

Optimum Basin Management Program 2020 Implementation Plan

Introduction

This document describes the implementation plan for the 2020 Update to the Chino Basin Optimum Basin Management Program (2020 OBMP). This implementation plan builds on and replaces the 2000 OBMP Implementation Plan attached to the Peace Agreement and its 2007 Supplement attached to the Peace II Agreement.

Nine program elements (PEs) were initially defined and scoped by the Chino Basin stakeholders during the development of the 2000 OBMP, as documented in the Phase 1 OBMP Report dated August 1999. The 2020 OBMP comprises the same nine PEs defined for the 2000 OBMP:

Program Element 1 – Develop and Implement Comprehensive Monitoring Program

Program Element 2 – Develop and Implement Comprehensive Recharge Program

Program Element 3 – Develop and Implement a Water Supply Plan for Impaired Areas

Program Element 4 – Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1

Program Element 5 – Develop and Implement Regional Supplemental Water Program.

Program Element 6 – Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management

Program Element 7 – Develop and Implement Salt Management Plan

Program Element 8 – Develop and Implement Groundwater Storage Management Program

Program Element 9 – Develop and Implement Storage and Recovery Programs

The development of the 2020 OBMP Update is described in detail in the *2020 Optimum Basin Management Program Update Report (2020 OBMP Update Report)*. As was done in 1998, Watermaster convened a stakeholder process to update the OBMP. Through this process, it became apparent that the PEs defined in the 2000 OBMP are still relevant as the overarching PEs of a program for optimum basin management. Each PE and its associated implementation actions for the next 20-year period are described in the following sections.

<<PLACEHOLDER TO INSERT PEACE AGREEMENT PARAGRAPH SIMILAR TO 2000 OBMP IP. TO BE COMPLETED AFTER PLAN AND AGREEMENT FINALIZED BY PARTIES>>

Program Element 1 – Develop and Implement Comprehensive Monitoring Program.

The 2000 OBMP included PE 1 to provide the information necessary to support the implementation of all other OBMP PEs and to evaluate their performance. Pursuant to the 2000 OBMP Implementation Plan, long-term have been developed, implemented, and updated as necessary. 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, enable rapid response to data requests by the Parties and other entities, and include standardized reports and data exports in formats for regulatory data deliverables or further analysis (e.g. creation of model input files).

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. Exhibit 1 lists each of Watermaster's monitoring and reporting requirements as of 2019 and identifies the entity requiring the program. The types of monitoring that are performed pursuant to the monitoring and reporting requirements include:

- Groundwater-production monitoring
- Groundwater-level monitoring
- Groundwater-quality monitoring
- Surface-water and climate monitoring
- Ground-level monitoring
- Biological monitoring
- Water-supply and water-use monitoring
- Planning information
- Well construction, abandonment, and destruction

The 2020 OBMP Update Report describes the status of the monitoring efforts for each monitoring type as of 2019. The monitoring programs will continue to evolve to address changed conditions over time. Many of the periodic reports prepared for the various monitoring program requirements contain updated descriptions of the monitoring programs.

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The ongoing objective of PE 1 is to collect the data and information necessary to continue 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. Watermaster maintains a list of each of the monitoring program requirements (Exhibit 1) and evaluates the programs annually as part of its budgeting process to revise the scope of work as necessary to: ensure the monitoring meets the minimum requirements, eliminate redundancies, and introduce other efficiencies.

The implementation actions and general schedule are:

Years 1 through 3 (FY 2020/21 through 2022/23)

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

Years 4 through 20 (FY 2023/24 through 2039/40)

- Watermaster will continue to conduct the required monitoring and reporting programs pursuant to the *OBMP Monitoring and Reporting Work Plan* (or other guidance documents developed by Watermaster).

- Perform periodic review and update of the *OBMP Monitoring and Reporting Work Plan* (or other guidance documents developed by Watermaster) and modify the monitoring and reporting programs, as appropriate.

Program Element 2 – Develop and Implement Comprehensive Recharge Program

The 2000 OBMP included PE 2 to reverse the loss of yield caused by urbanization and the concrete lining of natural streams overlying the Chino Basin. PE 2 was also meant to ensure that there will be enough supplemental water recharge capacity available to Watermaster to meet Replenishment Obligations. Section 5.1 of the Peace Agreement describes Watermaster performance of actions, programs, and procedures to accomplish Recharge and Replenishment.

