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Exempt from Filing Fees
Government Code § 6103

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES - CENTRAL DISTRICT

Coordination Proceeding, Special Title (Rule 1550(b))	Judicial Council Coordination Proceeding No. 4408
ANTELOPE VALLEY GROUNDWATER CASES	LASC Case No.: BC 325201
	Assigned to the Hon. Jack Komar, Judge of the Santa Clara Superior Court
	Santa Clara Court Case No. 1-05-CV-049053
	ANTELOPE VALLEY WATERMASTER'S ANNUAL REPORT FOR 2018

Pursuant to the requirements of the Judgement and Physical Solution (Section 18.5.17) as modified by this Court's Order dated April 30, 2018, the Antelope Valley Watermaster hereby submits its 2018 Annual Report (dated July 29, 2019) as required by the terms of the Judgment. The Watermaster Board unanimously approved the filing of this 2018 Annual Report with this Court pursuant to passing Resolution No. R-19-22 on July 24, 2019.

Dated: July 30, 2019

PRICE, POSTEL & PARMA LLP

By: Craig A. Parton
CRAIG A. PARTON
Attorneys for Antelope Valley Watermaster

PROOF OF SERVICE

STATE OF CALIFORNIA, COUNTY OF SANTA BARBARA

I am employed in the County of Santa Barbara, State of California. I am over the age of eighteen (18) and not a party to the within action. My business address is 200 East Carrillo Street, Fourth Floor, Santa Barbara, California 93101.

On July 30, 2019, I served the foregoing document described as **ANTELOPE VALLEY WATERMASTER'S ANNUAL REPORT FOR 2017** on all interested parties in this action by placing the original and/or true copy.

☒ **BY ELECTRONIC SERVICE:** I posted the document(s) listed above to the Santa Clara County Superior Court Website @ www.scefiling.org and Glotrans website in the action of the Antelope Valley Groundwater Cases.

☒ *(STATE)* I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

☐ *(FEDERAL)* I hereby certify that I am employed in the office of a member of the Bar of this Court at whose direction the service was made.

Executed on July 30, 2019, at Santa Barbara, California.

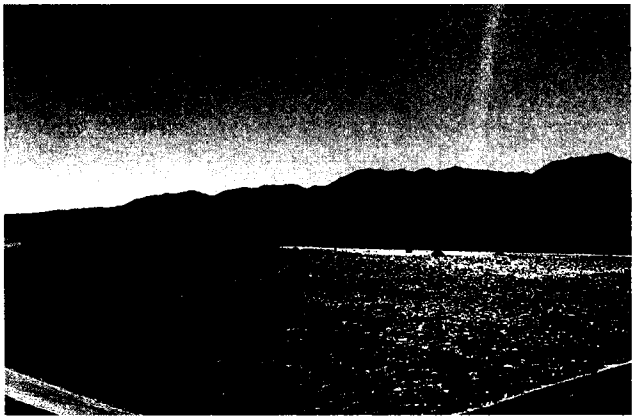
Signature
Elizabeth Wright

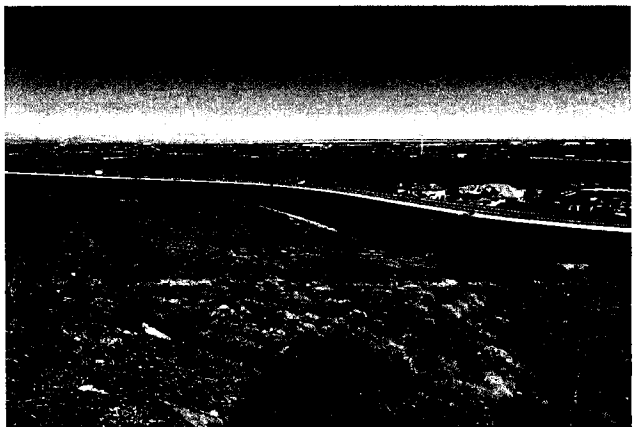
ANTELOPE VALLEY
WATERMASTER
EST. 2016

Final
Antelope Valley Watermaster

2018 Annual Report

July 29, 2019





TODD GROUNDWATER

Watermaster Engineer

ANTELOPE VALLEY
WATERMASTER
EST. 2016

FINAL

Antelope Valley Watermaster

2018 Annual Report

July 29, 2019

TODD GROUNDWATER

2490 Mariner Square Loop, Suite 215
Alameda, CA 94501
510.747.6920
www.toddgroundwater.com

Third Annual Report, Calendar Year 2018

Antelope Valley Groundwater Cases, Judicial Council Coordination Proceeding No. 4408, Santa Clara Case No.: 1-05-CV-049053, Superior Court of the State of California, County of Los Angeles - Central District

Antelope Valley Watermaster Board of Directors

The Antelope Valley Watermaster is charged with administering adjudicated water rights and managing groundwater resources within the Adjudication Area of the Antelope Valley. The five-member Board includes:

Robert Parris, Chairperson
Dennis Atkinson, Vice Chairperson
Adam Ariki
John Calandri
Leo Thibault

Antelope Valley Watermaster Engineer

TODD GROUNDWATER

2490 Mariner Square Loop, Suite 215
Alameda, CA 94501
510.747.6920
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List of Acronyms

AFY	acre-feet per year
AVEK	Antelope Valley-East Kern Water Agency
AVSWC/JPA	Antelope Valley State Water Contractors Joint Powers Authority
Cal Water	California Water Service Company
CIMIS	California Irrigation Management Information System
CSD	Community Services District
DDW	State Water Resources Control Board California Division of Drinking Water
District 40	Los Angeles County Waterworks District No. 40, Antelope Valley
DLCSD	Desert Lake Community Services District
DWR	California Department of Water Resources
DPW	Los Angeles County Department of Public Works
DRI	Desert Research Institute
EAFB	Edwards Air Force Base
ET	Evapotranspiration
FY	Fiscal year
GAMA	SWRCB Groundwater Ambient Monitoring and Assessment
InSAR	Interferometric Synthetic Aperture Radar
IRWMP	Antelope Valley Integrated Regional Water Management Plan
Kc	Crop coefficient
LACSD	County Sanitation Districts of Los Angeles County
LCID	Littlerock Creek Irrigation District
mg/L	milligram per liter
mgd	million gallons per day
msl	mean sea level
MWC	Mutual Water Company
NEWD	North Edwards Water District
NWIS	National Water Information System of the USGS
NWS	National Weather Service
PRID	Palm Ranch Irrigation District
PWD	Palmdale Water District
QHWD	Quartz Hill Water District
RCSD	Rosamond Community Services District
RWA	Replacement Water Assessment
SWRCB	State Water Resources Control Board
SWRU	Semitropic Water Storage District Stored Water Recover Unit
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nutrient Management Plan
SWP	State Water Project
Sy	specific yield
TDS	Total Dissolved Solids
USGS	U.S. Geological Survey

WRP	Water Reclamation Plant
WSSP-2	AVEK's Water Supply Stabilization Project No. 2 (also called Westside Water Bank)
WTP	Water Treatment Plant
WWTP	Wastewater Treatment
WSWB	Willow Springs Water Bank (formerly known as the Antelope Valley Water Bank)

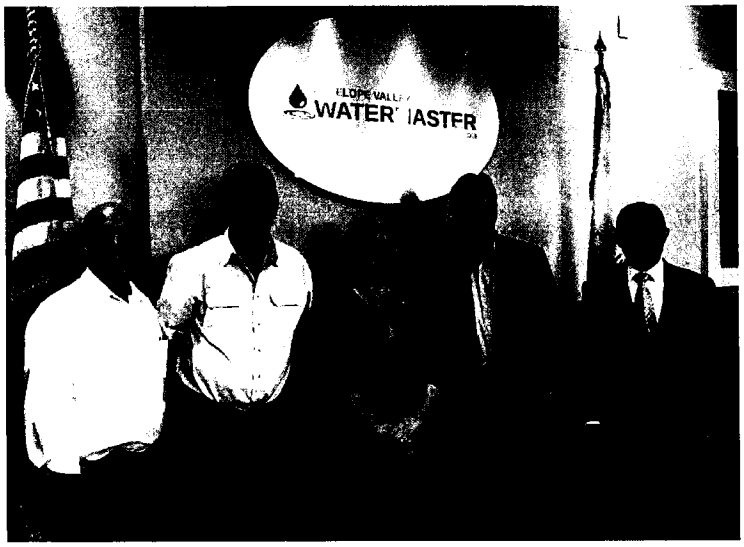
MESSAGE FROM THE WATERMASTER BOARD

As the Antelope Valley completes its third year of the Judgment, many details for implementation are in place. 2016 and 2017 were marked by building of the Watermaster team and development of roles and responsibilities for working together. During 2018, the foundation was laid for ongoing implementation of the Judgment as evidenced by a list of accomplishments:

- Approval of Rules and Regulations for administrative assessments, well application approval and Small Pumper qualifying process, transfers, and storage agreements
- Approval and management of budgets
- Adopting a Replacement Water Assessment for fiscal year 2018
- Completion of the Second Annual Report and acceptance by the Court
- Initiation of other key sections of the Rules and Regulations
- Board and Court approval of moving the annual report due date to August 1
- Resolution of important issues, including pre-rampdown for Exhibit 3 Parties
- Participation in a Basin-wide groundwater monitoring program.

This year was also the first year that required rampdown of production. As production is reduced, the flexibility of the Judgment becomes more important to ensure both reliability of shared groundwater supplies and management of the groundwater basin. Through transfers, carryover, new wells, and storage agreements for groundwater banking, the Watermaster is well-positioned to monitor and manage groundwater in compliance with the Judgment.

The Antelope Valley Watermaster Board would like to extend its appreciation to all involved for their contributions during this year of action. We continue to be impressed by the cooperative effort and appreciate the opportunity to work together toward our shared goal of achieving groundwater sustainability in an equitable manner.



Watermaster Board of Directors, July 24, 2019

From left to right: John Calandri, Dennis Atkinson, Kathy MacLaren (alternate), Dwayne Chisam (alternate), and Adam Ariki

1 INTRODUCTION

The Judgment and Physical Solution for the Antelope Valley Groundwater Adjudication represents more than 15 years of complex proceedings among more than 4,000 parties including public water suppliers, landowners, small pumpers and non-pumping property owners, and the federal and state governments. Through four phases, the adjudication defined the boundaries of the Basin[1], considered hydraulic connection throughout the basin, established the safe yield, and quantified groundwater production. The Judgment identified a state of overdraft, established respective water rights among groundwater producers, and ordered a rampdown of production to the native basin safe yield.

The adjudication provides a framework to sustainably manage the basin and reduce groundwater level declines and subsidence. The Final Judgment was entered on December 23, 2015 and is posted on the Watermaster website for reference (www.avwatermaster.net). To administer the Judgment, the Court directed appointment of the Watermaster – a five-member board representing the Parties. In 2016, the Watermaster Board and an Advisory Committee (both entities required under the Judgment) were formed. In 2017, the Board awarded Todd Groundwater a three-year contract as Watermaster Engineer to fulfill certain requirements of the Judgment.

Under the Judgment, the Watermaster Engineer has the responsibility of preparing annual reports for the Court; this document is the third such report. In 2018, the Watermaster Board requested and was granted a permanent filing date of August 1st for submittal of the Annual Report to the Court covering the previous calendar year. This 2018 Annual Report is being provided to the Court in compliance with the August 1, 2019 deadline.

1.1 BACKGROUND

The Antelope Valley Groundwater Basin is located in the western Mojave Desert, covering 1,580 square miles in portions of Los Angeles, Kern, and San Bernardino counties (**Figure 1**). The groundwater basin boundaries have been defined by the California Department of Water Resources (DWR Basin Number 6-44) and extend beyond the Adjudication Area.

The Antelope Valley Area of Adjudication covers approximately 1,390 square miles of the groundwater basin (**Figure 1).** The Adjudication Area does not include the adjacent alluvial portions of the groundwater basin to the northeast and south and is truncated at the Los Angeles-San Bernardino County Line in the southeast. Subsurface flows between these adjacent alluvial areas and the Adjudication Area are generally considered nominal and the portion of the Antelope Valley Groundwater Basin that extends southeast into San Bernardino County is within the Mojave Basin Area adjudication.

The Adjudication Area was divided into five subareas for management purposes (**Figure 1**):

[1] The Final Judgment defines Basin as the Area of Adjudication determined by the Court. Basin is capitalized in this report when referring to the Area of Adjudication. To avoid confusion, the terms *Antelope Valley Groundwater Basin* or *groundwater basin* refer to the DWR-defined groundwater basin.

- Central Antelope Valley Subarea
- West Antelope Valley Subarea
- South East Subarea
- Willow Springs Subarea
- Rogers Lake Subarea.

A native safe yield of 82,300 acre-feet per year (AFY) was established by the Court for the Antelope Valley Area of Adjudication and the adjudication Parties were divided into various classes to establish respective water rights among groundwater producers. To achieve sustainable groundwater elevations, groundwater production would be reduced (ramped down) over a seven-year period (2016-2022) to a final Production Right. The diagram on the right side of **Figure 2**[2] shows the Judgment's apportionment of native safe yield to the various Judgment classes.

The Physical Solution portion of the Judgment provides direction for the reduction of groundwater use within the Adjudication Area. During the Rampdown Period, certain Parties to the Judgment are allowed to produce groundwater in excess of their Production Right (beginning with a Pre-Rampdown Production amount) that does not incur a Replacement Obligation. Certain Parties are also allowed credit for Imported Water Return Flows, Carry Over water, and Stored water under the distinct circumstances defined in the Judgment. Certain Parties can also pump more than their allowed Production Right provided they pay a Replacement Water Assessment. A schematic diagram showing these seven potential production categories is shown on the left side of **Figure 2** and summarized briefly below.

- The Production Right is the portion of the Native Safe Yield assigned to each Party (see diagram on the right of **Figure 2**). Production Rights for specific Parties are defined in the Judgment in Exhibit 3 (Non-Overlying Production Rights), Exhibit 4 (Overlying Production Rights), and in Paragraphs 5.1.3, 5.1.4, and 5.1.5 for the Small Pumper Class, Federal Reserved Water Rights, and State of California, respectively.
- Rampdown Production is defined in the Judgment as the reasonable and beneficial use of groundwater, excluding Imported Water Return Flows, at a time prior to the Judgment, or the Production Right, whichever is greater. During the seven-year Rampdown Period, production is reduced – or ramped down – from the Pre-Rampdown Production Right to the Production Right for certain Parties with Pre-Rampdown Production rights.
- Imported Water Return Flows represent water brought into the basin from outside of the watershed that provides a net increase in groundwater supply (i.e., does not include consumed or evaporated imported water). Return flows for agriculture were established in the Judgment at 34 percent of imported water use and at 39 percent for municipal and industrial uses.

[2] The sum of the individual production rights is 82,280.63 AFY; this sum was rounded in the Judgment to 82,300 AFY.

- Carry Over Water is the right to an unused portion of an annual Production Right or a right to Imported Water Return Flows in a year after the year in which the right was originally available.
- Stored Water is water held in storage in the basin as a result of direct spreading or other methods for subsequent withdrawal and use pursuant to an agreement with the Watermaster. It does not include Imported Water Return Flows.
- Other Rights to Produce Groundwater are outlined in Paragraphs 5.1.7 through 5.1.10 and other portions of the Judgment. Such rights include entities that are required to switch to recycled water when available and production rights granted to non-stipulating Parties (also referred to as Supporting Landowners). This category also includes the right of Phelan Piñon Hills Community Services District to produce groundwater from the basin for export to its service area under specific conditions in the Judgment (¶6.4.1.2).
- Additional Production is pumping that does not fall into the other categories and would include Production based on Watermaster approvals for new production, and Production by Parties to the Judgment in excess of other rights. This production would be subject to a Replacement Obligation; for such pumping, the producer would need to pay a Replacement Water Assessment. Replacement Water will be purchased by the Watermaster or otherwise provided to satisfy the Replacement Obligation.

The Judgment limits the amount of groundwater production that can be produced without incurring a Replacement Obligation (i.e., purchase of imported water to offset the production). Types of production that do not incur a Replacement Obligation include Production Rights (up to the Native Safe Yield), recovery of Imported Water Return Flows, or recovery of Stored Water. While this report indicates that reductions in Production will occur as Parties are ramping down production rights to the Native Safe Yield, such reductions may not be required to the extent that the over-production is offset with Replacement Water.

1.2 PURPOSE AND SCOPE

The Watermaster Engineer is responsible for preparation of annual reports for submittal to the Court. The purpose of the annual report is to document the progress and details regarding implementation of the Judgment including a review of Watermaster activities. Information is provided regarding the operation and management of the groundwater basin and water supplies during the preceding year. A list of the minimum required elements to be compiled in the annual reports is provided in Paragraph (¶) 18.5.18 of the Judgment; these elements are reproduced in **Table 1**, with reference to the associated locations in this report. If there are any conflicts or ambiguities related to legal provisions or interpretations between the Judgment and the Annual Report, the Judgment controls.

Table 1. Minimum Required Elements for the 2018 Annual Report

Judgment Paragraph	Element	Report Location
18.5.18.1	Replacement Obligations	Section 4.6, Appendix E
18.5.18.2	Hydrologic Data Collection	Section 3
18.5.18.3	Purchase and Recharge of Imported Water	Section 4.4, Section 4.8, Appendix C
18.5.18.4	Notice List	Appendix L
18.5.18.5	New Production Applications	Section 4.11, Appendix H
18.5.18.6	Rules and Regulations	Section 1.5.7
18.5.18.7	Measuring Devices	Section 3.9
18.5.18.8	Storage Agreements	Section 4.8, Appendix G
18.5.18.9	Annual Administrative Budget	Section 1.6, Appendix K
18.5.18.10	Transfers	Section 4.7, Appendix F
18.5.18.11	Production Reports	Section 4.3, Appendix B
18.5.18.12	Prior Year Report	Section 2
18.5.18.13	Amount of Stored Water owned by each Party	Section 4.8, Appendix G
18.5.18.14	Amount of Stored Imported Water owned by each Party	Sections 4.3, 4.4 and 4.8, Appendices B, C and D
18.5.18.15	Amount of Unused Imported Water Return Flows owned by each Party	Section 4.4, Appendices B and D
18.5.18.16	Amount of Carry Over Water owned by each Party	Section 4.3 and 4.5, Appendix B
18.5.18.17	All Changes in Use	Section 4.10

1.3 REPORT ORGANIZATION

The report provides background and supporting information about Watermaster activities and safe yield monitoring for 2018, and detailed water accounting for 2018 groundwater use by the Parties to the Judgment. These topics are organized into five primary sections and accompanying appendices as described below.

Section 1 of this report provides an introduction and context for the 2018 Annual Report, including purpose and scope. **Section 1.4** summarizes the stakeholder review process including posting and notice of the report and the public hearing. Information on the Watermaster management structure including an organization chart is provided in **Section 1.5**. That section also summarizes the current roles and responsibilities of the Watermaster Board, administrative staff, the Advisory Committee, Watermaster legal counsel, and the Watermaster Engineer. **Section 1.6** provides a summary of Watermaster finances.

Section 2 summarizes specific activities of the Watermaster in 2018 and discusses the issues and topics involved this year in implementing the Judgment.

Section 3 presents relevant data from the monitoring of Safe Yield components in the basin. To provide context for these data, a summary of the safe yield calculation in the Judgment is provided in **Section 3.1**. This summary includes a brief review of the components of natural groundwater recharge relating to the hydrologic system (see Schematic Diagram on **Figure 3**). Components of both the Native Safe Yield and the Total Safe Yield are also discussed, including natural recharge, return flows from urban and agricultural water use, and imported water (including return flows from imported water use). Components of the Total Safe Yield are represented conceptually on **Figure 4**. **Section 3.2** documents the monitoring of safe yield components and provides preliminary analyses on current groundwater levels and change in groundwater in storage for 2018.

Section 4 provides details on the water accounting for the Parties to the Judgment. Rights to produce groundwater under the Judgment are summarized in **Section 4.1**. Water accounting includes documentation of the Rampdown schedule (**Section 4.2**), 2018 Production and water accounting (**Section 4.3**), imported water use and Imported Water Return Flows (**Sections 4.4**), Carry Over water (**Sections 4.5**), and information on Replacement Obligations (**Section 4.6**), Transfers (**Section 4.7**), Stored water and Storage Agreements (**Section 4.8**). The Drought Program is discussed in **Section 4.10.** Changes of use and well applications for new or replacement production wells are discussed in **Sections 4.10** and **4.11** and finally, **Section 4.12** provides details on the wastewater and recycled water practices that occurred within the Adjudication Area in 2018. As illustrated in **Table 1** above, much of the water accounting – including reported groundwater production – is provided in appendices to this report.

Section 5 lists the technical documents reviewed and referenced in this 2018 Annual Report.

The **appendices** contain supporting material and details of the water accounting process. The attached appendices are printouts of active water accounting files; on occasion, a cell will contain a notation "#VALUE!" This signifies an incomplete formula in the electronic file; these have been retained to maintain the operational integrity of the electronic file. **Table 2** provides a detailed description of each of the appendices and sub-appendices for reference.

Table 2. Description of Appendices

Appendix	Title	Description
A	**Rampdown Schedules** A-1. Exhibit 3 Non-Overlying and Supporting Landowner Producers Rampdown Schedule A-2. Exhibit 4 Overlying Producers Rampdown Schedule	Appendix A tables contain the Rampdown schedule for 2016 through 2022 for each Party. Beginning in 2018, Pre-Rampdown Production is reduced in equal increments each year to reach the Production Right by the end of the Rampdown Period.
B	**Water Accounting Tables** B-1. Exhibit 3 Non-Overlying Producers Water Accounting	Appendix B presents detailed accounting of water sources (Production Right, Rampdown, unused Federal Reserved

	B-2. Exhibit 4 Overlying Producers Water Accounting B-3. Other Parties (Non-Exhibit 3 or Exhibit 4) Water Accounting B-4. New Production Water Accounting	Water Rights, Imported Water Return Flows and Carry Over water) for 2018 for each Party to the Judgment. Note that all Parties may not have rights to all source types. In addition, Table B-4 presents water accounting for entities granted New Production.
C	**Imported Water, 2018**	Appendix C-1 provides details on the amounts of water imported into the Antelope Valley watershed, amounts recharged (banked), and the amounts sold to customers by AVEK, PWD, and LCID in 2018. Appendix C-2 summarizes the amount of imported water stored at the beginning of 2018, the amounts spread and recovered in 2018, and the amount of recoverable imported water stored at the end of 2018 for AVEK, Willow Springs Water Bank, and Tejon.
D	**Imported Water Return Flows**	Appendix D presents annual imported water use for 2011 through 2018 and Imported Water Return Flows for 2016 through 2019 by the 37 Parties on Exhibit 8. Return flows from agricultural imported water use are set in the Judgment at 34 percent and return flows from municipal and industrial imported water use are set in the Judgment at 39 percent of the amount of imported water used.
E	**Replacement Obligations, 2018**	Replacement Obligations and Replacement Assessments for 2018 are listed in Appendix E.
F	**Transfers**	Appendix F-1 provides details on all transfers that have occurred since implementation of the Judgment. Appendix F-2 lists the amounts of water that are not associated with a transfer of Production Rights that were transferred to other Parties.
G	**Storage Agreements**	The Storage Agreements Rules and Regulations are in the process of being finalized and will follow requirements of the Judgment (e.g., Section 14). In future

		annual reports, Appendix G will contain Storage Agreement information.
H	**Approved Well Applications and Small Pumper Qualifying Documentation**	Appendix H contains a table of the well applications and Small Pumper Qualifying Documentations that have been approved through 2018.
I	**Metering Requirements**	The approved section of Meter Requirements for the Rules and Regulations document is provided in Appendix I.
J	**Wastewater and Recycled Water, 2018**	Antelope Valley area wastewater is treated at LACSD's Palmdale and Lancaster WRPs, EAFB Air Force Research Laboratory Treatment Plant and the Main Base WWTP, and the RCSD's WWTP. Quantities of effluent and reuse for 2018 are tabulated in Appendix J.
K	**Watermaster Financial Budgets** K-1. Financial Budget, 2018 K-2. Proposed Financial Budget, 2019 K-2. Financial Audit, 2018	Appendix K contains detailed Watermaster financial budgets including a detailed budget summary table for 2018 and a proposed budget for 2019. It also contains an audit of all revenue and expenditures for 2018.
L	**Notice List**	Appendix L contains a list of parties to receive notices from the Watermaster.
M	**Delinquent Administrative Assessments and Delinquent Production Reports**	Current lists of delinquent assessments and delinquent production reports are included in Appendix M.
N	**Forms**	Appendix N contains the following forms: • Annual Water Production Report, 2018 Calendar Year • Monthly Flowmeter Production Reporting Form (1 Meter) • Monthly Flowmeter Production Reporting Form (2 Meters) • Request for Information • Parcel Location Request • Small Pumper Qualifying Documentation • Replacement Well Application (for Existing Production Rights or New Non-Production Well) • New Point of Extraction Application • New Production Application

		• Water Conservation Practices for Single Family Home • Transfer Request Form
O	**Financial Analysis Study for Replacement Water Assessment**	Appendix O contains a financial analysis of the imported water costs associated with Antelope Valley State Water Contractors Association's groundwater basin recharge and of Replacement Water Assessment fees to be assessed on property owners or agencies outside of AVSWCA's service area.

Although many sections of the Rules and Regulations have been completed and approved by the Court, other sections are at various stages of preparation, and Regulations are not yet complete. Accordingly, some data sets remain imperfect for the purposes of complete water accounting and reconciliation of water supply and demand. Preparation of this third Annual Report has further identified procedures and steps to prioritize for future data reporting and analysis.

Some background material from the adjudication and the Judgment are repeated from the two previous Annual Reports for context and reference. In addition, Todd Groundwater is adding new analyses and information to each new annual report (recognizing budget constraints) to further the monitoring and understanding of the shared groundwater resources for all Basin users.

1.4 Stakeholder and Public Review and Comment

This third annual report will be submitted to the Court on or by August 1 in compliance with the filing deadline approved by the Court[3]. A Draft Annual Report was posted on the Watermaster website on June 10, 2019 and reviewed by the Watermaster at its regular board meeting on June 26, 2019. After incorporating comments from various Parties and the Advisory Committee, the Watermaster Engineer produced a Revised Draft version on July 8, 2019.

The Watermaster Board held a noticed public hearing on July 24, 2019 to consider public comments on the Revised Draft 2018 Annual Report. On July 24, 2019, the Watermaster unanimously voted to consider and incorporate additional comments received prior to and at the July 24 public hearing. The Watermaster also unanimously approved the filing of the Final 2018 Annual Report, which incorporates the Board-recommended comments, to the Court by August 1, 2019 (Resolution No. 19-22).

