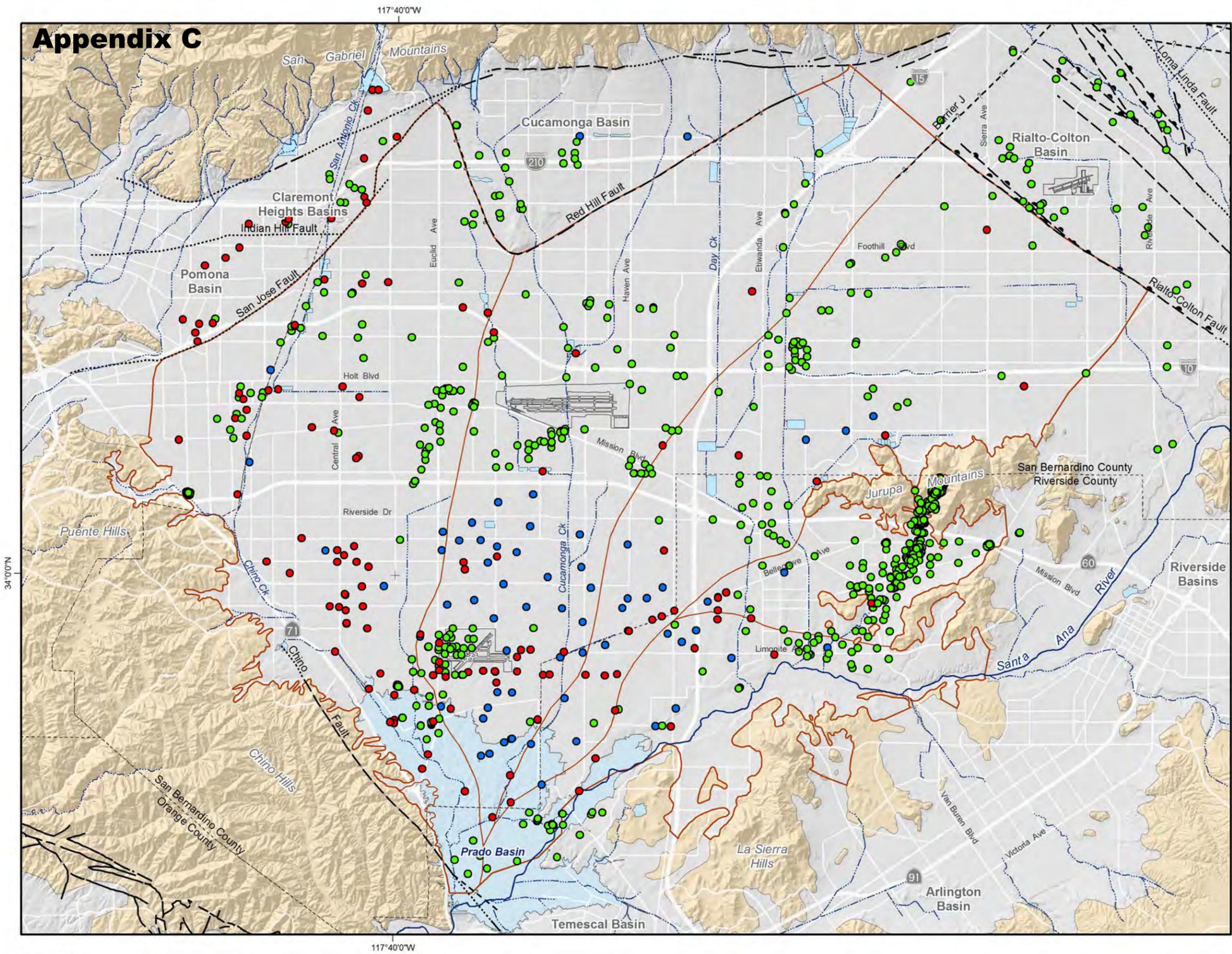
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Prepared for:
OBMP 2020 Update
 Scoping Report

Groundwater-Production Monitoring
 Fiscal Year 2017/18

Appendix C



Groundwater-Level Monitoring Program Wells symbolized by Measurement Frequency

- Measurement by CBWM Staff - Monthly (69 wells)
- Measurement by Transducer - Every 15 Minutes (177 wells)
- Measurement by Owner at Various Frequencies (1,077 wells)



OBMP Management Zones

Streams & Flood Control Channels

Flood Control & Conservation Basins

Geology

Water-Bearing Sediments

Quaternary Alluvium

Consolidated Bedrock

Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

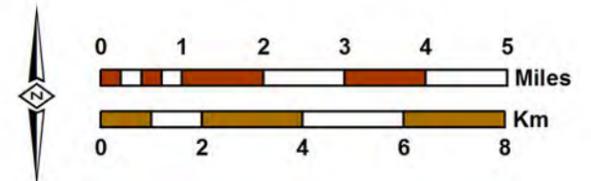
Faults

- Location Certain
- Location Concealed
- Location Approximate
- Location Uncertain
- Approximate Location of Groundwater Barrier



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WEI
WILDERMUTH ENVIRONMENTAL, INC.

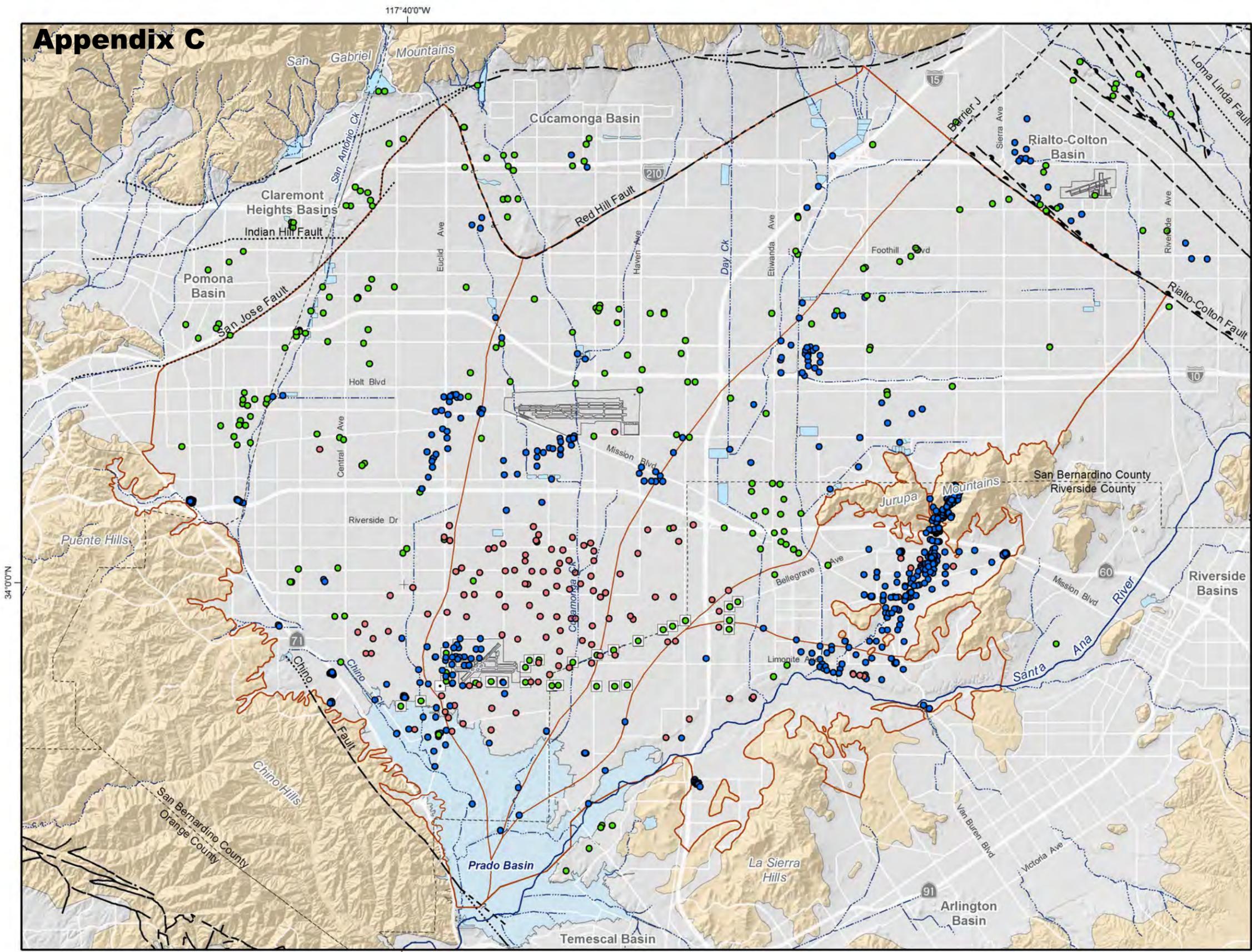
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Prepared for:
OBMP 2020 Update
Scoping Report

Groundwater-Level Monitoring Well Location and Measurement Frequency Fiscal Year 2017/18

Appendix C



Wells with Groundwater-Quality Data (June 2013 to June 2018)

- Monitoring Wells (986 wells)
- Municipal Production Wells (248 wells)
- Private Production Wells (123 wells)
- Chino Basin Desalter Wells

OBMP Management Zones

Streams & Flood Control Channels

Flood Control & Conservation Basins

Geology

Water-Bearing Sediments

- Quaternary Alluvium

Consolidated Bedrock

- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

Faults

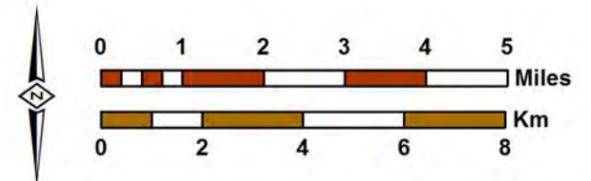
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- Location Concealed
- - - - Location Approximate
- - - - Location Uncertain
- - - - Approximate Location of Groundwater Barrier



Prepared by:

 WILDERMUTH ENVIRONMENTAL, INC.

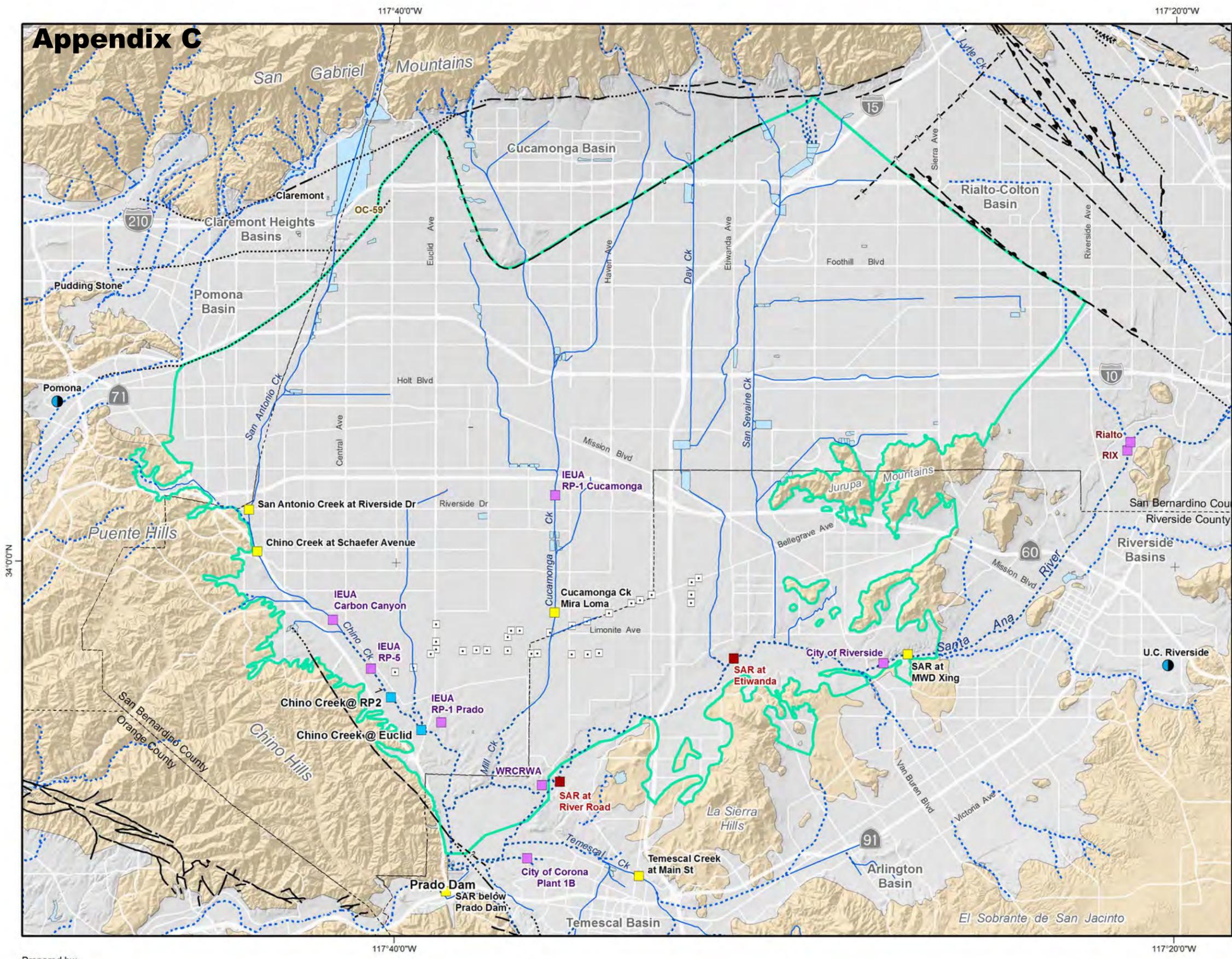
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Prepared for:
OBMP 2020 Update
 Scoping Report


Groundwater-Quality Monitoring
 July 2013 to June 2018

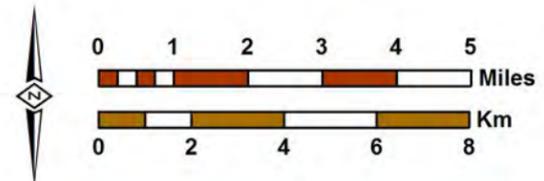
Appendix C



- Surface-Water Monitoring Program**
- POTW Discharge Outfall
 - USGS Stream Gage Station
 - Maximum-Benefit Monitoring Program Site
 - PBHSP Site
- Climate Monitoring Program**
- CIMIS Stations (Temperature and Evaporation)
 - Chino Basin - Area to Extract Grided Data from PRISM and NEXRAD Data Sets (Precipitation)
- Channel and Basin Features**
- Concrete-Lined Channels
 - - - Unlined Rivers and Streams
 - Flood Control & Conservation Basins
 - Chino Basin Desalter Authority Well
- Geology**
- Water-Bearing Sediments**
- Quaternary Alluvium
- Consolidated Bedrock**
- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks
- Faults**
- Location Certain
 - - - Location Concealed
 - · - · Location Approximate
 - - - ? Location Uncertain
 - - - Approximate Location of Groundwater Barrier



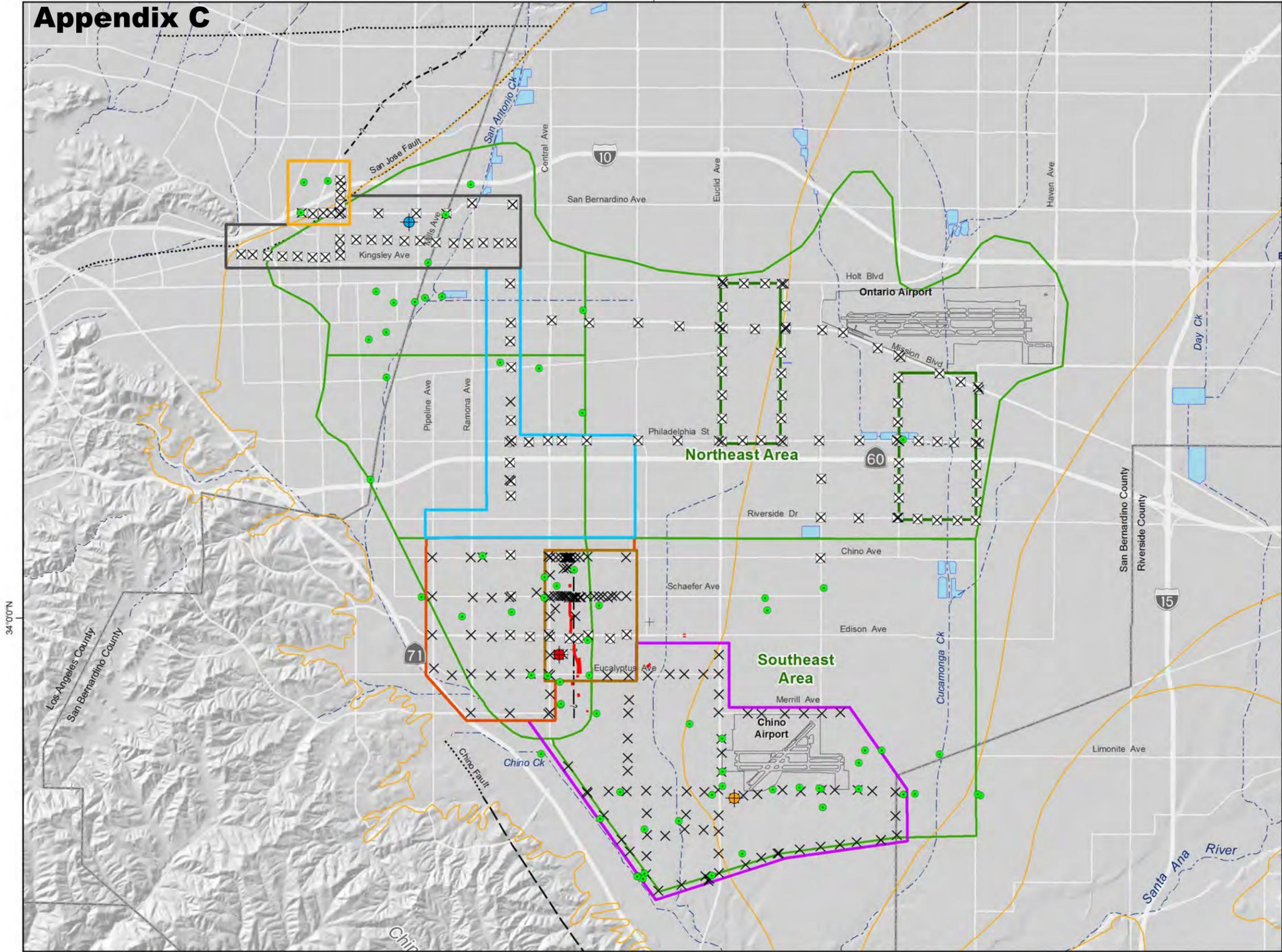
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Surface-Water and Climate Monitoring

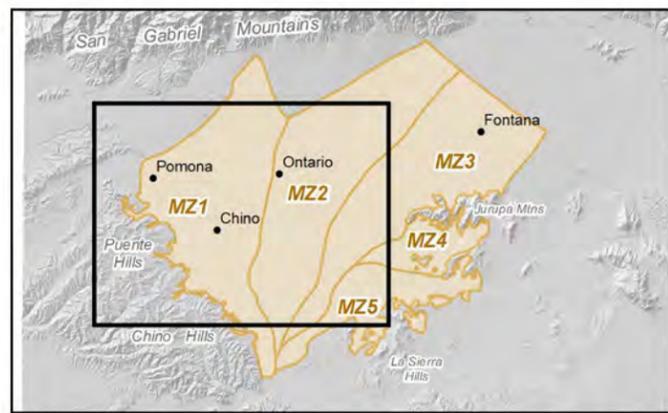
Appendix C

117°40'0"W



- Ground-Level Monitoring Network Facilities**
- Ayala Park Extensometer
 - Chino Creek Extensometer
 - Pomona Extensometer
 - Well Equipped with Pressure Transducer (2018/19)
 - Ground-Level Survey Benchmark
 - Ground-Level Survey Benchmark (Measured in April 15, 2019)

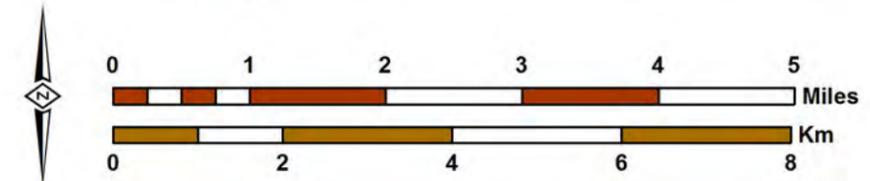
- Ground-Level Survey Areas**
- Managed Area
 - Fissure Zone Area
 - Central Area
 - Northwest Area
 - San Jose Fault Zone Area
 - Northeast Area
 - Southeast Area
- Areas of Subsidence Concern
- Flood Control and Conservation Basins
- Fault (solid where accurately located; dashed where approximately located or inferred; dotted where concealed)
- Ground Fissures
- Approximate Location of the Riley Barrier



117°40'0"W

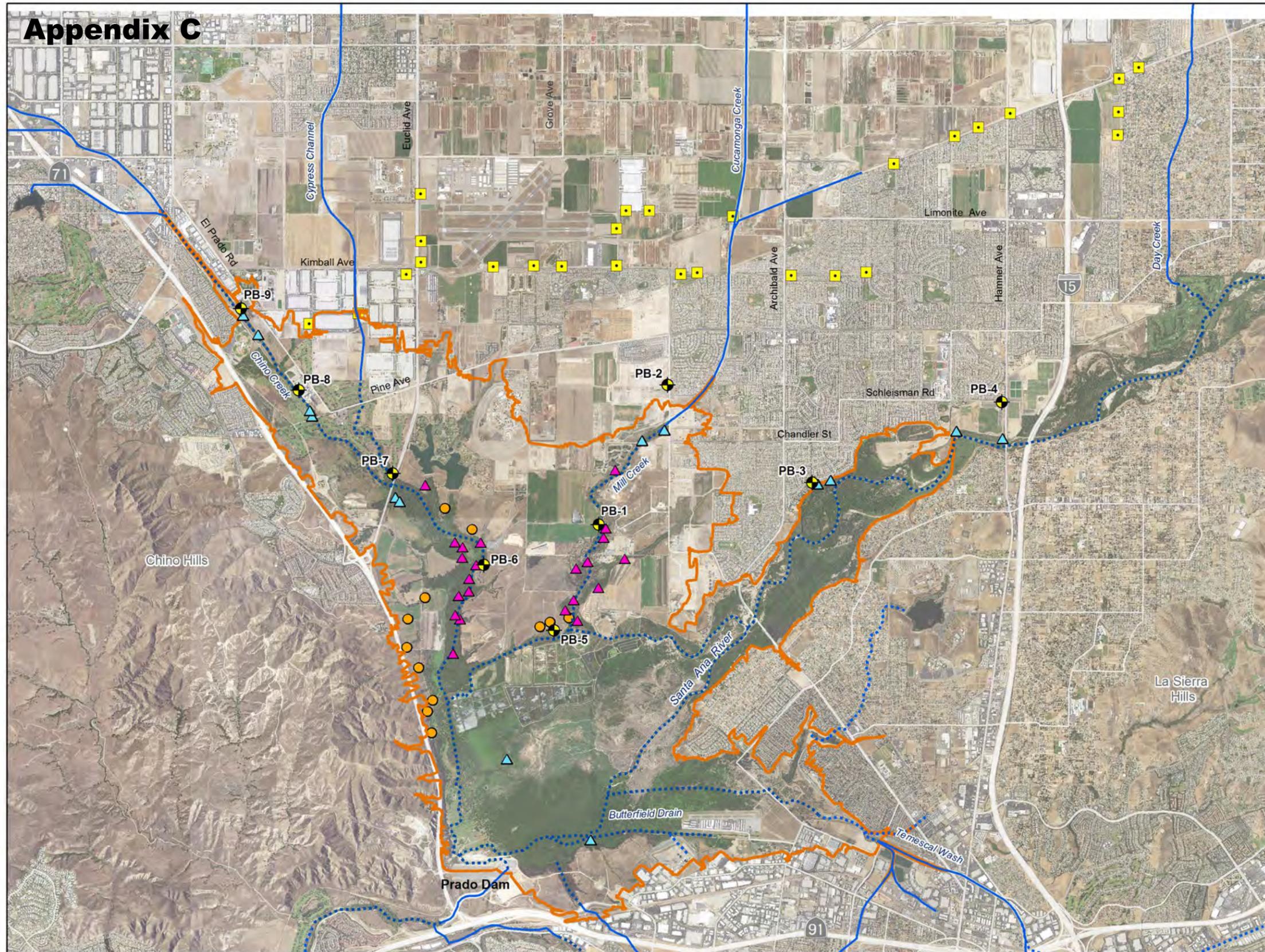


Author: NWS
Date: 8/22/2019
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Ground-Level Monitoring Network Western Chino Basin

Appendix C



Riparian Habitat Monitoring Program

Site-Specific Monitoring

- ▲ USBR Vegetation Surveys 2007, 2013, and 2016
- ▲ USBR Vegetation Surveys 2016
- OCWD Photo Stations (2010 - 2016)

Regional Monitoring

- Prado Basin Management Zone (Prado Basin) - Area of Interest for Analysis of NDVI and Air Photos.

- Chino Basin Desalter Authority Well
- ◆ PBHSP Monitoring Well
- Concrete-Lined Channels
- - - Unlined Rivers and Streams

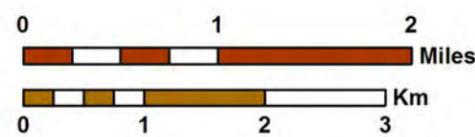
Aerial Photo: USDA, 2016. Mosaic of photos from June 2, 2016 to June 14, 2016



Prepared by:



Author: SO
Date: 8/22/2019
File: Exhibit_L7_Bio_Monitoring



Prepared for:
OBMP 2020 Update
Scoping Report



Biological Monitoring

Exhibit L-7

Appendix C

**Exhibit L-8
Cost Estimate and Schedule to Implement Activity L**

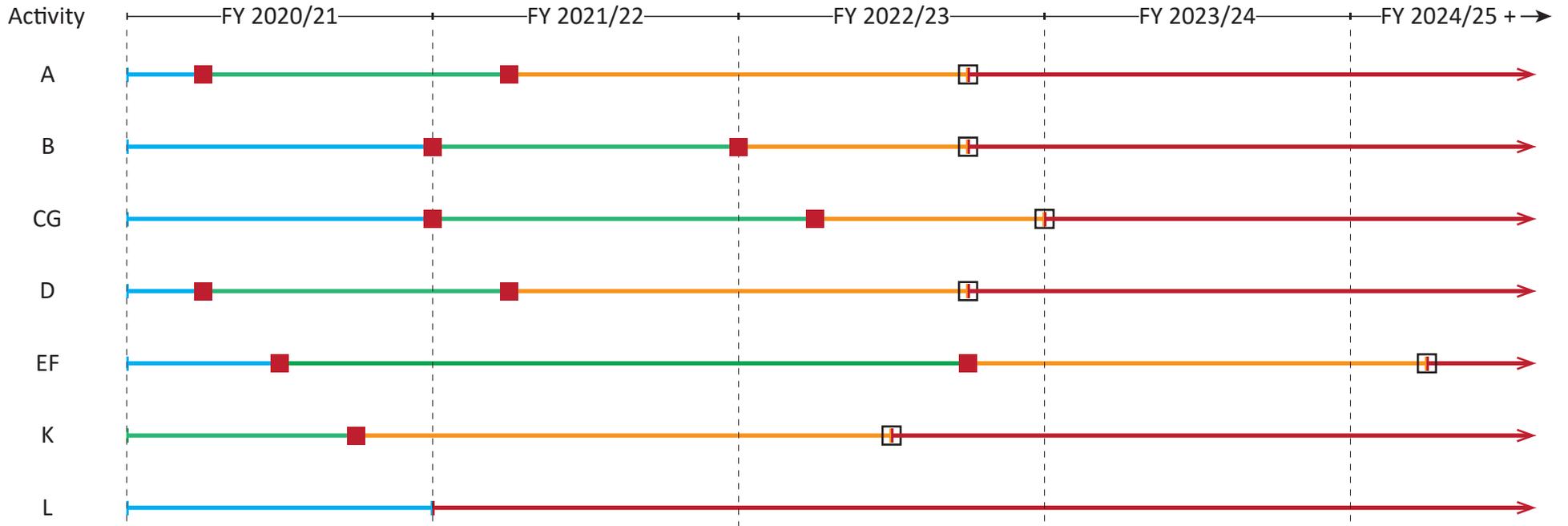
Task and Subtask Description	Engineering Cost	FY 2020/21				FY 2021/22				FY 2022/23				FY 2023/24 and beyond								
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4									
Task 1 Convene Monitoring and Reporting Committee and prepare the Monitoring and Reporting Work Plan · Convene Monitoring and Reporting Committee · Conduct (5) meetings to prepare Work Plan and develop recommended revisions · Prepare Monitoring and Reporting Work Plan · Prepare memorandum: Recommended Revisions to Watermaster’s Non-Discretionary Monitoring and Reporting Programs	\$125,000																					
Task 2 Implement Recommended Revisions to Watermaster’s Non-Discretionary Monitoring and Reporting Programs	\$ TBD																				\$ TBD	\$ TBD
Task 3 Annual review of scope of work and cost to implement the Monitoring and Reporting Work Plan in the Subsequent Fiscal Year	\$ TBD																				\$ TBD	\$ TBD
Total Cost and Cost by FY	\$125,000	\$60,000				\$65,000				\$ TBD				\$ TBD								

TBD -- To be determined



Appendix C

Exhibit HIJ-1 Process and Schedule to Implement the OBMP Update Activities



Key

- Scoping effort
- Evaluation of need for projects
- Project Evaluation
- Implementation
- Go-no-go decision points to proceed with activity
- Go-no-go decision to select projects for implementation

Appendix A

A1. 2020 OBMP Update -- Listening Session #1 Memorandum

A2. 2020 OBMP Update -- Listening Session #2 Memorandum

A2. 2020 OBMP Update -- Listening Session #3 Memorandum

Appendix C

To: Chino Basin Watermaster Stakeholders
From: Watermaster 2020 OBMP Update Team
Subject: 2020 OBMP Update -- Listening Session #1 Memorandum
Date: February 5, 2019

The objectives of this memorandum are to summarize the information provided by the stakeholders during Listening Session #1 and provide information that will assist the stakeholders in reviewing the work products of Listening Session #1 and preparing for Listening Session #2.

Background

During 1998-2000, the Chino Basin Watermaster (Watermaster) conducted a process to develop the Chino Basin Optimum Basin Management Program (OBMP). The OBMP was developed in a collaborative public process that identified the needs and wants of all stakeholders; described the physical state of the groundwater basin; developed a set of management goals; identified impediments to those goals; described a series of actions that could be taken to remove those impediments and achieve the management goals; developed and executed agreements to implement the OBMP; and certified a programmatic Environmental Impact Report (PEIR) pursuant to CEQA.

By 2019, many of the projects and management programs envisioned in the 2000 OBMP have been implemented, while some have not. The understanding of the hydrology and hydrogeology of the Chino Basin has improved since 2000, and new water-management issues have been identified that necessitate that the plan be adapted to protect the collective interests of the Chino Basin parties and their water supply reliability. For these reasons, the Watermaster parties are updating the 2000 OBMP (2020 OBMP Update) to set the framework for the next 20 to 30 years of basin-management activities.

The 2020 OBMP Update will be conducted using a collaborative process like that employed for the development of the 2000 OBMP. A description of the development of the 2000 OBMP and the rationale for and process to prepare the 2020 OBMP Update is included in a white paper prepared for the Chino Basin stakeholders: *White Paper – 2020 Update to Chino Basin Optimum Basin Management Program* (OBMP White Paper). The OBMP White Paper, and all documents relevant to the 2020 OBMP Update, are available on the [Watermaster's ftp site](#).¹

A series of eight public listening sessions are being held by the Watermaster throughout 2019 to support the 2020 OBMP Update. The purpose of the listening sessions is to obtain information and feedback from the parties and other Chino Basin stakeholders to define the collective goals of the parties, the impediments to achieving the goals, the management actions required to remove the impediments, and an implementation plan for the management actions. Watermaster staff will provide key information prior to and during each listening session to help the parties and other stakeholders provide their input on each topic discussed. The objective is for the ideas and opinions of every stakeholder to be heard. Participation in the listening sessions is critical to the development of the 2020 OBMP Update. Watermaster held Listening Session #1 on January 15, 2019.

Summary of Listening Session #1

Listening Session #1 was a four-hour workshop broken down into three main agenda topics:

¹ https://cbwm.syncedtool.com/shares/folder/9abb162877b999/?folder_id=670

- History of the 2000 OBMP
- Rationale for the 2020 OBMP Update – Drivers, Trends, and Implications (Breakout Session)
- Rationale for the 2020 OBMP Update – Issues, Needs, and Wants (Group Participation Session)

Prior to Listening Session #1 the following materials were distributed:

- Meeting agenda
- The OBMP White Paper
- An explanation of the assignment to prepare for Listening Session #1

These materials and a copy of the presentation given during Listening Session #1 are available on the Watermaster's ftp site.

History of the 2000 OBMP

The history of the 2000 OBMP and its implementation was provided by Watermaster staff and its legal, engineering, and environmental consultants. The presentation provided detail on why the OBMP was created; the process to develop it and the associated implementation agreements and environmental review documents; the OBMP Program Elements; and the progress and accomplishments in implementing each of the OBMP Program Elements, including a discussion on what was not accomplished.

Rationale for the 2020 OBMP Update – Drivers, Trends, and Implications

As described in the OBMP White Paper, the strategic drivers and trends that shaped the OBMP in the late 1990s have since changed. Exhibit 1 in the OBMP White Paper was a first attempt to summarize the current drivers and trends shaping water management, and their basin management implications for the Chino Basin parties. "Drivers" are external forces that cause changes in the Chino Basin water space. Grouped under each driver are expected trends that emanate from that driver. The relationship of the drivers/trends to the management implications are shown by arcs that connect trends to implications.

A breakout session was held to obtain input on the proposed drivers, trends and implications in Exhibit 1. The listening session attendees were divided into four groups to discuss changes and additions to the drivers, trends and implications. Each group documented its discussion and one member of each group reported out a summary of the group discussion to all attendees. The input provided by each breakout group was used to revise Exhibit 1 (attached to this memorandum). The following are the revised implications for Basin management that form a rationale for the 2020 OBMP Update:

- Reduced recycled water availability and increased cost
- Reduced imported water availability and increased cost
- Inability to pump groundwater with existing infrastructure
- Imported water quality degradation
- Chino Basin water quality degradation
- Increased cost of groundwater use
- Reductions in Chino Basin Safe Yield
- Recycled water quality degradation
- Increased cost of Basin Plan compliance

The final version of Exhibit 1 will be included as a final deliverable of the 2020 OBMP Update. Additional comments on Exhibit 1 can be submitted in writing to Edgar Tellez-Foster (etellezfoster@cbwm.org).

Rationale for the 2020 OBMP Update – Issues, Needs, and Wants

As described in the OBMP White Paper, the issues, needs and wants of the parties will form the basis of the management goals of the 2020 OBMP Update and inform the identification of impediments to the

goals and action items to remove the impediments. A full group participation session was led by Watermaster staff to obtain feedback from the listening session attendees on their individual issues, needs and wants related to basin management. The listening session attendees articulated the issues, needs, and wants of their associated party in writing and then verbally shared with the full group. The feedback provided by the attendees was transcribed by Watermaster staff and then the needs and wants were organized into similar classes of issues. The classes of issues identified were effectively the same as the implications for basin management defined in Exhibit 1. Table 1 is a summary of the needs and wants of the parties, organized by the basin management issues. Attribution by party was assigned to each need and want.

Next Steps

The next steps in the process to develop the 2020 OBMP Update are:

1. Finalize the descriptions of issues, needs, and wants for basin management in Table 1.
2. Describe the goals for the 2020 OBMP Update, and impediments to achieving the goals.

OBMP Goals and Impediments

For the 2000 OBMP, the Chino Basin stakeholders established four management goals for the OBMP that addressed the issues, needs, and wants of the parties:

Enhance Basin Water Supplies. The intent of the goal was to increase the volumes and variety of available water supplies. This goal applied not only to local groundwater, but also to all sources of water available to the parties (*e.g.*, recycled, imported).

Protect and Enhance Water Quality. The intent of the goal was to ensure the protection of the long-term beneficial uses of the groundwater basin.

Enhance Management of the Basin. The intent of the goal was to encourage stable, creative, sustainable and fair water resources management for broad mutual benefit to all stakeholders and avoidance of undesirable results.

Equitably Finance the OBMP. The intent of the goal was to identify and use efficient and equitable methods to fund OBMP implementation.

While these general goals are as valid today as they were in 2000, it was apparent from the discussions of issues, needs, and wants at Listening Session #1 that the impediments to achieving the goals have changed and that the stakeholders have more focused goals for basin management. The focus of the next two listening sessions will be to identify the issues/needs/wants that are common to most stakeholders and to define focused goal statements and the impediments to achieving the goals. Listed below are four example goals, based on common issues/needs/wants, for the 2020 OBMP Update. Below each goal are some examples of the impediments to achieving the goals, and actions to remove the impediments. The impediments listed are not exhaustive.

Goal #1: Be able to rely on local supplies to meet potable demands for a [6, 12, 18, 24-month] period in the event of a [short-term, long-term] outage of imported water supply.

Impediments to achieving the goal:

- The current capacity to rely on groundwater during these periods is constrained by insufficient pumping capacity, insufficient conveyance, poor quality, and subsidence.
- Exercising storage in the Chino Basin as a way of enhancing local water-supply reliability can cause undesirable results such as subsidence and loss of yield.

Actions to remove impediments and achieve the goal:

- Develop a Storage Management Plan (SMP) to define how to utilize storage without causing undesirable results.
- Build the production, conveyance and treatment facilities necessary to meet demands and operate in accordance with the SMP.

Goal #2: Avoid shutdown of groundwater production facilities due to existing or potential new water-quality regulations.

Impediment to achieving the goal: Insufficient treatment and brine disposal capacity.

Action to remove impediment and achieve the goal: Build conveyance and regional treatment facilities (with ability to expand, if necessary) to treat current and potential future contaminants of concern.

Goal #3: Optimize the use of unused storage space in the Basin by implementing storage and recovery programs.

Impediment to achieving the goal: Exercising storage in the Chino Basin can cause undesirable results such as subsidence and loss of yield.

Action to remove impediment and achieve the goal: Develop a Storage Management Plan (SMP) to define how to utilize storage without causing undesirable results.

Goal #4: Fund [X%] of the implementation of the OBMP Update with supplemental resources, such as grants, low-interest loans, or outside funding partners.

Impediment to achieving the goal: Competition for future grant funding will be fierce; success in obtaining grant funding is uncertain.

Recommended Preparation for Listening Session #2

1. Review the Issues, Needs, and Wants matrix in Table 1. Ensure that the feedback you reported at Listening Session #1 was accurately captured. Come to Listening Session #2 prepared to provide your feedback and add your party's attribution to the needs or wants identified by others, if you deem appropriate. The intent is to finalize Table 1 and use it to identify the specific concerns shared by most stakeholders. These common concerns will serve as that starting point for defining goals for the 2020 OBMP Update.
2. Based on your review of this memo and Table 1, come prepared to suggest and formulate goals for the 2020 OBMP Update and the impediments to achieving those goals.

Appendix C

Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want x Unspecified

Needs and Wants Categorized by Basin Management Issues	Pool Parties													Others					
	Appropriative										Agricultural			Overlying Non-Ag	IEUA	TVMWD	WMWD	Metropolitan	CBWCD
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy	State of CA						
Reductions in Chino Basin Safe Yield																			
Manage the basin safe yield for the long-term viability and reliability of groundwater supply											●							x	
Develop an OBMP Update that is consistent with the Physical Solution and enables the Parties to leverage their respective water rights						x													
Maintain or enhance the safe yield of the basin without causing undesirable results				●	●				●	x					x				
Reassess the frequency of the safe yield recalculation					x												x		
Develop recharge programs that maintain or enhance safe yield																	x		
Design storage management and storage & recovery programs that maintain or enhance safe yield												●		●					
Engage with regional water management planning efforts in the Upper Santa Ana River Watershed that have the potential to impact Chino Basin operations or safe yield	x																x		
Develop more facilities to capture, store, and recharge stormwater	●	●									●								
Enhance recharge in northeast MZ-3			●																
Maximize use of existing recharge facilities	●																		
Establish incentives to encourage recharge of high-quality imported water			●																
Develop a storage management plan to optimize the use of unused storage space in the basin, avoid undesirable results, and encourage storage and recovery programs		●		●	●						●		●		x		●		

Appendix C

Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want x Unspecified

Needs and Wants Categorized by Basin Management Issues	Pool Parties												Others						
	Appropriative										Agricultural		Overlying Non-Ag	IEUA	TVMWD	WMWD	Metropolitan	CBWCD	
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy							State of CA
<i>Inability to Pump Groundwater with Existing Infrastructure</i>																			
Design subsidence management plans to allow flexibility in the location and volume of groundwater production in MZ-1 and MZ-2	x					x	x			●					x				
Develop management strategies that enable the parties to produce or leverage their respective water rights that may be impacted by physical basin challenges like land subsidence or water quality						x	x												
Ensure that sufficient, reliable water supplies will be available to meet current and future water demands			●	●						x	x						●	●	
Design storage management and storage & recovery programs to raise funding to build infrastructure														●					
Develop conjunctive use agreements that provide certainty in the ability to perform during put and take years by clearly defining facilities/infrastructure and operating plans, and that leverage the lessons learned from obstacles encountered during the implementation of the current Dry Year Yield program.	x																x		
Develop process to support/facilitate project implementation																	●		
Pursue collaborative, regional partnerships to implement regional solutions to water management challenges					●												●	●	●

Appendix C

Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want x Unspecified

Needs and Wants Categorized by Basin Management Issues	Pool Parties													Others					
	Appropriative										Agricultural			Overlying Non-Ag					
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy	State of CA		IEUA	TVMWD	WMWD	Metropolitan	CBWCD
Increased Cost of Groundwater Use																			
Develop an equitable distribution of costs/benefits of the OBMP						x								x					
Watermaster assessments for implementation of the OBMP should be allocated based on benefits received					x														
Decrease Watermaster assessment costs	●				●														
Seek supplemental financial resources to support the implementation of the OBMP Update		●		●				●						x	●			●	
Monetize agencies unused water rights for equitable balance of basin assets			●																
Support to develop a justification for increases in water rates and developer fees to invest in needed water infrastructure	●	x														x			
Develop regional partnerships to help reduce costs														●					
Continue or enhance incentives to pump groundwater from the Chino Basin			●																
Chino Basin Water Quality Degradation																			
Develop a water quality management plan to ensure ability to produce groundwater rights				x										x			x		
Address existing and new drinking water quality regulations that may result in an increase in groundwater treatment and costs	x	x	●					x								x			
Develop regional infrastructure to address water quality contamination and treatment					●														
Recycled Water Quality Degradation																			
Maintain compliance with recycled water and dilution requirements pursuant to the Chino Basin groundwater recharge permit														●					

Appendix C

Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want x Unspecified

Needs and Wants Categorized by Basin Management Issues	Pool Parties													Others					
	Appropriative										Agricultural			Overlying Non-Ag	IEUA	TVMWD	WMWD	Metropolitan	CBWCD
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy	State of CA						
Increased Cost of Basin Plan Compliance																			
Perform the minimum amount of monitoring/reporting that is required for basin management and regulatory compliance							●												
Develop management strategy to ensure sufficient supplies to blend with recycled water and comply with Salt and Nutrient Management Plan											●								
Reduced Recycled Water Availability and Increased Cost																			
Maximize the use of recycled water for direct use or recharge	●			●					●							●			
Utilize non-IEUA sources of recycled water that are not being put to beneficial use	●								●										
Develop alternative management strategies to comply with the recycled water discharge obligations to the Santa Ana River															x		●		
Evaluate the potential for direct potable reuse of recycled water															●				
Fully utilize IEUA recycled water resources								●		●									
Reduced Imported Water Availability and Increased Cost																			
Increase water-supply reliability at the lowest possible cost							●												
Despite the best efforts of the Parties to decrease reliance on imported water, the cost of the total water supply continues to increase	x																		
Continue to build collaborative programs between the Metropolitan Water District and Chino Basin																		x	
Identify and utilize new sources of supplemental water															●				
Ensure that sufficient supplemental water supplies will be available to meet future replenishment requirements							x												

Appendix C

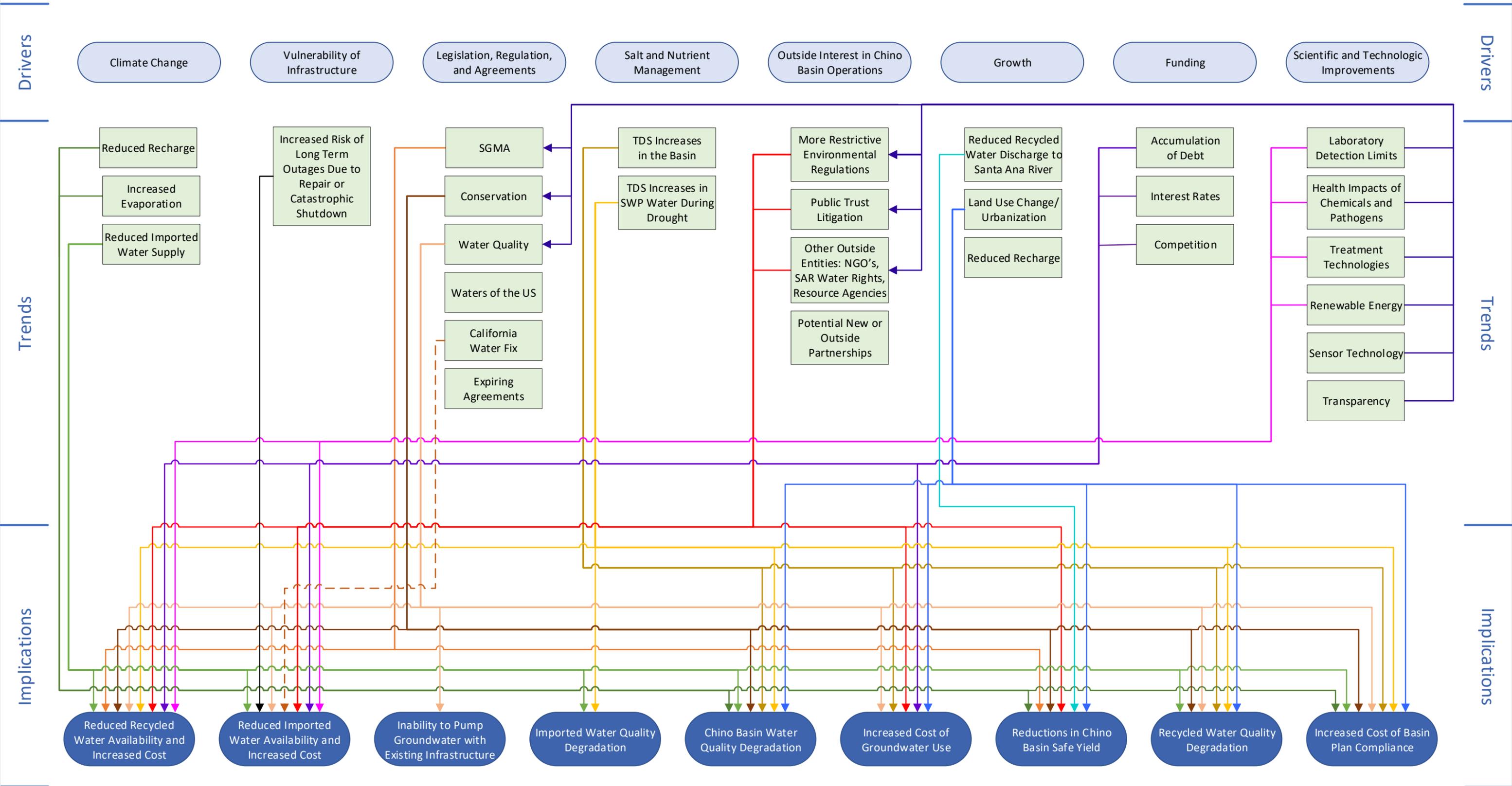
Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want x Unspecified

Needs and Wants Categorized by Basin Management Issues	Pool Parties													Others					
	Appropriative										Agricultural			Overlying Non-Ag	IEUA	TVMWD	WMWD	Metropolitan	CBWCD
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy	State of CA						
Reduced Imported Water Availability and Increased Cost																			
Understand how imported water reliability from Metropolitan Water District will be affected with and without the California Water Fix																		x	
Need a better understanding of the water management plans of the Parties to be able to better plan for imported water needs and to assure reliability of Metropolitan Water District water supply																			●
Construct inter-basin and intra-basin connections for the benefit of regional water supply and conjunctive use		●		●							●							●	●
Ensure that there is a reliable local water supply to replace imported water during shut down of imported water delivery infrastructure for maintenance and longer-term emergency outages	●		x	●			x	●	x									x	●
Analyze water management scenarios that plan for unexpected challenges and emergencies																		x	
Use more recycled water for replenishment obligation				●															
Develop management strategies that ensure parties will meet future desalter replenishment obligation and have the money to fund it				●														x	
Other																			
Improve communication between the parties	●																		
Coordinate timing of agreements, grants, etc. to ensure implementation of the OBMP Update																		x	
Consider a long-term planning horizon of up to 50 years																		●	
Educate elected officials and decision makers on the need and urgency to address the water management challenges		●																	

Appendix C

Exhibit 1 – Drivers and Trends and Their Implications 2020 OBMP Update



Appendix C

To: Chino Basin Watermaster Stakeholders
From: Watermaster 2020 OBMP Update Team
Subject: 2020 OBMP Update -- Listening Session #2 Memorandum
Date: March 14, 2019

The objectives of this memorandum are to summarize the information provided by the stakeholders during Listening Session #2 and provide information that will assist the stakeholders in reviewing the work products of Listening Session #2 and preparing for Listening Session #3.

Background

During 1998-2000, the Chino Basin Watermaster (Watermaster) conducted a process to develop the Chino Basin Optimum Basin Management Program (OBMP). The OBMP was developed in a collaborative public process that identified the needs and wants of all stakeholders; described the physical state of the groundwater basin; developed a set of management goals; identified impediments to those goals; described a series of actions that could be taken to remove those impediments and achieve the management goals; developed and executed agreements to implement the OBMP; and certified a programmatic Environmental Impact Report (PEIR) pursuant to CEQA.

By 2019, many of the projects and management programs envisioned in the 2000 OBMP have been implemented, while some have not. The understanding of the hydrology and hydrogeology of the Chino Basin has improved since 2000, and new water-management issues have been identified that necessitate that the OBMP be updated to protect the collective interests of the Chino Basin stakeholders and their water supply reliability. For these reasons, the Watermaster parties are updating the 2000 OBMP (2020 OBMP Update) to set the framework for the next 20 to 30 years of basin-management activities.

The 2020 OBMP Update is being conducted using a collaborative process like that employed for the development of the 2000 OBMP. A description of the development of the 2000 OBMP and the rationale for and process to prepare the 2020 OBMP Update is included in a white paper prepared for the Chino Basin stakeholders: *White Paper – 2020 Update to Chino Basin Optimum Basin Management Program* (OBMP White Paper). The OBMP White Paper, and all documents relevant to the 2020 OBMP Update, are available on the [Watermaster's ftp site](#).¹

A series of public listening sessions are being held by the Watermaster throughout 2019 to support the 2020 OBMP Update. The purpose of the listening sessions is to obtain information, ideas, and feedback from the Chino Basin stakeholders to define their collective goals, the impediments to achieving the goals, the management actions required to remove the impediments, and an implementation plan for the management actions. Watermaster staff is providing key information prior to and during each listening session to enable the stakeholders to provide their input on each topic discussed. The objective is for the ideas and opinions of every stakeholder to be heard. Participation in the listening sessions is critical to the development of the 2020 OBMP Update.

Watermaster held Listening Session #2 on February 12, 2019. Prior to Listening Session #2, the *Listening Session #1 Memorandum* was distributed which summarized: the feedback received during Listening Session #1, how the feedback will be used for 2020 OBMP Update, and the recommended preparation for Listening Session #2.

¹ https://cbwm.syncedtool.com/shares/folder/9abb162877b999/?folder_id=670

Summary of Listening Session #2

Listening Session #2 was a three-hour workshop broken down into two main agenda topics:

- Update and refinement of the issues, needs, and wants of the Chino Basin stakeholders (individual breakout activity)
- Development of draft goals for the 2020 OBMP Update (group breakout session)

Update and refinement of the Issues, Needs, and Wants of the Chino Basin Stakeholders

As described in the OBMP White Paper, the issues, needs and wants of the stakeholders form the basis of the management goals of the 2020 OBMP Update and inform the identification of impediments to the goals and action items to remove the impediments. The issues, needs and wants were first discussed in Listening Session #1: the listening session attendees articulated the issues, needs, and wants of their associated party in writing and then verbally shared with the full group. Following Listening Session #1, the 167 individual issues, needs and wants provided by the attendees were transcribed by Watermaster staff and then combined into a list of 55 unique needs and wants. The needs and wants were then reviewed and categorized into nine classes of basin management issues:

- Reductions in Chino Basin Safe Yield
- Inability to pump groundwater with existing infrastructure
- Increased cost of groundwater use
- Chino Basin water quality degradation
- Recycled water quality degradation
- Increased cost of Basin Plan compliance
- Reduced recycled water availability and increased cost
- Reduced imported water availability and increased cost
- Other

A draft matrix was then developed to show attribution of the needs and wants by party/stakeholder. This matrix was circulated for review, editing, and comment as part of the *Listening Session #1 Memorandum*.

The OBMP Update Team gave a presentation to explain the process to develop the draft matrix and explained that the next step is to identify the needs and wants that are common to most stakeholders. These common needs and wants will serve as the starting point for defining goals for the 2020 OBMP Update. Following the presentation, the participants at Listening Session #2 were asked to circulate the room to review poster-sized versions of the matrix to: (1) confirm that attribution for their party's needs and wants were appropriately assigned, (2) revise the needs and want statements as needed to accurately describe their needs and wants, and (3) add their party's attribution to the needs and wants identified by others. Members participating by phone were asked to email their comments and input.

Table 1 (attached) is the revised matrix of the issues, needs and wants of the Chino Basin Stakeholders, inclusive of all feedback provided by stakeholders prior to, during, and following Listening Session #2. Additional edits to the matrix can be submitted via email to Edgar Tellez-Foster (etellezfoster@cbwm.org).

Discussion of Goals for the 2020 OBMP Update

The OBMP Update Team provided an overview of the goals of the 2000 OBMP, which were:

1. **Enhance Basin Water Supplies**
2. **Protect and Enhance Water Quality**
3. **Enhance Management of the Basin**

4. *Equitably Finance the OBMP*

These goals were based on the then-current issues, needs and wants of the Chino Basin stakeholders and included associated activities that would be needed to achieve the goals. Using a similar transparent process as is being employed now for the 2020 OMPU Update, the stakeholders defined the impediments to the goals and activities and the specific actions required to remove the impediments and achieve the goals. The actions were formed into the 2000 OBMP implementation plan.

During Listening Session #2, a group breakout session was held to obtain input on defining goals for the 2020 OBMP Update based on the issues, needs, and wants of the stakeholders. The meeting attendees were divided into six groups. Each group was assigned to one or multiple of the nine “basin management issues” and their associated needs and wants. Each group was asked to:

1. Identify the needs and wants that are common to most stakeholders.
2. Define one or more goals or activities for the 2020 OBMP Update to address the most common needs and wants.

Following the group breakout session, one member from each group reported on the group’s discussions and ideas for goals and activities. Table 2 (attached) lists the stakeholder input presented by the breakout groups for goals and activities, categorized by basin management issues.

Proposed Goals for the 2020 OBMP Update

The feedback and input provided by the stakeholders during Listening Session #2 was used by The OBMP Update Team to develop proposed goals and their associated activities for the 2020 OBMP Update for review and discussion at Listening Session #3. The process followed to develop the proposed goals and activities included:

- An assessment of alignment of the stakeholder input in Tables 1 and 2 with the goals of the 2000 OBMP.
- An assessment of alignment of the basin management goals and activities in Table 2 with the needs and wants in Table 1.

The stakeholder input shown in Tables 1 and 2 indicates that the 2000 OBMP goals are still relevant today. To illustrate, Tables 1 and 2 each contain a column entitled “Alignment with 2000 OBMP Goal(s).” In both tables, the column indicates which of the four goals from the 2000 OBMP is in alignment with each line item of input provided, if applicable. Every need and want listed in Table 1 can be addressed through activities that are consistent with the 2000 OBMP goals. And, every activity described in Table 2 is in alignment with one or more of the 2000 OBMP goals. For this reason, we recommend that the goals for the 2020 OBMP Update are the same as the goals for the 2000 OBMP. While we propose that the goals for the 2020 OBMP Update are unchanged, the activities and implementation plan defined in 2000 need to be refined for the 2020 OBMP Update.

Our assessment of the stakeholder input for basin management goals and activities in Table 2 indicates that most of the issues, needs and wants described in Table 1 would be addressed by the activities. To illustrate, a column entitled “Addressed by Activities in Table 2” was added to Table 1. This column indicates which of the 17 activities listed in Table 2 have the potential to address each need and want. There are seven needs and wants in Table 1 that may not be addressed by the activities in Table 2 – additional activities may need to be considered to address these needs.

Based on our assessment, we propose the following set of goals and associated activities for the 2020 OBMP Update. For each goal, the following information is described: a statement of intent (relevant to

2000 and 2020), what has been accomplished to achieve the goal during the last 19 years of OBMP implementation, and a list of the proposed new or modified activities for to achieve the goals. The list of activities is based on the input in Table 2 (the number in parentheses following the activity description matches with the identification number shown in the first column the stakeholder input in Table 2).

Goal No. 1 - Enhance Basin Water Supplies. The intent of this goal is to increase available water supplies for all the stakeholders that rely on the Chino Basin and to improve supply reliability. This goal applies to Chino Basin groundwater, to other sources of water available to the OBMP stakeholders, and to the optimized use of Chino Basin storage to regulate the variability of the available water supplies and improve supply reliability.

Since the implementation of the 2000 OBMP, Watermaster and the OBMP stakeholders have completed or are currently implementing the following activities that enhance basin water supplies:

- constructed recharge projects to offset the stormwater recharge lost due to channel lining, increase Safe Yield, and ensure that there will be enough supplemental water recharge capacity to satisfy replenishment obligations;
- expanded the recharge and direct reuse of recycled water;
- constructed the Chino Basin desalters to recover contaminated groundwater in the southern part of the basin and to maintain the Safe Yield that would have otherwise been reduced due to the land use transition from agricultural to urban uses;
- recalculated the Safe Yield for the period 2011 through 2020; and
- started the process to recalculate the Safe Yield for 2021 through 2030.

The proposed new or modified activities to enhance basin water supplies to address the issues, needs and wants identified by the stakeholders in Listening Sessions 1 and 2 are based on the input in Table 2 and include:

- Construct new recharge facilities to increase the capacity for stormwater and recycled water recharge and provide recharge capacity in areas of the basin necessary to ensure long-term balance of recharge and discharge (1, 4 and 9).
- Develop and implement storage-and-recovery programs to increase water supply reliability, increase Safe Yield, and improve water quality (1, 2 and 3).
- Develop and implement regional conveyance and treatment programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence (7, 12 and 13).
- Maximize the reuse of recycled water produced by IEUA and others (10 and 11).

