

# Optimum Basin Management Program

## Staff Status Report 2014-2: July to December 2014



CHINO BASIN WATERMASTER

Optimum Basin Management Program

### Highlighted Activities

- As a requirement of Mitigation Measure 4.4-3 from the Peace II Subsequent Environmental Impact Report (SEIR), Watermaster, Inland Empire Utilities Agency (IEUA) and Orange County Water District (OCWD) continued to develop a Prado Basin Habitat Sustainability Program (PBHSP). Included within this program will be the Prado Basin Habitat Sustainability Adaptive Management Plan, the installation of 17 monitoring wells at nine separate sites, and vegetation monitoring. During this reporting period, property acquisition and permitting continued.
- Pursuant to the October 2013 Court Order authorizing Watermaster and IEUA to implement the 2013 Amendment to the 2010 Recharge Master Plan Update (2013 RMPU), Watermaster and IEUA have begun implementation. During the reporting period, Watermaster and IEUA continued a process to develop agreements to construct the storm and supplemental water recharge projects listed in Table 8-2c of the 2013 RMPU report, prioritize the construction of these projects relative to the availability of grant funding, and to plan subsequent implementation. Watermaster and IEUA meet monthly to review progress and advance implementation.
- Watermaster and IEUA continued work on the Turner Basins/Guasti Park Recharge Expansion Project in Management Zone (MZ) 2. After completion in 2015, the expansion project is projected to recharge an additional 300 acre-feet of storm runoff annually.
- During the reporting period, approximately 5,235 acre-feet of stormwater, 4,781 acre-feet of recycled water, and no imported water were recharged in the Chino Basin.
- Development and planning continues between the Chino Desalter Authority (CDA) and Watermaster to expand the Chino Desalters to an ultimate production capacity of 40,000 acre-feet per year. Equipping of two wells in the Chino Creek Well Field (CCWF), wells I-20 and I-21, was initiated and the wells are planned to begin producing in 2015. Three additional wells are being planned for construction to provide raw water to the Chino I Desalter; these wells are required to meet the maximum-benefit commitment to produce a total 40,000 acre-feet per year from the combined desalter well fields. The location of two of the wells has been determined, and the location for a third well is still being evaluated. Property acquisition for the two known well sites is in progress.
- Pursuant to the MZ-1 Subsidence Management Plan (MZ-1 Plan), Watermaster's subsidence management plan, if data from existing monitoring efforts in the locations called Areas of Subsidence Concern indicate the potential for adverse impacts due to subsidence, Watermaster will revise the MZ-1 Plan. During this reporting period, Watermaster prepared an outline for the update to the MZ-1 Plan and a draft Work Plan to Develop the Subsidence Management Plan for the Northwest MZ-1 Area, which was identified as an area of concern in the 2013 Annual Report of the Land Subsidence Committee (LSC).
- Watermaster began its evaluation of the Safe Yield in 2013. During this reporting period, Watermaster staff developed estimates of the Safe Yield based on present and future expected cultural conditions and reported on this work at the July Watermaster process meetings; and presented this information in great detail at a special September 16, 2014 Watermaster Board workshop. Based on the work by Watermaster staff, and discussions following the September 2014 Board workshop and at the Advisory Committee's recommendation, the Watermaster Board advised the parties to enter into a facilitated process to develop an agreement to implement the recalculated Safe Yield.

### Important Court Hearings and Orders

- JULY 14, 2014 -  
NOTICE OF RULING RE OVERLYING (NON-AGRICULTURAL) POOL COMMITTEE'S MOTION REGARDING AMENDMENT TO THE JUDGMENT RELATING TO QUORUM AND VOTING OF THE NON-AGRICULTURAL (OVERLYING) POOL COMMITTEE
- AUGUST 25, 2014 -  
NOTICE OF RULING RE AMENDMENTS TO JUDGMENT AND RULES AND REGULATIONS REGARDING COMPENSATION OF WATERMASTER BOARD MEMBERS
- DECEMBER 12, 2014 -  
ORDER ON COURT APPROVAL OF TEMPORARY SUBSTITUTE RATE FOR PHYSICAL SOLUTION TRANSFERS UNDER EXHIBIT "G" TO THE JUDGMENT

# Optimum Basin Management Program

## Program Element 1: Develop and Implement a Comprehensive Monitoring Program

### Groundwater Level Monitoring

Watermaster initiated a basin-wide groundwater-level monitoring program as part of the implementation of the Optimum Basin Management Program (OBMP). The monitoring program has been refined over time to satisfy the evolving needs of the Watermaster and IEUA, such as new regulatory requirements, and to increase efficiency. The groundwater-level monitoring program supports many Watermaster functions, such as the periodic reassessment of Safe Yield, the monitoring and management of land subsidence, the assessment of hydraulic control, the analysis of desalter pumping impacts at private wells, and the triennial re-computation of ambient water quality that is mandated by the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan). The data are also used to update and re-calibrate Watermaster's computer simulation groundwater flow model, to understand directions of groundwater flow, to compute storage changes, to interpret water quality data, and to identify areas of the basin where recharge and discharge are not in balance.

