

# Optimum Basin Management Program

## Staff Status Report 2013-1: January to June 2013



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. During this reporting period, the Technical Specifications, the Sampling and Analysis Plan, and the Health and Safety Plan were prepared for the cone penetrometer test (CPT) and monitoring well installation. IEUA continued property acquisition efforts for the nine monitoring well sites. The bidding process began for contractors to perform the CPT and well installation. Development of the Adaptive Management Plan began.
- Watermaster continued work on the 2013 Amendment to the 2010 Recharge Master Plan (2013 RMPU). The Recharge Master Plan Update Steering Committee (Steering Committee) met twice per month to complete sections of the 2013 RMPU. Sections 5, 6, and 7 of the Amendment were completed and approved by Watermaster during this period.
- Watermaster and IEUA jointly identified a series of recharge projects outside of the 2013 RMPU effort, and jointly agreed to fund these projects. Watermaster and IEUA staff started meeting monthly to plan these projects. Watermaster's share of the cost of these projects was included in the budget adopted by Watermaster for fiscal year 2013/14. Watermaster and IEUA continue to work together toward the creation of a fifth retention facility at the Turner Basin. Following completion, anticipated in 2015, the expansion project is projected to recharge an additional 300 AF of storm runoff annually. Watermaster and IEUA planned the Wineville Basin proof-of-concept investigation during the reporting period. The proof-of-concept investigation was designed to determine the effective infiltration rate in the Wineville Basin that in turn can be used to estimate the long-term average annual stormwater recharge.
- A right of entry agreement was entered into with the California Institution for Men (CIM) to allow Watermaster to continue monitoring wells on the CIM property that were otherwise planned to be destroyed.
- During this reporting period, approximately 2,088 acre-feet of stormwater and 7,017 acre-feet of recycled water were recharged; no imported water was recharged. During the entire fiscal year, approximately 5,298 acre-feet of stormwater and 10,479 acre-feet of recycled water were recharged; no imported water was recharged.

### Important Court Hearings and Orders

- JUNE 17, 2013- NOTICE OF ORDER RE JUDGE AND FILE LOCATION

## 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 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 Basin. 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.

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

The current groundwater-level monitoring program is comprised of about 1,000 wells. At about 800 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 approximately 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 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 111 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 Archibald South (formerly OIA) volatile organic compound (VOC) plume, the southern region of the Chino Airport Plume, and the Kaiser Steel 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 USGS National Water Quality Assessment Program (NAWQA) wells (Archibald 1 and Archibald 2), and two wells owned by the Santa Ana River Water Company (Well 9 and Well 11).
4. A cooperative basin-wide data-collection effort known as the Chino Basin Data Collection (CBDC) program, which relies on municipal producers and other government agencies to supply groundwater-quality data on a cooperative basis. These sources include the Appropriators, Department of Toxic Substance Control (DTSC), Regional Water Quality Control Board (RWQCB), US Geological Survey (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.

A right of entry agreement was entered into with the California Institution for Men (CIM) during this reporting period to allow Watermaster to continue monitoring groundwater level and groundwater quality from wells on the CIM property that were otherwise planned to be destroyed.

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## 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 continually measure the quantity of storm and supplemental water entering the 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.

**Surface Water Monitoring in the Santa Ana River (SAR).** 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. These data are also combined with discharge data from permanent USGS stream gauges, discharge data from publicly owned treatment works (POTWs), and groundwater modeling to assess the state of hydraulic control.

### Hydraulic Control

In January 2004, the RWQCB amended the Water Quality Control Plan (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 includes both "antidegradation" and "maximum benefit" objectives for TDS and nitrate-nitrogen for the Chino-North and Cucamonga groundwater management zones. 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 and Cucamonga Basins.

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 Management Zone 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-ft/yr would be considered *de minimus*.

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.