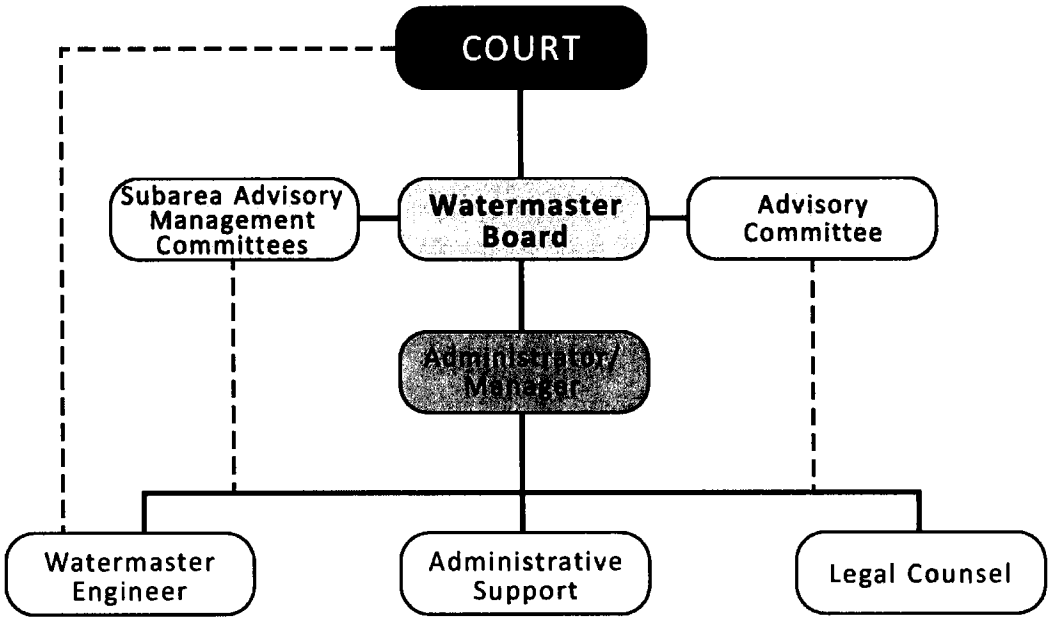
[3] Paragraph 18.5.17 of the Final Judgment requires that the Annual Report be filed no later than April 1 of each year. Recognizing the time needed for data reporting and compilation, along with the required public review process, the Watermaster Board requested and received approval from the Court to permanently move the filing deadline to August 1 of each year.

1.5 ANTELOPE VALLEY ADJUDICATION MANAGEMENT

The Judgment identified the powers and duties of specific entities charged with carrying out the Physical Solution. The Watermaster Board functions as the arm of the Court and is assisted by the Watermaster Engineer, the Watermaster Legal Counsel, and administrative staff to implement the Physical Solution. The Advisory Committee acts in an advisory capacity and makes recommendations on discretionary determinations by the Watermaster Board. The Subarea Advisory Management Committees, while not yet formed, will also act in an advisory capacity regarding recommendations on discretionary determinations made by the Watermaster Engineer that may affect that subarea.

The Advisory Committee and Watermaster Board are currently working to better define the lines of communication and working relationships among the Watermaster entities. A general organization chart that illustrates current working relationships is provided as follows.

Antelope Valley Watermaster Organization Chart



Roles and responsibilities of these entities are summarized in the following sections, recognizing that these role and responsibilities are currently being better defined by the Advisory Committee and Watermaster Board.

1.5.1 Watermaster Board

The Court-appointed Watermaster Board is made up of five members including:

- One representative from the Antelope Valley-East Kern Water Agency (AVEK)
- One representative from the Los Angeles County Waterworks District No. 40 (District 40)
- One public water supplier selected by District 40, Palmdale Water District (PWD), Quartz Hill Water District (QHWD), Littlerock Creek Irrigation District (LCID), California Water Service Company (Cal Water), Desert Lake Community Services District (DLCSD), North Edwards Water District (NEWD), City of Palmdale, City of Lancaster, Palm Ranch Irrigation District (PRID), and Rosamond Community Services District (RCSD), and
  Two landowner representatives (exclusive of public agencies and members of the Non-Pumper and Small Pumper Classes) who are selected by majority vote of the landowners identified on Exhibit 4 of the Physical Solution (or their successors in interest) based on their proportionate share of the total Production Rights identified on Exhibit 4.

The current Board members and their alternates are:

- AVEK: *Robert Parris,* alternate: *Dwayne Chisam*
- District 40: *Adam Ariki,* alternate: *Richard Gomez*
- Public Water Suppliers: *Leo Thibault*, alternate: *Kathy MacLaren*
- Landowners: *John Calandri and Dennis Atkinson*, alternates: *Derek Yurosek and Adrienne Reca.*

The Watermaster Board has certain responsibilities and powers including:

- A responsibility to implement and enforce the Judgment through actions, motions, and service of notices, determinations, requests, demands, reports and other methods pursuant to the Judgment and the Rules and Regulations
- An obligation to carry out its duties in an impartial manner and to rely on best available information to support Judgment implementation
- Selection of Watermaster Engineer
- Preparation of Annual Administrative budgets and associated accounting and billing
- Documentation of groundwater use and transfers and other pertinent information
- Review of new production applications
- Maintenance of a notice list
- Conduct of regular meetings at least quarterly and in accordance with the Ralph M. Brown Act
- Oversight of the preparation of annual reports and a Rules and Regulations document
- Powers and duties as provided in Paragraph 18.4 of the Judgment.

The Board typically meets on the fourth Wednesday of each month, with all meetings conducted in compliance with the Ralph M. Brown Act. The Watermaster Board has conducted its affairs transparently, including holding interviews and deliberations in open

session. All Watermaster decisions to date have been achieved through unanimous vote of the Board, although the Watermaster provided for meeting minutes to be approved using a simple majority vote.

1.5.2 Watermaster Engineer

Todd Groundwater was selected unanimously by the Watermaster Board as the Watermaster Engineer for the April 2017 to December 2019 period. The Watermaster Engineer is to "perform engineering and technical analysis and water administration functions as provided for in this Judgment" (¶3.5.53 of the Judgment). Duties include:

- Monitor safe yield components and collect hydrologic data
- Require Producers (other than unmetered Small Pumper Class members) to submit Production Reports
- Ensure reduction in groundwater production to the Native Safe Yield during the 2016 to 2022 Rampdown Period
- Propose measuring devices to monitor Production
- Determine Replacement Obligations
- Purchase and recharge Replacement Water
- Establish a new production application procedure, review applications and recommend approval or denial of such applications
- Maintain accounting of water stored under Storage Agreements
- Ensure that no person reduces the amount of storm flows that would otherwise enter the Basin
- Encourage appropriate regulatory agencies to enforce reasonable water quality regulations affecting the basin
- Establish memoranda of understanding with Kern and Los Angeles counties regarding well drilling ordinances and reporting
- Beginning in 2034, consider and potentially recommend change to Native Safe Yield
- Beginning in 2034, consider and potentially recommend changes to the calculation of Imported Water Return Flow percentages
- Rely on best available information to support Judgment implementation.
- Prepare an Annual Report for filing with the Court by August 1. The Watermaster requested and was granted a permanent extension to August 1 from the April 1 date in the Judgment
- Preparation of Rules and Regulations for Watermaster proposal to the Court (¶18.4.2 of the Judgment).

Although not specified in the Judgment, the Watermaster also has reporting requirements under the Sustainable Groundwater Management Act (SGMA) for adjudicated basins (Cal. Water Code §10720.8). Required data on water use, groundwater monitoring, and other information are due to the California Department of Water Resources (DWR) by April 1 of each year (California Water Code Section 10720.8). Adjudicated basins that have Court filing dates for their Annual Reports after April 1 (such as the Antelope Valley Adjudication) are allowed to complete reporting later than April 1. DWR requires an initial filing on the SGMA

website by April 1 of each year to notify DWR that requested data are not yet available; SGMA reporting can be completed when data become available. For the Antelope Valley Watermaster, this would occur concurrently with the Court filing of the Annual Report on August 1. Todd Groundwater will fulfill SGMA compliance reporting for the Watermaster.

1.5.3 Watermaster Legal Counsel

Watermaster Legal Counsel advises the Board on legal matters and takes direction directly from the Board. In November 2017, the Watermaster unanimously selected Craig Parton of Price Postel & Parma LLP to provide legal services to the Board, including provision of legal opinions on implementation of the Judgment.

1.5.4 Administrative Staff and Functions

Since 2016, administrative functions of the Watermaster are shared between selected staff members of AVEK and Palmdale Water District (PWD). The Watermaster has agreed to reimburse AVEK and PWD for the costs of providing administrative services to the Watermaster. The Advisory Committee and Watermaster will continue to review the roles and responsibilities of the administrative staff to improve the level of service provided to the Watermaster. Currently, administrative staff perform the followings tasks for the Watermaster:

- Provide general oversight of all Watermaster activities and provide direction to consultants
- Work with the Watermaster Board to establish priorities and policy
- Provide accounting services (accounts receivables and bill payables)
- Administer assessment billings and collection process
- Serve as primary point of contact for producers and the public
- Prepare and manage Watermaster budgets
- Administer Watermaster contracts (Engineer, Legal, Audit, etc.)
- Prepare Watermaster staff reports
- Prepare, distribute, and post Watermaster meeting agendas and public notices
- Maintain contact lists and notice list
- Maintain Watermaster website
- Coordinate attorney input
- Coordinate Advisory Committee input
- Coordinate Subarea Advisory Management Committees input
- Assist Watermaster Landowner Board member elections
- Staff Watermaster meetings
- Prepare meeting minutes
- Administer meeting services and equipment (Audio/Visual, Teleconference, and Video-Conference)
- Maintain liability insurance
- Manage work tasks as directed by Board
- Recommend timelines for tasks.

1.5.5 Advisory Committee

The Judgment directed Producers to form an Advisory Committee to act in an advisory capacity and make recommendations on discretionary determinations by the Watermaster Board. The Watermaster Board facilitated the formation of the Advisory Committee, which is formed and functioning, and has provided input into various Watermaster Board decisions. The Advisory Committee consists of 16 members representing a broad range of interests:

- Four from agricultural interests
- One industrial landowner
- One public landowner (County Sanitation Districts Nos. 14 and 20 of Los Angeles County or the City of Los Angeles)
- Two Los Angeles County public water purveyors (PWD, QHWD)
- One Kern County public agency (RCSD)
- Two mutual water companies (one each in Los Angeles and Kern counties)
- Two small pumpers
- Two ex-officio members per Judgment (Federal and State), and
- One ex-officio member to provide technical advice (Producer associated with Rottman Drilling).

Advisory Committee meetings are open to the public, noticed on the same webpage as the Watermaster meetings, and held on a regular basis (typically monthly in the week before the Board meeting).

1.5.6 Subarea Advisory Management Committees

The Judgment directs Producers in each of the five Management Subareas to form Subarea Management Advisory Committees. Each committee will consist of five Management Advisors to advise and make recommendations on discretionary determinations made by the Watermaster Engineer that may affect that subarea. Meetings should be held on a regular basis (at least semi-annually) with the Watermaster Engineer and should be open to the public.

Subarea Advisory Management Committees have not yet been formed, however, members from the various subareas are currently active in the implementation of the Judgment through the Advisory Committee. The Judgment provides that the Subarea Advisory Management Committees be composed of nominated and elected candidates by parties in that subarea; elections are to be held every three years. According to the Judgment, Parties will be entitled to one vote for each acre-foot of Production Right. It is anticipated that these committees will be in place in 2020.

1.5.7 Rules and Regulations Development

The Watermaster Engineer is required by the Judgment to prepare Rules and Regulations for Watermaster approval and proposal to the Court (¶18.4.2). The Rules and Regulations provide procedures and processes for implementation of the Judgment. Development of the

Antelope Valley Watermaster Rules and Regulations was initiated in 2017. Draft sections are being prepared on a priority basis, with a focus on those sections that are associated with a deadline under the Judgment (e.g., well metering requirements) or that provide immediate water management flexibility for the Parties (e.g., transfers or storage agreements). To date, approximately 10 key sections of the Rules and Regulations have either been approved or are in draft form for Advisory Committee and Board review. The status of the proposed Rules and Regulations sections are listed in **Table 3**.

As documented in the Judgment (¶18.4.2), the Court may adopt appropriate rules and regulations proposed by the Watermaster pursuant to the Judgment. Further, the Watermaster is required to hold a public hearing prior to proposing the Rules and Regulations to the Court. Thirty (30) days prior to the public hearing, the Watermaster must provide to all Parties a notice of the hearing and a copy of the proposed rules and regulations being considered. As discussed above, the Rules and Regulations are being developed in sections; each approved section has been considered in a public hearing and approved separately by the Court.

Table 3. Rules and Regulations – Sections and Status

Section	Status	Public Hearing	RESOLUTION		COURT	
			No.	Date	Hearing	ORDER
Meter Requirements	Approved	9/27/2017	R-17-07	9/27/2017	11/17/2018	11/28/2017
Administrative Assessments	Approved	1/24/2018	R-18-01	1/24/2018	3/7/2018	Waiting on Court
Annual Report Filing Date	Approved	2/28/2018	R-18-06	2/28/2018	4/30/2018	Waiting on Court
New Production Requests / Well Applications	Approved	2/28/2018	R-18-05	2/28/2018	4/30/2018	Waiting on Court
Transfers	Approved	4/25/2018; 05/23/2018	R-18-12 R-18-19	4/25/2018 5/23/2018	6/27/2018	Waiting on Court
Carry Over Water	Approved	5/23/2018	R-18-17	5/23/2018	6/27/2018	Waiting on Court
Storage Agreements	Approved	5/23/2018; 6/27/2018	R-18-16	6/27/2018	8/9/2018	
Pre-Rampdown Production	Approved		R-18-22	6/27/2018		
Watermaster Administration	In progress					
Advisory Committee / Subarea Committees	In progress					
Board Procedures - Voting, Subcommittees	Pending					
Imported Water and Return Flows	Pending					
Small Pumpers Assessments	Pending					
Replacement Water Assessments	Pending					
Balance Assessment	Pending					
Drought Program	Pending					
Recycled Water	Pending					
Monitoring and Reporting (including SGMA Compliance)	Pending					
Compliance/Enforcement	Pending					
Forms	In progress					

1.6 WATERMASTER FINANCES

1.6.1 Watermaster Administrative Budgets

The Watermaster Board approved an administrative budget for 2018, which resulted in a $5.00 per acre-foot administrative assessment. The Watermaster 2018 Budget is summarized below.

2018 Administrative Budget Summary

	Final Budgeted	Actual
Operating Revenue	$635,195	$517,050
Non-Operating Revenue	$ 78,000	$181,276
Operating Expenses	($682,708)	($783,145)
Net	$ 30,487	($ 84,819)

The Watermaster experienced a budget shortfall in 2018 and in response to that shortfall, the Watermaster reacted by reducing 2019 expenses by deferring work and re-assigning tasks previously conducted by the Watermaster Engineer to Administrative Staff.

The 2018 Operating Revenue Budget listed above includes 2018 Fixed Assessments and 2017 Variable Assessments.

- **Fixed Administrative Assessments** are based on each acre foot of a Party's Production Right and are levied at the beginning of the year in which the Production Right occurs.
- **Variable Administrative Assessments** are based on either (1) production by a Party in excess of the Production Right or (2) the right to produce Imported Water Return Flows. Administrative assessments on production under (1) above are levied each Spring after total Production is reported for the preceding year; administrative assessments on the right to produce Imported Water Return Flows under (2) above are determined for the current year based on an average of the amounts of imported water used in the five preceding years (¶5.2.2). Variable Administrative Assessments are collected on:
    - each acre foot (AF) of a Party's right to produce Imported Water Return Flows (¶5.2)
    - each acre foot of a Party's production for which a Replacement Water Assessment has been imposed (¶9.2)
    - each acre foot used of a Non-Overlying Production Right holders' allocation of the unused Federal Reserved Water Right (¶9.1)
    - each acre foot during Rampdown of a Party's production in excess of the sum of its Production Right, Imported Water Return Flows, and Production subject to a Replacement Water Assessment.

Appendix K contains detailed Watermaster financial budgets as follows:

- **Appendix K-1** contains a detailed budget summary table for 2018. The budget summary is broken down into revenues and expenses.
- **Appendix K-2** contains a proposed budget for 2019.

  The Administrative budget for 2019 has been approved. The 2019 Administrative Assessment was set at $5.00 per acre-foot, the same as the Administrative Assessment for 2018.

  Payment from Small Pumpers has been deferred due to the large cost associated with collection of an Administrative Assessment for the more than 4,000 Parties listed in Exhibit C of the Judgment. It is anticipated that the Small Pumper Class will begin to receive invoices in 2020 for 2016 through 2020 Administrative Assessments[4].
- **Appendix K-3** contains an audit of all revenue and expenditures for 2018.

1.6.2 Replacement Water Assessments

Replacement Water Assessments are charged by the Watermaster to pay for costs incurred to buy and recharge Replacement Water. The purpose of Replacement Water is to ensure that each Party may fully exercise its Production Right by keeping the Basin in hydrologic balance. The Watermaster shall impose a Replacement Water Assessment on any Producer whose production of groundwater is more than the sum of such Producer's rights to pump groundwater including Production Rights, Carry Over water, Imported Water Return Flows, in-lieu production, and Stored water. **Appendix E** lists the Replacement Obligations for 2018.

During the first two years of the Rampdown Period (2016 and 2017), Producers were generally not subject to Replacement Water Assessment fees. An exception to this was Phelan Pinon Hills Community Services District (PPHCSD). It does not have Production Rights, but according to the Judgment is allowed to pump up to 1,200 AFY from its Well #14 provided such use does not cause Material Injury and PPHCSD pays a Replacement Water Assessment and any other costs deemed necessary to protect Production Rights defined in the Judgment, on all water produced and exported.

The amount of the Replacement Water Assessment due is the sum of excess Production multiplied by the cost to the Watermaster of replacement water, including any Watermaster spreading costs. All Replacement Water Assessments collected by the Watermaster are used to acquire imported water from AVEK, LCID, PWD, or other entities. If the Watermaster encounters issues in acquiring imported water, as much water as possible will be purchased. The Watermaster will allocate the imported water for delivery to areas on an equitable and practicable basis pursuant to the Watermaster Rules and Regulations, including when the

[4] Small Pumper Administrative Assessments for 2016 through 2020 would be $20.40/Party (1.2 AF*$1/AF for 2016 + 1.2 AF*$1/AF for 2017 + 1.2 AF*$5/AF for 2018 + 1.2 AF*$5/AF for 2019 + 1.2 AF*$5/AF for 2020 = 1.2+1.2+6.0+6.0+6.0 = $20.40).

available amount of imported water is insufficient to fully meet the Replacement Water obligations.

A Replacement Water Assessment fee for Producers within the AVEK service area was set at $415 per acre-foot for the 2016 through 2018 period. The other two State Water Contractors within the Antelope Valley (PWD and LCID) also agreed to use this same rate for this period. The Watermaster has not yet defined the Replacement Water Assessment rate for 2016, 2017, and 2018 for lands outside of the State Water Contractor service areas.

The State Water contractors in the Antelope Valley area (AVEK, PWD, and LCID) hired an independent contractor to determine the Replacement Water Assessment fee in areas inside and in areas outside of the State Water Contractor service areas (copy included in **Appendix O**). The Replacement Water Assessment fee for 2019 was set at $451 per acre-foot for Producers within the State Water Contractor service areas and at $948 per acre-foot for Producers outside the State Water Contractor service areas, with the differences reflecting capital costs paid through property taxes by Parties inside the State Water Contractor service areas. Imported water will be purchased from AVEK, PWD, LCID, or other entities and recharged to make up any Replacement Water Obligations.

2 WATERMASTER ACTIVITIES IN 2018

In this third year for the Judgment, the Watermaster Board has continued to make considerable progress toward implementation of the adjudication. The Board held ten regular Board meetings and one special Board meeting (combined November and December meeting) in 2018. Board meetings were generally preceded by an Advisory Committee meeting the previous week. In 2018, the Board considered 33 resolutions and unanimously approved 29 resolutions (available on Watermaster website) as listed below:

- R-18-01 Adopting Rules & Regulations Concerning Administrative Assessments
- R-18-02 Approving Budget and Administrative Assessment for 2018
- R-18-03 Approving 1/17/18 Memo – Approval of Well Applications
- R-18-04 Approving 1/5/18 Memo – Legal Issue with PPHCSD – Obligated to pay Replacement Water Assessment
- R-18-05 Adopting Rules and Regulations Concerning Process and Procedure of Well Applications
- R-18-06 Adopting Annual Report Deadline – August 1 of each year
- R-18-07 Consenting to enter JPIA – Joint Powers Insurance Authority
- R-18-08 Adopting a Replacement Water Assessment for FY 2018
- *(R-18-09 Not Approved)*
- R-18-10 Approving Small Pumpers and New or Replacement Well Applications
- *(R-18-11 Not Approved)*
- R-18-12 Adopting Rules and Regulations Concerning Transfers
- *(R-18-13 Not Approved)*
- R-18-14 Approving New and Replacement Wells
- *(R-18-15 Not Approved)*
- R-18-16 Adopting Rules and Regulations Concerning Storage Agreements
- R-18-17 Adopting Rules and Regulations Concerning Carry Over Water
- R-18-18 Approving Small Pumpers and New or Replacement Well Applications
- R-18-19 Adopting Rules and Regulations Concerning Transfers
- R-18-20 Approving Small Pumpers and New or Replacement Well Applications
- R-18-21 Approving Applications for Transfers
- R-18-22 Adopting Pre-Rampdown Production Amounts for Exhibit 3
- R-18-23 Approving New or Replacement Well Applications
- R-18-24 Approving Applications for Transfers
- R-18-25 Approving 2017 Annual Report
- R-18-26 Approving Small Pumpers and New or Replacement Well Applications
- R-18-27 Approving Applications for Transfers – First Solar Land Holdings
- R-18-28 Approving Small Pumpers and New or Replacement Well Applications
- R-18-29 Approving Small Pumpers and New or Replacement Well Applications
- R-18-30 Approving Budget and Administrative Assessment for FY 2019
- R-18-31 Approving Small Pumpers and New or Replacement Well Applications
- R-18-32 Approving Applications for Transfer – WDS CA II to Palmdale Water District

- R-18-33 Authorizing Specified Individuals to Transact Business with Citizens Business Bank

Notable actions taken by the Board in 2018 are highlighted below:

- Held a Public Hearing to approve a proposed calendar year 2018 Administrative budget with an Administrative Assessment of $5 per acre foot.
- Requested a permanent change in the filing date of the annual report from April 1 to August 1. The change was approved by the Court.
- Held landowner elections for landowner representative and alternates.
- Approved and submitted the 2017 Annual Report to the Court.
- Complied with the Sustainable Groundwater Management Act (SGMA) reporting requirements for adjudicated basins.
- Adopted a Replacement Water Assessment in the State Water Contractors service areas of $415 per acre foot for 2018.

The Judgment requires the Watermaster to annually certify a list of unpaid delinquent assessments. Administrative staff regularly provide the Watermaster with a list of outstanding assessments as part of their financial report in each Board packet. Current lists of delinquent administrative assessments and delinquent production reports are included in **Appendix M**. Future annual reports will also include a list of delinquent Replacement Assessments and Balance Assessments.

Notice List. The Judgment requires the Watermaster to maintain a current list of Parties to receive notices on Watermaster activities. The Parties have an obligation to provide the Watermaster with their current contact information. For Small Pumper Class members, the Watermaster will initially use the contact information contained in the list of Small Pumper Class members filed with the Court by class counsel. The current Notice List is in **Appendix L**. This list will be updated and refined as appropriate. The Watermaster's website (www.avwatermaster.net) will also be used to notify interested parties of Watermaster activities.

Measuring Devices. In 2017, the Watermaster developed requirements for meter installing, testing, and reporting. These requirements were approved by the Court by order dated November 28, 2017 and are available on the Watermaster website and will ultimately be incorporated into a complete set of the Rules and Regulations document. By March 1, 2018, all Parties other than the Small Pumper Class were required to install meters on their wells for monitoring production and submit proof thereof to the Watermaster. The Watermaster requested and was granted an extension to the meter installation date from January 1, 2018 to March 1, 2018 to allow time for all producing Parties to comply with the requirements. Additional information is provided in **Section 3.9.1** of this report.

Meter installations are also required for any member of the Non-Pumper Class who has complied with the New Production Application Procedure specified in ¶18.5.13 of the Judgment. As provided in the Judgment, Producing Non-Pumper Class members shall report

production to the Watermaster, and prior to the commencement of production, shall install a meter consistent with the requirement of the Rules and Regulations (¶9.2.2).

Rules and Regulations. As previously discussed, development of Rules and Regulations is underway. The Judgment will be used to guide the implementation until the Rules and Regulations document has been finalized and approved by the Watermaster and the Court. Once complete, the Rules and Regulations document will be available on the Watermaster website (www.avwatermaster.net).

Several forms have been developed for reporting annual production and monthly meter readings; requests for information; Small Pumper qualifying documentation; requests for replacement wells, new points of extraction, and new production; and request for transfers. These are in **Appendix N** at the end of the report, are available on the Watermaster website, and will be included in the Rules and Regulations document. Other forms, such as those for reporting annual storage and for a storage agreement are under development and will be available on the Watermaster website when finalized.

Prior Year's Report. As provided in the Judgment, Annual Reports should also include the Annual Report from the prior year. To streamline this 2018 Annual Report, the 2017 Annual Report has been posted on the Watermaster website for easy downloading and reference (www.avwatermaster.net).

3 MONITORING OF SAFE YIELD COMPONENTS

The Judgment requires monitoring of the safe yield components in the Adjudication Area. The monitoring program established for the basin includes the compilation of data involving natural recharge, managed aquifer recharge (i.e., groundwater banking), amounts and use of imported water, groundwater production, and return flows. To assist with future analyses, groundwater levels, water quality, subsidence, groundwater production, and changes in groundwater in storage are also part of the monitoring program. Some data sets represent components of the Safe Yield calculation that can be monitored directly. Other data sets support analyses to estimate components or check the reasonableness of components. The text below describes the types of data collected.

In addition to the 2018 data compiled for this 2018 Annual Report, the Watermaster Engineer has continued compiling historical hydrologic and hydrogeologic information regarding the safe yield components for the Watermaster based on available data. This hydrologic and hydrogeologic database supplements the water accounting spreadsheets developed by the Watermaster Engineer for the purposes of tracking production categories and other requirements of the Judgment. It is anticipated that more detailed analyses of safe yield components will occur in future annual reports when the Watermaster Engineer has sufficient funding to cover such analyses.