The current groundwater-level monitoring program is comprised of about 1,000 wells. At about 900 of these wells, water levels are measured by well owners, which include municipal water agencies, the California Department of Toxic Substances Control (DTSC), the Counties, and various private consulting firms. Watermaster collects these water level data at least semi-annually. At the remaining 200 wells, water levels are measured by Watermaster staff using manual methods once per month or by using pressure transducers that record data once every 15 minutes. These wells are mainly Agricultural Pool wells or dedicated monitoring wells located south of the 60 freeway.

### Groundwater Quality Monitoring

Watermaster initiated a comprehensive groundwater-quality monitoring program as part of the implementation of the OBMP. The groundwater-quality monitoring program consists of the following four components:

1. An Annual Key-Well Water-Quality Monitoring Program consisting of 110 wells, which are mostly privately-owned agricultural wells in the southern portion of Chino Basin that are otherwise not included in an established sampling program. Twenty of these wells are sampled every year, and the remaining wells are sampled once every three years. The wells sampled annually are for the continuous monitoring of areas of concern associated with the southern edge of the South Archibald Plume, the southern region of the Chino Airport Plume, and the Kaiser Steel Mill Plume, and includes two multi-port MZ-3 monitoring wells.
2. Annual sampling at nine HCMP multi-port monitoring wells strategically placed between the Chino Desalter well fields and the Santa Ana River. Results of the annual sampling are used to analyze the effect of desalter pumping over time on hydraulic control, by comparing water quality of the native groundwater and the Santa Ana River.
3. Quarterly sampling at four near-river wells to characterize the interaction between the Santa Ana River and nearby groundwater. These shallow monitoring wells along the Santa Ana River consist of two former US Geological Survey (USGS) National Water Quality Assessment Program wells (Archibald 1 and Archibald 2), and two wells (Well 9 and Well 11) owned by the Santa Ana River Water Company.
4. A cooperative basin-wide data-collection effort known as the Chino Basin Data Collection program, which relies on municipal producers and other government agencies to supply groundwater-quality data on a cooperative basis. These sources include the Appropriators, DTSC, Regional Water Quality Control Board (RWQCB), USGS, the Counties, and other cooperators.



Water Quality Sampling

All groundwater-quality data are checked by Watermaster staff and uploaded to a centralized database management system that can be accessed online through HydroDaVE<sup>SM</sup>. Groundwater-quality data are used by Watermaster for: the biennial State of the Basin report; the triennial ambient water quality update mandated by the Basin Plan; and the demonstration of hydraulic control—a maximum benefit commitment in the Basin Plan. Data are also used for monitoring nonpoint source groundwater contamination and plumes associated with point source discharges and to assess the overall health of the groundwater basin. Groundwater-quality data are also used in conjunction with numerical models to assist Watermaster and other parties in evaluating proposed groundwater remediation strategies.

# Optimum Basin Management Program

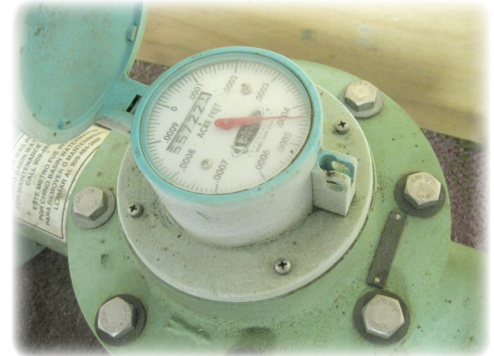
## Program Element 1: Develop and Implement a Comprehensive Monitoring Program (Continued)

### Groundwater Production Monitoring

All active wells (except for minimum user wells) are now metered. Watermaster reads the agricultural production data from the meters on a quarterly basis and enters these data into Watermaster's relational database.

### Surface Water Monitoring

**Water Quality and Quantity in Recharge Basins.** Watermaster and IEUA measure the quantity of storm and supplemental water that enters into recharge basins. Pressure transducers or staff gauges are used to measure water levels during recharge operations. In addition to these quantity measurements, imported water quality data for State Water Project water are obtained from the Metropolitan Water District of Southern California (MWDSC) and recycled water quality data for the RP-1 and RP-4 treatment plant effluents are obtained from IEUA. Combining the measured flow data with the respective water qualities enables the calculation of the blended water quality in each recharge basin, the New Yield to the Chino Basin, and the adequate dilution of recycled water.



Inline Water Flow Meter

**Surface Water Monitoring in the Santa Ana River.** Watermaster measures selected water quality parameters quarterly at two sites along the Santa Ana River (Santa Ana River at River Road and Santa Ana River at Etiwanda). Along with data collected at four near-river wells, these data are used to characterize the interaction between the Santa Ana River and nearby groundwater.

### Hydraulic Control

In January 2004, the RWQCB amended the Basin Plan for the Santa Ana River Basin to incorporate an updated total dissolved solids (TDS) and nitrogen (N) management plan. The Basin Plan amendment incorporated both "antidegradation" and "maximum benefit" objectives for TDS and nitrate-N for the Chino-North and Cucamonga groundwater management zones (GMZs). The application of the "maximum benefit" objectives relies on Watermaster and IEUA's implementation of a specific program of projects and requirements, which are an integral part of the OBMP. On April 15, 2005, the RWQCB adopted resolution R8-2005-0064, thus approving the Surface Water Monitoring Program and Groundwater Monitoring Program in support of maximum benefit commitments in the Chino-North and Cucamonga GMZs.