Goal No. 2 - Protect and Enhance Water Quality. The intent of this goal is to ensure the protection of the long-term beneficial uses of Chino Basin groundwater.

Since the implementation of the 2000 OBMP, Watermaster and the OBMP stakeholders have completed or are currently implementing the following activities to protect and enhance water quality:

- initiated a comprehensive basin-wide water-quality monitoring program;
- collaborated with the Regional Board in its efforts to facilitate the cleanup of groundwater contamination in the basin;
- developed an innovative salt and nutrient management plan to enable the use of recycled water that reduced treatment requirements without adversely impacting beneficial uses;
- constructed and operated the Chino Basin desalters to recover high-TDS and high-nitrate groundwater in the southern part of the basin and put it to beneficial use;

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- identified opportunities to use the Chino Basin desalters to assist in the remediation of the Chino Airport and South Archibald plumes; and
- constructed new recharge facilities to enhance the recharge of high-quality storm and imported waters.

The proposed new or modified activities to protect and enhance water quality to address the issues, needs and wants identified by the stakeholders in Listening Sessions 1 and 2 are based on the input in Table 2 and include:

- Develop a water-quality management plan to address current and future water-quality issues and ensure the protection of beneficial uses, now and into the future (5).
- Develop strategic regulatory-compliance solutions that achieve multiple benefits in managing water quality (6).

Goal No. 3 - Enhance Management of the Basin. The intent of this goal is to encourage stable, creative, sustainable and fair water-resources management for broad mutual benefit to all stakeholders and avoid undesirable results.

Since the implementation of the 2000 OBMP, Watermaster and the OBMP stakeholders have completed or are currently implementing the following activities to enhance management of the basin:

- initiated a comprehensive basin-wide monitoring program for groundwater levels, recharge and land subsidence;
- developed a subsidence management plan to minimize or abate the occurrence of land subsidence and ground fissuring;
- implemented the OBMP storage management plan and more recently initiated the process to update it;
- developed methods to estimate storage losses;
- entered into the Dry-Year Yield program with Metropolitan; and
- became eligible for a \$207 million grant to develop and implement a storage and recovery program.

The proposed new or modified activities to enhance management of the basin to address the issues, needs and wants identified by the stakeholders in Listening Sessions 1 and 2 are based on the input in Table 2 and include:

- Develop and implement storage-and-recovery programs that increase Safe Yield, improve water quality, and provide increased water supply reliability (1, 2, 3).
- Optimize the use of all sources of water supply by developing the ability to move water across the basin and between stakeholders (8 and 12).

Goal No. 4 - Equitably Finance the OBMP. The intent of this goal is to identify and use efficient and equitable methods to fund OBMP implementation.

Since 2000, Watermaster and the OBMP stakeholders have completed or are currently implementing the following activities to equitably finance the OBMP:

- completed the Peace Agreement, Peace II Agreement, and other agreements to provide incentives and funding plans to construct and operate the Chino Basin desalters and recharge improvements;

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- entered into an agreement with Metropolitan for a Dry-Year Yield Program to store imported water and provided funding for the construction of new wells and wellhead treatment to produce degraded water when Metropolitan made a call for the water in storage; and
- obtained low-interest loans and grants to construct groundwater treatment, recycled water treatment, conveyance, and recharge facilities to enable the cost-efficient implementation of the OBMP.

The proposed new or modified activities to equitably finance the OBMP to address the issues, needs and wants identified by the stakeholders in Listening Sessions 1 and 2 are based on the input in Table 2 and include:

- Develop an equitable distribution of costs/benefits of the OBMP Update and include in the OBMP update agreements (14).
- Develop regional partnerships to implement the OBMP Update and reduce costs and include in OBMP Update agreement (16).
- Continue to identify and pursue low-interest loans and grants to support the implementation of the OBMP Update. An example of such an effort is the Chino Basin Project (15).

Next Steps

The next steps in the process to develop the 2020 OBMP Update are:

1. Obtain feedback on the proposal that the goals of the 2020 OBMP Update are the same goals defined in the 2000 OBMP but that continued progress toward these goals requires consideration of new or modified activities in an updated OBMP implementation plan.
2. For each goal, obtain feedback on the proposed list of activities for consideration in the development of the 2020 OBMP Update implementation plan.
3. Identify and describe the impediments to implementing the activities and achieving the goals.
4. Develop an initial set of actions to remove the impediments, including reconnaissance-level cost estimates, for consideration by the stakeholders.

Recommended Preparation for Listening Session #3

1. Review Table 1 and confirm that the feedback you provided at Listening Session #2 was accurately captured in the issues, needs and wants matrix. Please send any edits to Edgar Tellez-Foster (etellezfoster@cbwm.org).
2. Review the assessments of the nexus of the 2000 OBMP Goals with the needs and wants and activities in Tables 1 and 2; and the nexus of the activities in Table 2 to the needs and wants in Table 1. Be prepared to provide feedback (e.g. do the activities in Table 2 address all of the needs and wants? Are there any activities that could be added to the activities in Table 2?).
3. Review the proposed goal statements and associated new/modified activities for the 2020 OBMP Update. Be prepared to provide your feedback on these goals and activities. The intent is to (i) finalize the goals and (ii) have a complete list of potential new or modified activities for consideration as part the 2020 OBMP Update implementation plan.
4. Be prepared to identify impediments to implementing the goals and their associated activities.

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Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

*The number in this column matches with the identification number of the stakeholder input in Table 2 (first column)

Needs and Wants Categorized by Basin Management Issues	Pool Parties												Overlying Non-Ag	Others					Addressed by Activities in Table 2*	Alignment with 2000 OBMP Goals					
	Appropriative									Agricultural				IEUA	TVMWD	WMWD	Metropolitan	CBWCD			CDA				
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy										State of CA			
Reductions in Chino Basin Safe Yield																									
Develop a storage management plan to optimize the use of unused storage space in the basin, avoid undesirable results, and encourage storage and recovery programs	●	●		●	●			●	●	●	●	●	●	●	●	●	●						1, 2	1, 2, 3	
Design storage management and storage & recovery programs that maintain or enhance safe yield	●	●						●	●	●			●		●	●	●						2, 3	1, 3	
Maintain or enhance the safe yield of the basin without causing undesirable results	●	●		●	●			●	●	●	●			●	●	●	●						2, 3	1, 3	
Manage the basin safe yield for the long-term viability and reliability of groundwater supply	●	●						●	●	●	●		●		●	●	●						2, 3	1, 3	
Reassess the frequency of the safe yield recalculation	●				●											●							2, 3	3	
Continue to model and track safe yield, but utilize other management strategies to address a decline.																●							2, 3	1, 3	
Develop recharge programs that maintain or enhance safe yield	●	●					●	●	●	●				●	●	●	●						3, 4, 9	1, 3	
Develop more facilities to capture, store, and recharge water	●	●					●			●	●			●	●	●							4, 9	1, 2	
Enhance recharge in northeast MZ-3	●		●						●						●								4, 9	1, 3	
Maximize use of existing recharge facilities	●	●							●	●													4, 9	3	
Establish incentives to encourage recharge of high-quality imported water	●		●																				1, 4, 9	2, 3	
Develop an OBMP Update that is consistent with the Physical Solution and allows access to the basin for users to meet their requirements	●	●				●		●																3	
Engage with regional water management planning efforts in the Upper Santa Ana River Watershed that have the potential to impact Chino Basin operations or safe yield	●													●	●		●							3	

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	Appropriative									Agricultural			IEUA	TVMWD	WMWD	Metropolitan	CBWCD			CDA	
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops										Dairy
Inability to Pump Groundwater with Existing Infrastructure																					
Pursue collaborative, regional partnerships to implement regional solutions to water management challenges	●			●	●		●							●	●	●	●	●	●	6, 7, 12, 13, 16	3
Ensure that sufficient, reliable water supplies will be available to meet current and future water demands	●	●	●	●			●	●	●	●				●	●	●	●	●		7, 9, 12, 13	1, 3
Develop conjunctive use agreements that provide certainty in the ability to perform during put and take years by clearly defining facilities/infrastructure and operating plans, and that leverage the lessons learned from obstacles encountered during the implementation of the current Dry Year Yield program	●						●		●					●		●				1, 2	1, 2, 3
Develop management strategies that enable the parties to produce or leverage their respective water rights that may be impacted by physical basin challenges like land subsidence or water quality	●						●	●						●		●				1, 2, 8, 13	3
Design storage management and storage & recovery programs to raise funding to build infrastructure	●			●										●		●				1, 15	3, 4
Develop process to support/facilitate project implementation	●																				4
Design subsidence management plans to allow flexibility in the location and volume of groundwater production in MZ-1 and MZ-2	●						●	●		●				●	●						3

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	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops										Dairy
<i>Increased Cost of Groundwater Use</i>																					
Seek supplemental financial resources to support the implementation of the OBMP Update	●	●		●			●	●	●						●	●	●	●	15, 16	4	
Develop regional partnerships to help reduce costs	●			●			●		●						●	●	●		●	15, 16	4
Monetize agencies' unused water rights for equitable balance of basin assets			●																	15, 16	4
Decrease Watermaster assessment costs	●				●			●												15, 16	4
Support to develop a justification for increases in water rates and developer fees to invest in needed water infrastructure	●	●							●								●			14, 15	
Develop an equitable distribution of costs/benefits of the OBMP	●	●		●		●	●	●	●	●				●	●					14	4
Watermaster assessments for implementation of the OBMP should be allocated based on benefits received	●				●															14	4
Continue or enhance incentives to pump groundwater from the Chino Basin			●																	1, 2, 12	3, 4
Improve flexibility for parties to execute water rights transfers													●								4

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	Appropriative									Agricultural			IEUA	TVMWD	WMWD	Metropolitan	CBWCD			CDA
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops									
Chino Basin Water Quality Degradation																				
Develop a water quality management plan to ensure ability to produce groundwater rights	●	●		●			●	●	●	●				●	●	●	●	5, 6	2, 3	
Develop regional infrastructure to address water quality contamination and treatment				●	●			●										5, 6	2	
Plan for and be prepared for new drinking water quality regulations that may result in an increase in groundwater treatment and costs	●	●	●	●			●	●	●	●				●		●		5, 6	2	
Be more proactive and engaged in the process to develop new drinking water quality regulations								●										5, 6	2	
Recycled Water Quality Degradation																				
Maintain compliance with recycled water and dilution requirements pursuant to the Chino Basin groundwater recharge permit		●					●		●	●				●	●			1, 6, 9	2	
Increased Cost of Basin Plan Compliance																				
Develop management strategy to ensure sufficient supplies to blend with recycled water and comply with Salt and Nutrient Management Plan	●	●									●			●	●			1, 6, 9	2	
Perform the minimum amount of monitoring/reporting that is required for basin management and regulatory compliance	●			●			●	●											3, 4	

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	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops										Dairy	State of CA				
Reduced Recycled Water Availability and Increased Cost																										
Fully utilize IEUA recycled water resources		●		●			●	●		●					●							10	1			
Maximize the use of recycled water for direct use or recharge	●	●		●			●	●	●	●					●							10, 11	1			
Evaluate the potential for direct potable reuse of recycled water	●								●						●							10, 11	1			
Develop alternative management strategies to comply with the recycled water discharge obligations to the Santa Ana River	●	●		●			●	●		●					●		●					10, 11	1, 3			
Utilize non-IEUA sources of recycled water that are not being put to beneficial use	●	●					●	●	●	●					●		●					11	1			
Other																										
Coordinate timing of agreements, grants, etc. to ensure implementation of the OBMP Update	●							●	●	●					●	●	●					17				
Improve communication between the parties	●			●										●	●		●					17				
Educate elected officials and decision makers on the need and urgency to address the water management challenges	●	●							●						●	●	●					17				
Consider a long-term planning horizon of up to 50 years	●								●	●					●								3			

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Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

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Needs and Wants Categorized by Basin Management Issues	Pool Parties											Overlying Non-Ag	Others					Addressed by Activities in Table 2*	Alignment with 2000 OBMP Goals							
	Appropriative									Agricultural			IEUA	TVMWD	WMWD	Metropolitan	CBWCD			CDA						
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops										Dairy	State of CA				
Reduced Imported Water Availability and Increased Cost																										
Ensure that there is a reliable local water supply to replace imported water during shut down of imported water delivery infrastructure for maintenance and longer-term emergency outages	●	●	●	●			●	●	●	●					●	●	●	●				7, 12, 13	1, 3			
Identify and utilize new sources of supplemental water	●	●		●			●	●	●	●					●	●	●					7, 8, 11, 13	1, 3			
Construct inter-basin and intra-basin connections for the benefit of regional water supply and conjunctive use	●	●		●			●	●	●		●				●	●	●	●				7, 8	1, 3			
Understand how imported water reliability from Metropolitan Water District will be affected with and without the California Water Fix	●								●						●	●	●					8, 13, 16	1, 3			
Develop management strategies that ensure parties will meet future desalter replenishment obligation and have the money to fund it	●	●		●			●		●								●			●		8, 13, 14	3			
Increase water-supply reliability at the lowest possible cost	●			●			●	●			●			●	●		●					8, 9, 13, 14	3			
Need a better understanding of the water management plans of the Parties to be able to better plan for imported water needs and to assure reliability of Metropolitan Water District water supply	●			●					●		●				●	●	●	●				8, 9, 13	3			
Analyze water management scenarios that plan for unexpected challenges and emergencies	●								●	●					●	●	●					8, 9, 13	3			
Ensure that sufficient supplemental water supplies will be available to meet future replenishment requirements							●		●		●			?	●					●		7, 8, 9, 13	1, 3			
Despite the best efforts of the Parties to decrease reliance on imported water, the cost of the total water supply continues to increase	●																					7, 8, 9, 15, 16	3			
Use more recycled water for replenishment obligation	●			●			●		●								●					10,11	3			
Continue to build collaborative programs between the Metropolitan Water District and Chino Basin	●						●	●	●						●		●	●				13, 16	3			

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Table 2
Stakeholder Input on Goals and Activities for the 2020 OBMP Update

Stakeholder Input by Basin Management Issue		Alignment with 2000 OBMP Goal(s)*
Reductions in Chino Basin Safe Yield		
1	Design storage and recovery programs that augment safe yield, improve water quality and enhance recharge	1, 2, 3
2	Optimize management of groundwater storage to enhance/protect safe yield	1, 3
3	Increase safe yield [by 10,000 af by 2030]	1
4	Capture and store all permitted water [by 2040]	1, 2
Chino Basin Water Quality Degradation		
5	Develop a water quality management plan [to address current and future water quality issues] to ensure ability to produce high-quality groundwater [by 2022]. (high quality = readily useable)	2
6	Develop strategic compliance solutions that achieve multiple benefits in managing water quality (OBMP Update, Built in)	2, 3
Reduced Imported Water Availability and Cost		
7	Increase wet-water supplies to meet parties' demands without the need of imported water from Metropolitan	1, 3
8	Optimize [efficient] use of all water supplies sources, with ability to move water across basins/amongst stakeholders	1, 3
9	Enhance ability to capture and store water when it is available [enough to satisfy imported water demands for 3 years (100 - 200k af)]	1, 2
Reduced Recycled Water Availability and Increased Cost		
10	Put 100% of IEUA recycled water to beneficial use in the Chino Basin [x% by 2025; x% by 2030]	1
11	Utilize available non-IEUA sources of recycled water for beneficial use in the Chino Basin [8,000 afy by 2025]	1
Inability to Pump Groundwater with Existing Infrastructure		
12	Leverage existing local infrastructure for the benefit of the region	3
13	Ensure sufficient, reliable water supplies (local, regional, imported) to meet future water demands, without MPI	1, 3
Increased Cost of Groundwater Use		
14	Develop an equitable distribution of costs/benefits of the OBMP and include in the OBMP Update agreements	4
15	Develop a plan to obtain supplemental financial resources to support the implementation of the OBMP Update	4
16	Develop regional partnerships to implement the OBMP Update and reduce costs -- (The "O" in OBMP); include in the OBMP update agreement	3, 4
Other		
17	Approve OBMP update with full support from all stakeholders and elected officials by June 2020	

*The 2000 OBMP Goals are:

- (1) - Enhance basin water supplies
- (2) - Protect and enhance water quality
- (3) - Enhance management of the basin
- (4) - Equitably finance the OBMP



Appendix C

To: Chino Basin Watermaster Stakeholders
From: Watermaster 2020 OBMP Update Team
Subject: 2020 OBMP Update -- Listening Session #3 Memorandum
Date: May 9, 2019

The objectives of this memorandum are to summarize the information provided by the stakeholders during Listening Session #3 and provide information that will assist the stakeholders in reviewing the work products of Listening Session #3 and preparing for Listening Session #4.

Background

During 1998-2000, the Chino Basin Watermaster (Watermaster) conducted a process to develop the Chino Basin Optimum Basin Management Program (OBMP). The OBMP was developed in a collaborative public process that identified the needs and wants of all stakeholders; described the physical state of the groundwater basin; developed a set of management goals; identified impediments to those goals; described a series of actions that could be taken to remove those impediments and achieve the management goals; developed and executed agreements to implement the OBMP; and certified a programmatic Environmental Impact Report (PEIR) pursuant to CEQA.

By 2019, many of the projects and management programs envisioned in the 2000 OBMP have been implemented, while some have not. The understanding of the hydrology and hydrogeology of the Chino Basin has improved since 2000, and new water-management issues have been identified that necessitate that the OBMP be updated to protect the collective interests of the Chino Basin stakeholders and their water supply reliability. For these reasons, the Watermaster parties are updating the 2000 OBMP (2020 OBMP Update) to set the framework for the next 20 to 30 years of basin-management activities.

The 2020 OBMP Update is being conducted using a collaborative process like that employed for the development of the 2000 OBMP. A description of the development of the 2000 OBMP and the rationale for and process to prepare the 2020 OBMP Update is included in a white paper prepared for the Chino Basin stakeholders: *White Paper – 2020 Update to Chino Basin Optimum Basin Management Program* (OBMP White Paper). The OBMP White Paper, and all documents relevant to the 2020 OBMP Update, are available on the [Watermaster's ftp site](#).¹

A series of public listening sessions are being held by the Watermaster throughout 2019 to support the 2020 OBMP Update. The purpose of the listening sessions is to obtain information, ideas, and feedback from the Chino Basin stakeholders to define their collective goals, the impediments to achieving the goals, the management actions required to remove the impediments, and an implementation plan for the management actions. Watermaster staff is providing key information prior to and during each listening session to enable the stakeholders to provide their input on each topic discussed. The objective is for the ideas and opinions of every stakeholder to be heard. Participation in the listening sessions is critical to the development of the 2020 OBMP Update.

Watermaster held Listening Session #3 on March 21, 2019. Prior to Listening Session #3, the *Listening Session #2 Memorandum* was distributed which summarized: the feedback received during Listening Session #2, how the feedback will be used for 2020 OBMP Update, and the recommended preparation for Listening Session #3. The PowerPoint presentation given at the meeting is available on the [Watermaster's ftp site](#).¹

¹ https://cbwm.syncedtool.com/shares/folder/9abb162877b999/?folder_id=670

Summary of Listening Session #3

Listening Session #3 was a three-hour workshop broken down into two main agenda topics:

- Discussion and feedback on the observation that the 2020 OBMP Update goals are the same as the 2000 OBMP goals
- Update and refinement of the types of activities that will be considered for inclusion in the 2020 OBMP Update

2020 OBMP goals

As discussed in the *Listening Session #2 Memorandum*, the stakeholder input provided in Listening Sessions #1 and #2 indicated that the goals defined in the 2000 OBMP are still relevant today. Based on the assessment of stakeholder input, the 2020 OBMP Update Team proposed maintaining the 2000 OBMP goals in the 2020 OBMP Update and drafted a statement of intent for each goal. During Listening Session #3, the 2020 OBMP Update Team gave a presentation to explain how the stakeholder input was used to conclude the goals remain the same and explained that the next step was to obtain feedback on these recommended goals and intents. The goals and intents presented during Listening Session #3 were:

Goal No. 1 - Enhance Basin Water Supplies. The intent of this goal is to increase available water supplies for all the stakeholders that rely on the Chino Basin and to improve supply reliability.

This goal applies to Chino Basin groundwater, to other sources of water available to the OBMP stakeholders, and to the optimized use of Chino Basin storage to regulate the variability of the available water supplies and improve supply reliability.

Goal No. 2 - Protect and Enhance Water Quality. The intent of this goal is to ensure the protection of the long-term beneficial uses of Chino Basin groundwater.

Goal No. 3 - Enhance Management of the Basin. The intent of this goal is to encourage stable, creative, sustainable and fair water resources management for broad mutual benefit to all stakeholders and avoidance of undesirable results.

Goal No. 4 - Equitably Finance the OBMP. The intent of this goal is to identify and use efficient and equitable methods to fund OBMP implementation.

Following the presentation, the participants at Listening Session #3 participated in a live web-supported survey on the goals and their intents. There was a total of five questions on the survey. For each of the four goals, the participants were presented the following question and multiple-choice answers:

Do you think this goal is still relevant?

- A) Yes B) Yes, with modifications C) No D) I don't understand this activity

The fifth survey question asked:

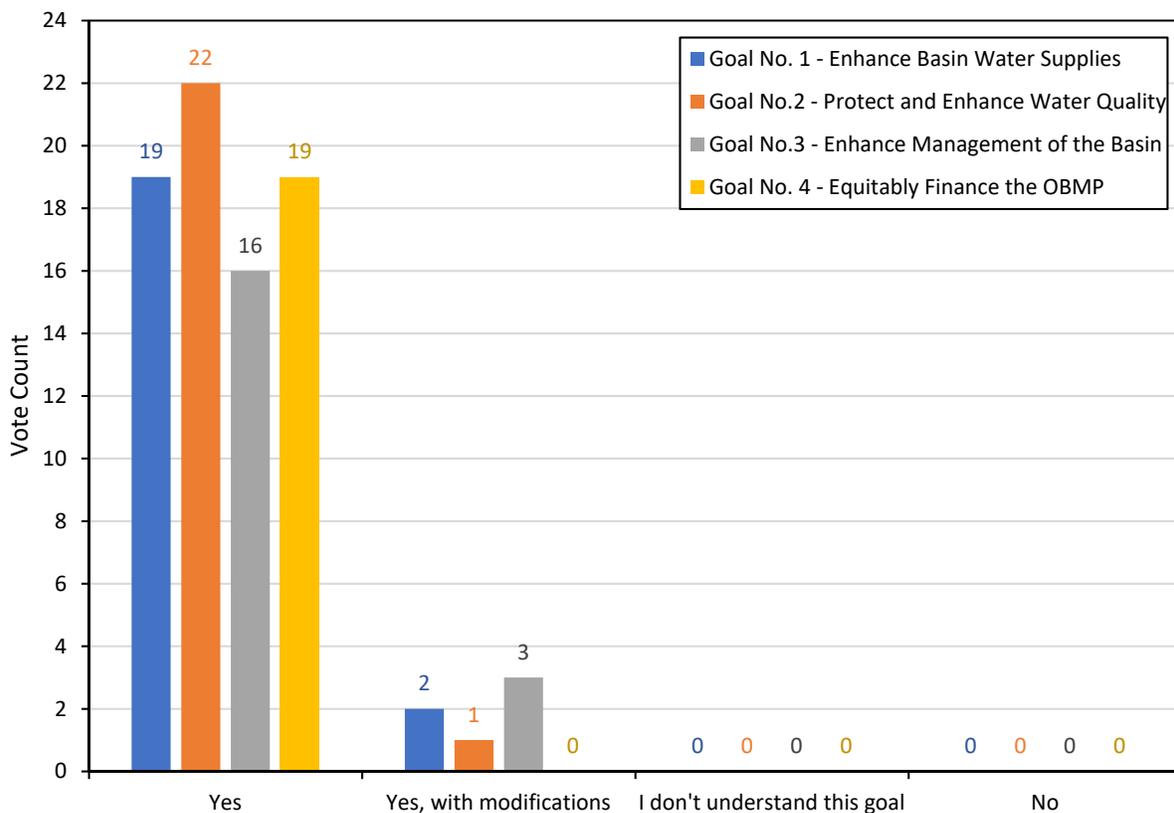
Are there more goals that should be added?

- A) Yes B) No

Survey Results

The results of the survey for the first four questions are shown in the bar chart below.

Results of Goals Survey -- Do you think this goal is still relevant?



As shown in the chart, all survey respondents indicated that the goals are still relevant today, and some respondents thought that Goals No. 1, 2 and 3 were still relevant but should be modified. The latter respondents were asked to explain their suggested modifications, resulting in a group discussion on the goal, the intent statement, and the respondents' concern. A summary of the discussion for each goal is summarized below:

Goal No. 1 - Enhance Basin Water Supplies. The meeting participants that spoke about potential modifications to Goal No. 1 voiced the following suggestions/concerns/questions:

- The goal could be construed as Watermaster attempting to manage water supplies outside Chino Basin groundwater, and therefore acting outside its purview.

Following explanation by two participants as to the consistency of the Watermaster's role in enhancing water supplies in the context of the Judgment and the 2000 OBMP, Watermaster legal counsel explained that Watermaster is responsible for ensuring that (1) the parties are able to meet their demands using Chino Basin groundwater and (2) sufficient water is available for replenishment if these demands result in overproduction; therefore, it is within Watermaster's purview to enhance water supplies outside Chino Basin groundwater. Another participant indicated that the implementation agreement will identify roles and responsibilities for implementing the OBMP activities and that through this agreement it could/will be made clear that Watermaster is not taking on a role that is beyond its purview.

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- Should storage be listed as source of supply in the intent goal? It seems management of storage is a function of Goal No. 3.

There was no discussion about this question. Upon reflection and review of the 2000 OBMP, the OBMP Update Team agreed that storage was best highlighted as part of Goal No. 3 for consistency with the 2000 OBMP.

Goal No. 2 - Protect and Enhance Water Quality. The meeting participants who spoke about potential modifications to Goal No. 2 voiced the following suggestions/concerns/questions:

- Should the word “enhance” be added to the intent statement?

During the discussion, participants who spoke indicated that “enhance” was already explicitly used in the goal statement and it did not need to be added to the intent.

Goal No. 3 - Enhance Management of the Basin. The meeting participants who spoke about potential modifications to Goal No. 3 voiced the following suggestions/concerns/questions:

- The descriptors used in the intent statement, such as “fair” and “broad mutual benefit” were unclear and unnecessary.

During the discussion, the participants who spoke suggested: that words with imprecise meaning should not be used; that keeping the goals broader in scope by removing these qualifiers is the best approach; and that the specificity of “benefits” will be addressed in the activities or implementation plans.

Goal No. 4 - Equitably Finance the OBMP. The meeting participants who spoke about potential modifications to Goal No. 4 voiced the following suggestions/concerns/questions:

- Are the terms “efficient” and “equitable” in the intent statement at odds with each other? What is the definition of efficient?

The OBMP Update Team explained that an example of “efficient” method to fund OBMP implementation is partnering with IEUA to obtain grant funding to implement projects, and that this was done successfully in implementing the 2000 OBMP.

Consideration of Additional OBMP Goals. For the survey question regarding addition of new goals for the 2020 OBMP Update, two out of 19 survey respondents voted “Yes.” The meeting participants who spoke offered the following input:

- Should we consider integrating the Sustainable Groundwater Management Act (SGMA) regulations with the 2020 OBMP Update goals?

During the discussion, the participants who spoke suggested that Goal No. 3 is encompassing of the SGMA regulations, but that it may be helpful to include language about “maintaining local control” of the groundwater basin in the intent of Goal No. 3.

- Should there be a goal related to regional collaboration?

During the discussion, the participants who spoke pointed out that regional collaboration is implied within Goals No. 1 and No. 3, so a separate goal is not needed.

- Participants also provided additional thoughts that should be considered by the stakeholders in the development of the 2020 OBMP Update, but not explicitly written as goals or intents of goals:

- The OBMP Update activities should ensure Watermaster's engagement on issues related to the Santa Ana River, which is a significant source of supply to the Basin.
- The participants should strive for collaboration and openness to avoid conflict.

Recommended 2020 OBMP Update goals

Based on the feedback from the goals survey during Listening Session #3, the recommended 2020 OBMP Update goals and intents are:

Goal No. 1 - Enhance Basin Water Supplies. The intent of this goal is to increase the water supplies available for Chino Basin parties and improve water supply reliability. This goal applies to Chino Basin groundwater and all other sources of water available for beneficial use.

Goal No.2 - Protect and Enhance Water Quality. The intent of this goal is to ensure the protection of the long-term beneficial uses of Chino Basin groundwater.

Goal No.3 - Enhance Management of the Basin. The intent of this goal is to encourage sustainable management of the Chino Basin to avoid material physical injury, promote local control, and improve water-supply reliability for the benefit of all Chino Basin parties.

Goal No. 4 - Equitably Finance the OBMP. The intent of this goal is to identify and use efficient and equitable methods to fund OBMP implementation.

2020 OBMP Update activities

During Listening Session #3, the meeting attendees participated in a breakout activity to review and provide feedback on the list of 10 new and revised activities for potential inclusion in the 2020 OBMP Update. The activities are shown in Table 2b, attached. These activities are based on the input provided by breakout groups during Listening Session #2, as documented in the Listening Session #2 memo. The Listening Session #3 participants were divided into six groups and each group was asked to:

1. Review a subset of the 10 activities (A through J) and suggest modifications to better address the needs and wants of the Chino Basin stakeholders, if necessary.
2. Review a subset of the issues, needs and wants (INWs) of the Chino Basin stakeholders to assess which of the ten activities address each need and want, and if any are not addressed by the activities, to suggest additional activities for consideration in the 2020 OBMP Update.

Table 1 shows the participants' assessment of which activities address each INW. Two new activities were defined by one of the breakout groups:

- K. Develop a management strategy within the Salt and Nutrient Management Plan to ensure ability to comply with dilution requirements for recycled water recharge.
- L. Perform the appropriate amount of monitoring and reporting required for basin management and regulatory compliance.

The 2020 OBMP Update Team compiled the feedback from the breakout session and revised the list of activities for consideration in the 2020 OBMP Update. The revised list of activities was distributed to the Chino Basin stakeholders in the form of a survey to obtain additional feedback. The results of the survey and the complete list of activities is described below.

Follow-up survey on 2020 OBMP activities

The objective of this survey was to obtain feedback on the revised list of activities for consideration in the 2020 OBMP Update. For each activity, the survey asked:

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(1) Do you think this activity should be considered for inclusion in the 2020 OBMP Update?

A) Yes B) Yes, with modifications C) No D) I don't understand this activity

(2) If you answered C or D, please explain

Based on the feedback from the survey as of May 3, 2019, six out of six survey respondents answered "A) Yes" for all activities except Activity F: *Develop strategic regulatory-compliance solutions that achieve multiple benefits in managing water quality.*

For Activity F, five out of six survey respondents thought that it should be included in the 2020 OBMP Update, and one participant responded that they did not understand the meaning of "strategic regulatory compliance solution." Based on the input provided by the parties, the 2020 OBMP Update Team's understanding of the scope of Activity F is to develop solutions to comply with evolving and more stringent drinking-water standards. Specifically, that the 2020 OBMP Update should explore regional, collaborative solutions that have the potential to address multiple water-quality and water-supply issues.

Based on the feedback from the survey as of May 3, 2019, the recommended list of activities is:

- A. Construct new facilities and improve existing facilities to increase the capacity to store and recharge surface water, particularly in areas of the basin that will promote the long-term balance of recharge and discharge
- B. Develop, implement, and optimize storage-and-recovery programs to increase water-supply reliability, protect or enhance Safe Yield, and improve water quality
- C. Identify and implement regional conveyance and treatment projects/programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence
- D. Maximize the reuse of recycled water produced by IEUA and others
- E. Develop and implement a water-quality management plan to address current and future water-quality issues and protect beneficial uses
- F. Develop strategic regulatory-compliance solutions that achieve multiple benefits in managing water quality
- G. Optimize the use of all sources of water supply by improving the ability to move water across the basin and among stakeholders, prioritizing the use of existing infrastructure
- H. Develop an equitable distribution of costs/benefits of the OBMP Update and include in the OBMP update agreements
- I. Develop regional partnerships to implement the OBMP Update and reduce costs and include in OBMP Update agreement
- J. Continue to identify and pursue low-interest loans and grants or other external funding sources to support the implementation of the OBMP Update. An example of such an effort is the Chino Basin Project
- K. Develop a management strategy within the Salt and Nutrient Management Plan to ensure ability to comply with dilution requirements for recycled water recharge
- L. Perform the appropriate amount of monitoring and reporting required for basin management and regulatory compliance

Nexus between the 2020 OBMP Update goals, their impediments, and the activities recommended for consideration

Thus far through the Listening Session process, the following has been completed:

- Defined the drivers, trends and implications for Basin management that identify the need for the 2020 OBMP Update (see attached Exhibit 1).
- Defined the needs and wants of the Chino Basin stakeholders, categorized by the Basin management issues derived from the drivers and trends analysis (see attached Table 1).
- Defined the goals of the 2020 OBMP Update, which are the same as the goals of the 2000 OBMP (refer to discussion above in this memo).
- Defined a set of activities for consideration in the 2020 OBMP Update that address the common needs and wants of the Chino Basin stakeholders (refer to discussion above in this memo).

There are physical, institutional, and financial impediments to achieving the goals of the 2020 OBMP. The issues, needs, and wants of the stakeholders shown in Table 1 explicitly recognize these impediments to achieving the goals and the stakeholders have identified the activities that could remove these impediments to achieve the goals.

Based on the feedback obtained from Listening Sessions #1 through #3, the 2020 OBMP Update Team drafted an exhibit to show the nexus of all this information. Table 3 lists the goals, the impediments to achieving these goals, the activities to remove the impediments, and the expected outcome or the implications of implementing those activities. Table 3 also shows the nexus of each activity to the Basin management issues defined in Exhibit 1. The statements of impediments and expected outcomes of the activities were developed by the 2020 OBMP Update Team and are based on the feedback obtained from stakeholders over the last three listening sessions.

Next Steps

The next step in the process to develop the 2020 OBMP Update is to (1) define the action plans required to perform the activities and (2) prepare reconnaissance-level engineering cost estimates of the action plans. This information will be documented in a technical memorandum (OBMP Update Technical Memorandum #1 [OBMP TM1]). OBMP TM1 will be circulated for review and subsequently refined and formulated into a recommended implementation plan (OBMP TM2) over a series of listening sessions with the stakeholders. The draft outline of OBMP TM1 and TM2 is attached herein.

Recommended Preparation for Listening Session #4

1. Review Table 3 and be prepared to provide feedback, specifically to suggest any changes or additions to the articulation of the impediments and expected outcomes of the 2020 OBMP Update activities. There will be a breakout session during Listening Session #4 to document all the feedback. The intent is to ensure that the feedback from the stakeholders over the last three Listening Sessions has been captured and is complete enough to prepare OBMP TM1.
2. Review the draft outline of OBMP TM1/TM2. The 2020 OBMP Update Team will provide an overview of the outline at Listening Session #4 and will provide an example of how the activities will be characterized in OBMP TM1.

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Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

*The letter in this column corresponds with the letter ID of the Activities listed in Table 3

Needs and Wants Categorized by Basin Management Issues	Pool Parties												Overlying Non-Ag	Others					Addressed by Activities in Table 3*	Alignment with 2000 OBMP Goals	
	Appropriative									Agricultural											
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy		State of CA	IEUA	TVMWD	WMWD	Metropolitan			CBWCD
Reductions in Chino Basin Safe Yield																					
Develop a storage management plan to optimize the use of unused storage space in the basin, avoid undesirable results, and encourage storage and recovery programs	●	●		●	●			●	●	●	●	●	●		●	●				B, C	1, 2, 3
Design storage management and storage & recovery programs that maintain or enhance safe yield	●	●						●	●	●		●		●		●			●	B, C	1, 3
Maintain or enhance the safe yield of the basin without causing undesirable results	●	●		●	●			●	●	●	●			●		●			●	B, D	1, 3
Manage the basin safe yield for the long-term viability and reliability of groundwater supply	●	●						●	●	●	●		●			●	●		●	A, B, C	1, 3
Reassess the frequency of the safe yield recalculation	●				●											●				I	3
Continue to model and track safe yield, but utilize other management strategies to address a decline.																●				B	1, 3
Develop recharge programs that maintain or enhance safe yield	●	●					●	●	●	●				●		●			●	A, B	1, 3
Develop more facilities to capture, store, and recharge water	●	●					●			●	●			●		●				A, B, D	1, 2
Enhance recharge in northeast MZ-3	●		●						●							●				A, C	1, 3
Maximize use of existing recharge facilities	●	●						●	●	●										A, C, F, G	3
Establish incentives to encourage recharge of high-quality imported water	●		●																	H, I	2, 3
Develop an OBMP Update that is consistent with the Physical Solution and allows access to the basin for users to meet their requirements	●	●				●		●												C, E	3
Engage with regional water management planning efforts in the Upper Santa Ana River Watershed that have the potential to impact Chino Basin operations or safe yield	●													●		●			●	I, D	3

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	Appropriative									Agricultural											
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy		State of CA	IEUA	TVMWD	WMWD	Metropolitan			CBWCD
Inability to Pump Groundwater with Existing Infrastructure																					
Pursue collaborative, regional partnerships to implement regional solutions to water management challenges	●			●	●		●							●	●	●	●	●	●	B, E, F, G, I	3
Ensure that sufficient, reliable water supplies will be available to meet current and future water demands	●	●	●	●			●	●	●	●				●	●	●	●	●		A, B, D, G	1, 3
Develop conjunctive use agreements that provide certainty in the ability to perform during put and take years by clearly defining facilities/infrastructure and operating plans, and that leverage the lessons learned from obstacles encountered during the implementation of the current Dry Year Yield program	●						●	●	●					●		●	●			B, G, I	1, 2, 3
Develop management strategies that enable the parties to produce or leverage their respective water rights that may be impacted by physical basin challenges like land subsidence or water quality	●						●	●						●		●				A, C, D, E, F, G, I	3
Design storage management and storage & recovery programs to raise funding to build infrastructure	●			●										●		●				B, D, I, J	3, 4
Develop process to support/facilitate project implementation	●																			F, H, J	4
Design subsidence management plans to allow flexibility in the location and volume of groundwater production in MZ-1 and MZ-2	●						●	●	●				●	●						A, C, G	3

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Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

*The letter in this column corresponds with the letter ID of the Activities listed in Table 3

Needs and Wants Categorized by Basin Management Issues	Pool Parties												Overlying Non-Ag	Others					Addressed by Activities in Table 3*	Alignment with 2000 OBMP Goals	
	Appropriative									Agricultural											
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy		State of CA	IEUA	TVMWD	WMWD	Metropolitan			CBWCD
<i>Increased Cost of Groundwater Use</i>																					
Seek supplemental financial resources to support the implementation of the OBMP Update	●	●		●			●	●	●	●				●	●			●		D, F, G, I, J	4
Develop regional partnerships to help reduce costs	●			●			●	●	●					●	●	●			●	F, G, I, J	4
Monetize agencies' unused water rights for equitable balance of basin assets			●																	G, H	4
Decrease Watermaster assessment costs	●				●			●												I, J	4
Support to develop a justification for increases in water rates and developer fees to invest in needed water infrastructure	●	●							●							●				F, G, H	
Develop an equitable distribution of costs/benefits of the OBMP	●	●		●		●	●	●	●	●				●	●					H, J	4
Watermaster assessments for implementation of the OBMP should be allocated based on benefits received	●				●															H	4
Continue or enhance incentives to pump groundwater from the Chino Basin			●																	G, I	3, 4
Improve flexibility for parties to execute water rights transfers													●							G, I	4

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Needs and Wants Categorized by Basin Management Issues	Pool Parties													Overlying Non-Ag	Others					Addressed by Activities in Table 3*	Alignment with 2000 OBMP Goals
	Appropriative										Agricultural										
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy	State of CA		IEUA	TVMWD	WMWD	Metropolitan	CBWCD		
Chino Basin Water Quality Degradation																					
Develop a water quality management plan to ensure ability to produce groundwater rights	●	●		●			●	●	●	●				●	●		●	●		E, F, G, J	2, 3
Develop regional infrastructure to address water quality contamination and treatment				●	●		●													A, B, C, E, F, G, I, J	2
Plan for and be prepared for new drinking water quality regulations that may result in an increase in groundwater treatment and costs	●	●	●	●			●	●	●	●				●		●				E, F	2
Be more proactive and engaged in the process to develop new drinking water quality regulations							●													A, B, D, E, G, J	2
Recycled Water Quality Degradation																					
Maintain compliance with recycled water and dilution requirements pursuant to the Chino Basin groundwater recharge permit		●					●	●	●	●				●	●					A, B, D, E, G, J	2
Increased Cost of Basin Plan Compliance																					
Develop management strategy to ensure sufficient supplies to blend with recycled water and comply with Salt and Nutrient Management Plan	●	●												●		●				G, K	2
Perform the minimum amount of monitoring/reporting that is required for basin management and regulatory compliance	●			●			●	●												L	3, 4

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Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

*The letter in this column corresponds with the letter ID of the Activities listed in Table 3

Needs and Wants Categorized by Basin Management Issues	Pool Parties													Overlying Non-Ag	Others					Addressed by Activities in Table 3*	Alignment with 2000 OBMP Goals
	Appropriative										Agricultural										
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy	State of CA		IEUA	TVMWD	WMWD	Metropolitan	CBWCD		
Reduced Recycled Water Availability and Increased Cost																					
Fully utilize IEUA recycled water resources		●		●			●	●		●				●						A, D, E, F, G	1
Maximize the use of recycled water for direct use or recharge	●	●		●			●	●	●	●				●						A, D, E, F, G	1
Evaluate the potential for direct potable reuse of recycled water	●								●					●						D, E, F	1
Develop alternative management strategies to comply with the recycled water discharge obligations to the Santa Ana River	●	●		●			●	●		●				●		●				D, E, F	1, 3
Utilize non-IEUA sources of recycled water that are not being put to beneficial use	●	●					●	●	●	●				●		●				D, E, F	1
Other																					
Coordinate timing of agreements, grants, etc. to ensure implementation of the OBMP Update	●							●	●	●				●	●	●				F, G, H, I, J	
Improve communication between the parties	●			●			●							●		●				F, H, I	
Educate elected officials and decision makers on the need and urgency to address the water management challenges	●	●							●					●	●	●				F, G, H, I, J	
Consider a long-term planning horizon of up to 50 years	●								●	●				●						F, G, H, I, J	3

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Table 1
Issues, Needs and Wants of the Chino Basin Stakeholders

Key: ● Need ● Want/Unspecified

*The letter in this column corresponds with the letter ID of the Activities listed in Table 3

Needs and Wants Categorized by Basin Management Issues	Pool Parties												Overlying Non-Ag	Others					Addressed by Activities in Table 3*	Alignment with 2000 OBMP Goals			
	Appropriative									Agricultural				IEUA	TVMWD	WMWD	Metropolitan	CBWCD			CDA		
	Pomona	Chino	Fontana	CVWD	SAWCO	MVWD	Chino Hills	Upland	JCSD	Ontario	Crops	Dairy										State of CA	
Reduced Imported Water Availability and Increased Cost																							
Ensure that there is a reliable local water supply to replace imported water during shut down of imported water delivery infrastructure for maintenance and longer-term emergency outages	●	●	●	●			●	●	●	●					●	●	●	●			B, C, G	1, 3	
Identify and utilize new sources of supplemental water	●	●		●			●	●	●	●					●	●	●					A, B	1, 3
Construct inter-basin and intra-basin connections for the benefit of regional water supply and conjunctive use	●	●		●			●	●	●		●				●	●	●	●				C, G	1, 3
Understand how imported water reliability from Metropolitan Water District will be affected with and without the California Water Fix	●							●	●						●	●	●					-	1, 3
Develop management strategies that ensure parties will meet future desalter replenishment obligation and have the money to fund it	●	●		●			●		●								●			●		H, I, J	3
Increase water-supply reliability at the lowest possible cost	●			●			●	●			●			●	●	●						A, B, D, J	3
Need a better understanding of the water management plans of the Parties to be able to better plan for imported water needs and to assure reliability of Metropolitan Water District water supply	●			●					●		●				●	●	●	●				A	3
Analyze water management scenarios that plan for unexpected challenges and emergencies	●							●	●	●					●	●	●					E, G	3
Ensure that sufficient supplemental water supplies will be available to meet future replenishment requirements							●		●	●	●			?	●					●		A	1, 3
Despite the best efforts of the Parties to decrease reliance on imported water, the cost of the total water supply continues to increase	●																					-	3
Use more recycled water for replenishment obligation	●			●			●		●								●					A, D, E, F	3
Continue to build collaborative programs between the Metropolitan Water District and Chino Basin	●						●	●	●						●		●	●				B, I	3

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Table 2b
Draft Activities for Consideration in the 2020 OBMP Update,
Derived from the Activities Defined by Stakeholders in Listening Session #2**

ID	Activity
A	Construct new recharge facilities to increase the capacity for stormwater and recycled water recharge and provide recharge capacity in areas of the basin necessary to ensure long-term balance of recharge and discharge.
B	Develop and implement storage-and-recovery programs to increase water supply reliability, increase Safe Yield, and improve water quality.
C	Develop and implement regional conveyance and treatment programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence.
D	Maximize the reuse of recycled water produced by IEUA and others.
E	Develop a water-quality management plan to address current and future water-quality issues and ensure the protection of beneficial uses, now and into the future.
F	Develop strategic regulatory-compliance solutions that achieve multiple benefits in managing water quality.
G	Optimize the use of all sources of water supply by developing the ability to move water across the basin and between stakeholders.
H	Develop an equitable distribution of costs/benefits of the OBMP Update and include in the OBMP update agreements.
I	Develop regional partnerships to implement the OBMP Update and reduce costs and include in OBMP Update agreement.
J	Continue to identify and pursue low-interest loans and grants to support the implementation of the OBMP Update. An example of such an effort is the Chino Basin Project.

****Note:** See Table 2 of Listening Session #2 Memo

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Table 3
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities								
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost	
Goal 1 - Enhance Basin Water Supplies											
<p>1a • Not all of the stormwater runoff available to the Chino Basin is diverted and recharged. Failure to divert and recharge stormwater is a permanently lost opportunity.</p> <ul style="list-style-type: none"> • The existing methodology to select recharge projects for implementation is based on the cost of imported water. There are currently no known projects with a unit cost lower than the cost of imported water, hindering expansion of stormwater capture and recharge • Pumping capacity in some areas of the basin is limited due to low groundwater levels and land subsidence. 	<p>A Construct new facilities and improve existing facilities to increase the capacity to store and recharge surface water, particularly in areas of the basin that will promote the long-term balance of recharge and discharge</p>	<ul style="list-style-type: none"> • Increases recharge of high-quality stormwater that will: <ul style="list-style-type: none"> • protect/enhance the Safe Yield, • improve water quality, • reduce dependence on imported water, • increase pumping capacity in areas of low groundwater levels and areas of subsidence concern, and • provide new supply of blending water to support the recycled-water recharge program. • Provides additional supplemental-water recharge capacity for replenishment and implementation of storage and recovery programs. • Provides additional surface water storage capacity. 	✓	✓	✓	✓	✓	✓		✓	
<p>1b • There is a surplus of recycled water available to the Chino Basin parties that is not being put to beneficial use, which is a loss of a low-cost, local water supply.</p> <ul style="list-style-type: none"> • Existing infrastructure limits the reuse and recharge of recycled water in the Chino Basin. • Existing requirements to discharge recycled water to the Santa Ana River limit the amount of water available for reuse and recharge 	<p>D Maximize the reuse of recycled water produced by IEUA and others</p>	<ul style="list-style-type: none"> • Results in a new, consistent volume of in-lieu and/or wet water recharge that will: <ul style="list-style-type: none"> • protect/enhance the Safe Yield, • reduce dependence on imported water, • improve water-supply reliability, especially during dry periods, and • increase pumping capacity in areas of low groundwater levels and areas of subsidence concern. 	✓	✓						✓	✓

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Table 3
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities							
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost
Goal 2 - Protect and Enhance Water Quality										
2a • Areas of the basin are contaminated with VOCs and constituents of emerging constituents (CECs). • Water-quality regulations are evolving and becoming more restrictive, which limits the beneficial uses of groundwater. • Groundwater treatment may be necessary to meet beneficial uses, but can be expensive to build and operate. • The basin is hydrologically closed, which causes accumulation and concentration of salts, nutrients, and other contaminants. • Some stored water in the Chino Basin cannot be used due to water quality and insufficient treatment capacity	E Develop and implement a water-quality management plan to address current and future water-quality issues and protect beneficial uses F Develop strategic regulatory-compliance solutions that achieve multiple benefits in managing water quality	• Proactively addresses new and near-future regulations. • Enables the parties to make informed decisions on infrastructure improvements for water-quality management. • Removes groundwater contaminants from the Chino Basin and thereby improves groundwater quality. • Enables the parties to produce or leverage their water rights that may be constrained by water quality. • Ensures that groundwater is pumped and thereby protects/enhances the Safe Yield.	✓	✓	✓	✓				✓
2b • Water-quality regulations are evolving and generally becoming more stringent, which could limit the reuse and recharge of recycled water.	K Develop management strategy within the Salt and Nutrient Management Plan to ensure ability to comply with dilution requirements for recycled water recharge	• Enables the continued and expanded recharge of recycled water, which will: • protect water quality, • improve water-supply reliability, especially during dry periods, and • protect/enhance the Safe Yield.	✓			✓	✓	✓		✓

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Table 3
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities							
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost
Goal 3 - Enhance Management of the Basin										
3a • Existing infrastructure (pumping and treatment capacity and conveyance) is insufficient to conduct puts and takes under proposed storage programs. • There is unused storage space in the Basin the use of which is constrained by the storage limits defined in existing CEQA documentation. • Watermaster's current storage management plan is not optimized to protect/enhance basin yield, improve water quality, avoid new land subsidence, ensure balance of recharge and discharge, maintain hydraulic control, etc.	B Develop, implement, and optimize storage-and-recovery programs to increase water-supply reliability, protect or enhance Safe Yield, and improve water quality.	<ul style="list-style-type: none"> Storage programs that protect/enhance basin yield, improve water quality, avoid new land subsidence, ensure balance of recharge and discharge, maintain hydraulic control, etc. Leverages unused storage space in the Basin. Reduces reliance on imported water, especially during dry periods. Potentially provides outside funding sources to implement the OBMP Update. Improves water quality through the recharge of high quality water. 		✓	✓	✓	✓			✓

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Table 3
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities							
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost
3b • Land subsidence in northwest MZ1 may limit the ability for parties to pump their respective rights in this area. • Poor water quality and increasingly restricting water quality regulations limits the ability for some parties to pump their respective rights.	C Identify and implement regional conveyance and treatment projects/programs to enable all stakeholders to exercise their pumping rights and minimize land subsidence.	<ul style="list-style-type: none"> Enables producers in MZ1 to obtain water through regional conveyance, which supports management of groundwater levels to reduce the potential for subsidence and ground fissuring. Enables the parties to increase production in areas currently constrained by poor water quality. Removes groundwater contaminants from the Chino Basin and thereby improves water quality. 								
	G Optimize the use of all sources of water supply by improving the ability to move water across the basin and amongst stakeholders, prioritizing the use of existing infrastructure.	<ul style="list-style-type: none"> Protects/enhances the Safe Yield. Maximizes the use of existing infrastructure, which will minimize costs. Provides infrastructure that can also be used to implement storage and recovery programs. 	✓	✓	✓	✓				✓
3d • Watermaster needs information to comply with regulations and its obligations under its agreements and Court orders, yet financial resources to collect this information are limited.	L Perform the appropriate amount of monitoring and reporting required for basin management and regulatory compliance	<ul style="list-style-type: none"> Ensures full compliance with regulatory requirements. Ensures full support of basin management initiatives. Enables parties to monitor the performance of the OBMP Update. 	✓	✓	✓	✓	✓	✓	✓	✓

Appendix C

Table 3
OBMP Update Goals, Impediments to the Goals, Activities to Remove the Impediments, Expected Outcomes of Activities,
and Nexus to Addressing the Issues Needs and Wants of the Stakeholders

Impediments	Activities to Remove Impediments	Potential Outcomes of Activities	Issues, Needs and Wants, as Categorized by Basin Management Issues, that are Addressed by Activities							
			Reductions in Chino Basin Safe Yield	Inability to Pump Groundwater with Existing Infrastructure	Increased Cost of Groundwater Use	Chino Basin Water Quality Degradation	Recycled Water Quality Degradation	Increased Cost of Basin Plan Compliance	Reduced Recycled Water Availability and Increased Cost	Reduced Imported Water Availability and Increased Cost
Goal 4 - Equitably Finance the OBMP										
4a • The distribution of benefits associated with the OBMP Update is not defined. • Funding needed for the OBMP implementation activities of the Watermaster is not projected beyond the current year budget, which limits parties ability to plan required funding for the future. • There is currently no formal process to evaluate and adapt the OBMP implementation plan, schedule and cost.	H Develop an equitable distribution of costs/benefits of the OBMP Update and include in the OBMP update agreements.	<ul style="list-style-type: none"> Provides transparency as to the benefits of the OBMP Update activities. Provides information needed to plan financial resources. Improves the likelihood that the OBMP will be implemented. 			✓					
4b • Limited financial resources constraint the implementation of the OBMP.	I Develop regional partnerships to implement the OBMP Update and reduce costs and include in OBMP Update agreement	<ul style="list-style-type: none"> Lowers the cost of OBMP implementation. Improves the likelihood that the OBMP will be implemented. 			✓					
	J Continue to identify and pursue low-interest loans and grants or other external funding sources to support the implementation of the OBMP Update. An example of such an effort is the Chino Basin Project.				✓					

Scoping Report Comments¹

City of Chino – Comments on Scoping Report Part 1 Provided by Dave Crosley

- 1. Page 12, last paragraph, 1st sentence ends with a reference to footnote “3” which seems misplaced.**

The reference to footnote 3 has been removed.

- 2. Page 31, Activity D. The described scope pertaining to Activity D could be reshaped to reflect a reduced level of effort by Watermaster.**

The objectives of Activity D are to maximize recycled water reuse. As described in the Scoping Report, the IEUA would be the appropriate entity to lead the implementation of Activity D on behalf of all parties in the IEUA, TVMWD, and WMWD service areas. The draft report suggested that part of Watermaster’s role would be to convene and lead a committee that could guide the process, however such a role is not required to implement the activity. Watermaster’s role could be to team with the IEUA or other coordinating agency in the implementation of Activity D to ensuring its implementation is consistent with the Judgment, the Peace Agreements and other agreements, the maximum benefit SNMP, and the Watermaster Rules and Regulations. Specifically, Watermaster should ensure that the process to maximize recycled water is integrated with the goals of the OBMP and that the process includes projects to maximize the use of recycled water for replenishment purposes (Judgment ¶ 49(a)). Accordingly, the text has been modified to reflect this revised role. Note that this is consistent with the 2000 OBMP Implementation Plan for Program Element 5 - *Develop and Implement Regional Supplemental Water Program* in the 2000 OBMP, for which IEUA was the agency responsible for implementation of expanded recycled water reuse. The revised text can be found on page 36 of the final report.

- 3. Page 25, last paragraph, 3rd sentence states “[T]he recent decline in the direct use of recycled water is a result of reduced water use due to drought and state-mandated water conservation programs that required significant reductions in water use.” What data supports this statement? The last sentence of the preceding paragraph describes conservation-related causation of reduced recycled water availability, but just because there is a reduced supply it does not necessarily follow that conservation caused less recycled water demand. We suggest clarification.**

The text has been updated per discussions with the IEUA. Per the IEUA, the recent decline is due to the mindful reduction in use by the City of Chino to accommodate changes in IEUA policy related to the use of recycled water base entitlements and conversions of land from agricultural to urban uses. The new text appears on page 31, fourth full paragraph, third sentence.

- 4. Page 26, 2nd paragraph, 1st sentence states “...the IEUA is maximizing the reuse of recycled water given the constraint of meeting its obligations to discharge a minimum of 17,000 AFY to**

¹ Comments and questions about the OBMP process were addressed in a separate document that is available on Watermaster’s website at:
<http://www.cbwm.org/docs/OBMP%20Update/20191017%20Watermaster%20Responses%20to%20comments%20on%20Process.pdf>.

comply with the Santa Ana River Judgment and associated agreements with WMWD.” This statement is misleading, as the IEUA discharge of recycled water to the river has generally exceeded the minimum 17,000 AFY flow requirement instead of directing excess supplies of recycled water to satisfy significant potential direct reuse demands throughout the IEUA service area. The 4th paragraph appearing on page 27 describes some of the circumstances that contribute to the challenge of maximizing reuse.

The text of this paragraph has been updated to more clearly articulate the challenge that the availability of recycled water poses for IEUA in meeting its obligations of the Santa Ana River Judgment, specifically that the increasing demand for recycled water for reuse will constrain the IEUA’s ability to continue to use recycled water to meet its discharge obligations. The revised text is on page 34, first full paragraph of the final Scoping Report.

5. *Page 28, 3rd full paragraph under the subheading Santa Ana River Judgment states “... discharge requirements of the Judgment preclude the IEUA from reusing 100 percent of its recycled water supply.” This is an oversimplified and misleading characterization of the Judgment requirement. The subject Judgment (OC Judgment) describes an obligation of entities located upstream of Prado to provide for a minimum flow of water to downstream of Prado. IEUA and WMWD, as upstream entities, have a joint obligation. IEUA has utilized unclaimed recycled water produced via the treatment of wastewater generated within the service areas of its members in order to satisfy its share of the joint IEUA/WMWD obligation. However, the minimum flow need not necessarily be supplied from recycled water generated from wastewater treatment, and the agencies within whose jurisdictions the wastewater is generated possess a contractual entitlement to the recycled water. If those agencies claim their entitlement then IEUA, as a regional (Chino Basin) water supply agency (not a wastewater treatment service provider), still has a joint (along with WMWD) obligation to provide a minimum flow downstream of Prado. The OC Judgment does not preclude the recycled water entitlement holders from using 100 percent of the recycled water.*

The text of this paragraph has been updated to eliminate the statement that “... discharge requirements of the Judgment preclude the IEUA from reusing 100 percent of its recycled water supply.” It was also modified to more clearly articulate the challenge that the availability of recycled water poses for IEUA in meetings its obligations of the Santa Ana River Judgment. The revised text is on page 34, first full paragraph of the final Scoping Report.

6. *Page 30, Task 7 paragraph, 2nd sentence which states “ensure that Watermaster is maximizing the reuse of recycled water...” should probably be refined to indicate that Watermaster is enabling/accommodating/facilitating the reuse of recycled water.*

The text has been updated to reflect a reduction of Watermaster’s role, as discussed in the response to comment number 2 above.

City of Ontario – Comments Provided by Katie Gienger

7. *Activity B – Storage and Recovery Programs. The tasks of this activity are a duplication of efforts already underway by the Chino Basin Water Bank (CBWB). It is unclear what Watermaster will do above and beyond the activities already performed by the CBWB. The focus of this activity in*

the OBMP should be Watermaster's role in administering the Judgment, such as evaluating proposed Storage & Recovery programs for MPI.

The purpose of the Scoping Report is to provide the parties with an understanding of the work that would need to be performed to accomplish the desired outcomes of each of the 2020 OBMP Update activities. To the extent that the scopes of work described herein are already being partly or completely performed by Watermaster or others, the Scoping Report acknowledges such. The next steps in the process to prepare the 2020 OBMP Update will focus on the review and revision of the activities scoped herein and the integration of the ongoing activities with the existing OBMP. The recommended 2020 OBMP Implementation Plan, inclusive of ongoing and new activities will be documented in a subsequent report, *2020 Optimum Basin Management Program Update Report*, and will form the foundation for the parties to develop a final implementation plan and agreements to implement the OBMP Update. This purpose has been clarified in the report introduction on page 6, last paragraph.