3.1 GROUNDWATER BASIN AND ADJUDICATION AREA

The Antelope Valley Groundwater Basin underlies an alluvial valley with ground surface elevations ranging from 2,300 to 3,500 feet above mean sea level (msl). The basin is bounded on the southwest and northwest by the San Gabriel Mountains and the Tehachapi Mountains, respectively, and on the southeast by a series of low ridges, buttes, and hills.

The southwest and northwest boundaries are controlled by two major geologic fault systems – the San Andreas fault at the base of the San Gabriel Mountains and the Garlock fault at the base of the Tehachapi Mountains. The northern boundary is defined by the contact of alluvial deposits with bedrock. An approximate five-mile section of the northern boundary abuts with the alluvial deposits of the Fremont Valley and is separated only by a previously-defined groundwater divide (**Figure 1**). To the east, a groundwater divide – generally located along the San Bernardino county line – has been used to separate the Antelope Valley from the El Mirage Valley and the Mojave adjudicated area. The Antelope Valley Adjudication Area as defined by the Court is slightly smaller than the groundwater basin (compare the shaded blue groundwater basin with the Adjudication Area on **Figure 1**).

Prior to development, groundwater flowed from the surrounding uplands toward natural surface depressions at ephemeral lake beds in the north (Rosamond Lake) and northeast (Rogers Lake). These natural flow directions have been re-directed locally toward pumping wells.

The basin has a long tradition of agricultural use dating back to the late 1800s. As both agriculture and urban land uses increased during the post-World War II era, groundwater provided about 90 percent of the overall supply. Reliance on groundwater decreased somewhat in the 1970s and 1980s after imported water was available in the basin. However, urban growth, an increase in irrigated acreage, and limitations on availability of imported water resulted in increases in pumping during the 1990s. In 2011, the Court ruled that the basin was in overdraft and required a physical solution to bring the basin into balance.

The physical solution in the Judgment establishes a safe yield for groundwater production and an allocation of that safe yield among basin producers. Two estimates of safe yield are provided in the Judgement:

- Native Safe Yield: 82,300 AFY
  Includes estimates of natural recharge plus return flows from groundwater use
- Total Safe Yield: 110,000 AFY
  Considers supplemental supply of imported water and associated return flows.

Native Safe Yield, set by the Court at 82,300 AFY, is based on estimates of natural groundwater recharge from the hydrologic system including subsurface inflows from the surrounding bedrock (referred to as mountain front recharge) and infiltration from precipitation and streamflow. Native Safe Yield also accounts for return flows from basin pumping (described below). As shown on **Figure 2**, the Native Safe Yield is the amount allocated among most of the basin producers. Recognizing that the importation of supplemental surface water adds to the safe yield, a Total Safe Yield of 110,000 AFY was set by the Court, based on average estimates of available imported water. Allocations of return flows from imported water are assigned to various Parties as determined by the Judgment.

To provide context for the collection of data for the monitoring of safe yield components, a summary of the Judgment's safe yield calculation is summarized below. The details of the safe yield determination have been documented in the Phase 3 Summary Expert Report (Beeby, et al., 2010)[5].

3.2 SAFE YIELD DETERMINATION IN THE JUDGMENT

The process to develop a safe yield for the Adjudication Area of the groundwater basin involved years of detailed hydrogeologic analyses by numerous technical experts representing various parties in the litigation. The analyses involved delineation of basin boundaries, descriptions of the geologic and hydrogeologic setting, evaluation of aquifers and aquitards, examination of water levels, assessment of groundwater occurrence and flow, and detailed accounting of the water budget, including inflows and outflows from the

[5] This report was prepared in association with Phase 3 of the trial. It is recognized that there were multiple phases that are not discussed herein; the Phase 3 Expert Report contains the most relevant information for summarizing the Safe Yield determination in the Judgment.

groundwater system and change in groundwater in storage. These analyses culminated in a Summary Expert Report, published in July 2010 (Beeby, et al., 2010).

3.2.1 Natural Groundwater Recharge

Estimates of natural recharge to the groundwater basin developed by technical experts during litigation were used as the foundation of the safe yield determination. For the purposes of this discussion, the use of *natural recharge* refers to recharge associated with the natural hydrologic environment such as precipitation and streamflow. It specifically excludes the concept of return flows associated with groundwater pumping or use of imported water.

It is recognized that the amount of natural recharge does not always equate to the amount of groundwater that can be pumped sustainably from a basin because it is difficult to capture all of the replenished water without losing a significant amount to natural groundwater discharge (e.g., subsurface outflow from a basin). For the Antelope Valley, discharge to the dry lakes appears to be minimal and to occur only during wet periods. Subsurface outflow is uncertain, but likely occurs along limited segments of the basin boundary. Therefore, estimates of natural recharge developed by technical experts during litigation served as a first approximation of the average annual amount of groundwater that could be used sustainably.

The natural groundwater recharge components were estimated by the technical experts during litigation using two separate methods: 1. a tabular mass balance (referred to as a water balance) approach, which accounted for each inflow and outflow associated with the groundwater system independently, while conserving the mass from the hydrologic cycle, and 2. estimates for changes of groundwater in storage over time – developed through a comparison of groundwater elevation contour maps – and then using pumping estimates to solve for inflow (natural recharge). These two methods and results are described below.

3.2.1.1 Natural Groundwater Recharge using a Mass Balance Method

A mass balance approach to the water budget for the basin involves tracking of water into (inflows) and out of (outflows) the groundwater basin. This water tracking is illustrated by a schematic diagram on **Figure 3** (modified from Beeby, et al., 2010). The diagram represents the physical system of the groundwater basin and surrounding watershed. The mountains or uplands that surround the groundwater basin are shown on the left side of **Figure 3**; the playas (dry lakes) that represent a natural discharge area of the groundwater basin are shown on the right. Annual average flows estimated in the 2010 analyses are shown on the diagram in AFY for illustration purposes. In general, groundwater flows northeasterly from the upland areas to the dry lakes.

Precipitation provides the primary water source for the basin, including rainfall (or snowmelt) in the surrounding uplands and rainfall on the valley floor. In the uplands, rainfall either leaves the system through evapotranspiration (ET), runs off the surface into stream channels, or infiltrates into the fractured bedrock (upper left area of **Figure 3**). Some of the infiltrated water discharges back to the stream channels as baseflow; the remaining amount

is available for groundwater recharge, also referred to as mountain front recharge. The 2010 analysis by the technical experts during litigation estimated this amount at about 19,800 AFY, as shown on **Figure 3**.

As mountain streams reach the valley floor, most of the water infiltrates into the permeable alluvium and serves as groundwater recharge (see the mass balance of streamflow on **Figure 3**). This component is considered the largest source of groundwater recharge with estimates of about 30,000 to 40,000 AFY (shown as 36,600 AFY from the mass balance on **Figure 3**). The water budget also recognizes that a small amount of streamflow is diverted for use prior to infiltration. During wet years, flood flows reach the playas, where water pools and evaporates. Some of the flood water may infiltrate the surficial deposits, but the low permeability of the lake bed sediments restricts deep percolation and groundwater recharge. When groundwater levels are high, small amounts of groundwater can also discharge to the playas.

Given the desert climate of the area, rainfall rates on the groundwater basin floor are small, with most of the area receiving less than eight inches per year on average. Given the corresponding high rates of ET in the basin, most of this rainfall evaporates quickly, limiting the available water for infiltration into the basin sediments. The 2010 analyses concluded that groundwater recharge from soil infiltration does not likely occur in basin areas with an average annual rainfall of less than eight inches (Beeby, et al., 2010); that conclusion is supported by numerous technical studies on groundwater recharge in desert basins. While minor recharge occurs from direct precipitation in localized alluvial fan deposits along the northwestern rim of the basin (western edge of the West Antelope Subarea, see **Figure 1**), the overall mass balance indicates that groundwater recharge from direct precipitation is small; as such, it is not quantified on **Figure 3**.

In summary, the two primary sources of natural recharge were determined by the technical experts during litigation to be mountain-front recharge (about 19,800 AFY on **Figure 3**) and infiltration from streamflow (about 36,600 AFY on **Figure 3**), resulting in a total estimated natural recharge of 56,400 AFY.

3.2.1.2 Natural Groundwater Recharge using a Change in Groundwater in Storage Method

The estimates for groundwater recharge above were checked for reasonableness by the technical experts during litigation through a separate analysis involving the change in groundwater in storage over time. This method involved preparation of nine groundwater elevation contour maps for nine years spanning a 59-year period from 1951 through 2009 (study period). These maps were used to assess water level changes (rise or declines) during eight specific time intervals and over the entire study period. Water level surfaces at the beginning and end of each period were electronically subtracted to estimate changes over the entire basin for each period (Beeby, et al., 2010).

In order to relate the water level changes to a volume of groundwater gain or loss, aquifer textures (e.g., percentages of sand, gravel, silt, and clay) were estimated using geologic logs. Textures were assigned a storage property, referred to as specific yield (Sy). Sy is defined as

the ratio of the volume of water that will drain under gravity compared to a unit volume of the aquifer (expressed as a percentage) and is used to estimate the volume of water released from storage for a unit change in head. Because Sy varies throughout the aquifer system, the method determined the Sy that corresponded to the interval of the aquifer where water levels had changed. This analysis provided the Basin-wide change of groundwater in storage for various time intervals.

The change in groundwater in storage was applied to the water balance equation as shown below:

Change in Groundwater in Storage = Inflows (recharge) - Outflows

Because outflows consisted primarily of groundwater pumping, investigators estimated pumping (less return flows) for the same time intervals as the contour map analysis. With estimates for both Outflows and Change in Groundwater in Storage, the equation above could be re-arranged to solve for inflows (natural recharge). The change in storage method indicated average annual natural recharge between 55,000 to 58,000 AFY, results very similar to the results of the mass balance analysis described above (56,400 AFY). Recognizing uncertainty in the analysis, a natural groundwater recharge of 60,000 AFY was selected by the technical experts during litigation for the purposes of the safe yield analysis (Beeby, et al., 2010).

3.2.2 Native Safe Yield

Safe yield is defined in the Judgment as "the amount of annual extractions...over time equal to the amount of water needed to recharge...groundwater...and maintain it in equilibrium..." Because safe yield is defined in terms of groundwater extraction, the efficiency of groundwater use requires consideration.

All groundwater pumped from a well may not be consumed; if unused water is allowed to percolate back into the groundwater basin, the amount is referred to as *return flows*. Because it is difficult for irrigation systems to be 100 percent efficient, return flows result from almost all irrigation applications including agricultural, municipal (e.g., landscaping, parks), and domestic (e.g., lawns). In addition to irrigation, other water use practices can result in return flows including conveyance system losses, percolation of wastewater, or septic systems. A conceptual diagram of various groundwater uses and associated return flows is provided on **Figure 4**[6]. The amount of return flows varies with irrigation method, type of losses, soil properties, evapotranspiration, and other factors.

Because these return flows provide recharge to the groundwater basin in addition to the natural recharge components (also included on **Figure 4**), the amount of sustainable production from the Antelope Valley Groundwater Basin can be higher than the 60,000 AFY estimate for natural recharge. For example, if return flows were 25 percent of pumping

[6] As noted on Figure 4, the diagram was developed to illustrate the concepts of safe yield and does not depict the complexity of the multi-aquifer system of the Antelope Valley Groundwater Basin.

(indicating that 75 percent of groundwater production is consumed through evaporation, crop transpiration, or human consumption), then a safe yield of 80,000 AFY would allow for consumption of the 60,000 AFY of recharge and 20,000 AFY of return flows (60,000/0.75 = 80,000).

Using a mix of historical and recent land use practices, the Summary Expert Report evaluated various return flow estimates for the purposes of developing a sustainable yield (Native Safe Yield) for the Basin. Given the mix of land use practices observed over a recent 15-year period, an overall return flow of about 27.1 percent[7] was estimated to be reasonable. Applying this to the 60,000 AFY estimate for natural recharge, a Native Safe Yield of 82,300 AFY was derived. As shown on **Figure 2**, this value was used for the total Production Right in the Basin.

3.2.3 Total Safe Yield

Total Safe Yield is defined in the Judgment as the amount of groundwater that may be safely pumped from the Basin on a long-term basis and is specified as the sum of the Native Safe Yield plus return flows from imported water (¶3.5.51 of the Judgment). Beginning in the 1970s, supplemental surface water supplies were imported into the Basin from the State Water Project (SWP). This supplemental water decreased the reliance on groundwater supply and provided water to meet the growing demand of the valley. Depending on use, the SWP water also provides an additional component of groundwater recharge through return flows, increasing the overall safe yield for the Basin. This amount varies substantially with the availability and use of imported water.

In order to consider this supplemental supply in the adjudication, the team of technical experts during litigation evaluated amounts of imported water and its use over time. This analysis led the team to conclude that return flows from imported water resulted in about 27,700 AFY of additional groundwater supply to the Basin. Adding to the Native Safe Yield of 82,300 AFY, this amount provided a Total Safe Yield of 110,000 AFY.

Credits for imported water return flows are assigned in the Judgment according to use (see **Section 4.4** for a description of these credits). Some imported water may be delivered to a recharge facility (e.g., a spreading basin) and recharged directly into the groundwater basin for subsequent recovery and use; such a recharge facility is illustrated conceptually on **Figure 4**. When imported water is recharged directly, there are not "return flows" as defined by the Judgment; return flows occur only after imported water is used directly in the Basin.

The technical analysis in 2010 recognized that safe yield is not necessarily a constant value and can change over time with varying land use and water management practices. As described above, the Native Safe Yield has embedded assumptions of land use and return

[7] These groundwater return flows are different from Imported Water Return Flows specified in the Judgment. Imported Water Return Flows are a new water source for the basin and are associated with a different land use mix (i.e., more imported water is used for municipal purposes, a use associated with a larger *percentage* of return flows compared to agricultural use).

flows. The Total Safe Yield will change based on average amounts of imported water available to the Basin over time. The Judgment allows the Watermaster Engineer to initiate a recommendation to change the Native Safe Yield ten years after the seven-year Rampdown Period (Year 17 of the Judgment).

3.3 CLIMATE DATA

Precipitation in the Antelope Valley watershed is the primary source of natural groundwater recharge and controls the location and pathways of natural recharge in the Basin. Average annual precipitation across the Antelope Valley watershed ranges from 4 inches to 47 inches with an area-weighted average of 8.3 inches (Beeby et al., 2010). Upland areas within the watershed but outside of the Adjudication Area account for most of the precipitation. Area-weighted average precipitation amounts in the upland watershed are listed below:

- San Gabriel Mountains – 15.4 inches per year
- Tehachapi Mountains – 13.1 inches per year
- Eastern buttes – 8.7 inches per year
- Northern buttes – 9.2 inches per year

Average annual precipitation on the valley floor is typically less than 8 inches per year. Most subareas have an average annual precipitation rate less than about 5 inches per year.

For the 2010 analyses, precipitation data for 23 stations covering a 57-year period (1949-2005) were compiled and analyzed. A portion of these data sets has been compiled for Watermaster files, with an emphasis on active state- or federal-operated weather stations. Data were also obtained from additional stations with recent data to support analyses in this Annual Report (Calendar Year 2018). Many of these stations also provide other climate information such as reference ET (ET_o) and temperature.

Precipitation (and other climate) data for the Antelope Valley Adjudication Area and surrounding watershed are available from the following primary sources: Los Angeles County, California Irrigation Management Information System (CIMIS), and National Weather Service cooperative stations (data available through the Desert Research Institute - DRI). Data have been downloaded from these sources for 46 stations through May 2019 (or the most recent data available); monitoring at three of these stations has recently been discontinued and future data will not be available (Station ID 1291, 299F, and 455B). **Table 4** provides station summary information; station locations are shown on **Figure 5**.

Precipitation data for 2018 are used to determine whether the year was wet, dry or average compared to long-term data. A graph of cumulative monthly 2018 precipitation was compared to similar curves for representative wet, average and dry conditions, using data from the Palmdale station (CIMIS and DRI). These data are shown graphically in the top chart on **Figure 6**; the general location of the Palmdale Station is highlighted on **Figure 5**.

Table 4. Precipitation and Evapotranspiration Stations

ID	Station Name	Elevation (feet msl)	Latitude	Longitude	Source	Period of Record Min	Period of Record Max	Frequency
1	Mojave		35.04917	-118.16194	DRI	Jan-1904	Current	Monthly
1005B	County Fire Station #81	2,767	34.51917	-118.28694	LA County	Oct-2016	Current	Daily
1017B	Little Rock Crk Above Dam Percip	3,267	34.47778	-118.02472	LA County	Oct-2016	Current	Daily
1058B	Palmdale W.D.	2,627	34.58806	-118.09194	LA County	Oct-1999	Current	Daily
1060B	Little Rock-Sycamore Camp Pcp	4,012	34.41722	-117.97028	LA County	Oct-2016	Current	Daily
1166B	Mile High Ranch	5,280	34.41111	-117.77083	LA County	Jan-2003	Dec-2017	Daily
117	Victorville	2,890	34.47591	-117.26351	CIMIS	Feb-1994	Current	Daily
120	County Fire Station #80	3,120	34.48833	-118.14194	LA County	Oct-2016	Current	Daily
1212	Lancaster Fss/Faa	2,320	34.73333	-118.21667	LA County	Oct-1999	Sep-2017	Daily
1240	Pearblossom-CALI.DW.R. Booster	3,050	34.50889	-117.92083	LA County	Oct-1999	May-2018	Daily
1242	Rocky Buttes Precip	2,540	34.64611	-117.84528	LA County	Oct-2016	Current	Daily
1243	Redman Precip	2,387	34.76500	-117.92611	LA County	Oct-2016	Current	Daily
1244	Roper Ranch Precip	2,438	34.67306	-118.01083	LA County	Oct-2016	Current	Daily
1245	Quartz Hill Precip	2,427	34.64944	-118.21722	LA County	Oct-2016	Current	Daily
1246	Scott Ranch Precip	2,718	34.79056	-118.45972	LA County	Oct-2016	Current	Daily
1247	North Lancaster Precip	2,340	34.76111	-118.10722	LA County	Oct-2016	Current	Daily
1248	Mescal Smith Precip	3,810	34.46667	-117.71111	LA County	Oct-2016	Current	Daily
1249	G-168 Pump Station	2,941	34.73444	-117.82833	LA County	Oct-2016	Jun-2018	Daily
1250	Avek Precip	2,825	34.52333	-117.92389	LA County	Oct-2016	Current	Daily
125B	San Francisquito Canyon Power House No.	2,105	34.59028	-118.45417	LA County	Oct-1999	Current	Daily
1267	Lancaster Reclamation Plant	2,302	34.77722	-118.15306	LA County	Oct-1999	Sep-2017	Daily
1268	Palmdale Reclamation Plant	2,565	34.59167	-118.08611	LA County	Oct-2016	Current	Daily
128B	Elizabeth Lake-Warm Springs Cmp Pcp	2,075	34.60833	-118.55944	LA County	Apr-2005	Current	Daily
1291	Rollin Ranch - Valyerno	5,040	34.41722	-117.75722	LA County	Mar-2011	Current	Daily
197	Palmdale	2,550	34.61498	-118.03249	CIMIS	Apr-2005	Current	Daily
2	Lancaster FF		34.74111	-118.21167	DRI	Jan-1974	Current	Monthly
220	Palmdale Central	2,630	34.59222	-118.1275	CIMIS	Mar-2011	Current	Daily
299F	Little Rock - Schwab	2,800	34.53667	-117.97861	LA County	Oct-2016	Jun-2017	Daily
3	Pear Blossom		34.50278	-117.89444	DRI	Jan-2015	Current	Monthly
321	Pine Canyon Patrol Station # 78	3,304	34.67417	-118.43083	LA County	Oct-1999	Current	Daily
322	Munz Valley Ranch	2,600	34.71389	-118.35417	LA County	Oct-1999	Apr-2018	Daily
4	Palmdale DRI		34.61498	-118.03249	DRI	Jan-1903	Current	Monthly
409B	Pyramid Reservoir	2,505	34.67611	-118.77972	LA County	Oct-2016	May-2018	Daily
455B	Lancaster - State Hwy. Maintenance Sta.	2,395	34.68250	-118.13389	LA County	Oct-1999	Jan-2018	Daily
517B	Lewis Ranch Precip	4,615	34.41972	-117.88611	LA County	Oct-2016	Current	Daily
542	Fairmont	3,050	34.70417	-118.42778	LA County	Oct-2016	Apr-2018	Daily
564C	Llano	3,394	34.48556	-117.83444	LA County	Oct-2016	Current	Daily
598D	Neenach - Check 43	2,973	34.79472	-118.62222	LA County	Oct-1999	Current	Daily
747	Sanberg - Airways Station	4,510	34.74333	-118.72500	LA County	Oct-1999	Current	Daily
82F	Table Mountain	7,420	34.38222	-117.6775	LA County	Oct-2016	May-2018	Daily
838	Big Pines Recreation Park Pcp	6,860	34.37889	-117.68889	LA County	Oct-2016	Current	Daily
AL388	Fire Station 114 (Lake Los Angles)	2,710	34.60667	-117.82556	LA County	Oct-2016	Current	Daily
AL468	Fire Station 77	3,459	34.75972	-118.79778	LA County	Oct-2016	Current	Daily
AL480	Fire Station #112 (Antelope Acres)	2,428	34.75444	-118.28833	LA County	Oct-2016	Current	Daily
AL481	Fire Station # 140 (Leona Valley)	3,172	34.61778	-118.28500	LA County	Oct-2016	Current	Daily
AL485	Lancaster Waterworks	2,460	34.66694	-118.12528	LA County	Oct-2016	Current	Daily

Current - Operational as of May 2, 2019

As indicated on **Figure 6**, average annual precipitation in this area of the Basin is about 7.1 inches per year (e.g., 2001, a representative average year); annual precipitation ranges from about 15.4 inches per year in a wet year (e.g., 1983, a representative wet year) to a low of about 2.9 inches per year (e.g., 2012, a representative dry year). The 2018 annual

precipitation was 3.74 inches, well below the average. As indicated by the cumulative precipitation curve, the highest rainfall months were March (1.80 inches) and December (1.37 inches).

The 2018 monthly precipitation, along with average monthly precipitation, is shown on the lower chart on **Figure 6**. This chart has been extended through March 2019 for purposes of the discussion of groundwater levels, presented in **Section 3.5.** As shown on the bottom of **Figure 6**, 2018 rainfall was above average for March and December 2018, but less than average in the other months of 2018. In early 2019, rainfall was close to monthly averages for January and March; however, February 2019 precipitation of 2.06 inches was more than double the monthly average (0.97 inches) (**Figure 6**).

3.4 STREAMFLOW DATA

As described above, runoff from the surrounding watershed provides significant groundwater recharge to the Basin (see **Figure 3**). Streams originate in the uplands and flow out onto the valley floor, where most of the water infiltrates into the basin sediments (as illustrated conceptually on **Figure 4**). The most hydrologically significant streams include drainages in the San Gabriel and the Tehachapi mountains, as listed below (Antelope Valley IRWMP, 2013):

- San Gabriel Mountains
    - Big Rock Creek
    - Little Rock Creek
    - Amargosa Creek
- Tehachapi Mountains
    - Oak Creek
    - Cottonwood Creek

The 2010 analyses compiled streamflow data from 18 stations spanning a 61-year period (1949-2009). These data were supplemented with characteristics of channel geometry at gaged and ungaged sites to allow for a more comprehensive assessment of runoff. Almost all historical data from these stations have been downloaded to supplement the Watermaster Engineer data files. Only six of these stations remain active. **Table 5** provides summary information for 24 streamflow stations, including most of the 18 stations used in the litigation, additional stations with available data, and three one-time measuring stations; the active stations provide data through April 2019 (indicated as 'current' in the last column of **Table 5**). Locations of these streamflow stations are shown on **Figure 5** (a few closely-positioned stations appear as one location on the map).

As shown in **Table 5**, discharge volumes are available for 19 streams (including tributaries to primary streams) at 24 gaging stations in the Adjudication Area and surrounding watershed. Also included in **Table 5** are three one-time measurement sites on Amargosa Creek, where the U.S. Geological Survey (USGS) documented infiltration rates for a potential enhanced recharge project for the City of Palmdale (see first three sites in **Table 5**).

Little Rock Creek contains an upstream reservoir, Littlerock Reservoir, jointly owned by PWD and LCID. As shown in **Table 5**, natural inflows are monitored by gage station ID 10264000. PWD maintains records of the discharge and diverts water from the reservoir. In 2018, PWD diverted 1,188.36 AF.

Table 5. Streamflow Gaging Stations

ID	Station Description	Source	Period of Record	
			Min	Max
	Amargosa C Nr Leona Siphon Nr Palmdale, CA (infiltration data only)	USGS		11/29/2013
	Amargosa C A 25th Street W Nr Palmdale, CA (infiltration data only)	USGS		11/29/2013
	Amargosa C Nr Palmdale, CA (infiltration data only)	USGS		11/29/2013
10264503	Barrel Springs Trib A Ca Aq Xing Nr Palmdale Ca	USGS	10/21/1988	2/13/1992
10263630	Big Rock C Ab Pallett C Nr Valyermo Ca	USGS/LA County	11/2/1988	Current
10263500	Big Rock C Nr Valyermo Ca	USGS	1/25/1969	Current
10263675	Big Rock C Wash A Hwy 138 Nr Llano Ca	USGS	12/12/1988	3/17/1993
10264640	Buckhorn C A E 120th Ave Nr Rogers Lake Ca	USGS	12/10/1996	3/7/2001
10263900	Buckhorn C Nr Valyermo Ca	USGS	5/8/1991	5/8/1991
10264550	City Ranch C Nr Palmdale Ca	USGS	1/13/1993	1/13/1993
10264555	Estates C Nr Quartz Hill Ca	USGS	5/1/1989	2/18/1993
10264510	Inn C A Palmdale Ca	USGS	12/16/1988	1/13/1993
10264605	Joshua C Nr Mojave Ca	USGS	4/1/1992	3/16/1993
10264501	Little Rock C A Hwy 138 Nr Littlerock Ca	USGS	4/10/1989	2/24/1992
10264000	Little Rock C At Little Rock Res Nr Littlerock Ca	USGS/LA County	1/1/2000	Current
10264682	Mescal C Nr Pinon Hills Ca	USGS/LA County	1/1/2000	5/21/2018
10264658	Mojave C A Forbes Ave A Edwards AFB Ca	USGS	12/6/1997	9/27/2000
10264660	Mojave C A Rosamond Blvd A Edwards Ca	USGS	12/6/1997	3/7/2001
10264600	Oak C Nr Mojave Ca	USGS	12/21/1988	3/16/1993
10263665	Pallett C A Big Rock C Nr Valyermo Ca	USGS/LA County	11/3/1988	Current
10264502	Peach Tree C Nr Littlerock Ca	USGS	12/16/1988	3/31/1992
10264530	Pine C Nr Palmdale Ca	USGS	1/13/1990	3/18/1993
10264675	Rogers Lk Trib A Edwards Afb Ca	USGS	2/3/1998	2/3/1998
10264100	Santiago Cyn C Ab Little Rock C Nr Littlerock Ca	USGS/LA County	1/1/2000	Current
10264636	Sled Track Cyn A Lancaster Blvd Nr Rogers Lake Ca	USGS	12/10/1996	3/7/2001
10264508	Somerset C A Palmdale Ca	USGS	1/24/1989	2/17/1994
10264560	Spencer Cyn C Nr Fairmont Ca	USGS	2/14/1992	2/14/1992

Current - Operational as of May 2, 2019

Previously, USGS monitored stream gage stations listed in **Table 5** and published data on the USGS National Water Information System (NWIS). Currently, USGS monitors only one station (Big Rock C Near Valyermo Ca). Los Angeles County now monitors five of the former USGS stations including Big Rock Creek, Little Rock Creek, Mescal Creek, Pallett Creek, and Santiago Canyon Creek (**Table 5**).