One of the main maximum-benefit commitments is to achieve and maintain "hydraulic control" of the Chino Basin so that downstream beneficial uses of the Santa Ana River are protected. Hydraulic control is defined by the Basin Plan as the elimination of groundwater discharge from the Chino-North GMZ to the Santa Ana River or its reduction to a *de minimus* level. In October 2011, the RWQCB indicated that groundwater discharge in an amount less than 1,000 acre-feet per year would be considered *de minimus* by the RWQCB.

In 2012, the Basin Plan was amended to remove all references to the specific monitoring locations and sampling frequencies required for groundwater and surface water monitoring, thus allowing the program to be modified over time, with approval of the Executive Officer of the RWQCB. The Basin Plan amendment was approved by the RWQCB on February 12, 2012 and by the State Office of Administrative Law on December 6, 2012. This amendment was adopted based on demonstrations made by Watermaster and the IEUA showing that the surface water monitoring program, as included in the Basin Plan, was not meaningfully adding to the body of evidence required to demonstrate hydraulic control. In the place of specific monitoring requirements, the Basin Plan Amendment required that Watermaster and IEUA submit for approval by the Executive Officer a new surface water monitoring program work plan by February 25, 2012 and a new groundwater monitoring program work plan by December 31, 2013. In February 2012, Watermaster and the IEUA submitted, and the RWQCB approved, a new surface water monitoring program that reduced the 2004 monitoring program from bi-weekly water quality measurements at 17 sites and direct discharge measurements at six sites, to quarterly water quality sampling at two sites. The new work plan including these changes was adopted by the RWQCB in March 2012.

In December 2013, Watermaster and IEUA submitted an updated *Maximum Benefit Monitoring Program Work Plan and Proposed Schedule for Achieving Hydraulic Control* to the RWQCB. The updated Work Plan states that Watermaster and IEUA will recalibrate the Chino Basin groundwater model every five years and use the model to estimate groundwater discharge from Chino-North to the Santa Ana River (i.e. annual underflow past the CCWF) and determine whether hydraulic control has been achieved. The new Work Plan was adopted by the RWQCB in April 2014.

# Optimum Basin Management Program

## Program Element 1: Develop and Implement a Comprehensive Monitoring Program (Continued)

In January 2014, in a letter to IEUA and Watermaster, the RWQCB confirmed that the model results indicated that hydraulic control would be achieved under the projected range of CCWF pumping. The RWQCB also requested that by May 31, 2014, IEUA and Watermaster submit a plan and schedule to increase desalter production capacity from 32,000 to 40,000 acre-feet per year. IEUA and Watermaster submitted the plan and schedule to the RWQCB on May 30, 2014 to install three new wells—one well location being provisional. In June 2014, the RWQCB accepted the plan, but requested that the final well locations be submitted to the RWQCB by June 30, 2015.

During this reporting period, Watermaster measured 486 manual water levels at 81 private wells throughout the Chino Basin, conducted downloads at about a 100 wells containing pressure transducers, and collected 29 groundwater-quality samples and four surface-water quality samples.

### *Prado Basin Habitat Sustainability Monitoring Program*

A requirement of Mitigation Measure 4.4-3 from the Peace II SEIR is for Watermaster, IEUA and OCWD to develop an Adaptive Management Plan for the PBHSP. The objective of this plan is to ensure that the riparian habitat in Prado Basin is not adversely impacted by drawdown associated with the implementation of the Peace II activities. Sixteen monitoring wells at nine sites will be constructed as part of the monitoring program for the PBHSP. An Adaptive Management Plan will be developed which will describe an initial monitoring program and a process to modify the monitoring program and/or implement mitigation strategies, as necessary. During this reporting period, the PBHSP Committee continued to oversee the property acquisition and permitting for the monitoring wells, the Cone Penetration Testing at the nine well sites, the analysis of test results to assist with monitoring well design, and the preparation of the draft Adaptive Management Plan.

### *Chino Basin Groundwater Recharge Program*

Watermaster, IEUA, the Chino Basin Water Conservation District, and the San Bernardino County Flood Control District jointly sponsor the Chino Basin Groundwater Recharge Program. This is a comprehensive water supply program to enhance water supply reliability and improve the groundwater quality in local drinking water wells throughout the Chino Basin by increasing the recharge of storm water, imported water, and recycled water. The recharge program is regulated under RWQCB Order No. R8-2007-0039 and Monitoring and Reporting Program No. R8-2007-0039.

**Recharge Activities.** Ongoing recycled water recharge occurred in the Brooks, 8th Street, Turner, Victoria, San Sevaine, Ely, Hickory, RP-3, and Banana Basins this reporting period. Stormwater was recharged at 16 recharge basins across all management zones of the Chino Basin during this reporting period. No imported water was recharged this reporting period.

