

**MAIN SAN GABRIEL BASIN WATERMASTER  
REPORT ON  
FINAL DETERMINATION OF  
OPERATING SAFE YIELD  
FOR 2023-24 THROUGH 2027-28**

**MAY 3, 2023**



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## TABLE OF CONTENTS

	<u>Page No.</u>
Special Introduction.....	1
Introduction .....	1
Basin Operating Criteria .....	2
Stormwater Augmentation – Water Resources Development Assessment.....	3
Impacts/Response to (Unprecedented) Recent Drought Conditions and Extremely Low Local Watershed Runoff .....	3
Fiscal Years 2011-12 through 2021-22 .....	3
MWD Pre-Delivery Agreement.....	4
Basin Conditions - Groundwater Elevations .....	4
Baldwin Park Key Well .....	4
Other “Key Wells” .....	6
Basin Conditions - Rainfall .....	6
San Gabriel Dam – Station 425B-E .....	6
Pasadena City Hall – Station 610B.....	7
Puddingstone Dam – Station 96C .....	7
Basin Conditions - Local Water in Surface Storage Reservoirs .....	7
Basin Conditions - Local and Imported Water Conserved.....	8
Basin Conditions - Supplemental Water Availability .....	9
Metropolitan Water District of Southern California.....	9
Availability of Imported Water .....	9
San Gabriel District.....	10
Deliveries of Stormwater Augmentation Water (RDA II) .....	10
Deliveries of Supplemental Water .....	11
Replacement Water .....	11
Fiscal Year 2022-23 Supplemental Water Deliveries.....	11
Estimated 2023-24 Supplemental Water Delivery Requirements ...	12

Cyclic Storage Water .....	12
Basin Conditions - Carry-over Rights .....	13
Basin Conditions - Estimated Water Production During 2022-23 .....	14
Fiscal Year 2022-23 Operating Safe Yield Determination .....	14
Conclusions .....	15
Adopted Operating Safe Yield.....	16

**LIST OF TABLES**

Table 1	Annual Operating Safe Yield, Production Rights, Water Production and Replacement Water Requirements
Table 2	Rainfall and Water Replenishment of Main San Gabriel Basin
Table 3	Monthly Cyclic Storage Accounts and Effect on Key Well
Table 4	Local Water in Storage in Surface Reservoirs
Table 5	Supplemental Water Deliveries to the Main San Gabriel Basin for Groundwater Replenishment
Table 6	Historical Water Production
Table 7	Total Historical Demand in Basin

**LIST OF PLATES**

Plate 1	Well Location Map
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**LIST OF FIGURES**

Figure 1	Baldwin Park Key Well Groundwater Elevation Projected Through 2025-26
Figure 2	Baldwin Park Key Well Groundwater Elevation
Figure 3	Impacts of Stored Water on Baldwin Park Key Well Groundwater Elevation

- Figure 4 San Gabriel Dam Rainfall and Baldwin Park Key Well Elevation
- Figure 5 Accumulated Rainfall at San Gabriel Dam Rainfall Station No. 425B-E
- Figure 6 Accumulated Rainfall at Pasadena City Hall Rainfall Station No. 610B
- Figure 7 Accumulated Rainfall at Puddingstone Dam Rainfall Station No. 96-C
- Figure 8 Production in Main San Gabriel Basin

### **LIST OF APPENDICIES**

- Appendix A Historical Average Annual Rainfall and Accumulated Departure
- Appendix B Hydrographs for Baldwin Park Key Well and Other “Key Wells”
- Appendix C Range of Operating Safe Yields and Pumper’s Shares Thereof

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**SPECIAL INTRODUCTION**

For fiscal year 2022-23, the Basin experienced an unexpected above-normal snowfall and rainfall event, throughout California, including Southern California. Long-term drought, since about 2005, has significantly impacted the Basin storage and water levels. During this time, the Watermaster has made significant changes to Basin management (including Water Resources Development Assessment (RDA)) to help supplement the significant reduction in local water supply Basin replenishment. During this time, the Watermaster reduced and held the Operating Safe Yield (OSY) at 150,000 acre-feet for the last nine (9) consecutive years, which is unprecedented. The Watermaster has used the RDA and OSY as the primary “tools” for Basin water supply management. The unexpected above-normal hydrologic event will be monitored very closely to determine if, and when, Basin conditions will allow the Watermaster to, once again, utilize the OSY as the “primary” tool for Basin water supply management.

**INTRODUCTION**

Operating Safe Yield is the quantity of water which the Main San Gabriel Basin Watermaster (Watermaster) determines may be pumped from the Main San Gabriel Basin (Basin) in a fiscal year, free of Replacement Water assessments. In accordance with Section 43 of the amended Main San Gabriel Basin Judgment<sup>1</sup>, Watermaster at its regular meeting in May of each year determines the Operating Safe Yield applicable to the succeeding fiscal year and estimates the Operating Safe Yield for the next succeeding four fiscal years.

A Report on the “Preliminary Determination of Operating Safe Yield” is submitted by its Engineer to Watermaster at its regular meeting in April each year. On acceptance of that Report by Watermaster, a copy is distributed to each Pumper and Integrated Producer at least 10 days prior to a hearing, which is held at the regular

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<sup>1</sup> Upper San Gabriel Valley Municipal Water District vs. City of Alhambra, et al., Case No. 924128, Los Angeles County, as amended June 21, 2012.

meeting of Watermaster in May each year. Objections, comments or suggested modifications to the preliminary Operating Safe Yield are considered by Watermaster at that hearing and Watermaster, through vote of its Board members, adopts the final Operating Safe Yield.

## **BASIN OPERATING CRITERIA**

Section 42 of the amended Judgment states in part, "... Watermaster shall recharge Replacement Water in accordance with the Watermaster Operating Criteria and, insofar as practicable, to maintain the water level at the Key Well above Elevation two hundred (200)." Replacement Water is defined in Section 10 (cc) of the amended Judgment as "Water purchased by Watermaster to replace: (1) Production in excess of a Pumper's Share of Operating Safe Yield; (2) The consumptive use portion resulting from the exercise of an Overlying Right; and (3) Production in excess of a Diverter's right to Divert for Direct Use". Producers and Responsible Agencies are allowed to deliver Supplemental Water into their respective Cyclic Storage accounts as a pre-delivery of Replacement Water. Furthermore, as a result of significant local drought conditions the Watermaster took unprecedented actions to supplement local water supplies, and, as part of 2012 Amendments to the Judgment, Watermaster may make deliveries of Supplemental Water to augment the lack of local water replenishment through the Water Resources Development Assessment (RDA) stormwater augmentation program. The Operating Safe Yield, using Replacement Water, and delivery of Supplemental Water, using the RDA, are the tools specified in the Judgment for management of Basin groundwater levels.

The Operating Safe Yield which is established in May of each year, along with the prior year's carryover rights and the Diversion component of Integrated Producers, results in a Replacement Water requirement (net of any withdrawals from Producer Cyclic Storage accounts) that is delivered (at the earliest) in October of the second fiscal year, a span of about 17 months, and possibly not until the following June, a span of 26 months, assuming imported Supplemental Water is available. In the time frame between when the Operating Safe Yield is established and Supplemental Water is actually delivered, the actual hydrologic conditions experienced may have had significant impacts on the Basin groundwater levels. Therefore, it is prudent to conservatively manage the Basin groundwater levels and assure that Replacement Water assessment funds and RDA funds are appropriately collected and available for the purchase of available Supplemental Water to provide for Basin replenishment. This Report is for the management of Basin groundwater levels using the Replacement Water management tool.

Watermaster evaluates numerous factors when determining the Operating Safe Yield. The most critical factors are the provisions of the Judgment and the current and projected groundwater elevation at the Baldwin Park Key Well (Key Well), which represents the water stored in the Basin. Importantly, Watermaster focuses on the "operational" groundwater elevation at the Key Well (which excludes the impacts of Supplemental Water held in all Cyclic Storage accounts). Figure 2 shows the

measured groundwater elevation at the Key Well, which includes stored Supplemental Water (Cyclic Storage and the Water Resource Development Assessment deliveries to Cyclic Storage) and the operational groundwater elevation at the Key Well, which is used to characterize “natural” groundwater elevations for the purposes of establishing an Operating Safe Yield. However, for the purpose of this Report, the measured Key Well elevation is referenced throughout. Watermaster also reviews historical and current hydrologic conditions within the Basin, such as rainfall, storage of local runoff in surface reservoirs and conservation of local runoff; the availability of Supplemental Water; the quantity of water in Cyclic Storage; Carry-over Rights; and other information. Presented in Table 1 is the historical record of the annual Operating Safe Yield, Carry-over Rights, Lost Carry-over Rights, Production Rights, Water Production, and Replacement Water Requirement for each year of Watermaster operations beginning with fiscal year 1973-74.

### **Stormwater Augmentation – Water Resources Development Assessment**

During fiscal year 2015-16, the Watermaster developed a “RDA Stormwater Augmentation Program,” whereby Watermaster uses its Water Resource Development Assessment (RDA II) to purchase available untreated imported water to supplement the shortage of local stormwater replenishment (discussed in detail in the following section). Consequently, once the Stormwater Augmentation Program water is delivered to the Basin, and paid for, it is considered to be a supplement to “local water and available to all Basin pumpers,” but not Supplemental Water. As a result of just the RDA programs (includes all RDA actual water deliveries, including RDA water not yet paid for), Watermaster and the Producers have added over 165,000 acre-feet of replenishment water and increased the elevation of the Baldwin Park Key Well by about 25 feet, as shown in Figure 3. The RDA is the second “tool” in addition to OSY, the Watermaster has to manage Basin water levels and Basin storage. Other Watermaster and Producer actions have also contributed to maintaining the Basin water supply reliability.

### **IMPACTS/RESPONSE TO (UNPRECEDENTED) RECENT DROUGHT CONDITIONS AND EXTREMELY LOW LOCAL WATERSHED RUNOFF**

#### **Fiscal Years 2011-12 through 2021-22**

Presented in Appendix A is the long-term annual rainfall in the Basin and the accumulated departure from the historical average annual rainfall. The graph shows when extended periods of above and below average annual precipitation occurred. An example of an extended period of above average annual precipitation is water years 1977-78 through 1982-83. An example of an extended below average precipitation is water years 1943-44 through 1976-77. The San Gabriel Valley experienced the lowest average annual rainfall during the 5-year period of water years 2011-12 through 2015-16 and the 11-year period of water years 2011-12 through 2021-22. The period of about 2005-06 through 2021-22 (17 years) “accumulated departure” demonstrates the

recent extreme drought conditions. This shows that since 2005-06, the San Gabriel Valley has not been able to fully recover.

Rainfall in the San Gabriel Valley has averaged about 11.85 inches between fiscal years 2011-12 and 2021-22 (about 11 years) which is significantly below the pre-drought long-term annual average of about 18.5 inches for the San Gabriel Valley (about 64%). Furthermore, between fiscal years 2011-12 and 2021-22, the local average annual stormwater replenishment has averaged about 56,000 acre-feet, as shown in Table 2, whereas the local long-term stormwater replenishment through the end of fiscal year 2010-11 averaged about 110,000 acre-feet per year (about 49%). Consequently, over those 11 years, the average annual deficit of stormwater replenishment has been about 54,000 acre-feet per year which represents a Basin deficit of about 600,000 acre-feet, representing about 75 feet at the Key Well. Although fiscal year 2022-23 is unexpectedly appearing to be a wet year, with the Basin depleted by about 600,000 acre-feet, one above-normal year for local rainfall and runoff will not bring the Basin back to “normal” storage and operating levels.

### **MWD Pre-Delivery Agreement**

Currently, MWD, Upper District and Watermaster have coordinated to deliver a minimum of 110,000 acre-feet under the MWD Pre-Delivery Agreement and 15,000 acre-feet under the MWD Reverse Cyclic Program (this water has already been paid for and MWD would deliver at a later time when water and replenishment facilities are available), for a total of 125,000 acre-feet during the summer of 2023. This represents about 16 feet at the Key Well. MWD would like to deliver as much water as possible when available in order to prepare for potential drought conditions, when MWD may not deliver Supplemental Water to the Basin. This potential MWD pre-delivery program is predicated on Watermaster managing the Basin so that, when the MWD supply interruption occurs, the pre-delivered water will be stored in the Basin and available for pumping.

### **BASIN CONDITIONS - GROUNDWATER ELEVATIONS**

Exhibit H, Section 2 of the amended Judgment states in part “Watermaster in determining Operating Safe Yield and the importation of Replacement Water shall be guided by water level elevations in the Basin.” The following describes the groundwater elevation at the Baldwin Park Key Well.

### **Baldwin Park Key Well**

The Key Well is located in the central portion of the Basin, as shown in Plate 1. It has been successfully used to generally represent basin-wide groundwater elevation trends. A one-foot groundwater elevation change at the Key Well is estimated to represent approximately 8,000 acre-feet of water in storage, under normal conditions (Basin operating conditions). Figure 4 is a hydrograph showing the groundwater elevation at the Key Well and annual rainfall at San Gabriel Dam since October 1,



1937. The highest groundwater elevation at the Key Well, since entry of the Judgment, occurred on July 20, 1983 at 295.3 feet at which time 9,900 acre-feet (about one foot) were in Cyclic Storage. The historical low groundwater elevation at the Key Well, since entry of the Judgment, occurred on November 21, 2018 at 169.4 feet at which time 161,000 acre-feet (about 20 feet) were in Cyclic Storage. Without Cyclic Storage, the groundwater elevation at the Key Well would have been about 150 feet on November 21, 2018. Subsequently, the groundwater elevation rose above 210 feet, but again the long-term drought caused the groundwater elevation to decline to nearly 175 feet in 2022.

Unexpectedly, fiscal year 2022-23 is proving to be an above-normal year. For local rainfall, significant effort is being made to maximize local runoff replenishment. On April 28, 2023, the groundwater elevation at the Key Well was 224.1 feet, at which time about 102,000 acre-feet (about 13 feet) were in Cyclic Storage (about 78,000 acre-feet in Cyclic Storage accounts and about 24,000 acre-feet in the MWD Pre-Delivery Agreement Cyclic Storage account). Without Cyclic Storage, the Key Well elevation would have been about 207 feet on April 28, 2023, as shown on Figure 2.

As previously discussed, local runoff conserved in the San Gabriel Basin has been significantly below the long-term annual average during the extended drought period (2011-12 through 2021-22), and for the last 15 years. As a result, the measured groundwater elevation at the Key Well decreased from 233.5 feet on June 24, 2011 to a historical low of 169.4 feet on November 21, 2018, a decrease of 64 feet. This is a loss of about 510,000 acre-feet of water from Basin storage. Since the historical low water elevation on November 2018, the Key Well has since increased to a high of 212.5 feet in December 2019, partially due to significant replenishment of imported water, but then declined to nearly 175 feet in 2022. As specified in Section 42 of the amended Judgment, the Watermaster, to the extent practical, shall manage the Basin to maintain the groundwater elevation at the Key Well above 200 feet.

Thus far during fiscal year 2022-23 (through April 2023), rainfall at Puddingstone Dam has been about 26.49 inches (the long-term annual average is about 18.5 inches) which is about 143 percent of annual average. The Key Well elevation decreased from 212.5 feet in December 2019 to about 177.2 feet in October 28, 2022. Currently, the Key Well elevation was 224.1 feet on April 28, 2023. Typically, during the Summer and early Fall, the measured groundwater elevation at the Key Well decreases by about 10 feet. However, there will be an estimated local water deliveries of about 200,000 acre-feet through the end of June 2023 and plans for imported water deliveries during the summer of about 125,000 acre-feet. Figure 1 shows two projections, Scenario 1 projection assumes only local water from the rainstorms spread through the end of June 2023 and Scenario 2 projection assumes in addition to Scenario 1, imported water deliveries of about 125,000 acre-feet spreads in the summer. Based on Scenario 1 where only local water is spread, the measured groundwater elevation at the Key Well is projected to be around 230 feet by the end of May 2023. Based on Scenario 2 with the additional imported water of 125,000 acre-feet is spread, the measured groundwater elevation at the Key Well is projected to be

around 243 feet by the end of October 2023. Figure 1 also assumes the next 3 years of drought and no additional imported water to the Basin.