Although data are limited with respect to the number of streams being actively monitored, data from Big Rock Creek and Little Rock Creek provide consistent, long-term data for analysis. In addition, previous work by USGS for the City of Palmdale provides some measured infiltration rates along Amargosa Creek to assist with estimating future groundwater recharge.

3.5 GROUNDWATER LEVELS

USGS currently monitors water levels in approximately 170 wells within and adjacent to the Antelope Valley Adjudication Area. Wells in recent USGS monitoring programs are shown on **Figure 7**. The number of wells in this regional monitoring program varies from year to year based, in part, on access and well status/operation. Water level monitoring occurs in Spring and Fall of each year, typically with all wells measured in March and a smaller subset measured in October. The network contains relatively good coverage for each of the Management Subareas (**Figure 7**). The network also contains wells in alluvial areas adjacent to the Adjudication Area including **Fr**emont Valley and north of the Rogers Lake Subarea, if needed.

The USGS monitoring program was developed, in part, to comply with the California Statewide Groundwater Elevation Monitoring (CASGEM) program for the groundwater basin. This program was developed by the Antelope Valley State Water Contractors Association (District 40, 2014[8]); program costs were previously shared by AVEK, LCID, and PWD, with additional funding from USGS. Recognizing its benefits for the safe yield component monitoring, the Antelope Valley Watermaster has agreed to share in the program costs and has provided about $15,000 to $16,000 per year to the program since 2017.

Most of the wells in the monitoring program are production wells rather than dedicated monitoring wells. USGS has implemented monitoring protocols to avoid inaccurate water levels measurements that may be affected by recent pumping. To supplement these data, the Watermaster Engineer has been identifying and requesting data from monitoring wells owned by others in the Basin to incorporate into the program. In addition, water level data have been provided for both monitoring and production wells by many of the public water suppliers, imported water suppliers, and mutual water companies in support of the Annual Report analyses.

[8] District 40 prepared the CASGEM Monitoring Plan for the Antelope Valley State Water Contractors Association on file with DWR.

3.5.1 Hydrograph Development and Analysis

To examine water level changes over time in representative wells, hydrographs have been prepared for wells with relatively long records in the Watermaster Engineer database. Working hydrographs were initially developed for more than 5,000 wells with elevation data and reviewed to identify representative wells. A quantitative approach was developed for hydrograph selection based on the number and duration of water level measurements, local trends and fluctuations, and the spatial distribution of hydrographs throughout the Basin. Specifically, each hydrograph in the program was rated using a simplified point system (low-5 points, medium-10 points, or high-15 points) for the following criteria:

- ***Ongoing/Recent monitoring*** – Wells that are part of the current USGS monitoring network or have recent data were prioritized. If a well had recent data from 2018 or 2019, it was scored high; wells with the most recent data occurring in 2010 to 2017 were scored medium; all other wells were scored low for this criterion.
- ***Historical monitoring*** – Wells were evaluated for the length of the monitoring record by prioritizing wells that provide sufficient data to compare water level trends over the last few decades. Wells with data extending back to 1973 were given a high rating; wells with data only in the last five years were rated low with records in between scored medium.
- ***Number of measurements*** – Each hydrograph was assessed for continuity of monitoring to better evaluate local fluctuations in the Basin. Wells with greater than 50 measurements were scored high, greater than 25 and 15 were medium and low respectively. Wells with less than 15 measurements were not scored.
- ***Location*** – Wells were prioritized for broad distribution across the Basin, distribution in each subarea, and availability of other wells nearby. Wells were scored based on a high score for unique locations and a low score for numerous wells in clusters.
- ***Trends*** – Finally, each hydrograph was assessed on a qualitative basis for continuity of monitoring, representation of local or regional trends, and presence of outliers or unrealistic/questionable data. Wells demonstrating representative trends with consistent data were scored high, wells with representative trends but without consistent monitoring were scored medium, and remaining wells were scored low.

The 17 top scoring wells (60 points and higher) are shown on **Figure 7**. For wells with similar trends and data, one from each trend group was selected for display. Accordingly, the selected wells are judged to adequately represent the range of local groundwater conditions across the Basin. Backup hydrographs can be used for local specific analyses as needed. Hydrograph data are displayed from 1997 to 2019 representing the last 22 years of groundwater elevations. Although groundwater elevations vary across the Basin, all vertical scales on the hydrographs cover 100 feet to facilitate comparison of water level changes.

As shown on **Figure 7**, most wells indicate an overall declining trend of varying magnitudes over the 22-year period including at least one well in each Basin Subarea (e.g., hydrographs shown clockwise by USGS_84501, USGS_94301, USGS_03501, USGS_85001, USGS_02001,

USGS_52901, USGS_31001, USGS_45101, USGS_54801, USGS_25201, USGS_44001, and USGS_14101). For some wells with overall declining trends, water levels have stabilized in recent years. In general, declines are less significant in the northern Basin and other areas with lower amounts of pumping (e.g., USGS_94301, USGS_75101, USGS_03501, USGS_85001, and USGS_02001). The largest decline is indicated in the east-central portion of the Central Antelope Valley Subarea where one hydrograph indicates an overall decline of about 60 feet (USGS_25201). In addition, two representative hydrographs indicate areas where water levels are rising (USGS_91101, USGS_44401), including one well near a groundwater banking project.

A detailed local analysis of water level trends and fluctuations is beyond the scope of this Annual Report; hydrographs are presented in the report for the first time to allow for improved monitoring and understanding of Basin-wide trends and fluctuations in the future. In addition, it is recognized that the Antelope Valley groundwater basin consists of multiple aquifers, which require consideration in any water level analysis. Well construction information is limited and needs to be matched to water level data to the extent available. Additional construction data are being compiled for future analyses on an aquifer-specific basis.

3.5.2 Groundwater Elevation Contour Maps

To further examine groundwater conditions for the 2018 Annual Report, two Basin-wide groundwater elevation contour maps have been prepared for March 2018 and March 2019. These time periods were selected based on the large amount of available data and the ability to analyze changes in groundwater levels over a one-year period. In addition, Spring measurements are less likely than Fall measurements to be preceded by heavy pumping associated with the summer irrigation season[9]. By developing these two maps one year apart, a change in groundwater in storage can be approximated for calendar year 2018, the period covered in this Annual Report.

Well locations with water level measurements in either March 2018 or 2019 are shown on **Figure 8**. Wells are color-coded by the agency (source) that provided the data. The number of wells for each of these data sets is summarized in **Table 6**.

[9] It is recognized that March irrigation occurs for some crops in the Antelope Valley, such as alfalfa and carrots, among others. According to a land use study by California State University, Los Angeles (Qiu, 2013), October appears to be the month when most crops in the Antelope Valley are not irrigated (i.e., end of the growing season for carrots and onions and prior to irrigation for winter grains). However, late fall measurements may be complicated by recovering water levels. In addition, other water supply wells may be pumping more in October than in spring. Spring data are also preferred by DWR for adjudication basin reporting. For these and other reasons, spring measurements are retained for the purposes of monitoring water levels and groundwater storage in the Basin.

Table 6. Water Level Data by Source

Source of Water Level Data	Wells with 2018 Data	Wells with 2019 Data
U.S. Geological Survey (USGS)	167	170
Department of Water Resources (DWR)	62	14
Sanitation Districts of Los Angeles County (LACSD)	80	47
Antelope Valley-East Kern Water Agency (AVEK)	25	23
Los Angeles County Depart. of Public Works (LACDPW)	52	52
Palmdale Water District (PWD)	21	20
Quartz Hill Water District (QHWD)	10	0
Rosamond Community Services District (RCSD)	3	3
City of Lancaster	1	0

Contours were generated from these data using an electronic contouring program and adjusted locally, as needed. Wells outside the Adjudication Area were used to slightly adjust the orientation of the contours along the northern edge of the Adjudication Area, but those wells are not shown on the contour maps to avoid confusion. These areas outside of the Adjudication Area were not included in the change in storage analysis. Wells with measurements in only one of the two-time periods were reviewed to determine if the incomplete data created artificial differences in the two contour maps. Where this occurred, wells were removed for the purposes of the change in storage analysis.

Management Subareas defined in the Judgment are included on the groundwater elevation contour map (subarea names are on **Figure 8**). Because some of these boundaries were developed along known or inferred geologic faults, data were examined to determine if groundwater elevations indicated a discontinuity across the boundary. In the southeast, the subarea boundary between the South East Subarea and the Central Antelope Valley Subarea was observed to create a discontinuity, but the line of discordance was slightly different from the Judgment-defined subarea boundary. For purposes of the groundwater elevation analysis, an additional line was added in that area for purposes of contouring the data.

The contour maps for March 2018 and March 2019 are presented on **Figures 9** and **10**, respectively and discussed below.

March 2018 Water Levels: As shown on **Figure 9**, groundwater elevation contours in the southeast and west-northwest portions of the map indicate relatively large hydraulic gradients (contours closely spaced) and groundwater flow toward the central portion of the Basin. Water levels are lowest in the Palmdale area and adjacent areas to the northeast – areas where much of the groundwater production occurs in the Basin. The lowest water levels during March 2018 are below 2,050 feet msl in Palmdale (**Figure 9**). Relatively low groundwater elevations (below 2,200 feet msl) are also observed in the Rogers Lake Subarea

beneath Edwards Air Force Base in the north. This dry lake area represents one of the natural discharge areas of the Basin.

A portion of the South East Subarea is excluded from the contouring (see red-outlined area on **Figure 9**). In this area, groundwater is relatively shallow and contours must be manually controlled to prevent water levels appearing higher than the ground surface elevation. The area is sparsely populated and production or monitoring well data are unavailable. The lack of data, shallow depth to groundwater, and large hydraulic gradients produce inaccurate contours in this area; accordingly, the area is excluded from the analysis to prevent artificial changes in groundwater in storage from being calculated[10].

As indicated by the contours on **Figure 9**, there are two subarea boundaries that appear to impede water levels and create discontinuities in water levels. In the northwest, the boundary between the Willow Springs Subarea and the West Antelope Subarea creates such a discontinuity as indicated by a break in the contours (**Figure 9**). This boundary generally is located along the Willow Springs, Cottonwood, and Rosamond faults, indicating that the faults disrupt water levels in the subsurface. The change in water levels across the faults ranges from about 300 feet on the eastern part of the boundary to more than 400 feet in the west.

In the southeast, the boundary between the Central Antelope Valley Subarea and the South East Subarea also indicates an area of disruption in water levels. The presence of the buttes and bedrock outcrops near and along the boundary suggests the possible presence of faults (inferred) and the subarea boundary has been based on both geologic (faults) and hydrogeologic (water levels) data. Although recent data confirm a discontinuity in groundwater elevations along the northern portion of the subarea boundary, the line of discontinuous groundwater elevations diverges from the subarea boundary along its southern portion (on **Figure 9**, compare the Management Subarea boundary shown in black with the line of discontinuous groundwater elevations shown in orange). For contouring purposes, an additional boundary line (shown in orange on **Figure 9**) has been interpreted. The water level declines around pumping wells northwest of the boundary do not appear to be affecting water levels southeast of the boundary. Water level differences of about 100 feet (northeast part of the boundary) to more than 300 feet (along the contouring zone boundary) are indicated on **Figure 9**. The remaining Management Subarea boundaries of the Central Antelope Valley Subarea (with the Rogers Lake Subarea to the northeast and the West Antelope Subarea to the northwest) do not appear to impede groundwater flow.

March 2019 Water Levels: Groundwater elevation contours for March 2019 are shown on **Figure 10**. Given the scale and contour interval of the maps, water levels on **Figure 10** appear almost identical to water levels on **Figure 9**. Previous analyses indicate that, except in areas of localized recharge or near certain pumping centers, water levels only change a

[10] There is at least one well in the excluded area of the South East Subarea that will be prioritized for water level monitoring in the future. The Watermaster Engineer has identified additional data from the Mojave adjudication just east of the Los Angeles-San Bernardino county line for compilation and incorporation into future analyses, as needed.

few feet in most Basin areas from year to year; this observation is consistent with the 2018 and 2019 data. Patterns of groundwater flow and hydraulic gradients are also similar on both contour maps. The two Management Subarea boundaries that created breaks in the contours for 2018 on **Figure 9** are also seen on **Figure 10**.

The area of shallow groundwater excluded from contouring in the South East Subarea is also excluded from contouring on **Figure 10**. As explained above, this exclusion prevents the need to artificially lower contours to some unspecified depth to prevent water levels from appearing to be above the ground surface. This also prevents a calculation of change in groundwater in storage that would be an artifact due to the lack of data.

Water Level Change from March 2018 to March 2019: Notwithstanding the similarities in **Figures 9** and **10**, several local areas have experienced significant water level changes from March 2018 to March 2019. For illustration purposes, the two contour maps have been electronically subtracted to develop a contour map of water level change, as presented on **Figure 11**. The changes are highlighted with color – areas of water level rise shown in blue, and water level declines shown in orange. Light yellow represents areas where water levels are generally unchanged. Contours have also been added to the map to more clearly differentiate among the areas of water level changes.

As shown on **Figure 11**, there are numerous areas of localized changes, the largest of which appear to be associated with local pumping centers or groundwater banking areas. For example, the AVEK Westside Water Bank in the eastern portion of the West Antelope Subarea indicates local water level declines of more than 30 feet (**Figure 11**). In 2018, a large volume of Stored water from the State Water Project was recharged in the bank, resulting in a relatively large area of high water levels. By March 2019, this mounding had dissipated, resulting in a decline in water levels beneath the bank. Even with this large local decline in water levels, most of the remaining subarea experienced an overall water level rise resulting in a positive change in groundwater in storage.

Recharge areas for two additional AVEK water banking projects are also shown on **Figure 11** for reference. Those two projects include the High Desert Water Bank in the southwestern portion of the West Antelope Subarea and the Eastside Water Bank in the South East Subarea. Although some water was recharged in both of these projects in 2018-2019, monitoring well data were not available for the time period represented on the contour maps. The analysis highlights the benefits of a local groundwater monitoring program that allows the changes in water levels over time to be better documented, especially in banking areas where larger changes in water levels occur. The Watermaster Engineer will work with water banking operators to ensure adequate monitoring of local water levels to incorporate into this analysis. Rules and regulations for Storage Agreements to be executed with these banking projects were approved in 2018; templates for legal agreements are currently being drafted (2019) for future use.

Other areas of localized water levels changes are observed in the southeastern portion of the Central Antelope Valley Subarea (near Palmdale and Quartz Hill). As indicated by the blue shading on **Figure 11**, water levels have risen more than 10 feet over a broad area in

the southeast and extending to the northwest and northeast. Pumping for public water supply is concentrated in the southeastern area, where water levels have risen the most. This area has been associated with low water levels and cones of depression on previous maps (see **Figure 9**). However, as indicated on **Figure 11**, 2019 water levels have risen from 2018 levels, likely due to wet Spring conditions in 2019 (see **Figure 6**), which are associated with increases in recharge and surface water supply coupled with decreases in pumping.

The South East Subarea had the largest area of overall declines in 2019. Although most wells indicated a decline of less than 10 feet, the changes occurred over a relatively broad area of the subarea.

Although an area of sparse data, the Willow Springs Subarea and the Rogers Lake Subarea did not change significantly from 2018 to 2019, although most wells indicated a slight decline in water levels.

3.5.3 Change in Groundwater in Storage

The surface of water level change on **Figure 11** was used to estimate the volume of groundwater change for each subarea and the total Adjudication Area. The methodology involves the application of the aquifer specific yield (a unitless hydraulic parameter) to the change in water levels to estimate the change in groundwater in storage between Spring 2018 and Spring 2019. For this analysis, a methodology was employed similar to the one used in the 2010 Summary Expert Report (Beeby, et al., 2010), whereby a locally-estimated value of specific yield (Sy) was correlated to the depths of water level change at the monitoring locations (as discussed previously – see **Section 3.2.1.2** above).

The intervals of change from the March 2018 and March 2019 maps (prepared by the Watermaster Engineer) were exported and compared to the Sy data. A Sy value was selected from the 2010 data set for each interval where water levels had either risen or declined. In this manner, the 2018-2019 water level changes occur within the same intervals and textures[11] used to derive a Sy value. The storage changes are combined for each subarea as summarized on **Table 7**.

[11] In this context, *texture* refers to the physical nature of the aquifer according to the relative proportions of sand, silt, and clay. These proportions affect aquifer storage parameters including specific yield.

Table 7. Change in Groundwater in Storage for Management Subareas

Management Subarea	Area (acres)	Average Specific Yield	Ave. Change Groundwater Elevation (ft)	2018 Change in Groundwater in Storage (AF)
West Antelope Subarea	166,150	0.13	1.3	28,259
Central Antelope Valley Subarea	310,193	0.13	1.4	59,830
South East Subarea	183,666	0.15	-2.7	-73,566
Willow Springs Subarea	52,740	0.11	-0.1	-549
Rogers Lake Subarea	177,708	0.15	-0.5	-12,663
TOTAL	**890,457**			**1,312**

This analysis indicated a relatively small increase of approximately 1,312 AF of groundwater in storage from March 2018 to March 2019 in the Basin. As shown on **Figure 11** and in **Table 7**, these changes varied from subarea to subarea across the Basin. Overall increases in groundwater in storage for the West Antelope and Central Antelope subareas were offset by losses of groundwater in storage for the South East, Rogers Lake, and Willow Springs subareas.

To provide context for these changes, **Table 8** summarizes the historical change in groundwater in storage calculations for 2016, 2017, and 2018 and indicates a total cumulative change in groundwater in storage of 65,783 AF since 2016. In brief, data suggest a net increase in groundwater in storage for the West Antelope and Central Antelope Valley subareas and a net decline in the remaining subareas. The most significant decline in groundwater in storage is indicated in the South East Subarea. It is noted that the groundwater conditions in the South East Subarea are not well-defined, and a portion is excluded from the analysis due to insufficient data in areas of shallow groundwater. Additional data collection and analysis may be warranted for an improved understanding of local groundwater conditions.

Table 8. Historical Change in Groundwater in Storage

Management Subarea	2016 Change in Groundwater in Storage (AF)	2017 Change in Groundwater in Storage (AF)	2018 Change in Groundwater in Storage (AF)	2016-2018 Change in Groundwater in in Storage (AF)
West Antelope Subarea	-4,973	52,514	28,259	75,800
Central Antelope Valley Subarea	60,993	16,258	59,830	137,081
South East Subarea	-1,461	-55,150	-73,566	-130,177
Willow Springs Subarea	3,235	-7,144	-549	-4,458
Rogers Lake Subarea	-4,032	4,232	-12,663	-12,463
TOTAL	**53,761**	**10,710**	**1,312**	**65,783**

3.6 SUBSIDENCE MONITORING

The historical decline of groundwater levels has been linked to land subsidence in the Basin. Water level declines cause a decrease in the aquifer pore pressure, allowing for re-arrangement and compaction of fined-grained units (i.e., clay) in the subsurface. As these sediments compact, the land surface can sink.

Land subsidence from groundwater pumping has been documented by USGS and others in the Antelope Valley. Between 1930 and 1992, up to 6.6 feet of land subsidence occurred near Lancaster. At Edwards Air Force Base, land subsidence has caused cracked (fissured) runways and accelerated erosion on Rogers lakebed. USGS reports that this subsidence has also permanently reduced groundwater storage capacity by about 50,000 AF[12].

Figure 12 shows the distribution of land subsidence in the Antelope Valley from 1930 to 1992 (Ikehara and Phillips, 1994). Historical land subsidence has primarily affected the northern half of the Central Antelope Valley Subarea, and small portions of the West Antelope and Rogers Lake subareas (**Figure 12**). An analysis of satellite-based InSAR (interferometric synthetic aperture radar) data indicate an additional 0.2 to 0.6 feet of land subsidence occurred between 1993 to 2005 in sections of the subsidence-prone area. Land subsidence from groundwater level declines can be a relatively slow process and continue for years after the pore pressure changes have occurred.

Additional information and data on historical land subsidence are available through USGS, which has established a network of 85 elevation benchmarks for the purposes of monitoring land subsidence, as shown on **Figure 12**. In addition, three extensometers have been installed at Edwards Air Force Base to measure land subsidence directly. However, other than at Edwards Air Force Base, there is no formal subsidence monitoring program that can be accessed for the purposes of the Antelope Valley Watermaster to analyze subsidence on an ongoing basis. A periodic subsidence monitoring program, conducted in cooperation with USGS and using either benchmark surveys or InSAR data could be explored in the future, if warranted.

Currently, the Watermaster Engineer is using the ongoing water level monitoring program as a proxy for subsidence monitoring. If water levels are maintained above historic lows in key areas of historical subsidence, then decreasing pore pressures in previously un-compacted clay layers can be avoided. By monitoring water levels and maintaining levels above historic lows, when possible, further land subsidence from groundwater pumping can be mitigated. It is recognized that local subsidence could continue as a result of historical conditions, but if water levels are maintained, exacerbation of this situation can be mitigated.

[12] In general, this loss of capacity is due to a one-time compaction of fine-grained layers that did not likely store significant quantities of usable groundwater.

3.7 GROUNDWATER QUALITY

Groundwater provides a high-quality water supply for the beneficial uses in the Antelope Valley groundwater basin (SNMP, 2014). Total dissolved solids (TDS), an indicator of overall salts and mineral content, are present in groundwater at an average concentration of 300 to 350 milligrams per liter (mg/L) (DWR, 2004; SNMP 2014). In general, water quality has naturally lower TDS in the southern and central parts of the Basin; TDS concentrations increase in the northern Basin and range up to about 800 mg/L near the dry lakes. Consistent with other desert basin aquifers in Southern California, trace element concentrations can be elevated locally in the Antelope Valley, including arsenic and boron (USGS and SWRCB, 2013). In general, groundwater quality meets drinking water standards and management goals throughout most areas of the Basin (SNMP, 2014).

As part of the CASGEM monitoring plan, USGS samples a subset of Antelope Valley wells for groundwater quality. Sampling occurs in the 35 CASGEM wells on a rotational basis. Typically, about 10 wells are selected for chemical analyses, with the remaining wells sampled for specific conductance and temperature.

In addition to the USGS analyses, public water suppliers are required to sample groundwater quality in public supply wells. Each entity has groundwater quality monitoring requirements associated with its permit from the Division of Drinking Water, State Water Resources Control Board (DDW, SWRCB). Data are summarized in Consumer Confidence Reports prepared annually by the water purveyors. DDW (formerly Department of Public Health) also maintains these data in a public water quality database. Several public water suppliers have provided recent groundwater quality data to the Watermaster Engineer.

The Salt Nutrient Management Plan for the Antelope Valley (SNMP) has developed a groundwater quality monitoring plan using wells from the SWRCB Groundwater Ambient Monitoring and Assessment (GAMA) program (SNMP, 2014). The plan includes 23 wells owned and operated by established water utilities or the U.S. Air Force in central and southeast portions of the Basin. The program supplements ongoing groundwater monitoring programs by monitoring constituents associated with management goals in the Basin including TDS, nitrate, chloride, arsenic, total chromium, fluoride, and boron.

Data from these monitoring programs can be accessed by the Watermaster Engineer as needed to evaluate changes in any key constituents of concern in local areas.

3.8 SURFACE WATER QUALITY

Numerous local agencies monitor the various sources of surface water in the Adjudication Area. Collection of the quality data for imported water (State Water Project water), recycled water, and stormwater is ongoing; data can be compiled into the Watermaster database in the future for analysis depending on priorities and budget.

SWP water is treated at the PWD Leslie O. Carter Water Treatment Plant (WTP) for use by PWD and LCID. SWP water is also treated at the four AVEK treatment facilities (Quartz Hill WTP, Eastside WTP, Rosamond WTP, and Acton WTP). SWP water is high quality with TDS concentrations typically in the upper 200 mg/L range.

Recycled water is produced at the Los Angeles County Sanitation District's (LACSD) Palmdale and Lancaster water reclamation plants (WRPs), Edwards Air Force Base (EAFB) Air Force Research Laboratory Treatment Plant and the Main Base Wastewater Treatment Plant (WWTP), and the RCSD's WWTP. Tertiary treated effluent from LACSD is used for agriculture, purple pipe system (parks, landscaping, etc.), and environmental purposes. Treated water from the two EAFB plants is used only on the base. The RCSD WWTP has the capacity to treat 1.3 million gallons per day (mgd) of secondary-treated water and 0.5 mgd of tertiary-treated water. The RCSD WWTP is in the process of being permitted and currently discharges all its wastewater in clay-lined ponds.

Recycled water in the Antelope Valley meets most drinking water standards (SNMP, 2014). EAFB recycled water quality tends to have higher salt and nutrient concentrations (e.g., TDS, nitrate, chloride); elevated TDS and chloride concentrations have been linked to the higher mineral content in the lower aquifer, which serves as the source water for recycled water in that area (SNMP, 2014).

Littlerock Reservoir, jointly owned by PWD and LCID, collects runoff from the San Gabriel Mountains. Water from Littlerock Reservoir discharges to Lake Palmdale and is subsequently treated at the PWD treatment plant. Water quality in Lake Palmdale is considered good with TDS concentrations of about 150 mg/L (SNMP, 2014).