Activity B is designed to obtain agreement on the specific objectives and desired benefits for Storage and Recovery (S&R) Programs, to identify "optimized" S&R programs that achieve the benefits while causing no material physical injury, and to help guide the development of future applications for S&R Programs. These outcomes are required for Watermaster to implement the Physical Solution of the Judgment and will support Watermaster approval of S&R applications. As such, Activity B is deemed necessary by Watermaster.

The second paragraph of the introduction to the Activity B scope of work (Page 27) acknowledges that prior work has been performed to describe and/or evaluate S&R programs for the Storage Framework Investigation, the Chino Basin Water Bank, and the Chino Basin Program. At such time that Activity B will be performed, the scope of work to will be updated to leverage this work.

- 8. Activity D – Maximize Reuse of Recycled Water. The tasks of this activity are a duplication of the IEUA recycled water efforts as described in our first general comment. It is unclear what Watermaster will do above and beyond the activities already performed by IEUA. For this reason, we recommend the parties discuss the best approach in scoping this activity to avoid a duplication of effort.***

As to the first part of our comment on duplication, the introduction of Activity D scope of work acknowledges that the IEUA is performing a significant amount of work to evaluate opportunities to acquire surplus recycled water supplies for recharge as part of the CBP, and recommends that this work be leveraged to simplify the scope of Activity D. The description of IEUA's work has been expanded to reflect its various other efforts to analyze recycled water supply and demands.

In the Scoping Report, the scope of work and costs to implement each OBMP Update activity were designed to achieve the desired outcomes defined by the stakeholders assuming that the activities could be implemented independently and that the planning efforts of others are not leveraged. The purpose of this assumption in the Scoping Report is to describe in detail the precise work required to achieve the outcomes. Additionally, the scopes of work and costs described in the Scoping Work leverage existing work being performed by Watermaster, but not by others. These assumptions are described on pages 14 and 15 of the Scoping Report under "Assumptions Applied in Defining the Scope of Work, Schedule, and Cost of the OBMP activities." There will be

opportunities to leverage work done by other agencies to avoid duplication of effort and to reduce the costs.

As to the second part of your comment on Watermaster's role, please see the response to Comment 2 above. Additionally, it is important to note that not all aspects of the OBMP require direct involvement by the Watermaster. For example, in the 2000 OBMP Implementation Plan, there are several implementation actions in Program Elements 3 and 5 that were the responsibility of the Chino Desalter Authority or the IEUA.

- 9. Activity D – Maximize Reuse of Recycled Water, Page 28 – Santa Ana River Judgment – The TM states “The discharge requirements of the Judgment preclude the IEUA from reusing 100 percent of its recycled water supply.” This statement is not accurate and should be revised to reflect that the SAR obligation is not required to be met with recycled water. The Santa Ana River Judgment states on page 9 “(1) At Prado. Base Flow shall: (i) include any water caused to be delivered by CBMWD or WMWD directly to OCWD, pursuant to its direction and control and not measured at the gages at Prado;” The Judgment anticipated using recycled water, but also allows for supplemental water to meet the SAR obligation, which was undertaken by Chino Basin Municipal Water District (now IEUA) on behalf of the Chino Basin producers**

Please refer to the responses to Comments 4 and 5 above.

- 10. Activity EF – Each water purveyor tracks and monitors current and emerging constituents on its own behalf, including engaging in formal and informal discussions with other water purveyors facing similar challenges. Watermaster has historically provided an arena for data sharing and compilation as well as ideas on best practices which has been a valuable resource. Agencies are already required to perform the necessary monitoring for compliance of water systems permits; therefore a Groundwater Quality Management Plan (and the proposed monitoring program) may be a redundant effort. It is not clear what regulatory compliance Watermaster is subject to aside from its involvement in the Salt & Nutrient Management Plan related to hydraulic control.**

The Judgment provides Watermaster the discretion to develop an OBMP, including both water quantity and water quality considerations. A groundwater quality management plan like the one scoped in the Scoping Report provides the parties with the comprehensive data and information, including best practices for monitoring, that are needed to understand and manage the future water quality challenges that could impact the parties' ability to fully utilize their pumping rights.

Currently, water purveyors are not required by the State to perform monitoring of contaminants with State notification levels or other emerging contaminants of concern; the monitoring of these contaminants is voluntary until there is an established drinking water regulation or a mandated monitoring order. In the past monitoring of emerging contaminants in the Chino Basin was not prevalent, and often did not use the laboratory method detection limits low enough to understand the occurrence in relation to State notification levels, and the occurrence was not characterized well enough to prepare for compliance with potential drinking water regulations. As described in the Scoping Report, a recent example of this is 1,2,3-trichloropropane, which became regulated in late 2017. A groundwater quality management plan and associated monitoring program would not be a redundant effort as it will include strategies to investigate and analyze emerging contaminants in the Basin in a comprehensive and consistent way and that

would leverage all existing groundwater monitoring performed by Watermaster and others. A groundwater quality management plan will ensure there is consistent and adequate monitoring of emerging contaminants as they are being identified to plan for potential water quality regulations, and if needed identify the most efficient means to address regional water-quality challenges.

As to concerns of duplication, please also refer to responses to Comments 7 and 8 above.

Inland Empire Utilities Agency – Comments on Scoping Report Part 1 Provided by Sylvie Lee and Joshua Aguilar

11. Page 1, regarding the title of Activity D, suggested edit to add direct use in the title, or does it not take into account direct use of recycled water?

The maximization of recycled water reuse in Activity D is meant to encompass all forms of recycled water reuse including: direct non-potable reuse (landscape irrigation or industrial uses), groundwater recharge or injection (indirect potable reuse), and direct potable reuse. See page 30 for description of Activity D’s objective.

12. Page 2, regarding the title of Activity HIJ, should it reference subsequent implementation plan instead of the OBMP Update?

The term OBMP Update is not exclusive of the implementation plan or the agreements to implement it.

13. Page 14, in the summary of Activity A, third bullet. Can we say something to the effect of minimizing losses or is that covered under pumping sustainability?

The text of the bullet was expanded to include reference to the need to maintain hydraulic control. The revised text is on page 20, third bullet of the final Scoping Report.

14. Page 19, fourth bullet. External funding should be listed [as something that the Storage and Recovery Program Master Plan will enable the parties to do] as this has been very successful for the region in reducing the cost of successful programs (GWR, Desalter, RW, etc.).

Concur. As, described under the “Summary” section for Activity B, the Storage and Recovery Master Plan can provide support in the application for external funding (grants and low-interest loans). The term “external funding” has been added to the list of things that can offset Watermaster assessments and reduce OBMP assessments. The revised text is on page 24, first bullet of the final Scoping Report.

15. Page 21, first paragraph. Is this [Storage and Recovery Program Master Plan] a new one that needs to be created or is it the Storage Management Plan? What is the purpose and shelf life in addition to the SMP?

The 2020 Storage Management Plan is a set of rules by which to manage all storage in the Chino Basin, including the parties’ local storage accounts and S&R Programs—it does not define how S&R programs should be designed to achieve the benefits desired by the parties. Activity B is designed to obtain agreement on the specific objectives and desired benefits for S&R Programs, to identify “optimized” S&R programs that achieve the benefits, to help guide the development

of future applications for S&R Programs, and to help apply for grants and low-interest loans to implement S&R Programs. This work will be documented as the Storage and Recovery Master Plan, which may need to be updated to be consistent with periodic updates to the Storage Management Plan.

16. Page 21, first paragraph. Is that our goal, “to reference a common set of objectives for storage and recovery programs and align the objectives with requirements in grant applications and other funding opportunities”? Seems like “Master Plan” should be broader than individual S&R requirements.

Please refer to the response to Comment 15.

17. Page 38, under “Scope of Work for Activity EF.” Are there recommendations for the “centralized” treatment options as suggested in the “needs”?

As described in the “Scope of Work for Activity EF” section, Task 5 of the scope of work for Activity EF is to identify groundwater quality treatment projects using existing and new facilities, to screen them using agreed upon criteria developed in Task 4, and to select a final list of projects for detailed evaluation in Task 6. The groundwater quality treatment projects can range from individual well-head treatment to regional treatment plants. Under Task 6, cost opinions for these projects will be developed and will include a comparison of the cost to implement treatment projects by individual municipal agencies to those of collaborative projects.

San Antonio Water Company – Comments Provided by Brian Lee

Monte Vista Water District – Comments Provided by Mark Kinsey (reiterative of SAWCo comments)

18. General Note of Duplication. A majority of the proposed activities duplicate existing planning efforts, as outlined in the below chart and further discussed per activity below:

Proposed Activity	Existing Planning Efforts
Activity A	Recharge Master Plan; Recharge Investigations & Projects Committee
Activity B	Chino Basin Water Bank; Inland Empire Utilities Agency
Activity D	Inland Empire Utilities Agency and Contracting/Member Agencies; Jurupa Community Services District; City of Pomona
Activity E/F	Local Agencies; Water Quality Committee (existing authority to reconvene)
Activity K	Maximum Benefit Salt and Nutrient Management Plan
Activity C/G	Integrated Resource Plan

Please refer to the responses to Comments 7, 8, and 10. Please also note that in the next step of the 2020 OBMP Update process the OBMP Update activities described in the Scoping Report will be integrated with the 2000 OBMP Program Elements. If the implementation actions that arise from the OBMP Update activities are already encompassed by the existing actions in the 2000

OBMP IP, then no new implementation actions will be included in the 2020 OBMP Update. See responses to comments 19 through 24 for more detail about specific activities.

- 19. Activity A. We disagree with this activity and its implementation schedule because it duplicates an existing and active planning effort, the Recharge Master Plan (RMP). The RMP has been developed and updated consistent with the Peace Agreements. Watermaster's Recharge Investigations and Projects Committee (RIPCom)- open to all parties- meets quarterly to review the ongoing implementation of the latest RMP. The process of updating the RMP includes an exhaustive review of opportunities to improve Basin recharge, and each RIP Com meeting agenda includes a standing item for discussion and consideration of new recharge projects.**

Watermaster staff has verbally confirmed with certain parties that there is no intent to duplicate the RMP process, and that this activity proposes instead to continue the existing process. However, the current draft of the technical memorandum lacks clarity on how newly proposed activities enhance existing activities. Overall, we believe there is no need to create a new process (with associated costs) that duplicates an existing, successfully implemented ongoing process.

As described in the report on pages 16 and 17, based on the alignment of the objectives of Activity A with those of the RMPU, Activity A can be accomplished through the existing RMPU process. The scope of work summarized in the report is for developing the 2023 RMPU, not in addition to it. Please also refer to responses to Comments 7, 8, 10, and 18 regarding duplication of efforts.

- 20. Activity B. We disagree with this activity and its implementation schedule because it duplicates existing and active planning efforts to develop Storage and Recovery Programs. The Peace Agreement provides criteria for Watermaster to facilitate and regulate the development of Storage and Recovery Programs that "provide broad mutual benefits" to the Judgment parties (§5.2(c)). We are aware of two entities, the Chino Basin Water Bank and the Inland Empire Utilities Agency (IEUA), that are actively engaged with Watermaster and their partners in developing Storage and Recovery Program proposals. We believe that these and other potential applicants should cover the cost of demonstrating how their proposed Storage and Recovery Programs may provide broad mutual benefits to the parties. Additionally, Watermaster's role in facilitating Storage and Recovery Programs necessitates a healthy division between the evaluating and approving entity (Watermaster) and the Program applicant(s).**

The Peace Agreement assigns Watermaster as the evaluating and approving entity for S&R Programs. As such, Watermaster must have criteria upon which to define and evaluate "broad mutual benefits" of S&R Programs. Activity B includes a process for the parties and Watermaster to build and achieve consensus on the definition(s) of broad mutual benefits and the objectives of S&R Programs. These definitions are key to Watermaster's ability to evaluate and rank S&R Programs when presented with applications. Activity B also helps guide the parties (or others) in the development of S&R Programs, so that the application and evaluation process is most efficient.

As to duplication of efforts, the intention of Activity B is to leverage past and current work to the maximum extent. The description in Activity B states that: "Prior work has been performed for the Storage Framework Investigation, the Chino Basin Water Bank, and the Chino Basin Program.

These past efforts can be leveraged..." in the execution of Activity B. See also the responses to Comments 7, 10, and 18.

- 21. Activity D. We disagree with this activity and its implementation schedule because it duplicates existing and active planning efforts by IEUA, IEUA member agencies, Jurupa Community Service District, and the City of Pomona. These planning efforts seek to address the full and beneficial utilization of recycled water supplies available in the Chino Basin. We believe parallel planning processes are neither advisable nor cost-effective.**

Please refer to the responses to Comments 8 and 18.

- 22. Activity E/F. We disagree with this activity and its implementation schedule because it proposes activities that are either outside of Watermaster's authority or already authorized under the existing OBMP Implementation Plan. Water quality compliance is the responsibility of water providers under their respective operating permits. Watermaster's role under the OBMP Implementation Plan is to monitor water quality to ensure that parties' use of the basin meet Basin Plan objectives and do not cause material physical injury. The existing OBMP Implementation Plan already directs Watermaster to form a "water quality committee" to oversee and provide input on these activities; we see no reason why Watermaster cannot reconvene such a committee under its existing authority.**

Please refer to the responses to Comments 10 and 18.

- 23. Activity K. We disagree with this activity and its implementation schedule because the Maximum Benefit Salt and Nutrient Management Plan already contains dilution compliance requirements that Basin parties must meet in order to continue recharging recycled water. As stated in the sixth listening session, Watermaster and IEUA are already implementing this activity through their work in developing a Basin Plan amendment proposal, and that the activity simply proposes to "do what we are doing."**

Activity K will ensure that the evaluation of a future compliance challenge with the recycled water dilution requirements will be done on a routine basis hereafter and not just during the current investigation to support the Basin Plan amendment proposal – such a routine assessment will also be required by the Regional Board, as described in the discussion of Activity K. Please also refer to response to Comments 7, 8, 10, 18, and 21.

- 24. Activity C/G. We disagree with this activity and its implementation schedule because it duplicates IEUA's ongoing integrated resource planning process. All parties and Watermaster staff are participating in this planning process, which is focused on identifying projects to improve the reliability and resiliency of regional water supplies.**

Please refer to the response Comments 7, 8, 10, and 18.

- 25. Activity L. This is a proposed review of Watermaster's current monitoring and reporting processes to ensure they are as efficient and cost-effective as possible. We consider this review an essential administrative best practice and fully support its immediate implementation and incorporation into Watermaster's Rules and Regulations and other procedural documents, as appropriate.**

Comment noted. Watermaster proposes that it be implemented in Fiscal Year 2020/21 and will present if for consideration in the budget at the appropriate time.

- 26. Activity H/I/J. The Chino Basin Judgment establishes the following requirement for basin management, inclusive of the OBMP: "In the process of implementing the physical solution for Chino Basin, Watermaster shall consider the following parameters: ... (c) Economic Considerations. - Financial feasibility, economic impact and the cost and optimum utilization of the Basin's resources and the physical facilities of the parties are objectives and concerns in equal importance to water quantity and quality parameters" (Exhibit "I" ¶(c), emphasis in original).**

Here and elsewhere in the Court-approved management agreements, Watermaster is directed to consider economics - inclusive of equitable distribution of costs and benefits, reductions in costs, and funding opportunities - for all basin management activities tied to implementation of the Physical Solution. Therefore, we respectfully request that Watermaster fulfill this requirement to incorporate economic considerations into any agreed-upon activity in this and any other basin management process.

Comment noted. As stated on pages 80 and 81 regarding economic considerations:

"The objectives for Activities H, I, and J can be efficiently met by incorporating tasks within the other activities to characterize the benefits and costs of the projects produced by the activities."

and

"The steps to achieve an equitable allocation of benefits and costs should be addressed by in the agreement that will be developed by the parties to implement the 2020 OBMP Update. The 2020 OBMP implementation agreement could be designed to ensure that the desired extent of cost/benefit assessments are performed to support equitable cost allocations in the implementation of activity scopes of work, to anticipate and accommodate the development of project implementation agreements that define the project-specific cost/benefit allocation, and to periodically update cost projections for implementation of the 2020 OBMP Update activities and associated projects to support planning of financial resources."

Appendix D

Stakeholder Participation Log

Appendix D

Stakeholder Attendance at the OBMPU Listening Sessions

Name	Agency/Stakeholder	LS1	LS2	LS3	LS4	LS5	LS6	LS7	LS8
Bob Feenstra	Agricultural Pool		X	X				X	X
Jeff Pierson	Agricultural Pool	X	X	X				X	
Diana Frederick	Agricultural Pool - State of CA		X						
Craig Stewart	Agricultural Pool - State of CA/CIM				X				
Pete Hall	Agricultural Pool - State of CA/CIM		X	X					
John Schatz	Appropriative Pool		X		X				X
John Thornton	Arcadis (consultant to the Chino Basin Water Bank)					X	X	X	X
Brian Geye	Auto Club Speedway	X	X				X	X	X
Andrew Lazenby	Brown and Caldwell (consultant to IEUA)			X					
Tom O'Neill	Chino Basin Desalter Authority		X	X					
Elizabeth Skrzat	Chino Basin Water Conservation District							X	
Kristen Wegner	Chino Basin Water Conservation District	X		X	X				
Don Galeano	Chino Basin Watermaster Board			X					
Ron Craig	Chino Hills, City of	X	X	X	X	X	X	X	X
Amanda Coker	Chino, City of	X	X	X		X		X	X
Dave Crosley	Chino, City of	X	X			X	X		X
Eunice Ulloa	Chino, City of	X		X	X	X		X	
Bob Page	County of San Bernardino		X						
Eduardo Espinoza	Cucamonga Valley Water District	X	X	X	X	X		X	X
John Bosler	Cucamonga Valley Water District						X		
Praseetha Krishnan	Cucamonga Valley Water District	X	X			X	X	X	
Tracy Egoscue	EIG (representing the Agricultural Pool)	X	X	X		X	X	X	X
Shawnda Grady	Ellison, Schneider & Harris (representing JCSD)		X						
Eric Tarango	Fontana Union Water Company	X		X				X	
Josh Swift	Fontana Union Water Company				X	X		X	
Cris Fealy	Fontana Water Company	X		X	X	X	X		
Roger Putty	GEI (consultant to IEUA)				X				
Chris Berch	Inland Empire Utilities Agency	X	X	X	X				
Christiana Daisy	Inland Empire Utilities Agency							X	
Joshua Aguilar	Inland Empire Utilities Agency		X		X	X		X	X
Kirby Brill	Inland Empire Utilities Agency	X							
Liz Hurst	Inland Empire Utilities Agency			X	X				
Liza Muñoz	Inland Empire Utilities Agency					X	X	X	
Sylvie Lee	Inland Empire Utilities Agency	X	X	X	X		X	X	X
Abhi Singh	Intera (consultant to IEUA)		X						
Betty Anderson	Jurupa Community Services District				X				
Chris Berch	Jurupa Community Services District					X	X	X	X
Eldon Horst	Jurupa Community Services District			X	X				
Steven Popelar	Jurupa Community Services District		X						
Ed Means	MC (consultant to Chino Water Bank)					X			
Brandon Goshi	Metropolitan Water District	X		X	X			X	X
Justin Scott-Coe	Monte Vista Water District					X	X	X	
Van Jew	Monte Vista Water District		X			X			

Appendix D

Stakeholder Attendance at the OBMPU Listening Sessions

Name	Agency/Stakeholder	LS1	LS2	LS3	LS4	LS5	LS6	LS7	LS8
Bob Bowcock	Non-Agricultural Pool	X	X		X				
Wendy Sanders	NRG/ERM	X							
Courtney Jones	Ontario, City of	X	X	X	X	X			
Katie Gienger	Ontario, City of			X	X	X	X	X	X
Scott Burton	Ontario, City of		X						
Marsha Westropp	Orange County Water District	X					X		
Chris Diggs	Pomona, City of	X	X		X	X	X	X	X
Darron Poulsen	Pomona, City of	X	X			X	X	X	
Raul Garibay	Pomona, City of	X	X	X					
Brian Lee	San Antonio Water Company	X				X			
Teri Layton	San Antonio Water Company	X			X	X			X
James McKenzie	San Bernardino County Flood Control District				X	X		X	
Jorge Vela	San Bernardino County Flood Control District					X			
Marty Zvirbulis	San Gabriel Valley Water Company							X	
Tom Harder	TH&Co (representing the Appropriative Pool)	X		X	X		X	X	X
John Mendoza	Three Valleys Municipal Water District	X	X	X		X	X		X
Matt Litchfield	Three Valleys Municipal Water District		X	X		X			
Tim Kellett	Three Valleys Municipal Water District					X		X	X
Harrison Nguyen	Upland, City of	X							
Rosemary Hoerning	Upland, City of	X	X	X	X				
Steve Ledbetter	Upland, City of							X	
Steve Nix	Upland, City of					X	X		
Nadia Loukeh	West Valley Water District			X					
Jason Pivovarovoff	Western Municipal Water District				X	X			X
Ryan Shaw	Western Municipal Water District	X	X	X			X	X	
Rick Rees	Wood (representing State of CA)	X	X	X		X	X	X	X
Individual Count		31	32	29	25	30	21	30	21
Stakeholder Count		19	17	19	18	17	17	21	16

Appendix E

2020 Storage Management Plan

2020 STORAGE MANAGEMENT PLAN FINAL REPORT

DECEMBER 11, 2019

Prepared for:



Prepared by:



Appendix E

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Acronyms, Abbreviations, and Initialisms

af	acre-feet
afy	acre-feet per year
DYYP	Dry Year Yield Program
IEUA	Inland Empire Utilities Agency
MPI	Material Physical Injury
MZ1	Management Zone 1
MZ2	Management Zone 2
MZ3	Management Zone 3
OBMP	Optimum Basin Management Program
OBMPU	Optimum Basin Management Program Update
SFI	Storage Framework Investigation
SMP	Storage Management Plan

Section 1 – Background

The objective of this report is to describe the 2020 Storage Management Plan (SMP).¹ The basis of the 2020 SMP was described in the *Final 2020 Storage Management Plan White Paper*,² which has been incorporated into this document as Appendix A. The Watermaster stakeholders reviewed and commented on the draft White Paper and participated in two workshops that occurred in June and July 2019. The final technical requirements of the 2020 SMP were developed in part from the work conducted in the 2018 *Storage Framework Investigation*³ (SFI), the White Paper, and discussions with the Watermaster stakeholders. The draft versions 1 and 2 of the 2020 SMP were distributed to the Watermaster stakeholders on September 6, 2019 and October 24, 2019, respectively. The Watermaster stakeholders provided comments on these drafts and the complete set of comments and Watermaster staff responses are included in Appendices B1 and B2. Some of the comments resulted in updates to the 2020 SMP and they are included herein.

Groundwater pumping rights in the Chino Basin were adjudicated in the 1970s and settled in the 1978 stipulated agreement (Judgment). The Judgment⁴ established a Watermaster to administer the decree under the court’s continuing jurisdiction and empowered it to manage and control available storage capacity and to enter into agreements for the storage of water. As a prerequisite to implementing the Optimum Basin Management Program (OBMP) the Parties⁵ executed the Peace Agreement, providing direction and guidance to Watermaster on how storage should be prioritized and managed. The OBMP addresses the management of groundwater pumping, recharge, storage and recovery, and the transfer of water. The prevailing standard for all operations is the avoidance of “Material Physical Injury” (MPI)^{6,7} under Court-Approved Management Agreements executed contemporaneously.

¹ The abbreviation “SMP” means Storage Management Plan. When referring specifically to the 2020 Storage Management Plan the year “2020” precedes SMP (i.e. 2020 SMP).

² Wildermuth Environmental, Inc. (2019). *Final 2020 Storage Management Program White Paper*. This report can be found here: https://cbwm.syncedtool.com/shares/folder/e83081106c3072/?folder_id=1847

³ Wildermuth Environmental, Inc. (2018). *Storage Framework Investigation, Final Report*. This report can be found here: https://cbwm.syncedtool.com/shares/folder/e83081106c3072/?folder_id=1429

⁴ Original Judgment in Chino Basin Municipal Water District vs. City of Chino, et al., signed by Judge Howard B. Weiner, Case No. 164327. File transferred August 1989, by order of the Court, and assigned new case number RCV51010. The Restated Judgment can be found here: https://cbwm.syncedtool.com/shares/folder/e83081106c3072/?folder_id=247

⁵ The terms Party and Parties refer to a party to the Judgment, party to the Peace and or Peace II Agreement, or a party to all three.

⁶ Defined terms in the Court Approved Management Agreements will appear with the first letter of each word capitalized; a footnote with their definitions is included at the first use of the defined term.

⁷ "Material Physical Injury" means material injury that is attributable to the Recharge, Transfer, storage and recovery, management, movement or Production of water, or implementation of the OBMP, including, but not limited to, degradation of water quality, liquefaction, land subsidence, increases in pump lift (lower water levels), and adverse impacts associated with rising Groundwater. Material Physical Injury does not include "economic

Given the passage of twenty years since its approval, Watermaster has revisited the OBMP goals and objectives and plans to update the OBMP by June 2020 (hereafter, 2020 OBMPU). Updating the SMP is integral to the 2020 OBMPU. The 2020 SMP will be incorporated into the 2020 OBMPU and its implementation plan.

The term “managed storage” as used herein (and consistent with the 2018 SFI) refers to water stored by the Parties and other entities and includes Carryover,^{8,9} Local Storage,¹⁰ and Supplemental Water¹¹ held in storage accounts by the Parties and Storage and Recovery Programs.¹² Local Storage includes Excess Carryover¹³ for the Overlying Non-Agricultural Pool Parties and Excess Carryover and Supplemental Waters for the Appropriative Pool and Overlying Non-Agricultural Pool Parties.

1.1 Storage Agreements and Transfers from Storage Accounts

Since the Judgment came into effect, Watermaster developed rules and regulations, standard storage agreements, and related forms. There are three types of storage agreements that result in five types of storage accounts: Excess Carryover, Local Supplemental-Recycled, Local Supplemental-Imported, Pre-2000 Quantified Supplemental, and Storage and Recovery. An Excess Carryover account includes a Party’s unproduced rights in the Safe Yield (Safe Yield for Overlying Non-Agricultural Pool Parties and Operating Safe Yield for Appropriative Pool

injury" that results from other than physical causes. Once fully mitigated, physical injury shall no longer be considered material. [Peace Agreement § 1.1(y).]

⁸ Defined terms in the Court Approved Management Agreements will appear with the first letter of each word capitalized and a footnote with their definitions is included at the first use of the defined term.

⁹ "Carry-Over Water" means the un-Produced water in any year that may accrue to a member of the Overlying Non-Agricultural Pool or the Appropriative Pool and that is Produced first each subsequent Fiscal Year or stored as Excess Carry-Over. (Judgment Exhibit H ¶ 12.)

¹⁰ "Local Storage" means water held in a storage account pursuant to a Local Storage Agreement between a party to the Judgment and Watermaster. Local Storage accounts may consist of: (i) a Producer's unproduced Excess Carry-Over Water or (ii) a party to the Judgment's Supplemental Water, up to a cumulative maximum of one hundred thousand (100,000) acre-feet for all Parties to the Judgment stored in the Basin on or after July 1, 2000 or (iii) that amount of Supplemental Water previously stored in the Basin on or before July 1, 2000 and quantified in accordance with the provisions and procedures set forth in Section 7.2 of these Rules and Regulations, or (iv) that amount of water which is or may be stored in the Basin pursuant to a Storage Agreement with Watermaster which exists and has not expired before July 1, 2010. [Peace Agreement § 1.1(x).]

¹¹ "Supplemental Water" means water imported to Chino Basin from outside the Chino Basin Watershed and Recycled Water. [Judgment ¶ 4(bb) and Peace Agreement § 1.1(ww).]

¹² "Storage and Recovery Program" means the use of the available storage capacity of the Basin by any person under the direction and control of Watermaster pursuant to a Court approved Groundwater Storage Agreement but excluding "Local Storage," including the right to export water for use outside the Chino Basin and typically of broad and mutual benefit to the Parties to the Judgment. [Peace Agreement §1.1(uu).]

¹³ "Excess Carry-Over Water" means Carry-Over Water which in aggregate quantities exceeds a party's share of Safe Yield in the case of the Non-Agricultural Pool, or the assigned share of Operating Safe Yield in the case of the Appropriative Pool, in any year.

Parties) and Basin Water acquired from other Parties. A Local Supplemental Water account includes imported and recycled water that is recharged by a Party and similar water acquired from other Parties. A Storage and Recovery account includes Supplemental Water and the Peace Agreement requires that Watermaster shall give first priority to Storage and Recovery Programs that produce a “broad and mutual benefit to the Parties to the Judgment.”¹⁴ Watermaster tracks the puts, takes, losses, and end of year storage totals for all of these storage accounts, and reports on this accounting in the annual assessment process. The losses assessed by Watermaster are based on the amount of water in managed storage (excluding Carryover) and they offset the increase in groundwater discharge to the Santa Ana River from the Chino Basin attributable to managed storage (excluding Carryover). Watermaster also assesses losses due to evaporation on the puts when water is recharged in spreading basins.

In evaluating applications for storage agreements, Watermaster must conduct an investigation to determine if the water stored and recovered under a proposed storage agreement has the potential to cause MPI to a Party or the basin. If Watermaster determines that implementation of the proposed storage agreement has the potential to cause MPI, the applicant must revise its application and demonstrate that there will be no MPI, or Watermaster must impose conditions in the storage agreement to ensure there is no MPI. Watermaster cannot approve a storage agreement that has the potential to cause MPI.

The Restated Judgment provides that the Basin’s groundwater storage capacity may be utilized for the storage and conjunctive use of supplemental water only under Watermaster control and regulation and that no use of such capacity be made except pursuant to written agreement with Watermaster (Restated Judgment, ¶ 11, 12; see also Peace Agreement, § 5.2(a)). The Pooling Plans of the Overlying (Non-Agricultural) Pool (Restated Judgment Exhibit “G”) and the Appropriative Pool (Restated Judgment Exhibit “H”) each require agreement with Watermaster as a condition of storing Excess Carryover water within the Basin.

Consistent with ¶s 14 and 28 of the Restated Judgment and the Chino Basin Watermaster Rules and Regulations (“Rules and Regulations”), storage of water within the Basin has been accomplished pursuant to Watermaster’s existing Form 1 (Application for a Local Storage Agreement) and Form 8 (Standard Local Storage Agreement). The Board enters into storage agreements only after an application is noticed and considered by the Pool Committees, Advisory Committee, and Watermaster Board (see Rules and Regulations, Article X), and when a finding is made that storage will not result in MPI to any Party to the Judgment or the Basin. (Peace Agreement, § 5.2(b)(iv).)

The Form 1 Application for Local Storage Agreement was approved in 2001 and has not been amended since that time; it is the mechanism through which Parties may apply to enter into a Local Storage Agreement.

The Form 8 Local Storage Agreement, as it was similarly approved by the Court in 2001 and still exists today, provides for the storage of a set quantity of water for the duration of the Peace Agreement. While Watermaster tracks production on a quarterly basis and accounts for unproduced water and water entering storage annually, in the event that a Party wishes to increase its quantity of water in storage—either via recharge of Supplemental Water or the

¹⁴ See §5.2(c)(iv)(b) of the Peace Agreement

accrual of Excess Carryover water—in order to ensure that that the additional quantity of water is stored in compliance with the provisions of the Restated Judgment, Peace Agreement, and Rules and Regulations, it must enter into a new storage agreement. In practice, this means that each of the members of the Overlying (Non-Agricultural) and Appropriative Pools must go through the application process each year in which their balances of stored water increase.

The Parties, amongst themselves, are actively involved in water transfers of annual unproduced rights in the Safe Yield and water in their storage accounts. Watermaster has an application and review process for transfers that is similar to the storage agreement application process. Transfers are one way that the Parties recover water held in storage accounts.

1.2 Existing Managed Storage and Proposed Storage and Recovery Programs

The Parties engage in conjunctive-use activities individually by storing Basin and Supplemental Waters that are in excess of their demands and subsequently recover that water as their individual needs arise. These activities collectively cause a temporary increase in managed storage. Table 1-1 summarizes the amount of water in managed storage by the Parties. Table 1-1 also shows the amount of water stored by the Metropolitan Water District of Southern California (Metropolitan) Dry-Year Yield Program (DYYP). The total volume of water in managed storage as of June 30, 2019 was 549,244 af.

Table 1-1 Ending balances in managed storage in the Chino Basin (af)

Fiscal Year ending June 30	Appropriative Pool				Overlying Non-Agricultural Pool			Total Managed Storage by Parties (8) = (7) + (4)	Dry Year Yield Program Storage (9)	Total Managed Storage (10) = (9) + (8)
	Carryover (1)	Excess Carryover (2)	Local Supplemental Storage (3)	Subtotal (4)	Carryover (5)	Excess Carryover (6)	Subtotal (7)			
2000	28,911	170,342		199,253	6,541	31,031	37,572	236,825	0	236,825
2001	15,940	77,907	92,813	186,660	5,301	32,330	37,631	224,291	0	224,291
2002	13,521	70,103	87,801	171,425	5,285	33,727	39,012	210,437	0	210,437
2003	18,656	71,329	81,180	171,165	6,743	36,850	43,593	214,758	7,738	222,496
2004	21,204	70,503	80,963	172,670	7,177	40,881	48,058	220,728	26,300	247,028
2005	21,289	76,080	88,849	186,218	7,227	45,888	53,115	239,333	38,754	278,087
2006	32,062	56,062	86,170	174,294	7,227	49,178	56,405	230,699	58,653	289,352
2007	34,552	50,895	83,184	168,631	7,084	51,476	58,560	227,191	77,116	304,307
2008	41,626	83,962	81,520	207,108	6,819	45,248	52,067	259,175	74,877	334,052
2009	42,795	101,908	79,890	224,593	6,672	46,600	53,272	277,865	34,494	312,359
2010	41,263	120,897	90,133	252,293	6,934	47,732	54,666	306,959	8,543	315,502
2011	41,412	146,074	98,080	285,566	6,959	49,343	56,302	341,868	0	341,868
2012	42,614	209,981	116,138	368,733	6,914	13,993	20,907	389,640	0	389,640
2013	39,413	225,068	116,378	380,859	7,073	15,473	22,546	403,405	0	403,405
2014	41,708	224,496	123,484	389,688	6,478	12,812	19,290	408,978	0	408,978
2015	40,092	239,517	127,994	407,603	6,823	12,225	19,048	426,651	0	426,651
2016	39,733	248,013	131,522	419,267	7,195	9,949	17,144	436,411	0	436,411
2017	38,340	260,682	143,552	442,575	7,226	8,292	15,519	458,093	6,315	464,408
2018	34,582	254,221	155,018	443,821	7,198	10,775	17,973	461,795	41,380	503,174
2019	38,605	279,033	166,406	484,044	7,227	12,004	19,231	503,275	45,969	549,244

The 2018 SFI projected that for the planned use of managed storage by the Parties up to 700,000 af that Hydraulic Control would be maintained, that there would be no MPI, and that there would be an adverse impact from the reduction of net recharge and Safe Yield attributable to the use of managed storage. The 2018 SFI made an identical finding for Storage and Recovery

Programs that would operate in an identical manner to the existing Metropolitan DYYP and using the managed storage space between 700,000 af and 800,000 af.

As of June 30, 2019, the Parties' aggregate amount of water in managed storage was 503,275 af (see Table 1.1). The Parties are projected to use in aggregate about 720,000 af of managed storage for their individual conjunctive-use operations based on the most recent planning information provided by them (See Appendix C). The projected average annual increase in managed storage by the Parties is about 21,600 afy through 2030, after which the aggregate amount of managed storage space used by the Parties is projected to decline through about 2070.

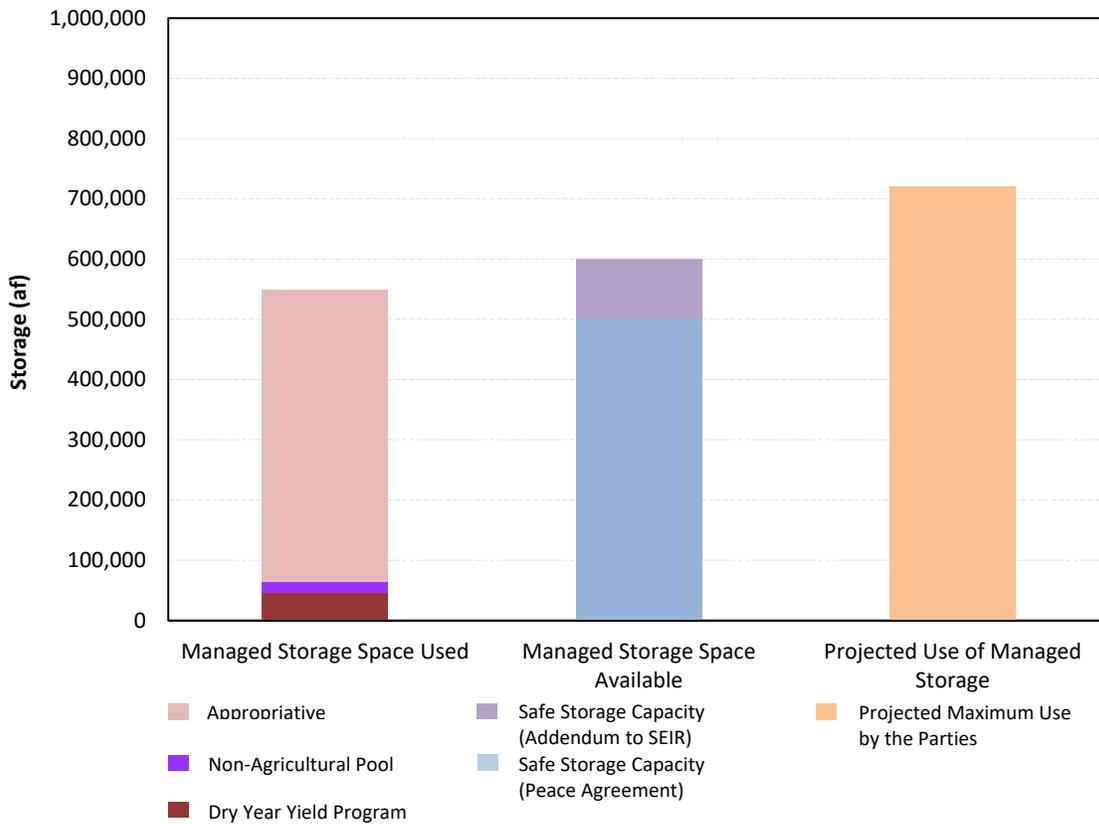
Metropolitan's DYYP is the only active Storage and Recovery Program in the basin. The DYYP can store up to 100,000 af with maximum puts of 25,000 afy and maximum takes of 33,000 afy. The DYYP Storage and Recovery Program agreement provides that puts and takes can exceed these values if agreed to by Watermaster (as was done in fiscal years 2018 and 2009, respectively). As of June 30, 2019, there was 45,969 af stored in the DYYP account. The agreement that authorizes the DYYP will expire in 2028.

The combined use of managed storage by the Parties and Metropolitan's DYYP is projected to reach a maximum of about 790,000 af assuming that the DYYP has 100,000 af in storage in 2028 and that subsequent to 2028 Metropolitan removes that water from managed storage at the contract rate of 33,300 afy starting in 2029.

Figure 1-1 compares the current amount of water in managed storage to the managed storage space available and the projected use of storage space by the Parties. The managed storage space used is 549,244 af. The amount of managed storage space available for use by the Parties pursuant the 2010 Peace II Project Subsequent Environmental Impact Report and its 2017 Addendum is 600,000 af. The storage space used by the Parties will exceed this 600,000 af limit by 120,000 af by 2030.¹⁵

¹⁵ See Appendix C for updated groundwater pumping and managed storage projections.

Figure 1-1 Comparison of managed storage space used, managed storage space available, and projected maximum use of managed storage by the Parties



The IEUA and some of the Parties are considering Storage and Recovery Programs with yet-to-be proposed operational parameters. According to the discussions in the development of the 2018 SFI, the amount of storage space required in aggregate for all contemplated Storage and Recovery Programs, including the DYYP, is projected to range between 200,000 and 300,000 af.

Section 2 – Storage Management Plan Description

This section describes the 2020 SMP based on the requirements of the Judgment, the Peace Agreement, the conclusions of the 2018 SFI, the 2020 SMP White Paper, and Watermaster stakeholder input from the 2020 SMP workshop process during the period of June through December 2019.

2.1 Use of Storage Space by the Parties for Their Individual Conjunctive-Use Activities and by Entities Engaged in Storage and Storage and Recovery Programs

An aggregate amount of 800,000 af is reserved for the Parties' conjunctive-use activities (includes Carryover, Excess Carryover, and Supplemental Accounts) and Metropolitan's DYYP. This amount is referred to as the "First Managed Storage Band" (FMSB).

The managed storage space between 800,000 and 1,000,000 af is reserved for Storage and Recovery Programs. Storage and Recovery Programs that utilize the managed storage space above 800,000 af will be required to mitigate potential MPI as if the 800,000 af were fully used. Renewal or extension of the DYYP agreement will require the DYYP to use storage space above 800,000 af.

The allocation of storage space for use by Parties and for Storage and Recovery Programs may be revised in subsequent updates of the SMP.

Note that the use of managed storage greater than 1,000,000 af may be possible provided the storing entity submits a Storage and Recovery Program application, demonstrates that the program has broad mutual benefit, demonstrates that program's mitigation measures will meet the mitigation requirements of the Watermaster to ensure there will be no MPI and other adverse impacts¹⁶, complies with CEQA, and obtains approval from the Watermaster.

2.2 Reservation of Existing Spreading Basin Facilities to Satisfy Watermaster Recharge and Replenishment Obligations

The Parties and IEUA, through the OBMP, have substantially increased storm and supplemental water recharge capacity in the Chino Basin. The increase in supplemental water recharge capacity was done to ensure that Watermaster could meet its future recharge and replenishment obligations pursuant to Court and Regional Board orders. Watermaster will include provisions in storage agreements to prioritize the use of spreading basins to satisfy Watermaster's recharge and replenishment obligations over the use of spreading basins for other uses subject to limitations provided in existing agreements with the owners of the facilities.

¹⁶ Adverse impacts include reductions in net recharge and Safe Yield; and an increase in the groundwater discharge from the Chino North GMZ to the Santa Ana River contributing to a loss of Hydraulic Control.

2.3 Storage Management Activities of the Parties

2.3.1 Limitation of Transfers or Leases of Water Rights and Water Held in Managed Storage

Early in the OBMP implementation period, Watermaster determined that transfers or leases of water rights and water held in managed storage (hereafter transfers) from Parties that are situated such that they pump groundwater outside of MZ1 to Parties that pump in MZ1 for *the purpose of replenishment* have the potential to cause MPI.¹⁷

This limitation on transfers should be reconsidered if the land subsidence management plan for MZ1 includes consideration for such transfers, the land subsidence plan is implemented, and subsequent monitoring demonstrates the sufficiency of the land subsidence management plan.

2.3.2 Mitigation of Reduced Net Recharge and Safe Yield

The 2018 SFI demonstrated that storing water has the effect of reducing net recharge and Safe Yield. The reduction in net recharge caused by storage is an adverse impact. The Safe Yield, a prospective calculation, is based on projected estimates of net recharge that include the effects of managed storage on net recharge¹⁸. The reduction in Safe Yield due to projected storage management by the Parties is thus incorporated into the Safe Yield estimate. Watermaster considers this adverse impact to be mitigated by the prospective calculation of the Safe Yield.

2.4 Storage and Recovery Programs

2.4.1 Prioritization of Put and Take Operations in MZ2 and MZ3

Storage and Recovery programs are implemented through a series of “puts” and “takes” where water goes into storage during a put and is recovered from storage during a take. Based on the results of the 2018 SFI, these puts and takes should be prioritized to occur in MZ2 and MZ3 to avoid new land subsidence and interfering with land subsidence management in MZ1, to minimize pumping sustainability challenges, to minimize the impact of storage and recovery operations on solvent plumes, to preserve the state of Hydraulic Control, and to take advantage of the larger and more useful groundwater storage space in MZ2 and MZ3.

This spatial prioritization on puts and takes should be reconsidered if the land subsidence management plan for MZ1 includes consideration for Storage and Recovery programs, the land subsidence management plan is implemented, and subsequent monitoring demonstrates the sufficiency of the land subsidence management plan.

¹⁷ See the report entitled: Material Physical Injury analysis – Monte Vista Water District lease of West Valley Water District production rights in the Chino Basin for fiscal year 2006/07. Prepared by WEI in April 2007.

¹⁸ Refer to the 2015 Reset Technical Memorandum and the April 2017 Court Order for additional information on the Safe Yield reset methodology. These documents can be found here: https://cbwm.syncedtool.com/shares/folder/e83081106c3072/?folder_id=1595.

2.4.2 Evaluation of Storage and Recovery Program Impacts, MPI, and Mitigation

The intent of this provision is to reaffirm the requirements of ¶ 12 of the Judgment and §5.2(c)(xiii) and 5.2(c)(ix) of the Peace Agreement, as to the review and approval of Storage and Recovery Program applications, and to require Storage and Recovery Program storage agreements to provide provisions that require Storage and Recovery Program participants to cease or modify their operations if Watermaster determines, subsequent to Watermaster and Court approval of a Storage and Recovery Program storage agreement, that the participant's storage and recovery operations are causing or threaten to cause MPI. The types of MPI to be addressed include but are not limited to land subsidence, pumping sustainability, water quality, shallow groundwater, and liquefaction.

Watermaster will review each Storage and Recovery Program application, estimate the surface and ground water systems response, prepare a report that describes the response and potential MPI, and develop mitigation requirements to mitigate MPI caused by the proposed Storage and Recovery Program. The Storage and Recovery Program applicant will develop mitigation measures pursuant to these requirements and incorporate them into their Storage and Recovery Program application. Upon approval by Watermaster, these mitigation measures will be incorporated into the Storage and Recovery Program storage agreement.

Watermaster will periodically review current and projected basin conditions, compare this information to the projected basin conditions assumed in the evaluation of the Storage and Recovery Program application process, compare the projected Storage and Recovery Program operations to actual Storage and Recovery Program operations, and make findings regarding the efficacy of related MPI mitigation requirements and measures in the Storage and Recovery Program storage agreements. And, based on its review and findings, Watermaster may require changes in the Storage and Recovery Program storage agreements to mitigate MPI.

2.4.3 Adverse Impacts Due to a Storage and Recovery Program Must Be Mitigated

Adverse impacts include but are not limited to reductions in net recharge and Safe Yield and an increase in the groundwater discharge from the Chino North GMZ to the Santa Ana River contributing to a loss of Hydraulic Control. Watermaster will, as part of the Storage and Recovery Program application review process, make a projection of the program's expected impact on net recharge and Safe Yield and on the state of Hydraulic Control.

The 2018 SFI concluded that the net recharge and Safe Yield of the basin would be reduced annually by about 2.0 percent (ranged from 1.5 to 2.4 percent) of the volume of water stored in a Storage and Recovery Program storage account. Watermaster will estimate the reduction in net recharge and Safe Yield for each Storage and Recovery Program and deduct it from water stored in each Storage and Recovery Program storage account to compensate for its impact on net recharge and Safe Yield.

Watermaster will review these impacts and develop mitigation requirements for the proposed Storage and Recovery Program. The Storage and Recovery Program applicant will develop mitigation measures pursuant to these requirements and incorporate them into their Storage

and Recovery Program application. Upon approval by Watermaster, these mitigation measures will be incorporated into the Storage and Recovery Program storage agreement.

Watermaster will periodically review the current and projected net recharge loss rate and the state of Hydraulic Control, compare this information to the projected basin conditions assumed in the evaluation of the Storage and Recovery Program application process, compare the projected Storage and Recovery Program operations to actual Storage and Recovery Program operations, and make findings regarding the efficacy of the related mitigation measures and requirements in the Storage and Recovery Program storage agreement. And, based on its review and findings, Watermaster may require changes in the Storage and Recovery Program storage agreements to mitigate impacts on net recharge and Safe Yield and on the state of Hydraulic Control.

2.5 Storage Agreement Application Process

As part of the development of an updated Storage Management Plan, environmental review will be conducted as to the impacts of a planned quantity of storage space reserved for the Parties' conjunctive-use activities and Metropolitan's DYYP. As a means of streamlining the process through which Parties apply for, receive approval of, and enter into storage agreements with Watermaster, the existing Form 8 Local Storage Agreements will be modified to be consistent with an "evergreen agreement" paradigm.

Within an "evergreen agreement" paradigm, the forms of the agreements, as revised, will allow for the quantities stored pursuant to the agreements to increase, during the term of the agreements, to cover the amount of water that each Party to an agreement places into storage, as shown in each Watermaster-approved annual Assessment Package. The evergreen agreements will be valid for the duration of the Peace Agreement and will be automatically adjusted upon Watermaster's approval of each subsequent Assessment Package so long as the cumulative amount of water in storage is less than the quantity reserved for the Parties' conjunctive-use operations and Metropolitan's DYYP (cumulatively, the FMSB) and Watermaster has made no finding that MPI is threatened to occur as a result of the increase in the quantity of water in storage.

2.6 Storage Management Plan Update

Watermaster will periodically review and update the SMP based on monitoring information obtained since the previous SMP was adopted, technology changes, and the "needs and requirements of the lands overlying the Chino Basin and the owners of the rights in the Safe Yield or Operating Safe Yield of the Basin."¹⁹ The periodic review and update of the SMP will require the use of updated planning and hydrologic data and models, and it should be completed: at no less than a five-year frequency, when the Safe Yield is recalculated, or when Watermaster determines a review and update is warranted based new information and/or the needs of the Parties or the Basin.

The projected aggregate amount of water in managed storage by the Parties in 2056 (planning horizon of the 2018 SFI) is about 340,000 af. The impacts to the Basin and the Parties from

¹⁹ Judgment, ¶12.

reducing managed storage below 340,000 af has not been estimated. Notwithstanding the SMP update frequency stated above, Watermaster should update the SMP at least five years before the aggregate amount of managed storage by the Parties is projected to fall below 340,000 af.

Appendix E

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Final 2020 Storage Management Plan White Paper

The objective of the 2020 Storage Management Plan white paper is to provide a concise compilation of technical storage management issues developed from the Storage Framework Investigation that should be considered in the 2020 Storage Management Plan. The draft 2020 Storage Management Plan white paper was distributed by the Chino Basin Watermaster on June 8, 2019 and it was reviewed at the June 20, 2019 Storage Management Plan workshop. The stakeholders were asked to provide comments on the draft white paper by July 5, 2019. These comments and Watermaster staff responses to them are included in Exhibit A attached herein. Some of those responses resulted in changes in the final white paper.

Background

Groundwater pumping rights in the Chino Basin were adjudicated in the 1970s and settled in the 1978 stipulated agreement (Judgment). The Judgment established a Watermaster to administer the decree under the court's continuing jurisdiction and empowered it to manage and control available storage capacity and to enter into agreements for the storage of water. As a prerequisite to implementing the Optimum Basin Management Program ("OBMP") the parties executed the Peace Agreement providing direction and guidance to the Watermaster on how storage should be prioritized and managed. The OBMP addresses the management of extraction, recharge, storage, recovery, and transfer of water. The prevailing standard for all operations is the avoidance of "undesirable results"—defined as "material physical injury"—under court approved management agreements executed contemporaneously and subsequent to the adoption of the OBMP Update in June 2020.¹

Given the passage of twenty years since its approval, Watermaster has revisited the OBMP goals and objectives and plans to update the OBMP by June 2020. Updating the OBMP storage management plan is integral to the OBMP update. This background section provides the historical and institutional background for Watermaster's storage management activities, managed storage conditions, and groundwater management challenges impacted by managed storage activities.

Judgment

There is a significant amount of unused storage space in the Chino Basin. Groundwater in storage was estimated to have declined by about 1,600,000 af over the period 1922 through 1978, the starting point of the Judgment implementation. This decline of groundwater in storage was recognized in the Judgment,² and it requires that the use of this space be undertaken only under Watermaster control and regulation. Specifically, Judgment paragraphs 11 and 12 state:

¹ The Optimum Basin Management Program can be found here: http://www.cbwm.org/rep_engineering.htm.

² Original judgment in Chino Basin Municipal Water District vs. City of Chino, et al., signed by Judge Howard B. Weiner, Case No. 164327. File transferred August 1989, by order of the Court, and assigned new case number RCV51010. The Restated Judgment can be found here:

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“11. Available Ground Water Storage Capacity. There exists in Chino Basin a substantial amount of available ground water storage capacity which is not utilized for storage or regulation of Basin Waters³. Said reservoir capacity can appropriately be utilized for storage and conjunctive use of Supplemental Water⁴ with Basin Waters. It is essential that said reservoir capacity utilization for storage and conjunctive use of Supplemental Water be undertaken only under Watermaster control and regulation, in order to protect the integrity of both such Stored Water⁵ and Basin Water in storage and the Safe Yield⁶ of Chino Basin.

12. Utilization of Available Ground Water Capacity. Any person or public entity, whether a party to this action or not, may make reasonable beneficial use of the available ground water storage capacity of Chino Basin for storage of Supplemental Water; provided that no such use shall be made except pursuant to written agreement with Watermaster, as authorized by Paragraph 28. In the allocation of such storage capacity, the needs and requirements of lands overlying Chino Basin and the owners of rights in the Safe Yield or Operating Safe Yield⁷ of the Basin shall have priority and preference over storage for export.”

These paragraphs establish Watermaster’s control over the use of the storage space in the basin, require the accounting of Stored Water and Basin Water in storage, require accounting for the impacts of managed storage on Safe Yield and the prevention of unauthorized overdraft, require storing entities to obtain a storage agreement from Watermaster, and prioritize the use of storage space to meet the needs and requirements of the lands overlying the Chino Basin and of the Judgment parties over the use storage space to store water for export.

Judgment paragraphs 28 and 29 state:

“28. Ground Water Storage Agreements. Watermaster shall adopt, with the approval of the Advisory Committee, uniformly applicable rules and a standard form of agreement for storage of Supplemental Water, pursuant to criteria therefore set forth in Exhibit "I". Upon appropriate application by any person, Watermaster shall enter into such a storage agreement; provided that all such storage agreements shall first be approved by written order of the Court, and shall by their terms preclude operations which will have a substantial adverse impact on other producers.

29. Accounting for Stored Water. Watermaster shall calculate additions, extractions and losses and maintain an annual account of all Stored Water in Chino

https://cbwm.syncedtool.com/shares/folder/e83081106c3072/?folder_id=247

³ Basin Water is a defined term. Please see Storage Framework Appendix D for its definition.

⁴ Supplemental Water is a defined term. Please see Storage Framework Appendix D for its definition.

⁵ Stored Water is a defined term. Please see Storage Framework Appendix D for its definition.

⁶ Safe Yield is defined term. Please see Storage Framework Appendix D for its definition.

⁷ Operating Safe Yield is a defined term. Please see Storage Framework Appendix D for its definition.

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Basin, and any losses of water supplies or Safe Yield of Chino Basin resulting from such Stored Water.”

These paragraphs require that Watermaster develop storage agreements for entities (Judgment parties and others) to store supplemental water in the basin, have the storage agreements approved by the Court, include terms in the storage agreements to ensure that storage “operations” do not cause “substantial adverse impact on other producers,” and collect information to enable it to account for “all Stored Water in Chino Basin, and any losses of water supplies or Safe Yield of Chino Basin resulting from such Stored Water.” Losses of water supplies or Safe Yield refer to storage losses and changes in Safe Yield caused by the management of storage.

Optimum Basin Management Program and the Peace Agreements

The Chino Basin OBMP⁸ set forth agreed goals and objectives in 1999. A year later, the Peace Agreement⁹ and the OBMP Implementation were approved by the Court in 2000. Many of the operable features of the OBMP were incorporated into the OBMP Implementation Plan,¹⁰ conditioned on compliance with the Peace Agreement. The OBMP Implementation Plan is Exhibit B to the Peace Agreement. The Peace Agreement is an agreement among the Judgment parties to implement the OBMP and was reviewed in a programmatic environmental impact report (PEIR), certified by the Inland Empire Utilities Agency (IEUA) in July 2000. The OBMP Implementation Plan contains a storage management plan that was developed to allow the parties and other entities to utilize the unused storage space in the basin and mitigate potential Material Physical Injury¹¹ (MPI) from its use.

The OBMP storage management plan consists of managing groundwater production, replenishment, recharge, and storage such that total storage within the basin ranges from a low of 5,300,000 af to a high of 5,800,000 af. The following definitions are included in the OBMP Implementation Plan:

- Operational storage requirement (OSR) is the storage or volume in the Chino Basin that is necessary to maintain the Safe Yield. The OSR was estimated in the development of the OBMP to be about 5.3 million af. This storage value was set as the estimated storage in the basin in 1997.¹²
- Safe storage is an estimate of the maximum amount of storage space in the basin that can be used and not cause significant water-quality and/or high-groundwater related

⁸ The OBMP report is located here:

http://www.cbwm.org/docs/engdocs/obmpphas1rep/Text/OBMP_Ph1_Report.pdf

⁹ The Peace Agreement is located here: http://www.cbwm.org/docs/legaldocs/Peace_Agreement.pdf

¹⁰ The OBMP Implementation Plan is Appendix B to the Peace Agreement, and it is located here: http://www.cbwm.org/docs/legaldocs/Implementation_Plan.pdf

¹¹ Material Physical Injury is a defined term. Please see Storage Framework Appendix D for its definition.

¹² Page 2-11, Optimum Basin Management Program, Phase I Report.

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problems. Safe storage was estimated in the development of the OBMP to be about 5.8 million af.

- Safe storage capacity (SSC) is the difference between safe storage and the OSR. The allocation and use of storage space in excess of the SSC will preemptively require mitigation; that is, mitigation must be defined and resources committed to mitigation prior to its allocation and use.

Safe storage is equal to the OSR plus the SSC. The SSC was estimated during the development of the OBMP to be equal to the calculated decline in storage (400,000 af) during the base period (1965 through 1974) used to estimate the Safe Yield¹³ in the Judgment plus an assumed additional decline in storage (100,000 af) in the intervening period up to the filing of the Judgment (1974 to 1978). The assumption underlying SSC was that it would be safe to store water in storage space that was recently created prior to implementing the Judgment.

Water occupying the SSC includes Carryover,¹⁴ Excess Carryover,¹⁵ Local Storage,¹⁶ and Supplemental Waters stored by the parties. Water stored for Storage and Recovery Programs is also included in the SSC.¹⁷ Carryover, Excess Carryover, Local Storage, and Supplemental Waters are referred to herein collectively as managed storage.

Subsequent to the approval of the PEIR in 2000, Watermaster and the Judgment parties developed revisions to the OBMP based on: new monitoring and borehole data collected since 1998, an improved hydrogeologic conceptualization of the basin and new numerical models that have improved the understanding of basin hydrology since 2000, and the need to expand the Chino Basin Desalters' (desalters) capacity to the 40,000 afy of groundwater pumping required in the OBMP Implementation Plan. Concurrently, the IEUA and Watermaster worked with the Santa Ana Regional Water Quality Control Board (Regional Board) to revise the total dissolved solids (TDS) and nitrate objectives for the Chino North Management Zone¹⁸ to enable the reuse of the IEUA's recycled water without desalting it for a period estimated to be at least 30 years and without impairing the beneficial use of Chino Basin groundwater. One of the Regional Board's conditions for raising the TDS and nitrate objectives was the achievement of Hydraulic Control.¹⁹

Hydraulic Control is the reduction of groundwater discharge from the Chino North Management Zone to the Santa Ana River to less than 1,000 afy. Hydraulic Control is a goal of the OBMP with the intent of maintaining and enhancing the Safe Yield of the basin by ensuring that agricultural

¹³ Ibid, page 2-28 and Table 2-13

¹⁴ Carryover Water is a defined term. Please see Storage Framework Appendix D for its definition.