### **Other “Key Wells”**

While the groundwater elevation at the Baldwin Park Key Well has increased by about 46.9 feet from October 28, 2022 to April 28, 2023, the change in groundwater elevations in other parts of the Basin has been less significant. A well location map showing other “Key Wells” is included as Plate 1 and hydrographs of groundwater elevations at four other wells located throughout the Basin (compared to the measured Baldwin Park Key Well groundwater elevation) are included in Appendix B. San Gabriel County Water District Well 10 is located westerly of the Baldwin Park Key Well, County of Los Angeles Well No. 2947F is located southerly of the Baldwin Park Key Well in the vicinity of Whittier Narrows, Suburban Water Systems Well 155W-2 is located in the vicinity of the Puente Narrows and Valencia Heights Water Company Well No. 5 is located southeasterly of the Baldwin Park Key Well. In general, groundwater elevations at each of the four monitoring wells in the Basin react (both upward and downward) in a comparable but less dramatic manner as the Baldwin Park Key Well. As shown on the hydrographs in Appendix B, the groundwater elevations at these wells generally do not increase as high as the Baldwin Park Key Well during wet periods (with significant groundwater replenishment), but also do not have as significant of a decrease during dry periods with less groundwater replenishment. Significant changes in the water level for the other “Key Wells” are not expected in the near future.

### **BASIN CONDITIONS - RAINFALL**

Rainfall in the San Gabriel River watershed provides direct percolation and typically results in local stormwater runoff which is captured and subsequently percolated in spreading facilities and contributes to Basin replenishment. Precipitation amounts vary throughout the San Gabriel River watershed and typically are highest in the foothills and mountains. Precipitation recorded at San Gabriel Dam, the City of Pasadena and Puddingstone Dam, are described below. The locations of these rainfall stations are shown on Plate 1.

#### **San Gabriel Dam - Station 425B-E**

Rainfall at San Gabriel Dam, which is located in the upper watershed and not on the valley floor, is estimated to be about 51.84 inches for the period July 1, 2022 through April 30, 2023, or about 182 percent of average for that period. Assuming average rainfall for the balance of the year, the annual rainfall is projected to be about 180 percent of average. Figure 5 shows the cumulative rainfall for 1) fiscal years 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22; 2) the period July 2022 through April 2023; and 3) the long-term average rainfall at San Gabriel Dam.

### **Pasadena City Hall - Station 610B**

Rainfall at the Pasadena City Hall is estimated to be about 40.43 inches for the period July 1, 2022 through April 30, 2023, or about 207 percent of average for that period. Assuming average rainfall for the balance of the year, the annual rainfall is projected to be about 201 percent of average. Figure 6 shows the cumulative rainfall for 1) fiscal years 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22; 2) the period July 2022 through March 2023; and 3) the long-term average rainfall at the Pasadena City Hall.

### **Puddingstone Dam - Station 96C**

Rainfall at Puddingstone Dam is estimated to be about 26.49 inches for the period July 1, 2022 through April 30, 2023, or about 151 percent of average for that period. Assuming average rainfall for the balance of the year, the annual rainfall is projected to be about 149 percent of average. Figure 7 shows the cumulative rainfall for 1) fiscal years 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22; 2) the period July 2022 through April 2023; and 3) the long-term average rainfall at Puddingstone Dam.

Precipitation in the San Gabriel River watershed during fiscal year 2022-23, through the end of April 2023 was about 180 percent of average.

### **BASIN CONDITIONS - LOCAL WATER IN SURFACE STORAGE RESERVOIRS**

Local runoff water in surface reservoirs located on streams tributary to the Basin is stored by the DPW. This local runoff water is later released to the San Gabriel River system either for direct delivery to users or for replenishment of the groundwater Basin.

Unexpected above-normal rain/runoff conditions started in January 2023 and totaled about 20 inches from January through April 2023. DPW made releases from canyon storage into the Santa Fe Spreading Grounds for flood control purposes and to make space for additional runoff into canyon storage. The releases from Morris reservoir began in January 2023 and may continue through the end of June 2023. Prior to the 20 inches of rainfall from January through April 2023, the total amount of local water stored in surface reservoirs tributary to the San Gabriel Valley was about 17,700 acre-feet. For January through March 2023, DPW estimates about 35,000 acre-feet has been released from Morris Dam and spread into Santa Fe spreading grounds, with most of the water replenished to the Main Basin. However, the Key Well has increased 45 feet.

Table 4 shows the maximum reservoir storage capacity and the quantities of water in storage in surface reservoirs tributary to the San Gabriel Valley on April 25, 2022 and April 25, 2023. Also shown are the current recorded inflow and outflow rates at the reservoirs on April 25, 2023. The total amount of local water stored in

surface reservoirs in the San Gabriel Valley as of April 25, 2025, was about 71,000 acre-feet (about 75 percent of capacity), which is an increase of about 38,366 acre-feet in storage compared to April 25, 2022 (71,021 – 32,655). DPW indicates it maintains a minimum pool in Cogswell, San Gabriel and Morris Reservoirs representing about 10,500 acre-feet. Much of this stored water will be used to replenish groundwater supplies.

## **BASIN CONDITIONS - LOCAL AND IMPORTED WATER CONSERVED**

The amount of local water conserved, which is typically the primary component of Basin replenishment, is dependent upon the amount of precipitation on the tributary watershed, resulting runoff, and the subsequent water replenishment activities of DPW. Historically, when the Basin experiences average to above-average precipitation, it results in a larger amount of local water available to replenish the Basin and the groundwater elevation increases. Examples of this relationship are shown on Figure 4 (see 1977-78, 1982-83, and 2004-05). The occurrence and duration of annual rainfall is also an important factor. For example, a large amount of rainfall over a short period of time may result in limited replenishment to the Basin due to surface flows exceeding water replenishment capabilities and even result in flow of local runoff to the ocean. Also, rainfall that follows severe dry periods will often result in lower runoff amounts due to dry soil absorbing effects in the watershed.

Unexpected above-normal rainfall in the Basin watershed so far during fiscal year 2022-23 has been about 180 percent of average through April 30, 2023. Although DPW replenishment records are incomplete this time of year, preliminary data indicate approximately 85,500 acre-feet (about 87 percent of annual average) of local runoff was replenished in the Basin between October 1, 2022 and February 28, 2023. The average annual local water Basin replenishment has averaged about 110,000 acre-feet prior to the recent drought. It is estimated that local runoff replenishment in the Basin may reach 200,000 AF in 2023, resulting an estimated Key Well elevation of about 230 ft by end of May 2023, as shown in Figure 1. As previously discussed, Scenario 1 projection in Figure 1 assumes only local water is spread.

In addition, MWD plans to deliver at least 125,000 acre-feet into the Basin (of that 110,000 acre-feet will be delivered into MWD's Cyclic Storage account) during the summer as part of MWD's Purchase Letter Agreement with Upper District and Watermaster and MWD's Reverse Cyclic (this water has already been paid for). This delivery of 125,000 acre-feet of imported water may increase the key Well elevation to about 243 ft by end of October 2023, as shown in Figure 1. As previously discussed, Scenario 2 projection in Figure 1 assumes imported water of 125,000 acre-feet is spread in addition to the local water from Scenario 1.

Table 2 summarizes the annual rainfall, local water plus RDA II water and imported water replenished for Cyclic Storage and measured and operational groundwater elevations at the Key Well since the inception of Watermaster operations.

## **BASIN CONDITIONS - SUPPLEMENTAL WATER AVAILABILITY**

Section 10 of the amended Judgment defines Supplemental Water as “Nontributary water imported through a Responsible Agency.” Upper District, Three Valleys Municipal Water District (Three Valleys District) and San Gabriel Valley Municipal Water District (San Gabriel District) are the Responsible Agencies which deliver Supplemental Water to the Basin. Upper District and Three Valleys District are member agencies of MWD. The San Gabriel District is a SWP contractor. The following describes the availability of Supplemental Water from MWD and San Gabriel District.

### **Metropolitan Water District of Southern California**

MWD primarily receives its water supply from the State Water Project and the Colorado River. Below is a description of the availability of water from MWD.

#### **Availability of Imported Water**

An “8-station index” is used by the California Department of Water Resources (DWR) to determine average precipitation in the Sacramento River hydrologic region of northern California, which is the source of much of the imported water supply to the Basin. Through March 31, 2023, the “8-station index” indicated average precipitation of 54.81 inches or about 131 percent of average for that time of year, while rainfall in the San Gabriel Valley was about 180 percent of average (through April 30, 2023).

On December 1, 2022, DWR announced the 2032 initial allocation of SWP water was 5 percent of the contractors’ Table A Entitlement. On January 26, 2023, DWR announced the 2023 allocation of SWP water has increased to 30 percent of the contractors’ Table A entitlement. On February 22, 2023, DWR announced the 2023 allocation of SWP water has increased to 35 percent of the contractors’ Table A entitlement. On March 24, 2023, DWR announced the 2023 allocation of SWP water has increased to 75 percent of the contractors’ Table A entitlement. On April 20, 2023, DWR announced the 2023 allocation of SWP water has increased to 100 percent of the contractors’ Table A entitlement. As stated in DWR’s Notice to State Water Project Contractors, the allocation is based on “the recent precipitation, runoff, and current water supply conditions...” In general, every five percent of SWP allocation equates to about 100,000 acre-feet of supply for MWD. With a 100 percent SWP allocation, MWD would receive about 1,911,500 acre-feet.

Based on the Colorado River Compact, the seven basin states receive allocations to Colorado River water. Based on California’s allocation of Colorado River water, MWD staff has indicated about 784,000 acre-feet of Colorado River water

are available to MWD during calendar year 2023. Although Colorado River water may be delivered as Supplemental Water to help replenish the Basin, there are issues which must be addressed prior to delivery. Quagga mussels are in Colorado River water and have the potential to negatively impact the replenishment facilities unless the Colorado River water is isolated and the replenishment facilities are allowed to dry out, which effectively eliminates the Quagga mussels. A second concern is the high Total Dissolved Solids (TDS) concentration in Colorado River water, which would need to be addressed through Watermaster's "Criteria for Delivery of Supplemental Water". There are currently no planned deliveries of Colorado River water for Basin replenishment. However, MWD, Upper District and Watermaster are working cooperatively on preparing a Provisional Quagga Mussel Control Plan to potentially deliver Colorado River water to the Basin as a last resort only if SWP water is not available and the Key Well is projected to reach emergency water levels.

### **San Gabriel District**

San Gabriel District has a contract for State Water Project water (see description of State Water Project availability under MWD). San Gabriel District's current 2023 allocation is 100 percent of its State Water Project Table A entitlement of 28,800 acre-feet. Consequently, it is anticipated San Gabriel District will deliver about 28,800 acre-feet to the Basin during calendar year 2023.

### **Deliveries of Stormwater Augmentation Program Water (RDA II)**

Section 45(b)(7) of the amended Judgment allows Watermaster to "...levy an Assessment on all Pumping, as determined through Rules and Regulations ... to support the purchase, financing, and/or development of new or additional Supplemental Water sources, in cooperation with one or more Responsible Agencies as appropriate." Section 45(b)(7) established the RDA for the purchase or development of additional Supplemental Water supplies.

As previously discussed, the "Stormwater Augmentation Program," purchases available untreated imported water to supplement the shortage of local stormwater replenishment. The RDA II assessment is on all production and the purchased water is added to the natural Basin water supply, with no specific rights to recover the water. Production during fiscal year 2016-17 was the first year RDA II assessment was applied. At \$40/AF, about 11,400 acre-feet was purchased at the end of calendar year 2017. Production during fiscal year 2017-18 was the second year RDA II assessment was applied. At \$70, about 19,000 acre-feet was purchased at the end of calendar year 2018. For the third year, at \$105, about 23,800 acre-feet was purchased at the end of calendar year 2019. For the fourth year, at \$140, about 31,400 acre-feet was purchased at the end of calendar year 2020. For the fifth year, at \$175, about 41,300 acre-feet was purchase at the end of calendar year 2021. For the sixth year, at \$175, funds generated from the RDA II assessment could be used to purchase about 36,200 acre-feet. The RDA II assessment is intended remain at \$175/AF on fiscal 2022-23 production. Assuming fiscal year 2022-23 production is

about 180,000 acre-feet, about 33,800 acre-feet could be purchased with RDA II assessment funds at the end of calendar year 2023. However, as of April 30, 2023, the unexpected above-normal hydrologic conditions have kept all Basin spreading grounds essentially full.

### **Deliveries of Supplemental Water**

In addition to Basin replenishment from local water supply, the groundwater elevation at the Key Well is impacted by the amount of Supplemental Water delivered as Replacement Water, RDA Water and for Cyclic Storage accounts. A summary of historical Supplemental Water deliveries is shown on Table 5. The following sections describe Supplemental Water deliveries, as 1) Replacement Water for Upper District, San Gabriel District and Three Valleys District; 2) MWD Agreement water; 3) Producer and other Cyclic Storage accounts and 4) Future Deliveries.

#### **Replacement Water**

Section 42 of the amended Judgment states in part, "... Watermaster shall recharge Replacement Water in accordance with the Watermaster Operating Criteria and, insofar as practicable, to maintain the water level at the Key Well above Elevation two hundred (200)." (As of April 28, 2023, the groundwater elevation at the Key Well was 224.1 feet.) Typically, establishing a lower Operating Safe Yield results in reduced water rights, increased Replacement Water obligations and, consequently, increased deliveries and replenishment of imported water as Replacement Water. However, thus far, there is a lot of Cyclic Storage water in accounts, which can be deducted to meet Replacement Water obligations instead of delivering water to the Basin.

#### **Fiscal Year 2022-23 Supplemental Water Deliveries (Replacement Water) Plus Stormwater Augmentation Program Water**

The following discusses Upper District, San Gabriel District and Three Valleys District deliveries during fiscal year 2022-23.

Following the conclusion of fiscal year 2021-22, it was determined Upper District had a Replacement Water requirement of 56.19 acre-feet to be delivered during 2022-23 through USG-3 (due to Producer Cyclic Storage water) and 3,000 acre-feet delivered through USG-5. In addition, Upper District had an RDA II requirement of about 33,723 acre-feet to be delivered during 2022-23. As of March 31, 2023, a total of 2,182.10 acre-feet was delivered through USG-5 leaving a Replacement Water balance of 817.90 acre-feet. As of March 2023, about 13,980 acre-feet of the RDA II requirement of 33,723 acre-feet had been fulfilled.

Following the conclusion of fiscal year 2021-22, it was determined San Gabriel District had a Replacement Water requirement of 18,027.15 acre-feet to be delivered during 2022-23. As of March 31, 2023, the Replacement Water requirement had not been delivered. In addition, San Gabriel District indicated it could not deliver its RDA

II requirement during 2022-23. Consequently San Gabriel District's required RDA II would be delivered by Upper District and Three Valleys District and included in their RDA II requirement.

Following the conclusion of fiscal year 2022-23, it was determined Three Valleys District had a Replacement Water requirement of 154.70 acre-feet to be delivered during 2022-23. Three Valleys District had an RDA II requirement of 2,496 acre-feet to be delivered during 2022-23. As of March 31, 2023, Three Valleys District delivered all of its Replacement Water requirement using MWD's Reverse Cyclic Program. As of March 31, 2023, Three Valleys District delivered all of its RDA requirement of 2,496 acre-feet using MWD's Reverse Cyclic Program.