3.9 Groundwater Production Monitoring and Meter Installation

The Physical Solution allocates groundwater production of the Native Safe Yield among numerous parties to the Judgment including the U.S. Federal Government, the State of California, Overlying Producers (Exhibit 4 of the Judgment), Non-Overlying Producers (Exhibit 3 of the Judgment), and members of the Small Pumper Class (see **Figure 2**). Although exact locations for all production wells are not known, locations of active wells were compiled (or approximated) during the trial to support development of a groundwater model. This work was conducted by Geoscience Support Services as technical experts in the litigation to analyze the recovery of the basin with reduced groundwater pumping.

Model input files were obtained from Geoscience Support Services by the Watermaster Engineer in February 2018 to support future analyses. These files contain locations of a partial list of wells owned by Parties in the Judgment as shown on **Figure 13**. The map shows locations of water supply wells owned by the Public Water Suppliers (yellow), Agricultural Landowners (green), the U.S. Federal Government (brown) and the State of California (blue). The service areas of the Public Water Suppliers are also shown to better differentiate among the wells.

The production wells owned by Mutual Water Companies (MWCs) (included on Exhibit 4 of the Judgment) are represented in the model well files by parcels served, as shown on **Figure 13**. Well locations for additional Exhibit 4 Parties and other Parties with rights to produce groundwater (e.g., the Supporting Landowners) were not available in the files; missing wells will be added in the future as locations become available.

Production by the Small Pumper Class members is represented by parcel locations shown on **Figure 14**. Approximately 8,000 parcels were included in these files. Although wells were assigned to these parcels in the groundwater model for the purposes of the analysis, actual well locations were not known. The large number of the model-assigned wells for the Small Pumper Class members are not shown on **Figure 14** to avoid confusion.

3.9.1 Production Monitoring and Metering

The Judgment requires the Watermaster Engineer to monitor safe yield components, including groundwater production, and to ensure that reductions in pumping take place pursuant to the terms of the Judgment (¶18.5.2). As Watermaster Engineer, Todd Groundwater developed a form for 2018 production monitoring (i.e., reporting) that included documentation of how each Party measures the reported production. Although production in public water supply wells is measured directly with well meters, many of the agricultural and other wells in the Basin did not historically install meters. As such, reported production for those wells has historically been estimated using a variety of methods including electrical records or crop consumption data.

As stated by the Judgment, all Parties (except the Small Pumper Class) have been required to install meters on their wells by December 23, 2017 (within two years after the Judgment) to measure production directly. The Watermaster requested and was granted an extension to March 1, 2018 to complete the required meter installation. This process is not complete. The Watermaster Engineer has developed Rules and Regulations (approved by the Court) providing guidance and requirements for selection, installation, and testing of well meters (see **Appendix I**).

To ensure that meters were properly installed, the Watermaster Engineer has selected numerous contractors and qualified personnel as Pre-Qualified Meter Installers. All Pre-Qualified Meter Installers were required to comply with consistent reporting and documentation of new meter installations. In addition, the rules required documentation of existing well meters to ensure that all wells were metered in compliance with the regulations. The requirements also allow for a variance in the rules if well owners can demonstrate that an alternative meter installation will result in accurate production monitoring. Materials related to the meter requirements are available on the Watermaster website, including the pertinent Rules and Regulations, and the list of pre-approved meter installers and testers.

At the end of 2018, there were a large number of Parties remaining that had not completed metering in compliance with the Rules and Regulations. Watermaster Counsel developed a memorandum with options available for the Watermaster to ensure meter installation

compliance and a recommended enforcement process, which was implemented in early 2019. Administrative staff, Watermaster Counsel, and the Watermaster Engineer are working together on enforcement to achieve full compliance with meter requirements. Administrative staff maintains a list of non-compliant Parties for reporting to the Board.

In addition to enforcement activities, procedures will be needed to estimate unreported Production amounts, so that a full water accounting can be performed. This accounting would help allow full implementation of the Judgment, such as determining Replacement Water Obligations or determining Carry Over amounts.

3.9.2 Small Pumper Class Production Monitoring

The Judgment defined a Small Pumper Class of Producers as "all private (i.e., non-governmental) Persons and entities that own real property within the Basin, as adjudicated, and that have been pumping less than 25 acre-feet per Year on their property during any Year from 1946 to the present" (¶3.5.44). The Judgment allows any Small Pumper Class Member to produce up to 3 AFY for reasonable and beneficial use on their overlying land without being subject to a Replacement Water Assessment (¶5.1.3).

The Judgment states that the "primary means for monitoring the Small Pumper Class Members' Groundwater use...will be based on physical inspection by the Watermaster, including the use of aerial photographs and satellite imagery" (¶5.1.3.2). The level of monitoring to document this groundwater use, along with appropriate monitoring tools, is being considered by the Watermaster Engineer.

As an initial step, aerial photographs and known small pumper parcels could be evaluated together on an annual basis. In addition, some Producers have identified areas of concern where Small Pumpers may be producing in excess of the maximum amount; as those areas are identified, the Watermaster Engineer could conduct additional assessments. Should the Watermaster develop a reasonable belief that a Small Pumper Class Member is using in excess of 3 AFY, the Watermaster can require the well owner to install a meter at the well owner's expense.

3.9.3 2018 Land Use Monitoring

To provide a Basin-wide perspective for groundwater use, land use in the Adjudication Area will be incorporated into the monitoring program. A color-infrared (CIR) aerial photograph taken in Fall 2018 and provided by the U.S. Department of Agriculture (USDA) is shown on **Figure 15** to illustrate the overall land use in the Basin for this reporting period. A CIR photograph is particularly useful for interpretation of natural resources, especially vegetation. The Adjudication Area and Management Subareas are also shown on the image, although subarea names have been omitted to maximize the viewing area (see **Figure 14** and others for Subarea names). The Federal lands of Edwards Air Force Base are excluded from this satellite image for national security reasons.

CIR aerial photographs vary in overall tone, which complicates the interpretation of the color tones on the photograph. In general, red tones on the image indicate live vegetation; the red color intensifies with vegetation density and health. This occurs because healthy vegetation reflects significant near-infrared light, assigned to be red on various images. As plant vigor decreases, the vegetation will show as lighter shades of red and pink, various shades of greens, and possibly tans. Dead vegetation (wheat stubble as an example) will often be greens or tans.

The image on **Figure 15** allows for identification of irrigated crops, especially alfalfa fields, by the intense bright red areas of the Basin. As shown on the figure, most of the irrigated agriculture at the time of the photograph (Fall) is indicated in the eastern half of the Central Antelope Subarea. Additional agriculture also occurs throughout the remainder of the Basin, with some fields visible but not being irrigated as of the date of this aerial photograph. A comparison of **Figure 15** with **Figure 13** shows a correlation between the location of agricultural wells and indicated fields across the Basin.

The number of acres associated with irrigated agriculture in 2018 was obtained from the agricultural commissioners of Kern and Los Angeles counties as shown in **Table 9**. Data compiled for the 2016 and 2017 Annual Reports are also included for comparison on the table.

Table 9. 2016 to 2018 Estimated Agricultural Acreage in the Antelope Valley

Irrigated Agriculture by Year	Kern County (acres)	Los Angeles County (acres)	Total (acres)
2018	1,606	10,651	12,257
2017	3,070	15,884	18,954
2016	2,232	14,219	16,451

Source: Kern County Department of Agriculture and Measurement Standards.
Los Angeles County Agricultural Commissioner/Weights & Measures.

As indicated by the data in **Table 9**, the number of irrigated agricultural acres in the Basin increased by about 15 percent from 2016 to 2017 but decreased by about 35 percent in 2018, commensurate with the mandatory reduction in pumping (rampdown). As production is reduced during the Rampdown Period in compliance with the Judgment, the irrigated agricultural acreage that is economically viable for farming may continue to decline.

4 WATER ACCOUNTING

This section provides details on the water accounting for the Parties to the Judgment. The detailed accounting includes documentation of the Rampdown schedule, 2018 production, actual rampdown use, allocation and use of Imported Water Return Flows (IWRFs), Carry Over water, and information on other water categories such as transfers and storage. Also included are details on the wastewater and recycled water practices that occurred within the Adjudication Area in 2018 and details on the well applications program developed in 2018.

Production Rights, Rampdown, Unused Federal Reserved Water Right, Imported Water Return Flows, and Carry Over water available to each Party in 2018 are tabulated in a single line entry for each Party in the tables in **Appendix B**. Other water available to Parties, such as transfers and storage, are tabulated in separate appendices and discussed in more detail in this section. Accounts remain incomplete for Parties that have not reported their 2016, 2017, and/or 2018 annual production. Parties are encouraged to contact the Watermaster Engineer if their records differ from what is presented in this report.

4.1 PRODUCTION RIGHT AND PRODUCTION CATEGORIES

Production Right is defined in the Judgment as "the amount of Native Safe Yield that may be Produced each Year free of any Replacement Water Assessment and Replacement Obligation. The total of the Production Rights decreed in this Judgment equals the Native Safe Yield" (¶3.5.32). The circle graph on **Figure 2** illustrates the allocation of Production Rights among the Antelope Valley Producers, which totals 82,300 AFY[13].

Additional groundwater production categories are identified throughout the Judgment; the primary production categories are listed on the left side of **Figure 2**. These categories, including provisions and limitations in the Judgment, have been considered in developing the water accounts. To ensure that the Watermaster Engineer and each Party have the same understanding as to the amounts of water in each Party's accounts, selected tables of these accounts will be posted on the Watermaster website.

4.2 RAMPDOWN SCHEDULE

In accordance with Paragraph 8.3 of the Judgment, Producers that were allocated a portion of the Native Safe Yield (except the Small Pumper Class, the State of California and the United States) must reduce production from a Pre-Rampdown Production amount to the Production Right. In this manner, the Basin will be brought into balance over the seven-year Rampdown Period in accordance with the Judgment-defined Native Safe Yield. The Pre-Rampdown Production amount is defined as the "reasonable and beneficial use of Groundwater, excluding Imported Water Return Flows, at a time prior to this Judgment, or the Production Right, whichever is greater" (¶3.5.28). The Rampdown Period extends from

[13] Figure 2 does not include Production Rights of the Supporting Landowner Parties.

2016 through 2022; the reductions in production associated with the rampdown occur in years 2018-2022.

The Rampdown schedule for 2016 through 2022 for each Party with a Pre-Rampdown Production right is provided in **Appendix A**. **Table A-1** has the Rampdown schedule for the Exhibit 3 Non-Overlying and Supporting Landowner Producers while **Table A-2** has the Rampdown schedule for the Exhibit 4 Overlying Producers. Beginning in 2018, Pre-Rampdown Production is reduced linearly over a five-year period to reach the Production Right in 2023, the first year after Rampdown.

Pre-Rampdown Production amounts for the Exhibit 4 Producers were provided in the Judgment. Pre-Rampdown Production amounts (**Table A-1**) for the Exhibit 3 Producers and Supporting Landowners were not provided in the Judgment and the values in Table A-1 have been approved by the Watermaster Board (Todd Groundwater memorandum dated June 22, 2018).

4.3 2018 Reported Production and Water Accounting

In compliance with the Judgment, Todd Groundwater has worked with administrative staff to develop a production reporting process including a reporting form and a deadline for submittals. Although reporting compliance has improved over the three years of Judgment implementation, not all Parties have complied with the requirements. At the time of this Final Report, about 102 Parties out of 133 total Parties had reported their 2018 production; 31 Parties had not yet reported. Types of Parties and the associated reported production are summarized in **Table 10**.

Table 10. 2018 Production Reported by Party

PARTY	Total Number of Parties	2018 Reported Production	Number of Parties Reporting
Exhibit 3 Parties	11	30,849.48	11
Exhibit 4 Parties	104	50,438.55	82
U.S. Federal	1	1,321.27	1
State of California	9	0.08	3
Supporting Landowners	8	514.45	5
TOTALS	133	83,123.83	102

Administrative staff has been working with Parties to improve production reporting compliance and to infill missing production reports from the previous two years. The current status of reporting for 2016 and 2017 production is summarized in **Table 11**. **Appendix M** contains a list of Exhibit 3, Exhibit 4, State of California, United States, and Supporting Landowner Parties that have not submitted a 2016, 2017, and/or 2018 Annual Production Reports. Rules and Regulations have incorporated incentives for production reporting compliance including requiring complete reporting prior to approval of wells or transfers.

Enforcement actions are being considered to achieve compliance with reporting requirements in the Judgment.

Table 11. Status of Production Reporting for 2016 and 2017

PARTY TYPE and NUMBER		2016 Reported Production	Number of Parties Reporting	2017 Reported Production	Number of Parties Reporting
Exhibit 3 Parties	11	31,889.89	11	29,240.30	11
Exhibit 4 Parties	104	75,681.61	83	58,390.21	74
U.S. Federal	1	1,094.01	1	1,174.00	1
State of California	9	0.00	1	0.00	1
Support. Landowners	8	152.45	3	608.25	5
TOTALS	133	108,817.96	99	89,412.76	92

Data in **Tables 10** and **11** indicate that reported production has declined over the three-year period of the Judgment as well as in 2018 as a result of rampdown, but accurate amounts cannot be determined without production reporting by all Parties.

Appendix B presents detailed accounting of water sources (Production Right, Rampdown, unused Federal Reserved Rights, Imported Water Return Flows and Carry Over water) for 2018 for each Party to the Judgment. Note that all Parties may not have rights to all these water source types. In addition to the sources of water available for production each year, the tables show the amount of groundwater produced and the sources of water assigned to that production for 2018. For example, production was first assumed to be derived from each Party's Production Right (as required by the Judgment). Additional production was then assumed to come from Rampdown, allocation of unused Federal Reserved Rights, IWRFs, and then Carry Over, if applicable. More details of IWRFs are in **Section 4.4**.

To facilitate review by the Parties of the process, columns on the tables in **Appendix B** have been numbered and formulas used to develop the account details are shown. This will allow Parties to better understand how numbers were derived and ensure that the amounts developed by the Watermaster Engineer balance with each Party's internal records.

Tables B-1 and **B-2** present the water accounts for the Exhibit 3 Non-Overlying Producers and the Exhibit 4 Overlying Producers, respectively. **Table B-3** contains water accounts for Other Parties including the United States, State of California, Supporting Landowners, Antelope Valley Joint Union High School District (AVJUHSD), City of Lancaster, and PPHCSD, as well as any metered Small Pumper Class members and use of Imported Water Return Flows by Parties that have no other rights to produce. Finally, **Table B-4** shows water accounts for those entities that have been granted New Production under the Antelope Valley Watermaster Rules and Regulations (see **Section 4.11** for information on the New Production well application process). Replacement Water Assessments must be paid for all

New Production. The first successful New Production application was approved in March 2018.

As per the Judgment (¶5.1.4.1), unused Federal Reserved Water Rights (associated with Edwards Air Force Base and Air Force Plant 42) in any given year will be allocated to the Non-Overlying Production Rights holders (except for Boron CSD and West Valley County Water District) in the following year, in proportion to Production Rights set forth in Exhibit 3 of the Judgment. This unused portion of the Federal Reserved Right is to be used by the Non-Overlying parties in the year available and is not subject to Carry Over (¶15). The United States is to give the Watermaster at least a ninety-day notice if its Production is anticipated to increase more than 200 AFY in the following 12-month period (¶11.1). Increased demand by the United States can be meet with increasing Production or by accepting imported water deliveries. Any Party can propose a water substitution or replacement to the United States. If a Party's proposed imported water substitution is agreed upon by the United States, the United States will reduce Production by that amount and the Party can Produce that amount of Native Safe Yield free from a Replacement Water Assessment in addition to their Production Right (¶11.2).

The Supporting Landowners are Non-Stipulating Parties that are subject to all provisions of the Judgment but are not entitled to benefits provided by Stipulation, including but not limited to Carry Over and Transfers (¶5.1.10) (**Table B-3**). Other Parties, such as the City of Lancaster and the AVJUHSD, were given rights to produce groundwater up to certain amounts until recycled water becomes available (**Table B-3**). Phelan Piñon Hills Community Services District (PPHCSD) does not have Production Rights, but according to the Judgment, is allowed to pump up to 1,200 AFY from its Well #14 provided such production does not cause Material Injury and the District pays a Replacement Water Assessment and any other costs deemed necessary to protect Production Rights defined in the Judgment, on all water produced and exported (**Table B-3**). The bottom of **Table B-3** lists six Parties that have rights to Imported Water Return Flows but do not have Production Rights. These six Parties have the right to produce, carry over, transfer, or store these Imported Water Return Flows in the future if they choose.

Small Pumper Class Members can produce up to 3 AFY for reasonable and beneficial use on their overlying land without being subject to a Replacement Water Assessment, reporting production or installing a meter on their well(s). To date, only two Small Pumper Class Members are known to have installed meters on their wells. The Antelope Valley Country Club has voluntarily installed meters on its wells to document use of its Production Right (up to 3 AFY, same as all Small Pumper Class Members) and its right to Imported Water Return Flows (**Table B-3**). It also has transfer water available to it (last column on right in **Table B-3**). Long Valley Road L.P. is in the process of getting meters installed and approved. It also has transfer water available to it (last column on right in **Table B-3**).

Table B-4 lists applicants that have been granted New Production. A total of 24 New Production applications have been approved but 2 of these encountered dry boreholes and subsequently withdrew their applications. Watermaster administrative staff is in the process

of contacting these Parties and getting 2018 Annual Production Reports for those that have had the wells completed in 2018.

4.4 Imported Water Use and Return Flows

AVEK, PWD, and LCID are State Water Project (SWP) contractors with turnouts along the east branch of the California Aqueduct to import SWP water into the Antelope Valley. AVEK imports SWP water and treats a portion of this water at its four water treatment plants for delivery to its municipal and industrial customers. AVEK also delivers untreated SWP water for agriculture use and recharge for subsequent recovery and delivery to its customers. PWD imports SWP water for treatment through its water treatment plant located at Lake Palmdale and delivers the treated water to its urban customers directly. PWD also wheels small amounts of imported water to AVEK and LCID. LCID does not have a treatment plant for its SWP allocation but has conducted exchanges with AVEK over the last several years. Some of LCID's SWP Table A water has been delivered to AVEK in exchange for the return of an equal amount of AVEK's approved future allocation of SWP Table A water to LCID. In 2018, AVEK imported 805 AF of LCID Table A SWP water. Since 2007, 5,635 AF of LCID's Table A water has been delivered to AVEK for future return to LCID. This imported water has been included in AVEK imported water totals.

Appendix C-1 provides details on the amount of water imported into the Antelope Valley watershed, amounts recharged (banked), and the amounts sold to customers in 2018. In 2018, a total of 59,839.16 AF of SWP water was imported into the watershed. AVEK imported 49,629.16 AF, PWD imported 10,210 AF, and LCID did not import any water in 2018. **Appendix C-2** provides a summary of the total imported water stored at the beginning and end of 2018 and the amount of water recovered for use inside and outside the Adjudicated Area.

As provided in Paragraph 5.2 of the Judgment, Parties listed on Exhibit 8 of the Judgment have a right to produce Imported Water Return Flows in any year equal to the applicable percentage multiplied by the average amount of imported water used by that Party within the Basin in the preceding five-year period. This calculation does not include imported stored water in the Basin pursuant to a Storage Water Agreement (see **Section 4.8**). AVEK has rights to the Imported Water Return Flows used by Parties not on Exhibit 8 of the Judgment. **Appendix D** lists imported water use for 2011 through 2018 and Imported Water Return Flows for 2016 through 2019 by the 37 Parties on Exhibit 8. Return flows from agricultural imported water use are set in the Judgment at 34 percent and return flows from municipal and industrial imported water use are set in the Judgment at 39 percent of the amount of imported water used.

Imported water is also banked in the Antelope Valley for storage and subsequent recovery and use. Groundwater banking by AVEK and others is described in **Section 4.8**.

4.5 CARRY OVER WATER

Producers can carry over an unproduced portion of an annual Production Right or a right to Imported Water Return Flows to the next year under certain conditions as defined by the Judgment. Producers are also allowed to purchase imported water and forego a portion of the Production Right to the Carry Over water account (In Lieu Production Right Carry Over, ¶15.1 of Judgment). Carry Over water amounts for Producers with unused Production Rights or Imported Water Return Flows for 2018 are documented in the tables in **Appendix B**. For future Annual Reports, these Carry Over accounts may be tabulated in a separate appendix to show aging of the separate Carry Over accounts. According to the Judgment, water eligible for these accounts may be carried over for up to ten years. At the end of the Carry Over period, the Producer may enter into a Storage Agreement with the Watermaster to store unproduced portions of Carry Over water. If not converted to a Storage Agreement, Carry Over water not Produced by the end of the tenth year reverts to the benefit of the Basin and the Producer no longer has a right to the Carry Over water (¶15.1, 15.2, 15.3).

4.6 REPLACEMENT OBLIGATIONS

The purpose of Replacement Water is to ensure that each Party may fully exercise its Production Right by keeping the basin in hydrologic balance. A Producer has a Replacement Obligation if its production of groundwater is more than the sum of its rights to pump groundwater including Production Rights, Carry Over water, Imported Water Return Flows, in-lieu production, and Stored water. During the first two years of the Rampdown Period (2016 and 2017), Producers were not subject to Replacement Water Assessment fees. An exception to this was Phelan Pinon Hills Community Services District (PPHCSD). It does not have Production Rights, but according to the Judgment is allowed to pump up to 1,200 AFY from its Well #14 provided such use does not cause Material Injury and PPHCSD pays a Replacement Water Assessment and any other costs deemed necessary to protect Production Rights defined in the Judgment, on all water produced and exported.

Replacement Water Obligations for 2018 are listed in **Appendix E**. The Replacement Water Assessment (RWA) fee for Producers within the AVEK, PWD, and LCID service areas was set at $415 per acre-foot for the 2016 through 2018 period. The State Water contractors in the Antelope Valley area (AVEK, PWD, and LCID) hired an independent contractor to develop a methodology to determine the RWA fee in areas inside and in areas outside of the State Water Contractor service areas (**Appendix O**). The Replacement Water Assessment fee for 2019 was set at $451 per acre-foot for Producers within the State Water Contractor service areas and at $948 per acre-foot for Producers outside the State Water Contractor service areas. The Parties listed in **Appendix E** will be invoiced for these RWAs unless they meet these Replacement Water Obligations through approved transfers.

4.7 TRANSFERS

All transfers of Production Rights or other rights to produce groundwater under the Judgment that have occurred to date are tabulated in **Appendix F-1**. The table includes the

names of the Transferor and the Transferee and the parcels associated with each party. Also listed is the type of transfer (e.g., property sale, transfer of rights, merger, split of rights). Most of the listed transfers are associated with property sales. The table also includes the transferred amount and date of transfer as well as the status of the voting rights associated with any permanent transfer of Production Rights. A transfer form was developed in 2018 (see **Appendix N**) and has been used for transfers since its approval. The transfees associated with Production Right transfers are also indicated in the second column of the water accounting tables (**Appendix B**) to show who the new owner of those Production Rights is.

Appendix F-2 contains a summary of transfers that are not associated with a transfer of Production Rights. The **Appendix F-2** table was generated to summarize one-time transfers, generally of Carry Over water. To date, four such transfers have occurred, and these amounts are also included in the water accounting tables (**Appendix B**) in the last column on the right. Transfers to Parties are represented as a positive number since it is additional water available to that Party while transfers from Parties are represented as a negative number since the Transferee has sold that water to another Party and it is no longer available to the Transferee. There have been no transfers by the Antelope Valley United Mutuals Group[14]. As required in the Judgment, a separate accounting for Antelope Valley United Mutuals Group transfers will occur if any of such transfers take place.

4.8 STORED WATER AND STORAGE AGREEMENTS

All Parties have the right to store water in the Basin pursuant to a Storage Agreement with the Watermaster. Storage could include Carry Over water or imported water that has been brought into the Basin and recharged. AVEK may export any of its imported Stored water to any area outside its jurisdictional boundaries and the Basin, provided all water demands within its jurisdictional boundaries are met. Stored water that originated as other imported water may also be exported, subject to a technical determination by the Watermaster of the percentage of the Stored water that is unrecoverable; such unrecoverable Stored water is dedicated to the Basin (¶14 of the Judgment). Production from Stored water is not subject to an Administrative Assessment (¶9.1 of the Judgment). Paragraph 6.3 of the Judgment prohibits unauthorized Parties to claim rights to produce any Stored water recharged in the Basin, except pursuant to a Storage Agreement with the Watermaster.

To date, the Watermaster has not entered into any storage agreements, and the information on existing banking programs is based on information reported to the

[14] The members of the Antelope Valley United Mutuals Group are Antelope Park Mutual Water Company, Aqua-J Mutual Water Company, Averydale Mutual Water Company, Baxter Mutual Water Company, Bleich Flat Mutual Water Company, Colorado Mutual Water Co., El Dorado Mutual Water Company, Evergreen Mutual Water Company, Land Projects Mutual Water Co., Landale Mutual Water Co., Shadow Acres Mutual Water Company, Sundale Mutual Water Company, Sunnyside Farms Mutual Water Company, Inc., Tierra Bonita Mutual Water Company, West Side Park Mutual Water Co. and White Fence Farms Mutual Water Co., together with the successor(s)-in interest to any member thereof.

Watermaster Engineer by the bank operators. Once Storage Agreements are executed, the water accounting will reflect information obtained during development of the Storage Agreement and reported under the agreement.

Several banking projects involving Stored water are currently in operation in the Basin including some projects that were in existence prior to the Judgment. Nothing in the Judgment limits or modifies operations of these preexisting banking projects (operators are listed in ¶14 of the Judgment). A complete list of preexisting banking projects has not yet been finalized; the following is a partial list of those projects:

- AVEK Westside Water Bank
- AVEK Eastside Water Bank
- AVEK High Dessert Water Bank
- Antelope Valley Water Storage LLC Willow Spring Water Bank (formerly the Antelope Valley Water Bank)
- Tejon Ranchcorp and Tejon Ranch Company's Tejon Water Bank.

These banking projects are described below and operations are documented quantitatively in **Appendix C-2**. Storage Agreements with these Parties are being initiated and information on these Storage Agreements will be included in **Appendix G** in future annual reports.