¹⁵ Excess Carryover Water is a defined term. Please see Storage Framework Appendix D for its definition.

¹⁶ Local Storage Water is a defined term. Please see Storage Framework Appendix D for its definition.

¹⁷ Storage and Recovery Program is a defined term. Please see Storage Framework Appendix D for its definition.

¹⁸ The Chino North Management Zone consists of the combination of OBMP Management Zones 1, 2, and 3, exclusive of the Prado Basin flood pool area.

¹⁹ Hydraulic Control is a defined term. Please see Storage Framework Appendix D for its definition.

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groundwater production in the southern half of the basin would be replaced by groundwater production for municipal uses as the land use in that area transitions from agricultural uses to urban uses. Through extensive investigations, it was determined that Hydraulic Control and the maintenance of Safe Yield required the expansion of desalter groundwater production to 40,000 afy and the reduction of basin water in storage by 400,000 af. These investigations included a recalculation of the total water in storage in the basin, based on the improved hydrogeologic understanding. The total storage in the Chino Basin for 2000 was estimated to be about 5,935,000 af, which is 635,000 af greater than that estimated for the OSR and 135,000 af greater than safe storage.²⁰

The OBMP Implementation Plan was amended in 2007, and the Peace II Agreement enabled the expansion of the Chino Desalter pumping capacity from 20,000 afy to 40,000 afy. The technical investigations conducted to support the expansion of desalter groundwater production to 40,000 afy and the use of 400,000 af²¹ of groundwater to partially meet the Replenishment Obligation for desalter production also indicated that the Safe Yield of the Chino Basin, at that time, was likely less than that stated in the Chino Basin Judgment and that it was projected to decline further in the future due to changes in cultural conditions in the watersheds overlying and tributary to the Chino Basin. The IEUA completed and subsequently certified a supplemental environmental impact report (SEIR) for the Peace II Agreement in 2010.

Starting in 2011, Watermaster began the technical effort to recalculate the Safe Yield. This work involved updating the hydrogeologic conceptual model of the basin, updating the historical hydrology, updating and recalibrating numerical models that simulate the surface and ground water hydrology of the Chino Basin area, and projecting the surface and groundwater response of the basin to future management plans that included storage management. This work is documented in *2013 Chino Basin Groundwater Model Update and Recalculation of Safe Yield Pursuant to the Peace Agreement* (WEI, 2015; hereafter, Safe Yield report). The results of that work yielded a reassessment of the hydrology of the basin from 1961 through 2011 and projections of basin hydrology through 2050, based on the best available planning information. The conclusions of the Safe Yield report, related to storage management, are:

- On July 1, 2000, the total water in storage in the basin was about 5,935,000 af, inclusive of the 236,000 af of managed storage. This is about 635,000 af greater than the OSR of 5,300,000 af that was established in the OBMP Implementation Plan.
- Managed storage was projected to increase from 487,000 af in 2016 to about 663,000 af by 2030 (exceeding the SSC by 163,000 af) and decline thereafter to zero af by 2051. Managed storage was projected to be used to meet future replenishment obligations.

²⁰ Wildermuth Environmental, Inc., 2007. 2007 CBWM Groundwater Model Documentation and Evaluation of the Peace II Project Description.

²¹ The 400,000 af of groundwater used for desalter replenishment is referred to as Re-Operation.

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- Total storage was projected to fall below the OSR of 5.3 million af in 2041.

In 2017, the IEUA adopted an addendum to the Peace II SEIR, that provided a temporary increase in the SSC to 600,000 af through June 30, 2021 to provide time for Watermaster and the Judgment parties to update the OBMP storage management plan. The Storage Framework Investigation (2018) was conducted to provide technical support to update the storage management plan. In the absence of developing and adopting a new storage management plan by June 30, 2021, the SSC would again be limited to 500,000 af.

Storage Agreements

Since the Judgment came into effect, Watermaster developed rules and regulations, standard storage agreements, and related forms. There are three types of storage agreements that result in several types of storage accounts: Excess Carryover, Local Supplemental, Local Storage and Storage and Recovery. An Excess Carryover account includes a party's unproduced rights in the Safe Yield (Safe Yield for Overlying Non-Agricultural Pool²² parties and Operating Safe Yield for Appropriative Pool²³ parties) and Basin Water acquired from other parties. A Local Supplemental Water account includes imported and recycled water that is recharged by a party and similar water acquired from other parties. A Storage and Recovery account includes Supplemental Water and is intended to produce a "broad and mutual benefit to the Parties to the Judgment." Watermaster tracks the puts, takes, losses, and end of year storage totals for all of these storage accounts, and reports on this accounting in the annual assessment process.

In evaluating applications for storage agreements, Watermaster must conduct an investigation to determine if the water stored and recovered under a proposed storage agreement will cause potential MPI to a party or the basin. If Watermaster determines that implementation of the proposed storage agreement will cause potential MPI, the applicant must revise its application so there is no MPI, or Watermaster must impose conditions in the storage agreement to ensure there is no MPI. Watermaster cannot approve a storage agreement that will result in MPI.

The parties, amongst themselves, are actively involved in water transfers of annual unproduced rights in the Safe Yield and water in their storage accounts. Watermaster has an application and review process for transfers that is similar to the storage agreement application process. Transfers are one way that the parties recover water held in storage accounts.

Existing Managed Storage and Proposed Storage and Recovery Programs

The Watermaster parties engage in conjunctive-use activities individually by storing Basin and Supplemental Waters that are in excess of their demands and subsequently recover that water as their individual needs arise. These activities collectively cause a temporary increase in managed storage. Table 1 summarizes the amount of water in managed storage by the Parties. Table 2-1 also shows the amount of water stored by the Metropolitan Water District of Southern California (Metropolitan) Dry-Year Yield Program (DYYP). The total volume of water in managed

²² Overlying Non-Agricultural Pool is a defined term. Please see Storage Framework Appendix D for its definition.

²³ Appropriative Pool is a defined term. Please see Storage Framework Appendix D for its definition.

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storage as of June 30, 2018 was about 581,100 af. Table 1 does not reflect the anticipated reductions in managed storage that will occur to offset unassessed desalter replenishment obligations.²⁴

²⁴ The reconciliation of the water held in managed storage and the desalter replenishment obligation should be complete by the end of calendar year 2019, and the final Storage Management Plan report will include an updated version of this table that reflects these changes.

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Table 1 Ending Balances in Managed Storage in the Chino Basin¹
(af)

Fiscal Year Ending June 30	Appropriative Pool				Overlying Non-Agricultural Pool			Total Managed Storage by Parties (8) = (7) + (4)	Dry Year Yield Program Storage ⁶ (9)	Total Managed Storage (10) = (9) + (8)
	Carryover ² (1)	Excess Carryover (ECO) ³ (2)	Local Supplemental Storage ⁴ (3)	Subtotal (4)	Carryover ² (5)	Local Storage ⁵ (6)	Subtotal (7)			
2000	28,911		170,342	199,253	6,541	31,031	37,572	236,825	0	236,825
2001	15,940	77,907	92,813	186,660	5,301	32,330	37,631	224,291	0	224,291
2002	13,521	70,103	87,801	171,425	5,285	33,727	39,012	210,437	0	210,437
2003	18,656	71,329	81,180	171,165	6,743	36,850	43,593	214,758	7,738	222,496
2004	21,204	70,503	80,963	172,670	7,177	40,881	48,058	220,728	26,300	247,028
2005	21,289	76,080	88,849	186,218	7,227	45,888	53,115	239,333	38,754	278,087
2006	32,062	56,062	86,170	174,294	7,227	49,178	56,405	230,699	58,653	289,352
2007	34,552	50,895	83,184	168,631	7,084	51,476	58,560	227,191	77,116	304,307
2008	41,626	83,962	81,520	207,108	6,819	45,248	52,067	259,175	74,877	334,052
2009	42,795	101,908	79,890	224,593	6,672	46,600	53,272	277,865	34,494	312,359
2010	41,263	120,897	90,133	252,293	6,934	47,732	54,666	306,959	8,543	315,502
2011	41,412	146,074	98,080	285,566	6,959	49,343	56,302	341,868	0	341,868
2012	42,614	209,981	116,138	368,733	6,914	13,993	20,907	389,640	0	389,640
2013	39,413	225,068	116,378	380,859	7,073	15,473	22,546	403,405	0	403,405
2014	41,708	231,679	125,052	398,439	6,478	12,812	19,290	417,729	0	417,729
2015	44,437	254,643	132,791	431,871	6,823	12,225	19,048	450,919	0	450,919
2016	45,683	279,757	144,012	469,452	7,195	9,949	17,144	486,596	0	486,596
2017	43,314	308,100	157,628	509,043	7,226	11,343	18,569	527,612	6,315	533,927
2018	40,390	308,056	170,168	518,614	7,198	13,894	21,092	539,706	41,380	581,086

1. Account balances are from Watermaster Assessment Packages and do not account for the desalter replenishment obligation or the change in Safe Yield.
2. The un-produced water in any year that may accrue to a member of the Non-Agricultural Pool or the Appropriative Pool and that is produced first each subsequent Fiscal Year or stored as Excess Carryover
3. Carryover Water which in aggregate quantities exceeds a party's share of Safe Yield in the case of the Non-Agricultural Pool, or the assigned share of Operating Safe Yield in the case of the Appropriative Pool, in any year.
4. Water imported to Chino Basin from outside the Chino Basin Watershed and recycled water.
5. Water held in a storage account pursuant to a Local Storage Agreement between a party to the Judgement and Watermaster. "Local Storage Agreement" means a Groundwater Storage Agreement for Local Storage.
6. Ending balance in the Dry Year Yield Program storage account.

Metropolitan's DYYP is the only active Storage and Recovery Program in the basin. The DYYP can store up to 100,000 af with maximum puts of 25,000 afy and maximum takes of 33,000 afy. As of July 1, 2018, there were 41,380 af stored in the DYYP account. The agreement that authorizes the DYYP will expire in 2028.

The IEUA and some of the parties are proposing the implementation of Storage and Recovery Programs, including the Chino Basin Water Bank and the Chino Basin Program (CBP). The operational parameters of these proposed programs are not yet defined; that said, the amount of storage space required has been identified to range between 200,000 and 300,000 af.

Current Groundwater Management Challenges and Their Relationship to Current Storage Management

The results of the groundwater modeling work reported in the Safe Yield report projected, based on the best planning information available at that time, that the total storage in the basin will likely be relatively stable through the mid to late 2020s, and by 2050, groundwater levels were projected to decline over a broad area ranging from about 65 feet in the Pomona area to 50 feet

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in the Jurupa Community Services District (JCSD) and Desalter II well field areas.²⁵ This decline in groundwater levels was projected to occur because managed storage was used to replenish desalter production and over-production by Appropriative Pool parties.

During the development of the *2013 Amendment to the 2010 Recharge Master Plan Update* (2013 RMPU), the JCSD asserted that declining groundwater levels in the areas around and in the JCSD and Chino Basin Desalter Authority (CDA) well fields contributed to declining groundwater pumping capacity at JCSD and CDA wells. Loss in production capacity in this area is likely due to hydraulic interference among the wells and could be mitigated by reducing pumping at these wells, spreading out production over a greater area, and/or by increased recharge located proximate and tributary to the JCSD and CDA well fields. The projected decline in groundwater levels after the mid to late 2020s is projected to further exacerbate pumping sustainability challenges in this part of the basin.

The existing storage management plan is based on fixed amounts of water in storage, and its technical basis is not supported by new information available after the storage management plan was first developed (1999). Review of this new information (developed since 1999), indicates that it is possible to expand the SSC to enable greater use of storage space. This new information includes an updated hydrogeologic conceptual model; 20 years of intensive monitoring of basin operations (not available in 1999), including monitoring the basin response as managed storage approached the SSC of 500,000 af; and groundwater model-based projections of the basin response to future management plans where the managed storage exceeded 500,000 af. Re-Operation will reduce the amount of Basin Water in storage by 400,000 af. The current storage management plan does not account for Re-Operation.

The new information developed since 1999 suggests that the unanticipated use of managed storage to meet future desalter and other replenishment obligations could cause potential MPI: it has the potential to exacerbate land subsidence and pumping sustainability challenges, impact net recharge and Safe Yield, increase groundwater discharge through the CCWF, cause a loss of Hydraulic Control, and change the direction and speed of the contaminant plumes. The OBMP storage management plan needs to be updated to include features that will ensure there is no MPI to a party or the basin caused by the conjunctive-use activities of the parties and Storage and Recovery Programs.

Storage Management Plan Requirements

This section describes the technical features of the recommended storage management plan, based on the requirements of the Judgment, the Peace Agreement, and the conclusions of the Storage Framework Investigation.

²⁵ See Figure 2-2 in the Storage Framework Investigation or Figure 7-5d from the Safe Yield report.

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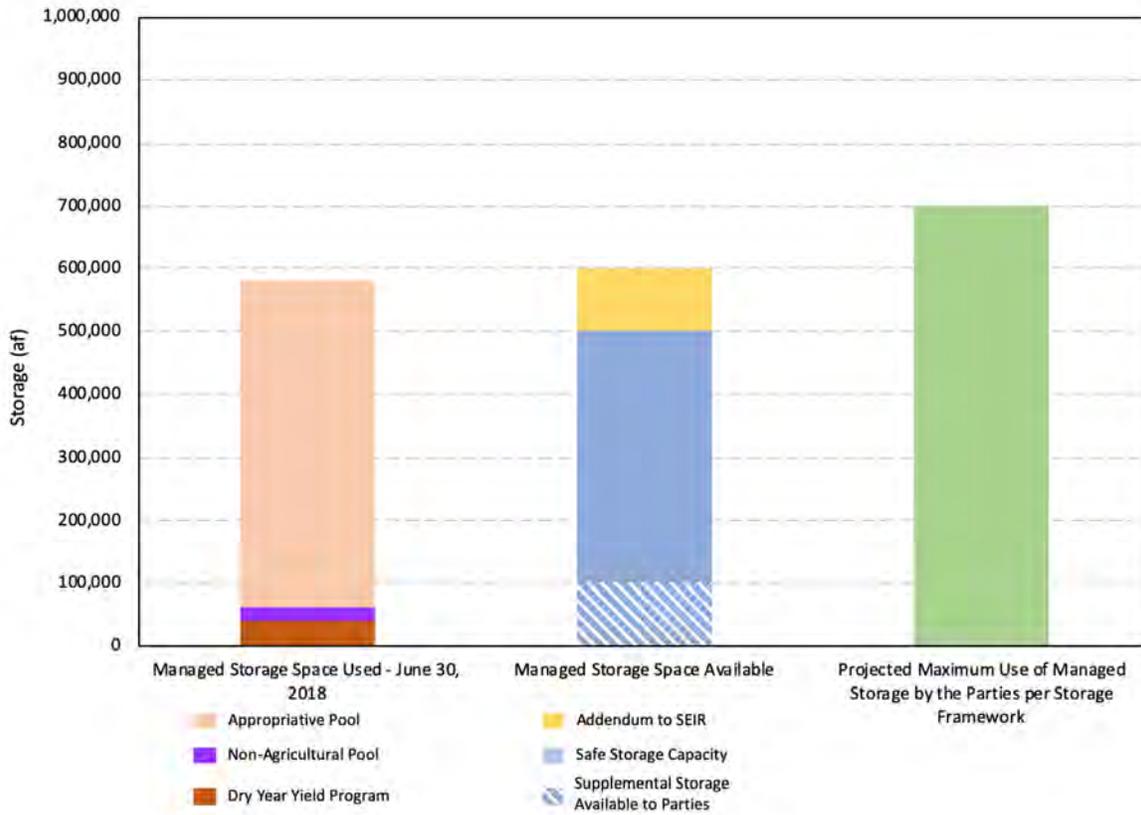
Allocation of Storage Space to the Parties Use of Managed Storage and Storage and Recovery Programs

The stakeholders desire to reserve storage space for the parties' individual uses and for Storage and Recovery Programs to provide certainty to their water supply planning and operations.

Based on the best available planning information provided by the parties in the Storage Framework Investigation, the parties' use of managed storage was projected to reach about 700,000 af in 2030 and decline monotonically thereafter. Therefore, it is logical to consider starting discussions for the parties use of managed storage with a limit of 700,000 af in the Storage Management Plan, and this will be adjusted in accordance with stakeholder input. Therefore, it is logical to consider establishing a limit for the parties' use of managed storage at 700,000 af in the Storage Management Plan. Figure 1 below compares the current use of managed storage to the storage space permitted per the Peace Agreement and the expected maximum use of managed storage by the parties.

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Figure 1 Comparison of Managed Storage Space Used, Managed Storage Space Available and Projected Maximum Use of Managed Storage by the Parties



Alternatively, the Watermaster and the parties could establish a lower or higher limit, but additional engineering work will be required to assess the basin response and potential MPI for a higher limit.

The Storage Framework Investigation evaluated the use of 300,000 af of storage for Storage and Recovery Programs that was superimposed on the storage management activities of the parties. Therefore, it is logical to consider establishing an aggregate limit for all Storage and Recovery Programs at 300,000 af in the Storage Management Plan, and this limit will be adjusted in accordance with stakeholder input.

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Reservation of Existing Spreading Basin Facilities to Satisfy Watermaster Recharge and Replenishment Obligations

The Judgment parties and IEUA, through the OBMP, have substantially increased the storm and supplemental water recharge capacity in the Chino Basin. The increase in supplemental water recharge capacity was done to ensure that Watermaster could meet its future recharge and replenishment obligations. Watermaster will include provisions in storage agreements that Watermaster will prioritize the use of spreading basins to satisfy Watermaster's recharge and replenishment obligations over the use of spreading basins for other uses.

Storage Management Activities of the Parties

Limitation of Transfers or Leases of Water Rights and Water Held in Managed Storage

Early in the OBMP implementation period Watermaster determined that transfers or leases of water rights and water held in managed storage (hereafter transfers) from parties that are situated such that they pump groundwater outside of MZ1 to parties that pump in MZ1 for *the purpose of replenishment* have the potential to cause MPI.

This limitation on transfers should be reconsidered if the land subsidence management plan for MZ1 includes consideration for such transfers, the land subsidence plan is implemented, and subsequent monitoring demonstrates the sufficiency of the land subsidence management plan.

Mitigation of Reduced Net Recharge and Safe Yield

Currently, Watermaster assesses a 0.07 percent loss to storage accounts based on the estimated groundwater discharge from the Chino North Management Zone to the Santa Ana River. The Storage Framework Investigation demonstrated that storing water has the effect of reducing net recharge and Safe Yield. The Storage Framework Investigation estimate of reduced net recharge is inclusive of discharge from the Chino North Management Zone to the Santa Ana River. The reduction in net recharge caused by storage is an adverse impact.

There are two fundamental approaches to mitigate the reduction in net recharge caused by the parties' storage management activities:

- In the first approach, the reduction net recharge would be embedded in Safe Yield, and it would be implicitly allocated to Appropriative Pool parties, based on their pro rata share of Operating Safe Yield.
- In the second approach, the reduction in net recharge would be debited to the storage accounts of the storing parties in the Appropriative and Overlying Non-agricultural pools, based on each parties' amount of water in storage.

Watermaster and the parties need to determine which of the above approaches or variant of them to include in the storage management plan to ensure that the impact from the parties' storage management activities are considered and addressed.

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Storage and Recovery Programs

Prioritization of Put and Take Operations in MZ2 and MZ3

Storage and Recovery programs are implemented through a series of “puts” and “takes” where water goes into storage during a put and is recovered from storage during a take. Based on the results of the Storage Framework Investigation, these put and takes should be prioritized to occur in MZ2 and MZ3 to avoid new land subsidence and interfering with land subsidence management in MZ1, to minimize pumping sustainability challenges, to minimize the impact of storage and recovery operations on solvent plumes, to preserve the state of Hydraulic Control, and to take advantage of the larger and more useful groundwater storage space in MZ2 and MZ3.

This spatial prioritization on puts and takes should be reconsidered if the land subsidence management plan for MZ1 includes consideration for Storage and Recovery programs, the land subsidence plan is implemented, and subsequent monitoring demonstrates the sufficiency of the land subsidence management plan.

Evaluation of Storage and Recovery Program Impacts, MPI, and Mitigation

The intent of this provision is to reaffirm the requirements of Paragraph 12 of the Judgment and the Peace Agreement, as to the review of Storage and Recovery Program applications, and to require Storage and Recovery Program agreements to provide provisions that require Storage and Recovery Program proponents to cease or modify their operations if Watermaster determines, subsequent to Watermaster and Court approval of a Storage and Recovery Program storage agreement, that the proponent’s storage and recovery operations are causing or threaten to cause potential MPI. The potential MPIs to be addressed include but are not limited to: land subsidence, pumping sustainability, reductions in net recharge and safe yield, water quality impacts, shallow groundwater, and liquefaction.

Watermaster will review each Storage and Recovery Program application, estimate the surface and groundwater system response, prepare a report that documents the response and potential MPI, and develop mitigation measures to mitigate MPI caused by the proposed Storage and Recovery Program. Watermaster will incorporate these mitigation measures into the Storage and Recovery Program storage agreement.

Watermaster will periodically review current basin conditions, compare this information to the projected basin conditions prepared in the evaluation of the Storage and Recovery Program application process, compare the projected Storage and Recovery Program operations to actual Storage and Recovery Program operations, and make findings regarding the efficacy of related MPI mitigation requirements in the Storage and Recovery Program storage agreement. And, based on its review and findings, Watermaster may require changes in the Storage and Recovery Program operations to mitigate MPI.

Hydraulic Control Impacts Due to a Storage and Recovery Program Must Be Mitigated

Watermaster will, as part of the Storage and Recovery Program application review process, make a projection of the program’s expected impact on the state of Hydraulic Control. Watermaster will review these impacts and develop mitigation requirements for the proposed Storage and

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Recovery Program. These mitigation requirements will be incorporated into the Storage and Recovery Program storage agreement.

Watermaster should periodically review the state of Hydraulic Control and update projections of the state of Hydraulic Control, compare this information to the projected Hydraulic Control assessment prepared in the evaluation of the Storage and Recovery Program application process, compare the projected Storage and Recovery Program operations to actual Storage and Recovery Program operations, and make findings regarding the efficacy of the related mitigation requirements in the Storage and Recovery Program storage agreement. And, based on its review and findings, Watermaster may require changes in the Storage and Recovery Program operations to mitigate impacts on the state of Hydraulic Control.

Storage Agreement Application Process

Watermaster and the parties should consider updating the storage agreement application process to incorporate changes in the technical features of storage management and to improve the efficiency of the application process.

Storage Management Plan Update

Watermaster should periodically review and update the storage management plan based on: monitoring information obtained since the previous storage management plan was adopted, technology changes, and the “needs and requirements of the lands overlying the Chino Basin and the owners of the rights in the Safe Yield or Operating Safe Yield of the Basin.” The assessment of technical storage management concerns and opportunities requires the use of updated hydrologic data and models and can be completed efficiently with the recalculation of Safe Yield on a ten-year frequency or more frequently.

The projected aggregate amount of managed storage by the parties in 2050 (planning horizon of the Storage Framework Investigation) is about 340,000 af. Notwithstanding the update frequency recommended above, Watermaster should consider updating the storage management plan before the aggregate amount of managed storage by the parties falls below 340,000 af if not done earlier in a periodic update of the storage management plan.

Exhibit A

Comments and Responses on the June 8, 2019 Storage Management Plan White Paper

Monte Vista Water District

Comment No. 1. Page 1, first full paragraph, text that reads: “As a prerequisite to implementing the Optimum Basin Management Program (“OBMP”) the parties executed an agreement providing direction and guidance to the Watermaster on how storage should be prioritized and managed.” Emphasis added. ***MVWD comment reads: “please state agreement and year.”***

Response. The agreement referred to is the 2000 Peace Agreement. Text modified to refer to the Peace Agreement.

Comment No. 2. Page 1, third full paragraph, , text that reads: “Groundwater storage was estimated to have declined by about 1,600,000 af over the period 1922 through 1978, the starting point of the Judgment implementation. This decline in groundwater storage was recognized in the Judgment, and it requires that the use of this space be undertaken only under Watermaster control and regulation.” Emphasis added. ***MVWD comment reads: Storage did not decline, groundwater in storage declined” and “change to “groundwater in storage”, respectively.***

Response. Text changed as requested.

Comment No. 3. Page 7, second full paragraph, text that reads: “The IEUA and some of the parties are proposing the implementation of Storage and Recovery Programs, including the Chino Basin Water Bank, the Santa Ana River Conservation and Conjunctive-Use Program (SARCCUP), and the Chino Basin Program (CBP). ***MVWD comment reads: “ It may be more contemporary to now delete the reference to SARCCUP.”***

Response. Text changed as requested.

Comment No. 4. Page 7, last paragraph continuing to top of page 8, text that reads: “The results of the groundwater modeling work reported in the Safe Yield report projected, based on the best planning information available at that time, that the total storage in the basin will likely be relatively stable through the mid to late 2020s, and by 2050, groundwater levels were projected to decline over a broad area ranging from about -65 feet in the Pomona area to -50 feet in the Jurupa Community Services District (JCSD) and Desalter II well field areas.” ***MVWD comment reads: “Described as a decline, the negative signs cause a double negative.”***

Response. Text changed to remove the negative signs.

Comment No. 5. Page 8, third full paragraph, text that reads: “The new information developed since 1999 suggests that the unanticipated use of managed storage to meet future desalter and other replenishment obligations could cause potential MPI: it has the potential to exacerbate land subsidence and pumping sustainability challenges, impact net recharge and Safe Yield,

increase groundwater discharge through the CCWF, cause a loss of Hydraulic Control, and change the direction and speed of the contaminant plumes.” ***MVWD comment reads: “Based on my 6/20 discussion with Andy I think he understands that it may be more clear if the phrase ‘to meet future desalter and other replenishment obligations’ is removed”.***

Response. The text was not changed.

Comment No. 6. Page 9, last paragraph, text that reads: “Therefore, it is logical to consider establishing a limit for the parties’ use of managed storage at 700,000 af in the Storage Management Plan.” ***MVWD comment reads: “Change ‘logical’ to ‘conducive’. ‘Logical’ seems to give an 700k an aura of certainty higher that it deserves.”***

Response. The text was changed to read: “Therefore, it is logical to consider starting discussions for the parties use of managed storage with a limit of 700,000 af in the Storage Management Plan, and this will be adjusted in accordance with stakeholder input.”

Comment No. 7. Page 10, second full paragraph, text that reads: “Therefore, it is logical to consider establishing an aggregate limit for all Storage and Recovery Programs at 300,000 af, provided that the aggregate storage limit for parties does not exceed 700,000 af.” ***MVWD comment reads: “This sentence/conclusion should probably be put on hold pending on how Watermaster stakeholders decide to be addressed, including mitigation measures.”***

Response: Note that the subsequent sentence in the text reads: “Watermaster and the parties could establish a lower or higher aggregate storage limit for Storage and Recovery Programs, but additional engineering work will be required to assess the basin response and MPI for a higher aggregated storage limit.” This sentence responds to the comment. That said, the text was changed to read: “Therefore, it is logical to consider establishing an aggregate limit for all Storage and Recovery Programs at 300,000 af in the Storage Management Plan, and this limit will be adjusted in accordance with stakeholder input.”

Comment No. 8. Page 11, first paragraph, text that reads: “Watermaster has the right to the use existing spreading basins to meet its recharge and replenishment obligations over the use of these facilities by any party or person to accomplish supplemental water recharge.” ***MVWD comment reads: “Is it WM or WM stakeholders who have invested into the basins that have this right?”***

Response: The OBMP identified that there was not enough supplemental water recharge capacity to meet future replenishment obligations. OBMP implementation led to the construction of recharge improvements that increased supplemental water recharge capacity for replenishment. The intent of constructing the recharge improvements is specific to increasing storm water recharge and providing Watermaster recharge capacity for replenishment. The text has been changed to read that Watermaster will include provisions in storage agreements that Watermaster will prioritize the use of spreading basins to satisfy Watermaster’s recharge and replenishment obligations over the use of spreading basins for other uses.

Comment No. 9. Page 11, second paragraph, text that reads: “Early in the OBMP implementation period Watermaster determined that transfers or leases of water rights and water held in managed storage (hereafter transfers) from parties that are situated such that they pump groundwater outside of MZ1 to parties that pump in MZ1 have the potential to cause MPI.” ***MVWD comment reads: “Transfers/leases into MZ1 do not have the potential to cause MPI. It can be said that physical pumping/production to some level has the potential to cause MPI. Transfer/leases and pumping/production are not one in the same.”***

Response: The text will be revised to improve clarity and will read: “Early in the OBMP implementation period Watermaster determined that transfers or leases of water rights and water held in managed storage (hereafter transfers) from parties that are situated such that they pump groundwater outside of MZ1 to parties that pump in MZ1 *for the purpose of replenishment* have the potential to cause MPI.”

San Antonio Water Company

Comment No. 1. Page 1, first full paragraph, text that reads: “As a prerequisite to implementing the Optimum Basin Management Program (“OBMP”) the parties executed an agreement providing direction and guidance to the Watermaster on how storage should be prioritized and managed.” Emphasis added. ***SAWC comment reads: “Would you please direct me to document and page where this is referenced?”***

Response. The agreement referred to is the 2000 Peace Agreement. Text will be modified to refer to the Peace Agreement.

Comment No. 2. Page 2, citation to Judgment Paragraph 28. ***SAWC comment reads: “Storage agreements are currently not going to court...correct? Are there concerns at this time because of that?”***

Response: There are no concerns at time. The present storage agreement, procedures, and forms have been approved by the Court through the approval of the Peace Agreement and Watermaster Rules and Regulations.

Comment No. 3. Page 8, third full paragraph, text that reads: “The new information developed since 1999 suggests that the unanticipated use of managed storage to meet future desalter and other replenishment obligations could cause potential MPI: it has the potential to exacerbate land subsidence and pumping sustainability challenges, impact net recharge and Safe Yield, increase groundwater discharge through the CCWF, cause a loss of Hydraulic Control, and change the direction and speed of the contaminant plumes. The OBMP storage management plan needs to be updated to include features that will ensure there is no MPI to a party or the basin caused by the conjunctive-use activities of the parties and Storage and Recovery Programs. “ ***SAWC comment reads: “I need further understanding. If the parties are not pumping the water and utilizing it as a transfer, why is there a problem? Wasn't this thought about when the desalter replenishment obligation was discussed? Didn't WEI do a study on the impact of this decision? Is it because the re-op schedule was changed?”***

Response: The original storage management plan was developed for the OBMP in 1999, based on the best available information available to Watermaster. The overlying land and water use practices have evolved over time, and we have continued to refine our understanding of the Basin and its responsiveness to all known variables. Even since Re-Operation was approved by the Court in 2007, the collection and analysis of new data and the application of technology improvements have provided Watermaster and the parties the ability to develop a more refined evaluation of the potential the impacts to the basin from specific recharge, pumping, and storage activities. It is true, the length of time water is held in storage and the rate and location of its withdrawal have implications. Potential impacts attributable to proposed changes in the current baseline will be addressed using our improved knowledge and analytical tools and incorporated into the 2020 Storage Management Plan.

Comment No. 4. Page 11 first full paragraph, text that reads: “Watermaster has the right to the use existing spreading basins to meet its recharge and replenishment obligations over the use of these facilities by any party or person to accomplish supplemental water recharge.” ***SAWC comment reads: “Why does Watermaster get first use of basin? Didn't the parties pay for the basin. Why is SAWCo's water not given priority over someone pumping rights they don't have?”***

Response: As to priority of use of the recharge basins, please see response to MVWD Comment No. 8. As to the question: “*Why is SAWCo's water not given priority over someone pumping rights they don't have?*” This is not a storage management plan question

Comment No. 5. Page 11, first bulleted item following the fifth paragraph, text that reads: “In the first approach, the reduction net recharge would be embedded in Safe Yield, and it would be implicitly allocated to Appropriative Pool parties, based on their pro rata share of Operating Safe Yield.” SAWC’s comment reads : ***“Other options need to be considered such as time frame for storage if it makes sense.”***

Response: The white paper refers to bookends on the approach to identify and mitigate a reduction in Safe Yield caused by the use of managed storage. The impact on Safe Yield from the duration that water is held in managed storage is included the bookend approaches and any variants of them.

Overlying Agricultural Pool

Comment No. 1. Page 1, first paragraph, text that reads: “ The prevailing standard for all operations is the avoidance of “undesirable results”—defined as “material physical injury”—under court approved management agreements executed contemporaneously and subsequent to the adoption of the OBMP Update in June 2020. “ ***Ag pool comment reads: “MPI is legally defined by Watermaster legal documents (court approved management agreements) and it does not include “undesirable results.” Ag Pool supports this concept however and recommends that WM bolster this in light of the defined term.”***

No response required.

Comment No. 2. Page 3, first bullet after the second full paragraph, text that reads: “Operational storage requirement (OSR) is the storage or volume in the Chino Basin that is necessary to maintain the Safe Yield. The OSR was estimated in the development of the OBMP to be about 5.3 million af. This storage value was set as the estimated storage in the basin in 1997. “ **Ag Pool comment reads: “Should there be a discussion on the relevance of OSR and SSC for the OBMP Update?”**

Response: The relevancy of the original OBMP storage management plan will be described in the 2020 Storage Management Plan. The 2020 Storage Management Plan will be incorporated into the OBMP update.

Comment No. 3. Page 4, first full paragraph, text that reads: “Water occupying the SSC includes Carryover, Excess Carryover, Local Storage, and Supplemental Waters stored by the parties. Water stored for Storage and Recovery Programs is also included in the SSC. Carryover, Excess Carryover, Local Storage, and Supplemental Waters are referred to herein collectively as managed storage. “ **Ag Pool comment reads: “Why is this (managed storage) defined that way?”**

Response: Managed storage refers to all water that is stored by virtue of the management activities of the parties and Storage and Recovery Program entities, and it includes carryover water.

Comment No. 4. Page 4 last paragraph continuing onto Page 5, text that reads: “These investigations included a recalculation of the total water in storage in the basin, based on the improved hydrogeologic understanding. The total storage in the Chino Basin for 2000 was estimated to be about 5,935,000 af, which is 635,000 af greater than that estimated for the OSR and 135,000 af greater than safe storage.” **Ag Pool Comment reads: “This should be explained. Consider adding a technical rationale for the revised total storage and reference where this rationale was developed.”**

Response: The engineering work for the Peace II Agreement produced a new hydrogeologic conceptual model that resulted in an updated estimate of the water in storage in 2000. A footnote will be added to state this and provide a reference to the documentation for it.

Comment No. 5. Page 5, second bullet after the second full paragraph, text that reads: “Managed storage was projected to increase from 487,000 af in 2016 to about 663,000 af by 2030 (exceeding the SSC by 163,000 af) and decline thereafter to zero af by 2051. Managed storage was projected to be used to meet future replenishment obligations.” **Ag Pool comment: “When and how will the storage be used? Should there be a schedule?”**

Response. The cited text refers to description of how managed storage is projected to change based on the work done to recalculate the Safe Yield and reported in *2013 Chino Basin Groundwater Model Update and Recalculation of Safe Yield Pursuant to the Peace Agreement* (WEI, 2015). The water in managed storage was assumed to be used for replenishment purposes based on the projected aggregate replenishment obligation. No schedule was recommended for

the use of managed storage in the report. The concept of a schedule should be addressed by the parties in the development of the 2020 Storage Management Plan.

Comment No. 6. Page 6, first paragraph, text that reads: “Since the Judgment came into effect, Watermaster developed rules and regulations, standard storage agreements, and related forms. There are three types of storage agreements that result in several types of storage accounts: Excess Carryover, Local Supplemental, Local Storage and Storage and Recovery. An Excess Carryover account includes a party’s unproduced rights in the Safe Yield (Safe Yield for Overlying Non-Agricultural Pool parties and Operating Safe Yield for Appropriative Pool parties) and Basin Water acquired from other parties. A Local Supplemental Water account includes imported and recycled water that is recharged by a party and similar water acquired from other parties. A Storage and Recovery account includes Supplemental Water and is intended to produce a “broad and mutual benefit to the Parties to the Judgment.” Watermaster tracks the puts, takes, losses, and end of year storage totals for all of these storage accounts, and reports on this accounting in the annual assessment process.” ***Ag Pool comment reads: “Should the different storage accounts be valued and used appropriately?”***

Response: This question should be addressed by the parties in the development of the 2020 Storage Management Plan.

Comment No. 7. Page 6, second paragraph, text that reads: “In evaluating applications for storage agreements, Watermaster must conduct an investigation to determine if the water stored and recovered under a proposed storage agreement will cause MPI to a party or the basin. If Watermaster determines that implementation of the proposed storage agreement will cause MPI, the applicant must revise its application so there is no MPI, or Watermaster must impose conditions in the storage agreement to ensure there is no MPI. Watermaster cannot approve a storage agreement that will result in MPI.” ***Ag Pool comment reads: “What about storage absent agreements? Is it assumed that is MPI?”***

Response: The paragraph describes an agreement approval process. Currently, all storage accounts have agreements in place.

Comment No. 8. Page 6, third paragraph, text reads: “The parties, amongst themselves, are actively involved in water transfers of annual unproduced rights in the Safe Yield and water in their storage accounts. Watermaster has an application and review process for transfers that is similar to the storage agreement application process. Transfers are one way that the parties recover water held in storage accounts.” ***Ag Pool comment reads: “Should the management plan curtail these? Should the parties be on notice that the ability to use a transfer is conditional on Watermaster’s continued finding that removal of water held in storage will not cause MPI?”***

Response: Watermaster has an application and review process for transfers that is similar to the storage agreement application process. If Watermaster determines that a proposed transfer will cause MPI, the applicant must revise its application so there is no MPI, or Watermaster must impose conditions on the transfer to ensure there is no MPI. Watermaster cannot approve a

transfer that will result in MPI. These questions should be addressed by the parties in the development of the 2020 Storage Management Plan.

Comment No. 9. Page 6, fourth paragraph, text that reads: “Table 1 does not reflect the anticipated reductions in managed storage that will occur to offset unassessed desalter replenishment obligations.²³” **Ag Pool comment reads: “Why not? Where is that analysis?”**

Response. See footnote 23 in the June 8th initial draft of the 2020 Storage Management Plan White Paper (footnote 24 in the July 18th final draft). Watermaster is the process of updating assessment packages from prior years pursuant to the Court order that approved the Safe Yield for the period 2011 through 2020. It is anticipated that the assessment package update will be completed within the calendar year. Table 1 will be updated after the assessment packages are updated.

Comment No. 10. Page 7, first paragraph, text that reads: “Metropolitan’s DYYP is the only active Storage and Recovery Program in the basin. The DYYP can store up to 100,000 af with maximum puts of 25,000 afy and maximum takes of 33,000 afy. As of July 1, 2018, there were 41,380 af stored in the DYYP account. The agreement that authorizes the DYYP will expire in 2028.” **Ag Pool comment reads: “Should all storage be managed like this one? Why or why not?”**

Response: These questions should be addressed by the parties in the development of the 2020 Storage Management Plan.

Comment No. 11. Page 7, second paragraph, text that reads: “The IEUA and some of the parties are proposing the implementation of Storage and Recovery Programs, including the Chino Basin Water Bank, the Santa Ana River Conservation and Conjunctive-Use Program (SARCCUP), and the Chino Basin Program (CBP). The operational parameters of these proposed programs are not yet defined; that said, the amount of storage space required has been identified to range between 200,000 and 300,000 af.” **Ag Pool comment reads: “What would be the impact. What are the proposed best management practices for this type of use?”**

Response: Absent specific proposals for these proposed Storage and Recovery Programs, the Ag Pool questions cannot be answered. The CBP is currently being formulated, and the Ag Pool questions will be answered in detail in early 2020.

Comment No. 12. Page 8, first full paragraph, text that reads: “During the development of the 2013 Amendment to the 2010 Recharge Master Plan Update (2013 RMPU), the JCSD asserted that declining groundwater levels in the areas around and in the JCSD and Chino Basin Desalter Authority (CDA) well fields contributed to declining groundwater pumping capacity at JCSD and CDA wells. Loss in production capacity in this area is likely due to hydraulic interference among the wells and could be mitigated by reducing pumping at these wells, spreading out production over a greater area, and/or by increased recharge located proximate and tributary to the JCSD and CDA well fields. The projected decline in groundwater levels after the mid to late 2020s is projected to further exacerbate pumping sustainability challenges in this part of the basin.” **Ag Pool comment: “Will these types of techniques be required in the plan?”**

Response. This question should be addressed by the parties in the development of the 2020 Storage Management Plan.

Comment No. 12. Page 8, second full paragraph that reads: “The existing storage management plan is based on fixed amounts of water in storage, and its technical basis is not supported by new information available after the storage management plan was first developed (1999). Review of this new information (developed since 1999), indicates that it is possible to expand the SSC to enable greater use of storage space. This new information includes an updated hydrogeologic conceptual model; 20 years of intensive monitoring of basin operations (not available in 1999), including monitoring the basin response as managed storage approached the SSC of 500,000 af; and groundwater model-based projections of the basin response to future management plans where the managed storage exceeded 500,000 af. Re-Operation will reduce the amount of Basin Water in storage by 400,000 af. The current storage management plan does not account for Re-Operation. ***Ag Pool comment reads: “Detail of this is warranted.”***”

Response: Additional detail will be provided in draft Storage Management Plan document when it is prepared.

Comment No. 13. Page 8, third full paragraph that reads: “The new information developed since 1999 suggests that the unanticipated use of managed storage to meet future desalter and other replenishment obligations could cause potential MPI: it has the potential to exacerbate land subsidence and pumping sustainability challenges, impact net recharge and Safe Yield, increase groundwater discharge through the CCWF, cause a loss of Hydraulic Control, and change the direction and speed of the contaminant plumes. The OBMP storage management plan needs to be updated to include features that will ensure there is no MPI to a party or the basin caused by the conjunctive-use activities of the parties and Storage and Recovery Programs.” ***Ag Pool comment reads: “What are the proposed management techniques to avoid this?”***”

Response: The management features/requirements to avoid MPI are described in the 2020 Storage Management Plan White Paper, following the cited text, and they will be included in the Storage Management Plan.

Comment No. 14. Page 9, second paragraph that reads: “Based on the best available planning information provided by the parties in the Storage Framework Investigation, the parties’ use of managed storage was projected to reach about 700,000 af in 2030 and decline monotonically thereafter. Therefore, it is logical to consider establishing a limit for the parties’ use of managed storage at 700,000 af in the Storage Management Plan.” ***Ag Pool comment reads: “This seems a bit high and not specific enough to each pumper. An itemized list of each parties desire for storage would be useful. What the parties lay claim to cannot be used by water bankers including IEUA for their grant funding. Water bankers are going to want absolute certainty in what they can bank.***”

Response: These comments should be addressed by the parties in the development of the 2020 Storage Management Plan.

Comment No. 15. Page 10, first paragraph that reads: “Alternatively, the Watermaster and the parties could establish a lower or higher limit, but additional engineering work will be required to assess the basin response and MPI for a higher limit.” ***Ag Pool comment reads: “Why wouldn't we do that now?”***

Response: This question should be addressed by the parties in the development of the 2020 Storage Management Plan.

Comment No. 16. Page 10, second paragraph, text that reads: “The Storage Framework Investigation evaluated the use of 300,000 af of storage for Storage and Recovery Programs that was superimposed on the storage management activities of the parties. Therefore, it is logical to consider establishing an aggregate limit for all Storage and Recovery Programs at 300,000 af, provided that the aggregate storage limit for parties does not exceed 700,000 af. Watermaster and the parties could establish a lower or higher aggregate storage limit for Storage and Recovery Programs, but additional engineering work will be required to assess the basin response and MPI for a higher aggregated storage limit.” ***Ag Pool comment reads: “Again, should we do pumper and location specific analysis?”***

Response: An MPI analysis is required for each Storage and Recovery Program proposal, and they will include a “pumper and location-specific analysis.”

Comment No. 17. Page 11, first paragraph, text that reads: “The Judgment parties and IEUA, through the OBMP, have substantially increased the storm and supplemental water recharge capacity in the Chino Basin. The increase in supplemental water recharge capacity was done to ensure that Watermaster could meet its future recharge and replenishment obligations. Watermaster has the right to the use existing spreading basins to meet its recharge and replenishment obligations over the use of these facilities by any party or person to accomplish supplemental water recharge.” ***Ag Pool comment reads: “Why is this important and should it be developed further?”***

Response: This is important because Storage and Recovery Program agreements need to specify that Watermaster has priority use of the existing spreading basins for its recharge and replenishment obligations over the use of these facilities for storage and recovery operations. The intent is to avoid conflicts between the recharge capacity required by Watermaster to fulfill its obligations under the Judgment and the desire of Storage and Recovery Program proponents to use the same existing recharge facilities to conduct recharge for their storage and recovery programs. The need to develop this further should be addressed by the parties in the development of the 2020 Storage Management Plan.

Comment No. 18. Page 11, Second and third paragraphs, text that reads: “Early in the OBMP implementation period Watermaster determined that transfers or leases of water rights and water held in managed storage (hereafter transfers) from parties that are situated such that they pump groundwater outside of MZ1 to parties that pump in MZ1 have the potential to cause MPI. No such transfers have occurred since the OBMP was implemented in 2000. This limitation on transfers should be reconsidered if the land subsidence management plan for MZ1 includes

consideration for such transfers, the land subsidence plan is implemented, and subsequent monitoring demonstrates the sufficiency of the land subsidence management plan.” **Ag Pool comment reads: “Why not include these requirements and potential uses in this plan? Additional details, analyses and monitoring would be needed to evaluate.”**

Response: This requirement will be included in the 2020 Storage Management Plan. The ongoing monitoring and analysis for land subsidence and the implementation of future land subsidence plans will provide the information necessary to update the requirement.

Comment No. 19. Page 11, last paragraph, text that reads: “Watermaster and the parties need to determine which of the above approaches or variant of them to include in the storage management plan to ensure their storage management activities do not cause MPI.” **Ag Pool comment reads: “What does Wildermuth (the expert) recommend? Should those that benefit the most pay the most?”**

Response: The specific approach in allocating mitigation liability for storage induced changes in net recharge and Safe Yield should be discussed and addressed by the parties.

Comment No. 20. Page 12, second paragraph, text that reads: “This limitation on puts and takes should be reconsidered if the land subsidence management plan for MZ1 includes consideration for Storage and Recovery programs, the land subsidence plan is implemented, and subsequent monitoring demonstrates the sufficiency of the land subsidence management plan.” **Ag Pool comment reads: “What does Wildermuth recommend as the tool to accomplish this? This needs further evaluation during development of the plan and continued validation and adjustment during operations on annual basis.”**

Response: This management requirement will be described in greater detail in the draft 2020 Storage Management Plan.

Comment No. 21. Page 12, third paragraph, text that reads: “The intent of this provision is to reaffirm the requirements of Paragraph 12 of the Judgment and the Peace Agreement, as to the review of Storage and Recovery Program applications, and to require Storage and Recovery Program agreements to provide provisions that require Storage and Recovery Program proponents to cease or modify their operations if Watermaster determines, subsequent to Watermaster and Court approval of a Storage and Recovery Program storage agreement, that the proponent’s storage and recovery operations are causing or threaten to cause MPI. The potential MPI to be addressed include but are not limited to: land subsidence, pumping sustainability, reductions in net recharge and safe yield, water quality impacts, shallow groundwater, and liquefaction.” **Ag Pool comment reads: “Propose abandonment of the Watermaster rebuttable presumption of no MPI.”**

Response: This comment should be addressed by the parties in the development of the 2020 Storage Management Plan.

Comment No. 22. Page 12, third paragraph, text that reads: “Watermaster will review each Storage and Recovery Program application, estimate the surface and groundwater system response, prepare a report that documents the response and potential MPI, and develop mitigation measures to mitigate MPI caused by the proposed Storage and Recovery Program. Watermaster will incorporate these mitigation measures into the Storage and Recovery Program storage agreement.” **Ag Pool comment reads: “How will this requirement be reflected in the plan?”**

Response: It will be explicitly stated. This requirement is in the Peace Agreement.

Comment No. 23. Page 12, fifth paragraph, text that reads: “Watermaster will periodically review current basin conditions, compare this information to the projected basin conditions prepared in the evaluation of the Storage and Recovery Program application process, compare the projected Storage and Recovery Program operations to actual Storage and Recovery Program operations, and make findings regarding the efficacy of related MPI mitigation requirements in the Storage and Recovery Program storage agreement. And, based on its review and findings, Watermaster may require changes in the Storage and Recovery Program operations to mitigate MPI.” **Ag Pool comment reads: Will this be required by the plan?**

Response: Yes.

Comment No. 24. Page 13, first full paragraph, text that reads: “Watermaster should periodically review the state of Hydraulic Control and update projections of the state of Hydraulic Control, compare this information to the projected Hydraulic Control assessment prepared in the evaluation of the Storage and Recovery Program application process, compare the projected Storage and Recovery Program operations to actual Storage and Recovery Program operations, and make findings regarding the efficacy of the related mitigation requirements in the Storage and Recovery Program storage agreement. And, based on its review and findings, Watermaster may require changes in the Storage and Recovery Program operations to mitigate impacts on the state of Hydraulic Control.” **Ag Pool comment: “Define “periodically.” The Ag Pool proposes that this be done on an annual basis and no less than every two years.**

Response: This management requirement will be described in greater detail in the draft 2020 Storage Management Plan.

Comment No. 25. Page 13, second full paragraph, text that reads: “Watermaster and the parties should consider updating the storage agreement application process to incorporate changes in the technical features of storage management and to improve the efficiency of the application process.” **Ag Pool comment reads: “Why not require it now and include it in the plan?”**

Response: This comment should be addressed by the parties in the development of the 2020 Storage Management Plan.

Comment No. 26. Page 13, third full paragraph, text that reads: “Watermaster should periodically review and update the storage management plan based on: monitoring information obtained

since the previous storage management plan was adopted, technology changes, and the “needs and requirements of the lands overlying the Chino Basin and the owners of the rights in the Safe Yield or Operating Safe Yield of the Basin.” The assessment of technical storage management concerns and opportunities requires the use of updated hydrologic data and models and can be completed efficiently with the recalculation of Safe Yield on a ten-year frequency or more frequently.” **Ag Pool comment reads: “Propose that Wildermuth define when this would be necessary and provide advice. Define “periodically.”**

Response: This management requirement will be described in greater detail in the draft 2020 Storage Management Plan.

Comment No. 27. Page 13, fourth full paragraph, text that reads: “The projected aggregate amount of managed storage by the parties in 2050 (planning horizon of the Storage Framework Investigation) is about 340,000 af. Notwithstanding the update frequency recommended above, Watermaster should consider updating the storage management plan before the aggregate amount of managed storage by the parties falls below 340,000 af if not done earlier in a periodic update of the storage management plan.” **Ag Pool comment reads: “Consider adding a buffer of additional AF to provide time to adjust. Consider other potential factors as well, such a rate of decline and projected time of reaching this untested threshold. Repeat that the periodic update should be conducted on an annual basis. not on a regular basis to ensure that it does not fall below. How will storage be allocated among the parties. What happens if everyone wants 100k AF? Where is the substance of the plan?”**

Response: As to the direct comment, the intent of the periodic review and update of the Storage Management Plan is to track the amount of water in managed storage, update the plan as necessary to avoid MPI, and to test the efficacy of the 340,000 af threshold. The frequency of the Storage Management Plan review and update will be established to ensure no MPI from the use of managed storage. This management requirement will be described in greater detail in the draft 2020 Storage Management Plan. The answers to the questions “How will storage be allocated among the parties. What happens if everyone wants 100k AF?” and “Where is the substance of the plan?” should be addressed by the parties in the development of the 2020 Storage Management Plan.

Overlying Non-Agricultural Pool

Comment No. 1. Background section, **Overlying Non-ag Pool comment reads: “In this section, the report says that as a prerequisite to implementing the OBMP, “the parties executed an agreement.” Which agreement does this refer to? Which parties executed it?**

Response. The agreement referred to is the 2000 Peace Agreement. Text will be modified to refer to the Peace Agreement.

Comment No. 2. Judgment section, **Overlying Non-ag Pool comment reads: “In this section, the draft says that groundwater storage “was estimated” to have declined by about 1,600,000 af over the period from 1922 through 1978. Who made this estimate? When? What is the source for this statement?**

Response: The change in storage was reported in *2013 Chino Basin Groundwater Model Update and Recalculation of Safe Yield Pursuant to the Peace Agreement* (WEI, 2015).

Comment No. 3. Judgment section, *Overlying Non-ag Pool* comment reads: ***“In this section, the draft says that Section 11 and Section 12 of the Judgment require that use of storage be undertaken only under Watermaster control and regulation. Section 11 and Section 12 apply only to Supplemental Water. Is there a basis in the Judgment for control or regulation by Watermaster of carryover water? What is the basis?”***

Response: Watermaster does not require agreements for carryover. Paragraph 7 of Exhibit “G” (Overlying (Non-Agricultural) Pool Pooling Plan) and Paragraph 12 of Exhibit “H” (Appropriative Pool Pooling Plan) to the Restated Judgment both require a storage agreement with Watermaster as a condition of storing excess carryover.

Comment No. 4. Judgment section, *Overlying Non-ag Pool* comment reads: ***“In this section, the draft says that Section 28 requires Watermaster to develop and administer storage agreements for Supplemental Water. Section 28 requires Watermaster to administer Supplemental Water, but does not require or authorize Watermaster to develop or administer storage agreements for carryover water. Is there a basis in the Judgment for storage agreements for carryover water? What is the basis?”***

Response: See response to Comment No. 3 above.

Comment No. 5. Storage Agreement section, *Overlying Non-ag Pool* comment reads: ***“In this section, the report says that an Excess Carryover account includes a party’s unproduced rights in the Safe Yield *“and Basin Water acquired from other parties.”* What is intended by the words in italics? Should the italicized words be replaced with “and Excess Carryover acquired from other parties”?***

Response: It includes a party’s unproduced safe yield rights and the unproduced rights acquired from other parties.

Comment No. 6. Storage Agreement section, *Overlying Non-ag Pool* comment reads: ***“In this section, the report says that, in evaluating applications for storage agreements, Watermaster must conduct an investigation to determine if the water stored and recovered under a proposed storage agreement will cause MPI to a party or the basin. As stated above, the Judgment appears to authorize control and regulation by Watermaster of Supplemental Water, but not carryover water. Is there a basis in the Judgment for investigations of MPI for storage of excess carryover? What is the basis?”***

Response: Paragraph 7 of Exhibit “G” (Overlying (Non-Agricultural) Pool Pooling Plan) and Paragraph 12 of Exhibit “H” (Appropriative Pool Pooling Plan) to the Restated Judgment both require a storage agreement with Watermaster as a condition of storing excess carryover.

Comment No. 7. Existing Managed Storage and Proposed Storage and Recovery Programs section. *Overlying Non-ag comment reads: “In this section, the report introduces the term “managed storage” for the first time. Prior to this section, all storage was referred to as “storage.” The implication is that “managed storage” is a subset of “storage.” What is the difference between “storage” and “managed storage”?*

Response: Managed storage is the aggregate of Carryover, Excess Carryover, Local Storage, and Supplemental Waters. This term was used throughout the Storage Framework Investigation presentations and report.

Comment No. 8. Storage Management Plan Requirements section. *Overlying Non-ag comment reads: “In this section, the report says that it is “logical” to consider establishing an aggregate limit for all storage at 700,000 af. As stated above, the Judgment appears to authorize control and regulation by Watermaster of Supplemental Water, but not carryover water. Should limits on storage apply to Supplemental Water and perhaps other water, but not apply to carryover water?”*

Response: The limits suggested in this section are intended to apply to all water held in managed storage, which includes carryover water.

Comment No. 9. Mitigation of Reduced Net Recharge and Safe Yield section. *Overlying Non-ag comment reads: “In this Section, the report says that Watermaster assesses a 0.07 percent loss to storage accounts based on estimated losses of water in the Basin to the Santa Ana River. As stated above, the Judgment appears to authorize control and regulation by Watermaster of Supplemental Water, but not carryover water. Should such losses be assessed on Supplemental Water and perhaps other water, but not on carryover water?”*

Response: Watermaster assesses these losses on excess carryover and supplemental water in storage.

Comment No. 10. Mitigation of Reduced Net Recharge and Safe Yield section. *Overlying Non-ag comment reads: “In this Section, the report says that the “Storage Framework Investigation” demonstrated that storing water has the effect of reducing net recharge and Safe Yield. Where on Watermaster’s website can the Storage Framework Investigation currently be found? Where in the report is this effect “demonstrated.” If storage has this effect, should such reduction be attributed to Supplemental Water and perhaps other water, but not to carryover water?”*

Response. Please see the Storage Framework Investigation Report located here:
https://cbwm.syncedtool.com/shares/folder/e83081106c3072/?folder_id=1429

The effect of managed storage on net recharge was presented and discussed at several workshops that were conducted during the preparation of the Storage Framework Investigation and pdfs of the PowerPoint presentation from these workshops are located here:
https://cbwm.syncedtool.com/shares/folder/e83081106c3072/?folder_id=1406

Comment No. 11. Mitigation of Reduced Net Recharge and Safe Yield section. *Overlying Non-ag comment reads: “In this Section, the report says that reduction in net recharge caused by storage is an MPI. Carryover water is unproduced water, and unproduced water is a natural condition pre-dating existing development of the basin. How can a natural condition be an MPI?”*

Response: In a truly natural condition, basin storage will be maximized and all recharge to the basin is lost to rising groundwater and evapotranspiration by riparian vegetation. In a truly natural condition, net recharge is zero. Increasing the volume of water in managed storage has the effect of suppressing net recharge regardless of how you label the water that is included in the managed storage. That said, the text has been changed substituting the term “adverse impact” for MPI.

City of Ontario

Comment No. 1. Page 10, second paragraph. *The City’s comment reads: “Paragraph 2 contemplates establishing an aggregate limit of 300kaf for all Storage & Recovery (S&R) programs, “provided that the aggregate storage limit for parties does not exceed” 700kaf. This is different from establishing an aggregate limit equal to the total space (1M af) less the volume used by parties (700kaf or less). In the case that parties use less than 700kaf, while S&R programs remain limited to 300kaf, how will the difference between the actual volume of stored water and 1M af be addressed?”*

Response: The suggested aggregate allocation of 700 kaf to the parties for their individual conjunctive-use activities and the 300 kaf for Storage and Recovery Programs is based on the results of the Storage Framework Investigation. The allocation of managed storage space for these two types of uses should be discussed and agreed upon by the parties for inclusion in the 2020 Storage Management Plan.