### **Estimated 2023-24 Supplemental Water Delivery Requirements - Replacement Water Plus Stormwater Augmentation Program Water**

The estimated fiscal year 2022-23 over-production in the Basin is about 29,400 acre-feet. It is assumed much of the over-production will be satisfied by a deduction from water in Producers' Cyclic Storage accounts.

#### **Cyclic Storage Water**

Cyclic Storage water is a pre-delivery of Replacement Water. Under the terms of Cyclic Storage agreements, the Individual Producers may make deliveries to Watermaster out of their Cyclic Storage accounts to satisfy Replacement Water requirements which are accounted for following June 30 of each year. The Responsible Agencies may make deliveries to Watermaster out of their Cyclic Storage accounts to satisfy Replacement Water requirements as of June 30 of each year.

There are Cyclic Storage agreements between Watermaster and each of the Responsible Agencies which provide for the total storage of up to 300,000 acre-feet of Supplemental (Replacement) Water in the Basin. This includes up to 50,000 acre-feet for San Gabriel District, up to 200,000 acre-feet for the MWD and Upper District, and up to 50,000 acre-feet for MWD and Three Valleys District. In addition, there are 21 producer Cyclic Storage agreements in which up to 175,525 acre-feet can be stored. The total amount of water that could be stored in existing Cyclic Storage accounts is up to 475,525 acre-feet. As of March 31, 2023 there was a total of about 133,000 acre-feet (about 109,000 acre-feet in cyclic storage accounts and about 24,000 acre-feet in MWD Pre-Delivery account) in Basin cyclic storage (represents about 17 feet at the Key Well).

Water in Cyclic Storage is available to supply Replacement Water by transfer to Watermaster in-lieu of physically delivering Supplemental Water. This is typically done at the discretion of the storing party. Table 3 is a summary of the monthly Cyclic Storage account balances since July 1, 2016. The storage balance in all of the Basin Cyclic Storage accounts on July 1, 2022, the balance as of March 31, 2023 and the estimated balance as of June 30, 2023, is shown below in acre-feet.



	Cyclic Storage as of July 1, 2022	Account Balance as of March 31, 2023	Estimated Balance as of June 30, 2023 <sup>1/</sup>
San Gabriel Valley Municipal Water District	2,300	2,850	5,500
Upper San Gabriel Valley Municipal Water District	6,601	5,711	5,700
Three Valleys Municipal Water District	5,988	5,948	5,900
Producers in San Gabriel District	0	0	0
Producers in Upper District	45,709	62,584	50,000
Producers in Three Valleys District	926	926	0
Watermaster Pre-purchases	0	0	0
RDA I	12,756	12,756	13,000
Puente Basin Agency Storage and Export	21,066	21,284	21,000
MWD Cyclic Agreement (intended for RDA II)	<u>49,105</u>	<u>21,105</u>	<u>21,000</u>
	144,451	133,164	122,100

1/ It is assumed Replacement Water requirements will be deducted from Cyclic Storage accounts following the end of fiscal year 2022-23. It is assumed 2023 SWP water allocation is 100 percent.

## **BASIN CONDITIONS - CARRY-OVER RIGHTS**

In accordance with the Judgment Section 49, "...Any Pumper's Share of the Operating Safe Yield and the Production Right of any Integrated Producer, which is not produced in a given fiscal year, may be carried over and accumulated for one fiscal year..." Establishing high operating safe yields will normally result in increased Carry-over Rights. These Carry-over Rights must be used by the Producer in the next year or can be leased to another Producer for use in that year. The first water produced in the succeeding fiscal year is deemed to be the Carry-over water. Leasing of water rights, including Carry-over Rights, also usually results in a reduction of the amount of water subject to Replacement Water assessments and, thus a decrease in delivery of Replacement Water to the Basin.

The amount of Carry-over Rights is considered when recommending the Operating Safe Yield. The Carry-over Rights at the beginning of fiscal year 2022-23 were approximately 26,300 acre-feet. It is estimated the Carry-over Rights at the beginning of fiscal year 2023-24 will be about 26,800 acre-feet. Historical Carry-over Rights and lost Carry-over Rights are shown on Table 1.

## **BASIN CONDITIONS - ESTIMATED WATER PRODUCTION DURING 2022-23**

Historical water production under the Judgment since July 1, 1973, has been reported and recorded on a quarterly basis, as shown in Table 6. The preliminary total water production for the first two quarters of fiscal year 2022-23 was about 97,000 acre-feet. Figure 8 shows quarterly production in the Basin for the past 13 years (fiscal years 2009-10 through 2021-22) plus fiscal year 2022-23. Anticipated groundwater production for fiscal year 2022-23 has been estimated below.

The reported production for the first two quarters of fiscal year 2022-23 was about 97,000 acre-feet. This is similar to the first two quarters of fiscal years 2015-16 (96,600 acre-feet). Fiscal year 2015-16 had below average rainfall (10 inches). It appears fiscal year 2022-23 may have above average rainfall year and consequently less water use. Assuming production for the last two quarters of fiscal year 2022-23 is similar to the production for the last two quarters of fiscal years 2015-16 with less water use, which was about 83,000 acre-feet, it is anticipated that the total fiscal year 2022-23 production will be about 180,000 acre-feet (97,000 + 83,000). Direct treated water deliveries have remained about the same, as described below. In addition, drought conservation activities have continued, which also have impacted production. Figure 8 shows production for the past 13 years and the estimated groundwater production for fiscal year 2022-23.

The historical total demand in the Basin is met by local water production and direct treated imported water deliveries. During fiscal year 2021-22, direct treated imported water sales were about 34,000 acre-feet, as shown in Table 7. Estimated direct treated imported water sales for fiscal year 2022-23 is about 30,000 acre-feet. Total demand during fiscal year 2022-23 is estimated to be about 210,000 acre-feet (180,000 + 30,000) and is about 17,000 acre-feet below the 11-year average total water demand of 228,000 acre-feet, as shown in Table 7.

## **FISCAL YEAR 2022-23 OPERATING SAFE YIELD DETERMINATION**

On May 11, 2022, Watermaster considered the Engineer's recommended Preliminary Operating Safe Yield of 150,000 acre-feet for fiscal year 2022-23. At that time, the total rainfall in the Basin from July 1, 2021 to April 30, 2022, as represented by the Puddingstone Dam station, was 11.30 inches or 64 percent of long-term average for that period. (The total annual rainfall at the Puddingstone Dam station for fiscal year 2021-22 was 11.42 inches, representing about 63 percent of average.) The groundwater elevation at the Key Well at the time of the May 2022 Watermaster meeting was 185.5 feet and increasing at the rate of about 0.5 feet per week. Total water in local storage reservoirs was 32,700 acre-feet.

At its May 11, 2022 meeting, Watermaster established the Operating Safe Yield at 150,000 acre-feet for fiscal year 2022-23 and an estimated Operating Safe Yield of 130,000 acre-feet for fiscal years 2023-24, 2024-25, 2025-26, and 2026-27.

## CONCLUSIONS

It is very important to recognize that “local” water resources and supplies have been seriously impacted by unprecedented drought conditions, and although fiscal year 2022-23 has been an unexpected wet year, very dry local conditions can return very quickly. The Key Well is projected to reach about 230 feet by the end of May 2023 due an estimated 200,000 acre-feet of local water replenishment, and possibly 243 feet by the end of October 2023 due to additional imported water deliveries of about 125,000 acre-feet in the summer of 2023.

Prior to the recent drought, the historical long-term annual average Basin replenishment from “local” water supplies is about 110,000 acre-feet. Since about fiscal year 2011-12, the average annual “local” water Basin replenishment has been reduced to about 56,000 acre-feet per year. This represents a shortage of about 600,000 acre-feet of water supply to the Basin for this recent period. Fiscal year 2022-23 may be an unexpected wet year, however, the rainfall water supply Basin replenishment is currently not expected to fully bring the Basin back to normal Basin storage and Basin operations.

### Local Water Replenishment

1973-74 through 2010-11 (before drought)      about 110,000 AFY

2011-12 through 2021-22 (11 yrs)      about 56,000 AFY

### Local Rainfall

1973-74 through 2010-11 (before drought)      about 19.23 inches/yr

2011-12 through 2021-22 (11 yrs)      about 11.86 inches/yr

### Baldwin Park Key Well

Historic Low Elevation (November 21, 2018)      169.4 feet

Current Elevation without RDA Replenishment      196.3 feet  
(includes Cyclic Storage for Replacement Water)

Most Recent Low Elevation in 2022      177.2 feet

Current Elevation – Measured (April 28)      224.1 feet

As stated earlier in the Report, Section 42 of the amended Judgment states in part, “...Watermaster shall recharge Replacement Water in accordance with the Watermaster Operating Criteria and, in so far as practicable, to maintain the water level at the Key Well above Elevation two-hundred (200)”. The Judgment criteria essentially establishes the Operating Safe Yield and delivery of Replacement Water as the primary Watermaster tool to manage groundwater supplies for the Basin. This management goal became not “practicable”, as a result unprecedented local drought conditions, and resulted in the RDA II – Stormwater Augmentation Program. The Stormwater Augmentation Program has resulted in the important recovery of Basin water levels and an addition to Watermaster’s Basin management approach under

Section 42, of the amended Judgment. The RDA II Program will likely continue to be an additional management tool for Watermaster until Basin water levels fully recover and demonstrate sustainability, and annual Replacement Water requirements reduce the large quantity of water held in Cyclic Storage.

As of April 28, 2023, the Key Well elevation was about 224.1 feet. Typically, during the Summer and early Fall, the measured groundwater elevation at the Key Well decreases by about 10 feet. However, there may be local water deliveries from February 2023 through the end of June 2023 that may bring the Key Well elevation up to 230 feet by the end of May 2023, and plans for imported water deliveries during the summer of 2023 of about 125,000 acre-feet that may bring the elevation to be near 243 feet by end of October 2023, above the minimum Operating Criteria of 200 feet.

FY 2021-22 (Full Year) and FY 2022-23 Comparison

<u>Last Year's (FY 21-22) Condition</u>	<u>This Year's (as of April 30<sup>th</sup>) Condition</u>
Key Well June 30 <sup>th</sup> – 185.2 ft	Key Well – 224.1 ft
Rainfall – 11.42 inches	Rainfall – 26.49 inches
Local Runoff – 68,370 AF	Local Runoff – 85,500 AF
SWP Allocation – 5%	SWP Allocation – 100%
Engineer Rec. – 150,000 AF	Engineer Rec. – 150,000 AF
Watermaster Adopted – 150,000 AF	Watermaster Adopted – TBD

Based on the evaluation presented in this Report, the Engineer's recommended Operating Safe Yield should be maintained for fiscal year 2023-24 at 150,000 acre-feet. The Engineer also recommends the Watermaster should consider maintaining the Operating Safe Yield at no more than 150,000 acre-feet until such time the operational elevation at the Key Well remains significantly above elevation 200 feet for at least two (2) consecutive years, in accordance with the Judgment provisions.

**ADOPTED OPERATING SAFE YIELD**

On May 3, 2023, Watermaster held a hearing on the preliminary determination of Operating Safe Yield, which was submitted to Watermaster on April 5, 2023, in accordance with Section 43(a) of the Judgment. After review by its Engineer and comments received by those at the hearing, Watermaster approved the establishment of the Operating Safe Yield of the Main San Gabriel Basin at 150,000 acre-feet for fiscal year 2023-24, as shown below.

<u>Fiscal Year</u>	<u>Operating Safe Yield (Acre-feet)</u>
2023-24	150,000
2024-25	130,000
2025-26	130,000
2026-27	130,000
2027-28	130,000

Attached, as Appendix C, is a tabulation showing each Pumper's Share in percent and the number of acre-feet each Producer can produce from the Basin free of Replacement Water assessments for quantities of Operating Safe Yield 130,000 acre-feet per year to 160,000 acre-feet per year. Those producers shown to have a share less than five acre-feet prior to June 21, 2012 are Minimal Producers and are allowed to produce up to five acre-feet free of Replacement Water assessments.

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TABLE 1

ANNUAL OPERATING SAFE YIELD,  
PRODUCTION RIGHTS, WATER PRODUCTION  
AND REPLACEMENT WATER REQUIREMENTS  
(ACRE-FEET)