Pursuant to the Peace Agreement and the criteria defined in 2000 OBMP Implementation Plan, the following agreement was executed by the Chino Basin Watermaster, the Chino Basin Water Conservation District (CBWCD), Inland Empire Utilities Agency (IEUA), the San Bernardino County Flood Control District (SBCFCD) to jointly implement the comprehensive recharge program:

Agreement for Operation and Maintenance of Facilities to Implement the Chino Basin Recharge Master Plan. Dated January 23, 2003.

The 2000 OBMP implementation Plan defined for PE 2 was to continue the recharge master plan study initiated by Watermaster and the Chino Basin Water Conservation District in 1998, followed by the preparation of a recharge master plan update (RMPU) at least every five years. The *2001 Recharge Master Plan* and subsequent RMPUs (2010, 2013, and 2018) were developed in open planning processes that were convened by Watermaster through various ad-hoc committees. In 2013, the Recharge Investigations and Projects Committee (RIPComm) was formed to assist Watermaster and the IEUA in the ongoing development and implementation of the RMPUs. The RIPComm is open to all interested stakeholders.

The outcomes of the 2001 Recharge Master Plan and subsequent RMPUs are summarized below:

- **2001 Recharge Master Plan:** The recharge improvements selected for implementation from the 2001 RMP were referred to the Chino Basin Facilities Improvement Program (CBFIP). Watermaster, in collaboration with the IEUA, constructed this first round of recharge improvements to exercise its rights pursuant to its diversion permits, increasing average annual stormwater recharge by about 9,500 acre-feet per year (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 (**DATE**), 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:** A key finding was that Watermaster has enough supplemental water recharge capacity to it meet its Replenishment Obligations via wet-water recharge through 2050. Thus, the 2018 RMPU did not recommend any new recharge projects.

In the first 20 years of OBMP implementation, stormwater recharge will have increased by about 14,150 afy, and supplemental water recharge capacity will have increased by about 27,600 afy. Future RMPUs will continue to evaluate opportunities to increase and maximize recharge to meet Watermaster obligations and the needs of the Parties. During the scoping phase of each five-year update, the economic and physical criteria used to evaluate and select projects will need to be reevaluated based on the objectives of the stakeholders.

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The ongoing 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. This will be evaluated and accomplished through the RMPU process. Maximizing recharge. The next RMPU is due to the Court by October 2023 and must be updated no less frequently than every five years thereafter.

Pursuant to the 2003 agreement, Watermaster, CBWCD, IEUA, and SBCFCD cooperate in conducting recharge in the Chino Basin and are jointly responsible for the implementation of PE 2. Section 5.1 of the Peace Agreement describes the actions and procedures Watermaster must perform with regards to recharge and replenishment of the Basin. The implementation actions and general schedule are:

Years 1 through 3 (FY 2020/21 through 2022/23)

- Continue to convene the Recharge Investigations and Projects Committee.
- Complete the 2023 Recharge Master Plan Update (RMPU).

Years 4 through 20 (FY 2023/24 through 2039/40)

- Implement recharge projects based on need and available resources.
- Continue to convene the Recharge Investigations and Projects Committee.
- Update the RMPU no less than every five years (2028, 2033, 2038).

Program Element 3 – Develop and Implement Water Supply Plan for the Impaired Areas

The 2000 OBMP included PE 3 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 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). 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 (11,250 afy).

The construction and operation of the Chino Basin Desalters to an ultimate capacity of 40,000 afy also became a fundamental component of the Chino Basin maximum-benefit salt and nutrient management plan (SNMP) developed pursuant to PE 7. Under the SNMP, which is a regulatory requirement of the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan), the operation of the Chino Basin Desalters is necessary to attain Hydraulic Control. The Parties executed the Peace II Agreement in 2007, which included a supplement to the OBMP Implementation Plan, to expand the Chino Basin Desalter pumping to 40,000 afy (36 mgd) and introduce Re-operation to attain hydraulic control.

As of the writing of this implementation plan, there are 31 Desalter wells with the capacity to pump about 34 mgd (37,600 afy) of groundwater from the southern portion of the Chino Basin. One final well is planned for construction to achieve the capacity goal of 40,000 afy. The Chino Basin Desalters are expected to be capable of operating at 40,000 afy by 2021. Once all agricultural land uses have converted to urban uses, operation at this capacity would fulfill the objectives of PE 3.

Because the requirement for the operation of the Chino Basin Desalters are now explicitly required by the maximum benefit SNMP, the ongoing implementation actions for the 2020 OBMP related to the Desalters are included under PE 7.

Program Element 4 – Develop and Implement Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1

The 2000 OBMP included PE 4 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 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.

PE 4 further specified a requirement for the physical recharge of 6,500 afy of supplemental water at the MZ-1 spreading facilities through at least FY 2004/05. 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.