Comment No. 2. Page 11, "Limitation of Transfers or Leases of Water Rights and Water Held in Managed Storage section." *The City’s comment reads: “ The second paragraph in this section states that the limit on certain transfers “should be reconsidered” under certain conditions. It seems logical that these conditions could also include mitigation such as may be required for S&R programs. In addition, S&R programs may be designed such that puts and takes aid in addressing land subsidence, plumes, etc.”*

Response: This management requirement will be described in greater detail in the draft 2020 Storage Management Plan

Comment No. 3. Page 11, Mitigation of Reduced Net Recharge and Safe Yield section. *City’s comment reads: “This section identifies “two fundamental approaches to mitigate the reduction in net recharge” caused by stored water. Are there additional approaches that can be explored? One such approach may be preemptive mitigation rather than allocation of effects.”*

Response: The white paper refers to bookends on the approach to identify and mitigate a reduction in Safe Yield caused by the use of managed storage. The specific approach in allocating mitigation liability for storage induced changes in net recharge and Safe Yield should be discussed and addressed by the parties.

Comment No. 4. Page 12, Evaluation of Storage and Recovery Program Impacts, MPI, and Mitigation section. *City's comment reads: "The second paragraph in this section states that "Watermaster will review each Storage and Recovery Program application, estimate the surface and groundwater system response...." (emphasis added) It is unclear why it is necessary for Watermaster to evaluate surface water system responses."*

Response: The use of existing recharge facilities for Storage and Recovery Programs may conflict with the use of the same facilities for stormwater recharge and may reduce net recharge. The intent to is characterize this conflict and to subsequently develop conditions on the Storage and Recovery Program to mitigate it.

Comment No. 5. *The City's comment reads: "General: Please provide citations for all references to guidance documents, particularly when quotation marks are used. Example: Page 13, 1st paragraph under "Storage Management Plan Update."*

Response: This request will be incorporated into the final version of the White Paper.

Appendix B1 -- Comments and Responses on the Draft 2020 Storage Management Plan Report, Version 1

October 1, 2019 letter from the Overlying Agricultural Pool

Comment No. 1. Page 1, fourth paragraph. Ag pool comment reads: ***“In regard to use of storage space by the Parties and other entities, the Ag Pool proposes that a schedule be developed to dictate when, how and by whom storage will be used. The Ag Pool also proposes that different storage accounts be valued and used appropriately.”***

Response. Please see Section 2.1 of the draft 2020 SMP, Version 2.

Comment No. 2. Page 1, fifth paragraph. Ag pool comment reads: ***“The Draft 2020 SMP introduces “three types of storage agreements that result in four types of storage accounts,” but only describes three of those four types of storage accounts. (Draft 2020 SMP, Section 1.1.) It also does not explain which type(s) of accounts are available to which Parties or Pools. Although this information is available in other documents, adding this information to the SMP would make for a more complete description of the types and ownerships of current and potential future accounts and would make this section more consistent with Table 1-1.”***

Response. In Table 1-1, the column heading in the Overlying Non-Agricultural accounts for “Local Storage” has been changed to “Excess Carryover.”

Comment No. 3. Page 1, fifth paragraph. Ag pool comment reads: ***“This paragraph also states that the Watermaster tracks “losses” and reports its accounting in the annual assessment process. Would it be helpful to expand on the types of “losses” that Watermaster tracks? Are there losses other than storage losses?”***

Response. The text has been revised to include a description of the losses referred to in Section 1.1.

Comment No. 4. Page 1, sixth paragraph. Ag pool comment reads: ***“The Draft 2020 SMP also states that Watermaster must conduct an investigation to determine if the water stored and recovered under the proposed storage agreement will cause “potential MPI,” and that the Watermaster cannot approve a storage agreement that will “result in MPI.” (Draft 2020 SMP, Section 1.1.) Is the difference in wording intentional? If so, it would be helpful to explain the***

difference in meaning/use and maybe add this clarification to Note 7 on page 1-1. "Potential MPI" is also used in the first paragraph of Section 2.3.3.2."

Response The text was updated and now reads:

"In evaluating applications for storage agreements, Watermaster must conduct an investigation to determine if the water stored and recovered under a proposed storage agreement has the potential to cause MPI to a Party or the basin. If Watermaster determines that implementation of the proposed storage agreement has the potential to cause potential MPI, the applicant must revise its application and demonstrate that there will be no MPI, or Watermaster must impose conditions in the storage agreement to ensure there is no MPI. Watermaster cannot approve a storage agreement that has the potential to cause MPI. "

Comment No. 5. Page 2 first full paragraph. Ag pool comment reads: ***"The Draft 2020 SMP recommends that the Watermaster's current limitation on transfers or leases of water rights and water held in managed storage from Parties that are situated such that they pump groundwater outside of MZ1 to Parties that pump in MZ1 for the purpose of replenishment "should be reconsidered if the land subsidence management plan for MZ1 includes consideration for such transfers, the land subsidence plan is implemented, and subsequent monitoring demonstrates the sufficiency of the land subsidence management plan." (Draft 2020 SMP, Section 2.3.1.) The Watermaster has indicated that "[t]he ongoing monitoring and analysis for land subsidence and the implementation of future land subsidence plans will provide the information necessary to update the requirement." (Comments and Responses on the June 8, 2019 Storage Management Plan White Paper, p. 10) However, the Draft 2020 SMP does not identify or discuss any parameters that will be used to determine whether the subsequent monitoring demonstrates the sufficiency of the land subsidence management plan. The Draft 2020 SMP also does not identify when such an evaluation would be made or if the limitation would be reinstated if conditions change in the future. Accordingly, the Draft 2020 SMP should be revised to include more detail on when and how the "sufficiency" of the plan will be determined."***

Response. Consider the timeline to reach a point where a land subsidence management plan for MZ1 has been functioning and monitoring and analysis can provide reliable information to assess the ability to allow transfers from Parties outside of MZ1 to Parties inside MZ1 that will not cause land subsidence. Given the present state of knowledge, it could take at least ten years to develop this plan and an agreement to implement it. It could take ten or more years of implementation and monitoring to assess the efficacy of the land subsidence management plan and additional investigations after that to determine if transfers from Parties outside of MZ1 to Parties inside MZ1 could be done without contributing to land subsidence. In sum, more than 20 years. Given this timeline, it is not appropriate to *"identify or discuss any parameters that will be used to determine whether the subsequent monitoring demonstrates the sufficiency of the land*

subsidence management plan.” Rather, the land subsidence management plan should include monitoring and analysis to demonstrate whether or not these transfers could occur and the conditions under which transfers could occur pursuant to the Peace Agreement. The land subsidence management plan should include monitoring and analysis that will provide information to determine if Storage and Recovery Programs can be operated in MZ1 without causing land subsidence.

Comment No. 6. Page 2 second paragraph. Ag pool comment reads: ***“The Draft 2020 SMP identifies the two potential approaches to mitigate the reduction in net recharge caused by the Parties’ storage management activities but does not further discuss the approaches. Regarding the second identified potential approach, the Ag Pool maintains that working through this issue will require consideration of factors that may/may not be known at the time a storage agreement is proposed or executed, versus uncertainties that could affect the availability, quantity, or cost of water under future continued storage or take conditions. For example, might a Party’s interest in executing a storage agreement be affected if the debit associated with reduction in net recharge could not be quantified in advance?”***

Response. A proposed approach has been incorporated into the draft 2020 SMP, Version 2.

Comment No. 7. Page 2 third paragraph. Ag pool comment reads: ***“The Draft 2020 SMP states that storage “put” and “takes” should be prioritized to occur in MZ2 and MZ3 to avoid new land subsidence and interfering with land subsidence management in MZ1, to minimize pumping sustainability challenges, to minimize the impact of storage and recovery operations on solvent plumes, to preserve the state of Hydraulic Control, and to take advantage of the larger and more useful groundwater storage space in MZ2 and MZ3. Nonetheless, the Draft 2020 SMP again recommends that such prioritization “should be reconsidered if the land subsidence management plan for MZ1 includes consideration for such transfers, the land subsidence plan is implemented, and subsequent monitoring demonstrates the sufficiency of the land subsidence management plan” without further detail. (Draft 2020 SMP, Section 2.3.3.1.) The Draft 2020 SMP should be revised to include more detail on when and how the “sufficiency” of the plan will be determined.”***

Response. See response to comment No. 5.

Comment No. 8. Page 2 fourth paragraph. Ag pool comment reads: ***“Section 1.2, paragraph 1 identifies MWD’s “Dry-Year Yield Program (DYYP).” The Ag Pool suggests adding a definition for MWD’s DYYP that is more robust than the brief description contained in the paragraph under Table 1-1. Additionally, the paragraph indicates a maximum put of 25,000 afy and a maximum take of 33,000 afy under the DYYP. However, Table 1-1 shows the maximums were***

exceeded twice, in 2009 (40,383 take) and 2018 (35,065 put). An explanation of these apparent exceedances would be helpful.”

Response. The text has been modified to explain the put exceeding 25,000 afy in fiscal year 2018 and the take exceeding 33,000 af in fiscal year 2009.

Comment No. 9. Page 2 fifth paragraph. Ag pool comment reads: ***“Section 1.2, paragraph 4 refers to “managed storage space available.” The Ag Pool suggests that Watermaster consider clarifying whether this is physical space available (without resulting in MPI), space available through existing approvals, both, or something else.”***

Response. It’s physical space available to the Parties and it was authorized in the 2010 Peace II Project Subsequent Environmental Impact Report and its 2017 Addendum. Other than the impact from the use of managed storage on net recharge and Safe Yield, no MPI is projected to occur.

Comment No. 10. Page 2 sixth paragraph. Ag pool comment reads: ***“The Draft 2020 SMP states that the “Watermaster will periodically review current and projected basin conditions, compare this information to the projected basin conditions prepared in the evaluation of the Storage and Recovery Program application process, compare the projected Storage and Recovery Program operations to actual Storage and Recovery Program operations, and make findings regarding the efficacy of related MPI mitigation measures and requirements in the Storage and Recovery Program storage agreement. And, based on its review and findings, Watermaster may require changes in the Storage and Recovery Program agreements to mitigate MPI.” (Draft 2020 SMP, Section 2.3.3.2.) The Ag Pool proposes that Watermaster’s review of Hydraulic Control be conducted on an annual basis and no less than every two years.”***

Response. Presently Watermaster evaluates the state of hydraulic control on a one- to two-year frequency and reports the results of the evaluation to the Regional Board pursuant to its Maximum Benefit commitments.

Comment No. 11. Page 3 first full paragraph. Ag pool comment reads: ***“Sections 2.3.3.2 and 2.3.3.3 refer to Watermaster developing mitigation measures and incorporating such measures into a storage agreement. Is it appropriate that Watermaster develop the mitigation measures (given that doing so might affect the feasibility or cost of a Party’s storage program) or should Watermaster simply identify the potential MPI that must be mitigated and leave it to the Party to develop and propose mitigation measures that Watermaster finds sufficient and acceptable?”***

Response. The text in Section 2.3.3.2 was modified to read:

“Watermaster will review each Storage and Recovery Program application, estimate the surface and groundwater system response, prepare a report that describes the response and potential MPI, and develop mitigation requirements to mitigate MPI caused by the proposed Storage and Recovery Program. The Storage and Recovery Program applicant will develop mitigation measures pursuant to these requirements and incorporate them into their Storage and Recovery Program application. Upon approval by Watermaster, these mitigation measures will be incorporated into the Storage and Recovery Program storage agreement.”

The text in Section 2.3.3.3 was modified to read:

“Watermaster will, as part of the Storage and Recovery Program application review process, make a projection of the program’s expected impact on the state of Hydraulic Control. Watermaster will review these impacts and develop mitigation requirements for the proposed Storage and Recovery Program. The Storage and Recovery Program applicant will develop mitigation measures pursuant to these requirements and incorporate them into their Storage and Recovery Program application. Upon approval by Watermaster, these mitigation measures will be incorporated into the Storage and Recovery Program storage agreement.”

Comment No. 12. Page 3 second paragraph. Ag pool comment reads: ***“The Draft 2020 SMP states that the Watermaster will “periodically” update the SMP and suggests “it can be completed efficiently with the recalculation of Safe Yield on a ten-year frequency.” The Draft 2020 SMP also suggests that Watermaster should consider updating the SMP at least five years before the aggregate amount of managed storage by the Parties falls below 340,000 af if not done earlier in a periodic update of the SMP. The Ag Pool proposes that a projection of anticipated managed storage should be made at least every 5 years if the SMP is updated every 10 years. This will facilitate identification of an interim trigger to update the SMP based on managed storage falling below the 340,000 af threshold.”***

Response. The text was modified to read:

“Watermaster will periodically review and update the SMP based on: monitoring information obtained since the previous SMP was adopted, technology changes, and the “needs and requirements of the lands overlying the Chino Basin and the owners of the rights in the Safe Yield or Operating Safe Yield of the Basin.” The periodic review and update of the SMP will require the use of updated planning and hydrologic data and models, and it should be completed: at no less than a five-year frequency; when the Safe Yield is recalculated; or when Watermaster determines a review and update is warranted based new information and/or the needs of the Parties or the Basin.

The projected aggregate amount of water in managed storage by the Parties in 2056 (planning horizon of the 2018 SFI) is about 340,000 af. The impacts to the Basin and the Parties from reducing managed storage below 340,000 af has not been estimated. Notwithstanding the SMP update frequency stated above, Watermaster should update the SMP at least five years before the aggregate amount of managed storage by the Parties is projected to fall below 340,000 af.”

Comment No. 13. Page 3 third paragraph. Ag pool comment reads: ***“The storage agreement application process section of the Draft 2020 SMP was left blank to be filled by Watermaster staff in the next draft. The Ag Pool proposes that the storage agreements include limits for the parties’ use of managed storage. The storage agreements should also include a provision that places applicants on notice that water transfers between parties and its storage and extraction are subject to the continued finding of no MPI by Watermaster. The pumping sustainability issues should also be addressed in the storage agreements by including identification and analysis of production locations. The Draft 2020 SMP also did not address Ag Pool’s proposed abandonment of the Watermaster rebuttable presumption of no MPI. Accordingly, Ag Pool restates its proposal to abandon the Watermaster’s rebuttable presumption of no MPI.”***

Response. Watermaster will present its proposed storage application process in the draft 2020 SMP Report, Version 3 in November.

October 1, 2019 annotated version of the draft 2020 SMP, Version 1 provided by the Inland Empire Utilities Agency

Comment No. 1. Comment refers to Section 2.2 referenced immediately above. IEUA comment reads: ***“Will there be a prioritization of Basins and resulting operation scheme?”***

Response. There is an existing hierarchal scheme for the use of spreading basins that includes the following: (1) flood control, (2) maximizing storm water recharge, (3) Watermaster replenishment and recharge, (4) IEUA recycled water recharge, and (5) maintenance. Use of spreading basins by Storage and Recovery Programs would come after the five higher priority uses have been satisfied.

Comment No. 2. Comment refers to Section 2.3.2 on page 2-2: “Two potential approaches were identified in the 2019 SFI and 2020 SMP White Paper to mitigate the reduction in net recharge caused by the Parties storage management activities.” IEUA comment reads: ***“Should this include S&R programs or is it implicit?”***

Response. Section 2.3.2 refers to mitigation of the reduction in net recharge and Safe Yield due to the use of managed storage by the Parties. Mitigation for the reduction of net recharge and Safe Yield due to the use of managed storage by a Storage and Recovery Program is explicitly described in Section 2.3.3.2 of the draft 2020 SMP Report, Version 2.

Comment No. 3. Comment refers to Section 2.3.4 on page 2-3 and refers to a future section of the 2020 SMP that is not yet written. IEUA comment reads: ***“A flow chart may be helpful for this section once it is prepared?”***

Response. A flow chart may be included in the draft 2020 SMP, Version 3.

Comment No. 4. Comment refers to Section 2.3.4 on page 2-3 and refers to a future section of the 2020 SMP that is not yet written. IEUA comment reads: ***So are the S&R Programs going to be analyzed with boundary conditions of managed storage between 720kaf and 340kaf? Or based on annual projections as provided herein?”***

Response. No. Storage and Recovery Programs will be evaluated for their use of storage space in excess of that used by the Parties. Presently, the managed storage use by the Parties is projected to reach a maximum value of 720,000.

Appendix B2 – Comments and Responses on the October 24, Draft 2019 Storage Management Plan Report, Version 2

November 19, 2019 comment letter from the Overlying Agricultural Pool (OAP)

Comment No. 1. Section 1.1. OAP comment reads: ***“The introduction and descriptions of storage agreements and accounts remain unclear. The text refers to three types of agreements and four types of accounts. The text names four types of accounts, but only describes three. The relationship between types of accounts and their corresponding agreements should be clarified.”***

Response. The text of SMP document was revised and it now reads:

“Since the Judgment came into effect, Watermaster developed rules and regulations, standard storage agreements, and related forms. There are three types of storage agreements that result in five types of storage accounts: Excess Carryover, Local Supplemental-Recycled, Local Supplemental-Imported, Pre-2000 Quantified Supplemental, and Storage and Recovery. An Excess Carryover account includes a Party’s unproduced rights in the Safe Yield (Safe Yield for Overlying Non-Agricultural Pool Parties and Operating Safe Yield for Appropriative Pool Parties) and Basin Water acquired from other Parties. Local Supplemental Water accounts includes imported and recycled water that is recharged by a Party and similar water acquired from other Parties. A Storage and Recovery account includes Supplemental Water and is intended to produce a “broad and mutual benefit to the Parties to the Judgment.” Watermaster tracks the puts, takes, losses, and end of year storage totals for all of these storage accounts, and reports on this accounting in the annual assessment process. The losses assessed by Watermaster are based on the amount of water in managed storage (excluding Carryover) and they offset the increase in groundwater discharge to the Santa Ana River from the Chino Basin attributable to managed storage (excluding Carryover). Watermaster also assesses losses due to evaporation on the puts when water is recharged in spreading basins.” (emphasis added)

Comment No. 2. Section 1.1. OAP comment reads: ***“The response to OAP Comment No.3 indicates the “text has been revised to include a description of the losses referred to in Section 1.1.” (Appendix B Response to Comments on 2020 SMP V1, p. B-1.) The noted revisions and description are not apparent. Where in the text can they be found? There is a storage loss factor***

for flow out of the Chino North Management Zone (described in the White Paper). Are other losses calculated and tracked?”

Response. See text revision in the response to Comment No. 1 above.

Comment No. 3. Section 1.1. OAP comment reads: ***Details, such as the date it was approved by the court and its purpose, are provided for Form 8, however, corresponding information about Form 1 is not provided. Consider adding such information or explaining why the information is not relevant for Form 1.***

Response. The text of SMP document was revised to include the following paragraph in Section 1.1:

“The Form 1 Application for Local Storage Agreement was approved in 2001 and has not been amended since that time; it is the mechanism through which Parties may apply to enter into a Local Storage Agreement.”

Comment No. 4. Section 2.1. OAP comment reads: ***“This section does not describe how storage may be allocated among the Parties. Watermaster counsel has indicated Watermaster has no priority for allocation of storage but what will happen if it becomes a limited resource? Is it first come first serve until fully allocated with the hope that it will not be fully allocated?”***

Response. Watermaster anticipates, based on the Parties’ projections, that 800,000 AF would be adequate to satisfy the Parties’ storage activities and the DYYF until 2030. Watermaster plans to evaluate projections periodically and update the SMP no less frequently than every 5 years having the opportunity to adjust and avoid limiting the Parties use.

Comment No. 5. Section 2.1. OAP comment reads: ***“It is clear that a storing entity must prepare an evaluation of managed storage above 1,000,000 acre-feet (af) “to ensure that there will be no material injury.” The OAP suggests making it clear (as we understand from the workshops) that the evaluation will be both a technical evaluation in addition to CEQA compliance. The OAP suggests including clarification that the evaluation needs to address potential Material Physical Injury (MPI) as well as adverse impacts (Safe Yield reduction and loss of hydraulic control).”***

Response: The text of SMP document was revised and it now reads:

“Note that the use of managed storage greater than 1,000,000 af may be possible provided the storing entity submits a bona fide Storage and Recovery Program application, demonstrates that the program has broad mutual benefit,

demonstrates that program's mitigation measures will meet the mitigation requirements of the Watermaster to ensure there will be no MPI and other adverse impacts, complies with CEQA and obtains approval from the Watermaster." (emphasis added)

Comment No. 6. Section 2.3.2. OAP comment reads: ***"Future evaluations of storage impacts to Safe Yield will be done in the Safe Yield reset or interim corrections. It may be helpful in this section to reference the 2015 Reset Technical Memorandum and the April 2017 Court order for additional information on the Safe Yield reset methodology."***

Response. A footnote was added to this section that reads:

"Refer to the 2015 Reset Technical Memorandum and the April 2017 Court Order for additional information on the Safe Yield reset methodology. These documents can be found here: https://cbwm.syncedtool.com/shares/folder/e83081106c3072/?folder_id=1595."

Comment No. 7. Section 2.4.2. OAP comment reads: ***"The Draft SMP Version 2 states, "...recharge loss rate... may be adjusted from time-to time..." What is the mechanism for developing and approving this adjustment, and can it only be done under the condition of additional evaluation of Safe Yield?"***

Response. Watermaster may adopt uniform rules to address triggers, notice, opportunity to respond and to implement corrective actions. Moreover, as part of the Storage and Recovery application and approval process, each Storage and Recovery application may have customized conditions responsive to the characteristics of the specific project.

Comment No. 8. Section 2.4.2. OAP comment reads: ***"The Draft SMP Version 2 states, "Watermaster will periodically review current and projected basin conditions..." Periodically is subject to interpretation. Will this review be done at a minimum frequency, based on threshold changes in amounts of water in storage, or combined with other reviews (e.g., SMP updates, additional Safe Yield evaluations"***

Response. Watermaster will periodically review current and projected basin conditions when it updates the SMP as described in Section 2.6. Watermaster could conduct additional reviews if routine assessments of monitoring and planning data indicate changed conditions from that which was assumed in the evaluation of existing Storage and Recovery Program, when the Safe Yield is recalculated and when new Storage and Recovery Program applications are submitted to Watermaster.

Comment No. 9. Section 2.4.3. OAP comment reads: ***“The Draft SMP Version 2 states, “Watermaster will periodically review current and projected state of Hydraulic Control...” Periodically is subject to interpretation. Will this review be done at a minimum frequency, based on threshold changes in amounts of water in storage, or combined with other reviews (e.g., SMP updates, additional Safe Yield evaluations)?”***

Response. Hydraulic Control is evaluated annually in the Max Benefit Report to the Regional Board.

Comment No. 10. Section 2.4.3. OAP comment reads: ***“Please clarify that loss of Hydraulic Control is not an MPI, if that is what is intended. Loss of Hydraulic Control appears to have a higher threshold of impact than impacts to Safe Yield in the SMP because loss of Hydraulic Control “must be mitigated” as indicated in the section heading. The OAP suggests additional discussion of this need for a higher level of mitigation in the text of this section.”***

Response. The text of SMP document was revised in multiple locations to state that loss of Hydraulic Control is an adverse impact and not MPI.

Comment No. 11. Section 2.6. OAP comment reads: ***“This section identifies the need for Watermaster to “update the SMP at least five years before the aggregate amount of managed storage by the Parties is projected to fall below 340,000 af.” Watermaster has indicated in its response to comments that this threshold of 340,000 af includes Storage and Recovery programs. The 340,000 af threshold was established because impacts to the basin (e.g. subsidence induced by groundwater withdrawal) due to reducing managed storage below this threshold have not been evaluated. It could be termed “the band of storage management untested for MPI.” We suggest that it may be appropriate to discuss this issue in Section 2.4.2 because there is additional risk in any storage and recovery program that relies on this untested band of storage management.”***

Response. The 340,000 af threshold includes managed storage by the Parties and does not include Storage and Recovery programs.

November 21, 2019 comment email from the Overlying Non- Agricultural Pool (ONAP)

Comment No. 1. Page 1-2 – Last sentence of Background section. ONAP comment reads: ***“This sentence omits that Non-Agricultural Pool Parties can have Supplemental Waters. Please make the correction.”***

Response: The text of SMP document was revised and it now reads:

“Local Storage includes Excess Carryover for the Overlying Non-Agricultural Pool Parties and Excess Carryover and Supplemental Waters for the Appropriative Pool and Overlying Non-Agricultural Pool Parties.”

Comment No. 2. Page 1-4 and Page 2-1 – Conjunctive-Use. ONAP comment reads: ***“Section 1.2 and Section 2.1 talk about conjunctive-use. How is conjunctive-use defined? What is included and excluded?”***

Response: First sentence of Section 1.2 describes conjunctive use.

Comment No. 3. Page 2-3 & 2-4 – Local Storage Applications/Agreements. ONAP comment reads: ***“Section 2.5 addresses the evergreen concept and the need for a revised Form 8. Will a new Form 1 also be needed? Will input from the Pools be considered in crafting revised forms?”***

Response: Proposed revised Forms, to the extent desired, will be considered and approved through the Pool Committee, Advisory Committee, and Board process.

Comment No. 4. Section 2.5. ONAP comment reads: ***“Section 2.5 also comments that the evergreen agreements would be valid for the duration of the Peace Agreement. What happens upon expiration and how much advance notice will Parties have?”***

Response: The expiration of the Peace Agreement will be known at least five years in advance. Accordingly, the effect of the expiration of the Peace Agreement and storage agreements can be considered and addressed at the time an intervening SMP update is undertaken.

Comment No. 5. Page 2-4 – MPI. ONAP comment reads: ***“The last sentence in Section 2.5 discusses MPI. Please provide a summary of what MPI may be caused by water in storage if***

the Parties do not exceed the proposed First Managed Storage Band of 800,000 AF. What MPI could be caused over 800,000 AF?"

Response: The Storage Framework Investigation indicated there is no MPI within the FMSB; storage used above 800,000 AF will need to be evaluated for MPI (land subsidence, water quality, and pumping sustainability) and other adverse effects (e.g. reduction in Safe Yield, loss of Hydraulic Control).

November 19, 2019 comment letter from the City of Chino

Comment No. 1. Section 1.2 (Page 1-5 2nd paragraph) and Section 2.1 (page 2-1 paragraphs 1 and 2). City's comment reads: ***“Section 1.2 indicates the combined use of managed storage and the existing Dry Year Yield (DYY) conjunctive use program is projected to reach a maximum of ~790,000 AF, assuming there is 100,000 AF in the DYY in 2028. Section 2.1 paragraph 1 indicates the First Managed Storage Band (FMSB, upper threshold = 800,000 AF) includes the DYY. Section 2.1 paragraph 2 indicates that extension of the DYY (beyond 2028) will require the DYY to use storage space above the 800,000 AF band threshold. (a) Does this mean that if the DYY is extended (beyond 2028) that the 100,000 AF of space below the 800,000 AF threshold (within FMSB) previously reserved for DYY use prior to 2028 is immediately available for managed storage use in 2029 and no longer available for the DYY? (b) Does this mean that any extension of the DYY program beyond 2028 would likely be required to mitigate impacts in-advance? (c) Do the terms of the existing DYY agreement require that the water in the DYY account be entirely depleted (withdrawn) prior to 2028 agreement expiration?”***

Response. (a) – Yes. (b) – Any Storage and Recovery Program would be approved only if any projected MPI and adverse impacts are addressed such that the Program could be undertaken without MPI or adverse impacts. (c) – The storage agreement does not address this issue; the Operating Committee is currently reviewing. The SMP is planned to be updated at a frequency no less than every 5 years so any changes regarding the DYY agreement could be addressed in later updates if necessary.

Comment No. 2. City's comment reads: ***“Expanding on Comment No. 1 (above), the possibility of adjusting the FMSB upper threshold up or down, based on the Parties' needs, was discussed at the November 6th SMP Workshop #3. Please expand on the timing of the modifications to the FMSB and what the process would be to make changes to the FM SB. For example, would changes to the FMSB upper threshold require consent from all three Pools and would unanimous consent be required from the Appropriative and Overlying Non-Agricultural Pool members?”***

Response. The Restated Judgment gives Watermaster control over storage; Watermaster plans to update the SMP as described in Section 2.6 and at that time will seek input including water demand and supply projections from the Parties. The FMSB was defined based on the Parties' input, which would be considered again at the time of any SMP update.

Comment No. 3. Section 2.3.2. City's comment reads: ***“Section 2.3.2 indicates that reduction in Safe Yield (SY) due to projected managed storage volume is incorporated into the SY estimate, and that this adverse impact (i.e. reduced Safe Yield) is mitigated by the prospective calculation***

of SY. (a) Please provide a tabulation or other form of explanation that illustrates the impact/mitigation below the FMBS threshold of 800,000 AF. Presumably, other factors (besides managed storage) may also have the effect of reducing Safe Yield. (b) Can it be determined what portion of estimated SY reduction is due to storage management and what portion of estimated SY reduction is due to other factors? (c) If yes, then how can these factors (i.e. managed storage and other cultural condition factors) be described in separate quantitative terms to allow for a practical means to reconcile the associated impacts on an annual basis?

For example, if SY (net recharge) is reduced as a result of increasing storage volumes (assuming no corresponding implementation of a plan for optimizing production that would be necessary to maintain SY), can this cause & effect be expressed algebraically? (d) If yes, then what is the algebraic formula? If no, then what practical method(s) may be used to quantify the cause & effect on an annual basis as storage volumes fluctuate?"

Response. (a) – This information has not been developed by Watermaster or its consultants. (b) – Theoretically, yes. (c) – Technical work could be done to develop methods to allocate the projected changes in net recharge and Safe Yield based on changes in cultural conditions and the individual Parties pumping, recharge and the storage activities. (d) – This would be determined in the work described in (c). This scope of work is highly impractical as there are many variables to consider and thus has not been considered or budgeted.

Comment No. 4. City's comment reads: *"Expanding on Comment No. 3 (above), Storage Framework Investigation (SFI) Figure 5-7 depicts a projected inflection point at approximately Year 2040 when the net recharge begins to steadily increase. SFI Figure 6-3 describes managed storage volumes in Year 2040 to be well above 500,000 AF (depending on assumed operating scenario), and then dropping to approximately 340,000 AF in the Year 2056. Please provide an explanation of the circumstances depicted by these two figures, and how/why Safe Yield (net recharge) is projected to increase in the future when there is a significant amount of managed storage."*

Response. As to Figure 5-7, the following observations can be made from the review of 2018 SFI report Tables 3-4 and 3-5. In Scenario 1A, total groundwater pumping is projected to increase from about 146,000 afy in 2018 to about 154,000 afy in 2030 (~ 8,000 afy increase) and thereafter gradually increase to about 177,000 afy by 2040 (~23,000 afy increase). Projected pumping is less than pumping rights through 2030 and storage is projected to increase through 2030. After 2030, pumping exceeds pumping rights and storage is projected to decrease. The net recharge projection generally declines with increasing storage and increases with decreasing storage. There is a time lag between the onset of the decrease in storage and increase in net recharge that is attributable to the basin dynamics – in 2032 the rate of decline in net recharge declines and by about 2040 the net recharge starts to increase. Inspection of the water budget shown in Table 3-5 indicates that the total recharge during the 2018 through 2050 period is fairly consistent and averages about 200,000 afy; and that the total discharge increases gradually over the same period from about 190,000 afy to 218,000 afy tracking the projected pumping. Cultural

conditions have some effect in that the deep infiltration of precipitation and applied water decreased by about 5,000 afy from 2018 to 2050 and however this effect has been offset by a projected increase in storm water recharge in 2021.

As to Figure 6-3 the projected decline in managed storage occurs because 80 percent of the projected replenishment obligation, estimated to be about 17,000 afy after 2030, is satisfied from managed storage.

Comment No. 5. . Sections 2.4.2 and 2.4.3. City's comment reads: ***"Both discussions end with an indication that Watermaster may require changes in Storage and Recovery (S/R) agreements to mitigate impacts. What processes of Watermaster notification and S/R Party response are contemplated to allow S/R Parties to modify their behavior to avoid or minimize further mitigation after they have presumably already provided mitigation at the time their S/R agreements were initially approved?"***

Response. Watermaster may adopt uniform rules to address triggers, notice, opportunity to respond and to implement corrective actions. Moreover, as part of the Storage and Recovery application and approval process, each Storage and Recovery application may have customized conditions responsive to the characteristics of the specific project.

Comment No. 6. White Paper. City's comment reads: ***"The SFI (page 1-5) indicates the Chino Basin Groundwater Model and Recalculation of Safe Yield Pursuant to the Peace Agreement {Safe Yield report} assessed the hydrology of the Chino Basin, and concluded that managed storage was projected to increase from 487,000 AF in Year 2016 to approximately 663,000 AF by Year 2030 and then decline thereafter to zero (0.0) AF by Year 2051. This was restated in the White Paper at the bottom of page 5. However, as described in Comment No. 4 (above), the subsequent SFI analysis (Figure 6-3) indicates managed storage is projected to be approximately 340,000 AF in Year 2056. (a) Does the SFI analysis update/replace the conclusion of the Safe Yield report with respect to the projected volume of managed storage in future years? Please explain."***

"The White Paper (page 3) indicates the Operational Storage Requirement (OSR) is the volume of storage necessary to maintain the Safe Yield (SY), and that during the development of the Optimum Basin Management Program (OBMP ~ Year 2000) the OSR was estimated to be 5.3 MAF. The White Paper also indicates the Safe Storage Capacity {SSC} in addition to the OSR was estimated (~ Year 2000) to be 500,000 AF (the SSC is the amount of storage for which it was believed significant water quality impacts would not be triggered by groundwater level). More recent Storage Framework Investigation (SFI) analyses seem to indicate that the SSC is ~ 800,000 AF. SMP Section 2.6 indicates it is projected that the aggregate amount of managed storage by the Parties is approximately 340,000 AF in Year 2056 and that impacts resulting from an aggregate managed storage volume less than 340,000 AF has not been estimated.

However, recent SMP workshop discussions seem to suggest that if the aggregate managed storage volume is less than 340,000 AF, then it is believed that new land subsidence may result. (b) What relationships exist between the originally estimated 5.3 MAF OSR, the originally estimated 500,000 AF SSC, the 800,000 AF SFI FMSB, and the projected 340,000 AF managed storage volume?"

Response. (a) – Yes. The 2018 SFI uses updated water demand and supply projections. (b) – The estimated 5,300,000 af OSR and 500,000 af SSC described in the Peace Agreement IP have no relationship to 800,000 af FMSB described in the 2020 SMP. The storage management plan in the 2020 SMP is a completely different management paradigm than that described in the Peace Agreement IP. The 2018 SFI and 2020 SMP are based on 20 years of monitoring, a significantly updated hydrogeologic understanding of the basin and improved modeling.

Comment No. 7. Section 2.3.2. City's comment reads: ***"Comment No. 3 (above), pertaining to Section 2.3.2, describes a circumstance that might generally be regarded as an adverse impact since SY is reduced. Maintenance of the 340,000 AF threshold described in Comment No. 6 (above) would seem to represent a positive impact i.e. prevents triggering the "onset of new land subsidence" that would likely occur when managed storage falls below that critical managed storage volume. If true, then how might this positive impact be quantified?"***

Response. Quantification of a benefit on preventing the occurrence of new land subsidence by maintaining managed storage in excess of 340,000 af is beyond the scope of the 2018 SFI.

November 19, 2019 comment letter from the City of Ontario

1. Storage Bands

- a. ***Section 1.2 describes end conditions for the volume of water in the DYYP account in 2028 and the subsequent extraction. This paragraph (the second paragraph on page 1-5) does not accurately characterize the agreement between Metropolitan Water District and the Parties to the DYYP. Parties are not obligated to perform (i.e. remove water from the DYYP storage account) after 2028.***

Response. The DYYP agreement does not address this issue; the Operating Committee is currently reviewing. The SMP is planned to be updated at a frequency no less than every 5 years so any changes regarding the DYYP agreement could be addressed at later updates if necessary.

- b. ***Section 2.1 states that “the managed storage space between 800,000 and 1,000,000 af is reserved for Storage and Recovery Programs” (emphasis added).***

- i. ***If, due to changing conditions or water resource management, Parties desire to store more than 800,000 af, will Watermaster authorize storage agreements for Parties to do so?***

Response. Yes, but this will require future technical evaluations and an SMP revision that would occur in periodic update of the SMP as described in Section 2.6.

- ii. ***Does this statement indicate that Watermaster intends to reserve space above 800,000 af for Storage and Recovery Programs which may never come to fruition?***

Response. No, Watermaster anticipates, based on Parties’ projections, that 800,000 AF would be adequate to satisfy Parties’ storage activities and the DYYP until 2030. Watermaster plans to evaluate projections periodically and update the SMP no less frequently than every 5 years having the opportunity to adjust and avoid limiting the Parties use.

- c. ***Section 2.1 states that “renewal or extension of the DYYP agreement will require the DYYP to use storage space above 800,000 af.” It is unclear why this is required.***

Response. The FMSB for the 2020 SMP includes the projected managed storage requirement of the Parties and the DYYP. The DYYP is included in the FMSB because it is

an existing Storage and Recovery Program, it places contractual requirements on the Parties and it will terminate in 2028. Renewal or extension of the DYYP will trigger a new Storage and Recovery Program application process and the terms of the renewed or extended DYYP storage agreement will need to be consistent with the SMP at the time the new Storage and Recovery Program application is considered by Watermaster. Storage and Recovery Programs utilize storage above the FMSB. The 800,000 afy contained in the FMSB will be revised no later than 2025 and it may be increased or decreased based on the managed storage requirements of the Parties.

d. In the last paragraph of Section 2.1, it is noted that “the use of managed storage greater than 1,000,000 af may be possible provided the storing entity...demonstrates that the program has broad mutual benefit.”

i. What is the basis for this requirement? The Peace Agreement does not require all Storage and Recovery Programs provide broad mutual benefit. Broad mutual benefit is only necessary if Watermaster acts to condition, curtail or prohibit Local Storage to provide priority to Storage and Recovery Program(s).

Response. Section 5.2(c)(iv)(b) of the Peace Agreement provides that Watermaster shall prioritize its efforts to regulate and condition the storage and recovery of water developed in a Storage and Recovery Program for the mutual benefit of the Parties to the Judgment and give first priority to Storage and Recovery Programs that provide broad mutual benefits.

ii. How is broad mutual benefit demonstrated and/or determined?

Response. Broad mutual benefit will be determined at the time that application(s) for Storage and Recovery Program storage agreements are received, and it may be determined through Activity B as it is being contemplated in the 2020 OBMP Update.

2. Use of Spreading Basins

a. In Appendix B, Watermaster’s response to Inland Empire Utilities Agency’s (IEUA) Comment No. 1 states that “there is an existing hierarchal scheme for the use of spreading basins.” The listed “hierarchal scheme” includes first flood control, second stormwater recharge, third Watermaster replenishment and recharge, and fourth IEUA recycled water recharge. Who developed the hierarchal scheme for the use of spreading basins and where is this scheme documented? To which basins does it apply? Basins may be owned by San Bernardino County Flood Control District, Chino Basin Water Conservation District, or IEUA.

Response. The priorities are established in Section III of the “Agreement for Operation

and Maintenance of Facilities to Implement the Chino Basin Recharge Master Plan”. They are also specified by basin in the Operations Manual.

- b. Additionally, basins and basin improvements in some cases were funded 50% by IEUA to increase recycled water recharge. How does the stated hierarchal scheme recognize the priority of the Parties that have invested financially in the basins?**

Response. See response to comment 2.a. above.

3. Mitigation

- a. What is the benchmark for mitigation impacts to net recharge and Safe Yield? In other words, is the demonstrated reduction compared against 140,000 afy, 135,000 afy, or another value, such as a theoretical Safe Yield absent stored water?**

Response. The benchmark is estimated net recharge and Safe Yield absent stored water.

- b. The Storage Framework Investigation concluded that the reduction in Safe Yield (as a percentage of average annual storage space used) ranged from 1.50% to 2.41% for bands 2, 3 and 4. The Storage Management Plan states this value as 2.0 percent. Please clarify if the 2.0 percent is an average across the three bands or if Watermaster is using a different methodology to set the 2.0 percent impact.**

Response. It is an average. For clarity the text of SMP document was revised and it now reads:

“The 2018 SFI concluded the that the net recharge and Safe Yield of the basin would be reduced annually by about 2.0 percent (ranged from 1.5 to 2.4 percent) of the volume of water stored in a Storage and Recovery Program.” (emphasis added)

- c. Section 2.4.1 suggests prioritizing puts and takes in MZ2 and MZ3, in part due to impacts on “solvent plumes.” Solvent plumes are also present in MZ2 and could be impacted by puts and takes in that zone, as could pumping depressions. Each Storage and Recovery**

Program should be individually analyzed to determine acceptable put and take locations.

Response. Comment noted.

- d. For the process described in the second paragraph of Section 2.4.2, please describe if Watermaster will estimate lifetime reduction in net recharge at the onset of a Storage and Recovery Program, to be deducted annually similar to Local Storage losses, or if another method is envisioned.***

Response. Watermaster will prepare an initial estimate of “rate” of reduction in net recharge and Safe Yield attributable to a specific Storage and Recovery Program during the application process. Watermaster may update the rate periodically as described in the fourth paragraph of Section 2.4.2 (SMP version 2) and through periodic updates of the SMP as described in Section 2.6.

4. Scope and Timing of Environmental Review

The Appropriative Pool formally requested that Watermaster proceed with the environmental review of storage management, including working with the Appropriative Pool’s technical consultant. Watermaster has indicated that it intends to incorporate the Storage Management Plan into the current Optimum Basin Management Plan (OBMP) update effort, and then pursue environmental review on the package. However, the OBMP update effort is not subject to the same demonstrated time sensitivities as the Storage Management Plan, and negotiations have not yet begun on the activities to be included in an implementation plan. Ontario requests that Watermaster, responsive to the Pool’s request, perform environmental review of the Storage Management Plan independent of and ahead of any environmental review that may be needed for the OBMP update.

Response. Comment noted.

5. Frequency of Updates

What is the basis for setting the minimum frequency at every five years? Performing the update every ten years concurrently with Safe Yield recalculations will provide a timelier and more comprehensive picture of storage projections. The five-year requirement is excessive and presents an unnecessary cost to the paying stakeholders. If conditions change or if the need arises, additional updates can be performed. Ontario recommends a minimum frequency of every ten years for updates.

Response. Comment noted.

6. Characterization of Material Physical Injury

- a. ***In Footnote 7 defining Material Physical Injury, storage and recovery is incorrectly listed as “Storage, and Recovery.” In the definition in Peace I, the term “storage and recovery” is not capitalized (in other words, is not a defined term) and is not separated into two actions by the placement of the comma.***

Response. The text of SMP document was revised and it now reads:

"Material Physical Injury" means material injury that is attributable to the Recharge, Transfer, storage and recovery, management, movement or Production of water, or implementation of the OBMP, including, but not limited to, degradation of water quality, liquefaction, land subsidence, increases in pump lift (lower water levels), and adverse impacts associated with rising Groundwater." (emphasis added)

- b. ***Section 1.2 states that “for the planned use of managed storage by the Parties up to 700,000 af...there would be no MPI with the exception of a reduction of net recharge and Safe Yield...” A reduction of net recharge and Safe Yield is not included in the definition of Material Physical Injury.***

Response. The SMP document has been revised to characterize the reduction in net recharge and Safe Yield attributable to managed storage activities as an adverse impact. The text now reads:

“The 2018 SFI projected that for the planned use of managed storage by the Parties up to 700,000 af that Hydraulic Control would be maintained, that there would be no MPI and that there would be an adverse impact from the reduction of net recharge and Safe Yield attributable to the use of managed storage.” (emphasis added)

- c. ***Section 2.4.2 includes “reduction in Safe Yield” in the list of “MPIs to be addressed” in the first paragraph. A reduction in Safe Yield is not included in the definition of Material Physical Injury.***

Response. The SMP document has been revised to characterize the reduction in net recharge and Safe Yield attributable to managed storage activities as an adverse impact.

7. Types of Storage Accounts Storage Agreements

- a. **Section 1.1 lists “four types of storage accounts” under “three types of storage agreements.” It is unclear what the three types of storage agreements are, and the four types of storage accounts include “Local Storage” separate from “Local Supplemental” and “Excess Carryover.” By definition, Local Storage includes Excess Carryover and Local Supplemental. Please clarify this statement.**

Response. The text of the SMP document was revised and now reads:

“Since the Judgment came into effect, Watermaster developed rules and regulations, standard storage agreements, and related forms. There are three types of storage agreements that result in five types of storage accounts: Excess Carryover, Local Supplemental-Recycled, Local Supplemental-Imported, Pre-2000 Quantified Supplemental, and Storage and Recovery. An Excess Carryover account includes a Party’s unproduced rights in the Safe Yield (Safe Yield for Overlying Non-Agricultural Pool Parties and Operating Safe Yield for Appropriative Pool Parties) and Basin Water acquired from other Parties. Local Supplemental Water accounts includes imported and recycled water that is recharged by a Party and similar water acquired from other Parties. A Storage and Recovery account includes Supplemental Water and is intended to produce a “broad and mutual benefit to the Parties to the Judgment. Watermaster tracks the puts, takes, losses, and end of year storage totals for all of these storage accounts, and reports on this accounting in the annual assessment process.” (emphasis added)

- b. **Please include a citation for the quotation at the top of page 1-3.**

Response. The SMP document was revised to include the citation. The citation reads: “See paragraph 5.2(c)(iv)(b) of the Peace Agreement”

November 22, 2019 comment letter from the City of Upland

Comment No. 1. Section 1.2, Page 1-4. City's comment reads: "**Reduction of net recharge appears to be characterized herein as Material Physical Injury (MPI). (a) However, in Section 2.3.2 and at the November 6, 2019 2020 SMP workshop, reduction of net recharge is characterized as an adverse impact and mitigated for within the Safe Yield recalculation. (b) With the typical duration between Safe Yield recalculations being approximately 10-years, why isn't the mitigation for reduction of net recharge calculated annually to respond to the annual fluctuations in storage volume (as proposed in Section 2.4.2 for Storage and Recovery Programs)? (c) What are the advantages and disadvantages for mitigating for reduction in net recharge being embedded in Safe Yield versus on an annual basis?**"

Response. (a) – The text in the SMP has been modified to describe reductions in net recharge and Safe Yield as an adverse impact. (b) The Court's April 2017 order establishes the SY recalculation methodology; the recalculation considers the volume of wet water in Storage over the coming decade. (c) See part (b).

Comment No. 2. Section 1.2, Page 1-5. City's comment reads: "**Generally, what is the technical basis for allowing the Dry Year Yield Program (DYYP) to exceed puts and takes? What was the technical basis for allowing the DYYP takes to exceed 40,000 acre-feet (AF) in 2009? Is that approved by Watermaster as an administrative procedure or is that circulated through the Pools and board for approval?**"

Response. When MWD wants to exceed the 25,000 AF of annual put set forth in the DYYP agreement, the Parties consider the request through the regular Watermaster process.

Comment No. 3. Section 2.1, Page 2-1. City's comment reads: "**Regarding storage greater than 1,000,000 AF, consider revising and elaborating on that process. More specifically, what constitutes a "bona fide" application. In addition, please consider adding the required CEQA analysis to store above 1,000,000 AF.**"

Response. The text in the SMP document was revised to include a footnote containing a definition of a bona fide Storage and Recovery Program application. The footnote reads:

"A bona fide Storage and Recovery Program application includes the name of the person; the source, quantity and quality of the Supplemental Water; a description of the facilities proposed to be used, operating plan and duration of the proposed Storage and Recovery Program; CEQA documentation; and any other information Watermaster requires to evaluate the application."

The SMP text was also revised to include a requirement to complete a CEQA process for Storage and Recovery Program application that wish to use managed storage space in excess of 1,000,000 af.

Comment No. 4. Section 2.2, Page 2-1. City's comment reads: **" The City's "Upland Basin" is used by Watermaster and IEUA pursuant to an agreement between the three agencies. The agreement stipulates a specific quantity of storage space allocated to Watermaster and IEUA. To date, the agencies have worked cooperatively under said agreement to optimize basin usage, including storage above the dead storage quantity and allowing others to use the City's basin for recharge. The priority of additional recharge above the 200,000 AF in the agreement is subject to negotiation. This section needs to be clarified to recognize that use of some spreading basins is subject to separate agreement(s)."**

Response. The text of the SMP document was revised and it now reads:

"Watermaster will include provisions in storage agreements to prioritize the use of spreading basins to satisfy Watermaster's recharge and replenishment obligations over the use of spreading basins for other uses subject to limitations provided in existing agreements with the owners of the facilities." (emphasis added)

Comment No. 5. Section 2.3.1, Pages 2-1 and 2-2 . City's comment reads: **" The limitations placed on agencies within MZ1 due to the potential to cause MPI will likely be in effect for "more than 20-years" according to Watermaster (Appendix B, Comment No. 5, Page B-2) appear to pose a long-term constraint on the ability of agencies within MZ1 to manage water. This limitation on transfers should also allow for a reconsideration on a case by case basis, over the next 20-years or more, by Watermaster to ensure there will be no MPI.**

For example, if a proposed transfer or lease from a Party that pumps outside of MZ1 to a Party that pumps in MZ1 demonstrates groundwater levels remain greater than the new land subsidence metric (i.e. new land subsidence won't occur per 2018 SFI Section 2.2.1), then consideration should be given by Watermaster."

Response. Comment noted.

Comment No. 6. Section 2.3.2, Page 2-2. City's comment reads: **" Same comments as above regarding mitigation for reduction of net recharge."**

Response. Comment noted.

Comment No. 7. Section 2.5, Page 2-4. City's comment reads: "**Define the term "evergreen agreement". Please provide clarification on the automatic adjustment (i.e. can be adjusted both up and down)."**

Response. Evergreen in this context signifies an agreement to store water that accommodates changes in the quantity of water in storage within FMSB, without requiring a new storage application.

November 20, 2019 comment letter from the Monte Vista Water District

Comment No. 1. MVWD comment: **“The SMP should specify which portions are proposed for incorporation into the 2020 Optimum Basin Management Program (OBMP) Implementation Plan as an amendment to the Peace Agreement. It may make more sense for Peace Agreement Parties to negotiate an amendment to the Peace Agreement (OBMP Implementation Plan) prior to approving the SMP, as the SMP must be consistent with the Peace Agreement, whether or not it is amended and only through consent of the Peace Agreement Parties.”**

Response. The entire document is planned to be included in the 2020 OBMP IP.

Comment No. 2. MVWD comment: **“The SMP should acknowledge the priority of storage for Storage and Recovery Programs to the extent that Local Storage may be curtailed or prohibited (Peace Agreement 5.2 (b)(xi)).”**

Response. The SMP has been drafted to provide the Parties with the use of all necessary storage for Local and Storage and Recovery activities consistent with the Parties’ preferences and needs.

Comment No. 3. MVWD comment: **“The SMP should direct Watermaster to fully mitigate any reduction in Safe Yield due to either historical or projected storage activities in a manner that is equitably applied to all applicable storage activities so that Safe Yield is kept whole in respect to these storage activities.”**

Response. Watermaster considers that the effects of storage activities in Safe Yield are addressed by the recalculation of Safe Yield pursuant to the Technical Memorandum methodology approved by the Court’s April 28, 2017 order. Watermaster staff has been informed that the Appropriative Pool has reached agreement among Parties on how to compensate for individual storage activity effects on Safe Yield reduction.

Comment No. 4. MVWD comment: **“The SMP should focus on water stored in the basin that is subject to an agreement with Watermaster under the Judgment. This includes Local Storage (Excess Carryover and Supplemental), Storage and Recovery, and Preemptive Replenishment. Carryover is part of a producing Party’s annual production right and not subject to an agreement with Watermaster. If Carryover is in excess of a Party’s annual share of safe yield, the Party may then store the excess Carryover in a Local Storage (Excess Carryover) account under agreement with Watermaster. In contrast, water under a preemptive replenishment agreement is water stored in the basin under agreement with Watermaster; therefore, its management should be included in the SMP.”**

Response. The Safe Storage Capacity identified in the OBMP IP included Carryover, which is “wet water” in storage. Similarly, the SMP provides for management of water in storage regardless of whether an agreement with Watermaster is required.

Comment No. 5. MVWD comment: **“For purposes of brevity and to avoid any potential confusion, the SMP should avoid describing the process and requirements for determining material physical injury (MPI), and instead refer to relevant sections of the Peace Agreement and Rules and Regulations governing MPI determination.”**

Response. Comment noted.

Comment No. 6. MVWD comment: **“The SMP should, under the principle of "beneficiary pays," include the implementation of a storage assessment as a more equitable way to allocate Chino Basin Watermaster costs related to storage.”**

Response. The judgment provides for Watermaster costs to be recovered using production-based assessments.

General response to MVWD redlined version of 2020 Draft Storage Management Plan, Version 2.

MVWD prepared a redline version of the 2020 SMP Version 2 document. The document has been modified to reflect comments received from various parties, this includes MVWD’s edits consistent with the overall document philosophy. Watermaster’s staff general responses to the suggested redline document are listed below:

1. Information included in the Background section is considered useful to the reader.
2. Carryover is “wet water” in the basin and was included in the Safe Storage Capacity in the OBMP IP. While Carryover does not require a storage agreement with Watermaster it is within Watermaster’s management and control, thus it is included in managed storage.
3. Preemptive replenishment accounts will no longer be used after current balances have been depleted.
4. The rebuttable presumption of no MPI was eliminated as part of the Second Amendment to the Peace Agreement.
5. Watermaster estimates the amount of storage to be used by Parties based on their projections will be 800,000 af including DYYF and not 720,000 af.
6. Watermaster is tasked with evaluating transfers and put and take operations before approving them.
7. The SMP provides a high-level description of Storage and Recovery Program requirements including Hydraulic Control impacts, this is intended to be helpful to future Storage and

Recovery Program applications.

8. Watermaster considers it necessary that the SMP be updated at the indicated frequency.

November 20, 2019 comment letter from the Chino Basin Water Bank

Comment No. 1. Comment reads: ***“Based on our understand that the storage space used by the Parties is projected to reach 720 KAF and the combined use of managed storage by the Parties and Metropolitan’s DYYP is projected to reach a maximum of about 790 KAF, how was the 800 KAF for the S&R Program derived?”***

Response: Please see Appendix C of the final SMP report. The projected use of managed storage space by the Parties and Metropolitan is just under 800,000 af. The value of 800,000 af was arrived at by rounding up.

Comment No. 2. Comment reads: ***“Why are S&R required to mitigate MPI as if the 800 KAF were fully used, when it potentially is not?”***

Response: This is based on the Peace Agreement paragraph 5.2(c)(xiii) and (ix) that require Watermaster to condition Storage and Recovery Program storage agreements to protect the Parties and the basin from any potential MPI and to consider Broad Mutual Benefits.

Comment No. 3. Comment reads: ***“How do the estimated net recharge of 2.41% and 1.5% as average storage used translate to the annual loss percentages?”***

Response: See response to City of Ontario’s comment No. 3.b.

Comment No. 4. Comment reads: ***“What process does Watermaster propose to adjust loss percentages in the future so that S&R Programs will have adequate time to prepare prior to changing conditions going into effect?”***

Response: Watermaster may adopt uniform rules to address triggers, notice, opportunity to respond and to implement corrective actions. Moreover, as part of the Storage and Recovery application and approval process, each Storage and Recovery application may have customized conditions responsive to the characteristics of the specific project.

Appendix C – 2019 Update of Water Demand, Water Supply and Managed Storage Projections through 2050

During the development of the 2020 SMP, Watermaster requested the Appropriative Pool Parties to review their water demand, associated water supply plan and their plans to use their stored water that were used in the 2018 SFI and update them if warranted. The planning period for the 2020 SMP is 2020 through 2050. Table C-1 shows the projected groundwater pumping by all Parties along with the recent historical pumping. The groundwater pumping projections for the Appropriative Pool Parties were unchanged from those used in the 2018 SFI except for three Parties: Cities of Chino and Pomona and the Monte Vista Water District (MVWD). The table below summarizes the differences between the pumping projections used in the 2018 SFI and the 2020 SMP. In summary the projected pumping in the 2020 SMP is less than that assumed in the 2018 SMP.

Comparison of total projected pumping for the 2018 SFI and 2020 SMP (afy)

Year	2018 SFI	2020 SMP	2020 SMP – 2018 SFI
2020	144,527	139,519	-5,008
2025	149,468	144,596	-4,872
2030	154,302	151,808	-2,494
2035	167,772	164,600	-3,172
2040	176,765	173,805	-2,960

Table C-2 lists the projected time series of managed storage by the Parties through 2050 based on the pumping projections in Table C-1. Table C-2 is constructed as follows.

- Column 1 lists the planning fiscal year ending on June 30.
- Column 2 list the projected total annual pumping based on the updated total pumping projections listed in Table C-1.
- Columns 3, 4 and 5 contain the projected annual Safe Yield from Scenario 1A of the 2018 SFI, Reoperation water used to partially offset annual Desalter replenishment obligation and the projected annual recycled water recharge.
- Column 6 lists the total annual pumping right which is equal to the sum of columns 3, 4 and 5.
- Column 7 lists the net annual replenishment obligation and is equal to the projected total annual groundwater pumping minus the projected total annual pumping rights. A negative value means that pumping is less than pumping rights and the difference results in an increase in managed storage. A positive value indicates that pumping exceeds pumping rights and a replenishment obligation has occurred that must offset through wet-water recharge and or from managed storage.

- Column 8 lists the annual amount of the replenishment obligation that is satisfied from storage. In the 2018 SFI it was determined that about 80 percent of the replenishment obligation would be satisfied from water in storage accounts and that assumption has not changed.
- Column 9 lists the annual amount of the replenishment obligation that is satisfied through wet-water recharge.
- Column 10 list the time history of end-of-year managed storage. The end-of-year managed storage is numerically equal to the end-of-year managed storage at the end of the prior year minus the net replenishment obligation (column 7) plus wet-water replenishment (column 9).

The maximum managed storage by the Parties is reached is 713,100 af in 2030. After 2030, the managed storage is projected to decline annually and reach about 484,000 af by 2050.

Metropolitan’s Dry-Year Yield Program (DYYP) is the only active Storage and Recovery Program in the basin. The DYYP can store up to 100,000 af with maximum puts of 25,000 afy and maximum takes of 33,000 afy. The DYYP storage and recovery agreement provides that puts and takes can exceed these values if agreed to by Watermaster (as was done in fiscal years 2018 and 2009, respectively). The agreement that authorizes the DYYP will expire in 2028.

The combined use of managed storage by the Parties and Metropolitan’s DYYP is projected to reach a maximum of about 791,300 af assuming that the DYYP has 100,000 af in storage in 2028 and that subsequent to 2028 Metropolitan removes that water from managed storage at the contract rate of 33,300 afy starting in 2029. This is illustrated in the table below.