FISCAL YEAR	RAINFALL AT PUDDINGSTONE STA. NO. 96C-E (INCHES) 1/	MEASURED KEY WELL ELEVATION (FEET) 2/	OPERATING SAFE YIELD	CARRY OVER RIGHTS FROM PREVIOUS YEAR	LOST CARRY OVER RIGHTS	PRODUCTION RIGHTS	WATER PRODUCTION	BASIN OVER PRODUCTION		
								REPLACEMENT WATER REQUIREMENT	PRODUCER CYCLIC STORAGE	TOTAL
1973-74	15.05	238.4	226,800	--	--	238,132.94	235,460.40	14,518.98	0.00	14,518.98
1974-75	14.57	234.8	210,000	17,191.52	203.36	237,913.46	225,221.86	8,421.93	0.00	8,421.93
1975-76	7.77	221.1	200,000	20,908.91	131.06	231,391.95	242,246.36	24,744.88	0.00	24,744.88
1976-77	15.72	211.4	150,000	13,759.41	861.12	174,193.45	210,340.40	48,650.71	0.00	48,650.71
1977-78	40.08	270.4	150,000	9,980.67	1,198.54	170,473.30	195,275.53	36,818.25	0.00	36,818.25
1978-79	24.88	266.6	170,000	8,950.43	78.11	189,439.67	214,919.54	34,404.83	0.00	34,404.83
1979-80	33.76	282.4	220,000	6,745.88	81.54	237,226.13	223,088.89	9,896.39	0.00	9,896.39
1980-81	9.74	252.4	230,000	21,960.87	202.89	262,445.19	230,832.31	5,477.08	0.00	5,477.08
1981-82	19.94	245.5	210,000	35,642.01	380.30	255,281.37	220,391.54	10,582.35	0.00	10,582.35
1982-83	37.80	292.7	200,000	43,261.87	304.02	253,049.93	209,949.43	3,293.23	0.00	3,293.23
1983-84	12.09	267.1	230,000	45,378.26	80.10	287,394.98	236,679.19	2,151.85	1,573.60	3,725.45
1984-85	14.42	245.8	210,000	51,594.26	344.48	272,050.11	242,439.63	12,475.69	0.00	12,475.69
1985-86	23.33	250.8	190,000	40,395.40	198.50	240,319.81	246,223.58	33,774.82	0.00	34,774.82
1986-87	9.61	236.5	200,000	25,403.49	106.93	235,923.93	253,633.02	41,828.86	0.00	41,828.86
1987-88	16.79	224.0	190,000	22,457.73	143.63	222,985.31	248,101.54	51,989.89	0.00	51,989.89
1988-89	14.00	219.8	180,000	21,710.19	61.61	214,810.57	253,694.47	59,384.99	0.00	59,384.99
1989-90	12.11	206.5	180,000	19,741.33	282.28	210,268.35	252,135.76	62,582.49	0.00	62,582.49
1990-91	18.29	200.3	170,000	17,837.99	387.33	199,467.55	232,091.44	41,232.39	13,112.70	54,345.09
1991-92	23.93	236.9	140,000	18,796.02	345.83	169,575.74	221,476.83	31,214.19	35,916.90	67,131.09
1992-93	40.44	267.8	180,000	13,478.79	189.05	204,009.40	236,677.04	15,858.66	50,031.39	65,890.05
1993-94	12.44	248.8	220,000	31,718.29	462.81	262,029.85	243,616.55	8,915.59	25,422.42	34,338.01
1994-95	29.38	269.0	200,000	50,290.41	1,065.79	260,802.71	243,479.39	30,194.77	0.00	30,194.77
1995-96	15.92	248.9	220,000	44,262.41	737.28	274,608.47	268,950.50	32,526.05	0.00	32,526.05
1996-97	18.47	241.3	210,000	35,484.68	863.84	256,011.19	279,481.35	55,236.24	0.00	55,236.24
1997-98	35.84	267.8	220,000	28,965.55	704.70	263,725.27	253,921.28	26,362.42	4,331.64	30,694.06
1998-99	7.93	244.8	230,000	34,016.10	124.28	277,282.73	265,151.97	30,499.32	2,859.66	33,358.98
1999-00	14.65	228.5	220,000	40,633.83	592.51	274,824.14	278,687.14	39,749.83	3,663.84	43,625.83
2000-01	17.04	220.1	220,000	33,774.80	570.83	267,126.29	270,919.13	38,317.35	2,825.02	41,142.37
2001-02	6.41	208.7	210,000	32,015.15	532.59	258,992.70	264,328.17	40,773.50	6,450.10	47,223.60
2002-03	19.99	204.1	190,000	32,833.12	159.50	240,450.90	237,490.86	38,519.29	5,948.75	44,468.04
2003-04	12.77	204.2	170,000	38,370.38	79.24	224,691.75	252,811.50	51,416.73	8,870.23	60,286.96
2004-05	44.08	248.4	170,000	24,549.23	53.76	219,049.64	247,187.00	41,043.83	18,736.93	59,780.76
2005-06	16.82	249.7	240,000	17,402.45	156.28	268,418.02	259,807.52	12,065.12	6,908.92	18,974.04
2006-07	4.55	220.5	240,000	27,862.73	90.80	278,386.20	284,328.04	20,048.99	7,309.89	27,358.88
2007-08	16.17	202.7	210,000	29,374.42	182.17	249,433.95	258,167.00	28,777.98	9,157.53	37,935.51
2008-09	14.59	195.6	180,000	33,902.42	778.21	224,028.56	250,102.62	26,473.24	30,239.02	56,712.26
2009-10	20.04	204.2	170,000	28,729.17	236.31	210,117.25	237,846.31	35,129.38	14,929.92	50,059.30
2010-11	19.45	233.5	170,000	20,695.69	167.70	201,220.31	227,657.15	33,084.38	15,382.66	48,467.04
2011-12	12.06	226.4	210,000	21,657.47	166.96	242,181.86	237,028.57	19,685.04	20,704.45	40,389.49
2012-13	7.84	202.8	200,000	44,143.15	268.13	254,314.47	242,913.84	5,972.15	23,673.25	29,645.40
2013-14	4.77	187.8	180,000	42,864.86	377.39	233,389.45	240,552.41	3,779.32	36,325.98	40,105.30
2014-15	10.01	177.5	150,000	36,753.33	419.84	197,280.18	208,339.16	12,319.13	33,508.84	45,827.97
2015-16	10.04	174.0	150,000	35,226.32	284.47	195,752.95	182,826.49	6,909.20	19,510.99	26,420.19
2016-17	20.92	179.4	150,000	39,299.44	285.56	199,994.06	197,243.28	7,526.21	24,009.59	31,535.80
2017-18	6.92	178.5	150,000	34,893.57	144.60	195,420.20	209,499.70	12,520.95	27,409.98	39,930.93
2018-19	23.60	196.9	150,000	28,810.62	298.63	189,434.81	190,156.12	10,747.45	24,101.15	34,848.60
2019-20	16.49	203.1	150,000	34,603.48	640.76	194,608.18	192,583.66	12,911.67	21,913.85	34,825.52
2020-21	6.23	191.3	150,000	36,743.32	176.41	197,339.52	207,821.52	10,776.45	23,887.81	34,664.26
2021-22	11.42	185.2	150,000	25,117.46	147.97	185,717.47	186,148.03	9,177.33	26,324.07	35,501.40
2022-23	26.49	3/ 221.4	150,000	26,324.07	--	186,800	180,000	--	--	--
<b>11-YEAR AVERAGE:</b>	<b>11.85</b>	--	<b>162,727</b>	--	--	--	<b>208,647</b>	--	--	--
<b>15-YEAR AVERAGE:</b>	<b>13.37</b>	--	<b>168,000</b>	<b>32,854.31</b>	<b>305.01</b>	<b>211,348.88</b>	<b>217,925.72</b>	<b>15,719.33</b>	<b>23,405.27</b>	<b>39,124.60</b>
<b>49-YEAR AVERAGE:</b>	<b>17.57</b>	--	<b>190,139</b>	<b>29,587.27</b>	<b>340.63</b>	<b>230,673.19</b>	<b>235,712.76</b>	<b>25,525.74</b>	<b>11,123.29</b>	<b>36,673.72</b>

1/ Water Year  
2/ End of Fiscal Year, July to June  
3/ As of April 30, 2023  
4/ As of April 28, 2023  
5/ Estimated value including Carry-over Rights and Diversion Rights  
6/ Estimated value

TABLE 2

## RAINFALL AND WATER REPLENISHMENT OF MAIN SAN GABRIEL BASIN

WATER YEAR 1/	RAINFALL AT PUDDINGSTONE STA. NO. 96C-E (INCHES)	WATER REPLENISHED IN THE MAIN SAN GABRIEL BASIN			MEASURED BALDWIN PARK KEY WELL ELEV. AT END OF WATER YEAR (FT)	OPERATIONAL BALDWIN PARK KEY WELL ELEV. AT END OF WATER YEAR (FT)
		LOCAL RUNOFF (AF)	IMPORTED (AF) 2/	TOTAL (AF)		
1973-74	15.05	92,000	8,835	100,835	234	234
1974-75	14.57	62,000	14,564	76,564	226	226
1975-76	7.77	22,400	28,018	50,418	214	212
1976-77	15.72	21,000	18,335	39,335	206	203
1977-78	40.08	262,400	20,549	282,949	259	258
1978-79	24.88	160,000	30,968	190,968	254	253
1979-80	33.76	227,700	5,805	233,505	269	268
1980-81	9.74	49,100	0	49,100	243	242
1981-82	19.94	92,200	42,623	134,823	240	239
1982-83	37.80	298,800	28,345	327,145	284	283
1983-84	12.09	70,000	3,326	73,326	256	255
1984-85	14.42	32,700	66	32,766	240	239
1985-86	23.33	70,200	55,862	126,062	241	234
1986-87	9.61	26,700	55,943	82,643	238	228
1987-88	16.79	48,500	43,989	92,489	218	208
1988-89	14.00	33,000	45,925	78,925	211	201
1989-90	12.11	37,700	47,504	85,204	201	193
1990-91	18.29	95,500	54,153	149,653	205	199
1991-92	23.93	222,100	68,304	290,404	237	230
1992-93	40.44	220,000	62,632	282,632	268	265
1993-94	12.44	43,000	38,296	81,296	250	247
1994-95	29.38	210,500	22,354	232,854	266	261
1995-96	15.92	105,900	32,480	138,380	248	238
1996-97	18.47	34,700	55,075	89,775	239	228
1997-98	35.84	171,600	62,887	234,487	264	255
1998-99	7.93	48,200	13,346	61,546	239	230
1999-00	14.65	66,500	59,559	126,059	226	214
2000-01	17.04	84,900	34,998	119,898	217	206
2001-02	6.41	55,900	60,543	116,443	205	194
2002-03	19.99	55,200	63,508	118,708	203	189
2003-04	12.77	45,600	67,533	113,133	197	180
2004-05	44.08	398,000	19,921	417,921	248	237
2005-06	16.82	138,600	88,014	226,614	240	225
2006-07	4.50	47,800	24,780	72,580	213	199
2007-08	16.25	85,400	7,727	93,127	203	191
2008-09	14.82	73,800	6,607	80,407	191	185
2009-10	20.02	157,400	32,708	190,108	204	198
2010-11	19.45	241,500	68,424	309,924	234	227
2011-12	12.06	39,100	57,846	96,946	212	203
2012-13	7.84	24,600	44,678	69,278	196	188
2013-14	4.77	21,900	36,717	58,617	182	174
2014-15	10.01	14,500	41,519	56,019	174	165
2015-16	10.04	35,200	60,092 1/	95,292	172	161
2016-17	20.92	92,200	91,316 1/	183,516	182	163
2017-18	6.92	29,400	55,115	84,514	172	152
2018-19	23.60	173,500	99,265 1/	272,765	211	182
2019-20	16.49	79,700	54,736 1/	134,436	201	173
2020-21	6.23	32,700	18,287 1/	50,987	185	163
2021-22	11.54	68,370	9,835 1/	78,205	180	160
2022-23	26.35	3/ 85,500 4/	15,901 5/	101,401 5/	224	3/ 204 3/
<b>11-Year Average</b>	<b>11.86</b>	<b>55,561</b>	<b>51,764</b>	<b>107,325</b>	--	--
15-Year Average	13.40	77,951	45,658	123,609	--	--
49-Year Average	17.58	98,361	40,080	138,440	--	--

1/ October 1 to September 30

2/ July 1 to June 30

3/ As of April 30, 2023

4/ Preliminary data as of February 28, 2023

5/ October 1, 2022 to February 28, 2023





**TABLE 4**

**LOCAL WATER IN STORAGE  
IN SURFACE RESERVOIRS**

<u>RESERVOIR</u>	<u>April 25, 2022</u>	<u>April 25, 2023</u>				
	<u>STORAGE (ACRE-FEET)</u>	<u>STORAGE (ACRE-FEET)</u>	<u>INFLOW (CFS)</u>	<u>OUTFLOW (CFS)</u>	<u>RESERVOIR CAPACITY (ACRE-FEET)</u>	<u>RESERVOIR STORAGE IN PERCENT</u>
Cogswell Dam	156	262	58	80	10,475	3%
San Gabriel Dam	5,005	38,302	823	1,270	44,044	87%
Morris Dam	20,302	24,181	1,246	1,270	28,736	84%
<b>Sub-Total:</b>	<b>25,463</b>	<b>62,745</b>			<b>83,255</b>	<b>75%</b>
Santa Fe Dam <sup>1/</sup>	0	609	--	614	--	--
Big Dalton Dam	0	--	4	4	--	--
San Dimas Dam	510	788	25	41	--	--
Puddingstone Dam <sup>2/</sup>	6,682	6,879	0	0	--	--
<b>TOTALS:</b>	<b>32,655</b>	<b>71,021</b>				

1/ Storage is typically zero. Reservoir used for Flood Control purposes only, not storage for water conservation purposes.

2/ Storage is typically about 6,600 acre-feet. Used for recreational purposes, not water conservation purposes.

TABLE 5

SUPPLEMENTAL WATER DELIVERIES  
TO THE MAIN SAN GABRIEL BASIN  
FOR GROUNDWATER REPLENISHMENT  
(ACRE-FEET)