**Monitoring Activities.** Watermaster and IEUA collect weekly water quality samples from recharge basins that are actively recharging recycled water and from lysimeters installed within those recharge basins. During this reporting period, approximately 204 recharge basin and lysimeter samples were collected and 28 recycled water samples were collected for alternative monitoring plans that include the application of a correction factor for soil-aquifer treatment determined from each recharge basin's start-up period. Monitoring wells located down-gradient of the recharge basins were sampled quarterly at a minimum; however, some monitoring wells were sampled more frequently during the reporting period for a total of 98 samples.

**Reporting.** Watermaster and IEUA completed the following required reports concerning the recharge program during the reporting period:

- 2Q-2014 Quarterly Report, submitted to the RWQCB – August 2014
- 3Q-2014 Quarterly Report, submitted to the RWQCB – November 2014



Lower Day Basin



# Optimum Basin Management Program

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## Program Element 1: Develop and Implement a Comprehensive Monitoring Program (Continued)

### *Land Surface Monitoring*

In response to the occurrence of land subsidence in the City of Chino, the Watermaster prepared and submitted the MZ-1 Plan to the Court for approval and, in November 2007, the Court ordered its implementation (see Program Element 4: Develop and Implement a Comprehensive Groundwater Management Plan for Management Zone 1). The MZ-1 Plan calls for several monitoring and mitigation measures to minimize or abate the future occurrence of land subsidence and ground fissuring in the western Chino Basin. These measures and activities include:

- Continuing the scope and frequency of monitoring within the so-called Managed Area (southwest MZ-1) that was conducted during the period when the MZ-1 Plan was being developed.
- Expanding the monitoring of the aquifer system and land subsidence into other areas of MZ-1 and Chino Basin where the data indicate concern for future subsidence and ground fissuring.
- Monitoring of horizontal strain across the historical zone of ground fissuring.
- Evaluating the potential contribution of groundwater production in northern MZ-1 on conditions in southern MZ-1.
- Conducting additional testing and monitoring to refine the MZ-1 Guidance Criteria.
- Developing alternative pumping plans for the MZ-1 producers that are impacted by the MZ-1 Plan.
- Constructing and testing a lower-cost cable extensometer facility at Ayala Park.
- Evaluating and comparing ground-level surveying and Interferometric Synthetic Aperture Radar (InSAR), and recommending future monitoring protocols for both techniques.
- Conducting an aquifer storage recovery (ASR) feasibility study at a City of Chino Hills production well within the MZ-1 Managed Area (Well 16).
- Providing for recovery of groundwater levels in the MZ-1 Managed Area.

During the reporting period, Watermaster undertook the following activities called for in the MZ-1 Plan:

- The continuation of high-resolution water-level monitoring at wells within the Managed Area and across much of the western portion of Chino Basin. All monitoring equipment is inspected at least quarterly and is repaired and/or replaced as necessary. The data collected were checked and analyzed to assess the functionality of the monitoring equipment and for compliance with MZ-1 Plan.
- The continuation of monitoring and maintenance at the extensometer facilities at the Ayala Park, Chino Creek, and Daniels sites. The Daniels Horizontal Extensometer was repaired following flooding at the site.
- The collection of InSAR data from radar satellites during the reporting period, which will be analyzed for ground motion in early 2015.
- Assisting the City of Chino Hills in required quarterly reporting for its Department of Water Resources grant to support the ASR pilot test.

## Program Element 2: Develop and Implement a Comprehensive Recharge Program

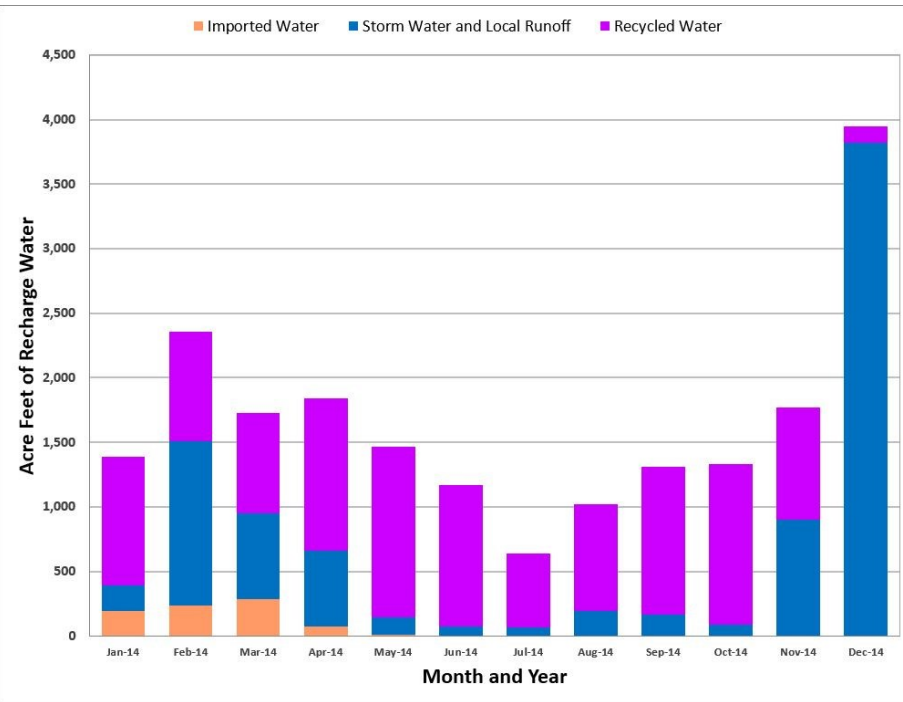
The average stormwater recharge of the Chino Basin Facilities Improvement Program facilities is approximately 13,000 acre-feet per year, the supplemental “wet”<sup>1</sup> water recharge capacity is approximately 60,600 acre-feet per year, and the in-lieu supplemental water recharge capacity ranges from 25,000 to 40,000 acre-feet per year. There is also a demonstrated well injection capacity of 5,600 acre-feet per year. Current total supplemental water recharge capacity ranges from 91,200 to 106,200 acre-feet per year which is greater than projected supplemental water recharge capacity required by Watermaster.