Total potential combined end-of-year managed storage of the Parties and Metropolitan (af)

Year	Parties	Metropolitan	Total
2026	664,842	100,000	764,842
2027	678,623	100,000	778,623
2028	691,254	100,000	791,254
2029	702,734	66,667	769,434
2030	713,063	33,333	746,463
2031	713,061	67	713,128

Appendix E

Table C-1 Historical and Projected Groundwater Pumping in the Chino Basin

(af)

Producer	Historical Pumping										Pumping Projection (2019 Update)				
	2013	2014	2015	2016	2017	2018	2019	Statistics (2013-2019)			2020	2025	2030	2035	2040
								Min	Max	Mean					
Overlying Agricultural Pool															
Aggregate Agricultural Pool Pumping	23,946	22,063	17,361	16,904	17,786	18,827	15,572	15,572	23,946	18,923	15,678	12,788	9,968	7,907	4,808
Overlying Non-Agricultural Pool															
Ameron	59	18	29	30	25	-	-	18	59	32	-	-	-	-	-
Angelica Textile Service	48	37	26	28	20	-	-	20	48	32	-	-	-	-	-
California Speedway Corporation	509	436	454	300	410	438	389	300	509	419	500	500	500	500	500
California Steel Industries, Inc.	1,303	1,417	1,279	1,187	1,298	1,266	1,419	1,187	1,419	1,310	1,450	1,450	1,470	1,500	1,530
General Electric Company	1,285	1,626	1,355	917	1,667	957	1,127	917	1,667	1,276	1,667	1,667	1,667	1,667	1,667
NRG California South LP	470	290	221	204	211	212	18	18	470	232	232	232	232	232	232
Riboli Family and San Antonio Winery, Inc.	10	10	7	4	5	6	26	4	26	10	10	10	10	10	10
Southern Service Company	-	-	-	-	-	21	23	21	23	22	32	32	32	32	32
TAMCO	-	-	-	-	-	18	10	10	18	14	32	32	32	32	32
<i>Subtotal Overlying Non-Agricultural Pool Pumping</i>	<u>3,685</u>	<u>3,834</u>	<u>3,371</u>	<u>2,670</u>	<u>3,636</u>	<u>2,919</u>	<u>3,010</u>	<u>2,670</u>	<u>3,834</u>	<u>3,304</u>	<u>3,923</u>	<u>3,923</u>	<u>3,943</u>	<u>3,973</u>	<u>4,003</u>
Appropriative Pool															
Arrowhead Mountain Spring Water Company	413	379	426	356	367	308	285	285	426	362	400	400	400	400	400
City of Chino	7,022	6,725	6,546	5,010	4,972	5,162	4,315	4,315	7,022	5,679	8,262	9,696	11,058	11,945	14,355
City of Chino Hills	3,039	2,163	3,745	1,633	2,246	2,839	1,608	1,608	3,745	2,468	2,570	3,600	3,600	3,600	3,600
City of Ontario	21,146	21,980	17,675	22,849	24,840	26,280	20,722	17,675	26,280	22,213	12,363	14,514	17,947	23,715	31,016
City of Pomona	12,227	12,909	12,520	9,964	8,067	9,286	10,840	8,067	12,909	10,830	11,309	11,395	11,481	11,568	11,568
City of Upland	2,358	2,822	3,416	2,601	1,260	1,764	2,381	1,260	3,416	2,372	2,800	2,800	2,800	2,800	2,800
Cucamonga Valley Water District	18,740	16,122	14,640	20,537	16,562	6,838	9,624	6,838	20,537	14,723	12,755	13,687	13,859	19,282	19,282
Fontana Water Company	11,752	15,377	13,344	15,317	13,250	11,392	9,961	9,961	15,377	12,913	9,920	10,416	13,153	15,591	17,942
Jurupa Community Services District	17,411	18,406	12,805	9,284	11,498	15,286	13,894	9,284	18,406	14,083	10,310	12,310	14,310	14,310	14,310
Marygold Mutual Water Company	1,250	1,315	1,250	753	619	944	950	619	1,315	1,011	1,241	1,322	1,403	1,484	1,565
Monte Vista Water District	10,324	12,522	7,402	8,371	7,086	6,483	6,631	6,483	12,522	8,403	6,500	6,257	6,397	6,537	6,668
Niagara	1,000	1,343	1,860	1,775	1,532	1,571	1,683	1,000	1,860	1,537	1,537	1,537	1,537	1,537	1,537
San Antonio Water Company	1,540	1,159	1,479	1,031	538	428	376	376	1,540	936	1,232	1,232	1,232	1,232	1,232
San Bernardino County (Olympic Facility)	12	16	11	9	13	11	11	9	16	12	12	12	12	12	12
Golden State Water Company	1,059	736	720	807	850	148	0	0	1,059	617	374	374	374	374	374
<i>Subtotal Appropriative Pool Pumping</i>	<u>109,292</u>	<u>113,974</u>	<u>97,840</u>	<u>100,297</u>	<u>93,699</u>	<u>88,740</u>	<u>83,280</u>	<u>83,280</u>	<u>113,974</u>	<u>98,160</u>	<u>81,585</u>	<u>89,552</u>	<u>99,564</u>	<u>114,387</u>	<u>126,661</u>
Chino Desalter Authority															
Total Desalter Pumping	<u>27,098</u>	<u>29,282</u>	<u>30,022</u>	<u>28,191</u>	<u>28,284</u>	<u>30,088</u>	<u>31,233</u>	<u>27,098</u>	<u>31,233</u>	<u>29,171</u>	<u>40,000</u>	<u>40,000</u>	<u>40,000</u>	<u>40,000</u>	<u>40,000</u>
2020 SMP Projected Total Pumping	<u>164,021</u>	<u>169,153</u>	<u>148,593</u>	<u>148,061</u>	<u>143,405</u>	<u>140,574</u>	<u>133,095</u>	<u>133,095</u>	<u>169,153</u>	<u>149,557</u>	<u>141,186</u>	<u>146,263</u>	<u>153,474</u>	<u>166,266</u>	<u>175,472</u>
Less GE Injection											<u>-1,667</u>	<u>-1,667</u>	<u>-1,667</u>	<u>-1,667</u>	<u>-1,667</u>
2020 SMP Projected Net Total Basin Pumping											<u>139,519</u>	<u>144,596</u>	<u>151,808</u>	<u>164,600</u>	<u>173,805</u>
2018 SFI Projected Net Total Basin Pumping											144,527	149,468	154,302	167,722	176,765
Change in Projected Net Total Basin Pumping from the 2018 SFI Projection											<u>-5,008</u>	<u>-4,872</u>	<u>-2,494</u>	<u>-3,122</u>	<u>-2,960</u>

increase relative to 2018 SFI projection

decrease relative to 2018 SFI projection



Table C-2 Projected Groundwater Pumping, Pumping Rights, Replenishment and End-of-Year Volume in Managed Storage – SFI Scenario 1A Revised

(af)

Fiscal Year ending June 30	Projected Groundwater Pumping per 2020 SMP Survey for Normal Year	Pumping Rights				Net Replenishment Obligation ²	Replenishment from Storage ³	Replenishment with Wet-Water Recharge	End-of-Year Managed Storage
		Safe Yield ¹	Reoperation Water Use to Offset the Desalter Replenishment Obligation	Recycled Water Recharge	Total				
(1)	(2)	(3)	(4)	(5)	(6) = (3)+(4)+(5)	(7) = (2)-(6)	(8)	(9)	(10) _t = (10) _{t-1} - (7) _t + (9) _t
2019									503,275
2020	139,519	135,000	12,500	13,504	161,004	-21,485	0	0	524,760
2021	140,534	140,717	12,500	13,795	167,012	-26,478	0	0	551,237
2022	141,550	140,717	12,500	14,087	167,304	-25,754	0	0	576,991
2023	142,565	140,717	12,500	14,379	167,595	-25,030	0	0	602,021
2024	143,581	140,717	12,500	14,670	167,887	-24,306	0	0	626,327
2025	144,596	140,717	12,500	14,962	168,179	-23,583	0	0	649,910
2026	146,038	140,717	5,000	15,253	160,970	-14,932	0	0	664,842
2027	147,481	140,717	5,000	15,545	161,262	-13,781	0	0	678,623
2028	148,923	140,717	5,000	15,837	161,554	-12,631	0	0	691,254
2029	150,365	140,717	5,000	16,128	161,845	-11,480	0	0	702,734
2030	151,808	140,717	5,000	16,420	162,137	-10,329	0	0	713,063
2031	154,366	137,943	0	16,420	154,363	3	2	1	713,061
2032	156,924	137,943	0	16,420	154,363	2,561	2,049	512	711,012
2033	159,483	137,943	0	16,420	154,363	5,119	4,096	1,024	706,917
2034	162,041	137,943	0	16,420	154,363	7,678	6,142	1,536	700,774
2035	164,600	137,943	0	16,420	154,363	10,236	8,189	2,047	692,585
2036	166,441	137,943	0	16,420	154,363	12,077	9,662	2,415	682,923
2037	168,282	137,943	0	16,420	154,363	13,918	11,135	2,784	671,789
2038	170,123	137,943	0	16,420	154,363	15,759	12,607	3,152	659,181
2039	171,964	137,943	0	16,420	154,363	17,600	14,080	3,520	645,101
2040	173,805	137,943	0	16,420	154,363	19,441	15,553	3,888	629,548
2041	173,805	139,164	0	16,420	155,584	18,221	14,577	3,644	614,971
2042	173,805	139,164	0	16,420	155,584	18,221	14,577	3,644	600,394
2043	173,805	139,164	0	16,420	155,584	18,221	14,577	3,644	585,818
2044	173,805	139,164	0	16,420	155,584	18,221	14,577	3,644	571,241
2045	173,805	139,164	0	16,420	155,584	18,221	14,577	3,644	556,664
2046	173,805	139,164	0	16,420	155,584	18,221	14,577	3,644	542,087
2047	173,805	139,164	0	16,420	155,584	18,221	14,577	3,644	527,510
2048	173,805	139,164	0	16,420	155,584	18,221	14,577	3,644	512,934
2049	173,805	139,164	0	16,420	155,584	18,221	14,577	3,644	498,357
2050	173,805	139,164	0	16,420	155,584	18,221	14,577	3,644	483,780

503,275 af is the estimated volume in managed storage on June 30, 2019

1 -- Safe yield estimate from net recharge estimated in Scenario 1A.

2 -- This is the annual net replenishment obligation based on the assumptions described in the 2018 SFI report; negative values mean aggregate underproduction and an increase in stored water accounts.

3 -- 80 percent of a positive replenishment obligation is satisfied from storage and 20 percent is satisfied by wet-water recharge.



F

Appendix F. Cucamonga Judgment

1 WALKER, WRIGHT, TYLER & WARD
2 210 West 7th Street, Suite 631
3 Los Angeles 14, California
4 Trinity 8936

5 Attorneys for Plaintiff

6
7
8 IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
9 IN AND FOR THE COUNTY OF SAN BERNARDINO

10
11
12 SAN ANTONIO WATER COMPANY, a corporation,
13 Plaintiff,

14 -vs-

15 FOOTHILL IRRIGATION COMPANY, a corporation;
16 SUNSET WATER COMPANY, a corporation; IOAMOSA
17 WATER COMPANY, a corporation; and OLD SETTLERS
18 WATER COMPANY, a corporation; ALTA LOMA MUTUAL
19 NURSERIES, a corporation; BANYAN HEIGHTS WATER
20 COMPANY, a corporation; CARNELIAN WATER
21 COMPANY, a corporation; CITRUS WATER COMPANY,
22 a corporation; CUCAMONGA DEVELOPMENT COMPANY,
23 a corporation; CUCAMONGA WATER COMPANY, a
24 corporation; HEDGES WELL COMPANY, a corpor-
25 ation; HELLMAN WATER COMPANY, a corporation;
26 HERMOSA WATER COMPANY, a corporation;
27 JOYA MUTUAL WATER COMPANY, a corporation;
28 REX MUTUAL WATER COMPANY, a corporation;
29 SAPPHIRE MUTUAL WATER COMPANY, a corporation;
30 CHARLES SNYDER; UPLAND WATER COMPANY, a
31 corporation; HENRY G. BODKIN and BANK OF
32 AMERICA NATIONAL TRUST AND SAVINGS ASSOCIATION,
as Executors of the last will of Giovanni Vai,
deceased; WESTERN FRUIT GROWERS, a corporation;
HUGH P. CRAWFORD; G. N. HAMILTON RANCH, a
partnership composed of Arthur Bridge, Helen
Bridge, and Grace W. Burt; JOHN DOE ONE to
THIRTY inclusive, MARY ROE ONE to THIRTY
inclusive, JOHN DOE COMPANY ONE to TWENTY
inclusive,

Defendants.

No. 92645

DECREE

SCOTT & HEILNER
ATTORNEYS AT LAW
SAN BERNARDINO, CALIFORNIA

1 WHEREAS, there has been filed in the above entitled
2 action, a Stipulation for Judgment duly executed by and on the
3 part of each and all of the following named parties to said action
4 (who are collectively hereinafter referred to as the "stipulating
5 parties"), to wit:

6 San Antonio Water Company, a corporation;
7 Foothill Irrigation Company, a corporation;
8 Ioamosa Water Company, a corporation;
9 Old Settlers Water Company, a corporation;
10 Sunset Water Company, a corporation;
11 Cucamonga Water Company, a corporation;
12 Alta Loma Mutual Water Company, a corporation;
13 Armstrong Nurseries, a corporation;
14 Banyan Heights Water Company, a corporation;
15 Carnelian Water Company, a corporation;
16 Citrus Water Company, a corporation;
17 Hedges Well Company, a corporation;
18 Hellman Water Company, a corporation;
19 Hermosa Water Company, a corporation;
20 Joya Mutual Water Company, a corporation;
21 Upland Water Company, a corporation;
22 Western Fruit Growers, a corporation;
23 Cucamonga Development Company, a corporation;
24 Sapphire Mutual Water Company, a corporation;
25 Charles Snyder;
26 Hugh P. Crawford;
27 Bank of America National Trust and Savings Association,
28 a national banking association, and Henry G. Bodkin,
29 as executors of the last Will of Giovanni Vai, deceased;
30 G. N. Hamilton Ranch, a partnership composed of Arthur
31 Bridge, Helen Bridge, Grace W. Burt;

1 and Rex Mutual Water Company.

2 and,

3 WHEREAS, the Court has heard and considered evidence on the
4 part of various of the stipulating parties,

5 NOW, THEREFORE, IT IS HEREBY ORDERED, ADJUDGED AND DECREED
6 by this Court that:

7 FIRST: As used herein, the terms listed below shall have
8 the respective meanings next following them, viz:

9 (a) "Cucamonga Basin" or "Basin" shall mean that certain
10 territory in the County of San Bernardino, State of California,
11 which is more particularly described upon Exhibit 1, and shall
12 also include all percolating water and underground water and water
13 sources underlying said territory;

14 (b) "Imported water" shall mean water derived from a
15 stream flow in an area outside of any water shed draining into the
16 Cucamonga Basin. Specifically, water derived from San Antonio
17 Canyon and/or Creek is "imported water".

18 (c) "Irrigation season" shall mean that portion of each
19 year when irrigating is required by the users of the water sold by
20 the Plaintiffs and Defendants hereto. While this period varies
21 considerably from year to year, the irrigating season generally
22 commences during any month in which the rainfall does not exceed
23 two inches, and the season generally terminates after the first
24 rainfall of two inches or more. The season usually approximates
25 the period from May 1st to November 1st.

26 "Spreading season" is the balance of each year remaining
27 after deducting the irrigation season for such year, and is
28 usually approximately the period from November 1st of one year to
29 May 1st of the succeeding year.

30 "Spread" with respect to water shall mean to conduct the
31 same upon and sink the same into the gravels of Cucamonga Basin
32 during a spreading season.

1 (d) "Aggregate stipulated water" means the total number
2 of acre feet of water set opposite the names of all stipulating
3 parties in Exhibit 2.

4 (e) "Pro-rata" means, in each case, in the same propor-
5 tion as the acre feet listed opposite the name or names of the
6 party or respective parties in question bear to the aggregate
7 stipulated water; and the verb "pro-rate" means to divide and
8 share pro-rata among the stipulating parties.

9 (f) "Allocated water" of any stipulating party or parties
10 in each case means the number of acre feet of water set out on
11 Exhibit 2 opposite the name or names of such party or parties.

12 (g) "Ten preceding years" means the period of ten con-
13 secutive calendar years which immediately precedes or has preceded
14 the year or event mentioned.

15 (h) "Five-sixths of the water users" shall mean stipu-
16 lating parties having in the aggregate allocated water which is
17 not less than five-sixths of the total allocated water of all
18 stipulating parties.

19 (i) An "inch" of water or a "miner's inch" of water shall
20 mean a flow of water equal to one-fiftieth (1/50th) of a cubic
21 foot of water per second of time.

22 (j) Any party hereto the corporate name of which ends
23 with "Water Company" or "Mutual Water Company" will be hereinafter
24 referred to without such words. Thus "San Antonio" means herein
25 "San Antonio Water Company" and similarly with the other parties
26 using said words "Water Company" or "Mutual Water Company".

27 (k) "Canyon pipeline" shall mean the pipeline (varying in
28 size between approximately 32 inches in inside diameter and about
29 18 inches) which extends Southerly from a point on the channel of
30 Cucamonga Creek at an elevation of approximately 2350 feet above
31 sea level (herein called "Northerly intake") to the "round weir"
32 mentioned below.

1 (l) "Round weir" shall mean that certain weir of Ioamosa
2 marked on the map Exhibit 3 as "Round Weir" and located near the top
3 of the bluff on the East side of Cucamonga Creek and just Northerly
4 from the Westerly prolongation of Almond Street, said weir being
5 the point from which (a) two ten-inch water lines marked on the map
6 Exhibit 3 as "Ioamosa 10 inch" lead Easterly to Ioamosa's
7 Carnelian Street Reservoir (at about elevation 2030 feet above sea
8 level on the East side of Carnelian Street between Hillside Road and
9 Almond Street); (b) a six-inch water line marked on the map Exhibit 3
10 as "Hamilton 6 inch" leads Southeasterly to the Hamilton Ranch (which
11 lies South of Hillside Road, North of Banyan Street, East of Sapphire
12 Street and West of Carnelian Street), and, (c) an eight-inch water
13 line marked on the map Exhibit 3 as "Banyan 8 inch" runs Southerly
14 down Topaz Street to connect with the water system of Banyan Heights.

15 (m) "Reservoir Weir" means the weir of Ioamosa located at
16 the Carnelian Street Reservoir.

17 (n) "Ioamosa Southerly Intake" shall mean a line extending
18 West across the channel of Cucamonga Creek from the existing "Canyon
19 Weir" of Ioamosa marked on the map Exhibit 3 as "Canyon Weir", which
20 weir is located in Cucamonga Canyon, is part of the Canyon pipeline,
21 and is situated about midway (or somewhat Northerly thereof) between
22 the round weir and the Northerly intake mentioned above.

23 (o) "Schulhof pipe-line" means that certain three-inch water
24 pipe-line marked on the map Exhibit 3 as "Schulhof 3 inch" which
25 connects with the Canyon pipe-line Northerly of the round weir, and
26 which is mentioned in paragraph Second(h) of that certain decree
27 dated April 12, 1937, in action No. 29,799 (Schulhof v. Cucamonga
28 Development Company) in the above entitled Superior Court.

29 (p) The water to which Ioamosa is entitled as provided in
30 paragraph "Third" hereof is herein called "Ioamosa gravity water",
31 or "gravity water".

32 (q) "An overflow year" shall mean any calendar year for which

1 the water level determined as hereinafter provided in the index
2 well is at an elevation of 1345 feet or higher above sea level.

3 For the purposes of determination of elevation above sea
4 level the United States Geological Survey bench mark on Baseline
5 (also known as 16th Street) as it exists on the date this decree is
6 entered, on or near the north boundary of Section 4, Township 1
7 South, Range 7 west, and approximately four-fifths of a mile west of
8 Vineyard Avenue, shall be deemed to be at an elevation above sea
9 level of 1454 feet. The elevation of the water level in such index
10 well shall be determined by measuring the elevation of such water
11 in such well on October 1st of each year (Provided that if any such
12 day falls on a Sunday or a holiday, measurements shall be made on
13 the next business day). The index well shall be the well known
14 as Shaft No. 9-A of the San Antonio Water Company located approx-
15 imately 154 feet Southerly of the Northwest corner of Lot 14 of
16 Red Hill subdivision and shown on the map Exhibit 5. Wells No. 11
17 of Cucamonga Water Company and 20 and 22 of the San Antonio Water
18 Company shall not be pumped within three days before such date of
19 measurements, and the tunnel bulkhead adjacent to Red Hills Country
20 Club will be kept closed for a like period before such date. If
21 for any reason Shaft 9-A shall not be available for measurement,
22 then the index well shall be Wells No. 11 of Cucamonga Water Company
23 or 20 or 22 of the San Antonio Water Company, in the order herein
24 listed. If for any reason none of said wells shall be available
25 for such measurement, the identity and location of the index well
26 may be determined by a written stipulation executed by five-sixths
27 of the water users and filed in said action, or in default of
28 said stipulation by order of the said court.

29 Annexed to this Decree and hereby incorporated herein are the
30 following Exhibits:

31 Exhibit 1: A description of the territory under which
32 lies the "Cucamonga Basin";

1 Exhibit 2: A list of the "allocated water" of each party
2 (Other than the stream flow mentioned in paragraph "Third");
3 Exhibit 3: A map of "Cucamonga Pipe Lines";
4 Exhibit 4: A map of "Cucamonga Spreading Works";
5 Exhibit 5: A map of "Well and Shaft Locations";
6 and said exhibits are herein respectively referred to as "Exhibit 1",
7 "Exhibit 2", "Exhibit 3", "Exhibit 4" and "Exhibit 5".

8 SECOND: This paragraph deals with the right and quantity of
9 water San Antonio may annually hereafter extract from the Cucamonga
10 Basin as reduced by its failure to previously annually spread therein
11 the minimum amount of water hereinafter set forth, or as increased by
12 its previously annually spreading more imported water therein than
13 said minimum, excepting, however, in both such situations the spread-
14 ing of imported water during years in which such spread causes
15 the Basin to overflow resulting in such year constituting an overflow
16 year, as defined in Paragraph First, subdivision (q) thereof.

17 For the purpose of the computation in this Paragraph Second,
18 it shall be assumed that San Antonio has spread in each of the ten
19 years previous to 1957, 2,000 acre feet of imported water.

20 With respect to each calendar year after entry of this decree
21 each preceding ten year period shall be divided into "included" and
22 "Excluded" years. "Excluded years" are those calendar years which
23 are defined as overflow years in Paragraph First, subdivision (q)
24 thereof. All other calendar years are "included years".

25 If in the ten preceding years San Antonio shall have spread
26 less than 2,000 acre feet of imported water in any of the included
27 years, as modified by the assumption above set forth, the difference
28 between (a) The amount of imported water which shall have been so
29 spread in such included years, and (b) The quantity of 2,000 acre
30 feet multiplied by the number of included years, shall be known
31 as the "ten year deficit".

32 Any right of San Antonio to extract water from the Cucamonga

1 Basin in any calendar year after the entry of this decree shall be
2 reduced by the number of acre feet of water equal to the ten year
3 deficit divided by the number of included years, if any such deficit
4 shall have occurred, so that such right to extract water for such
5 year shall not exceed 6,500 acre feet less the ten year deficit
6 divided by the number of included years.

7 Correspondingly, with respect to each calendar year after
8 the entry of this decree, if in the ten preceding years San Antonio
9 shall have spread more than 2,000 acre feet of imported water in any
10 of the included years, as modified by the assumption above set forth,
11 the difference between (a) The amount of imported water which shall
12 have been so spread in such included years; and (b) The quantity of
13 2,000 acre feet multiplied by the number of included years, shall be
14 known as the "ten year surplus".

15 The right of San Antonio to extract water from the Cucamonga
16 Basin in any calendar year after the entry of this decree, shall be
17 increased by a number of acre feet of water equal to 95 percent of
18 the ten year surplus divided by the number of included years, if any
19 such surplus shall have occurred, so that there shall be added for
20 such year to San Antonio's right to extract 6,500 acre feet of water
21 a number of acre feet of water equal to 95 percent of the ten year
22 surplus divided by the number of included years. Provided, however,
23 that in no case shall such increased extraction exceed 2,000 acre
24 feet of water for any one calendar year.

25 So long as the water level in the index well referred to in
26 paragraph First, subdivision (q) herein is at an elevation below
27 1345 feet above sea level, and in the event San Antonio has available
28 in any one calendar year after the year 1956 more than 2,000 acre feet
29 of imported water, and desires to sell the same, it shall, before selling
30 such imported water to others not parties to this Decree, annually
31 offer to sell such imported water to the other stipulating parties
32 hereto for spreading in the Cucamonga Basin and at a price to be fixed

1 between the parties by negotiation, but in any event to be not
2 greater than the price San Antonio can obtain from others not
3 parties of this Decree.

4 In the event San Antonio and the other stipulating parties
5 hereto do not agree by October 1st to the terms for the purchase
6 of said imported water to be sold and spread during the next
7 succeeding spreading season, then San Antonio is thereafter free
8 to sell such imported water to other persons not parties hereto,
9 or at its option, it may spread such imported water in the Cucamonga
10 Basin and by so spreading will receive the credit for water
11 spread as provided in this paragraph Second. If the stipulating
12 parties and San Antonio agree to the purchase from San Antonio
13 of any imported water, and such stipulating parties, other than
14 San Antonio, purchase said water and the same is spread in the
15 Cucamonga Basin, then during such year no credit shall be
16 given to San Antonio toward estimating its ten year surplus
17 or deficit for the amount of water so purchased and spread.

18 THIRD: Ioamosa and Hamilton Ranch, a partnership composed
19 of Arthur Bridge, Helen Bridge and Grace W. Burt, are the owners
20 of the paramount right to take and divert throughout each year
21 at or Northerly from the Ioamosa Southerly intake all surface
22 and subsurface flow of Cucamonga Creek, not exceeding however
23 two hundred fifty (250) miner's inches of water, (measured at
24 the round weir and the intake to the Schulhof pipeline), including
25 any water which shall be supplied to the Schulhof pipeline under
26 the terms of said decree in action No. 29,799 or otherwise. The
27 right to said flow of Cucamonga Creek up to 250 miner's inches
28 per year is subject to an obligation of Hamilton Ranch and Ioamosa
29 to deliver water into the Schulhof pipeline, and the balance of
30 said water is owned by Hamilton Ranch and Ioamosa in the following
31 proportions:

32 (a) Hamilton Ranch 128/1200ths thereof;

1 (b) Ioamosa 1072/1200ths thereof, subject to the right
2 of Sapphire to the extent of one (1) inch from the weir box on
3 Ioamosa's pipeline located approximately 1200 feet East of the
4 "round weir".

5 The rights of Ioamosa to the Ioamosa gravity water are
6 subject to the provisions hereof. Ioamosa may transport such
7 gravity water to any location or locations whether within or without
8 the basin, and use or deliver such water at any such location or
9 location, provided, however, if any of the Ioamosa gravity water is
10 used or conducted outside the Basin in any year, then the quantity of
11 water which Ioamosa shall be entitled to develop or extract from the
12 Basin by Paragraph Fourth and Exhibit 2 herein during the next
13 succeeding year shall be reduced by an amount equal to the quantity
14 of Ioamosa gravity water so used or conducted outside the Basin
15 during such year.

16 The stipulating parties hereto shall within sixty (60) days
17 after the date of this judgment, at their proportionate expense, con-
18 struct in a manner which shall have been approved by San Antonio
19 Water Company or by the above entitled Court a dividing weir located
20 where Ioamosa now maintains the "round weir". Such dividing weir
21 shall be so constructed that it will automatically limit to 249
22 inches the amount of water that will flow into the above mentioned
23 four outgoing lines that are now connected with the round weir and
24 are referred to in paragraph First (1) herein.

25 Within sixty (60) days after the date of this judgment
26 the stipulating parties hereto shall also construct in a manner
27 which shall have been approved by San Antonio Water Company or
28 by the above entitled Court a dividing weir at the said
29 Carnelian Street reservoir. The dividing weir at this point shall
30 be so constructed as to permit Ioamosa to divert fifty inches of
31 such Ioamosa gravity water to domestic use.
32

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SAN BERNARDINO, CALIFORNIA

1 During each spreading season, the remaining amount of Ioamosa
2 gravity water over and above fifty (50) inches, shall be either:
3 (a) Used for irrigation purposes over Cucamonga Basin; or,
4 (b) Spread over Cucamonga Basin in the spreading grounds
5 of Ioamosa or Banyan Heights Water Company; or
6 (c) Returned by Ioamosa to the channel of Cucamonga Creek.

7 During each spreading season all of the flow of Cucamonga
8 Creek in excess of such 250 inches after passing through the debris
9 basins numbered C1 to C12 inclusive on Exhibit 4 shall be spread in
10 spreading grounds which now exist, or are now under construction, or
11 which are proposed, as shown on Exhibit 4, including the channel or
12 wash of Cucamonga Creek, and which overlie the Cucamonga Basin and
13 are North of Baseline Road. Whenever such spreading grounds are all
14 overflowing, or would overflow, the waters which do or would so over-
15 flow may be spread in the "15th St. Spreading Grounds" as shown on
16 said map, and when the "15th St. Spreading Grounds" also do or would
17 overflow, the waters which do or would so overflow the "15th St.
18 Spreading Grounds" may be spread in what is known as the "8th Street
19 Spreading Grounds", all as shown on Exhibit 4, even though all or part
20 of such spreading grounds do not overlie the Cucamonga Basin.

21 Such spreading shall be done at one or more locations in said
22 spreading grounds which shall be approved by San Antonio.

23 Such flow of Cucamonga Creek may be spread at other locations
24 than above provided, and outside the area above described upon the
25 written consent of 5/6th of the water users, as defined in paragraph
26 First subdivision (k) of this Decree.

27 If any costs are incurred in such spreading by any party
28 hereto, for which such party would not otherwise be reimbursed, such
29 costs shall be pro-rated between the parties hereto.

30 FOURTH: The rights of all stipulating parties to take water
31 from Cucamonga Basin, subject to the adjustments set forth in this
32 decree and to the provisions of paragraphs Second and Third above,

1 are hereby fixed at the quantities set forth in Exhibit 2. Such
2 rights are correlative, and except as to quantity or as herein
3 otherwise stated are equal. No stipulating party shall have any
4 right to export water from the Cucamonga Basin or use water extracted
5 from the Cucamonga Basin at any place other than over the Cucamonga
6 Basin except as provided in paragraph Third and as follows:

7 (a) The following stipulating parties, or any of them,
8 may use water which they are entitled to extract from Cucamonga
9 Basin in any location whatsoever, namely, San Antonio, Cucamonga,
10 Upland, Old Settlers, and Sunset.

11 (b) Hermosa, Foothill Irrigation Company and Alta Loma
12 are entitled to export water from Cucamonga Basin only to the
13 extent hereinafter set forth, and none of said parties shall ever
14 export from the Basin more water than said "Export quantity" herein
15 listed for it, to wit:

16	<u>Party</u>	<u>Export Quantity</u>
17	HERMOSA	343 Acre Feet
18	FOOTHILL IRRIGATION COMPANY	483 Acre Feet
19	ALTA LOMA	51 Acre Feet

20 and if in any year water used outside the basin which has been ex-
21 tracted or developed from the basin by any of said parties exceeds
22 the "Export Quantity" above listed for such party, the quantity of
23 water which such party shall be entitled to develop or extract from
24 the basin in the ensuing year shall be reduced by an amount equal
25 to such excess.

26 FIFTH: Within sixty (60) days after the date of this
27 judgment, San Antonio shall, in the event it has not already done
28 so, install, at the following locations, suitable recording and
29 measuring devices, by means of which all spread water passing
30 through such devices may be accurately measured and the quantity
31 of such water recorded. Said locations are as follows:

32 (1) On 23rd Street at the Northeast corner of Ontario

1 Colony Lot No. 170

2 (2) On 20th Street at the Northwest corner of Ontario
3 Colony Lot No. 282; and

4 (3) On the West line of Ontario Colony Lot No. 301,
5 400 feet North of 19th Street.

6 Such measuring and recording devices shall be of such design and
7 construction as may be agreed upon by and between San Antonio and
8 Cucamonga, or, if they fail to agree, as may be designated by the
9 Chief Engineer of the San Bernardino County Flood Control District,
10 or by the above entitled Court.

11 All imported water which is to be spread upon Cucamonga Basin,
12 whether spread by San Antonio to earn its entitlement under paragraph
13 Second hereof, or is spread after the purchase thereof by the parties
14 hereto other than San Antonio, shall be conducted through said record-
15 ing and measuring devices by San Antonio, unless otherwise agreed in
16 writing by the stipulating parties, including San Antonio, having
17 allocated water equal to at least five-sixths (5/6ths) of the aggre-
18 gate stipulated water, and no water not so conducted through such
19 devices and measured shall be counted as water spread under the terms
20 of such paragraph Second, unless so agreed in writing by such parties.

21 Said devices shall be designed and operated so that they
22 continuously record the amount of water passing therethrough between
23 the start and finish of each spreading season. In case of failure
24 of measuring devices, average of the preceding and succeeding
25 measurements shall be used. Such records shall be open to the inspect
26 ion of all other stipulating parties on reasonable notice.

27 Each stipulating party shall have the right to inspect such
28 recording and measuring devices at any time, and, in the event that
29 the same shall ever be locked, each of the stipulating parties shall
30 be furnished by San Antonio with a key thereto so as to permit in-
31 spection thereof. Further, San Antonio shall grant to the other
32 stipulating parties hereto, insofar as it can do so without being

1 required to obtain the same from others, a non-exclusive right of
2 ingress and egress from the nearest public street to said recording
3 measuring devices. The stipulating parties hereto shall pro-rate the
4 expense of the original installation of said recording measuring
5 devices, and San Antonio shall thereafter operate and maintain and
6 bear the expense of operating and maintaining such devices.

7 SIXTH: As between the stipulating parties only, no extraction
8 of water from Cucamonga Basin by any party in excess of the amount
9 herein provided to be taken by such party, shall be deemed adverse to
10 any other stipulating party, and each stipulating party hereby waives
11 as against each other stipulating party the right to plead any statute
12 of limitations or laches with respect to any extraction of water by
13 such party in excess of such amount.

14 SEVENTH: Except as provided in paragraph Second, if any stip-
15 ulating party in any year shall fail to take or receive from the basin
16 or transport beyond the confines of the basin, the full quantity of
17 water which such party is entitled hereunder to take or receive or
18 transport beyond said confines, as the case may be, such failure shall
19 not entitle such party to take or receive or so transport from the
20 basin in any succeeding year any greater quantity of water than if in
21 each prior year such party had taken, received and so transported
22 from the basin all water which such party was entitled hereunder to so
23 take, receive and transport, and, subject to the provisions of Para-
24 graph Fifteen, such failure shall not affect the rights of other
25 parties to the decree to take the stipulated amounts of water they are
26 entitled to receive by Exhibit 2 herein.

27 Likewise, except as provided in said paragraph Second, as
28 between the stipulating parties, no right adjudged hereunder of any
29 party to thereafter take water from the Basin or to thereafter trans-
30 port such water beyond the confines of the Basin shall be lost,
31 impaired or diminished by any failure to take or so transport from the
32 Basin all or any of the water to which such party is entitled hereunder:
33 unless and only to the extent that for a period of at least fifteen

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1 consecutive years such right shall not be exercised.

2 EIGHTH: Each stipulating party shall always maintain records
3 of all extractions of water from the Basin by such party such that it
4 can be determined therefrom for each year what quantity of water was
5 taken from each well, or combination of wells, or other water source
6 within the Basin from which such party received water.

7 Upon written demand of any other stipulating party, the party
8 keeping such records shall, within 30 days after receipt of such
9 demand, supply to the party making such demand or to the person
10 designated by such party in such demand a written statement of the
11 amount of water (in acre feet) so taken from each such well or combin-
12 ation of wells, or other source, for each year after 1957, with
13 respect to which no such statement has previously been supplied.

14 Within six months hereafter as to existing wells, or upon
15 commencement of operation as to wells first hereafter operated, each
16 such well or combination of wells shall be so equipped with measuring
17 devices at the expense of stipulating party who operates the same, as
18 to show the quantity of water used or extracted.

19 Likewise, if any stipulating party hereafter transports water
20 beyond the confines of the Basin, such transporting party shall there-
21 after maintain such measuring box, meter, weir, or other measuring
22 device as will show readily and accurately the quantity of water at
23 the time being transported beyond the confines of the Basin. Measure-
24 ments of the quantity of water being taken at each of said points
25 shall be made by such transporting party at least daily by weir or
26 weekly by meter throughout the entire period water is being taken at
27 such point. A record of such measurements and hours of operation
28 shall always be made and maintained by such party. In case of failure
29 of measuring device, average of the preceding and succeeding measure-
30 ments shall be used.

31 Each stipulating party and any agent of any such party shall
32 at all reasonable hours be entitled to inspect all such meters, boxes,

1 wairs and other measuring devices, and to inspect, check, and copy
2 any record of extractions and measurements and of all data and com-
3 putations pertaining to the same in the possession or under the
4 control of any other stipulating party or parties.

5 NINTH: Every provision of this Judgment in favor of or
6 applying to any party hereto shall also apply to and inure to the
7 benefit of, and also bind each and all of the heirs, legal represent-
8 atives, successors and assigns of such party.

9 TENTH: The maximum quantity of water which any stipulating
10 party shall be entitled to take from the Basin or transport beyond
11 its confines shall not be increased or affected by the future
12 acquisition by such party of additional lands, unless there shall be
13 appurtenant to such lands rights to take water, which rights are
14 in this action adjudged to exist.

15 Nothing in this judgment contained shall prevent any stipula-
16 ating party from selling or otherwise disposing, or from purchasing
17 or otherwise acquiring, any rights to water or to transport the same
18 which may be adjudged to belong to any party to this action; but any
19 such rights so acquired or so disposed shall remain subject to any
20 limitations or restrictions herein expressed. Any transfer of the
21 rights of any party herein shall be in writing, and notice thereof
22 shall be given to San Antonio Water Company and Cucamonga Basin
23 Protective Association, a corporation, whose address is Cucamonga,
24 California, before the transferee may exercise such transferred rights.

25 ELEVENTH: The stipulating parties shall pro-rate the expense
26 incurred after the date of this Judgment in prosecuting this action
27 to Judgment against any other parties to this action.

28 The stipulating parties will unite in opposing any new,
29 wrongful or unlawful taking of water from the Basin hereafter made
30 by any person or corporation other than a stipulating party or
31 parties, and will prorate the expense of making such opposition,
32 including any litigation or engineering expense, provided that:

1 (a) The term "new taking" shall not include any water devel-
2 opment in the Basin hereafter made for the sole purpose of maintain-
3 ing but not increasing any quantity of water now being taken from
4 the Basin by the person who may hereafter make such development.

5 (b) If any stipulating party does not join in prosecuting
6 any future suit to prevent, enjoin or limit any such new, wrongful
7 or unlawful taking, such stipulating party not so joining shall bear
8 pro-rata the expense of such suit (including attorney's fees and
9 engineering expense) only if final judgment is rendered in such
10 suit preventing, enjoining or limiting such taking.

11 TWELFTH: Each stipulating party, and the agents and employees
12 of each such party, is and are hereby perpetually enjoined and re-
13 strained from doing any act or thing in violation of any provision
14 of this judgment, other than paragraph Eleventh hereof.

15 THIRTEENTH: No stipulating party shall be entitled to
16 recover court costs from any other stipulating party.

17 FOURTEENTH: The above entitled action shall continue and may
18 be prosecuted and tried against all defendants therein, other than
19 the stipulating parties; and the stipulating parties shall share
20 the expense of such prosecution pro-rata. The Court will retain
21 jurisdiction to enter modifications of this decree pursuant to
22 stipulations provided for hereunder.

23 FIFTEENTH: In the event that through inadequacy of the
24 supply of water in the Cucamonga Basin, or by reason of adjudication
25 in any subsequent action, the stipulating parties in the aggregate
26 shall be unable to pump and extract from the Cucamonga Basin a
27 quantity of water so great as the aggregate stipulated water as is
28 set forth in Exhibit 2, the stipulating parties shall pro-rate the
29 aggregate quantity of water available in the Basin as long as such
30 inability shall continue.

31 In the event between October 1st of any year and June 15th
32 of the succeeding calendar year, five-sixths of the water users

1 shall agree in writing by a stipulation filed in said action that
2 the supply of water in the Basin is inadequate to safely permit the
3 stipulating parties to pump in such ensuing year the aggregate
4 stipulated water and that the amount of water to be pumped by each
5 stipulating party shall for such succeeding calendar year be limited
6 to a specified percentage (uniform for all) of the allocated water,
7 then for such succeeding calendar year, each stipulating party is
8 hereby enjoined and restrained from pumping or extracting from the
9 Basin more than such percentage of allocated water of such party
10 (subject to the provisions of paragraphs Second and Third hereof).

11 SIXTEENTH: The listing upon Exhibit 2 of any number of
12 acre feet for any party to this action other than a stipulating
13 party, shall not be deemed an admission by any stipulating party
14 that a non-stipulating party is entitled to any water whatsoever
15 from Cucamonga Basin, nor as to the quantity which such non-
16 stipulating party may take from said Basin, if any, but each such
17 figure for any non-stipulating party is listed as a matter of con-
18 venience and as a possible basis of compromise only.

19 SEVENTEENTH: This judgment supersedes and controls all
20 previous agreements and decrees between the stipulating parties, or
21 any of them but only insofar as they are inconsistent herewith.

22 Done in open Court this 25 day of April, 1958.

23
24
25 CARL B. HILLIARD

26 _____
27 Judge
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32

EDWIN S. HELLYER
ATTORNEY AT LAW
SAN FRANCISCO, CALIFORNIA

EXHIBIT 2

STIPULATED WATER

NAME ACRE FEET PER YEAR

San Antonio Water Company	6500	6500
Alta Loma Mutual Water Company	600	600
Armstrong Nurseries		200
Banyan Heights Water Company		625
Carnelian Water Company		600
Citrus Water Company		450
Cucamonga Water Company	6500	6500
Cucamonga Development Company (included under Ioamosa)		None
Foothill Irrigation Company	483	1600
Hedges Well Company		732
Hellman Water Company (included under Ioamosa)		None
Hermosa Water Company	600	600
Ioamosa Water Company		920
Joya Mutual Water Company		390
Old Settlers Water Company	400	400
Rex Mutual Water Company		600
Charles Snyder		114
Sunset Water Company	400	400
Upland Water Company	750	750
Heirs and Devisees of Giovanni Vai, deceased		500
Hugh P. Crawford		120
Western Fruit Growers		120
Sapphire Mutual Water Company		None
G. N. Hamilton Ranch, a partnership		None
AGGREGATE STIPULATED WATER		22,721

EXHIBIT 2

114
15,351

1 WALKER, WRIGHT, TYLER & WARD
2 210 W. 7th Street, Suite 631
3 Los Angeles, 14, California,
4 Trinity 8936

5 Attorneys for Plaintiff

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8 IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
9 IN AND FOR THE COUNTY OF SAN BERNARDINO

10
11 SAN ANTONIO WATER COMPANY, a corporation,
12 Plaintiff,

13 vs.

14 FOOTHILL IRRIGATION COMPANY, a corporation;
15 SUNSET WATER COMPANY, a corporation; IOAMOS
16 WATER COMPANY, a corporation; and OLD SETTLERS
17 WATER COMPANY, a corporation; ALTA LOMA MUTUAL
18 WATER COMPANY, a corporation; ARMSTRONG
19 NURSERIES, a corporation; BANYAN HEIGHTS WATER
20 COMPANY, a corporation; CARNELIAN WATER
21 COMPANY, a corporation; CITRUS WATER COMPANY,
22 a corporation; CUCAMONGA DEVELOPMENT COMPANY,
23 a corporation; CUCAMONGA WATER COMPANY, a
24 corporation; HEDGES WELL COMPANY, a corpora-
25 tion; HELLMAN WATER COMPANY, a corporation;
26 HERMOSA WATER COMPANY, a corporation;
27 JOYA MUTUAL WATER COMPANY, a corporation;
28 REX MUTUAL WATER COMPANY, a corporation;
29 SAPPHIRE MUTUAL WATER COMPANY, a corporation;
30 CHARLES SNYDER; UPLAND WATER COMPANY, a
31 corporation; HENRY G. BODKIN and BANK OF
32 AMERICA NATIONAL TRUST AND SAVINGS ASSOCIATION,
as Executors of the last will of Giovanni Vai,
deceased; WESTERN FRUIT GROWERS, a corporation;
HUGH P. CRAWFORD; G. N. HAMILTON RANCH, a partner-
ship composed of Arthur Bridge, Helen Bridge, and
Grace W. Burt; JOHN DOE ONE to THIRTY, inclusive,
MARY ROE ONE to THIRTY inclusive, JOHN DOE
COMPANY ONE TO TWENTY inclusive,

Defendants.

No.

STIPULATION

REGARDING

TRIAL AND

JUDGMENT

30 IT IS HEREBY STIPULATED AND AGREED by and between plaintiff
31 San Antonio Water Company and the undersigned defendants (said
32 plaintiff and defendants being herein called "Stipulating parties")

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ATTORNEYS AT LAW
SAN BERNARDINO, CALIFORNIA

1 that:

2 FIRST: Each of the undersigned defendants hereby appears in
3 the above entitled action. The allegations of the complaint on
4 file in said action shall be deemed denied by the undersigned
5 defendants, and they shall be and are deemed to have alleged in
6 said action that they own such rights to the waters of Cucamonga
7 Creek and of Cucamonga Basin (mentioned in said judgment) as may
8 be supported by any evidence which may be introduced at the trial
9 of said action.

10 SECOND: At any time after the filing of this stipulation
11 said action may be tried as between the stipulating parties. Said
12 trial may be held without notice if the undersigned counsel for the
13 stipulating parties are present or represented at said trial, and
14 in such case notice of said trial is hereby waived.

15 THIRD: The stipulating parties consent that a Decree in the
16 form which precedes and is attached to this stipulation may be
17 rendered and entered by the Court in said action, in the event
18 the Court finds such judgment proper under the evidence which shall
19 have been introduced.

20 FOURTH: The stipulating parties hereby waive the signing
21 or filing of any Findings of Fact in said action in the event a
22 decree in said form is to be rendered.

23 Dated: ^{April} ~~November~~ 25th, 1957.

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25 *Egan*
26

SAN ANTONIO WATER COMPANY

BY F. C. Buffington President
AND C. Adams Secretary

WALKER, WRIGHT, TYLER AND WARD

BY Thomas S. Heston
Attorneys for Plaintiff

FOOTHILL IRRIGATION COMPANY

BY Therman Heston V. President
AND Frank H. Van Fleet Secretary

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IOAMOSA WATER COMPANY

BY J. F. Anderson President
AND Frank N. Van Fleet Secretary

OLD SETTLERS WATER COMPANY

BY Harold B. Blatz President
AND Frank N. Van Fleet Secretary

SUNSET WATER COMPANY

BY Herman Blinn President
AND Emma Mae Phelan Secretary

CUCAMONGA WATER COMPANY

BY Leon Lucas President
AND Clifton Chappell Secretary

ALTA LOMA MUTUAL WATER COMPANY

BY E. J. Minor President
AND Louise L. Merchant Secretary

ARMSTRONG NURSERIES, ETC.

BY Clayton Armstrong President
AND Tom R... Secretary

BANYAN HEIGHTS WATER COMPANY

BY Robert L. ... President
AND Robert L. ... Secretary

CARNELIAN WATER COMPANY

BY John C. Belcher President
AND Robert L. ... Secretary

CITRUS WATER COMPANY

BY Robert A. Hill President
AND W. H. ... Secretary

JOHN B. HELLNER
ATTORNEY AT LAW
SAN FRANCISCO, CALIFORNIA

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HEDGES WELL COMPANY,

BY Donald B. Beane President
AND Mrs. H. J. Beane Secretary

HELLMAN WATER COMPANY

BY J. F. Grass President
AND Frank W. Van Fleet Secretary

HERMOSA WATER COMPANY

BY Wm. H. Hutton President
AND Frank W. Van Fleet Secretary

JOYA MUTUAL WATER COMPANY

BY Glenn B. Bann President
AND Harold A. Mason Secretary

UPLAND WATER COMPANY

BY Wm. H. Hutton President
AND J. F. Easton Secretary

WESTERN FRUIT GROWERS

BY W. H. Hutton President
AND M. Oliver Davis Secretary

CUCAMONGA DEVELOPMENT COMPANY

BY Robert H. Hutton President
AND Frank W. Van Fleet Secretary

SAPPHIRE MUTUAL WATER COMPANY

BY H. L. Seavey President
AND Frank W. Van Fleet Secretary

Charles Snyder
(Charles Snyder)
Hugh P. Crawford
(Hugh P. Crawford)

SURR & HELLYER
ATTORNEYS AT LAW
SAN BERNARDINO, CALIFORNIA

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HENRY G. BODKIN and
BANK OF AMERICA NATIONAL TRUST AND
SAVINGS ASSOCIATION,
As Executors of the Last Will of
Giovanni Vai, deceased;

BY [Signature]

X AND [Signature]
ATTORNEY AT TRUST OFFICES
(Henry G. Bodkin)

G. N. HAMILTON RANCH, a partnership,

BY [Signature]
(Arthur Bridge)

BY [Signature]
(Helen Bridge)

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Partners

REX MUTUAL WATER COMPANY

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Appendix G. Six Basins Judgment

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DEC 18 1998

JOHN A. CLARKE, CLERK
John A. Clarke

6
7
8 SUPERIOR COURT OF THE STATE OF CALIFORNIA
9 FOR THE COUNTY OF LOS ANGELES

10 SOUTHERN CALIFORNIA WATER COMPANY)

11)
12 Plaintiff,)

13 vs.)

14 CITY OF LA VERNE, CITY OF CLAREMONT,)
15 CITY OF POMONA, CITY OF UPLAND,)
16 POMONA COLLEGE, POMONA VALLEY)
17 PROTECTIVE ASSOCIATION, SAN ANTONIO)
18 WATER COMPANY, SIMPSON PAPER)
19 COMPANY, THREE VALLEYS MUNICIPAL)
20 WATER DISTRICT, WEST END)
21 CONSOLIDATED WATER COMPANY, and)
22 DOES 1 through 1,000, Inclusive,)

23 Respondents and Defendants.)
24)
25)
26)
27)
28)

CASE NO. KC029152

Assigned for All
Purposes to Judge
William O. McVittie

Department 0

(Complaint Filed, September 28,
1998)

JUDGMENT

THE DOCUMENT TO WHICH THIS CERTIFICATE IS
ATTACHED IS A FULL, TRUE, AND CORRECT COPY
OF THE ORIGINAL ON FILE AND OF RECORD IN
MY OFFICE.

DEC 18 1998

ATTEST _____

JOHN A. CLARKE

Executive Officer/Clerk of the
Superior Court of California, County of
Los Angeles

By _____, Deputy

C. MORALES

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1 PRELIMINARY FINDINGS

2 A. Complaint.

3 The Southern California Water Company ("SCWC"), (or "Plaintiff"), and the City of La Verne
4 ("La Verne"), City of Claremont ("Claremont"), City of Pomona ("Pomona"), City of Upland
5 ("Upland"), Pomona College ("Pomona College"), Pomona Valley Protective Association ("PVPA"),
6 San Antonio Water Company ("San Antonio"), Simpson Paper Company ("Simpson"), Three Valleys
7 Municipal Water District ("TVMWD"), West End Consolidated Water Company ("West End"),
8 collectively (Defendants) either:

- 9 i. account for essentially all of the current production of groundwater from or the
10 replenishment to the Canyon Basin, the Upper Claremont Heights Basin, the
11 Lower Claremont Heights Basin, the Pomona Basin, the Live Oak Basin and
12 the Ganesha Basin ("Six Basins Area"), located in Los Angeles and San
13 Bernardino Counties, and described in Exhibits "A," and "B" attached hereto,
14 and further defined in Judgment Section I(A) below; or
- 15 ii. are public agencies with an interest in the efficient and responsible
16 management of groundwater resources within the Six Basins.

17 On or about September 28, 1998 the Plaintiff filed a complaint against Defendants and Does 1
18 through 1,000 requesting a declaration of their individual and collective rights to groundwater and
19 a mandatory and prohibitory injunction requiring the reasonable use and equitable management of
20 groundwater within the Six Basins pursuant to *Article X, Section 2 of the California Constitution*.
21 The pleadings further allege that the Plaintiff and Defendants collectively claim substantially all
22 rights of groundwater use, replenishment and storage within the Six Basins Area, that the available
23 Safe Yield (as defined in Judgment Section I(A), below) is being exceeded and that the groundwater
24 supply to the Six Basins Area is inadequate to meet the current and long term demands of Plaintiff
25 and Defendants without the imposition of a physical solution. Plaintiff requests a determination of
26 all groundwater rights, including replenishment and storage rights, of whatever nature within the
27 boundaries of the Six Basins and request the imposition of an equitable physical solution.
28

1 **B. Answers and Cross-Complaints.** On or before November 13, 1998, Plaintiff and
2 Defendants filed a stipulation for entry of judgment.

3 **C. Jurisdiction.** This Court has jurisdiction to enter judgment declaring and adjudicating
4 the Plaintiff's and Defendants' ("the Parties") rights to the reasonable and beneficial use of
5 groundwater by the Parties in the Six Basins Area pursuant to *Article X, Section 2 of the California*
6 *Constitution* and to impose a complete physical solution. All pre-existing rights to groundwater
7 within the Basin held or claimed by any Party (as defined in Section I(A) of the Judgment below) are
8 hereby settled and defined as the production allocations and the other rights and obligations set forth
9 under this judgment ("Judgment"). The respective allocations for each Party are expressly set forth
10 in Exhibit "D."

11 **D. Parties.**

12 1. SCWC is an investor-owned public utility incorporated under the laws of the
13 State of California. (*See Public Utilities Code Section 1001 et seq. and 2701 et seq.*) SCWC produces
14 groundwater from the Six Basins and delivers it for use on land within its certificated service area
15 that predominantly overlies some portion of the Six Basins, and otherwise is within the Counties of
16 Los Angeles and San Bernardino.

17 2. Pomona is a charter city situated in the County of Los Angeles. Pomona
18 produces groundwater from the Six Basins and delivers it for use on land within its incorporated
19 boundaries, on land lying outside its incorporated boundaries within the County of Los Angeles and
20 on City owned lands that predominantly overlie some portion of the Six Basins. Pomona owns and
21 controls land in the Six Basins Area upon which it has historically diverted, for direct use and
22 spreading, surface water from San Antonio Creek and Evey Canyon.

23 3. La Verne is a general law city situated in the County of Los Angeles. La Verne
24 produces groundwater from the Six Basins and delivers it for use on land within its incorporated
25 boundaries, on land lying outside its incorporated boundaries within the County of Los Angeles and
26 on City owned lands that predominantly overlie some portion of the Six Basins.

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28

1 4. Upland is a general law city situated in the County of San Bernardino. Upland
2 produces groundwater from the Six Basins and delivers it for use on land within its incorporated
3 boundaries some portion of which overlie the Six Basins. It possesses a majority of the shares of
4 stock in San Antonio and West End.

5 5. San Antonio is a mutual water corporation incorporated under the laws of the
6 State of California, with its principal place of business in San Bernardino County. San Antonio
7 produces groundwater from the Six Basins and delivers it for use by its shareholders.

8 6. West End is a mutual water corporation, incorporated under the laws of the
9 State of California, with its principal place of business in San Bernardino County. West End
10 produces groundwater from the Six Basins and delivers it for use by its shareholders.

11 7. Claremont is a general law city situated in the County of Los Angeles.
12 Claremont's incorporated boundaries and City owned lands overlie a portion of the Six Basins. The
13 City has executed an agreement with SCWC with respect to its groundwater rights.

14 8. Pomona College is a California corporation, with a principal place of business
15 in the County of Los Angeles. Pomona College owns land and groundwater production facilities that
16 overlie the Six Basins Area and it has executed operating leases with SCWC regarding these
17 facilities. Pomona College has executed an agreement with SCWC with respect to its groundwater
18 rights.

19 9. Simpson is a Washington corporation, which is doing business in the State of
20 California and the County of Los Angeles. Simpson produces groundwater from the Six Basins for
21 its own use and also purchases water service from Pomona.

22 10. PVPA is a California corporation, operating on a non-profit basis for the mutual
23 benefit of its members with its principal place of business in the County of Los Angeles.
24 Shareholders of PVPA include Pomona, Pomona College, San Antonio, SCWC, Simpson, Upland
25 and West End. PVPA owns the primary spreading grounds and recharge facilities for the Six Basins
26 and owns other lands which also overlie the Six Basins. PVPA has undertaken ongoing studies and
27 evaluation of groundwater conditions in the Six Basins Area.

28

1 11. TVMWD is a California Municipal Water District formed pursuant to the
2 provisions of the municipal water district act and with the power to acquire, control, distribute, store,
3 and spread water for beneficial purposes within its boundaries.

4 **E. Settlement Negotiations.**

5 1. **Importance of Groundwater.** Groundwater is an important water supply
6 source for businesses, individuals and public agencies that overlie or extract groundwater from the
7 Six Basins. The Parties have a mutual and collective interest in the efficient and reasonable use of
8 groundwater and the coordinated management of water resources to ensure the prudent use of the
9 resource. The Parties have a further collective interest in furthering the efficient and reasonable use
10 of groundwater and the coordinated and comprehensive management of water resources to ensure that
11 the common resource may be sustained and enhanced.

12 2. **Coordinated Study.** PVPA has conducted and continues to conduct technical
13 studies of the Six Basins and has developed groundwater models of the Six Basins. To achieve the
14 goals of coordinated basin management and to ensure and promote the sustainable and enhanced use
15 of the groundwater resources of the Six Basins, the Parties joined in a collaborative process, reviewed
16 prior groundwater production reports and hydrologic studies, other historical data and engaged in new
17 technical studies to supplement the previous work of PVPA. Substantial engineering, hydrologic and
18 geologic data not previously known have been collected and jointly analyzed and verified by the
19 Parties. Included therein are estimates of production and reported production from the Six Basins
20 and further refinement of PVPA's groundwater models. The results of these efforts provide the
21 technical foundation for this Judgment.

22 3. **Overdraft.**

23 a. **Native Safe Yield.** The Native Safe Yield (as defined in Judgment,
24 Section I(A), below) of the Six Basins Area has historically been augmented generally by the
25 spreading activities conducted by PVPA, Pomona and La Verne and from return flows from water
26 imported to the Six Basins Area through TVMWD. There is no precise estimate of the Native Safe
27 Yield; however, without augmentation comprised of the substantial spreading operations conducted
28

1 by PVPA and others, and the return flows from imported water, the amount of groundwater
2 comprising the Native Safe Yield is substantially less than the Safe Yield which is allocated to the
3 parties pursuant to this Judgment.

4 **b. Safe Yield.** Safe Yield (as defined in Judgment, Section I(A), below)
5 for all groundwater supplies within the Six Basins, including the benefits of historic augmentation
6 is nineteen thousand three hundred (19,300) acre feet per year.

7 **c. Groundwater Production.** Reports filed with the State of California
8 pursuant to *Water Code Section 4999 et seq.*, production records reported to PVPA by its members,
9 and independent verification by the Parties all demonstrate that the cumulative groundwater
10 production of the Parties from the Six Basins Area annually has been greater than twenty thousand
11 (20,000) acre feet in each of the five years immediately preceding the filing of this action. Therefore,
12 groundwater production has exceeded the available Safe Yield and *a fortiori* the Native Safe Yield
13 in each of the last five years.

14 **F. Stipulation.** The Parties, whose production from the Six Basins cumulatively comprise
15 essentially all of the groundwater production in the Six Basins Area, which have engaged in long-
16 standing groundwater replenishment activities or otherwise have an interest in the efficient and
17 coordinated management of groundwater, have stipulated to the entry of this Judgment. Each of the
18 Parties stipulate that this Judgment is a physical solution (as defined in Judgment, Section I(A),
19 below) which provides due consideration to the environment, the respective groundwater rights of
20 the Parties, and that this Judgment will not cause substantial material injury to any Party under these
21 circumstances of a lengthy period of overdraft and the competing claims to groundwater. The Parties
22 further stipulate that the Judgment is a fair and equitable allocation of water in accordance with the
23 provisions of *Article X, Section 2 of the California Constitution*.

24 //

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1 JUDGMENT

2 IT IS HEREBY ORDERED, ADJUDGED AND DECREED:

3 I. INTRODUCTION

4 A. Definitions.

5 1. "Base Annual Production Right" means the average annual production , in acre-feet,
6 for each Party for the twelve year period beginning on January 1 of 1985 and ending on
7 December 31 of 1996 as set forth in Exhibit "D".