FISCAL YEAR	UPPER DISTRICT						THREE VALLEYS DISTRICT					SAN GABRIEL DISTRICT						TOTALS		
	REPLACEMENT WATER		CYCLIC STORAGE	WATERMASTER PRE-PURCHASES	RESOURCE DEVELOPMENT	PRODUCER CYCLIC STORAGE	REPLACEMENT WATER	CYCLIC STORAGE	WATERMASTER PRE-PURCHASES	RESOURCE DEVELOPMENT	PRODUCER CYCLIC STORAGE	REPLACEMENT WATER	USG-5		CYCLIC STORAGE	WATERMASTER PRE-PURCHASES	TRANSFERS TO MWD		RESOURCE DEVELOPMENT	
	USG-3	USG-5 2/											EXCHANGE REPLACEMENT	REPLACEMENT			CYCLIC STORAGE			CYCLIC STORAGE
1974-75	13,731.90	--	--	--	--	--	--	--	--	--	--	787.10	--	44.90	--	--	--	--	14,563.90	
1975-76	7,121.40	--	12,621.10	--	--	--	--	--	--	--	--	1,302.90	--	6,972.10	--	--	--	--	28,017.50	
1976-77	10,752.60	2,654.90	52.40	--	--	--	--	--	--	--	--	3,814.95	992.93	2,722.12	--	--	--	--	20,989.90	
1977-78	14,962.50	2,981.70	0.00	--	--	--	--	--	--	--	--	4,470.85	1,115.15	0.00	--	--	--	--	23,530.20	
1978-79	24,000.00	3,486.10	0.00	--	--	--	--	--	--	--	--	4,112.25	1,303.79	1,551.96	--	--	--	--	34,454.10	
1979-80	4,740.60	3,191.00	0.00	--	--	--	--	--	--	--	--	0.00	1,064.00	0.00	--	--	--	--	8,995.60	
1980-81	0.00	3,130.70	0.00	--	--	--	--	--	--	--	--	0.00	0.00	0.00	--	--	--	--	3,130.70	
1981-82	40,824.70	2,853.70	0.00	--	--	--	--	--	--	--	--	81.84	1,067.28	648.88	--	--	--	--	45,476.40	
1982-83	22,934.40	2,256.30	3,189.30	--	--	--	--	--	--	--	--	0.00	843.87	1,377.13	--	--	--	--	30,601.00	
1983-84	0.00	1,907.10	3,246.70	--	--	0.00	--	--	--	--	--	0.00	79.00	0.00	--	--	--	--	5,232.80	
1984-85	0.00	2,395.50	0.00	--	--	0.00	--	--	--	--	--	0.00	66.00	0.00	--	--	--	--	2,461.50	
1985-86	3,000.00	2,600.80	47,405.40	--	--	0.00	--	--	--	--	--	4,484.30	972.70	0.00	--	--	--	--	58,463.20	
1986-87	19,354.30	2,484.20	23,991.10	--	--	0.00	--	--	--	--	--	4,368.59	929.09	7,300.32	--	--	--	--	58,427.60	
1987-88	28,187.30	3,751.30	5,975.00	--	--	0.00	--	--	--	--	--	7,763.11	1,402.99	660.90	--	--	--	--	47,740.60	
1988-89	39,100.00	3,726.60	110.70	--	--	0.00	--	--	--	--	--	5,320.25	1,393.75	0.00	--	--	--	--	49,651.30	
1989-90	32,740.20	1,716.10	0.00	--	--	0.00	--	--	--	--	--	11,296.63	641.82	2,825.55	--	--	--	--	49,220.30	
1990-91	16,078.60	2,734.10	14,453.50	--	--	13,112.70	--	--	--	--	--	9,485.43	1,022.57	0.00	--	--	--	--	56,886.90	
1991-92	7,491.90	2,214.00	23,525.90	--	--	3,305.90	0.00	--	--	--	--	8,074.96	828.04	0.00	--	--	--	--	70,517.80	
1992-93	16,077.97	2,478.10	10,214.60	--	--	18,916.73	0.00	3,737.50	--	--	--	11,418.17	1,202.03	1,064.80	--	--	--	--	65,109.90	
1993-94	0.00	3,214.00	0.00	--	--	23,050.80	0.00	0.00	--	--	--	8,620.14	1,205.80	5,419.06	--	--	--	--	41,509.80	
1994-95	0.00	3,178.10	6,177.10	--	--	0.00	0.00	5,738.60	--	--	--	5,691.49	1,188.61	3,557.90	--	--	--	--	25,531.80	
1995-96	15,467.80	3,149.90	85.20	--	--	0.00	0.00	3,832.00	--	--	--	8,484.59	1,178.05	3,432.36	--	--	--	--	35,629.90	
1996-97	3,934.10	3,304.50	32,229.90	--	--	0.00	0.00	1,451.10	--	--	--	14,525.94	1,235.89	1,698.17	--	--	--	--	58,379.60	
1997-98	21,409.60	3,392.70	24,870.20	--	--	0.00	0.00	953.10	--	--	--	14,061.60	1,268.85	323.55	--	--	--	--	66,279.60	
1998-99	0.00	3,353.40	0.00	--	--	0.00	3,311.70	0.00	--	--	--	6,158.61	1,254.19	2,621.20	--	--	--	--	16,699.10	
1999-00	13,645.60	3,508.30	24,416.20	--	--	0.00	4,418.60	0.00	--	--	--	9,286.01	1,312.09	8,605.90	--	--	--	--	65,192.70	
2000-01	10,412.80	3,285.30	14,624.30	--	--	0.00	5,583.70	675.20	--	--	--	10,464.30	1,228.70	0.00	--	--	--	--	46,274.30	
2001-02	25,246.02	3,438.90	1,944.90	--	--	0.00	4,944.10	570.20	--	--	--	10,929.17	1,286.13	1,172.70	--	--	--	--	49,532.12	
2002-03	33,551.42	3,018.30	0.00	--	--	0.00	2,791.00	0.00	--	--	--	3,938.39	1,128.84	15,027.77	--	--	--	--	59,455.72	
2003-04	14,166.20	3,058.30	23,603.00	--	--	10,000.00	1,920.40	0.00	--	--	--	672.60	1,143.80	16,815.60	--	--	--	--	71,379.90	
2004-05	5,744.20	2,998.00	0.00	--	--	0.00	1,714.50	0.00	--	--	--	1,800.00	500.66	1,121.25	10,840.09	--	--	--	24,718.70	
2005-06	48,069.20	2,815.50	9,400.80	--	--	7,500.00	357.10	0.00	--	--	--	0.00	1,052.99	12,658.01	--	--	--	--	81,853.60	
2006-07	0.00	2,963.30	4,159.20	--	--	0.00	166.70	2,978.00	--	--	--	0.00	573.59	1,108.29	15,794.12	--	--	--	27,743.20	
2007-08	0.00	3,027.20	5,724.40	--	--	0.00	0.00	0.00	--	--	--	0.00	91.76	1,132.17	779.07	--	--	--	10,754.60	
2008-09	0.00	3,064.90	0.00	--	--	0.00	0.00	0.00	--	--	--	0.00	788.73	1,146.29	4,671.98	--	--	--	9,671.90	
2009-10	16,076.40	2,611.50	0.00	--	--	0.00	0.00	1,427.80	--	--	--	0.00	1,886.58	976.70	12,340.72	--	--	--	35,319.70	
2010-11	23,737.90	2,428.20	0.00	--	--	11,646.50	0.00	12,264.60	--	--	--	0.00	14,655.86	908.13	5,211.01	--	--	--	70,852.20	
2011-12	3,257.20	2,999.40	0.00	--	--	18,169.10	0.00	12,871.40	--	--	--	0.00	22,426.22	1,121.78	0.00	--	--	--	60,845.10	
2012-13	2,034.70	3,037.40	0.00	--	--	10,000.00	0.00	10,098.80	--	--	--	0.00	16,269.22	1,135.98	5,138.80	--	--	--	47,714.90	
2013-14	0.00	2,983.90	0.00	--	--	31,288.90	0.00	3,110.10	--	--	--	0.00	1,202.03	1,115.97	0.00	--	5,000.00	--	39,700.90	
2014-15	0.00	2,711.70	4,031.54	5,000.00	--	29,809.36	0.00	471.00	--	--	--	1,000.00	192.83	1,014.17	0.00	--	0.00	--	44,230.60	
2015-16	0.00	2,486.50	3,107.00	0.00	5,622.00	10,510.00	0.00	2,507.40	0.00	416.00	500.00	0.00	929.95	7,354.05	--	5,000.00	902.00	--	39,334.90	
2016-17	0.00	2,876.90	0.00	0.00	4,713.00	35,786.60	0.00	12,264.60	0.00	118.10	500.00	14,029.70	1,075.95	7,265.75	--	5,000.00	761.00	--	84,391.60	
2017-18	0.00	2,987.20	44,310.10	0.00	9,236.00	3,236.00	0.00	5,332.20	0.00	0.00	670.00	4,649.74	1,117.22	12,898.64	--	5,000.00	1,492.00	--	90,929.10	
2018-19	0.00	2,943.90	14,854.60	0.00	15,297.00	20,624.00	0.00	2,126.50	0.00	1,110.00	3,220.00	0.00	1,101.03	11,966.97	--	5,000.00	2,471.00	--	80,715.00	
2019-20	0.00	2,983.20	57,299.10	0.00	20,056.52	0.00	90.07	17,959.73	0.00	1,455.00	0.00	0.00	1,115.73	14,021.27	--	5,600.00	0.00	0.00	120,580.62	
2020-21	0.00	2,986.40	0.00	179.50	31,270.00	10,000.00	174.60	2,841.60	0.00	2,375.00	353.40	0.00	1,116.92	3,621.08	--	0.00	0.00	0.00	54,918.50	
2021-22	0.00	2,992.00	0.00	0.00	14,719.00	0.00	26.30	600.00	0.00	2,850.00	0.00	0.00	1,119.00	87.00	--	0.00	0.00	0.00	22,393.30	
2022-23	1/ 56.19	2,182.10	0.00	0.00	38,139.40	16,931.19	154.70	600.00	0.00	2,496.00	0.00	0.00	643.99	1,365.00	--	0.00	0.00	0.00	62,568.57	

1/ Estimated as of March 31, 2023.  
2/ In-Lieu replenishment through CWEA.

**TABLE 6**

**HISTORICAL WATER PRODUCTION  
(ACRE-FEET)**

<u>FISCAL YEAR</u>	<u>FIRST QUARTER</u>	<u>SECOND QUARTER</u>	<u>THIRD QUARTER</u>	<u>FOURTH QUARTER</u>	<u>TOTAL</u>
1973-74	76,455	51,809	40,649	65,397	234,310
1974-75	77,392	48,530	40,887	56,644	223,454
1975-76	77,811	51,274	47,542	63,439	240,066
1976-77	66,731	52,977	41,987	48,645	210,340
1977-78	59,996	47,251	33,189	54,839	195,275
1978-79	69,708	46,610	36,010	62,593	214,920
1979-80	75,291	51,799	37,496	58,522	223,108
1980-81	73,516	54,159	40,262	62,896	230,832
1981-82	77,656	50,996	39,071	51,819	219,541
1982-83	71,346	46,704	37,995	53,904	209,950
1983-84	69,443	44,463	51,157	69,616	234,679
1984-85	77,766	50,832	45,153	68,689	242,440
1985-86	77,193	53,773	46,083	69,175	246,223
1986-87	77,425	55,643	49,330	71,235	253,633
1987-88	76,057	51,642	53,093	67,319	248,111
1988-89	77,997	57,325	49,245	69,127	253,694
1989-90	77,509	60,257	50,941	63,412	252,118
1990-91	73,887	59,330	43,472	55,384	232,073
1991-92	65,688	54,633	40,696	60,461	221,477
1992-93	74,132	54,047	41,534	66,427	236,139
1993-94	76,624	57,381	47,652	61,949	243,606
1994-95	80,506	57,787	43,202	61,984	243,479
1995-96	81,408	63,428	50,931	73,184	268,950
1996-97	84,588	60,760	56,428	77,705	279,481
1997-98	84,624	60,585	46,940	61,890	254,039
1998-99	83,626	62,349	54,000	65,176	265,152
1999-00	82,395	69,076	53,697	73,519	278,687
2000-01	83,293	65,227	51,776	70,623	270,919
2001-02	82,434	61,691	55,724	64,480	264,328
2002-03	69,276	55,906	49,811	57,797	232,791
2003-04	71,337	56,815	54,740	69,957	252,850
2004-05	77,021	55,480	46,456	68,310	247,266
2005-06	79,323	62,977	53,745	63,894	259,940
2006-07	83,160	66,532	61,808	72,828	284,329
2007-08	75,251	57,898	53,327	71,691	258,167
2008-09	76,053	59,007	49,458	66,029	250,547
2009-10	74,867	56,356	43,456	62,445	237,123
2010-11	71,179	50,002	44,881	60,877	226,939
2011-12	74,369	51,922	48,340	61,659	236,290
2012-13	76,217	53,359	46,418	66,550	242,545
2013-14	73,131	54,706	48,357	64,359	240,552
2014-15	66,954	50,046	43,168	48,171	208,339
2015-16	54,430	42,182	37,364	48,850	182,826
2016-17	59,704	46,491	35,748	55,300	197,243
2017-18	63,580	53,479	41,816	50,625	209,500
2018-19	60,022	46,919	34,434	48,780	190,155
2019-20	58,198	44,615	40,766	49,005	192,584
2020-21	60,404	53,345	42,633	51,439	207,822
2021-22	54,603	43,508	39,642	48,395	186,148
2022-23	54,505	42,475	--	--	180,000 1/
11-Year Average	63,783	49,143	41,699	53,921	208,546
15-Year Average	66,597	50,922	43,320	56,945	217,785
49-Year Average	73,297	54,365	45,765	61,980	235,408

1/ ESTIMATED

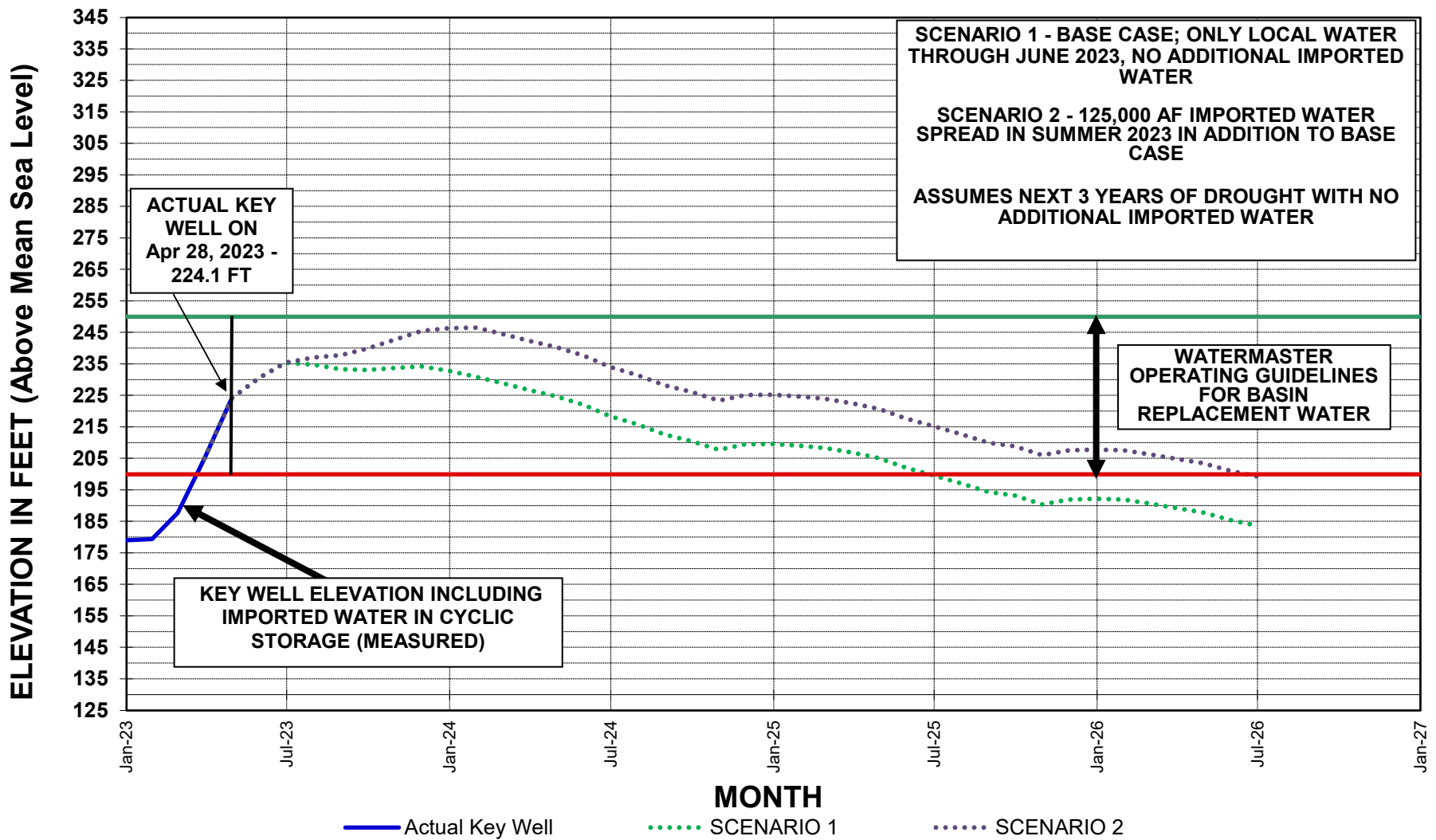
**TABLE 7**

**TOTAL HISTORICAL WATER DEMAND IN BASIN  
(ACRE-FEET)**

<u>FISCAL YEAR</u>	<u>TREATED IMPORTED WATER</u>	<u>TOTAL PRODUCTION</u>	<u>TOTAL DEMAND</u>
1973-74	630	235,460	236,090
1974-75	1,036	225,222	226,258
1975-76	3,539	242,246	245,785
1976-77	9,471	210,340	219,811
1977-78	11,427	195,276	206,702
1978-79	11,724	214,920	226,643
1979-80	13,032	223,089	236,121
1980-81	16,799	230,832	247,631
1981-82	17,402	220,392	237,793
1982-83	14,208	209,949	224,158
1983-84	18,298	236,679	254,977
1984-85	21,676	242,440	264,116
1985-86	20,872	246,224	267,095
1986-87	22,575	253,633	276,208
1987-88	28,537	248,102	276,638
1988-89	25,799	253,694	279,494
1989-90	31,478	252,136	283,614
1990-91	29,922	232,091	262,014
1991-92	18,606	221,477	240,083
1992-93	18,948	236,677	255,625
1993-94	18,412	243,617	262,029
1994-95	19,517	243,479	262,996
1995-96	16,931	268,951	285,881
1996-97	17,205	279,481	296,686
1997-98	14,208	253,921	268,129
1998-99	13,846	265,152	278,998
1999-00	21,062	278,687	299,749
2000-01	19,971	270,919	290,890
2001-02	35,153	264,328	299,481
2002-03	40,982	237,491	278,472
2003-04	50,758	252,812	303,570
2004-05	35,979	247,187	283,166
2005-06	23,125	259,808	282,932
2006-07	25,904	284,328	310,232
2007-08	30,174	258,167	288,341
2008-09	21,683	250,103	271,785
2009-10	16,329	237,846	254,176
2010-11	10,316	227,657	237,973
2011-12	10,561	237,029	247,590
2012-13	14,344	242,914	257,258
2013-14	22,216	240,552	262,768
2014-15	22,517	208,339	230,856
2015-16	12,740	182,826	195,566
2016-17	12,251	197,243	209,495
2017-18	13,576	209,500	223,076
2018-19	24,953	190,156	215,109
2019-20	26,335	192,584	218,919
2020-21	24,413	207,822	232,235
2021-22	34,023	186,148	220,171
2022-23	<sup>1/</sup> 30,000	180,000	210,000
11-Year Average	19,812	208,647	228,458
15-Year Average	19,762	217,926	237,688
49-Year Average	20,111	235,713	255,824