AVEK's Westside Water Bank (formally referred to as Water Supply Stabilization Project No. 2 (WSSP-2)) is capable of storing up to 150,000 AF of water recharged in low-bermed recharge basins covering about 1,000 acres of agricultural fields. AVEK's Eastside Water Bank consists of three 2-acre recharge basins and three groundwater wells that are used for recharge and recovery of raw SWP water. The recovered water is blended for delivery to the Eastside Water Treatment Plant. In 2017, AVEK also started recharging water in its new High Desert Water Bank which is on a 1,500-acre site and will have a 280,000 AF capacity to store approximately 70,000 AFY of SWP surface water conveyed to the site via the California Aqueduct. In 2018, 12,559 AF of SWP water was recharged into the Westside Water Bank, 778 AF of SWP water was recharged into the Eastside Water Bank and 2,992 AF was recharged into the High Desert Water Bank for a total of 16,329 AF of recharge (**Appendix C-1**). AVEK recovered 7,922.83 AF of previously banked water in 2018 (**Appendix C-2**).

Another groundwater bank in Antelope Valley is the Willow Springs Water Bank (WSWB) (formerly called the Antelope Valley Water Bank). The WSWB is located on 1,838 acres of agricultural land near Rosamond in Antelope Valley. It consists of percolation ponds and has a reported storage space of 500,000 AF and recharge and recovery capacities of 100,000 AFY. The Southern California Water Bank Authority (formerly called the Semitropic-Rosamond Water Bank Authority) operates the WSWB and the Semitropic Water Storage District Stored water Recover Unit (SWRU), which is not located in Antelope Valley. Operating both the WSWB and the SWRU, which are located in different areas in Kern County, provides more flexibility to acquire, exchange and deliver water. The combined storage space capacity is reported at 800,000 AF with a 133,000 AFY recharge capacity and a 200,000 AFY recovery capacity. Banking information indicates that 200,000 shares will be

issued to customers in the combined facilities. Each share will provide customers with the following capacities:

- 1 AFY recovery plus lower priority capacity when available
- 3 AF in SWRU or 5 AF in WSWB of storage plus lower priority capacity when available
- 0.33 AFY in SWRU or 1 AFY in WSWB of recharge plus lower priority capacity when available.

Water agencies can purchase shares in the water bank and pay annual fees per share plus fees for depositing water and for extracting water. Ten percent of all water deposited in the water bank is required to be left behind to keep the bank viable. The basin is also credited with evaporation losses based on actual conditions including temperature and wind conditions when the percolation occurs (Beuhler, 2017).

In 2018, no water was recharged or recovered from the WSWB. Pumping of native groundwater (954 AF) did occur in accordance with the bank's Exhibit 4 Production Right (1,772 AF) to support the agricultural property at the water bank.

The Tejon Water Bank was built in 2006 and is owned and operated by the Tejon Ranchcorp and Ranch Company on 160 acres in northeast Kern County. In 2018, they spread 17,330 AF but did not recover any previously-stored water (**Appendix C-2**).

At the end of 2018, the three Parties discussed above and included in **Appendix C-2** that store water in the Adjudicated Area have a total of 139,654 AF of water in storage.

4.9 DROUGHT PROGRAM

The Judgment contains provisions for a Drought Program which is defined as a water management program in effect only during the Rampdown Period affecting the operations and Replacement Water Assessments of the participating Public Water Suppliers (called Drought Program Participants)[15] (¶3.5.12).

During the Rampdown Period, District 40 agrees to purchase from AVEK each year an amount of water equal to 70 percent of District 40's total annual demand or, if that amount is not available from AVEK, as much water as AVEK makes available at no more than the then-current AVEK treated water rate. District 40 is not required to purchase more than 50,000 AFY from AVEK (¶8.4.1). **Table 12** summarizes District 40's total annual demand and the amount of imported water purchased from AVEK in 2016, 2017 and 2018.

[15]Drought Program Participants are District 40, Quartz Hill Water District, Littlerock Creek Irrigation District, California Water Service Company, Desert Lake Community Services District, North Edwards Water District, City of Palmdale, and Palm Ranch Irrigation District (¶8.4).

Table 12. District No. 40 Water Demand and Imported Water Supply

District 40 Imported Water Use	2016	2017	2018
Total Water Use (Groundwater + Imported)	42,461.14	44,342.76	46,199.45
Imported Water Use	26,459.24	26,946.45	28,925.81
Percent of Imported Water Use	62.31%	60.77%	62.61%

During the Rampdown Period, the Drought Program Participants agree to minimize excess groundwater production and use all water made available by AVEK at no more than the current AVEK treated water rate in any year they produce groundwater in excess of their rights under the Judgment. Drought Program Participant Production is not considered excess Production exempt from a Replacement Water Assessment under this Drought Program unless a Drought Program Participant has utilized all water supplies available to it including its Production Right, Imported Water Return Flow rights, unused Production allocation of the Federal Reserved Water Rights, imported water, and Production rights previously transferred from another Party (¶8.4.2).

The Drought Program Participants are exempt from Replacement Water Assessments for Production in excess of their respective rights up to a total of 40,000 AF over the Rampdown Period with a maximum of 20,000 AF in any single year for District 40 and a total of 5,000 AF over the Rampdown Period for all other Drought Program Participants combined. Any excess Production under this Drought Program needs to be for direct delivery to customers within their respective service areas (¶8.4.3). **Table 13** shows the amount of production in excess of Drought Program Participants' available water for 2016, 2017, and 2018.

Table 13. Drought Program Participants Production in Excess of Rights

Drought Program Participants	Production in Excess of Rights (AFY)		
	2016	2017	2018
District 40	0.00	0.00	0.00
Quartz Hill Water District	0.00	0.00	0.00
Littlerock Creek Irrigation District	0.00	0.00	0.00
California Water Service Company	0.00	0.00	0.00
Desert Lake Community Services District	0.00	0.00	0.00
North Edwards Water District	0.00	0.00	0.00
City of Palmdale	0.00	0.00	0.00
Palm Ranch Irrigation District[1]	0.00	57.48	114.17
Total	0.00	57.48	114.17

1. Palm Ranch ID received a one-time transfer of 2,850 AF in 2019 and 114.17 AF of this will be used as its Replacement Water Obligation for 2018 overproduction.

As shown in the table, Palm Ranch Irrigation District is the only Drought Program Participant that produced in excess of its total groundwater rights in 2018 (see **Appendix B-1**). In 2019, Palm Ranch Irrigation District received a one-time transfer of 2,850 AF of which 114.17 AF will be used as its Replacement Water Obligation for 2018 overproduction.

4.10 Changes in Use

Annual reports are to include a compilation of changes in use (¶18.5.18.17 of the Judgment). Changes in use have been documented through Transfers (see **Section 4.6** and **Appendix F**) and through New Point of Extraction applications (see **Section 4.11** and **Appendix H**).

4.11 Well Applications for New or Replacement Production Wells

The process for well applications for new or replacement production wells was initiated in 2017 and finalized in early 2018.

New and replacement wells drilled in the Adjudication Area of the Antelope Valley are subject to approval by the Antelope Valley Watermaster. A new well is any well that does not presently exist but is proposed to be constructed. A replacement well is a specific kind of new well that is located within 300 feet of an existing well and owned by the same Party that intends to construct the new well.

There is also an approval process for non-production wells. Non-production wells include piezometers, monitoring wells, and cathodic protection wells that will pump only minimal amounts of groundwater associated with well construction and/or groundwater sampling.

Prior to approval of a well application, the Watermaster Board must make the following findings:

- Applicant has a known right to produce groundwater under the Judgment, or qualifies as an unknown small pumper, or is a non-pumper with no pumping rights but agrees to purchase replacement water.
- Applicant with a right to produce groundwater requests a replacement well (within 300 feet of an existing well) or a new well from a new point of extraction; or applicant is a non-pumper with no pumping rights and requests a well for new production; or applicant requests a non-production well.
- Applicant's well will not cause Material Injury as defined by the Judgment and the Rules and Regulations.

Appendix N contains the four forms associated with these types of wells applications:

- Small Pumper Qualifying Documentation
- Replacement Well Application for Existing Production Rights or New Non-Production Well

- New Point of Extraction Application
- New Production Application.

In 2017 and 2018, the following well applications and Small Pumper Qualifying Documentations have been approved:

- 28 monitoring wells
- 3 test, yield or other wells
- 8 Replacement wells
- 1 Replacement well for Parties that no longer wanted to share wells
- 5 New Points of Extraction
- 2 New Points of Extraction for Parties that no longer wanted to share wells
- 15 New Production wells (2 of these approved applications were withdrawn because wells were dry)
- 42 Small Pumper Qualifying Documentations (7 of these Small Pumper Qualifying Documentations were submitted in association with some of the Replacement Well and New Points of Extraction requests listed above).

Locations of these approved applications are shown on **Figure 16** and listed in **Appendix H**.

4.12 WASTEWATER AND RECYCLED WATER

Antelope Valley area wastewater is treated at LACSD's Palmdale and Lancaster WRPs, EAFB Air Force Research Laboratory Treatment Plant and the Main Base WWTP, and the RCSD's WWTP. Quantities of effluent and reuse for 2018 are tabulated in **Appendix J**.

5 REFERENCES

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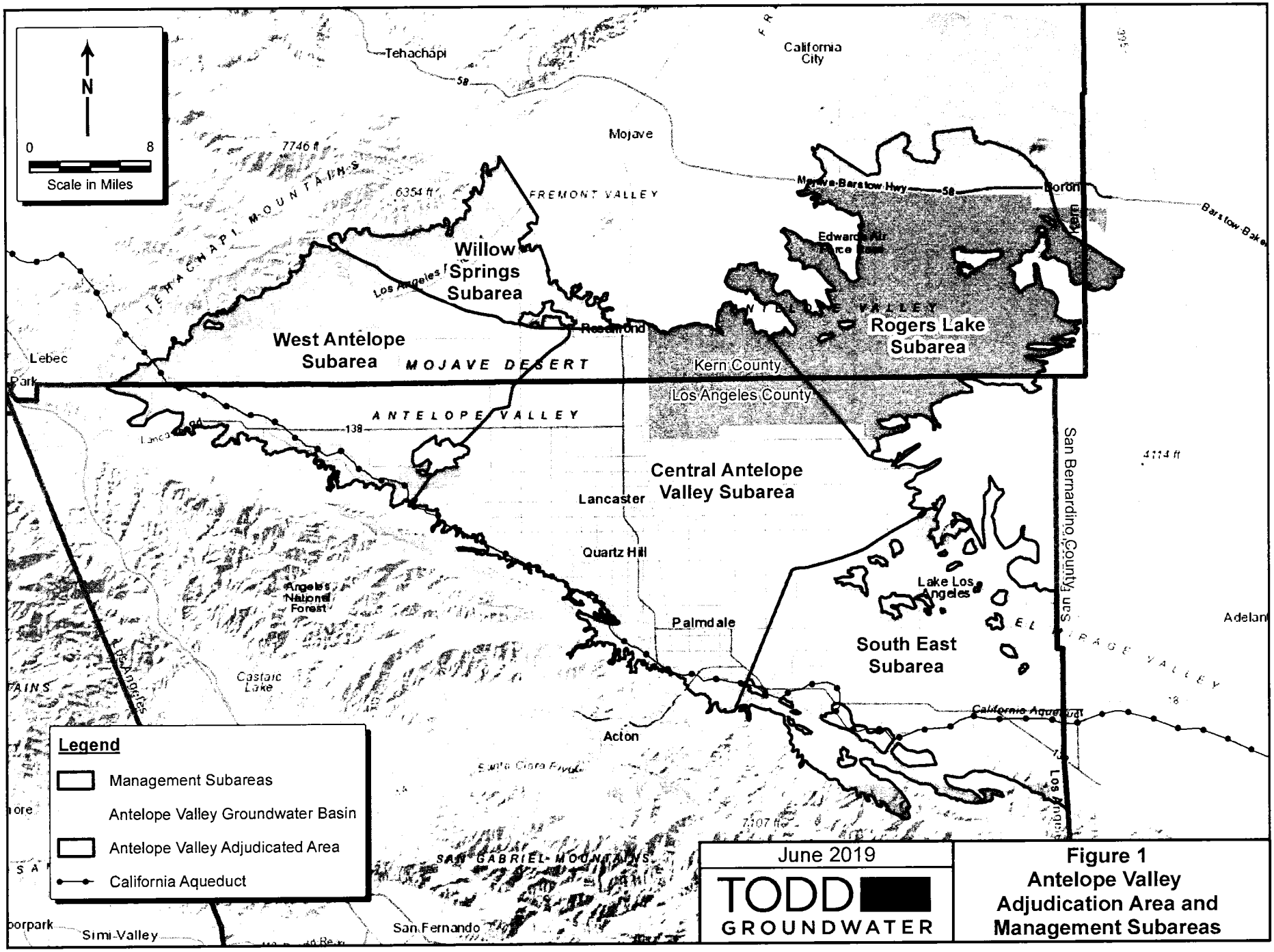
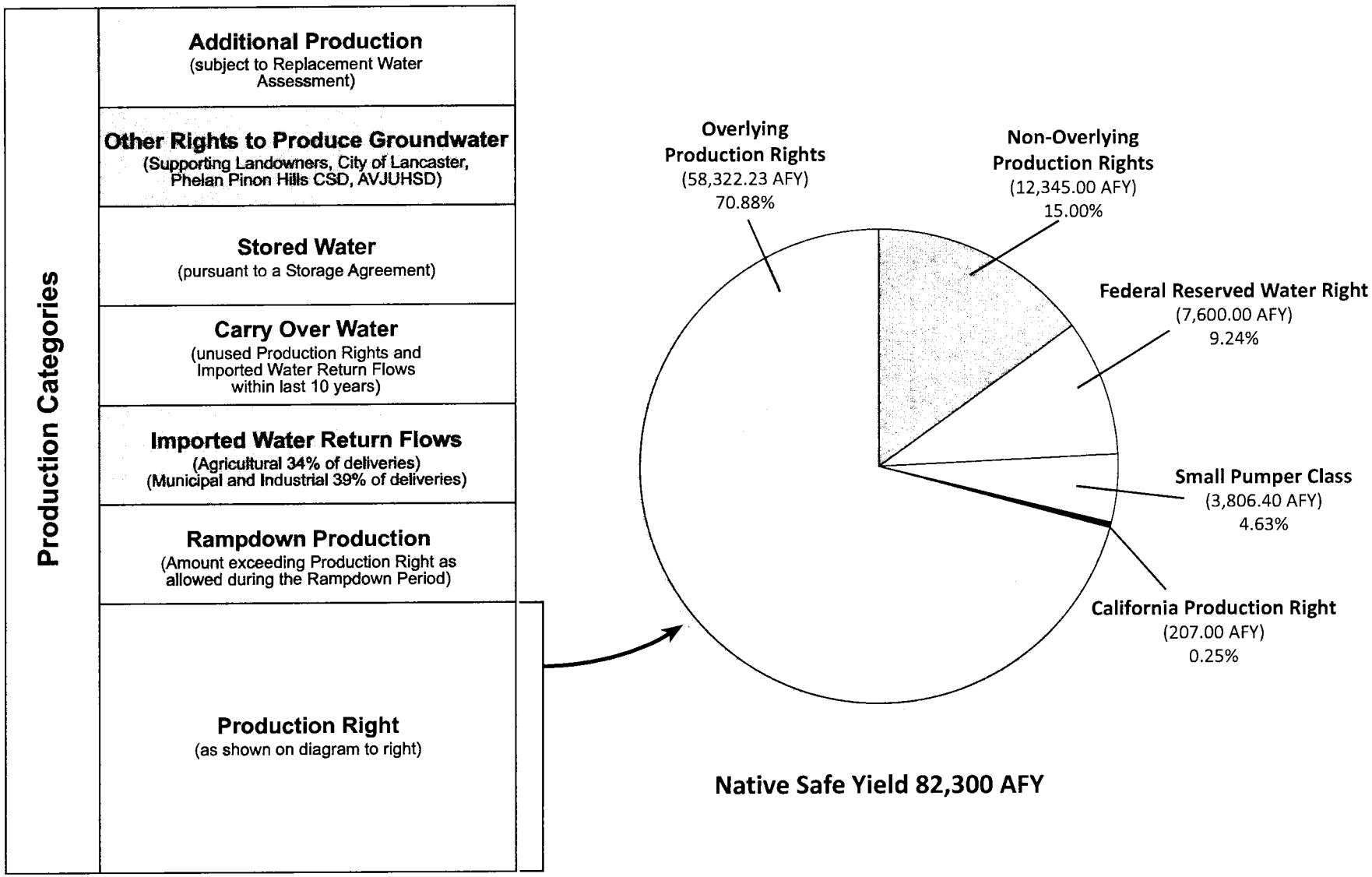
Figures

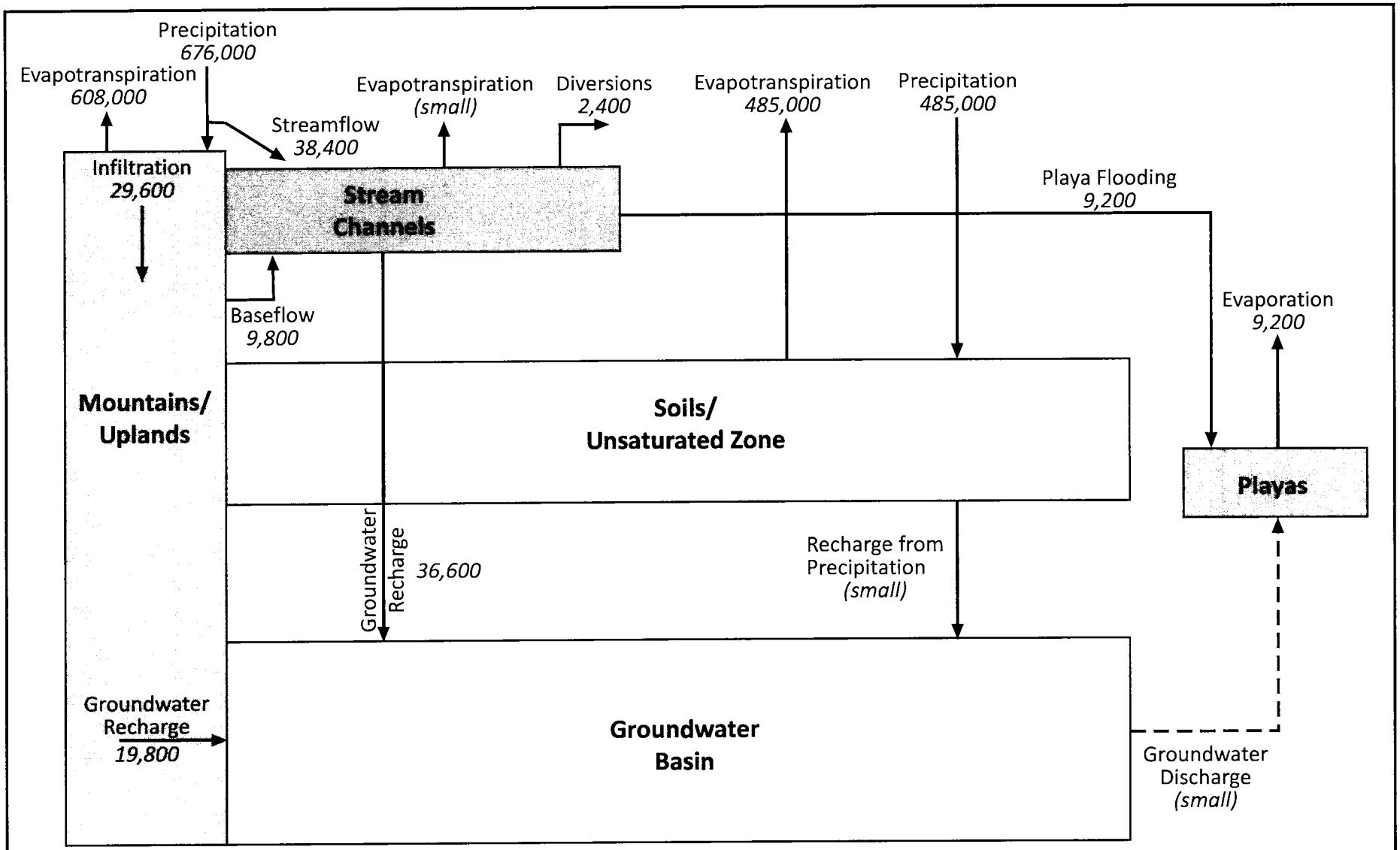

N
0
8
Scale in Miles
Tehachapi
California City
Mojave
7746 ft
6354 ft
TEHACHAPI MOUNTAINS
FREMONT VALLEY
Willow Springs Subarea
Los Angeles
Redmond
West Antelope Subarea
MOJAVE DESERT
Rogers Lake Subarea
Kern County
Los Angeles County
Lebec
ANTELOPE VALLEY
Central Antelope Valley Subarea
Lancaster
Quartz Hill
Palmdale
Lake Los Angeles
South East Subarea
San Bernardino County
Angeles National Forest
Castaic Lake
Acton
California Aqueduct
SAN GABRIEL MOUNTAINS
7107 ft
San Fernando
Simi Valley
Mojave-Barstow Hwy
58
Boron
Barstow
Adelanto
4114 ft
Legend
Management Subareas
Antelope Valley Groundwater Basin
Antelope Valley Adjudicated Area
California Aqueduct
June 2019
TODD GROUNDWATER
Figure 1
Antelope Valley
Adjudication Area and
Management Subareas



June 2019

TODD GROUNDWATER

Figure 2
Adjudication Production Categories



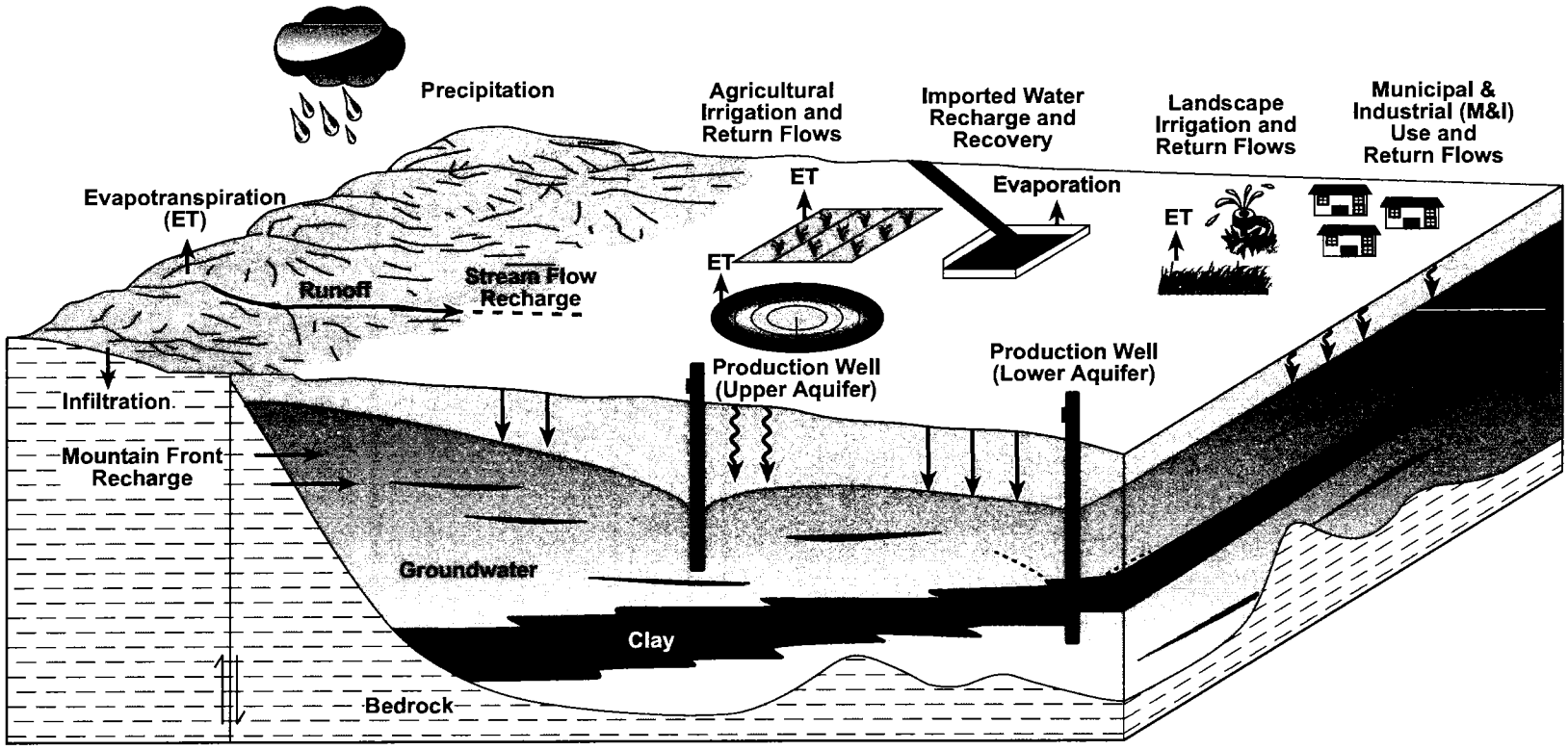
Note: Values represent estimates of recharge and discharge as average annual flows in AFY. Conceptual diagram illustrates sources of natural groundwater recharge that were estimated to support the Native Safe Yield determination in the Judgment. Diagram does not include return flows, which also are a component of the Native Safe Yield.

Source: Modified from Beeby et al., 2010.