8 2. "Carryover Rights" means the maximum percentage of a Party's annual allocation
9 of Operating Safe Yield production of which may be deferred until the following Year free
10 of any Replacement Water Assessment.

11 3. "Effective Date" means January 1, 1999.

12 4. "Four Basins or Four Basins Area" means the following groundwater basins and
13 the area overlying them: Canyon, Upper Claremont Heights, Lower Claremont Heights and
14 Pomona as shown on Exhibit "A" and further described in Exhibit "B".

15 5. "Groundwater" means all water beneath the ground surface and contained
16 within any one of the Six Basins except as provided in Article IIIA Section 1.

17 6. "Imported Water" means water that is not naturally tributary to the Six Basins Area
18 and which is delivered to the Six Basins Area.

19 7. "In Lieu Procedures" means a method of either providing Replacement Water or
20 water to be stored under a Storage and Recovery Agreement whereby a Party receives direct
21 deliveries of Imported Water or water other than Replenishment Water in exchange for
22 foregoing the production of an equivalent amount of such Party's share of the Operating Safe
23 Yield.

24 8. "Minimal Producers" means any producer whose production is less than 25 acre
25 feet each Year.

26 9. "Native Groundwater" means groundwater within the Six Basins Area that
27 originates from the deep percolation of rainfall, natural stream flow or subsurface inflow, and
28

1 expressly excluding groundwater which originates from (a) the Parties' replenishment
2 activities and (b) return flows from both imported water and the Parties' replenishment
3 activities, and water described in Article IIIA Section 1.

4 10. **"Native Safe Yield"** means the amount of Native Groundwater, in acre feet, that can
5 be extracted from the Six Basins Area on an annual basis without causing an undesirable
6 result. Expressed as a formula: Native Safe Annual Yield = Annually Available Groundwater
7 - (Replenishment Water + return flows from Imported Water and Replenishment Water).

8 11. **"Native Water"** means water which is naturally tributary to the Six Basins Area.

9 12. **"Non-party"** means any person or entity which is not a party to this Judgment.

10 13. **"Operating Plan"** means the plan, developed by Watermaster (as defined in
11 Judgment, Article V below) for the Four Basins Area, by which the purpose and objectives
12 of the Physical Solution will be implemented and realized.

13 14. **"Operating Safe Yield"** means the amount of groundwater, in acre feet, which the
14 Watermaster shall determine can be produced from the Four Basins Area by the Parties during
15 any single year, free of any replacement obligation under the Physical Solution herein.
16 Because of the benefits created by coordinated management of groundwater provided by the
17 Physical Solution, the Operating Safe Yield set by Watermaster may exceed the Safe Yield
18 that would otherwise be available for production by the Parties. The Two Basins Area is
19 excluded from the Operating Safe Yield allocated pursuant to this Judgment with its annual
20 Safe Yield being equivalent to the amount of groundwater La Verne may reasonably produce
21 from the Two Basins Area on an annual basis without causing substantial injury to any other
22 Party.

23 15. **"Overdraft"** means a condition wherein the total annual production from a
24 groundwater basin exceeds the Safe Yield.

25 16. **"Party or Parties"** means any person(s) or entity(ies) named in this action, who
26 has/have intervened in this case or has/have become subject to this Judgment through
27 succession, stipulation, transfer, default, trial or otherwise.

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17. **"Physical Solution"** means the efficient and equitable coordinated management of groundwater within the Six Basins Area to maximize the reasonable and beneficial use of groundwater resources in a manner that is consistent with the public interest, *Article X, Section 2 of the California Constitution*, and with due regard for the environment.

18. **"Producer"** means a person, firm, association, organization, joint venture, partnership, business, trust, corporation or public entity who, or which, produces or has a right to produce groundwater from the Six Basins Area.

19. **"Production"** means the process of pumping groundwater; also, the gross amount of groundwater pumped.

20. **"Replacement Water"** means imported water or water other than Replenishment Water supplied through in-lieu procedures that is acquired by the Watermaster or provided by a Party to replace production by such Party in excess of the amount of its share of the Operating Safe Yield, Carry-Over Rights and Storage and Recovery rights authorized by Watermaster.

21. **"Replacement Water Assessment"** means an assessment levied by Watermaster pursuant to Article XII A, Section 4 of this Judgment.

22. **"Replenishment"** means a program to spread or inject Replenishment Water into the Six Basins Area. A description of the current replenishment programs is attached hereto as Exhibit "E."

23. **"Replenishment Water"** means native water which augments the Native Safe Yield and thereby comprises a portion of the Operating Safe Yield pursuant to a historical replenishment program as described in Article VIB, Section 9 and Exhibit E.

24. **"Return Flows"** means water which percolates, infiltrates or seeps into the Six Basins after having been previously applied to some end use by one of the Parties or any user of water.

25. **"Safe Yield"** means the amount of groundwater, including Replenishment and return flows from Imported Water, that can be reasonably produced from the combined Two Basins

1 and the Four Basins Areas on an annual basis without causing an undesirable result, including
2 but not limited to land subsidence, water quality degradation, and harm from high
3 groundwater levels, i.e. 19,300 acre feet per year.

4 **26. "Six Basins or Six Basins Area"** means the Four Basins Area plus the Two Basins
5 Area, as shown on Exhibit "A" and further described in Exhibit "B."

6 **27. "Spreading"** means a method of groundwater recharge whereby water is placed in
7 permeable impoundments and allowed to percolate into a basin.

8 **28. "Storage and Recovery"** means a program administered under an agreement
9 between the Watermaster and a Party to store water either directly by sinking, spreading or
10 injecting or by in-lieu procedures, into the Four Basins, and subsequently recovering such
11 water without regard to the limitations imposed by the Party's Base Annual Production Right.

12 **29. "Storage and Recovery Agreement"** means an agreement between Watermaster and
13 a Party for Storage and Recovery of water by such Party. An acceptable pre-approved
14 Storage and Recovery Agreement between Watermaster and Pomona is listed on Exhibit "F."

15 **30. "Transfer"** means temporary or permanent assignment, sale, contract or lease of any
16 Party's Base Annual Production Right and its associated percentage of the Safe Yield, Carry-
17 Over Rights or rights to recover water stored under a Storage and Recover Agreement to any
18 other Party or a person that becomes a Party. A lease shall not be considered a "permanent
19 transfer" unless both the Lessee and Lessor jointly agree to such characterization.

20 **31. "Two Basins or Two Basins Area"** means the Live Oak and Ganesha Basins and
21 the areas overlying them, as shown on Exhibit "A" and further described in Exhibit "B."

22 **32. "Water Shortage Emergency"** means the substantial impairment, which cannot be
23 promptly mitigated, of the ability of the Parties to provide sufficient water for human
24 consumption, sanitation and fire protection because of: (a) a sudden occurrence such as
25 storm, flood, fire, unexpected equipment outage; or (b) an extended period of drought.

26 **33. "Watermaster"** means the committee with the powers and duties defined in Article
27 V of this Judgment.

28

1 **34. "Year"** means a calendar year.

2 **B. Exhibits.** Each exhibit is expressly incorporated herein and made part of this
3 Judgment.

4 Exhibit A: Six Basin Map

5 Exhibit B: General Description of the Six Basins Area

6 Exhibit C: Memorandum of Agreement between Watermaster and PVPA

7 Exhibit D: Base Annual Production Rights of Parties

8 Exhibit E: Description of Replenishment Programs

9 Exhibit F: City of Pomona Storage and Recovery Agreement

10 Exhibit G: Initial Operating Plan

11 **II. FINDINGS AND HYDROLOGIC CONDITIONS**

12 **A. Safe Yield.** Prior to the imposition of this Physical Solution, the Safe Yield of the Six
13 Basins is historically found to be 19,300 acre feet per year.

14 **B. Overdraft and Prescriptive Circumstances.** For a period in excess of five
15 consecutive Years prior to the filing of the complaint herein, the Native Safe Yield and the Safe Yield
16 have been exceeded by the aggregate Production therefrom and the Six Basins have been in a
17 continuous state of Overdraft. The court finds that the Production constituting such Overdraft has
18 been open, notorious, continuous, adverse, hostile, and under claim of right. The court further finds
19 that the groundwater Production has exceeded the Native Safe Yield and the Safe Yield in each of
20 the last five years and thus all the required elements necessary to establish prescription have been
21 satisfied.

22 **1. Adversity.** The Native Safe Yield of the Six Basins Area has been continuously
23 exceeded for decades. It is only through the ongoing Replenishment undertaken by PVPA, Pomona
24 and La Verne coupled with the availability of and return flows from Imported Water that a further
25 decline in water levels has been averted. An unmanaged downward decline in water levels is known
26 to have severe adverse impacts on the rights of groundwater producers and groundwater quality, to
27 cause land subsidence and to cause increased pump-lifts. Moreover, the Court finds that presently
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1 estimated Safe Yield of 19,300 acre feet, with the full benefit of the Replenishment carried on by the
2 Parties has been exceeded and if Production is not managed pursuant to this Physical Solution, severe
3 adverse impacts will result.

4 **2. Continuity.** The Native Safe Yield has been continuously exceeded for at least two
5 decades. For each of the last five Years the Safe Yield has been exceeded. The Court finds that
6 cumulative total Production from the Six Basins Area for the Years 1993 through 1997 is as follows:

7	1993	21,020 acre feet
8	1994	20,313 acre feet
9	1995	22,959 acre feet
10	1996	23,584 acre feet
11	1997	21,902 acre feet

12 **3. Notice.** Each of the Parties with a Base Annual Production Right, or their agents, have
13 filed groundwater production reports with the State Department of Water Resources pursuant to
14 *Water Code Section 4999*. These reports are public records and are available for inspection by any
15 member of the public. SCWC is an investor-owned public utility subject to regulation by the
16 California Public Utilities Commission (PUC). Its records, reports and filings with the PUC regularly
17 include information regarding the wells used and groundwater produced from the Six Basins Area.
18 The PUC has held publicly noticed rate hearings which have been attended by the public and
19 representatives from Claremont. Pomona, La Verne and Upland are all public entities and their
20 groundwater production information are public records and open to public inspection upon reasonable
21 notice. PVPA has frequently published reports which indicate the nature of its Replenishment and
22 the volume of groundwater produced in the Six Basins Area. At least two settlement agreements
23 have been entered between certain Parties on matters related to the adverse impacts of increased
24 groundwater production. Both of these agreements were approved by a public entity and are public
25 records. Moreover, the negotiations leading up to the entry of this Judgment were open to all persons
26 claiming the right to produce groundwater by virtue of their owning overlying land or having
27 corporate boundaries overlying the Six Basins Area. Regular meetings concerning these negotiations
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1 have been held at the headquarters of TVMWD, a public agency, and were personally attended by
2 representatives from each of the Parties. These meetings have taken place at regular intervals for
3 more than twelve consecutive months and the contents of this Judgment and the status of groundwater
4 conditions in the Six Basins Area has remained readily available. Accordingly, the Court finds that
5 all persons claiming the right to produce had actual notice, constructive notice or could have easily
6 determined upon reasonable diligence that the Six Basins Area was in Overdraft and of each Party's
7 claim to groundwater. The circumstances of such Overdraft and water use are such that each of the
8 Parties either: (i) had actual knowledge of such circumstances; or (ii) should have discovered such
9 circumstances upon the exercise of reasonable diligence or (iii) received constructive notice of the
10 adverse nature of such aggregate production through the public record filings with the State of
11 California pursuant to *Water Code Section 4999* and through the various reports published by the
12 Parties.

13 **C. High Groundwater Levels.** There are cienegas and springs in the Four Basins Area
14 and there is a potential for groundwater to rise to the surface regardless of the replenishment,
15 replacement or storage operations of the Watermaster and carried out by the Parties. Periodically,
16 though not in the past twelve years, high groundwater levels have constituted an important causative
17 factor, in creating damage in the Four Basins Area.

18 **D. Water Quality Problems.** Some of the Six Basins have experienced problems of high
19 concentrations of nitrates and volatile organic compounds (VOC's) in groundwater. Potential sources
20 of the nitrate are historical agricultural practices and individual wastewater disposal systems, most
21 of which have been abandoned. The Two Basins Area and some of the Four Basins Area have been
22 adversely impacted by high concentrations of nitrates and VOC's and may also require remediation.

23 **III. DECLARATION OF RIGHTS AND RESPONSIBILITIES**

24 **A. General Provisions.**

25 **1. Surface Water Rights.** Pomona and San Antonio have prior and paramount pre-
26 1914 water rights, superior to the rights of any other party, to the surface water and supporting
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1 subsurface flows historically and presently diverted therefrom in San Antonio and Evey Canyon,
2 except as provided in Article VIB Section 9 and as referenced in Article IIIA Section 1d.

3 a. Historically, Pomona and San Antonio have diverted, and presently are
4 diverting, surface waters and supporting subsurface flows from San Antonio Canyon.

5 b. Historically, Pomona has diverted, and presently is diverting, surface water
6 and supporting subsurface flows from Evey Canyon.

7 c. Pomona and San Antonio are under no obligation to spread such waters.

8 d. Surface waters and supporting subsurface flows diverted in San Antonio and
9 Evey Canyons at existing diversion locations are excluded from (i) the operation of this Judgment
10 and (ii) the determination of Operating Safe Yield, except to the extent of the portion of such waters
11 which are spread by Pomona at its Pedley Treatment Plant, which portion is governed by the
12 provisions of Article VIB, Section 9.

13 e. The diversion and the use of surface waters and supporting subsurface flows
14 shall not be subject to this Judgment.

15 f. The above-referenced surface waters and supporting subsurface flows shall
16 not be subject to allocation among the Parties pursuant to this Judgment.

17 g. Surface waters and supporting subsurface flows may be used by Pomona and
18 San Antonio to satisfy Replacement Water obligations as provided in Article VIB, Section 5.

19 **2. Loss of Priorities.** By reason of the long continued overdraft in the Six Basins, and
20 in light of the complexity of determining appropriate priorities and the need for conserving and
21 making maximum beneficial use of the water resources of the State, each and all of the Parties listed
22 in Exhibit "D" are estopped and barred from asserting special priorities or preferences *inter se* to
23 groundwater except as expressly provided herein. All the Parties' rights to groundwater are
24 accordingly deemed and considered to be of equal priority unless otherwise expressly stated herein.

25 **3. Limitations on Export.** Other than the limitation on Pomona's use of 109 acre feet
26 as further described in Exhibit "D", any Party's share of the Operating Safe Yield, including
27 Carryover Rights and Transfers, may be produced and exported for use outside the Six Basins Area.

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1 However, groundwater stored and recovered pursuant to a Storage and Recovery Agreement may be
2 produced and exported only in accordance with the terms and conditions of the Storage and Recovery
3 Agreement.

4 **4. No Abandonment of Rights.** It is in the interest of reasonable beneficial use of the
5 Six Basins Area and its water supply, that no Party be encouraged to take and use more water in any
6 Year than is actually required. Failure to produce all of the water to which a Party is entitled
7 hereunder shall, in and of itself, not be deemed to be, or constitute an abandonment of such Party's
8 right, in whole or in part.

9 **5. Pre-Existing Rights.** This Judgment controls each Party's rights to the Production,
10 Replenishment, Storage and Recovery of groundwater and expressly supersedes other rights, claims
11 or defenses arising from agreement, operation of law, prior use or a prior judgment to the extent that
12 they are inconsistent with this Judgment. However, nothing in this Judgment shall alter or affect any
13 rights or remedies that any Party may have under any contract or agreement with any other Party on
14 matters which are not inconsistent with or are unrelated to the provisions of this Judgment or as
15 provided in Article IVC herein.

16 **6. Physical Solution.** This Judgment represents a total and complete Physical Solution
17 for the Six Basins Area and all basins included therein. Although prior hydrologic and physical
18 conditions limited the Safe Yield to 19,300 acre feet per year, through the coordinated and equitable
19 management of the Four Basins and Two Basins Areas provided under this Judgment, an Operating
20 Safe Yield, Operating Plan and Base Annual Production Rights shall be independently established
21 for the Four Basins Area. However, La Verne shall be entitled to produce groundwater from the Two
22 Basins Area in addition to its equitable share of the Four Basins Operating Safe Yield, as provided
23 in accordance with the terms of this Judgment.

24 **7. Portability Between the Two Basins and Four Basins Areas.** A Party's right to
25 produce, store or recover groundwater accruing under this Judgment in the Four Basins Area may not
26 be transferred, exchanged or exercised in the Two Basins Area. A Party's right to produce, store or
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1 recover groundwater accruing under this Judgment in the Two Basins Area may not be transferred,
2 exchanged or exercised in the Four Basins Area.

3 **B. Rights of the Parties to Produce Groundwater from the Four Basins.**

4 1. **Declaration of Rights.** The Parties listed in Exhibit "D" are the owners of
5 appropriate rights, including rights by prescription, and exercised and unexercised overlying rights
6 of equal priority, and each Party shall be entitled to produce groundwater under the Physical Solution
7 and to share in the Operating Safe Yield of the Four Basins according to the percentages set forth in
8 Exhibit "D" as Base Annual Production Rights in a manner consistent with the provisions of this
9 Judgment.

10 2. **Carryover Rights.** Any Party that produces less than its share of the Operating Safe
11 Yield in any Year shall have the right to carry the unproduced portion forward to be produced in the
12 following year subject to the following limitations: (a) the first water produced in any Year shall be
13 deemed to be an exercise of any Carryover Right; (b) a Party's Carryover Right cannot exceed 25
14 (twenty-five) per cent of such Party's share of the current Operating Safe Yield for the prior Year,
15 and (c) Carryover Rights may be lost in the event replenishment is discontinued or curtailed as
16 provided below in Article IIIB, Section 7.

17 3. **Transferability of Rights.** Subject to the limitations set forth in ^xhis Judgment, a Base
18 Annual Production Right and its associated percentage of the Operating Safe Yield, as well as any
19 Carryover Rights and water stored under a Storage and Recovery Agreement, may be transferred, in
20 whole or in part, among existing Parties or to any other person that becomes a Party on either a
21 temporary or permanent basis provided that no Party is substantially injured by the Transfer. Pro-
22 duction pursuant to any such Transfer shall be subject to the limitations on carryover and portability
23 set forth in Article IIIB, Section 4. Any such Transfer shall become effective upon being recorded
24 with Watermaster. Watermaster shall revise Exhibit "D" annually, to reflect any permanent
25 Transfers. The permanent Transfer of any Party's full Base Annual Production Right shall require
26 Watermaster approval. Upon Watermaster approval the permanent Transfer of a Party's full Base
27 Annual Production Right may require an adjustment in the Party representatives to the Watermaster
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1 and the number of votes of the Party's representatives as provided in Article V. Notwithstanding the
2 provision of this Article IIIB, Section 3, Pomona shall not be entitled to Transfer 109 acre feet of its
3 Base Annual Production Right and its associated percentage of Operating Safe Yield.

4 **4. Portability of Rights Among the Four Basins.** Any Party with a Base Annual
5 Production Right, shall have the right to produce its share of the Operating Safe Yield of the Four
6 Basins, including any Carryover Rights or Transfers, from any or all of the Four Basins, subject to
7 the following conditions.

8 **a. No Substantial Injury.** Any groundwater production from a "new" location
9 shall not cause substantial injury to another Party.

10 **b. Advance Written Notice to Watermaster.** Any Party that intends to
11 undertake any of the following actions shall provide thirty (30) days' advance written notice to the
12 Watermaster: (i) acquire, construct or operate a "new" groundwater production facility in any one
13 of the Four Basins in which it is then producing groundwater; (ii) change the point of extraction from
14 an existing groundwater production facility to a "new" groundwater production facility where the old
15 and the new groundwater production facilities are both within the Canyon or Upper Claremont
16 Heights or Lower Claremont Heights Basins; (iii) change the point of extraction from an existing
17 groundwater production facility on one side of the Indian Hill Fault to a "new" facility on the other
18 side of the Indian Hill Fault.

19 **c. Prior Watermaster Approval.** Any Party that changes the point of extraction
20 from an existing groundwater production facility on one side of the Indian Hill Fault to a "new"
21 facility located on the other side of the Indian Hill Fault and increases the cumulative rate of annual
22 extraction therefrom by more than 2,000 acre feet per year shall be required to obtain the prior written
23 approval of the Watermaster.

24 **d. New Facility Defined.** "New" as used in this Section 4 means either (i) an
25 increase or enlargement in the pre-existing design capacity of a groundwater production facility or
26 (ii) a movement in the location of a groundwater extraction facility by more than three hundred (300)
27 feet or from one legal parcel to another legal parcel.

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1 e. **Procedure for Resolution of Disputes.** The Watermaster shall make all
2 necessary determinations and resolve all disputes arising under this Article IIIB, Section 4 in
3 accordance with the provisions of Article VIII.

4 5. **Rights to Unused Groundwater Storage Capacity.** From time to time there may
5 exist in the Four Basins, unused storage capacity. Parties holding Base Annual Production Rights
6 pursuant to this Judgment and TVMWD for the sole purpose of storing Imported Water, shall have
7 the exclusive rights to use such storage capacity, and subject to the complete discretion of the
8 Watermaster, may sink, spread or inject water into the Four Basins Area pursuant to a Storage and
9 Recovery Agreement.

10 6. **Priorities for Use of Groundwater Storage Capacity.** In directing spreading and
11 controlling the use of groundwater storage capacity, the Watermaster shall give first priority to
12 Replenishment Water; second priority to Carryover Rights; third priority to Storage and Recovery
13 of water which is naturally tributary to the Six Basins Area; fourth priority to Storage and Recovery
14 of Imported Water, and fifth priority to Storage and Recovery of other water.

15 7. **Loss of Stored and Carryover Water.** After providing notice and opportunity to be
16 heard to any affected Party pursuant to Article IXA, if the Watermaster reasonably determines that
17 Replenishment had to be terminated or curtailed in any year, or that Replenishment Water was
18 rejected because of insufficient storage capacity, some or all of a Party's unproduced Carryover
19 Rights or Storage and Recovery rights may be deemed lost. The amount of water subject to loss shall
20 be equal to that quantity of Replenishment Water which was curtailed or rejected solely because of
21 insufficient storage capacity in the Four Basins.

22 The burden of a determination by Watermaster that rejected recharge has occurred and that
23 there shall be a loss of stored and Carryover water, shall be shared proportionately by each Party to
24 the extent the quantity of water held by each Party at the time of the loss bears to the total quantity
25 of water within each of the classification. Any losses shall be charged first to the storage of other
26 water, then to the storage of Imported Water, then to the storage of Native Water, then to Carryover
27 Water as expressly set forth below.

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- a. Highest priority shall be given to Replenishment Water.
- b. Second priority against loss shall be given to Carryover Water.
- c. Third priority against loss shall be given to storage of Native Water.
- d. Fourth priority against loss shall be given to storage of Imported Water.
- e. Fifth priority against loss shall be given to storage of other water.

8. **Consideration of Groundwater Levels.** Watermaster shall make every reasonable effort to establish water operations limits so that the spreading of Replenishment or Replacement water, groundwater storage pursuant to a Storage and Recovery Agreement, or the determination of Operating Safe Yield shall not cause high groundwater levels that result in material damage to overlying property (not including sand and gravel excavations or operations) or cause groundwater to surface above the undisturbed natural terrain.

C. **The Parties' Rights to Groundwater and Storage in the Two Basins.**

1. **Declaration of Rights.** In recognition of the remediation efforts that are likely to be necessary to maximize groundwater production from the Two Basins; because of the detected high nitrate concentrations and in recognition that La Verne is uniquely situated to remedy these water quality conditions and exploit future opportunities; because of the minimal hydrologic communication between the Four Basins and Two Basins, and in furtherance of a complete and total physical solution for the Six Basins Area, La Verne shall have the right to produce as much groundwater as it may reasonably withdraw from the Two Basins Area on an annual basis so long as it does not substantially injure the rights of any other Party.

2. **Storage and Recovery.** La Verne has the sole right to use available storage capacity in the Two Basins in its complete discretion for the Storage and Recovery of groundwater so long as it does not cause substantial injury to any other Party. La Verne shall not be required to obtain a Storage and Recovery Agreement from the Watermaster for Storage and Recovery programs carried out within the Two Basins Area provided that (i) such production or use of storage capacity shall not cause substantial injury to any other Party and (ii) La Verne provides 60 (sixty) days' advance written notice to Watermaster before initiating such a Storage and Recovery program.

1 **3. Transferability of Rights.** Subject to the limitations set forth in Article III A,
2 Section 7, La Verne's right to produce groundwater from the Two Basins Area may be transferred,
3 in whole or in part, among existing Parties or to any other person that becomes a Party, on either a
4 temporary or permanent basis provided that no Party is substantially injured by the Transfer. The
5 permanent Transfer of the right to produce groundwater from the Two Basins Area shall not be
6 effective until approved by Watermaster.

7 **D. Rights and Responsibilities of PVPA.**

8 **1. Spreading Operations.** PVPA and the other Parties have negotiated a Supplemental
9 Memorandum of Agreement, attached hereto as Exhibit "C". This Supplemental Memorandum of
10 Agreement and all modifications or amendments thereto shall include a provision for Watermaster's
11 indemnity of PVPA for all Replenishment activities undertaken by PVPA at the direction of the
12 Watermaster. Within sixty (60) days of entry of this Judgment, Watermaster and PVPA shall execute
13 the Agreement. Upon execution, the Agreement shall become part of the Physical Solution. PVPA
14 shall not be required to execute a Storage and Recovery Agreement with Watermaster for its
15 Replenishment activities carried out under the direction of the Watermaster. The Spreading
16 operations conducted by PVPA may result in incidental Replenishment to the Two Basins Area and
17 none of the Parties have a right to object thereto. This Replenishment is authorized under the
18 Judgment.

19 **2. Waiver of Claims Against PVPA.** The Parties expressly waive any and all claims
20 against PVPA arising from facts, conditions or occurrences in existence before the Effective Date and
21 arising from PVPA's spreading operations including but not limited to water quality degradation,
22 subsurface infiltration, high groundwater or groundwater Overdraft within the Six Basins Area.

23 **E. Non-parties.**

24 **1. Minimal Producers.** Minimal producers are not bound or affected by this Judgment.
25 No person may produce twenty-five acre feet or more in any Year without becoming a Party.

1 2. Parties' Rights Versus Non-parties Reserved. The Parties expressly reserve all
2 rights, without limitation, concerning any and all claims raised by persons not a Party to this
3 Judgment as provided in Article IV C Section 1.

4 **IV. REMEDIES**

5 A. Injunctions.

6 1. Injunction Against Unauthorized Production. Each and every Party, its officers,
7 agents, employees, successors and assigns is enjoined and restrained from producing water from the
8 Six Basins except as authorized herein.

9 2. Injunction Against Unauthorized Storage. Each and every Party, its officers,
10 agents, employees, successors and assigns is enjoined and restrained from storing water in the Six
11 Basin Area except as authorized herein.

12 3. Injunction Against Unauthorized Replenishment. Each and every Party, its
13 officers, agents, employees, successors and assigns is enjoined and restrained from replenishing water
14 in the Six Basin Area except as authorized herein.

15 B. Continuing Jurisdiction

16 1. Jurisdiction Reserved. Full jurisdiction, power and authority are retained by and
17 reserved to the Court upon the application of any Party, by a motion noticed in accordance with the
18 review procedures of Article XIA, Section 6 hereof, to make such further or supplemental order or
19 directions as may be necessary or appropriate for interpretation, enforcement or implementation of
20 this Judgment, and to modify, amend or amplify any of the provisions of this Judgment or to add to
21 the provisions thereof consistent with the rights herein decreed; provided that nothing in this
22 paragraph shall authorize a reduction of the Base Annual Production Right of any Party except
23 pursuant to a Transfer.

24 2. Intervention After Judgment. Any Non-party who proposes to produce
25 Groundwater from the Six Basins Area in an amount equal to or greater than 25 acre feet per Year,
26 may seek to become a Party to this Judgment through (a) a stipulation for intervention entered into
27 with Watermaster or (b) any Party or Watermaster filing a complaint against the Non-party requesting
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1 that the Non-party be joined in and bound by this Judgment. Watermaster may execute said Stipu-
2 lation on behalf of the other Parties herein, but such stipulation shall not preclude a Party from
3 opposing such intervention at the time of the Court hearing thereon. A stipulation for intervention
4 must thereupon be filed with the Court, which will consider an order confirming said intervention
5 following thirty (30) days' notice to the Parties. Thereafter, if approved by the Court, such intervenor
6 shall be a Party bound by this Judgment and entitled to the rights and privileges accorded under the
7 Physical Solution herein, including a Base Annual Production Right in an amount equal to its average
8 annual production in the twelve-year period beginning on January 1, of 1985 and ending on
9 December 31, 1996, or any Base Annual Production Right it may obtain by a transfer.

10 C. Reservation of Other Remedies.

11 1. Claims By and Against Non-parties. Nothing in this Judgment shall expand or
12 restrict the rights, remedies or defenses available to any Party in raising or defending against claims
13 made by any Non-party. Any Party shall have the right to initiate an action against any Non-party
14 to enforce or compel compliance with the provisions of this Judgment.

15 2. Claims Between Parties on Matters Unrelated to the Judgment. Nothing in this
16 Judgment shall either expand or restrict the rights or remedies of the Parties concerning subject
17 matter which is unrelated to the quantity and quality of groundwater allocated and equitably managed
18 pursuant to this Judgment other than as provided in Article IIIA, Section 1.

19 3. Groundwater Levels. Except as expressly provided herein, nothing in this Judgment
20 shall either expand or restrict the rights or remedies at law that any Party may have against any other
21 Party for money damages to real or personal property resulting from high groundwater or defenses
22 thereto for events or occurrences after the Effective Date.

23 V. WATERMASTER

24 A. Composition, Voting and Compensation. The Watermaster shall be a committee
25 composed of one representative of each of the following Parties, and each representative shall have
26 the authority to cast the indicated number of votes on any question before the committee:

27 City of La Verne 5 votes

1	City of Pomona	5 votes
2	City of Upland	5 votes
3	Southern California Water Company	5 votes
4	City of Claremont	2 votes
5	TVMWD	2 votes
6	PVPA	2 votes
7	Simpson Paper	1 vote
8	Pomona College	1 vote
9	San Antonio	1 vote

10 Committee representatives having the combined authority to cast twenty votes shall constitute a
 11 quorum for the transaction of affairs of Watermaster and seventeen affirmative votes shall be required
 12 to constitute action by Watermaster. Representatives shall be compensated for their services by their
 13 respective appointing authorities. Representatives may be reimbursed by Watermaster for out of
 14 pocket expenses incurred on authorized Watermaster business.

15 **B. Nomination and Appointment Process.** Each of the Parties named in Article VA,
 16 above, shall within thirty (30) days of entry of this Judgment submit to the Court its nominees for its
 17 representative member of the Watermaster Committee and one alternate and the Court shall in the
 18 ordinary course confirm the same by an appropriate order of appointment. Once appointed
 19 representatives and their alternates shall normally serve until a replacement is designated by the Party
 20 or until removed by the Court. If a representative or alternate is no longer willing or able to serve
 21 for any reason the Party represented by such member or alternate shall promptly submit a
 22 replacement for the member or their alternate. There shall be no need for replacement representative
 23 members or alternates to be approved by the Court. In its annual report to the Court, Watermaster
 24 shall update the list of its representative members and alternates.

25 **C. Succession.** For the purpose of determining whether a permanent Transfer of a Base
 26 Annual Production Right shall affect whether a Party shall have a Representative on the Watermaster
 27 Committee and the number of votes held by the representative, the following guidelines shall apply:

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1 1. **Partial Succession.** The permanent Transfer of less than any Party's full Base
2 Annual Production Right shall be considered a "partial" succession. A partial succession shall not
3 create any new or additional voting rights in the successor Party or require any modifications to the
4 rules and procedures under this Article V. The full Base Annual Production Right of any Party shall
5 be equal to the entire quantity of the Base Annual Production Right for that Party set forth in Exhibit
6 D on the Effective Date.

7 2. **Non-Party Successor.** A permanent Transfer of the full Base Annual
8 Production Right of any Party to a Non-Party shall automatically include the authority to cast the
9 number of votes held by the Party. In addition, the Non-Party shall succeed to all other rights and
10 responsibilities of their predecessor Party under this Judgment.

11 3. **Party Successor.** A permanent Transfer of the full Base Annual Production
12 Right between Parties shall automatically include the authority to cast a number of votes equal to the
13 greater of: (a) the number of votes indicated for the acquiring Party on the Effective Date or (b) the
14 number of votes indicated for the Party whose Base Annual Production Right has been acquired at
15 the time the Transfer is approved by the Watermaster. The number of votes equal to the lesser of 3(a)
16 or 3(b) shall be extinguished. The acquisition of one Party's full Base Annual Production Right by
17 another Party shall not cause a change in the number of votes required to constitute a quorum or to
18 take an action under this Article. However, in the event more than two votes are eliminated, any
19 Party or the Watermaster upon its own motion, may petition the Court to revise the required number
20 of votes to constitute a quorum or to take action under this Judgment.

21 **D. Powers and Duties.** Subject to the continuing supervision and control of the Court
22 and the limitations set forth in this Judgment, Watermaster shall have and may exercise the following
23 express powers, and shall perform the following duties, together with any specific powers, authority
24 and duties granted or imposed elsewhere in this Judgment or hereafter ordered or authorized by the
25 Court in the exercise of its continuing jurisdiction:

- 26 1. Developing, Maintaining and Implementing the Operating Plan.
27 2. Adopting Rules, Regulations, Procedures, Criteria and Time Schedules.

- 1 3. Acquiring or Investing in Facilities or Facility Improvements.
- 2 4. Acquiring or Investing in Monitoring Facilities.
- 3 5. Inspecting and Testing Measuring Devices.
- 4 6. Levying Assessments
- 5 7. Requiring the Acquisition of and Recharge of Replacement Water.
- 6 8. Contracting for Necessary Services. (Including the execution of agreements regarding
- 7 spreading and groundwater modeling.)
- 8 9. Employing Agents, Experts and Legal Counsel provided that Watermaster shall not
- 9 contract with or otherwise engage a Party with a Base Annual Production Right to
- 10 perform directly or indirectly, administrative services. However, this limitation shall
- 11 not apply to spreading services under Exhibit C, and meter reading.
- 12 10. Adopting an annual budget for monitoring and reporting legal and administrative
- 13 costs.
- 14 11. Managing Watermaster Funds.
- 15 12. Cooperating with Federal, State and Local Agencies.
- 16 13. Entering and Administering Storage and Recovery Agreements.
- 17 14. Maintaining a Notice List.
- 18 15. Reporting Annually to the Court.
- 19 16. Engaging in Dispute Resolution.
- 20 17. Prosecuting litigation against Non-parties in furtherance of the Judgment.
- 21 18. Limiting groundwater production to Operating Safe Yield during a Water Shortage
- 22 Emergency.

23 **E. Organization and Meetings.** At its first meeting in each Year Watermaster shall elect
24 a chair, vice chair, secretary and treasurer and such other officers as may be appropriate. Watermaster
25 shall hold regular meetings at places and times specified in its rules and regulations, and may hold
26 such special meetings as may be required. Watermaster shall provide notices of all regular and special
27 meetings to all parties and any person requesting notice in writing. Any meeting may be adjourned
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1 to a time and place specified in the order of adjournment. Meetings shall be conducted to the extent
2 practicable in accordance with the provisions of the California Open Meetings Law ("Brown Act")
3 *California Government Code Section 54950*, et seq as it may be amended from time to time.

4 F. **Limits on Assessments.** Watermaster shall not have the authority to levy assessments
5 beyond those specifically described herein.

6 **VI. PHYSICAL SOLUTION FOR THE SIX BASINS AREA**

7 **A. General Purposes and Objectives.**

8 1. **Physical Solution is Consistent With the Public Interest.** The Physical Solution
9 is consistent with each Party's full enjoyment and the reasonable exercise of its respective water
10 rights will not materially injure the interests of any Parties and will promote coordinated groundwater
11 management with due regard for the environment and it is therefore consistent with the public interest
12 and the reasonable and beneficial use of water.

13 2. **Balance of Equities.** This Physical Solution constitutes a legal and practical means
14 for balancing the needs of the Parties for a reliable water supply, providing an appropriate incentive
15 for remediation of poor water quality conditions, managing the available groundwater storage
16 capacity to protect against loss of available groundwater and against damage from high groundwater
17 levels with due regard for the environment .

18 3. **Flexibility.** It is essential that this Physical Solution provides maximum flexibility
19 so that the Watermaster and the Court may be free to adapt and accommodate future changed
20 conditions or new institutional or technological considerations. To that end the Court's retained
21 jurisdiction may be utilized to augment or adjust the Physical Solution without adjustment to a Party's
22 Base Annual Production Right.

23 **B. Guidelines for Operation of Four Basins Area.**

24 All production, replenishment, replacement, and Storage and Recovery of water in the Four
25 Basins Area must be conducted pursuant to the Operating Plan adopted by Watermaster in accordance
26 with the principles and procedures contained in this Judgment. The following general pattern of
27 operations is contemplated:

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1 **1. Replenishment.** Groundwater will be replenished pursuant to Exhibit "E" or under
2 any other replenishment program or activity to the extent water which is naturally tributary to the Six
3 Basin Area, is available for that purpose and can safely be spread.

4 **2. Storage and Recovery.** Other Native Water, imported water or other water may be
5 stored and recovered pursuant to Storage and Recovery Agreements.

6 **3. Operating Safe Yield.** Watermaster will annually, not later than September 15,
7 establish the Operating Safe Yield for the Four Basins for the following Year, taking into
8 consideration the amount of water in storage and the need to control water table elevations.
9 Watermaster shall review the condition of the Four Basins at least quarterly during the Year and may
10 make any appropriate adjustments of the Operating Safe Yield.

11 **4. Production.** In any Year, each Party will be free to produce its share of the Operating
12 Safe Yield, including any Carryover Rights or Transfers, plus any water authorized to be recovered
13 pursuant to a Storage and Recovery Agreement. Except upon Transfer, no change shall be made to
14 any Party's Base Annual Production Rights.

15 **5. Replacement Water.** Notwithstanding any limitation contained in this Judgment, a
16 Party may produce and export water from the Four Basins in excess of its Base Annual Production
17 Right and its share of the Operating Safe Yield, plus unused Carryover rights and recoverable
18 groundwater pursuant to an approved Storage and Recovery Agreement, subject to the requirement
19 to provide Replacement Water in the manner set forth herein.

20 **a. Obligation to Provide Replacement Water.** To the extent a Party's
21 production in the Four Basins or in any basin exceeds that Party's share of the Operating Safe Yield,
22 plus unused Carryover rights and recoverable groundwater pursuant to an approved Storage and
23 Recovery Agreement, the Party shall arrange for delivery of Replacement Water in an amount equal
24 to the Party's excess production by any of the following: (i) acquiring Replacement Water directly
25 from TVMWD except Upland which may also acquire Replacement Water from the Inland Empire
26 Utilities Agency ("the Empire"); (ii) arranging for delivery of a Native water supply other than
27 Replenishment Water; or (iii) paying a Replacement Water Assessment to Watermaster for the
28

1 purpose of acquiring Replacement Water directly from TVMWD except as to Upland for which
2 Watermaster may acquire replacement water from the Empire.

3 **b. In Lieu Procedures.** Replacement Water may be supplied through In-Lieu
4 Procedures, spreading or other method at a place, time and manner, acceptable to Watermaster, for
5 a price and upon terms to be determined by TVMWD except as to Upland for which the price and
6 terms may be determined by the Empire.

7 **c. Replacement Water Assessment.** Watermaster will use Replacement Water
8 Assessment proceeds to acquire Replacement Water from TVMWD, or as to Upland, the Empire.

9 **6. Development, Maintenance and Implementation of the Operating Plan.** Water-
10 master is directed to maintain and implement the Operating Plan such that Production, Replenishment
11 and Storage and Recovery of water are consistent with and implement the purpose and objectives of
12 the Physical Solution herein. The Operating Plan shall include rules, regulations, procedures, criteria,
13 and time schedules, as appropriate, for at least the following elements:

- 14 a. Establishing and adjusting the Operating Safe Yield.
- 15 b. Replenishment.
- 16 c. Execution of supplemental agreements with PVPA regarding spreading
17 grounds and the funding thereof.
- 18 d. Acquisition and delivery of Replacement Water.
- 19 e. Standard terms and conditions of Storage Agreements.
- 20 f. Replenishment, replacement and storage limits needed to protect against high
21 groundwater levels.
- 22 g. Remediation of water quality problems.
- 23 h. Monitoring systems and protocols, including such for groundwater levels.
- 24 i. Monitoring, reporting and verification programs.
- 25 j. Transfers.
- 26 k. Annual budgets.
- 27 l. Financial management.

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1 m. Reporting to the Court.

2 n. Levying Assessments.

3 7. **Initial Operating Plan.** Within six months of the effective date of this Judgment
4 Watermaster shall submit to the Court for approval an initial Operating Plan. An outline of the Initial
5 Operating Plan is attached as Exhibit "G."

6 8. **Annual Review of the Operating Plan.** Watermaster shall review the Operating Plan
7 at least annually and, subsequent to each such review, submit to the Court for its approval any
8 proposed amendments or revisions.

9 9. **Replenishment.** PVPA and Pomona historically augmented the Native Safe Yield
10 within the Four Basins Area through replenishment programs or activities. For many years these
11 replenishment programs or activities have resulted in the spreading and percolation of native waters
12 originating in the San Antonio Canyon and Evey Canyon. To the extent such waters have been
13 historically spread, they comprise a portion of the Safe Yield and Operating Safe Yield subject to
14 management under this Physical Solution.

15 a. All Replenishment shall be at the direction of the Watermaster.

16 b. At the direction and sole discretion of the Watermaster PVPA shall, pursuant
17 to the Memorandum of Agreement set forth in Exhibit "C" or any subsequent
18 amendments thereto, continue to spread such native waters as it receives.

19 c. Unless it is acting for the benefit of another Party pursuant to a Storage and
20 Recovery Agreement approved by the Watermaster, except for Replacement Water,
21 all water PVPA spreads, sinks or injects shall be considered Replenishment and shall
22 comprise a portion of the Operating Safe Yield.

23 d. Although Pomona has no continuing obligation to spread or replenish, all
24 waters spread in excess of its "historical replenishment" shall not be considered
25 Replenishment and a part of the Operating Safe Yield of the Four Basins Area. The
26 "historical replenishment" of Pomona shall be equal to a twelve (12) year annual
27 average for the twelve (12) years immediately preceding the filing of the complaint
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1 (1985-1996), which is determined to be one-hundred and thirty) acre feet. All water
2 Pomona spreads, sinks or injects, or causes to be spread, sunk or injected (collectively
3 augmentation) in excess of the historical replenishment shall not be considered a
4 portion of the Operating Safe Yield, and shall not be allocated among the Parties
5 pursuant to their Base Annual Production Rights. Pomona shall be entitled to produce
6 such excess quantity in addition to its Base Annual Production Right under a pre-
7 approved Storage and Recovery Agreement as provided in Article VIA, Section 10
8 in a form substantially similar to Exhibit F hereto, which is ordered to be executed by
9 Watermaster and Pomona within sixty (60) days from the Effective Date.
10 Measurement of Pomona's rights to recover water under any Storage and Recovery
11 Agreement shall be administered as follows:

- 12 i. Pomona shall be entitled to recover the amount by which its
13 augmentation of water over the twelve (12) year period ending with
14 the current year exceeds 1,560 acre feet.
- 15 ii. If less than twelve (12) years have elapsed since the effective date of
16 this Judgment, Pomona shall have the right to recover the amount by
17 which the total number of acre feet of groundwater augmented by
18 Pomona exceeds one hundred thirty (130) acre feet times the number
19 of years elapsed.
- 20 iii. The amount in excess of Pomona's historical replenishment may be
21 recovered by Pomona as provided in the Storage and Recovery
22 Agreement.

23 **10. Storage and Recovery Pursuant to Storage and Recovery Agreements.**

24 Watermaster may enter a Storage and Recovery Agreement with any Party holding a Base Annual
25 Production Right or TVMWD so long as the Storage and Recovery of groundwater will not cause an
26 unreasonably high groundwater table and physical damage. A Storage and Recovery Agreement
27 shall contain uniform terms and conditions as set forth in the Operating Plan and may also contain
28

1 special terms and conditions as deemed appropriate by Watermaster. Water that may be stored
2 pursuant to a Storage Agreement includes any water other than Replenishment Water including
3 augmentation in excess of historical replenishment as expressly set forth under Article VIB, Section
4 9.

5 **11. Special Projects.** Any Party may propose for Watermaster approval, special projects
6 including projects for controlling water levels or for remediation of water quality problems. Any such
7 proposal shall be accompanied by an analysis that identifies the benefits of the project as well as any
8 potential adverse impacts on any Party and any proposed mitigation measures. After notice to all
9 Parties, if any Party files a written objection to the proposed project, Watermaster shall hold a hearing
10 to determine whether the objections to the proposed project can be resolved. If there are no
11 objections or if objections are resolved to the satisfaction of the Parties or if Watermaster determines
12 that the objections are without merit, then Watermaster shall approve the proposed project.
13 Groundwater produced under authorization as a Special Project shall not be eligible for the accrual
14 of Carryover Rights unless authorized by Watermaster.

15 **12. Temporary Surplus Groundwater.** From time to time it may be in the best interest
16 of the Parties, for the control of high groundwater, water quality remediation or other reasons, to
17 produce groundwater over and above the then declared Operating Safe Yield. Therefore, from time
18 to time, the Watermaster may declare a Temporary Surplus of groundwater to be available for
19 production. The Parties' rights to the Temporary Surplus shall be in the same percentages as the Base
20 Annual Production Right bears to the Operating Safe Yield. A Party's rights to temporary surplus
21 shall not be eligible for the accrual of Carryover Rights set forth in Article IIIB, Section 2.

22 **C. Guidelines for Operation of the Two Basins Area.** All Production, Replenishment
23 and Storage and Recovery rights for groundwater in the Two Basins Area are reserved to La Verne.
24 However, La Verne's Production, Replenishment and Storage and Recovery of groundwater must not
25 substantially injure other Parties.

26 **1. Replenishment.** La Verne shall have sole and complete discretion in the operation
27 of Replenishment programs in the Two Basins Area provided that no other Party is substantially
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1 injured by the program. La Verne shall provide written notice to Watermaster sixty (60) days in
2 advance of any Replenishment program being undertaken.

3 **2. Storage and Recovery.** La Verne shall have sole and complete discretion in the
4 operation of a Storage and Recovery program in the Two Basins Area provided that no other Party
5 is substantially injured by the program. La Verne shall provide written notice to Watermaster sixty
6 (60) days in advance of any Storage and Recovery program being undertaken. La Verne shall
7 annually report the quantity of groundwater stored pursuant to a Storage and Recovery Program in
8 the Two Basins Area.

9 **3. Production.** La Verne shall have sole and complete discretion to produce
10 groundwater from the Two Basins Area provided that no other Party is substantially injured by such
11 production. La Verne shall report its groundwater production to the Watermaster on a monthly basis.

12 **VII. ASSESSMENTS**

13 **A. Ground Rules**

14 **1. Authorization.** Subject to the continuing supervision of the Court and the limitations
15 set forth in the Judgment, Watermaster is authorized to levy assessments to fund Replacement Water
16 acquisition costs, administrative costs and other costs determined by Watermaster to be necessary for
17 the implementation of the physical solution.

18 **2. Assessment Spread.** Excluding Replacement Water Assessments, all assessments
19 levied by the Watermaster shall be spread such that Claremont, Pomona College and TVMWD
20 (collectively, the "Minor Parties") shall each individually be assessed three and one half (3.5) percent
21 of the total assessment , and eighty-nine and one half (89.5) percent of the total assessment is spread
22 among La Verne, Pomona, Upland, San Antonio, West End, ~~Simpson~~ and SCWC (collectively, the
23 "Major Parties") in proportion to their then-current holdings of Base Annual Production Rights,
24 provided that for assessments other than for Replacement Water or administration (a) the total amount
25 spread among Minor Parties shall not exceed sixty-thousand \$60,000, escalated, in any year without
26 their unanimous consent and (b) the total amount spread among the Major Parties in any year shall
27 not exceed ten dollars (\$10.00), escalated, per acre foot of their Base Annual Production Rights
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1 without their unanimous consent. "Escalated" shall mean an annual adjustment in the specified dollar
2 value based upon the Consumer Price Index for Southern California in the immediately preceding
3 Year. No escalation adjustment shall be made until the Judgment has been in effect for twelve
4 consecutive calendar months. PVPA shall not have any obligation to pay any assessments.

5 **3. Administrative Assessment.** Watermaster is authorized to levy an annual assessment
6 that is sufficient to fund the costs of administering the Judgment. The administrative assessment shall
7 not exceed the cost of Watermaster's administrative budget and shall be due and payable according
8 to a schedule established by Watermaster. The administrative assessment for the first Year following
9 entry of Judgment shall be \$8.00 ^{per AF} and shall be due and payable on January 15, 1999. Late payment
10 shall bear an interest penalty to be established annually by Watermaster. (*escalated?*)

11 **4. Replacement Water Assessments.** To the extent Watermaster must acquire and
12 recharge the groundwater with Replacement Water pursuant to the terms of this Judgment, in order
13 to fund the costs thereof, Watermaster is authorized to levy Replacement Water Assessments.
14 Replacement Water Assessments levied against any Party shall be sufficient to pay the costs to
15 replace such Party's production in excess of the sum of such Party's share of the Operating Safe Yield,
16 any Carryover Right or Transfers and any storage recovery, Production of Temporary Surplus or
17 pursuant to Special Project authorization, during the prior Year, minus any Replacement Water
18 provided to Watermaster by the Party. Any Replacement Water Assessment shall be paid within
19 sixty (60) days from the date of the written invoice from Watermaster.

20 **VIII. DISPUTE RESOLUTION**

21 **A. Entity for Resolution of Dispute.** All disputes arising under this Judgment initially
22 shall be submitted to Watermaster for resolution in accordance with the provisions of this Article.

23 **B. Determination Regarding Substantial Injury.** Any Party having a right to be
24 protected against "substantial injury" caused by any other Party; the right to proceed so long as not
25 causing substantial injury to another party; or any other claim, right or remedy against any other
26 Party arising under the provisions of this Judgment may file a written request with the Watermaster
27 to hold a hearing.

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1 C. Notice and Hearing. Upon receipt of the written request, Watermaster shall provide
2 written notice to each Party which generally describes the nature of the dispute. Thereafter,
3 Watermaster shall cause an item to be placed on the agenda for the next regularly scheduled meeting
4 of the Watermaster or if requested by the moving Party, call a special meeting for the purpose of
5 providing a full hearing of the dispute and providing the interested Parties with notice and
6 opportunity to be heard. No later than 30 days following the conclusion of the hearing(s)
7 Watermaster shall issue a written decision which is dispositive of the dispute and which is supported
8 by written findings. Any Party may seek review of an adverse decision of the Watermaster in
9 accordance with the provisions of Article IX.

10 **IX. ADDITIONAL PROVISIONS**

11 A. Procedure

12 1. Designation of Address for Notice and Service. Each Party shall designate the name
13 and address to be used for purposes of all subsequent notices and service herein, either by its
14 endorsement on the Stipulation for Judgment or by a separate designation to be filed within thirty
15 (30) days after Judgment has been entered. Said designation may be changed from time to time by
16 filing a written notice of such change with Watermaster. Any Party desiring to be relieved of
17 receiving notices of Watermaster activity may file a waiver of notice on a form to be provided by
18 Watermaster. Watermaster shall maintain at all times a current list of Parties to whom notices are
19 to be sent and their address for purposes of service. Watermaster shall also maintain a full current
20 list of names and addresses of all Parties or their successors, as filed herein. Copies of such lists shall
21 be available to any person. If no designation is made, a Party's designee shall be deemed to be, in
22 order of priority: (i) the Party's attorney of record; (ii) if the Party does not have an attorney of
23 record, the Party itself at the address on the Watermaster list.

24 2. Service of Documents. Delivery to or service upon any Party by Watermaster, by any
25 other Party, or by the Court, of any document required to be served upon or delivered to a Party under
26 or pursuant to this Judgment shall be deemed made if made by deposit thereof (or by copy thereof)

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1 in the mail, first class postage prepaid, addressed to the designee of the Party and at the address
2 shown in the latest designation filed by that Party.

3 **3. Recordation of Notice.** Within sixty (60) days following entry of this Judgment,
4 Watermaster shall record in the office of the County Recorder of the Los Angeles and San Bernardino
5 Counties a notice substantially complying with the notice content requirements set forth in *Section*
6 *2529 of the California Water Code* as it exists on the Effective Date.

7 **4. Judgment Binding on Successors.** Subject to specific provisions hereinbefore
8 contained, this Judgment and all provisions thereof are applicable to and binding upon and inure to
9 the benefit of not only the Parties to this action, but also to their respective heirs, executors,
10 administrators, successors, assigns, lessees, licensees and to the agents, employees and attorneys in
11 fact of any such Persons.

12 **5. Costs.** No Party stipulating to this Judgment shall recover any costs or attorneys fees
13 in this proceeding from another stipulating Party. In any future proceedings, the costs of notice or
14 service, shall be levied in accordance with the provisions of Article XIA, Section 6.

15 **6. Review Procedures.** Any action, decision, rule or procedure of Watermaster pursuant
16 to this Judgment shall be subject to review by the Court on its own motion or on timely motion by
17 any Party, as follows:

18 **a. Effective Date of Watermaster Action.** Any order, decision or action of
19 Watermaster pursuant to this Judgment on noticed specific agenda items shall be deemed to have
20 occurred on the date of the order, decision or action.

21 **b. Notice of Motion.** Any Party may, by a regularly noticed motion, petition the
22 Court for review of Watermaster's action or decision pursuant to this Judgment. The motion shall
23 be deemed to be filed when a copy, conformed as filed with the Court, has been delivered to
24 Watermaster together with the service fee established by Watermaster sufficient to cover the cost to
25 photocopy and mail the motion to each Party. Watermaster shall prepare copies and mail a copy of
26 the motion to each Party or its designee according to the official service list which shall be
27 maintained by Watermaster according to Article XIA, Section 1, a Party's obligation to serve notice
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1 of a motion upon the Parties is deemed to be satisfied by filing the motion as provided herein. Unless
2 ordered by the Court, any such petition shall not operate to stay the effect of any Watermaster action
3 or decision which is challenged.

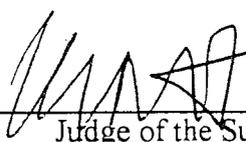
4 c. **Time for Motion.** A motion to review any Watermaster action or decision
5 shall be filed within ninety (90) days after such Watermaster action or decision, except that motions
6 to review Watermaster Assessments hereunder shall be filed within thirty (30) days of mailing of
7 notice of the Assessment.

8 d. **De Novo Nature of Proceeding.** Upon filing of a petition to review
9 Watermaster action, the Watermaster shall notify the Parties of a date when the Court will take
10 evidence and hear argument. The Court's review shall be de novo and the Watermaster decision or
11 action shall have no evidentiary weight in such proceeding.

12 e. **Payment of Assessments.** Payment of Assessments levied by Watermaster
13 hereunder shall be made when due, notwithstanding any motion for review of Watermaster action,
14 decision, rules or procedures, including review of Watermaster Assessments.

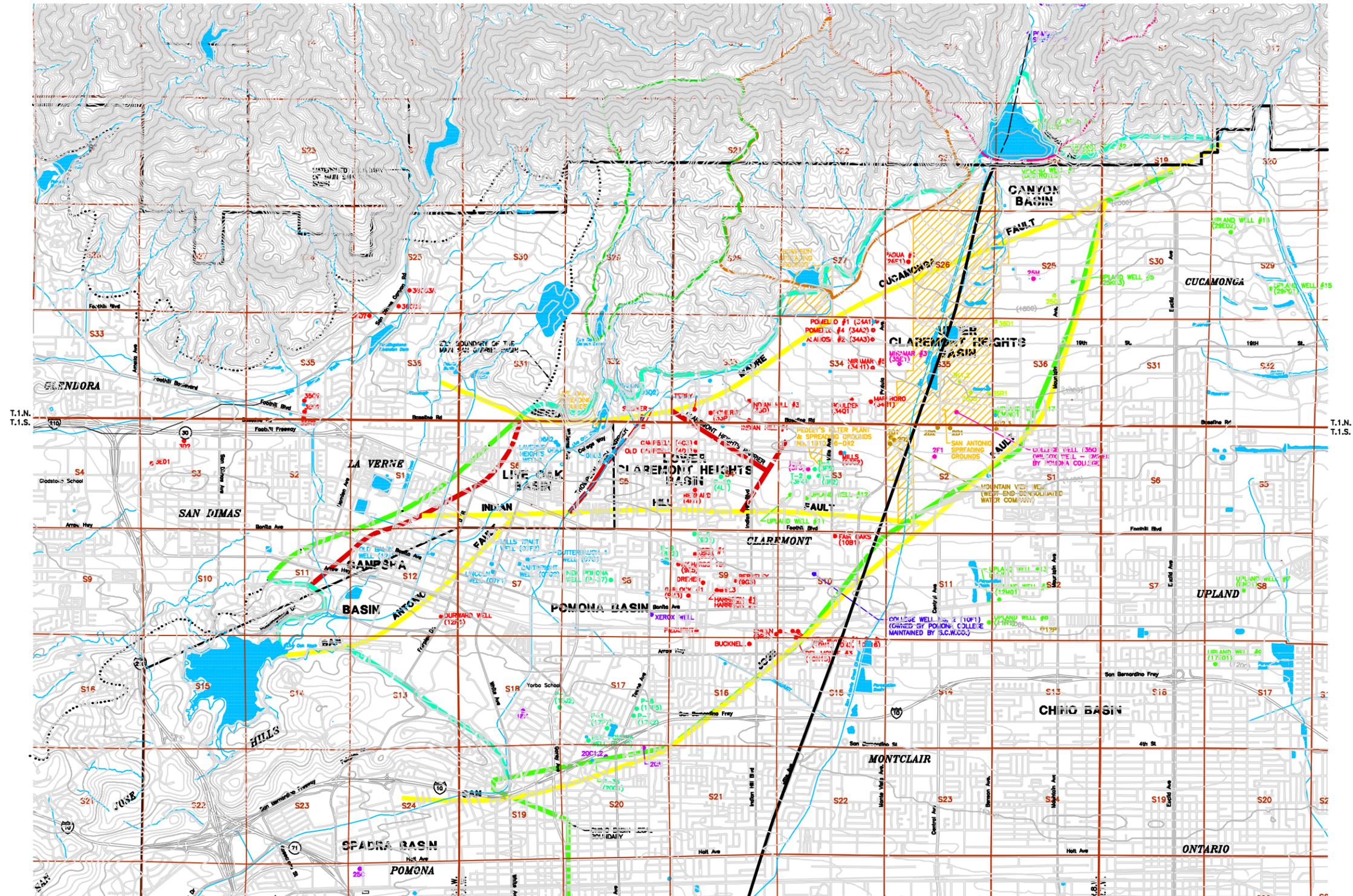
15
16 B. **Entry of Judgment.** The Clerk shall enter this Judgment.

17
18 DEC 18 1998
19 Dated: _____ 1998.



Judge of the Superior Court
WILLIAM J. McVITTIE

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T.1.N.
T.1.S.

T.1.N.
T.1.S.