1/ Estimated

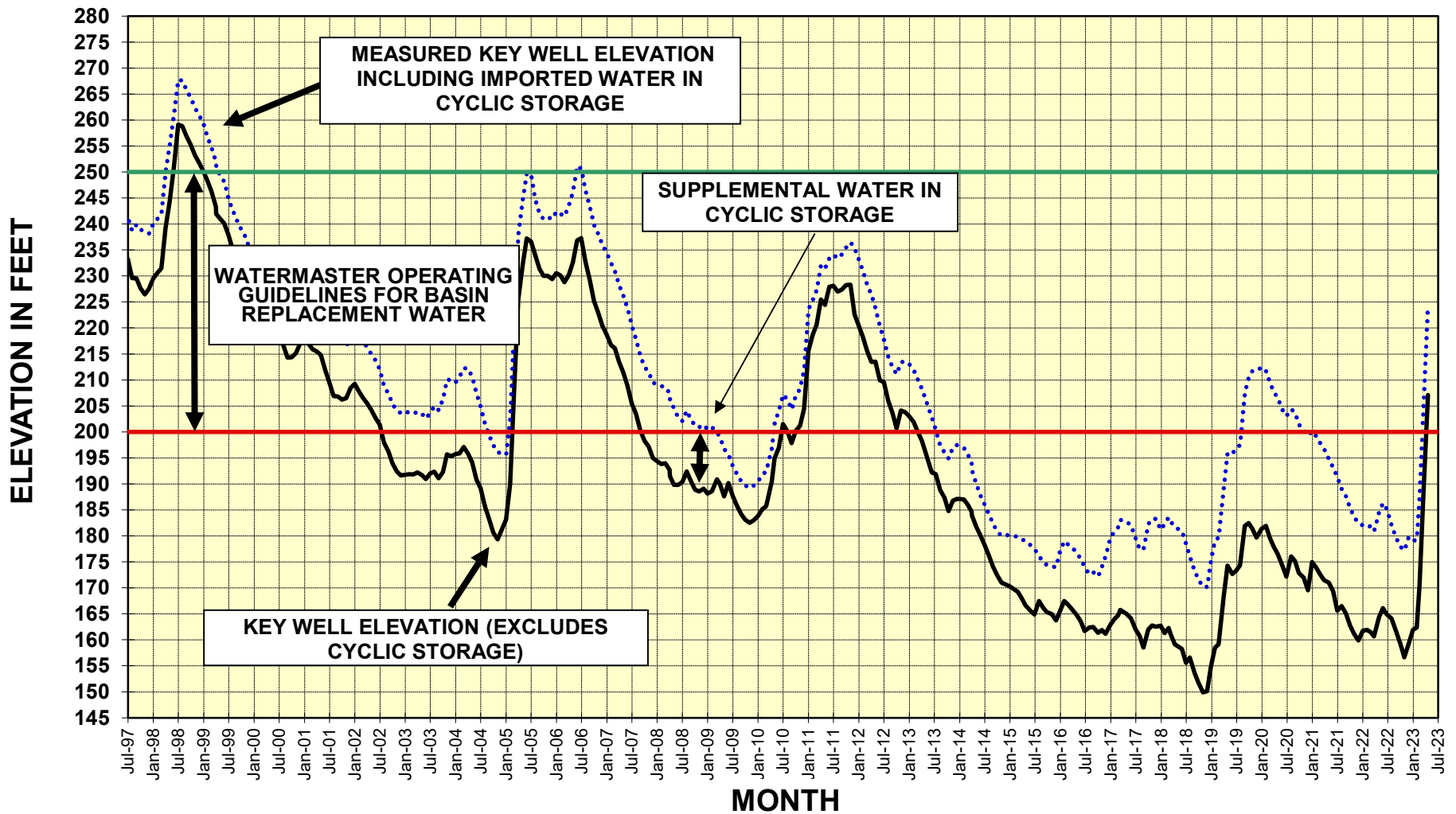




**STETSON ENGINEERS INC.**  
 Covina San Rafael Mesa, Arizona  
 WATER RESOURCE ENGINEERS

**MAIN SAN GABRIEL BASIN WATERMASTER  
 BALDWIN PARK KEY WELL  
 GROUNDWATER ELEVATION  
 PROJECTED THROUGH FY 2025-26**

**FIGURE 1**



**STETSON ENGINEERS INC.**

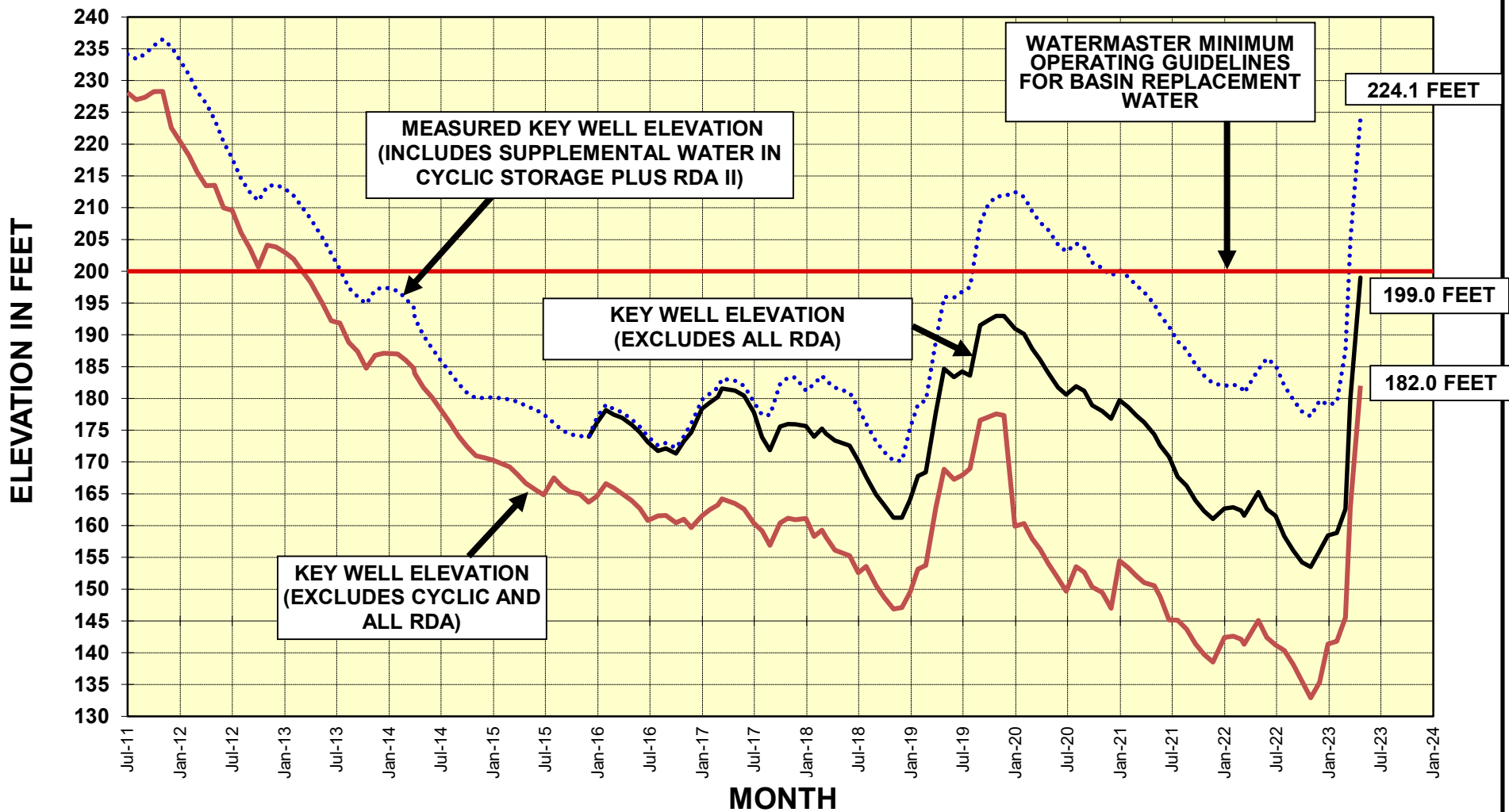
Covina San Rafael Mesa, Arizona

WATER RESOURCE ENGINEERS

**MAIN SAN GABRIEL BASIN WATERMASTER**

**BALDWIN PARK KEY WELL  
GROUNDWATER ELEVATION**

**FIGURE 2**



**STETSON ENGINEERS INC.**  
 Covina San Rafael Mesa, Arizona  
 WATER RESOURCE ENGINEERS

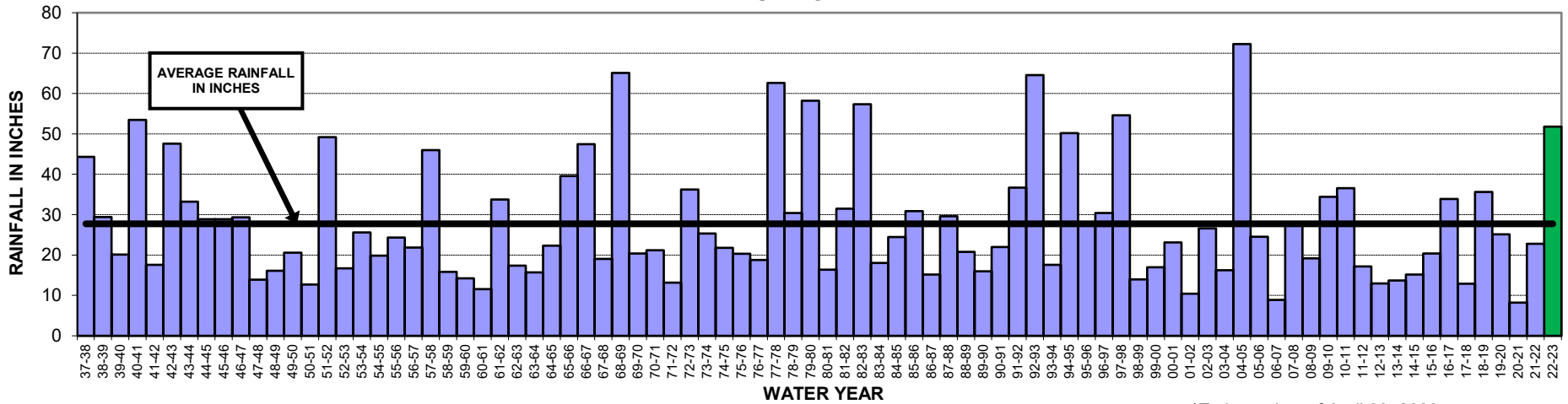
**MAIN SAN GABRIEL BASIN WATERMASTER**

**IMPACTS OF STORED WATER ON BALDWIN PARK  
 KEY WELL GROUNDWATER ELEVATION**

**FIGURE 3**

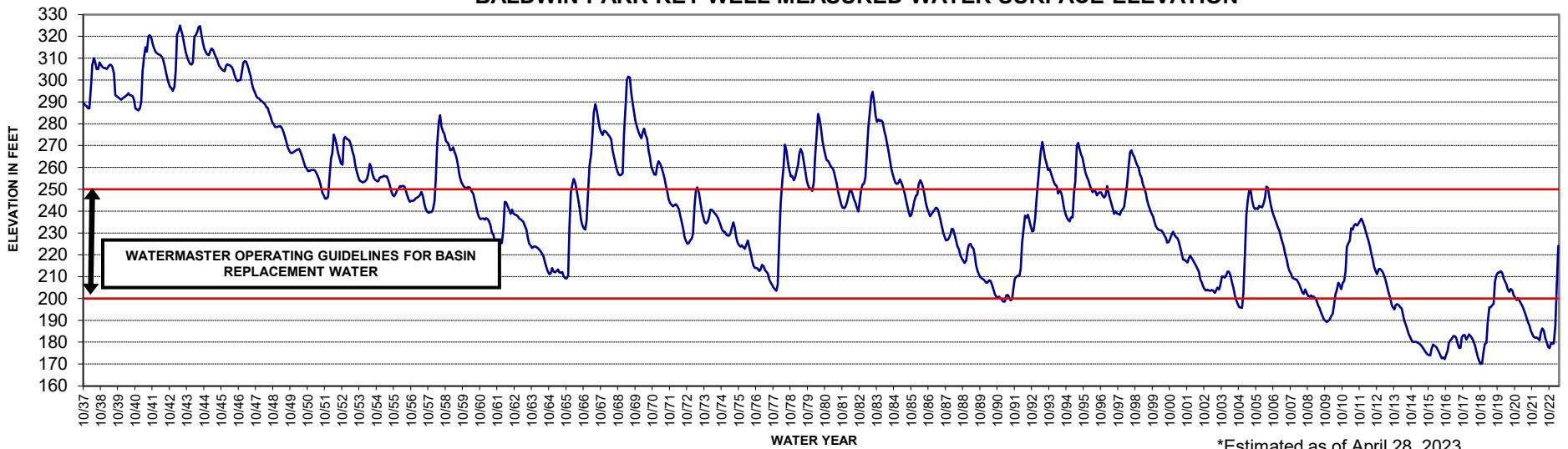


### RAINFALL AT SAN GABRIEL DAM



\*Estimated as of April 30, 2023

### BALDWIN PARK KEY WELL MEASURED WATER SURFACE ELEVATION



\*Estimated as of April 28, 2023



**STETSON ENGINEERS INC.**

Covina San Rafael Mesa, Arizona

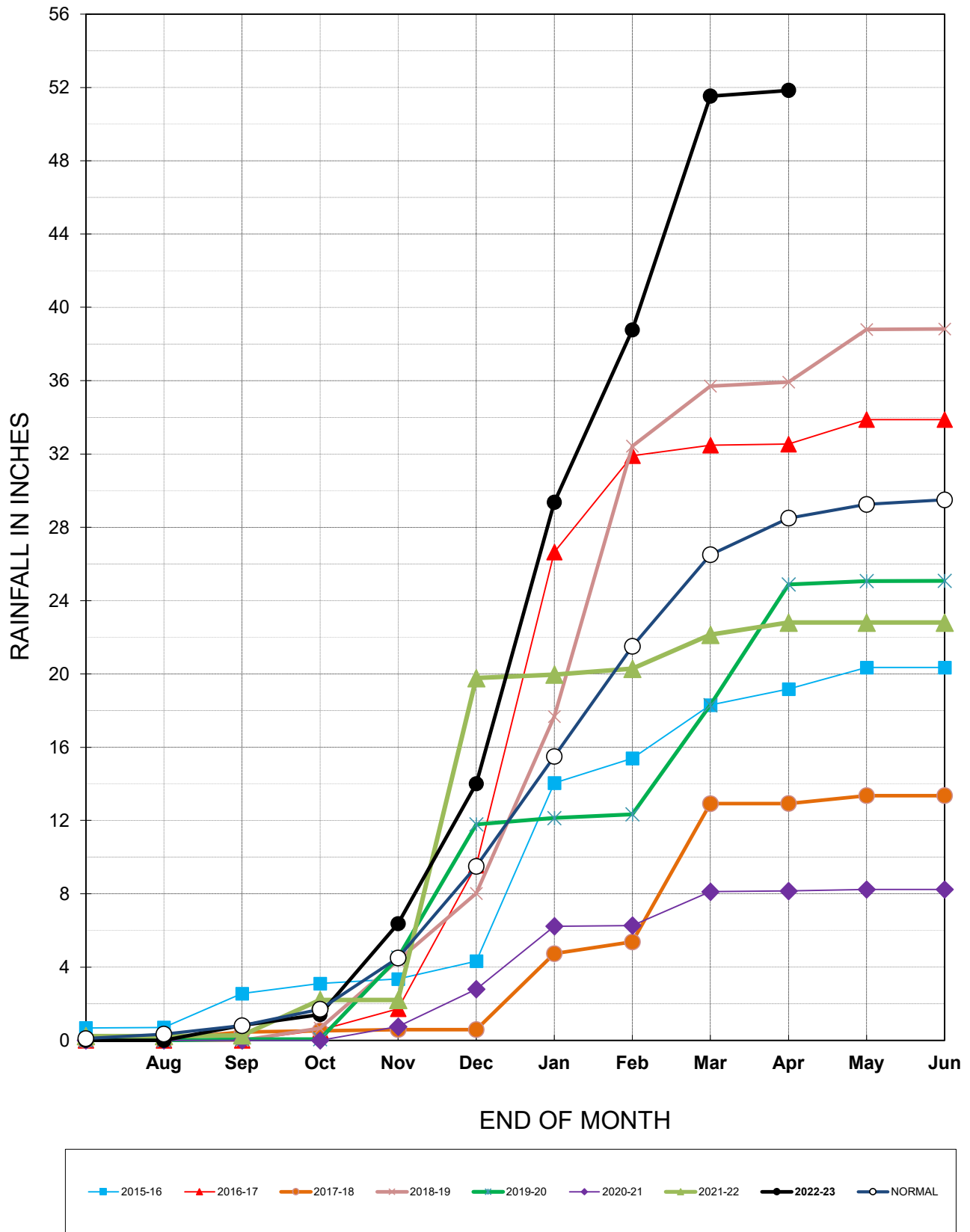
WATER RESOURCE ENGINEERS

## MAIN SAN GABRIEL BASIN WATERMASTER

### SAN GABRIEL DAM RAINFALL AND BALDWIN PARK KEY WELL ELEVATION

FIGURE 4

FIGURE 5

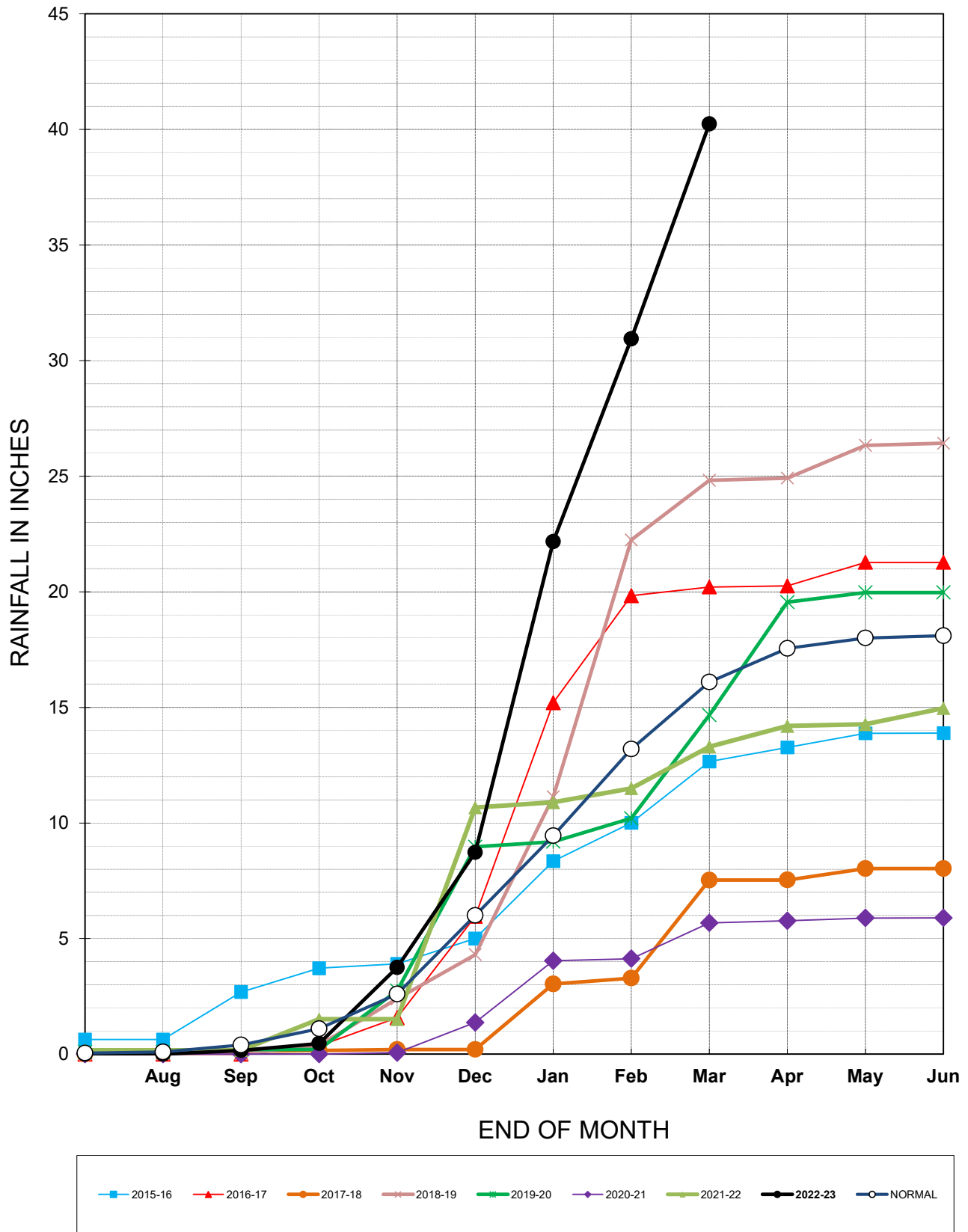


**STETSON ENGINEERS INC.**  
 Covina San Rafael Mesa, Arizona  
 WATER RESOURCE ENGINEERS

**MAIN SAN GABRIEL BASIN WATERMASTER**

**ACCUMULATED RAINFALL AT SAN GABRIEL DAM  
 RAINFALL STATION NO. 425B-E**

FIGURE 6

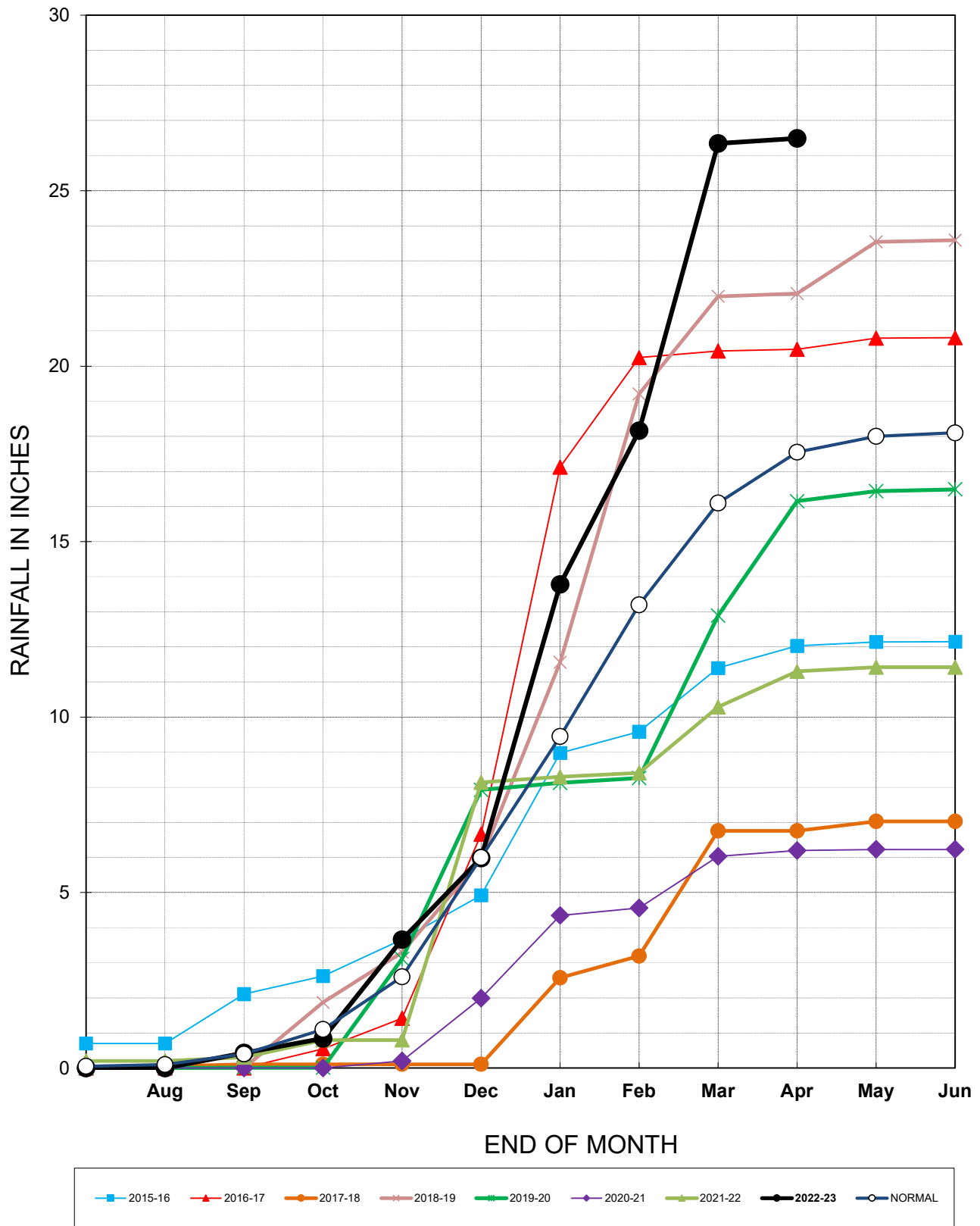


**STETSON ENGINEERS INC.**  
Covina San Rafael Mesa, Arizona  
WATER RESOURCE ENGINEERS

**MAIN SAN GABRIEL BASIN WATERMASTER**

**ACCUMULATED RAINFALL AT PASADENA - CITY HALL  
RAINFALL STATION NO. 610B**

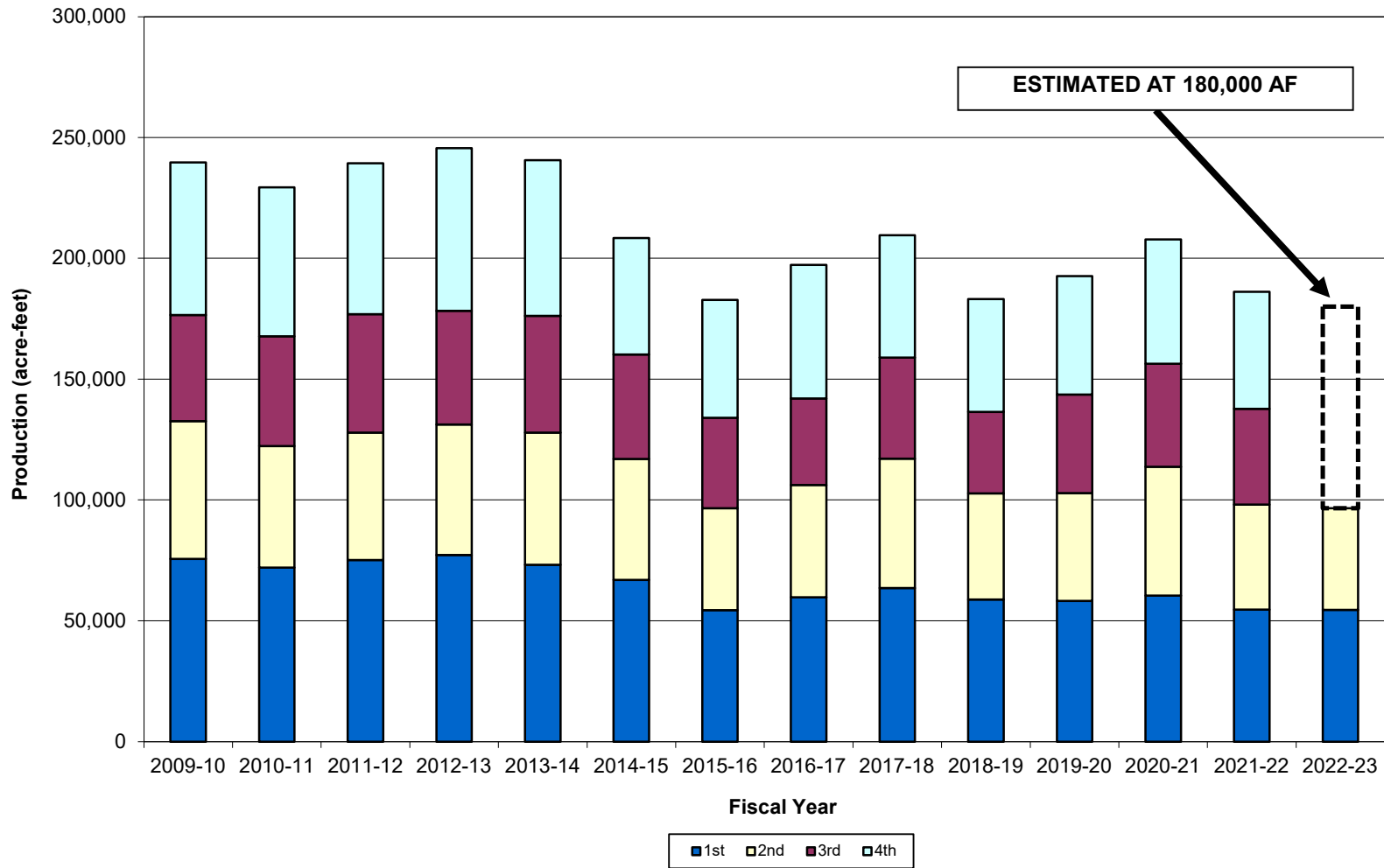
**FIGURE 7**



**STETSON ENGINEERS INC.**  
Covina San Rafael Mesa, Arizona  
WATER RESOURCE ENGINEERS

**MAIN SAN GABRIEL BASIN WATERMASTER**

**ACCUMULATED RAINFALL AT PUDDINGSTONE DAM  
RAINFALL STATION NO. 96-C**



**STETSON ENGINEERS INC.**

Covina San Rafael Mesa, Arizona

WATER RESOURCE ENGINEERS

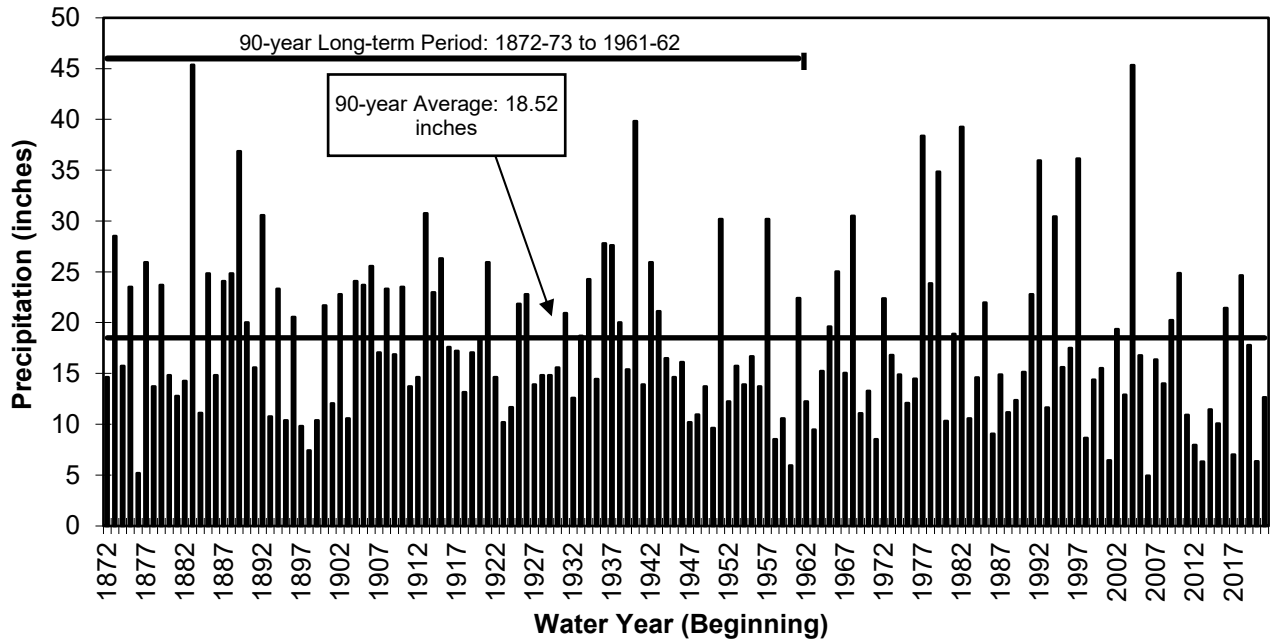
**MAIN SAN GABRIEL BASIN WATERMASTER**

**PRODUCTION IN  
MAIN SAN GABRIEL BASIN**

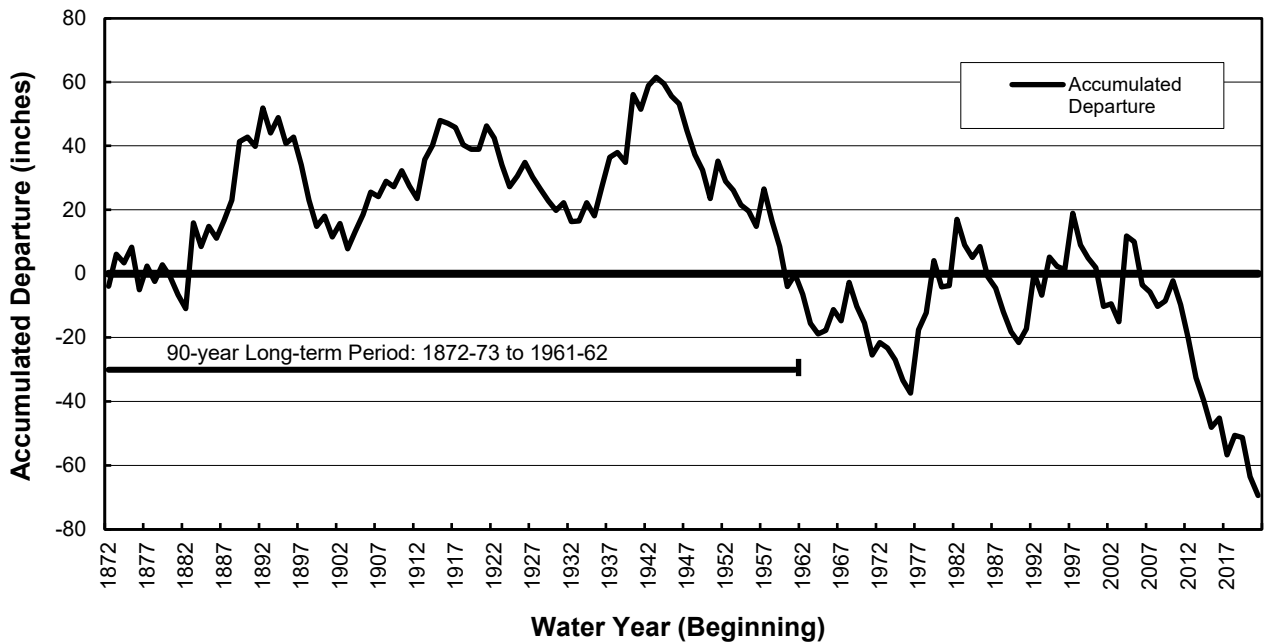
**FIGURE 8**

# **APPENDIX A**

## SAN GABRIEL VALLEY PRECIPITATION 1872-73 THROUGH 2021-22



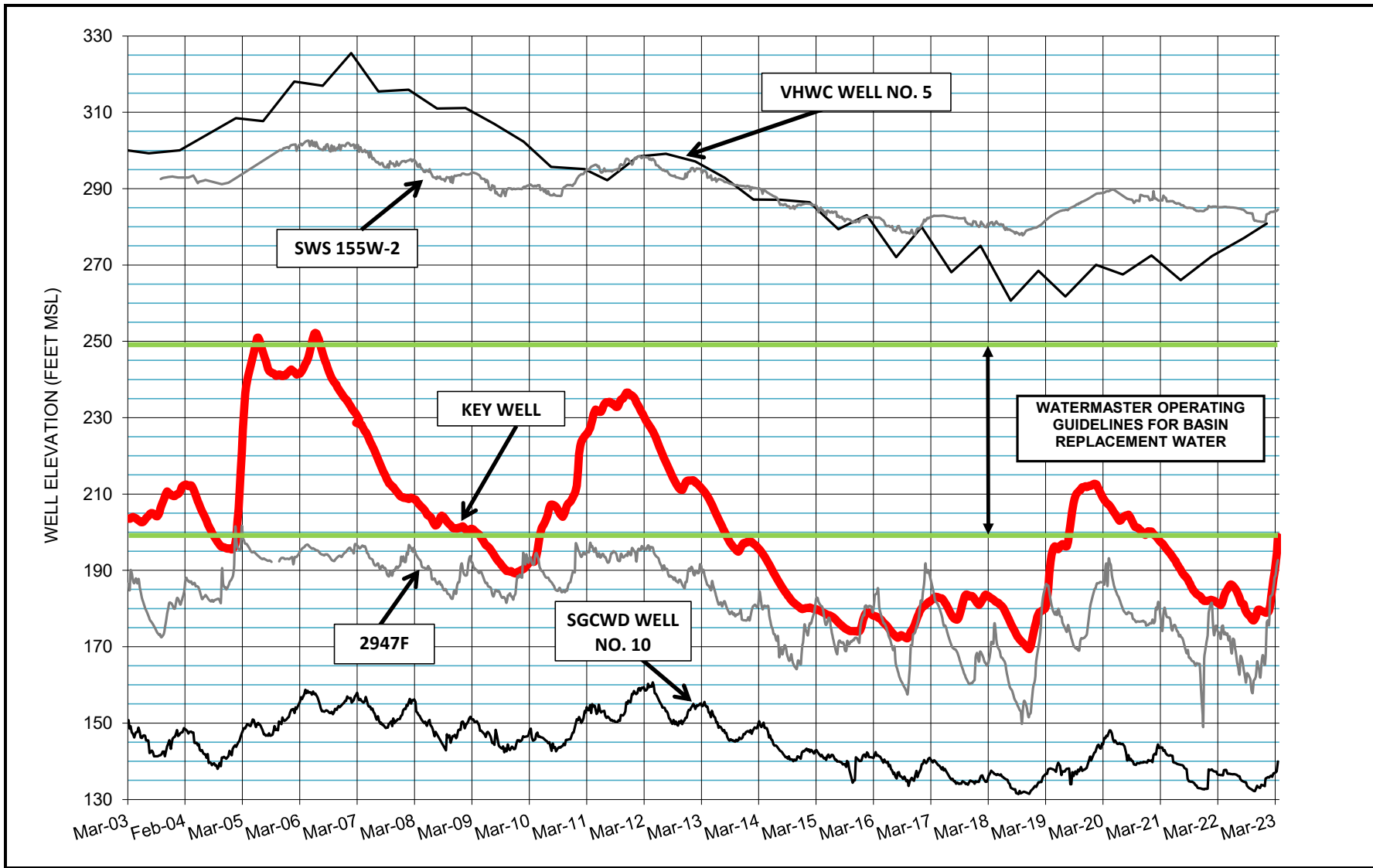
## SAN GABRIEL VALLEY ACCUMULATED DEPARTURE 1872-73 THROUGH 2021-22



# HISTORICAL PRECIPITATION IN THE SAN GABRIEL VALLEY

# **APPENDIX B**





**STETSON ENGINEERS INC.**

West Covina San Rafael Mesa, Arizona  
 WATER RESOURCE ENGINEERS

**MAIN SAN GABRIEL BASIN WATERMASTER**

**HYDROGRAPHS FOR BALDWIN PARK KEY WELL AND OTHER "KEY WELLS"  
 BETWEEN MARCH 2003 AND MARCH 2023**