<sup>1</sup>The modifier “wet” means actual physical water is being recharged in spreading basins as opposed to the dedication of water from storage or in-lieu recharge.

# Optimum Basin Management Program

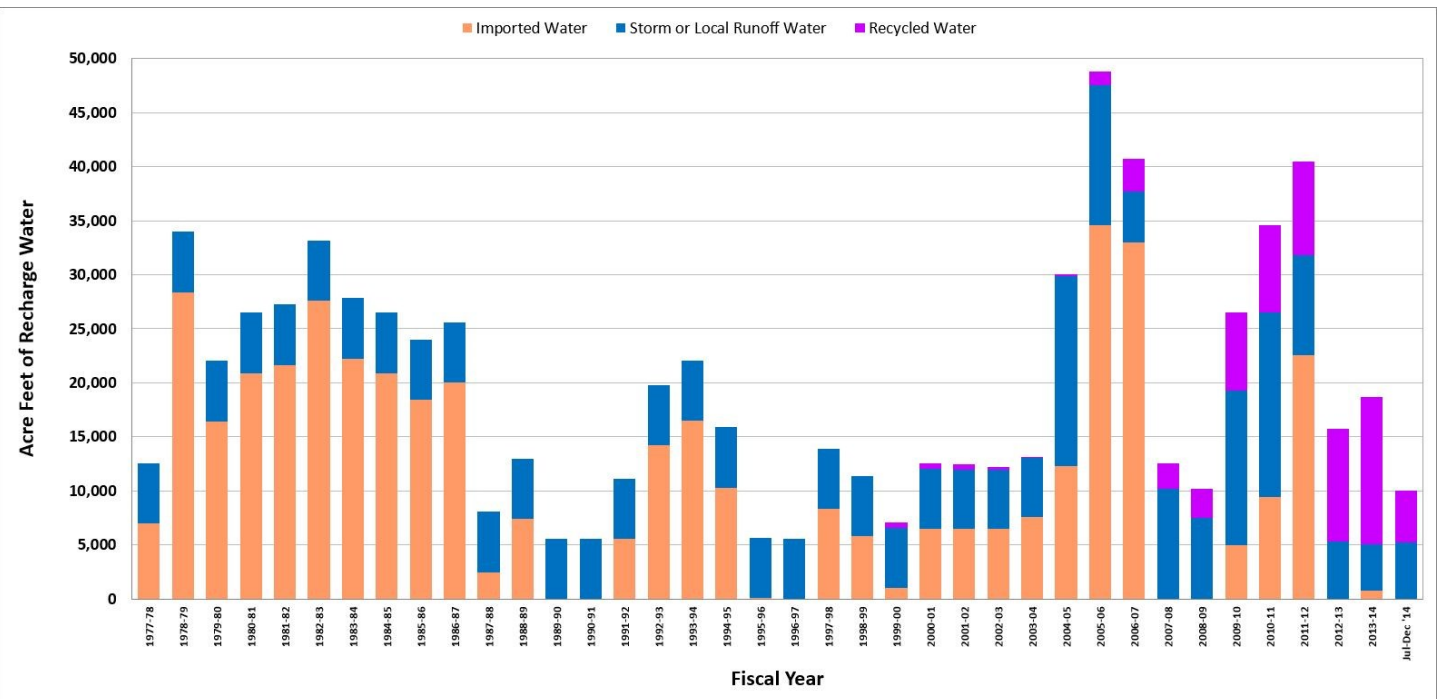
## Program Element 2: Develop and Implement a Comprehensive Recharge Program (Continued)

Stormwater recharge during this reporting period was approximately 5,235 acre-feet. Recycled water recharge during this reporting period was approximately 4,781 acre-feet. No imported water was recharged during this reporting period. The IEUA and Watermaster recharge permit was amended in fiscal year 2009/10 to allow for underflow dilution and extended the dilution period from a running 60 months to a running 120 months. The significance of this permit amendment was to reduce the amount of imported and storm waters required for dilution. IEUA projects that dilution requirements will likely be met through 2019/20, even if no imported water were available for dilution.



The total amount of supplemental water recharged in MZ-1 since the Peace II Agreement through June 30, 2014 was approximately 44,446 acre-feet, which is slightly less than the 45,500 acre-feet required by June 30, 2014 (annual requirement of 6,500 acre-feet): the shortfall of 1,054 acre-feet was recharged in MZ-1 during the first half of fiscal year 2014/15. The amount of supplemental water recharged into MZ-1 during the reporting period was approximately 511 acre-feet.