From 2001 to 2005, Watermaster developed, coordinated, and conducted the MZ-1 Interim Monitoring Program (IMP) under the guidance of the MZ-1 Technical Committee. The MZ-1 Technical Committee (now called the Ground-Level Monitoring Committee or the GLMC) was composed of representatives from all major MZ-1 producers and their technical consultants. 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 Guidance Criteria formed the basis for the long-term management plan, documented as the *MZ-1 Subsidence Management Plan* (MZ-1 Plan), which 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. The *2014 Annual Report of the GLMC* 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), which included a *Work Plan to Develop a Subsidence Management Plan for the Northwest MZ-1 Area*.

Pursuant to the Subsidence Management Plan, Watermaster produces an 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.

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The Chino Basin will always be susceptible to the future occurrence of land subsidence and ground fissuring. The ongoing objective of PE 4 is to reduce the rate of land subsidence and arrest it completely to prevent further ground fissuring in the Chino Basin. 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 and general schedule are:

Years 1 through 20 (FY 2020/21 through 2039/40)

- Implement Watermaster's Subsidence Management Plan, and adapt it as necessary.
- Through the term of the Peace Agreement, Watermaster will: arrange for the physical recharge of at least 6,500 afy of Supplemental Water in MZ-1 as an annual average and may re-evaluate and increase the minimum annual quantity.

Program Element 5 – Develop and Implement Regional Supplemental Water Program

The 2000 OBMP included PE 5 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 as agricultural demands decreased and that limitations to the traditional supplies, such as imported water from Metropolitan, would necessitate development of alternative supplies such as recycled water.

Since 2000, Watermaster and the IEUA have pursued programs to improve water supply reliability through the implementation of PEs 2, 3, and 5. The OBMP enabled Watermaster and the IEUA to obtain the maximum benefit SNMP in the Basin Plan, which allowed for the IEUA's recycled water reuse program to be rapidly expanded. The IEUA constructed a recycled water conveyance system throughout the basin for direct non-potable reuses and recharge. The recycled water provided by the IEUA for direct uses has replaced a like amount of groundwater and imported water that would have otherwise been used for non-potable purposes. And, 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.

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. There may be future opportunities to further expand recycled water reuse in the Chino Basin, using IEUA or other recycled water supplies.

The total water demand of the Chino Basin Parties is projected to grow from about 290,000 afy to about 420,000 afy by 2040, an increase of about 130,000 afy. Each of the water sources available to the Chino Basin Parties to meet these demands 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, and water quality.
- The challenges to imported water include reliability of its supply and infrastructure and the local capacity to treat it for municipal use.
- The reliability of non-Chino Basin groundwater supplies depends on water quality, water rights, and infrastructure to convey them 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, complying with the maximum benefit SNMP, and water quality regulations.

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. The IEUA and its member agencies are currently preparing the *2020 Integrated Resources Plan*, which will serve as a regional implementation strategy for long-term water resources management within the IEUA's service area. This or other future regional planning efforts could be expanded by the Chino Basin Parties for the benefit of the entire Chino Basin.

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The ongoing objective of PE 5 is to improve the regional conveyance and availability of imported and recycled waters throughout the basin. 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. This is a basin-wide activity that involves the Parties, the IEUA, the TVMWD, and the WMWD. Any of these agencies could lead and coordinate a 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, and the Watermaster Rules and Regulations.

The implementation actions and general schedule are:

Years 1 through 20 (FY 2020/21 through 2039/40)

- The IEUA will continue to maximize the reuse of its recycled water in the Chino Basin.

- 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.
- 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.
- 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.
- 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.

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 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. During the development of the OBMP, Watermaster was conducting a multi-year comprehensive basin-wide water quality monitoring program to sample every well possible to establish 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. 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.

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 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 monitor 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.

More recently, there are an increasing number of emerging contaminants that are subject to regulations that could limit the use of groundwater for drinking water supply. 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, causing reductions in pumping while management solutions are developed. 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. This necessitates 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 and ensure the long-term maximum beneficial use of the Basin.

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The ongoing 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.

The implementation actions and general schedule are:

Years 1 through 3 (FY 2020/21 through 2022/23)

- Re-convene the water quality committee and meet periodically to update groundwater quality management priorities.
- Develop and implement an initial emerging contaminant monitoring plan.
- Prepare a water quality assessment of the Chino Basin to evaluate the need for a Groundwater Quality Management Plan and prepare/implement a long-term emerging contaminant monitoring plan.