# **APPENDIX C**

**APPENDIX C**

**RANGE OF OPERATING SAFE YIELDS  
AND PUMPER'S SHARES THEREOF  
(Acre-feet)**

**Quantities which may be pumped free of Replacement Water Assessment**

<b>Pumper</b>	<b>Pumper's Share %</b>	<b>OSY of 130,000</b>	<b>OSY of 140,000</b>	<b>OSY of 150,000</b>	<b>OSY of 160,000</b>
Alhambra, City of	4.45876	5,796.39	6,242.26	6,688.14	7,134.02
Amarillo Mutual	0.35874	466.36	502.24	538.11	573.98
Andrade, Susan	0.00423	5.50	5.92	6.35	6.77
Arcadia, City of	4.23099	5,500.29	5,923.39	6,346.49	6,769.58
Banks, Gale C.	0.02530	32.89	35.42	37.95	40.48
Brea, City of	0.76035	988.46	1,064.49	1,140.53	1,216.56
Cadway, Inc.	0.32545	423.09	455.63	488.18	520.72
Calif. American-San Marino	4.74431	6,167.60	6,642.03	7,116.47	7,590.90
California Domestic	6.26154	8,140.00	8,766.16	9,392.31	10,018.46
Canyon Water Company	0.00051	0.66	0.71	0.77	0.82
Chevron	0.00101	1.31	1.41	1.52	1.62
County Sanitation Dist.18	0.00228	2.96	3.19	3.42	3.65
Covina, City of	0.23979	311.73	335.71	359.69	383.66
Crevolin, A.J.	0.00114	1.48	1.60	1.71	1.82
Dawes, Mary Kay	0.22359	290.67	313.03	335.39	357.74
Del Rio Mutual	0.10069	130.90	140.97	151.04	161.10
El Monte, City of	1.40888	1,831.54	1,972.43	2,113.32	2,254.21
El Monte Cemetery	0.00936	12.17	13.10	14.04	14.98
Fox Family Trust Michael Edward Fox and Crystal Marie Fox, Trustees	0.07378	95.91	103.29	110.67	118.05
Garnier, Anton and Anita	0.10843	140.96	151.80	162.65	173.49
Golden State Water-S.G.V. Dist.	2.92105	3,797.37	4,089.47	4,381.58	4,673.68
Green, Walter	0.02419	31.45	33.87	36.29	38.70
Hansen, Alice	0.00038	0.49	0.53	0.57	0.61
Hanson Aggregates West, Inc.	1.17094	1,522.22	1,639.32	1,756.41	1,873.50
Heinrich, Carolyn	0.01269	16.50	17.77	19.04	20.30
Hemlock Mutual	0.08399	109.19	117.59	125.99	134.38
IBY Property Owner, LLC	1.20047	1,560.61	1,680.66	1,800.71	1,920.75
Industry, City of	0.55810	725.53	781.34	837.15	892.96
Irwindale, City of	0.19025	247.33	266.35	285.38	304.40
Kirklen, Jeffery	0.05665	73.65	79.31	84.98	90.64
Knight, William J., Living Trust	0.11530	149.89	161.42	172.95	184.48
Landeros, John	0.00038	0.49	0.53	0.57	0.61
La Puente Valley CWD	0.57197	743.56	800.76	857.96	915.15
Loucks, David	0.00152	1.98	2.13	2.28	2.43

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<b>Pumper</b>	<b>Pumper's Share %</b>	<b>OSY of 130,000</b>	<b>OSY of 140,000</b>	<b>OSY of 150,000</b>	<b>OSY of 160,000</b>
Lovelady, June G.	0.09386	122.02	131.40	140.79	150.18
The Maggiore Family Trust	0.07379	95.93	103.31	110.69	118.06
Martinez, Frances	0.00038	0.49	0.53	0.57	0.61
McIntyre, William	0.01467	19.07	20.54	22.01	23.47
Monterey Park, City of	3.39216	4,409.81	4,749.02	5,088.24	5,427.46