Watermaster and IEUA continued work on the Turner Basins/Guasti Park Recharge Expansion Project in MZ-2. Following completion, anticipated in 2015, the expansion project is projected to recharge an additional 300 acre-feet of storm runoff annually. Watermaster and IEUA meet monthly on the Turner Basins/Guasti Park, Wineville Basin and other projects that are currently in a phase of design and construction.



# Optimum Basin Management Program

## Program Element 2: Develop and Implement a Comprehensive Recharge Program (Continued)

Pursuant to the October 2013 Court Order authorizing Watermaster and IEUA to implement the 2013 RMPU, Watermaster and IEUA have begun implementation of the 2013 RMPU. During the reporting period, Watermaster and IEUA continued a process to develop agreements to construct the storm and supplemental water recharge projects listed in Table 8-2c of the 2013 RMPU, prioritize the construction of these projects relative to the availability of grant funding, and to plan subsequent implementation. Watermaster and IEUA meet monthly to review progress and advance implementation.

During the reporting period, Watermaster and IEUA continued to develop a series of projects outside of the 2013 RMPU effort that will increase stormwater and supplemental water recharge and have jointly agreed to fund these projects. Watermaster and IEUA staffs meet monthly to implement and monitor the progress of these projects. Watermaster's share of the cost of these projects was included in the budget adopted by Watermaster for fiscal year 2014/15.

Watermaster continued work on the 2013 RMPU and is in the process of finalizing agreements with IEUA on their joint projects. The Recharge Master Plan Update Steering Committee continues to meet quarterly on the progress of implementing the 2013 RMPU Projects.

## Program Element 3: Develop and Implement Water Supply Plan for the Impaired Areas of the Basin; and

## Program Element 5: Develop and Implement Regional Supplemental Water Program

The Chino I Desalter Expansion and the Chino II Desalter facilities were completed in February 2006. As currently configured, the Chino I Desalter produces about 13,500 acre-feet per year (12.1 million gallons per day [MGD]) of groundwater at 15 wells (I-1 through I-15) that is treated through air stripping (VOC removal), ion exchange (nitrate removal), and/or reverse osmosis (for nitrate and TDS removal). The Chino II Desalter produces about 15,800 acre-feet per year (14.1 MGD) of groundwater at eight wells (II-1 through II-4 and II-6 through II-9) that is treated through ion exchange and/or reverse osmosis.

Development and planning continues between the CDA and Watermaster to expand the production and treatment capacity of the Chino Desalters by about 10,500 acre-feet per year (9.5 MGD). More than \$70 million in grant funds have been secured toward this expansion. The most recent expansion project completed includes the construction of five wells for the new CCWF (wells I-16, I-17, I-18, I-20 and I-21), which were required to meet the hydraulic control commitment associated with maximum benefit, and will provide additional raw water to the Chino I Desalter. Construction of the raw water pipelines from Wells I-16, I-17 and I-18 is complete, and production at wells I-16 and I-17 began in mid-2014. Well I-18 is currently not planned for operation due to high VOC concentrations. A nine-month pilot test for a treatment system for removal of TCE, 1,2,3-trichloropropane, and nitrate is planned through mid-2015. Equipping of wells I-20 and I-21, and subsequently production, is planned to begin in late-2015. Three additional wells are being planned for construction to provide raw water to the Chino I Desalter; these wells are required



Chino II Desalter Facility

to meet the maximum-benefit commitment to produce a total 40,000 acre-feet per year from the combined desalter well fields. This amount was determined in the OBMP Phase I report as the production necessary to maintain hydraulic control. Watermaster and the IEUA coordinated with CDA to develop a plan to achieve the 40,000 acre-feet per year of desalter production and submitted a preliminary plan to the RWQCB on May 30, 2014. The location of two of the wells has been determined, and the location for a third well is still being evaluated. Property acquisition for the two known well sites is in progress.

# Optimum Basin Management Program

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## Program Element 4: Develop and Implement a Comprehensive Groundwater Management Plan for Management Zone 1

### *MZ-1 Management Plan*

Because of the historical occurrence of pumping-induced land subsidence and ground fissuring in southwestern Chino Basin (southern MZ-1), the OBMP called for the development and implementation of an Interim Management Plan (IMP) for MZ-1 that would:

- Minimize subsidence and fissuring in the short-term,
- Collect information necessary to understand the extent, rate, and mechanisms of subsidence and fissuring, and
- Formulate a management plan to reduce to tolerable levels or abate future subsidence and fissuring.

From 2001-2005, Watermaster developed, coordinated, and conducted an IMP under the guidance of the MZ-1 Technical Committee. The investigation provided enough information for Watermaster to develop Guidance Criteria for the MZ-1 producers in the investigation area that, if followed, would minimize the potential for subsidence and fissuring during the completion of the MZ-1 Plan. The Guidance Criteria included a listing of Managed Wells and their owners subject to the criteria, a map of the so-called Managed Area, and an initial threshold water level (Guidance Level) of 245 feet below the top of the PA-7 well casing. The MZ-1 Summary Report and the Guidance Criteria were adopted by the Watermaster Board in May 2006. The Guidance Criteria formed the basis for the MZ-1 Plan, which was approved by Watermaster in October 2007. The Court approved the MZ-1 Plan in November 2007 and ordered its implementation.