During this reporting period, Watermaster measured 480 manual water levels at 83 private wells throughout the Chino Basin, conducted downloads at 99 wells containing pressure transducers, and collected 8 groundwater quality samples and 4 surface water quality samples.

### Prado Basin Habitat Sustainability 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 Prado Basin Habitat Sustainability Program (PBHSP). The objective of this plan is to ensure that the riparian

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

habitat in Prado Basin is not adversely impacted by drawdown associated with the implementation of the Peace II activities. Seventeen monitoring wells at nine sites will be constructed as part of the monitoring program for the PBHSP.

During this reporting period, the Technical Specifications, the Sampling and Analysis Plan, and the Health and Safety Plan were prepared for the CPT and monitoring well installation. The initial site walk at potential well sites was held on January 22, 2013. IEUA continued property acquisition efforts for the nine monitoring well sites. The bidding process began for contractors to perform the CPT and well installation. Development of the Adaptive Management Plan began.

### *Chino Basin Groundwater Recharge Program*

Watermaster, IEUA, the Chino Basin Water Conservation District (CBWCD), and the San Bernardino County Flood Control District (SBCFCD) 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, 7th Street, 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 38 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 99 samples.

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

- 4Q-2012 Quarterly Report, submitted to the RWQCB – February 2013
- 1Q-2013 Quarterly Report, submitted to the RWQCB – May 2013
- 2012 Annual Report, submitted to the RWQCB – May 2013

### *Land Surface Monitoring*

In response to the occurrence of land subsidence in the City of Chino, the Watermaster prepared and submitted the MZ-1 Subsidence Management (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.

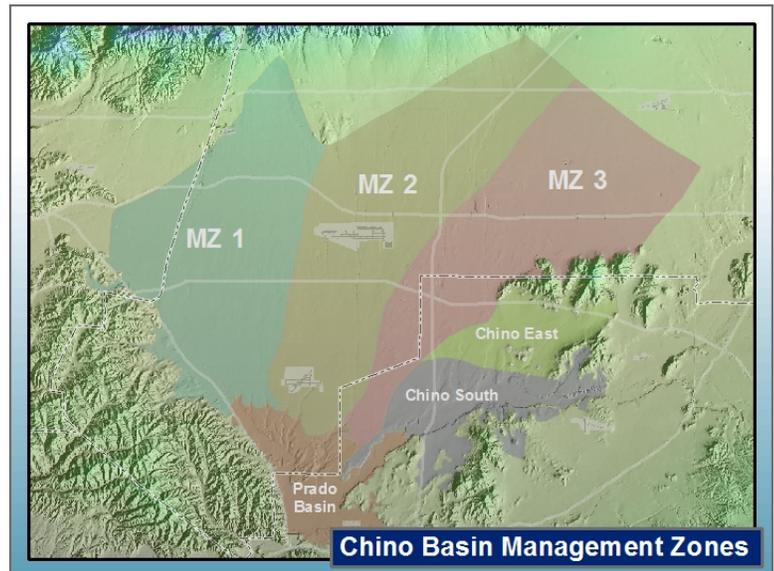
# Optimum Basin Management Program

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

- 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 ASR (aquifer storage recovery) 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 detailed 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 including: Ayala Park, Chino Creek, and Daniels sites.
- The collection of InSAR data from radar satellites in January, April and June, 2013, which will be analyzed for ground motion in early 2014.
- Assisted the City of Chino Hills in required quarterly reporting for its DWR grant to support the ASR pilot test.



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

The average stormwater recharge is approximately 10,000 acre-feet/yr (AFY), the supplemental “wet” water recharge capacity is approximately 60,600 AFY, and the in lieu supplemental water recharge capacity ranges from 25,000 to 40,000 AFY. There is also a demonstrated well injection capacity of 5,600 AFY. Current total supplemental water recharge capacity ranges from 91,200 to 106,200 AFY, which is greater than projected supplemental water recharge capacity required by Watermaster.