NCL Co, LLC	0.00050	0.65	0.70	0.75	0.80
Nick Tomovich	0.00001	0.01	0.01	0.02	0.02
Nicholson Family Trust - Marital Trust	0.01569	20.40	21.97	23.54	25.10
Pellissier Irrevocable QTIP Trust, et a	3.28384	4,268.99	4,597.38	4,925.76	5,254.14
Pico County Water Dist.	0.00038	0.49	0.53	0.57	0.61
Rados, Alexander	0.02176	28.29	30.46	32.64	34.82
Rana Living Trust, Jeanne	0.01269	16.50	17.77	19.04	20.30
Rosemead Development Ltd.	0.00051	0.66	0.71	0.77	0.82
Ruth, Roy	0.00038	0.49	0.53	0.57	0.61
San Gabriel Country Club	0.14476	188.19	202.66	217.14	231.62
San Gabriel County WD	2.73019	3,549.25	3,822.27	4,095.29	4,368.30
San Gabriel Valley WC	10.49247	13,640.21	14,689.46	15,738.71	16,787.95
Sonoco Products	0.15766	204.96	220.72	236.49	252.26
So. Calif. Edison Co.	0.08690	112.97	121.66	130.35	139.04
South Pasadena, City of	1.80520	2,346.76	2,527.28	2,707.80	2,888.32
Sterling Mutual	0.06072	78.94	85.01	91.08	97.15
Suburban Water Systems	12.59998	16,379.97	17,639.97	18,899.97	20,159.97
Sunny Slope Water Co.	1.12770	1,466.01	1,578.78	1,691.55	1,804.32
Tate, Phillip P. & Sieglinde A., et al	0.02926	38.04	40.96	43.89	46.82
Tyler Nursery	0.00162	2.11	2.27	2.43	2.59
United Rock Products	0.23253	302.29	325.54	348.80	372.05
Valencia Heights Water Co.	0.53685	697.91	751.59	805.28	858.96
Valley County Water District	3.01517	3,919.72	4,221.24	4,522.76	4,824.27
Valley View Mutual	0.31169	405.20	436.37	467.54	498.70
Vulcan Materials Company	0.90690	1,178.97	1,269.66	1,360.35	1,451.04
Whittier, City of	4.18519	5,440.75	5,859.27	6,277.79	6,696.30
Wilmott, Erma	0.00038	0.49	0.53	0.57	0.61
Workman Mill Invest. Comp.	0.87839	1,141.91	1,229.75	1,317.59	1,405.42
<b>Total of Pumpers</b>	<b>76.46119</b>	<b>99,399.55</b>	<b>107,045.67</b>	<b>114,691.79</b>	<b>122,337.90</b>

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Azusa, City of	1.84988	2,404.84	2,589.83	2,774.82	2,959.81
Azusa Valley Water Co.	5.06299	6,581.89	7,088.19	7,594.49	8,100.78
Calif. American (Duarte) Covina Irrigating Co.	1.84634 3.22577	2,400.24 4,193.50	2,584.88 4,516.08	2,769.51 4,838.66	2,954.14 5,161.23
Glendora, City of	4.75261	6,178.39	6,653.65	7,128.92	7,604.18
Golden State Water Co. - San Dimas District	1.73984	2,261.79	2,435.78	2,609.76	2,783.74
Los Angeles, County of	1.88292	2,447.80	2,636.09	2,824.38	3,012.67
Metropolitan Water Dist. Monrovia, City of	0.08349 3.09472	108.54 4,023.14	116.89 4,332.61	125.24 4,642.08	133.58 4,951.55
Phillips, Alice B., et al	0.00025	0.33	0.35	0.37	0.40
Total of Integrated Producers	23.53881	30,600.45	32,954.33	35,308.21	37,662.10
Total of Pumpers	76.46119	99,399.55	107,045.67	114,691.79	122,337.90
<b>TOTAL</b>	<b>100.00000</b>	<b>130,000.00</b>	<b>140,000.00</b>	<b>150,000.00</b>	<b>160,000.00</b>