During this reporting period, Watermaster continued implementation of the MZ-1 Plan. Water levels at the PA-7 piezometer stayed above the Guidance Level during the reporting period, and very little, if any, permanent compaction was recorded at the Ayala Park Extensometer. The ongoing monitoring program called for by the MZ-1 Plan continued to be implemented.

Pursuant to the MZ-1 Plan, Watermaster staff and consultants prepared the final 2013 Annual Report of the LSC. In addition, the MZ-1 Plan states that if data from existing monitoring efforts in the so-called Areas of Subsidence Concern indicate the potential for adverse impacts due to subsidence, Watermaster will revise the MZ-1 Plan pursuant to the process outlined in Section 3 of the MZ-1 Plan. During this reporting period, Watermaster prepared an outline for the update to the MZ-1 Plan and a draft Work Plan to Develop the Subsidence Management Plan for the Northwest MZ-1 Area.

The LSC met in July, September, October, and December 2014. The following was discussed at these meetings:

- The 2013 Annual Report of the LSC was reviewed, and was forwarded to the Pools for review.
- Watermaster staff and consultants provided an update on the ongoing monitoring and testing program in the Areas of Subsidence Concern.
- Watermaster staff and consultants provided a draft outline for an update to the current Subsidence Management Plan (MZ-1 Plan) for review by the LSC.
- Watermaster staff and consultants provided a “straw-man” process to develop the subsidence management plan for the Northwest MZ-1 Area.
- Watermaster staff and consultants provided exhibits from the draft work plan to develop the subsidence management plan for the Northwest MZ-1 Area.
- Watermaster approved a budget amendment of \$100,000 to finalize the work plan for the Northwest MZ-1 Area and to update the Chino Basin Subsidence Management Plan.

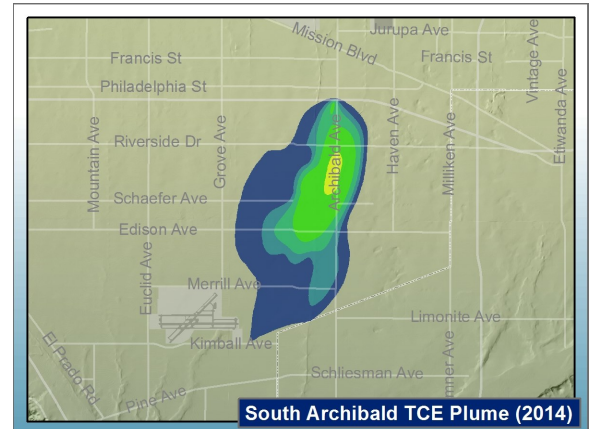


# Optimum Basin Management Program

## Program Element 6: Develop and Implement Cooperative Programs with the Regional Water Quality Control Board, Santa Ana Region and Other Agencies to Improve Basin Management; and Program Element 7: Develop and Implement a Salt Management Program

### South Archibald Plume

In July 2005, the RWQCB prepared draft Cleanup and Abatement Orders (CAOs) for seven parties who were tenants on the Ontario International Airport (OIA) with regard to the South Archibald (trichloroethene [TCE]) Plume. The draft CAOs required the parties to “submit a work plan and time schedule to further define the lateral and vertical extent of the TCE and related volatile organic compounds (VOCs) that are discharging, have been discharged, or threaten to be discharged from the site” and to “submit a detailed remedial action plan, including an implementation schedule, to cleanup or abate the effects of the TCE and related VOCs.” Four of the parties (Aerojet, Boeing, General Electric [GE], and Lockheed Martin) voluntarily formed a group (known as ABGL) to work jointly on a remedial investigation. Northrop Grumman declined to participate in the group. The US Air Force, in cooperation with the US Army Corps of Engineers, funded the installation of one of the four clusters of monitoring wells installed by ABGL.



In 2012, an additional draft CAO was issued by the RWQCB jointly to the City of Ontario, the City of Upland, and IEUA for the operation of the treatment plant currently known as RP-1, and associated disposal areas where wastewater from the previously identified PRPs that may have contained TCE was treated and discharged. In part, the draft CAOs require the parties to “supply uninterrupted replacement water service...to all residences south of Riverside Drive that are served by private domestic wells at which TCE has been detected at concentrations at or exceeding 5 µg/L...” and to report this information to the RWQCB. In addition, the parties are to “prepare and submit [a] ...feasibility study” and “prepare, submit and implement the Remedial Action Plan” to mitigate the “effects of the TCE groundwater plume.”

Upon the direction of the RWQCB, sampling at residential taps in the affected area has been conducted approximately every two years (2007-2008, 2009, 2011, 2013-2014). Several parties recently conducted additional sampling at private water supply wells in the area of the plume, and submitted the results of this sampling to the RWQCB in October 2013 and May 2014. With the completion of this work, all wells in the area of the plume have been sampled at least once. Alternative water systems (tanks) have been installed at residences in the area where well water contains TCE at or above 80% of the MCL for TCE. Residents who declined tank system are being provided bottled water. Watermaster also routinely samples for water quality at private wells in the area, and uses data obtained from this monitoring to delineate the plume.