June 2019

TODD GROUNDWATER

Figure 3
Schematic Diagram
Natural Groundwater
Recharge Components



Recharge and discharge

Recharge from return flows

Note: **This diagram was developed to illustrate the concepts of the Safe Yield components in the Antelope Valley Groundwater Basin; it is not meant to accurately depict the complexity of the multi-aquifer system in the basin.**

June 2019

TODD GROUNDWATER

Figure 4
Conceptual Diagram of Safe Yield Components

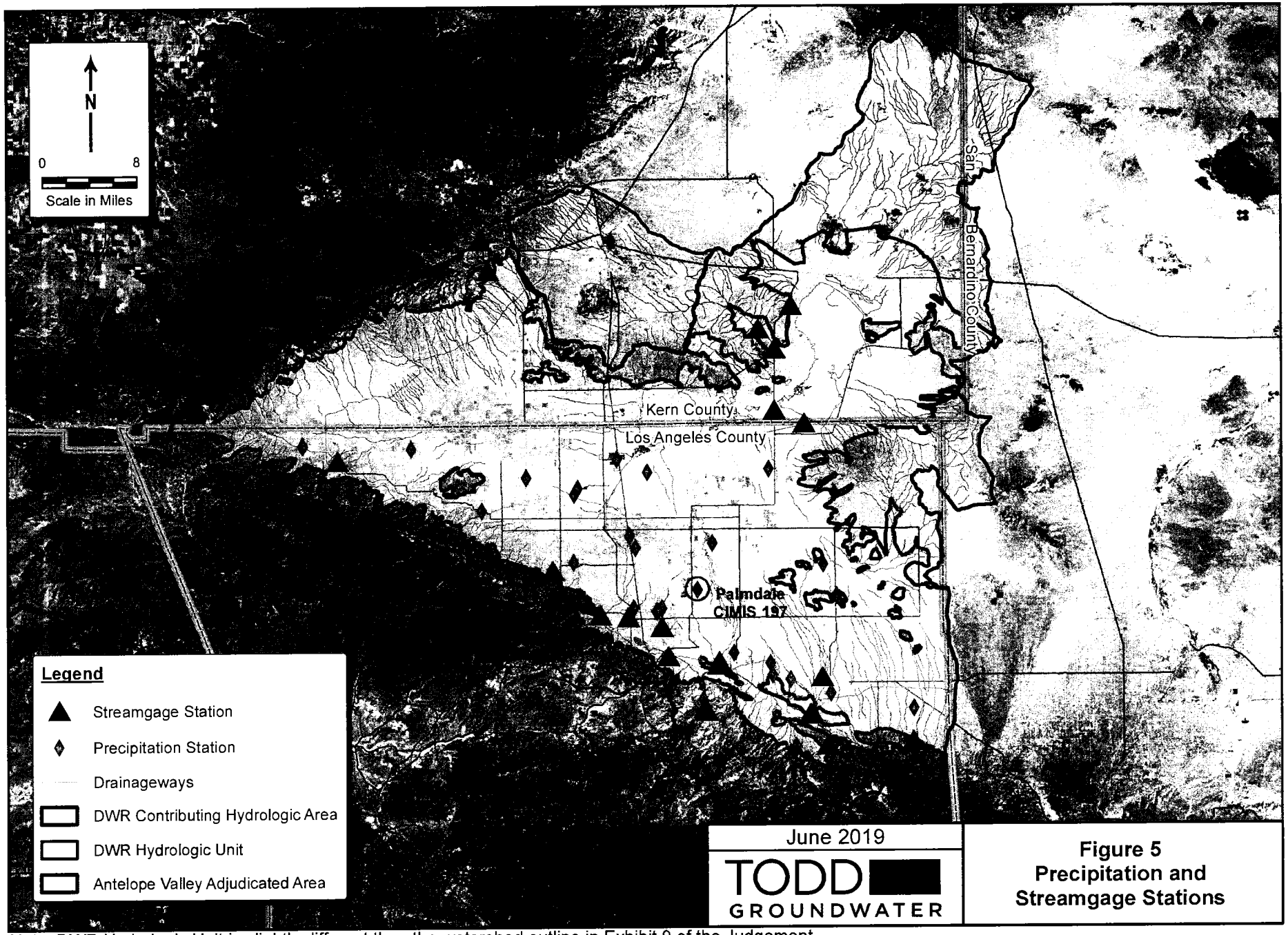
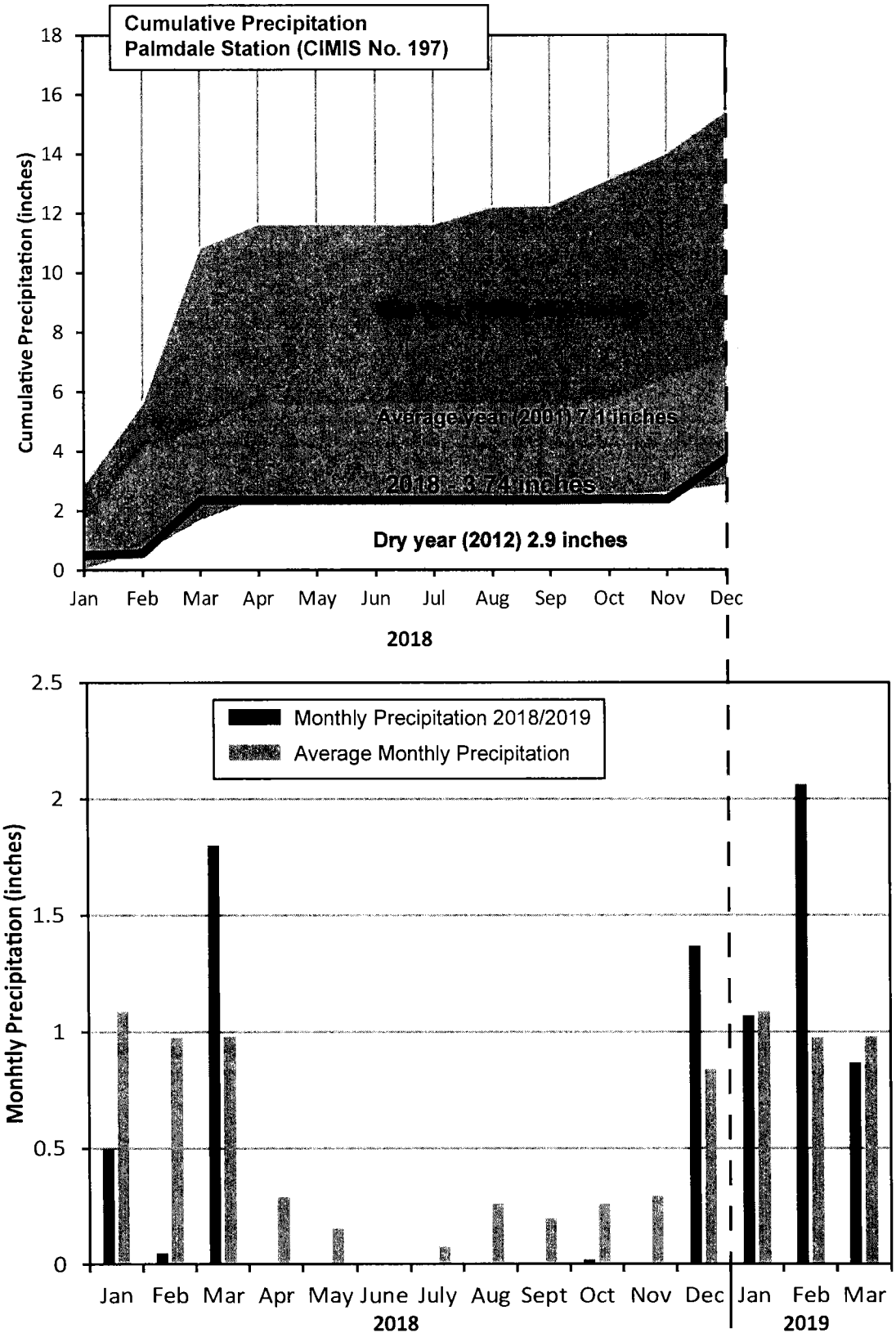


Figure 5
Precipitation and Streamgage Stations

Note: DWR Hydrologic Unit is slightly different than the watershed outline in Exhibit 9 of the Judgement

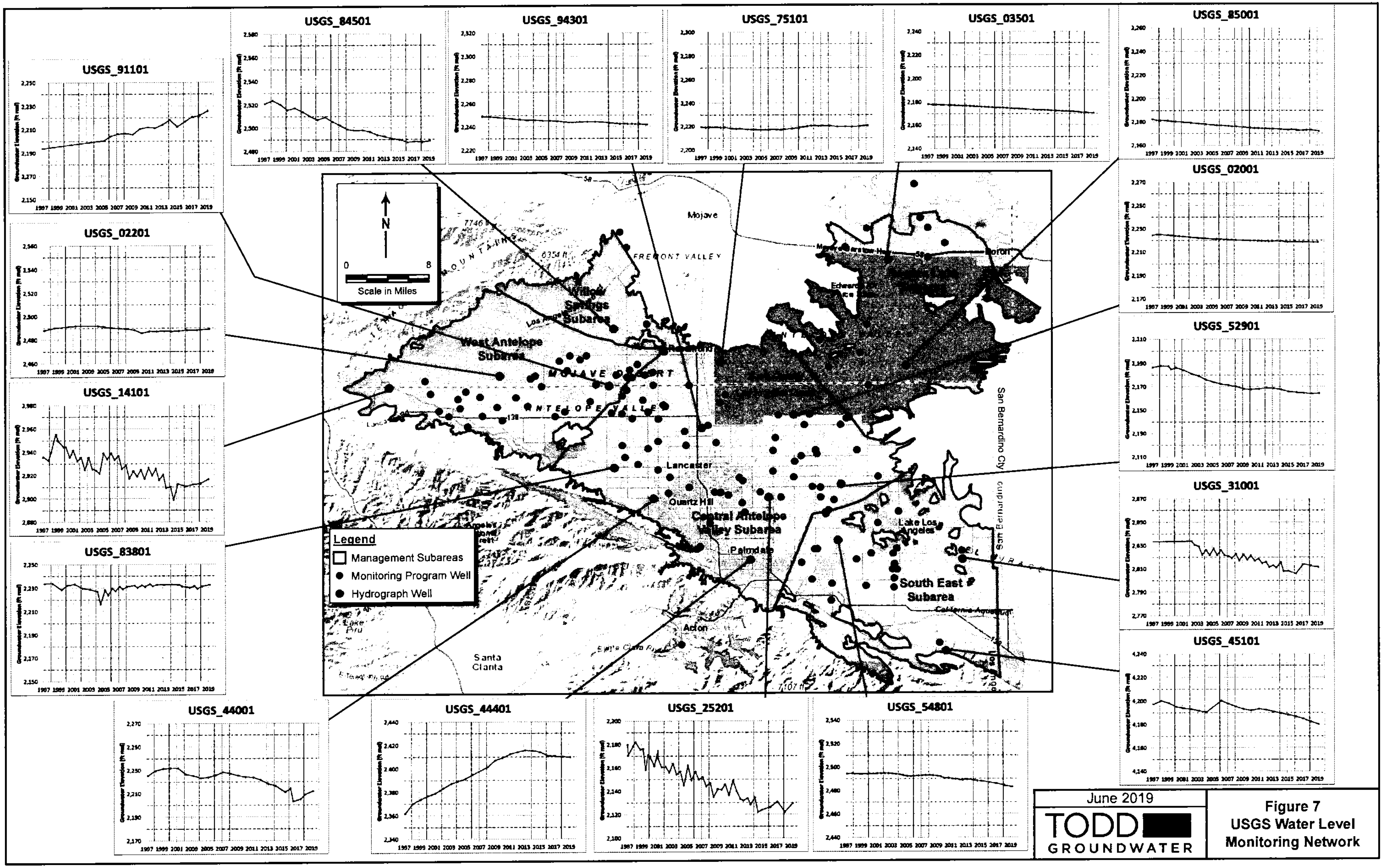


Source: Palmdale CIMIS Station ID197
Palmdale DRI Station ID4 (average, wet, and dry)

June 2019

TODD GROUNDWATER

Figure 6
Antelope Valley Precipitation 2018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USGS_84501
USGS_94301
USGS_75101
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USGS_85001
USGS_02001
USGS_52901
USGS_31001
USGS_45101
USGS_02201
USGS_14101
USGS_83801
USGS_44001
USGS_44401
USGS_25201
USGS_54801
Scale in Miles
0
8
N
Legend
Management Subareas
Monitoring Program Well
Hydrograph Well
West Antelope Subarea
Willow Springs Subarea
Central Antelope Valley Subarea
South East Subarea
MOJAVE DESERT
ANTELOPE VALLEY
FREMONT VALLEY
Mojave
Boron
Lancaster
Quartz Hill
Palmdale
Acton
Santa Clarita
Lake Los Angeles
San Bernardino Cty
California Aqueduct

June 2019

TODD GROUNDWATER

Figure 7
USGS Water Level Monitoring Network

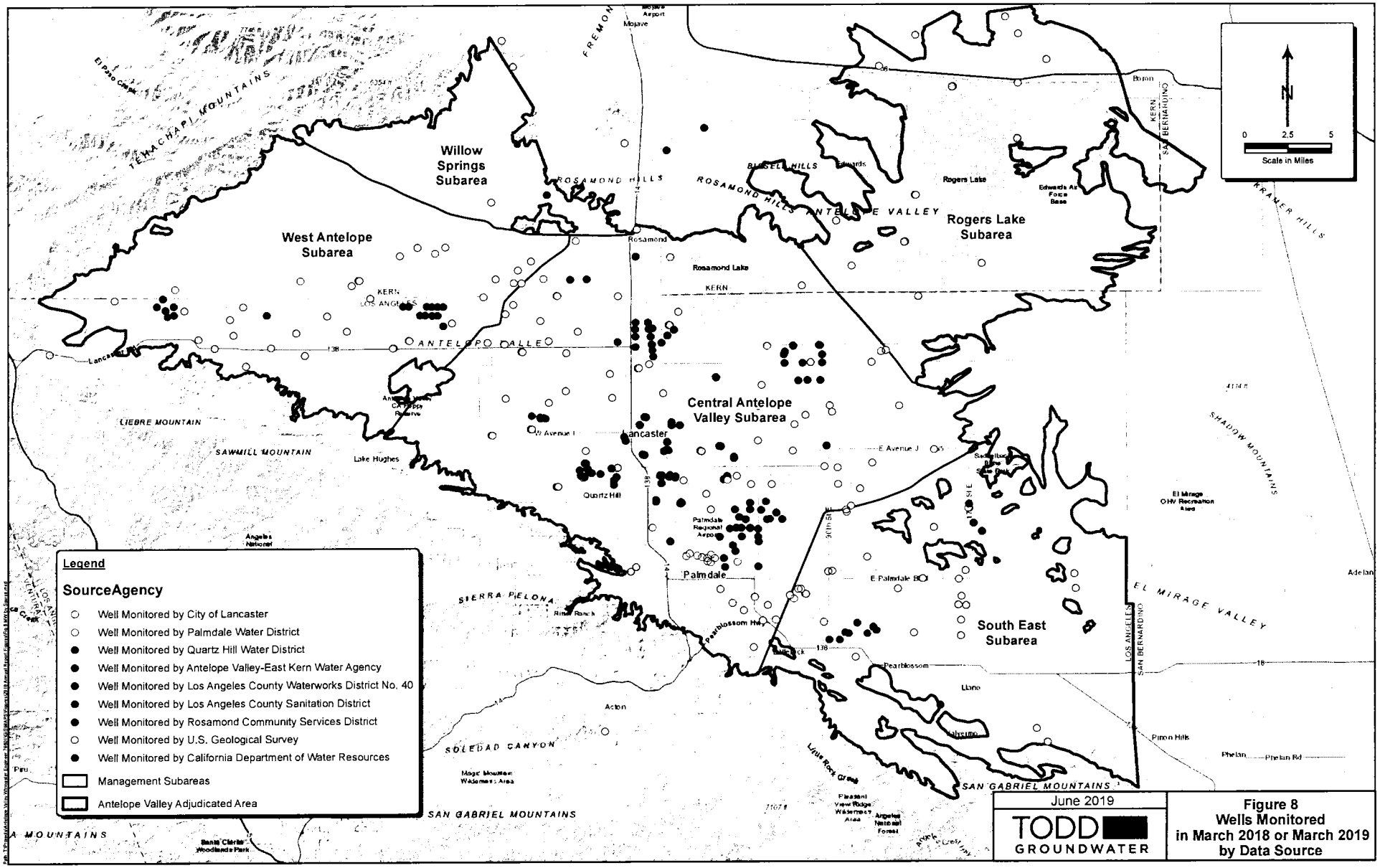
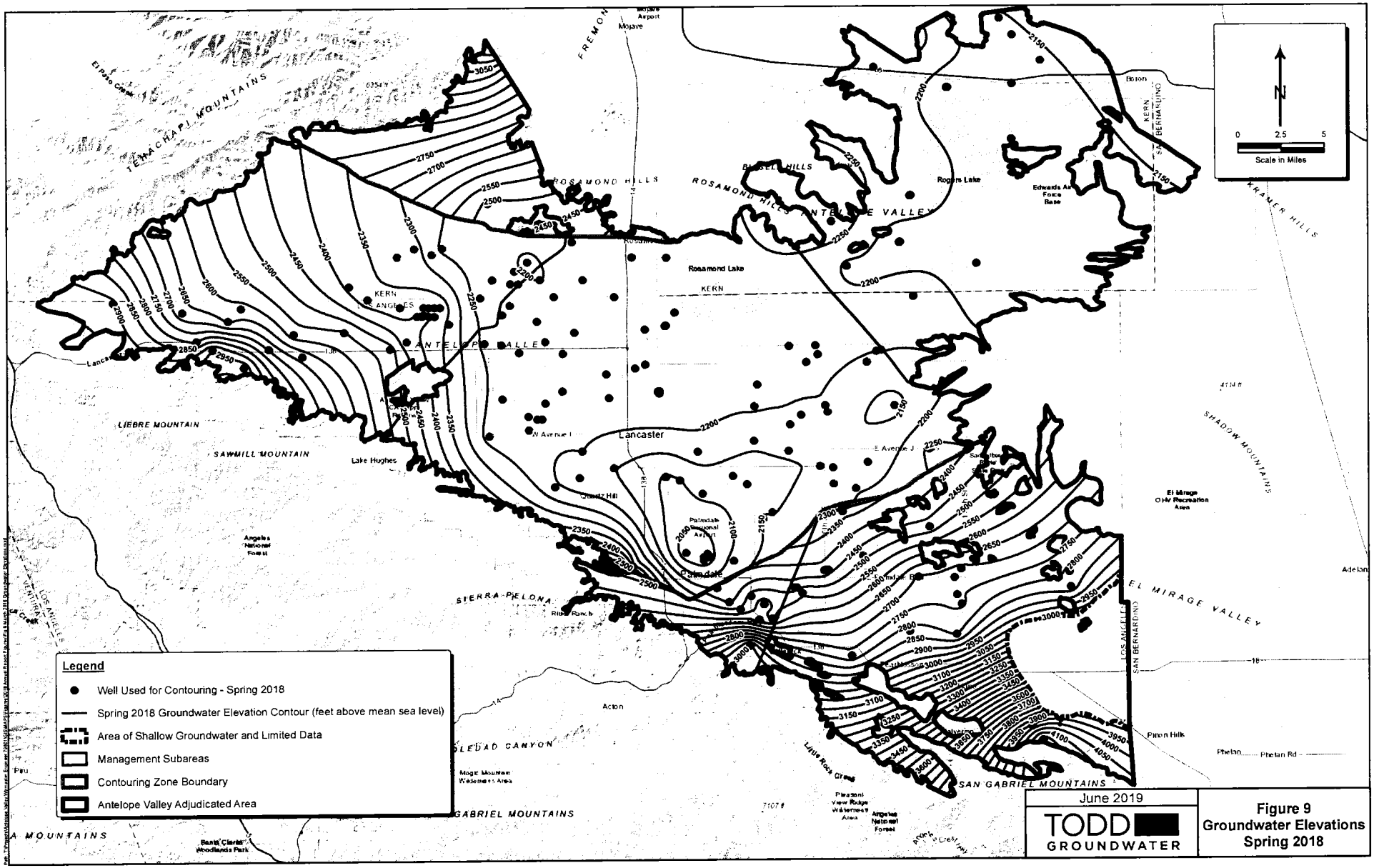
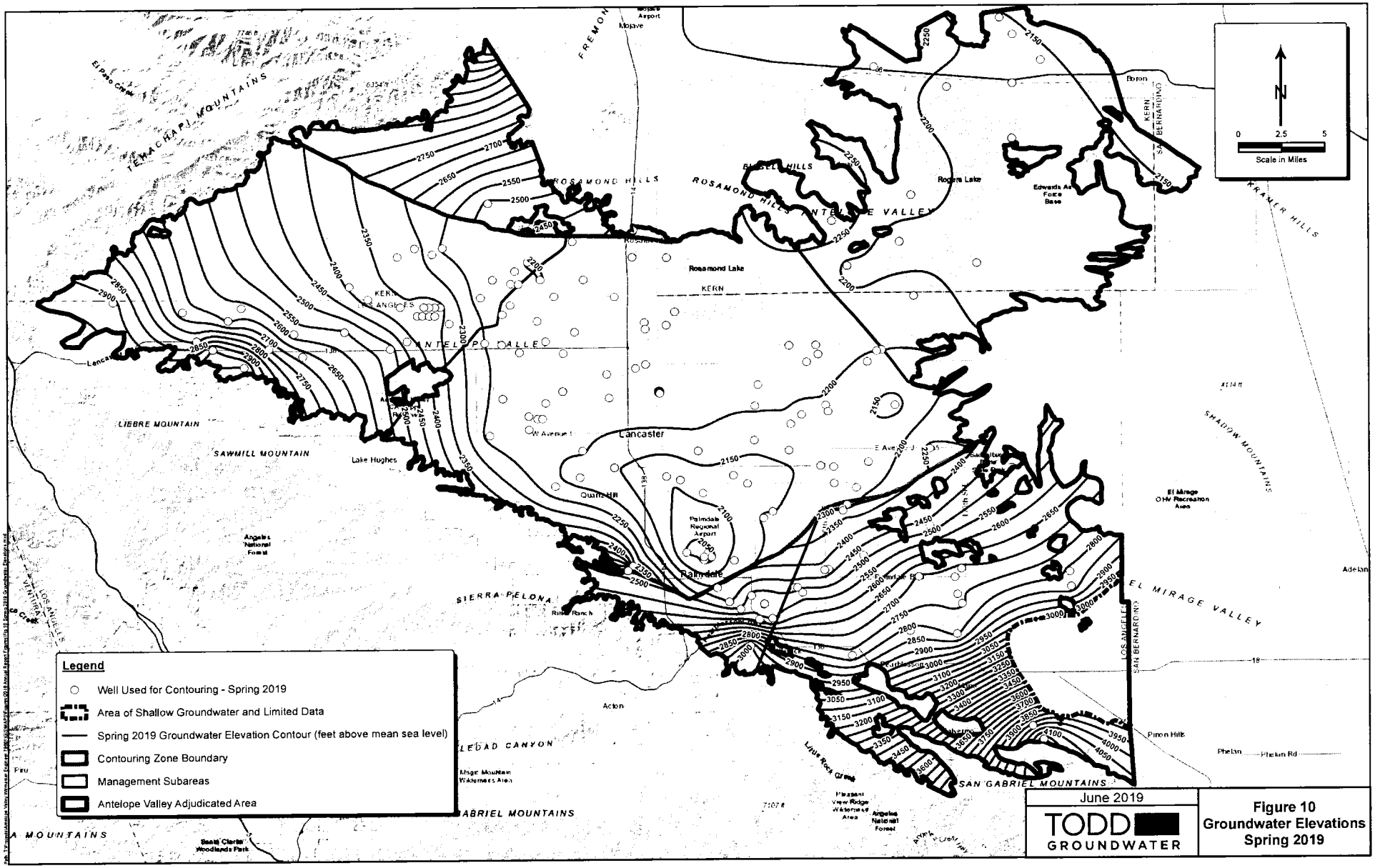
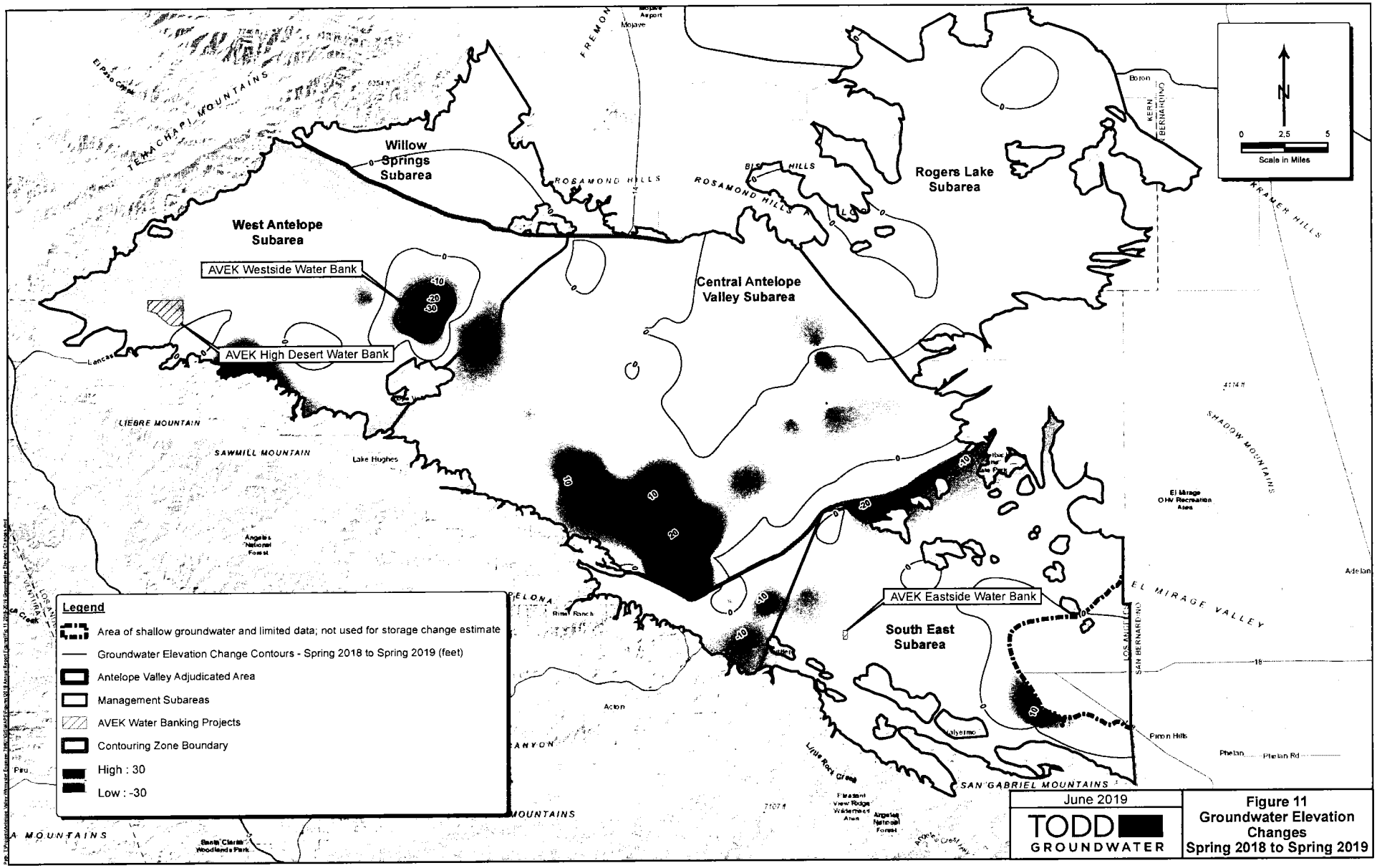
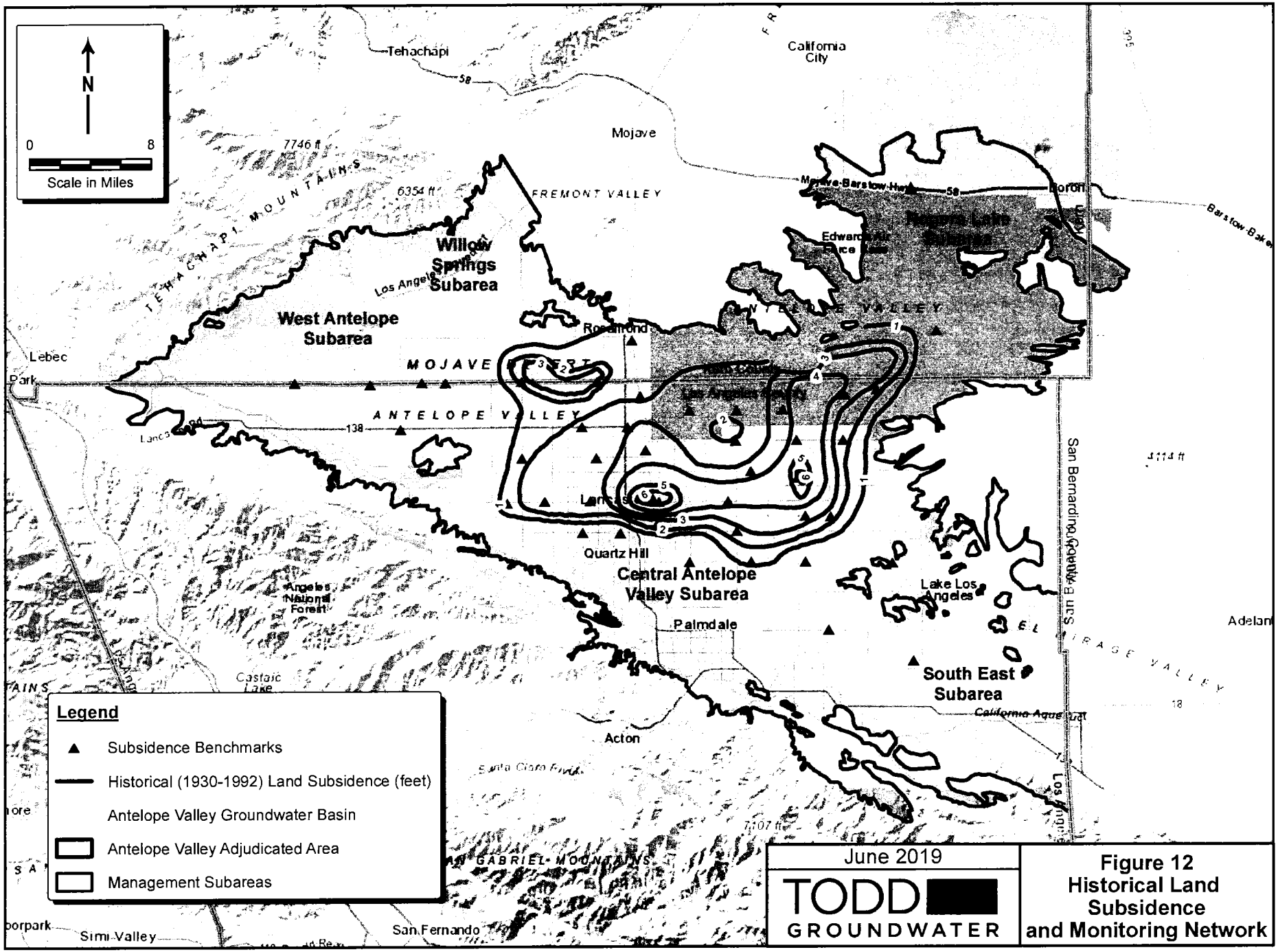