Stormwater recharge during this reporting period was approximately 2,088 AF. Recycled water recharge during this reporting period was approximately 7,017 AF. 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 stormwater 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, 2013 was approximately 41,710 AF, which exceeds the 39,000 AF required by June 30, 2013 (annual requirement of 6,500 AF). The amount of supplemental water recharged into MZ-1 during the reporting period was approximately 2,722 AF.

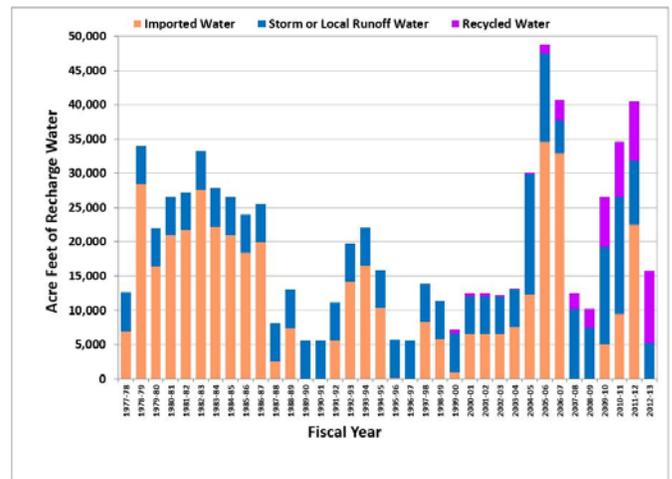
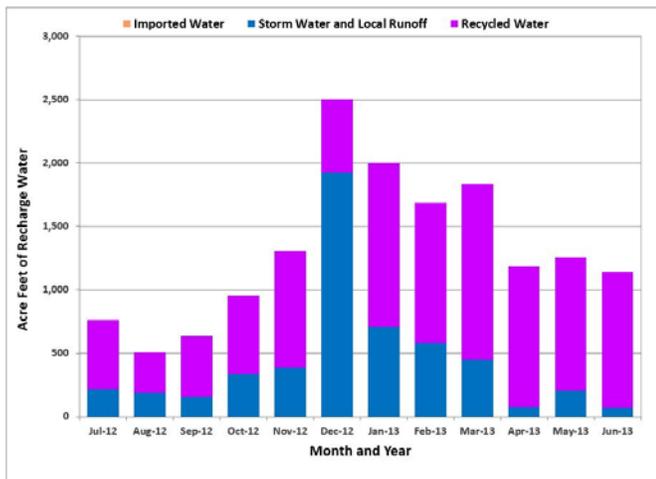
Watermaster and IEUA continued work on the Turner Basins/Guasti Park Recharge Expansion Project in MZ-2. Following completion, anticipated in 2015, the expansion project is projected to recharge an addition 300 AF of storm runoff annually. Watermaster and IEUA planned the Wineville Basin proof-of-concept investigation during the reporting period. The proof-of-concept investigation is

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

designed to determine the effective infiltration rate in the Wineville Basin that in turn can be used to estimate the long-term average annual stormwater recharge. Also during the reporting period, Watermaster and IEUA jointly identified 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 staff's started meeting monthly to plan these projects. Watermaster's share of the cost of these projects was included in the budget adopted by Watermaster for fiscal year 2013/14.

Watermaster continued work on the 2013 Amendment to the 2010 Recharge Master Plan (2013 RMPU). The Recharge Master Plan Update Steering Committee (Steering Committee) met twice per month to complete the 2013 RMPU. During this period, the following sections of the Amendment were completed and approved by Watermaster: 5-Monitoring, Reporting, and Accounting Practices to Estimate Long-Term Average Annual Net New Stormwater Recharge; 6-Recharge Options to Improve Yield and Assure Sustainability; and 7-Evaluation Criteria.