LEGEND

- THOMPSON CREEK WATERSHED BOUNDARY
- LIVE OAK WATERSHED BOUNDARY
- SAN ANTONIO WATERSHED BOUNDARY
- FAULT LINE
- LEGAL BOUNDARY OF ADJACENT BASIN
- GEOLOGIC FEATURE
- ALLUVIUM BOUNDARY
- MAIN SAN GABRIEL BASIN WATERSHED BOUNDARY
- MAIN SAN GABRIEL BASIN
- GROUNDWATER RECHARGE FACILITY



SCALE: 1" = 2000'

CITY OF UPLAND WELLS

18J02	WELL AND NUMBER
24L1	UPLAND WELL #1 (DESTROYED)
24E02	UPLAND WELL #1A
24E01	UPLAND WELL #2
12M01	UPLAND WELL #3 (INACTIVE)
25K03	UPLAND WELL #5
8N01	UPLAND WELL #7
11R1	UPLAND WELL #8 (INACTIVE)
17E01	UPLAND WELL #9
3M3	UPLAND WELL #11 (DESTROYED)
3M1	UPLAND WELL #12 (DESTROYED)
11J01	UPLAND WELL #13 (INACTIVE)
29P01	UPLAND WELL #15
29E02	UPLAND WELL #16
38N01	UPLAND WELL #17

SAW.C. WELLS

18J02	WELL AND NUMBER
2501	SAWC WELL #17 (INACTIVE)
35R1	SAWC WELL #25 (INACTIVE)
35L3	SAWC WELL #26
3K1,2	SAWC WELL #27 (INACTIVE)
38D1	SAWC WELL #28 (INACTIVE)

CITY OF POMONA WELLS

18J02	WELL AND NUMBER
17P7	P-1
18J2	P-3
17K2	P-7
17R5	P-8
8H2	P-9
9D1	P-13
4L1	P-20
17P3	P-32
20C1	P-33
8F1	P-37
3F2	T-1
3F4	T-2
3F3	T-3
3F5	T-4

SIMPSON PAPER CO. KEY MONITORING WELLS

18J02	WELL AND NUMBER
18K	WELL 5
20A	WELL 1
20C1	WELL 2A
20C2	WELL 2B
29C	WELL 3

S.C.W.Co. WELLS

18J02	WELL AND NUMBER
34A3	ALAMOSA #2
9G3	BERKELEY
4M1	BERNARD
34D1	BOULDER
4C3	CAMPBELL
3501	COLLEGE WELL
10N1	DEL MONTE #1
10N3	DEL MONTE #2
10N15	DEL MONTE #3
10N16	DEL MONTE #4
9F	DREHER
12R1	DURWARD WELL
1081	FAIR OAKS
9E2	FORD #1

KEY MONITORING WELLS

18J02	WELL AND NUMBER
12M01	UPLAND WELL #3
2F1	ML VIEW #4
35E1	MIRAMAR #3
35C1	COLLEGE WELL No. 1
3F3	T-3

POMONA COLLEGE

18J02	WELL AND NUMBER
9M3	GARLOCK #1
9R1	GREEN
9L3	HARRISON #1
9L2	HARRISON #2
33Q	INDIAN HILL #3
34R1	MARLBORO
3Q2	MILLS #1
33E1	MIRAMAR #3
34H1	MIRAMAR #5
28E1	PADUA #1
34A1	POWELLO #1
34A2	POWELLO #4
33P	POWEROY
9E5	RICHARDS 180

POMONA COLLEGE

18J02	WELL AND NUMBER
3501	COLLEGE WELL No. 1
10F1	COLLEGE WELL No. 2

CITY OF LAVERNE WELLS

18J02	WELL AND NUMBER
07G2	CARTWRIGHT
07F1	LINCOLN
05D2	MALONE 2 (INACTIVE)
07F2	MILLS TRACT
12A	OLD BALDY
08A2	LAVERNE HEIGHTS 1
08A1	LAVERNE HEIGHTS 2
05D3	LAVERNE HEIGHTS 3
07G1	BUTTERBAUGH 1 (DESTROYED)

PREPARED BY:

(626) 357-0588

SIX BASINS AREA

FINAL BOUNDARY MAP

DESIGN: JM/MR	CHECKED: WDB	SCALE: 1" = 2000'
DRAWN: PWH	J.N. 97106	SHEET 1 OF 1

EXHIBIT 'A'

EXHIBIT B

DESCRIPTION OF SIX BASINS AREA

The Six Basins Area lies between the San Jose Hills on the south, the Chino Basin on the east, the San Gabriel Mountains on the north and the Main San Gabriel Basin on the west. The boundaries of the Main San Gabriel Basin are set forth in the Judgment in the case of the *Upper San Gabriel Valley Municipal Water District vs. City of Alhambra, et al.*, Superior Court of the State of California, Los Angeles County, Case No. 924128, and the boundaries of the Chino Basin are set forth in the Judgment in the case of *Chino Basin Municipal Water District vs. City of Chino, et al.*, Superior Court for the State of California, San Bernardino County, Case No. 164327. The Area consists of six interconnected groundwater basins. Each basin consists of all alluvium or other water-bearing formations lying beneath the surface of the basin. The approximate boundaries of the surface of each basin are shown on EXHIBIT A and are described generally as follows:

Canyon Basin. The surface of the Canyon Basin is bounded on the south and east by the surface trace of the Sierra Madre/Cucamonga Fault and on the north and west by the surface trace of the bedrock/alluvium interface between (a) the point of intersection in Township 1 North, Range 8 West, Section 31, SBB&M, of the Sierra Madre/Cucamonga Fault with easterly boundary of the Main San Gabriel Basin and (b) the point of intersection in Township 1 North, Range 8 West, Section 20, SBB&M, of the Sierra Madre/Cucamonga Fault with the San Gabriel Mountains. The northernmost extent of the bedrock/alluvium interface is assumed to be at the southern boundary of Township 1 North, Range 8 West, Section 13, SBB&M in San Antonio Canyon.

Upper Claremont Heights Basin. The surface of the Upper Claremont Heights Basin is bounded on the south by the surface trace of the Indian Hill Fault, on the east by the westerly boundary of the Chino Basin, on the north by the surface trace of the Sierra Madre/Cucamonga Fault and on the west by the surface trace of the Claremont Heights Barrier.

Lower Claremont Heights Basin. The surface of the Lower Claremont Heights Basin is bounded on the south by the surface trace of the Indian Hill Fault, on the east by the surface trace of the Claremont Heights Barrier, on the north by the surface trace of the Sierra Madre/Cucamonga Fault on the west by the surface trace of the Thompson Wash Barrier.

Live Oak Basin. The surface of the Live Oak Basin is bounded on the south by the surface trace of the Indian Hill Fault, on the east by the surface trace of the Thompson Wash Barrier, on the north by the surface trace of the Sierra Madre/Cucamonga Fault and on the west by the easterly boundary of the Main San Gabriel Basin.

Ganesha Basin. The surface of the Ganesha Basin is bounded on the south and east by the surface of the San Antonio Fault, on the north surface trace of the Indian Hill Fault, and on the west by easterly boundary of the Main San Gabriel Basin and by the surface trace of the bedrock/alluvium interface between (a) the point of intersection in Township 1 South, Range 9 West, Section 11, SBB&M, of the easterly boundary of the Main San Gabriel Basin with the San Jose Hills and (b)

the point of intersection in Township 1 South, Range 9 West, Section 14, SBB&M, of the surface trace of the San Antonio Fault with the San Jose Hills.

Pomona Basin. The surface of the Pomona Basin is bounded on the south by the surface trace of the bedrock/alluvium boundary between (a) the intersection in Township 1 South, Range 9 West, Section 14, SBB&M, of the surface trace of the San Antonio Fault with the San Jose Hills and (b) the intersection in Township 1 South, Range 8 West, Section 19, SBB&M, of the boundary of the Chino Basin, on the north by the surface trace of the Indian Hill Fault on the west by the surface of the San Antonio Fault.

1 MEMORANDUM OF AGREEMENT
2 BETWEEN THE POMONA VALLEY PROTECTIVE ASSOCIATION
3 AND WATERMASTER OF THE SIX BASINS RELATING TO
4 WATER SPREADING AND RELATED ACTIVITIES
5

6 THE AGREEMENT, made, entered into, and executed as of this ___ day of _____,
7 1999, by and between the Pomona Valley Protective Association ("PVPA"), and Watermaster of the
8 Six Basins ("Watermaster"), relating to water spreading and related activities in connection with the
9 Canyon Basin, the Upper Claremont Height Basin, the Lower Claremont Heights Basin, the Live
10 Oak Basin, the Ganesha Basin and the Pomona Basin (collectively, the "Six Basins").

11 RECITALS

12 WHEREAS, the rights to groundwater in connection with the Six Basins were adjudicated
13 by the court in an action entitled "*Southern California Water Company v. City of La Verne, et al.*,"
14 Case No. KC029152 in the Superior Court of the State of California, County of Los Angeles, (the
15 "Judgment"); and

16 WHEREAS, the Judgment requires the Watermaster to determine annually an Operating Safe
17 Yield of the Six Basins and to develop an Operating Plan, which will include the monitoring and
18 direction of all production, replenishment, replacement and storage of groundwater in the Six
19 Basins; and

20 WHEREAS, PVPA, a California corporation, formed in 1910 by various water interests in
21 Pomona Valley, engages in water conservation activities for the benefit of its shareholders, which
22 include the City of Upland, Southern California Water Company, the City of Pomona, Simpson
23 Paper Co., Pomona College, the San Antonio Water Company, and the West End Water Company;
24 and

25 WHEREAS, PVPA owns certain real property in and around the Six Basins area primarily
26 consisting of two spreading grounds: the San Antonio Spreading Grounds and the Thompson Creek
27 Spreading Grounds together with appurtenant diversion and conveyance facilities (the "Spreading
28 Grounds" herein); and

1 WHEREAS, in connection with its water conservation activities, PVPA has conducted
2 several technical studies of the Six Basins including the development of a numerical groundwater
3 model which assists in the prediction of the Six Basins' response to PVPA's spreading activities, and
4 is used to control the groundwater resources for the Six Basins and to mitigate high groundwater in
5 the Six Basins; and

6 WHEREAS, the parties to the Judgment have conducted additional studies including the
7 enhancement and refinement of the PVPA groundwater model.

8 NOW, THEREFORE, in consideration of mutual promises, agreements, and covenants of
9 Watermaster and PVPA collectively referred to herein as "the Parties" agree as follows:

10 **I. DEFINITIONS**

11 A. The Judgment defines certain important terms. Except as to the definitions provided
12 in this Agreement, the terms used in this Agreement which have been defined in the Judgment shall
13 have the meaning set forth in the Judgment and the definitions set forth in the Judgment are
14 incorporated herein by this reference

15 B. "Emergency" shall mean a sudden event which threatens life or property.

16 C. "Models" shall mean the spreadsheet and the basin wide models used by PVPA in
17 development of an Operating Plan and any subsequent version or improvement thereof.

18 D. "Parties" written with an upper case P, refer to the Watermaster and to PVPA.
19 Parties written with a lower case p, refer to the parties to the Judgment as defined therein.

20 **II. SPREADING GROUNDS AND SPREADING OPERATIONS**

21 A. Watermaster Direction and PVPA Reservation. PVPA shall use and operate the
22 Spreading Grounds primarily for the spreading of replenishment, replacement and storage water
23 under the direction of the Watermaster Plan. PVPA reserves the right to use the Spreading Grounds
24 for other lawful activities consistent with its water spreading activities so long as doing so does not
25 impair PVPA's ability to spread replenishment water in quantities substantially comparable to
26 historic quantities.

27 B. Impossibility and related defenses. PVPA shall not be liable, in breach or in default
28 of the Agreement if PVPA is unable, either temporarily or permanently, to perform its obligations

1 under the Agreement for reasons beyond PVPA's reasonable control, including but not limited to,
2 acts of God, eminent domain, impossibility or impracticability of performance, interference of a
3 third party and natural disasters, including without limitation, floods, earthquakes, and fires.

4 C. PVPA Discretion. PVPA shall have discretion to make operational decisions in
5 discharging its obligation hereunder within the scope of Watermaster direction.

6 D. Common conditions of spreading. In addition to the direction of Watermaster PVPA
7 shall spread replenishment, replacement or storage waters subject to the following conditions.

8 1. Cessation of Spreading for Emergencies. PVPA reserves the right to cease
9 spreading at any time, without prior notice to Watermaster if, in the discretion of PVPA, such action
10 shall be warranted by, and in connection with, any emergency condition. PVPA will give
11 Watermaster immediate notice of any such cessation.

12 2. Water Quality. PVPA bears no responsibility for the quality of replenishment,
13 replacement or storage water or the impacts of spreading such water upon water quality of the Six
14 Basins.

15 3. High Groundwater. PVPA bears no responsibility for high groundwater due
16 to any spreading of replenishment, replacement or storage water.

17 4. Rejected water. PVPA bears no responsibility for loss of replenishment,
18 replacement or storage water which is rejected or otherwise lost.

19 5. Measurement and Reporting. Watermaster shall provide adequate measuring
20 devices to measure the spreading of replenishment, replacement and storage waters and any such
21 water rejected or lost. PVPA will keep, maintain and furnish to Watermaster on a monthly basis,
22 records of the quantities of replenishment waters spread and rejected.

23 6. Record of Deliveries and Spreading. Watermaster shall keep, maintain and
24 furnish to PVPA records of the quantities and quality of replacement or storage waters delivered
25 within 30 days following delivery of such waters. PVPA shall keep, maintain, and furnish to
26 Watermaster the quantities of replacement and storage waters spread within 30 days following
27 delivery of such water together with an estimate of the quantities of water bypassing the spreading
28 facilities, if any.

1 7. Compensation. Subject to review by the court under its continuing
2 jurisdiction in Case No. KC029152, Watermaster shall pay PVPA's actual, reasonable and necessary
3 costs incurred by PVPA in spreading replenishment, replacement and storage water. PVPA will
4 bill Watermaster such costs on a quarterly basis and such bill will include a reasonably detailed
5 accounting of such costs under generally accepted accounting principles (GAAP). Payment is due
6 upon billing. PVPA's costs may be subject to review or audit by an outside accounting firm selected
7 and paid by Watermaster (within thirty days following billing). Within thirty (30) days following
8 billing, Watermaster shall either contest the billing or accept said billing.

9 E. Replenishment water. In addition to the above, PVPA shall spread replenishment
10 water as it becomes available. PVPA has no control over the availability of replenishment waters
11 and is under no obligation to spread any specific quantity of replenishment water.

12 F. Replacement Water. In addition to the above, PVPA shall spread Replacement
13 Water on the Spreading Grounds under the following terms and conditions. Pursuant to the
14 Judgment, only qualified parties under the Judgment may store water in the Six Basins upon entry
15 into a Storage and Recovery Agreement with Watermaster. Upon request, PVPA shall spread
16 storage water under the following terms and conditions:

17 1. Terms of Delivery. Watermaster shall deliver and PVPA shall spread storage
18 water under the same terms and conditions as replacement waters.

19 2. Replacement Water Flows. PVPA will assist Watermaster in determining the
20 allowable daily rates and the duration of replacement water deliveries, based upon conditions
21 existing from time to time, including any unused capacity available at and in PVPA spreading
22 facilities.

23 3. Notice of New or Changed Replacement Water Flows. Watermaster, at least
24 seven (7) days prior to any anticipated delivery of replacement water, shall notify PVPA that water
25 will be available for transport and spreading and shall give PVPA at least forty-eight (48) hours
26 notice of any anticipated change in previously established flow rates of delivery for such water.

27 4. Spreading Grounds Limitations. PVPA may require changes in delivery flow
28 rates when, in PVPA's opinion, continued spreading (in whole or in part) cannot be carried out

1 hereunder due to operational and/or maintenance problems, including, but not limited to, trespassing,
2 insect infestations, scarification, weed abatement, and/or construction in or at PVPA's conveyance
3 and spreading facilities. When it is reasonable to do so, PVPA will give Watermaster at least twenty-
4 four (24) hours' notice of any such changes.

5 **III. OWNERSHIP AND IMPROVEMENTS OF SPREADING GROUNDS**

6 A. No Dedication. Nothing in this Agreement shall be construed as a dedication of the
7 PVPA Spreading Grounds or its facilities to Watermaster, the other parties to the Judgment, or to
8 the public use or benefit. The spreading grounds and appurtenant facilities are, and remain, the sole
9 property of PVPA. PVPA may sell, lease, or otherwise dispose of portions of its spreading grounds
10 at its own discretion but not inconsistent with this Agreement.

11 B. Spreading Grounds Improvements. Nothing in this Agreement obligates or otherwise
12 requires PVPA to construct new or additional facilities in connection with its spreading operations.
13 PVPA may at its discretion construct new or additional facilities. Watermaster may propose
14 improvements to PVPA's spreading grounds and facilities at its own expense.

15 C. Condemnation. Watermaster agrees to and does waive and disclaim any interest in
16 any award or settlement which may be made in any proceeding in eminent domain concerning all
17 or part of the Spreading Grounds whether the taking be total or partial, or for easement purposes.
18 If the taking be such as to render the Spreading Grounds totally unfit and unsuitable for the above
19 use, then, pursuant to Paragraph II,^B~~A~~ PVPA is not in default or breach.

20 **IV. GROUNDWATER MODEL**

21 A. License for use. PVPA grants Watermaster a license to use its Spreadsheet Models
22 pursuant to the terms and conditions of this agreement for the development of an Operating Plan.
23 In developing the initial operating plan, Watermaster has used PVPA's Groundwater Models. In
24 developing subsequent operating plans or revising such plans, Watermaster shall use PVPA's
25 Groundwater Models and any subsequent version or improvement thereof, or other criteria at
26 Watermaster's discretion.

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1 1. Custody of the PVPA's Groundwater Models. Watermaster shall have
2 physical custody of a copy of the model. However, PVPA shall have the right to access the Models
3 for any purpose which is not inconsistent with the Judgment or the direction of the Watermaster.

4 2. Updates to Model.

5
6 Said license shall include, following consultation with PVPA, the right to make changes,
7 modifications, improvements, updates, or refinements in or to PVPA's Groundwater Model at the
8 sole expense of Watermaster and without any contribution from PVPA.

9 B. Terms and Conditions. For daily operations, Watermaster shall be responsible for
10 keeping, maintaining and reporting on the data base necessary for use of PVPA's Groundwater
11 Models. Watermaster shall collect water level and quality data necessary, including key well levels
12 and rainfall data, to use the Groundwater Models to implement the Physical Solution. Watermaster
13 shall provide this data to PVPA by the fifteenth day of each month. PVPA shall provide
14 Watermaster readings of replenishment water spread, on a daily basis. PVPA then shall provide
15 Watermaster with a monthly report on available storage and water levels of monitoring wells.

16 1. Compensation. PVPA grants Watermaster this license at no cost other than
17 the continuing costs which may be incurred by PVPA as a result of Watermaster operating the
18 Models.

19 2. No Warranty. PVPA makes no warranty and disclaims all warranties
20 regarding PVPA's Groundwater Model and its subsequent updates or improvements.

21 3. Field Conditions. PVPA shall report to Watermaster any field conditions that
22 may have an impact on Spreading Operations.

23 **V. INDEMNIFICATION**

24 A. Watermaster Obligations. To the extent which is allowed by law, Watermaster shall
25 indemnify and hold harmless, PVPA, its officers, directors, employees, agents, and representatives
26 against any and all claims, demands, costs, and/or liabilities due to, or arising from any act or
27 omission by PVPA, its officers, directors, employees, or agents arising from any activities not
28 connected with the spreading of water under the direction of Watermaster.

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VI. INSURANCE

A. Subject to the above, PVPA shall obtain and maintain during the term of this Agreement the following insurance policies:

1. General Liability Insurance: PVPA shall maintain general liability insurance for bodily injury, property damage, personal injury, errors and omissions, and if practicable, flooding. The insurance shall be on an occurrence basis. The policy limits shall be at least \$1,000,000.

2. Property: PVPA shall obtain insurance to provide for replacement of real and personal property owned by PVPA in the event of loss by fire, flood or vandalism. This insurance shall be provided on an occurrence basis and the policy limits shall be at least \$1,000,000.

VII. MISCELLANEOUS PROVISIONS

A. Effective Date. This Agreement shall not be effective until executed by the Parties and approved by the court upon motion of Watermaster in said action in Case No. KC029152.

B. Written Amendments. This Agreement may only be modified, amended, or supplemented by a subsequent writing executed by each Party hereto and approved by the Court with jurisdiction in Case No. KC029152.

C. Choice of Law. This Agreement shall be governed by and interpreted under the laws of the State of California.

D. Delivery of Notices. All notices permitted or required under this Agreement shall be addressed to the representative Parties at the following address, or such other address as the respective Parties may provide in writing for this purpose:

PVPA: President
Pomona Valley Protective Association
414 Yale Avenue, Suite H
Claremont, California 91711

Six Basins Watermaster As may be designated by Watermaster

1 Such Notices shall be deemed made when personally delivered or, when mailed, forty-eight
2 (48) hours after deposit in the U.S. mail, first class postage pre-paid and addressed to the Party at
3 its applicable address.

4 E. Successors and Assigns. This Agreement is binding on and shall inure to the benefit
5 of the Parties, their respective successors in interest and assigns.

6 F. Assignment. No Party shall have the right to assign its rights or delegate any of its
7 obligations hereunder without the express written consent of the other Party.

8 G. Construction. Each Party and/or its respective counsel has taken part in the
9 negotiation, drafting, and preparation of this Agreement, and, therefore, any ambiguity or
10 uncertainty in this Agreement shall not be construed against any Party. To ensure that this
11 Agreement is not construed against any Party, the Parties expressly agree that any common law or
12 statutory provision providing that an ambiguous or uncertain term will be construed against the
13 drafter of an Agreement is waived and shall not apply to the construction of this Agreement.

14 H. Entire Agreement. This Agreement embodies the entire and final Agreement and
15 understanding of the Parties pertaining to the subject matter of this Agreement, and supersedes all
16 prior Agreements, understandings, negotiations, representations, and discussions pertaining to that
17 subject matter, whether verbal or written, of the Parties. The Parties acknowledge that there are no
18 representations, promises, warranties, conditions, or obligations of any Party, or counsel (or any
19 Party), pertaining to that subject matter other than is contained in this Agreement, and that no Party
20 has executed this agreement in reliance on any representation, promise, warranty, condition, or
21 obligation, other than is contained in this Agreement.

22 I. Execution. The Parties to this Agreement acknowledge that they have executed this
23 Agreement voluntarily and without any duress or undue influence. The Parties further acknowledge
24 that they (1) have been represented by counsel of their own choice in connection with the
25 negotiation and execution of this Agreement, or have been advised to seek independent counsel of
26 their own choice prior to executing this agreement; (2) have read this Agreement in its entirety; and
27 (3) have entered into this Agreement of their own volition and not as a result of any representations
28 or advice by other Party or counsel for any other Party.

1 J. Counter Parts. This Agreement may be executed in one or more counterparts, each
2 of which shall be deemed an original, but all of which together shall constitute one and the same
3 instrument. This agreement shall become effective and binding immediately upon its execution by
4 both Parties. This Agreement consists of nine (9) pages, including the signature page.

5 K. Termination. Upon motion made by either Party to this Agreement in accordance
6 with the procedures set forth in Article IX, Section A of the Judgment and approval of the Court,
7 this Agreement shall be terminated.

8
9 DATED: _____ WATERMASTER
10
11 _____

12 By:

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14 DATED: _____ POMONA VALLEY PROTECTIVE ASSOCIATION
15
16 _____

17 By:

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EXHIBIT D

BASE ANNUAL GROUNDWATER PRODUCTION IN EACH BASIN, 1985- 1996
AND TOTAL BASE ANNUAL GROUNDWATER PRODUCTION, 1985- 1996
FOR EACH PARTY, AND EACH PARTY'S PERCENTAGE OF THE AGGREGATE OPERATING SAFE
YIELD FOR THE CANYON, UPPER CLAREMONT HEIGHTS, LOWER CLAREMONT HEIGHTS AND POMONA BASINS

Party	<u>Base Annual Production, Acre Feet per Year</u>					Percentage of Aggregate Operating Safe Yield
	Canyon Basin Basin	Upper Claremont Heights Basin	Lower Claremont Heights Basin	Pomona Basin	Total	
City of La Verne	0	0	0	1,492	1,492	7.731
City of Pomona*	0	1,234	961	1,128	3,323	17.218
Simpson Paper	0	0	0	691	691	3.580
Southern Cal. Water Co.	56	2,895	107	3,647	6,705	34.741
City of Claremont	0	267	0	268	535	2.772
Pomona College	0	357	0	0	357	1.850
City of Upland	408	1,434	0	0	1,842	9.544
West End Consolidated Water Company	0	2,972	0	0	2,972	15.399
San Antonio Water Company	0	1,383	0	0	1,383	7.166
TOTAL	464	10,542	1,068	7,226	19,300	100.000%

* Pomona shall have the right to produce an additional 109 acre feet of groundwater per year subject to the following:

(a) Pomona shall provide at least 436 acre feet of recycled water to the property presently designated by the Los Angeles County Assessor as Assessor's Parcel Nos. 834-800-8001, 834-800-8002, 834-800-8009, 834-800-5013 and 834-800-6001.

(b) Pomona's additional production right shall be added to its Base Annual Production Right and shall be subject to all provisions of the Judgment relating to Base Annual Production Rights; provided however, such additional right shall not be subject to transfer or the water produced delivered for use outside the Pomona service area.

(c) To the extent in any year Pomona provides less than 436 acre feet of recycled water to the above described property, the additional right of Pomona shall be reduced to an amount equal to one fourth (1/4) of the amount of recycled water provided. However, no reduction shall occur to the extent the failure to deliver recycled water is the result of sudden occurrences such as storms, floods, fires, earthquakes, accidents or unexpected equipment outage) or acts or omissions of the Los Angeles County Sanitation District which impair the ability of Pomona to make recycled water deliveries.

EXHIBIT E

DESCRIPTION OF REPLENISHMENT PROGRAMS

San Antonio Spreading Grounds

Owned and operated by the Pomona Valley Protective Association (PVPA), this private facility is comprised of 600 acres of spreading grounds on both the east and west sides of San Antonio channel. The grounds consist of ditches, check levees, gates, metering stations, shallow basins and deep basins. The primary source of water for this facility is from San Antonio Creek by way of controlled releases from San Antonio Dam which is owned and operated by the U.S. Army Corps of Engineers. Water is released from the dam directly into San Antonio Flood Control Channel. Upon entering the channel, water is diverted into an underground basin where control gates allow regulated flow onto the spreading grounds. Additional sources of water include uncontrolled surface flows from adjacent properties in San Bernardino and Los Angeles Counties. The Corps coordinates its releases with PVPA. Four metering stations are used for flow measurements, and a series of ditches, check levees, gates and appurtenances allow the water to be directed into shallow and deep basins. Since 1896, PVPA has regularly spread water at its facility.

Thompson Creek Spreading Grounds

Owned and maintained by PVPA, this private facility is comprised of approximately 53 acres of spreading grounds south of Thompson Creek Dam and east of Thompson Creek. PVPA operates this facility with the cooperation of the Los Angeles County Flood Control District. The grounds consist of ditches, check levees, gates, shallow and deep basins. The sources of water for this facility are Cobal, Williams, Palmer, and Padua Creeks which are diverted to the grounds by PVPA with the cooperation of the Los Angeles County Department of Public Works through the Palmer Diversion. Surface runoff is diverted onto the grounds by way of Chicken Creek through a diversion located directly north of the grounds. PVPA's facility can also receive water from Thompson Creek Dam when the reservoir exceeds the elevation of 1625 feet above sea level. Since 1918, PVPA has spread water at this facility.

Pomona Spreading Grounds

Owned and operated by the City of Pomona, this facility is comprised of 8 acres of spreading grounds adjacent to the City's Pedley Water Treatment Plant. The City acquired this property in October 1926. The present deep basin configuration of the facility was completed in 1957. The source of water for this facility is San Antonio Creek water delivered through the Loop Merserve Canyon Water Company pipeline and Evey Canyon water. This facility also receives some local runoff. Water has been spread in this vicinity on and off since about 1897.

Live Oak Spreading Grounds

Owned and operated by the Los Angeles County Department of Public Works, this facility consists of approximately 5 acres of spreading grounds. Approximately 1.5 acres north of Baseline Road and 3.5 acres south of route 30 freeway extension. The source of water for this facility is controlled releases from Live Oak Dam and Live Oak Debris Basin. This facility was first used in the 1961-62 water year.

WATER STORAGE AND RECOVERY AGREEMENT

1. IDENTIFICATION

THIS AGREEMENT dated _____ by and between the CITY OF POMONA, a chartered municipal corporation (Pomona), and the SIX BASINS WATERMASTER, a court appointed entity established by the Los Angeles County Superior Court (Watermaster), and is based upon the following recitals.

2. RECITALS

2.1 Water rights have been adjudicated in the Six Basins Area according to the Judgment in Los Angeles County Superior Court Case No. KC 029152, entitled Southern California Water Company v. the City of La Verne.

2.2 Said Judgment establishes the Watermaster as the court empowered entity responsible for managing the Six Basins Area. Under the provisions of Paragraph VI.B.10 of the Judgment, Watermaster is authorized to enter into Storage and Recovery Agreements with any party holding a base annual production right.

2.3 Pomona is a party holding a base annual production right. In addition, Pomona has historically replenished the Six Basins Area. While Pomona is under no obligation to replenish the Six Basins Area, to the extent that it does augment groundwater supplies in excess of its historical replenishment as provided in Paragraph VI.B.9 of the Judgment, Pomona is authorized to recover such water.

2.4 Spreading and injecting or otherwise recharging groundwater in the Six Basins Area is restricted according to Paragraph IV.B of the Judgment; however, pursuant to Paragraph VI.B.10,

Watermaster is authorized to enter into storage and recovery agreements for the utilization of groundwater storage capacity and for subsequent recovery use or credit by the storing entity.

2.5 Pomona and Water master desire to enter into an agreement for the storage and recovery of water.

3. AGREEMENTS

In consideration for the mutual promises and conditions contained herein and for other valuable consideration, the parties agree as follows:

3.1 Pomona may, subject to the conditions hereinafter set forth, spread and cause to be spread water which would be stored for Pomona's account. The amount of water stored and recovered shall be all amounts it has spread or caused to be spread in the Six Basins Area in excess of 130 acre feet annually as specifically provided in Paragraph VI.B.9 of the Judgment. Without limitation on accumulations, Pomona shall acquire and retain ownership of all such storage in excess of the historical replenishment of 130 acre feet per year until such water is produced by Pomona or transferred as a credit toward any Replacement Water obligation.

3.2 Pomona shall issue a report to Watermaster on a quarterly basis indicating the amount of water which Pomona has spread. The report shall be due the last day of the month next following the end of the relevant quarter.

3.3 Recovery of water by Pomona shall be accounted for as follows:

3.3.1 The first water Pomona produces in a calendar year shall be the carryover of unused rights in accordance with Paragraph III.B.2.

3.3.2 The next such water produced shall be Pomona's Base Annual Production Right.

3.3.3 The next such water produced shall be water stored pursuant to this storage and Recovery Agreement.

3.4 This Agreement shall be effective upon court approval of the Judgment in the above-referenced case.

3.5 Any notices required hereunder may be given by mail postage prepaid and addressed as follows:

TO WATERMASTER:

TO CITY OF POMONA:

Henry Pepper, Director of Utilities
Public Works Department
City of Pomona
505 S. Garey Avenue
Pomona, CA 91769-0660

EXECUTED this _____ day of _____, 1998, at _____, CA.

CITY OF POMONA

By: _____

WATERMASTER

By: _____

EXHIBIT G

INITIAL OPERATING PLAN

1. **Replenishment.** PVPA shall continue to replenish the basin as it has historically done. PVPA shall curtail replenishment when the Index Water Level is at 1455 or higher, where the Index Water Level is the average of the water level elevations above Mean Sea Level for the following five Key Wells:

Upland-Foothill No. 3 (Owner: WECWC)
Mountain View No. 4 (Owner: WECWC)
Miramar No. 3 (Owner: SCWC)
College No. 1 (Owner: Pomona College)
Tunnel Well No. 3 (Owner: Pomona)

On the second Monday of each month owners of the Key Wells shall measure and report to Watermaster and to PVPA the water level elevations in the Key Wells. Water level elevations shall be measured using protocols specified by Watermaster.

2. **Production Measurement and Reporting.** Within 180 days following Entry of Judgment each producer shall have installed on all of its producing wells a calibrated device to measure production. Such devices shall conform to, and be regularly calibrated in accordance with, specifications developed by Watermaster. Each producer shall record the monthly production from each well in acre feet and shall report such monthly production for each well and the total for all wells for the month and for the year to date to Watermaster by not later than the third working day following the end of the month.

3. **Operating Safe Yield.** The initial Operating Safe Yield of the Four Basins is 24,000 acre feet per year.

1 PROOF OF SERVICE

2 I am a resident of the State of California, over the age of eighteen years, and not a party to the within
3 action. My business address is 21 East Carrillo Street, Santa Barbara, California 93101-2782. On
4 December 21, 1998, I served the within document:

5 **NOTICE OF ENTRY OF JUDGMENT**

6

by transmitting via facsimile the document(s) listed above to the fax number(s) set forth below on this date before 5:00 p.m.

7

8 by placing the document listed above in a sealed envelope with postage thereon fully prepaid, in the United States mail at Santa Barbara, California as set forth below.

9

10 by causing personal delivery by _____ of the document(s) listed above to the person(s) at the address(es) set forth below.

11

12 by personally delivering the document(s) listed above to the person(s) at the address(es) set forth below.

13 SEE ATTACHED LIST

14 I am readily familiar with the firm's practice of collection and processing correspondence for mailing. Under that practice it would be deposited with the U.S. Postal Service on that same day with postage thereon fully prepaid in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

17

18 (State) I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

19 Executed on December 21, 1998, at Santa Barbara, California.

20 *Gina Lane*

21 _____
GINA M. LANE

1 Jess Senecal, Esq.
Lagerlof, Senecal, Bradley and Swift
2 301 North Lake Ave., 10th Floor
Pasadena, CA 91101

Tom McPeters, Esq.
San Antonio Water Company
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Redlands, CA 92378

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Simpson Paper Company
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Riverside, CA 92412

13 Robert Hawkins, Esq.
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Newport Beach, CA 92660

16 James Markman, Esq.
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20 Arthur Kidman, Esq.
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21 695 Town Center Drive, Suite 1400
Costa Mesa, CA 92626-1924

23 Jerome Craig, Esq.
Morrison & Foerster, LLP
24 555 West Fifth St., Suite 3500
Los Angeles, CA 90013

26 Keith Johnson
Allard, Shelton & O'Connor
27 319 Harvard Ave.
Claremont, CA 91711

28

H

Appendix H. Water Shortage Contingency Plan

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SAN ANTONIO WATER COMPANY

Water Shortage Contingency Plan

SEPTEMBER 2021

Prepared by Water Systems Consulting, Inc.



1.1 Water Supply Reliability Analysis

The San Antonio Water Company (SAWCo) analyzed future demand and supply in its 2020 Urban Water Management Plan (UWMP). The UWMP analyzed conditions for normal, or average, single-dry, and five-year consecutive dry periods. SAWCo aims to provide shareholders full entitlement, but in periods of drought, allocations per share may be reduced, depending on supply availability. In all scenarios, SAWCo expects to meet customer demands based on shareholders full entitlement. In addition, a Drought Risk Assessment was performed to analyze anticipated supply and demand for the next five years (2021-2025). The Drought Risk Assessment analysis determines that SAWCo's supplies are able to reliably meet customer demands. Details on this analysis as well as supply and demand estimates are discussed in the UWMP.

1.2 Annual Water Supply and Demand Assessment

As an urban water supplier, SAWCo must prepare and submit an Annual Water Supply and Demand Assessment (Annual Assessment). The Annual Assessment is a near-term outlook for supplies and demands. It is used to determine whether the potential for a supply shortage exists and whether there is a need to trigger a WSCP shortage level and response actions to maintain supply reliability. Starting in 2022, the Annual Assessment will be due by July 1st of every year, as indicated by CWC Section 10632.1. SAWCo's Annual Assessment procedure, including key data inputs, evaluation criteria and responsible staff is summarized in Table 1. Nearly all of SAWCo's staff will be involved in the Annual Assessment and implementation of this WSCP.

Table 1. Annual Assessment Procedure

TIMING	ASSESSMENT ACTIVITIES	PROCEDURE, KEY DATA INPUTS, EVALUATION CRITERIA AND OTHER CONSIDERATIONS	SAWCO STAFF RESPONSIBLE
November–December	Estimate unconstrained demands for the coming year	SAWCo anticipates annual demands equal to that of the total active shares, based on yearly entitlement.	SAWCo Staff
November–December	Estimate available supplies for the coming year, considering the following year will be dry	SAWCo will analyze historical rainfall and other local groundwater conditions that may impact supply availability and warrant a reduction to shareholder’s entitlement. SAWCo will also work with various groundwater management agencies, like the Chino Basin Watermaster, etc., to monitor groundwater conditions and stay informed of any impacts to SAWCo’s ability to extract and provide local groundwater. SAWCo will monitor groundwater levels provided through the Tunnel. The Tunnel serves as an indicator for conditions within the local mountains and available water for the San Antonio Creek/percolated surface water.	SAWCo Staff
December–January	Consider potential infrastructure constraints that may impact supply delivery	Identify any known infrastructure issues that may pertain to near-term water supply reliability, including repairs, construction, and environmental mitigation measures that may temporarily constrain capabilities, as well as any new projects that may add to system capacity. Identify any facilities out of service due to water quality problems, equipment failure, etc. that may impact normal water deliveries.	Operations Staff
February	Inform the Board of Annual Assessment findings	The General Manager shall inform the Board of the Annual Assessment and results and make a recommendation of which shortage stage to enter, if applicable, if the Board is in session. If the Board is not in session, the General Manager shall immediately request a special meeting of the Board.	SAWCo Board or General Manager
March	Notify the Public	The Board/SAWCo will make a public announcement published in the Inland Valley Daily Bulletin and become effective immediately upon publication. SAWCo will coordinate with other agencies that it provides water to, in addition to other local agencies.	General Manager
Ongoing	Implement WSCP actions, if needed	Relevant members of SAWCo’s staff will implement shortage response actions associated with the declared water shortage level.	SAWCo Staff
Prior to July 1 st	Submit Annual Assessment	Send final Annual Assessment to DWR.	General Manager

1.3 Water Shortage Levels

SAWCo uses four (4) water shortage stages to identify and response to water shortage emergencies. Stage 1 is implemented year-round to encourage water conservation and responsible water management, regardless of a shortage emergency.

The Water Code outlines six standard water shortage levels that correspond to a gap in supply compared to normal year availability. The six standard water shortage levels correspond to progressively increasing estimated shortage conditions (up to 10-, 20-, 30-, 40-, 50-percent and greater than 50-percent shortage compared to the normal reliability condition) and align with the response actions that a water supplier would implement to meet the severity of the impending shortages.

The Water Code allows suppliers with an existing WSCP that uses different water shortage levels to comply with the six standard levels by developing and including a cross-reference relating to its existing shortage categories to the six standard water shortage levels. SAWCo is maintaining its current four shortage stages for this WSCP, as shown in Table 2. A cross reference to the six standard stages is shown in Figure 1. SAWCo's existing stages and their relationship to the six standard stages.

Table 2. DWR 8-1 Water Shortage Contingency Plan Levels

SHORTAGE LEVEL	PERCENT SHORTAGE RANGE	SHORTAGE RESPONSE ACTIONS
1	Up to 10%	Required savings may be met through a combination of quantifiable and unquantifiable actions. SAWCo will only implement measures to the extent necessary to mitigate a water shortage, although estimates may indicate a greater savings is obtainable. It is anticipated that some of the required savings will be met through quantifiable shortage response actions and the remaining amount savings will be met through other actions, including communication and outreach efforts. For a list of all SAWCo specific shortage response actions and their potential savings, please refer to DWR Table 8-2.
2	Up to 30%	Required savings may be met through a combination of quantifiable and unquantifiable actions. SAWCo will only implement measures to the extent necessary to mitigate a water shortage, although estimates may indicate a greater savings is obtainable. It is anticipated that some of the required savings will be met through quantifiable shortage response actions and the remaining amount savings will be met through other actions, including communication and outreach efforts. For a list of all SAWCo specific shortage response actions and their potential savings, please refer to DWR Table 8-2.
3	Up to 50%	Required savings may be met through a combination of quantifiable and unquantifiable actions. SAWCo will only implement measures to the extent necessary to mitigate a water shortage, although estimates may indicate a greater savings is obtainable. It is anticipated that some of the required savings will be met through quantifiable shortage response actions and the remaining amount savings will be met through other actions, including communication and outreach efforts. For a list of all SAWCo specific shortage response actions and their potential savings, please refer to DWR Table 8-2.
4	Greater than 50%	Required savings may be met through a combination of quantifiable and unquantifiable actions. SAWCo will only implement measures to the extent necessary to mitigate a water shortage, although estimates may indicate a greater savings is obtainable. It is anticipated that some of the required savings will be met through quantifiable shortage response actions and the remaining amount savings will be met through other actions, including communication and outreach efforts. For a list of all SAWCo specific shortage response actions and their potential savings, please refer to DWR Table 8-2.

SAWCo Shortage Stage	Supply Reduction (%)		Standard Shortage Stage	Standard Supply Shortage Level
1	10%		1	Up to 10%
2	30%		2	Up to 20%
3	50%		3	Up to 30%
4	Greater than 50%		4	Up to 40%
			5	Up to 50%
			6	Greater than 50%

Figure 1. SAWCo's existing stages and their relationship to the six standard stages

1.4 Shortage Response Actions

SAWCo expects to mitigate supply shortages through a variety of response actions, including various supply sources, demand reduction actions, conservation, outreach, and if necessary, mandatory prohibitions.

1.4.1 Demand Reduction

SAWCo has identified a variety of demand reduction actions to offset supply shortages. These actions include, but are not limited to, conservation and rebate programs, leak detection and repair, limitations on irrigation and other voluntary actions to reduce customer demand. Demand reduction actions are summarized in Table 3.

Table 3. DWR 8-2 Demand Reduction Actions

SHORTAGE LEVEL	DEMAND REDUCTION ACTIONS	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?	ADDITIONAL EXPLANATION OR REFERENCE	PENALTY, CHARGE, OR OTHER ENFORCEMENT
Stage 1	Landscape - Limit landscape irrigation to specific times	0-5%	Watering restricted to between the hours of 10:00 am and 6:00 pm	Yes
Stage 1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	0-5%	Leaks and misadjusted water fixtures shall be corrected within 72 hours of discovery or notification by SAWCo.	Yes
Stage 1	Other	0-5%	Runoff from irrigation or leaks prohibited.	Yes
Stage 1	Other	0-5%	Washing of automobiles, trucks, trailers, boats, airplanes, and other types of equipment (mobile or otherwise) unless done with a hand-held bucket or hand-held hose equipped with a positive shutoff nozzle for quick rinses. The nozzle shall be removed when the hose is not in use to ensure the water supply is shut off.	Yes
Stage 1	CII - Restaurants may only serve water upon request	0-5%	With respect to eating and drinking establishments of any kind, including but not limited to, any restaurant, hotel, café, cafeteria, bar or club, whether public or private, that benefits from the supply of water by SAWCo shall not provide drinking water to any person unless expressly requested.	Yes
Stage 2	Other	5-10%	The washing of sidewalks, walkways, driveways, public and private parking areas and all other impervious hard surfaced areas by direct hosing when runoff water directly flows to a gutter or storm drain, except as may be necessary to properly dispose of flammable or other dangerous liquids or substances, wash away spills that present a trip and fall hazard, or to prevent or eliminate materials dangerous to the public health and safety.	Yes
Stage 2	Landscape - Limit landscape irrigation to specific days	5-10%	Outdoor irrigation of landscape by sprinklers is permitted only on even days of the month for those locations having a street address with an even last digit. Outdoor irrigation by sprinklers is permitted only on odd days of the month for those locations having a street address with an odd last digit. No outdoor irrigation shall take place between the hours of 10:00 a.m. and 6:00 p.m.	Yes

SHORTAGE LEVEL	DEMAND REDUCTION ACTIONS	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?	ADDITIONAL EXPLANATION OR REFERENCE	PENALTY, CHARGE, OR OTHER ENFORCEMENT
Stage 2	Other	5-10%	The washing of automobiles, trucks, trailers, boats, and other types of equipment (mobile or otherwise) is prohibited except on the designated outdoor water use days between the hours of 12:00 midnight to 12:00 noon and sundown to 12:00 midnight. Such washing, when allowed, shall be done with a hand held bucket or hand held hose equipped with a positive shutoff nozzle for quick rinses. The nozzle shall be removed when the hose is not in use to ensure the water supply is shutoff.	Yes
Stage 2	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	5-10%	No individual, firm or business that regularly washes vehicles for remuneration or provides facilities for customers to do so through coin operated machinery shall be permitted to operate such a business unless their place of business is equipped and operating to approved standards with equipment to recycle water for use within their facility.	Yes
Stage 2	Other water feature or swimming pool restriction	5-10%	The refilling or adding of water to swimming pools is prohibited except on designated outdoor water use days, which is restricted between the hours of 10am and 6 pm.	Yes
Stage 2	Water Features - Restrict water use for decorative water features, such as fountains	5-10%	Any non-business, operation related pond, ornamental fountain or other structure making similar use of water is prohibited.	Yes
Stage 2	Landscape - Prohibit certain types of landscape irrigation	5-10%	The irrigation of golf course fairways is prohibited. This section shall not apply to the irrigation of any golf course solely with available non-potable or reclaimed wastewater.	Yes
Stage 2	Other	5-10%	The use of water from fire hydrants shall be limited to firefighting and emergency related activities and/or other activities necessary to maintain the health, safety, and welfare of the citizens of the San Antonio Heights. This restriction shall not apply to businesses, which require the use of water for land development and building construction processes with prior written approval by the Water Company.	Yes

SHORTAGE LEVEL	DEMAND REDUCTION ACTIONS	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?	ADDITIONAL EXPLANATION OR REFERENCE	PENALTY, CHARGE, OR OTHER ENFORCEMENT
Stage 3	Landscape - Limit landscape irrigation to specific days	10-30%	Outdoor irrigation of landscape by sprinklers is permitted only on Wednesday and Sunday for those locations having street address with an even last digit. Outdoor irrigation by sprinklers is permitted only on Tuesday and Saturday for those locations having a street address with an odd last digit. Outdoor irrigation for locations not having a street address shall occur on Wednesday and Sunday if located west of San Antonio Avenue or only on Tuesday and Saturday if located east of San Antonio Avenue.	Yes
Stage 3	Landscape - Other landscape restriction or prohibition	10-30%	No outdoor irrigation shall take place between 6:00 a.m. until one (1) hour before sundown.	Yes
Stage 3	Other	10-30%	The washing of automobiles, trucks, trailers, boats, airplanes and other types of equipment (mobile or otherwise) is prohibited except on the designated outdoor water use days pursuant to section 7734.040 between the hours of 12:00 midnight to 12:00 noon and sundown to 12:00 midnight. Such washing, when allowed, shall be done with a hand held bucket or hand held hose equipped with a positive shutoff nozzle for quick rinses. The nozzle shall be removed when the hose is not in use to ensure the water supply is shutoff.	Yes
Stage 3	Other	10-30%	Trucks, trailers and other types of mobile equipment (such as garbage trucks and vehicles used to transport food and other perishables) when said washing is necessary in order to protect the health, safety and welfare of the public, shall be restricted to the hours of sundown to noon. Such washing, when allowed, shall be done with a hand held bucket or hand held hose equipped with a positive shutoff nozzle for quick rinses. The nozzle shall be removed when the hose is not in use.	Yes
Stage 3	Water Features - Restrict water use for decorative water features, such as fountains	10-30%	Any non-business, operation related pond, ornamental fountain or other structure making similar use of water is prohibited.	Yes
Stage 3	Landscape - Other landscape restriction or prohibition	10-30%	The waters of golf course tee areas and fairways is prohibited unless done with reclaimed wastewater.	Yes

SHORTAGE LEVEL	DEMAND REDUCTION ACTIONS	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?	ADDITIONAL EXPLANATION OR REFERENCE	PENALTY, CHARGE, OR OTHER ENFORCEMENT
Stage 3	Other water feature or swimming pool restriction	10-30%	The refilling or adding of water to existing swimming pools is prohibited except on designated outdoor water use days which shall be the same days as outdoor water is permitted pursuant to section 7734.040. New pool construction filling shall be by permit only	Yes
Stage 4	Landscape - Limit landscape irrigation to specific days	30-50%	Outdoor irrigation of landscape by sprinklers is permitted only on Sunday for those locations having street address with an even last digit. Outdoor irrigation by sprinklers is permitted only on Saturday for those locations having a street address with an odd last digit. Outdoor irrigation for locations not having a street address shall occur on Sunday if located west of San Antonio Avenue or only on Tuesday and Saturday if located east of San Antonio Avenue	Yes
Stage 4	Landscape - Limit landscape irrigation to specific times	30-50%	No outdoor irrigation shall take place between 6:00 a.m. until one (1) hour before sundown	Yes
Stage 4	Other	30-50%	The washing of automobiles, trucks, trailers, boats, airplanes, and other types of equipment (mobile or otherwise) is prohibited	Yes
Stage 4	Other water feature or swimming pool restriction	30-50%	Any non-business, operation related pond, ornamental fountain or other structure making similar use of water is prohibited	Yes
Stage 4	Other	30-50%	Washing sidewalks, driveways, public and private parking areas, tennis courts, patios, or other paved areas, except to alleviate an immediate health hazard is prohibited	Yes

1.4.2 Supply Augmentation

SAWCo maintains interconnections with the City of Upland, as well as the Monte Vista Water District (MVWD) and the City of Ontario through the Water Facilities Authority (WFA). The WFA is a Joint Powers Authority composed of the cities of Chino, Chino Hills, Ontario, and Upland and the MVWD. The WFA owns and operates a surface water treatment plant within the City of Upland that primarily treats imported water supplies from Metropolitan Water District of Southern California (Metropolitan). SAWCo’s interconnection with the City of Upland could potentially provide the ability to negotiate imported water deliveries via the WFA and wheeled through this existing interconnection.

Table 4. DWR 8-3 Supply Augmentation and Other Actions

SHORTAGE LEVEL	SUPPLY AUGMENTATION METHODS AND OTHER ACTIONS BY WATER SUPPLIER	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?	ADDITIONAL EXPLANATION OR REFERENCE
Stage 2	Other purchases	0-100%	Negotiate imported water deliveries through the Water Facilities Authority
Stage 3	Other purchases	0-100%	Negotiate imported water deliveries through the Water Facilities Authority
Stage 4	Other purchases	0-100%	Negotiate imported water deliveries through the Water Facilities Authority

1.4.3 Operational Changes

SAWCo operates its system as efficiently as possible. In the event of a water shortage emergency, it is likely that surface water from the San Antonio Creek and percolated water from the San Antonio Tunnel would be vastly reduced. As a result, SAWCo would focus operations on well extractions to meet demands.

1.4.4 Additional Mandatory Restrictions

SAWCo also implements several measures at all times to avoid water waste, which include:

- Prohibit washing of sidewalks, driveways, public and private parking areas and all other impervious hard surfaced areas by direct hosing when runoff water directly flows to a gutter or storm drain, except as may be necessary to properly dispose of flammable or other dangerous liquids or substances, wash away spills that present a trip and fall hazard, or to prevent or eliminate materials dangerous to the public health and safety;
- Prohibit excessive or unreasonable run-off or unreasonable spray of the areas being watered;
- Prohibit outdoor irrigation by sprinklers between 10 AM and 6 PM. Shareholders are encouraged to avoid the use of sprinklers on windy days;
- Prohibit the washing of automobiles, trucks, trailers, boats, airplanes, and other types of equipment (mobile or otherwise) unless completed with a hand-held bucket or hand-held hose equipped with a positive shutoff nozzle for quick rinses.

1.4.5 Seismic Risk Assessment, Mitigation Plan, and Emergency Response Plan

In addition to responding to drought conditions, SAWCo's WSCP can be used to respond to emergency or catastrophic conditions that impact the availability of the SAWCo's water supplies and/or the ability to deliver water within the service area. Besides drought, water supply may experience a catastrophic interruption as a result of natural disasters, such as an earthquake, wildfire, mudslide, or a regional power outage.

Planning and response measures in the event of an interruption to the water supply include the following:

- In advance of a known threat to the water and distribution system, such as a wildfire, distribution reservoirs will be filled to capacity, and any reservoir out of service will be put back into service.
- Portable generators will be deployed to critical facilities lacking emergency backup power.
- Supervisory Control and Data Acquisition (SCADA) will be used throughout the distribution system to monitor system problems, whether they be minor day-to-day problems or major disruptions.
- Distribution system crews are trained in pipe repair and replacement as a part of their normal duties and will be continually ready to perform such work on an emergency basis as needed.
- In the occurrence of a catastrophic event, SAWCo staff will be prepared to mobilize to respond to emergent issues.
- Distribution system repairs will be prioritized to best meet critical needs, including water for firefighting, and health and safety needs.
- A portion of the available potable supply will be reserved for drinking-water purposes in the event of prolonged interruption.
- In the event of distribution system failure, a clear message for timely information dissemination to the public will be developed that includes the nature of the catastrophic event, status of the distribution system, water use prohibitions, allowable water uses, potential need to boil drinking water prior to consumption, and location and availability of emergency drinking water.

In 2021, SAWCo completed a Risk and Resilience Assessment (RRA) and Emergency Response Plan (ERP) in accordance with America's Water Infrastructure Act (AWIA) of 2018. The purpose of the RRA and ERP is to meet the AWIA compliance requirements and plan for long-term resilience of SAWCo's infrastructure. The RRA assesses SAWCo's water system to identify critical assets and processes that may be vulnerable to human and natural hazards and to identify measures that can be taken to reduce risk and enhance resilience from service disruption for the benefit of customers. The RRA identifies and characterizes both infrastructure-specific and system-wide vulnerabilities and threats and quantifies the consequences of disruption. The RRA also identifies various options (and constraints) in addressing and mitigating risk. The RRA, in conjunction with the ERP, charts a course for water system resilience. The RRA also provided various recommendations to increase the reliability of SAWCo's system. Since critical pieces of infrastructure and specific vulnerabilities are detailed in the RRA and ERP, the contents of the document are confidential and for use by SAWCo's staff only. However, SAWCo can confirm that these plans meet the requirements set forth by AWIA and evaluate seismic risks and mitigation actions to SAWCo's infrastructure.

SAWCo certified with the U.S. Environmental Protection Agency that their RRA was compliant with all AWIA requirements on June 30, 2021, and will certify their ERP by December 31, 2021, meeting all federal deadlines.

1.4.6 Shortage Response Action Effectiveness

SAWCo has estimated the effectiveness of shortage response actions when data pertaining to such actions is available. Estimates of the effectiveness for actions are included in Table 3. It is expected that response actions effectiveness is also a result of successful communication and outreach efforts.

1.5 Communication Protocols

SAWCo publishes seasonal newsletters to inform customers of SAWCo's work. During a water shortage, SAWCo may publish information such as shortage stage and demand reduction measures in these newsletters. In addition, SAWCo will inform customers through informational bill stuffers. In more severe shortage stages, SAWCo would implement additional communication outlets, such as local newspaper postings, Facebook postings and notifications, and postings through local homeowners' associations and the San Antonio Heights Association newsletters.

In addition, SAWCo's newly deployed Automated Meter Reading (AMR) system will include a web portal where shareholders can enable notifications for using water over entitlement.

1.6 Compliance and Enforcement

SAWCo may administer penalties for shareholders who are not in compliance with this WSCP and engage in knowingly water waste activities during any calendar year or declared shortage stage, whichever time period is shorter in duration:

- **First Violation:** guilty of an infraction offense and punished by a fine not less than twenty-five dollars (\$25) but not exceeding fifty dollars (\$50)
- **Second Violation:** guilty of an infraction offense and punished by a fine not less than fifty dollars (\$50) but not exceeding one hundred dollars (\$100)
- **Third Violation:** guilty of a misdemeanor offense and punished by a fine not less than five hundred dollars (\$500) but not exceeded one thousand dollars (\$1,000)

In addition, the General Manager may enact other penalties and restrictive measures that are intended to restrict further water waste of shareholders that continue to violate the policies and procedures outlined in this plan. The General Manager may select to implement any of the following measures, or others not listed here, such as the placement of a flow restricting device upon the water service, locking off of water meter, removal of water meter, and shutting off of the service line valve.

1.7 Legal Authorities

SAWCo first established its WSCP by Resolution No. 2006-06-03, adopted at a Board meeting on September 19, 2006. Resolution No. 2006-06-03 was created to ensure responsible water management of SAWCo and its customers and promote water conservation. This Resolution provides the Board with the legal authority to declare a water shortage emergency and implement appropriate measures to mitigate a supply shortage.

1.8 Financial Consequences of WSCP

SAWCo's Bylaws specify that "all water shall be supplied at cost"; therefore, SAWCo must supply the corresponding water associated with each customer's shares. SAWCo may apply reductions to

entitlement in extreme water shortages, which would decrease SAWCo's revenue. As a small water agency, SAWCo does not have the resources to hire additional staff to assist with implementation of this WSCP and various response actions.

SAWCo has developed reserves for Master Plan projects, emergency occurrences, and operating expenses, as outlined in Resolution No. 2007-01-01. This reserve was first established in July 1994 to mitigate impacts to SAWCo and ensure that with reduced deliveries, SAWCo could continue to provide services with a buffer for emergency situations. A portion of the reserve fund is allocated for emergency water purchases in the event SAWCo were to lose a water supply source.

1.9 Monitoring and Reporting

As mentioned, SAWCo has recently replaced all customer and system meters and upgraded to an AMR system. AMR meters provide daily readings that will allow SAWCo to quickly respond to large readings and correct any issues, such as system leaks or inform customers of demand reduction actions or rebates to limit water use. In addition, the AMR meters will be connected to a website where shareholders can track their own water use and enable notifications. Shareholders can be notified of excessive water use over their entitlement.

1.10 WSCP Refinement Procedures

The WSCP is best prepared and implemented as an adaptive management plan. SAWCo will use results obtained from its monitoring and reporting program to evaluate any needs for revisions. Potential changes to the WSCP that would warrant an update include, but are not limited to, any changes to trigger conditions, changes to the shortage stage structure, changes to entitlement, and/or changes to customer reduction actions.

Any prospective changes to the WSCP would need to be presented to SAWCo's Board of Directors (Board) for approval. SAWCo will hold a public hearing, obtain any comments, and formally adopt the updated WSCP. Notices for refinement and the public hearing date will be published in the local newspaper in advance of any public meetings.

1.11 Special Water Feature Distinction

Water Code Section 10623 (b) now requires that suppliers analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code. SAWCo prohibits water used for any non-business, operation related pond, ornamental fountain, or other similar structure for aesthetic use in shortage stages 2-4.

1.12 Plan Adoption, Submittal, and Availability

The WSCP will be presented for adoption to SAWCo's Board at a public meeting. The Board and members of the public may submit any comments prior to approval and adoption. The WSCP will be submitted to DWR at the same time as the 2020 Urban Water Management Plan.

The WSCP will be made available to all staff, customers, and any affected cities, counties, or other members of the public through SAWCo's website.

1.13 Resources and References

- California Water Efficiency Partnership. (2021). *Jumpstart Water Shortage Toolkit Tool#1: Model Water Shortage Contingency Plans*. Sacramento: California Water Efficiency Partnership.
- San Antonio Water Company. (n.d.). *Amended and Restated Bylaws of San Antonio Water Company*.
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