Years 4 through 20 (FY 2023/24 through 2039/40)

- Continue to support the Parties in identifying funding from outside sources to finance cleanup efforts.
- Continue to conduct investigations to assist the Parties and/or the Regional Board in accomplishing mutually beneficial objectives as needed.
- Develop and implement a Groundwater Quality Management Plan and periodically update it.
- Implement projects of mutual interest.

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.

Program Element 7 – Develop and Implement Salt Management Program

The 2000 OBMP included PE 7 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.

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 worked with the Regional Board to

establish a maximum-benefit-based SNMP that involved (1) increasing the TDS and nitrate objectives for the Chino-North groundwater management zone 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 commitments”) that ensure the protection of beneficial uses of the Chino Basin and downgradient waters (the Santa Ana River and the Orange County groundwater management zone).

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 and the IEUA’s recycled water discharge and direct reuse permit. 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 OBMP implementation actions within PEs 1, 2, 3, 5, and 7. 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.

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. In 2015, the TDS concentration of recycled water approached the compliance metric. 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 update the maximum-benefit SNMP to incorporate a revised compliance metric for recycled water TDS and nitrate, specifically to allow for a longer-term averaging period. The technical work supporting the proposal is due to the Regional Board in 2020. The Regional

Board has indicated that in accepting a 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.

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The ongoing objective of PE 7 is to implement, and periodically update, the maximum-benefit SNMP as defined in the Basin Plan (including any amendments thereto). 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 are:

Years 1 through 3 (FY 2020/21 through 2022/23)

- Continue to implement the maximum-benefit salt and nutrient management plan pursuant to 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.

Years 4 through 20 (FY 2023/24 through 2039/40)

- Starting in 2025 and every five years thereafter, update water quality projections to evaluate compliance with the maximum-benefit salt and nutrient management plan.
- Continue to implement the maximum-benefit salt and nutrient management plan pursuant to the Basin Plan, and any amendments thereto.

Program Element 8 – Develop and Implement Storage 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 2000 OBMP included two PEs to address the management and use of storage space.

The 2000 OBMP included PE 8 (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. And, it included PE 9 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 implementation plan for PEs 8 and 9 were combined in the OBMP Implementation Plan and will continue as a combined management program under this 2020 OBMP Update.

Safe Yield Reset

The 2000 OBMP requires that the Safe Yield be recomputed every ten years. Starting in 2011, Watermaster began the technical effort to recalculate the Safe Yield of the basin. 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. 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.

Storage Agreements and 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. The water occupying storage space 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."

The Pooling Plans of the Overlying (Non-Agricultural) Pool and the Appropriative Pool 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 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."

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, Watermaster began assessing losses in stored water at a rate of 2.0 percent per year. In February 2016, following the achievement of Hydraulic Control, 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.

2020 Storage Management Plan

The 2000 OBMP and Peace Agreement included the first storage management plan to regulate the use of storage. The Pooling Plans of the Overlying (Non-Agricultural) Pool and the Appropriative Pool 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. The only active Storage and Recovery Program in the basin is the Metropolitan Dry-Year Yield Program (DYYP). The agreement that authorizes the DYYP will expire in 2028.

By 2016, it was recognized that the Parties were approaching the storage limits established in the 2000 OBMP and there would be insufficient capacity to meet the needs of the Parties for their individual needs or for Storage and Recovery Programs. However, review of the extensive hydrogeologic information developed pursuant to the OBMP since 1999 indicated that it is possible to use more storage space than was contemplated in the 2000 OBMP and that a new storage management plan would be needed to meet the storage requirements of the Parties. The Storage Framework Investigation (SFI) was completed in 2018 to provide the technical information required to update the storage

management plan. The Watermaster completed the 2020 Storage Management Plan in December 2019, and it is included herein as **Exhibit 2**. 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).
- 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 impacts¹, 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:

- 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.

¹ 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.

- 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.

2020 Implementation Plan

Section 5.2 of the Peace Agreement describes the actions and procedures Watermaster must perform in managing storage and recovery in the Chino Basin. The ongoing 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.

The implementation actions and general schedule are:

Years 1 through 3 (FY 2020/21 through 2022/23)

- Complete and submit to the Court the 2020 Safe Yield Recalculation.
- Complete and submit to the Court the 2020 Storage Management Plan.
- 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 provide the Watermaster with criteria to review, condition, and approve applications in a manner that is consistent with the Judgment and the Peace Agreement.
- Assess losses from storage accounts based on the findings of the 2020 Safe Yield Recalculation.

Years 4 through 20 (FY 2023/24 through 2039/40)

- 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.
- Perform Safe Yield recalculation every 10 years (2030, 2040).
- Update the storage loss rate following each recalculation of Safe Yield (2030, 2040) and during periodic updates of the SMP.