## 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

Construction of the Chino I Desalter Expansion and the Chino II Desalter facilities was completed in February 2006. As currently configured, the Chino I Desalter provides 2.6 million gallons per day (MGD) of treated (air stripping for VOC removal) water from Well Nos. 1-4, 4.9 MGD of treated (ion exchange for nitrate removal) water from Well Nos. 5-15, and 6.7 MGD of treated (reverse osmosis for nitrate and TDS removal) water from Well Nos. 5-15 for a total of 14.2 MGD (15,900 AFY). The Chino II Desalter provides 4.0 MGD of ion exchange treated water and 6.0 MGD of reverse osmosis treated water from eight additional wells for a total of 10.0 MGD (11,200 AFY).

Planning continued between the Chino Desalter Authority (CDA) and Western Municipal Water District (WMWD) to expand the Chino II Desalter by 10.5 MGD (11,800 AFY). Raw water will be drawn from existing CDA II wells, and possible additional new wells, if needed. In addition, a new Chino Creek Desalter Well Field, required for the hydraulic control commitment associated with Maximum Benefit, will provide additional raw water to the Chino I Desalter, enabling some existing wells to direct production to the expanded Chino II Desalter facility. Watermaster and the CDA demonstrated continued progress on the project schedule RWQCB approved by the RWQCB in June 2010, which calls for completion of the expansion in 2015. Existing design contracts for pipeline, well and pump facilities continue to lead toward task and eventual project completion.

In June 2012, the WMWD was awarded a \$51 million state grant from the California Department of Health for the desalter expansion project. To date, more than \$70 million in grant funds have been secured toward this expansion project.

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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 Interim Monitoring Program (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. Drawdown 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 continues to be implemented. Watermaster staff and consultants prepared a draft of the 2012 Annual Report of the Land Subsidence Committee.

The Land Subsidence Committee met in March 2013. Watermaster staff and consultants provided an update on the ongoing monitoring and testing program in the MZ-1 Managed Area, on the ASR pilot test at Chino Hills Well 16, and on the recent data collected from the newly-installed extensometer at the Chino Creek Well Field. In addition, the Committee prepared a scope of work and cost-estimate for the program for fiscal year 2013/14.

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

### *Archibald South 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 Archibald South (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 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, the RWQCB issued a draft CAO to the City of Ontario, the City of Upland, and IEUA concerning the former Ontario-Upland Sewage Treatment Plant (Regional Recycling Plant No. 1), located in the City of Ontario. The draft CAO states that these parties are “responsible parties subject to this Order because, as the former and current owners and operators of the WWTP and disposal areas, they are responsible for discharge of wastes that resulted in the presence of TCE in groundwater down-gradient of the WWTP and disposal areas.” In part, the draft CAO requires 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.”

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

Upon the direction of the Regional Board, sampling at residential taps in the affected area has been conducted approximately every two years (2007-2008, 2009, 2011). 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 Regional Board 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.

### *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 Regional Board's GeoTracker website.

Watermaster has also collected samples from dedicated monitoring wells and private wells in and around the Chino Airport plume area. The County and Watermaster have been sharing these investigation data so that both parties can utilize a robust data set for plume characterization. Watermaster has used its calibrated groundwater model to estimate cleanup times and contaminant concentrations in the Chino Creek Well Field (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.

In 2012, Tetra Tech installed groundwater monitoring well clusters (at least two wells per location) at seven locations, and submitted a VOC Plume Characterization and Monitoring Well Installation Report in January 2013 (revised March 2013). In May 2013, Tetra Tech submitted a Historical Site Assessment Report identifying on-site areas of concern at the Airport. Additional work expected to be completed in 2013 includes the preparation of a work plan for additional on-site characterization of the Airport property. The County has not yet performed any groundwater remediation activities.

### *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, the California Institute for Men, 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**

Recent events demonstrate the importance of groundwater storage 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 applications of Local Storage Agreements.

The existing Watermaster/IEUA/MWDSC/Three Valley 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. No water has been placed into the DYY account since that time. Watermaster, IEUA, TVMWD, and MWDSC are negotiating potential amendments to the current contract.