The RWQCB has indicated that many of the potential responsible parties issued Draft CAOs will work together to prepare a remedial action feasibility study. Discussions among those parties are ongoing to resolve details about how to proceed with that work. Many of the parties are also pursuing various grant funding opportunities to develop a remediation strategy that is long-term, regional, and mutually beneficial to the Chino Basin. This includes the existing applications submitted to the United States Bureau of Reclamation.

### Chino Airport

The County of San Bernardino, Department of Airports is working under RWQCB CAO No. R8-2008-0064, which requires the County to define the lateral and vertical extent of the plume and prepare a remedial action plan. Beginning in 2007, Tetra Tech, the consultant to the County, conducted several off-site plume characterization studies to delineate the areal and vertical extent of the plume. Since 2003, the County has conducted quarterly monitoring events at their monitoring wells. Conclusions from this monitoring program can be found in reports posted on the RWQCB’s GeoTracker website. In November 2014, Tetra Tech submitted the *Semiannual Groundwater Monitoring Report, Winter and Spring 2014, Chino Airport Groundwater Assessment, San Bernardino County, California*.

Watermaster has also collected samples from dedicated monitoring wells and private wells in and around the Chino Airport plume area. Watermaster has also used its calibrated groundwater model to estimate cleanup times and contaminant concentrations in the CCWF. This work will be updated, given new information about the extent of contamination, subsurface hydrogeology, well performance, and the need for habitat sustainability in the Prado Basin.

# Optimum Basin Management Program

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## **Program Element 6: Develop and Implement Cooperative Programs with the Regional Water Quality Control Board, Santa Ana Region and Other Agencies to Improve Basin Management; and Program Element 7: Develop and Implement a Salt Management Program (Continued)**

In October 2013, the RWQCB approved a Work Plan for Tetra Tech to conduct field work for additional characterization of contamination in soil and groundwater associated with the Chino Airport. On September 18, 2014 the results of all the site characterization activities performed to date per the Work Plan were presented to the RWQCB. Following the meeting, an Addendum to the Work Plan was submitted, which outlined the plan to install several multi-port groundwater monitoring wells and perform additional depth-discrete groundwater sampling at the VAP borings. In December 2014, a remedial investigation report was submitted to the RWQCB describing the results of the soil investigation activities performed at the Airport during 2013 and 2014 per the Work Plan. A report describing the results of the groundwater investigations performed in 2014 per the Work Plan, the installation and sampling of all groundwater monitoring wells per the 2014 Work Plan Addendum, and the current plume characterization, is due to the RWQCB by April 30, 2015.

### *Other Water Quality Issues*

Watermaster continues to track monitoring programs and mitigation measures associated with other point sources in the Chino Basin, including: Alumax Aluminum Recycling, Crown Coach, GE Test Cell and Flatiron, Kaiser Steel, Milliken Landfill, Upland Landfill, and the Stringfellow National Priorities List sites.

## **Program Element 8: Develop and Implement a Groundwater Storage Management Program; and Program Element 9: Develop and Implement a Storage and Recovery Program**

Groundwater storage is important to the Chino Basin. Watermaster has committed to investigate the technical and management implications of Local Storage Agreements, improve related policies and procedures, and then revisit all pending Local Storage Agreement applications.

The existing Watermaster/IEUA/MWDSC/Three Valleys Municipal Water District (TVMWD) Dry-Year Yield (DYY) program continued during the reporting period. By April 30, 2011, all DYY program construction projects and a full “put” and “take” cycle had been completed, leaving the storage account with a zero balance. During the reporting period no water was stored or withdrawn from storage in the DYY Program.

### *Safe Yield Redetermination*

The Basin’s Safe Yield was initially set by the Judgment at 140,000 acre-feet per year. The Safe Yield was based in part on the hydrology of the period 1965 through 1974. Pursuant to the Judgment, the Chino Basin Safe Yield is to be re-determined periodically, but provides that the Safe Yield would not be reexamined for at least ten years from 1978. The Safe Yield has not been reevaluated since the time of the Judgment. Pursuant to the OBMP Implementation Plan and Watermaster’s Rules and Regulations, in year 2010/11 and every ten years thereafter, Watermaster is to compute the Safe Yield based in part on the information obtained in the prior ten-year period and reset the Safe Yield for the next ten-year period.

In 2011, Watermaster authorized Watermaster staff to compile the data necessary to recalculate Safe Yield and update its computer model of the Basin and based on the information developed from the data and the model to recalculate the Safe Yield. The model calibration was completed in 2012, and evaluation of the Safe Yield began in 2013. This effort continues. During this reporting period, Watermaster staff developed estimates of the Safe Yield based on present and future expected cultural conditions and reported on this work at the July Watermaster process meetings; and presented this information in great detail at a special September 16, 2014 Watermaster Board workshop. Based on the work by Watermaster staff, and discussions following the September 2014 Board workshop and at the recommendation of the Advisory Committee, the Watermaster Board advised the parties to enter into a facilitated process to develop an agreement to implement the recalculated Safe Yield.