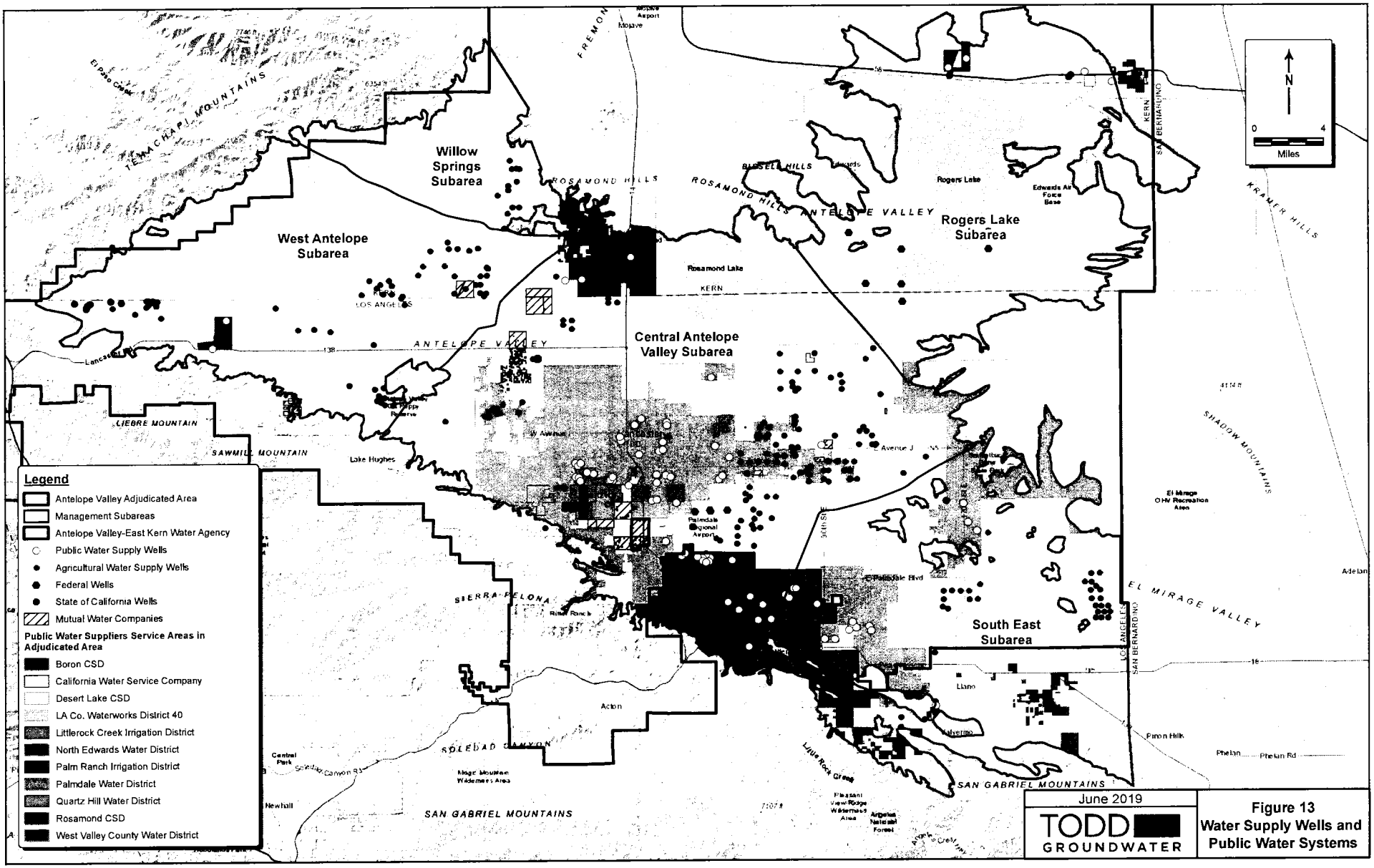
Figure 8
Wells Monitored in March 2018 or March 2019 by Data Source


Legend
Well Used for Contouring - Spring 2018
Spring 2018 Groundwater Elevation Contour (feet above mean sea level)
Area of Shallow Groundwater and Limited Data
Management Subareas
Contouring Zone Boundary
Antelope Valley Adjudicated Area
N
0 2.5 5
Scale in Miles
June 2019
TODD GROUNDWATER
Figure 9
Groundwater Elevations
Spring 2018
ROSAMOND HILLS
ROSAMOND HILLS ANTELOPE VALLEY
Rosamond Lake
Rogers Lake
Edwards Air Force Base
Lancaster
Palmdale
Palmdale Regional Airport
Lake Hughes
LIEBRE MOUNTAIN
SAWMILL MOUNTAIN
SHADOW MOUNTAINS
EL MIRAGE VALLEY
El Mirage OHV Recreation Area
SIERRA PELONA
SAN GABRIEL MOUNTAINS
TEHACHAPI MOUNTAINS
Mojave
Boron
Acton
Pinon Hills
Phelan
Phelan Rd
Little Rock Creek
Pleasant View Ridge Wilderness Area
Angeles National Forest
Mogic Mountain Wilderness Area
Santa Clarita Woodlands Park
KERN
LOS ANGELES
SAN BERNARDINO


Legend
Well Used for Contouring - Spring 2019
Area of Shallow Groundwater and Limited Data
Spring 2019 Groundwater Elevation Contour (feet above mean sea level)
Contouring Zone Boundary
Management Subareas
Antelope Valley Adjudicated Area
N
0 2.5 5
Scale in Miles
TEHACHAPI MOUNTAINS
ROSAMOND HILLS
ANTELOPE VALLEY
KRAMER HILLS
LIEBRE MOUNTAIN
SAWMILL MOUNTAIN
SHADOW MOUNTAINS
SIERRA PELONA
EL MIRAGE VALLEY
SAN GABRIEL MOUNTAINS
Lancaster
Palmdale
Lake Hughes
Rosamond Lake
Boron
Mojave
Acton
Pinon Hills
Phelan
Edwards Air Force Base
El Mirage OHV Recreation Area
Palmdale Regional Airport
Angeles National Forest
KERN
LOS ANGELES
SAN BERNARDINO
June 2019
TODD GROUNDWATER
Figure 10
Groundwater Elevations
Spring 2019


Willow Springs Subarea
West Antelope Subarea
Central Antelope Valley Subarea
Rogers Lake Subarea
South East Subarea
AVEK Westside Water Bank
AVEK High Desert Water Bank
AVEK Eastside Water Bank
Legend
Area of shallow groundwater and limited data; not used for storage change estimate
Groundwater Elevation Change Contours - Spring 2018 to Spring 2019 (feet)
Antelope Valley Adjudicated Area
Management Subareas
AVEK Water Banking Projects
Contouring Zone Boundary
High : 30
Low : -30
N
0 2.5 5
Scale in Miles
TEHACHAPI MOUNTAINS
ROSAMOND HILLS
LIEBRE MOUNTAIN
SAWMILL MOUNTAIN
SHADOW MOUNTAINS
EL MIRAGE VALLEY
SAN GABRIEL MOUNTAINS
Lake Hughes
Acton
Pinon Hills
Phelan
June 2019
TODD GROUNDWATER
Figure 11
Groundwater Elevation Changes
Spring 2018 to Spring 2019

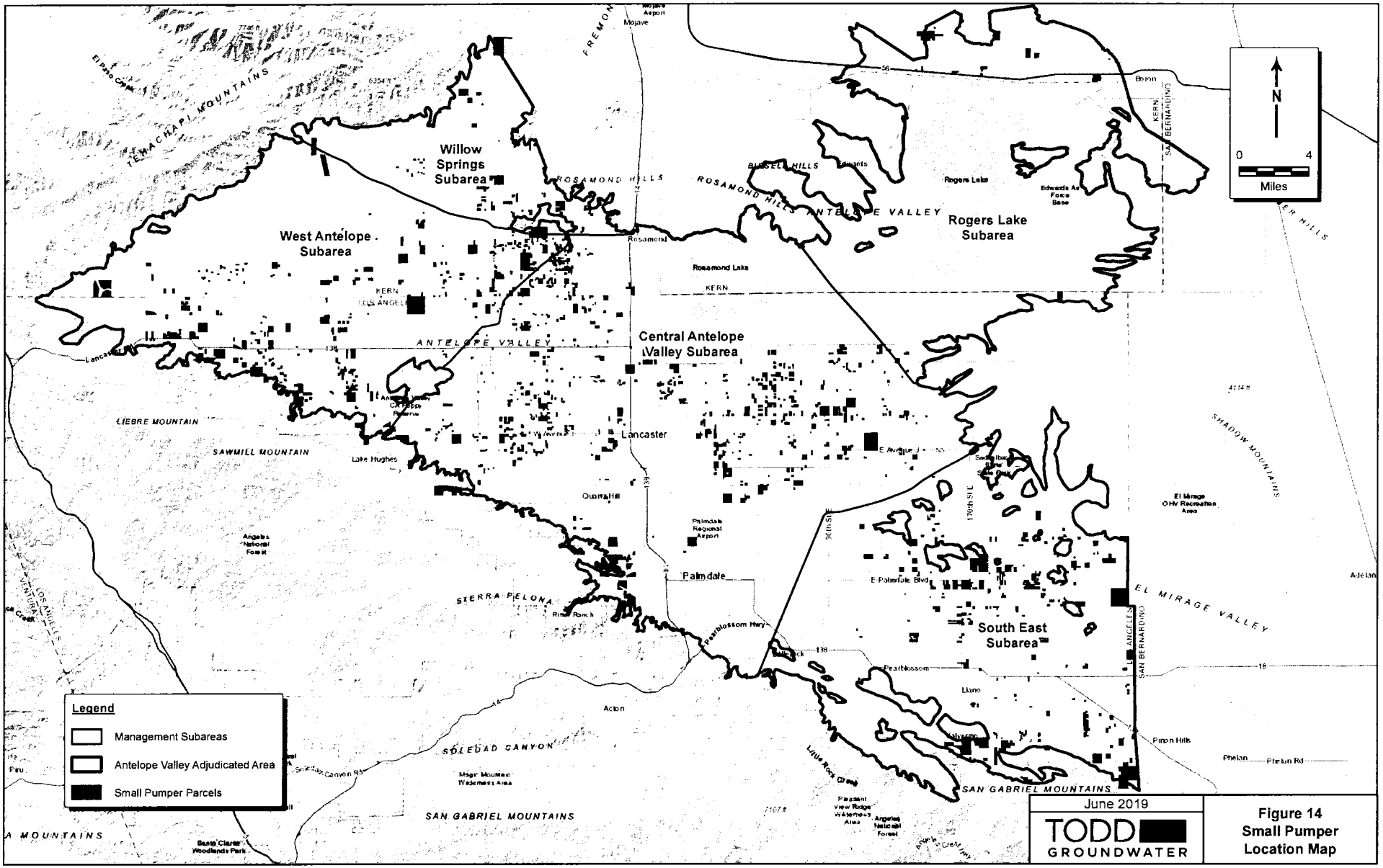

N
0
8
Scale in Miles
Tehachapi
California City
Mojave
Willow Springs Subarea
West Antelope Subarea
Rosamond
Lebec
Quartz Hill
Central Antelope Valley Subarea
Palmdale
Lake Los Angeles
South East Subarea
Acton
Simi Valley
San Fernando
Adelanto
FREMONT VALLEY
MOJAVE DESERT
ANTELOPE VALLEY
Legend
Subsidence Benchmarks
Historical (1930-1992) Land Subsidence (feet)
Antelope Valley Groundwater Basin
Antelope Valley Adjudicated Area
Management Subareas
June 2019
TODD GROUNDWATER
Figure 12
Historical Land Subsidence and Monitoring Network

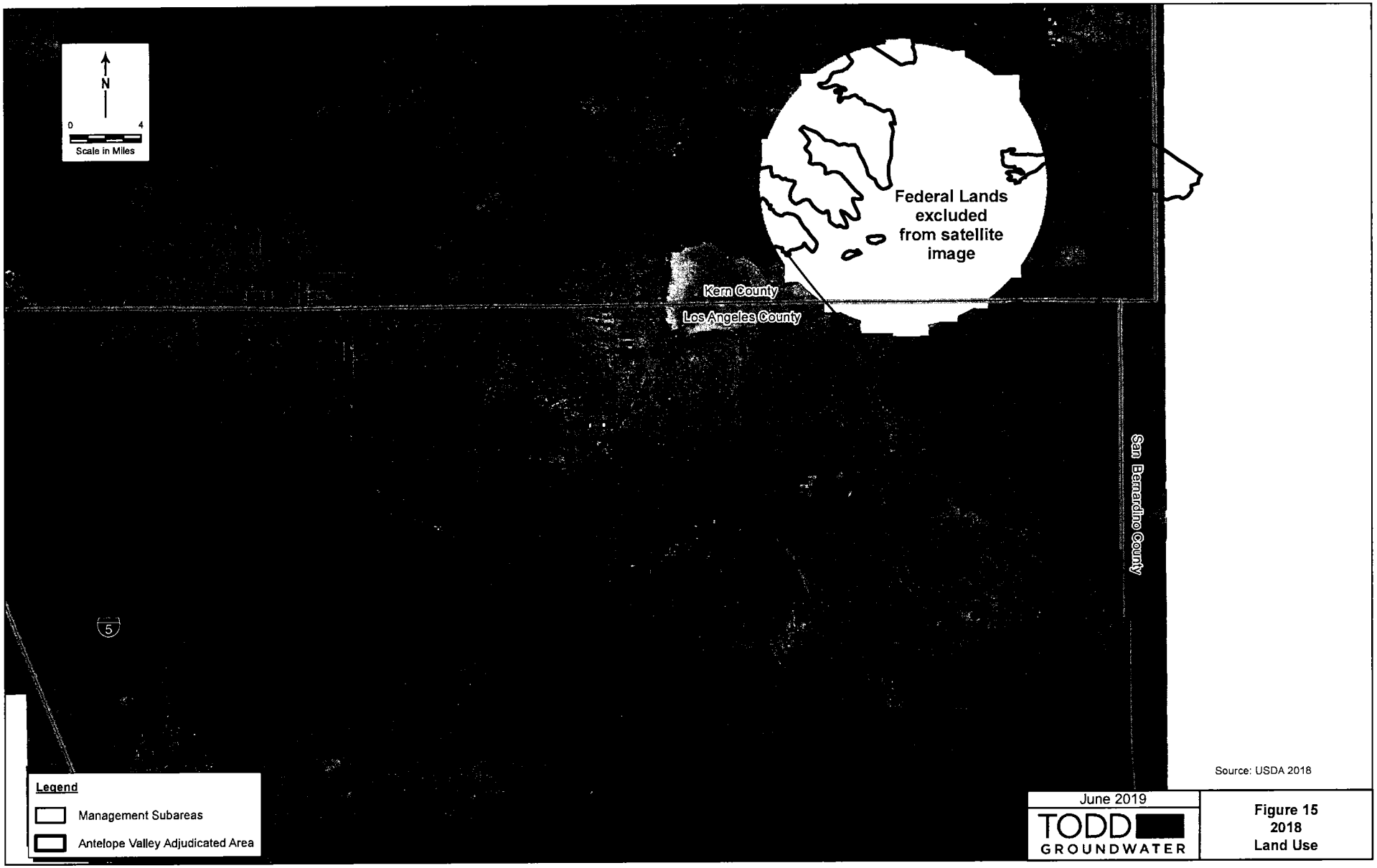


June 2019

TODD GROUNDWATER

Figure 13
Water Supply Wells and Public Water Systems


Willow Springs Subarea
West Antelope Subarea
Central Antelope Valley Subarea
Rogers Lake Subarea
South East Subarea
Legend
Management Subareas
Antelope Valley Adjudicated Area
Small Pumper Parcels
N
0
4
Miles
June 2019
TODD GROUNDWATER
Figure 14
Small Pumper
Location Map

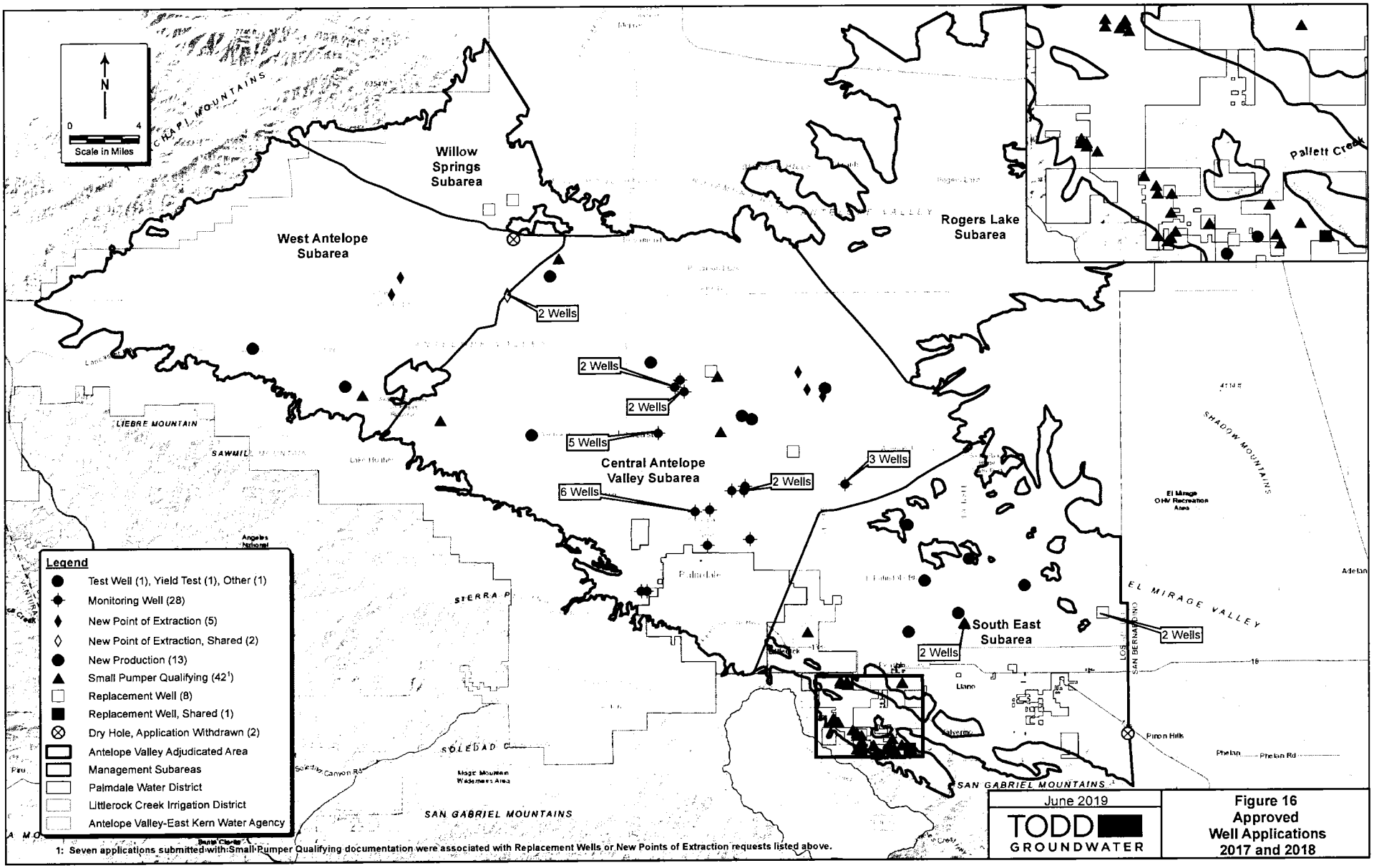


Source: USDA 2018

June 2019

TODD GROUNDWATER

Figure 15
2018
Land Use



1: Seven applications submitted with Small Pumper Qualifying documentation were associated with Replacement Wells or New Points of Extraction requests listed above.

June 2019

TODD GROUNDWATER

Figure 16
Approved Well Applications 2017 and 2018

Appendices

Appendix A

Rampdown Tables

A-1. Exhibit 3 Non-Overlying and Supporting Landowner Producers Rampdown Schedule

A-2. Exhibit 4 Overlying Producers Rampdown Schedule

Table A-1 Exhibit 3 Non-Overlying and Supporting Landowner Producers Rampdown Schedule

Exhibit 3 Non-Overlying Producers	Pre-Rampdown Production (AFY)	Rampdown Targets (AFY)							Production Right (AFY)
		2016	2017	2018	2019	2020	2021	2022	
Boron Community Services District	153.02	153.02	153.02	135.85	118.68	101.51	84.34	67.17	50.00
California Water Services Company	589.76	589.76	589.76	548.66	507.56	466.45	425.35	384.24	343.14
Desert Lake Community Services District	73.53	73.53	73.53	73.53	73.53	73.53	73.53	73.53	73.53
Littlerock Creek Irrigation District	1,420.19	1,420.19	1,420.19	1,316.25	1,212.32	1,108.38	1,004.45	900.51	796.58
Los Angeles County Waterworks District No. 40	6,789.26	6,789.26	6,789.26	6,789.26	6,789.26	6,789.26	6,789.26	6,789.26	6,789.26
North Edwards Water District	102.92	102.92	102.92	93.94	84.95	75.97	66.99	58.00	49.02
Palm Ranch Irrigation District	1,095.47	1,095.47	1,095.47	990.51	885.55	780.58	675.62	570.65	465.69
Palmdale Water District	2,769.63	2,769.63	2,769.63	2,769.63	2,769.63	2,769.63	2,769.63	2,769.63	2,769.63
Quartz Hill Water District	2,397.09	2,397.09	2,397.09	2,091.53	1,785.97	1,480.41	1,174.85	869.29	563.73
Rosamond Community Services District	2,917.88	2,917.88	2,917.88	2,498.97	2,080.06	1,661.15	1,242.24	823.33	404.42
West Valley County Water District	185.00	185.00	185.00	160.83	136.67	112.50	88.33	64.17	40.00
Total	18,493.75	18,493.75	18,493.75	17,458.36	16,434.47	15,419.36	14,394.69	13,369.79	12,345.00

Supporting Landowner Producers (Non-Stipulating Parties)	Pre-Rampdown Production (AFY)	Rampdown Targets (AFY)							Production Right (AFY)
		2016	2017	2018	2019	2020	2021	2022	
Desert Breeze MHP, LLC	20.35	20.35	20.35	19.98	19.60	19.23	18.85	18.48	18.10
Milana VII, LLC dba Rosamond Mobile Home Park	28.00	28.00	28.00	26.95	25.90	24.85	23.80	22.75	21.70
Reesdale Mutual Water Company	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00
Juanita Eyherabide, Eyherabide Land Co., LLC and Eyherabide Sheep Company	14.56	14.56	14.56	14.13	13.71	13.28	12.85	12.43	12.00
Clan Keith Real Estate Investments, LLC dba Leisure Lake Mobile Estates	148.10	148.10	148.10	134.08	120.07	106.05	92.03	78.02	64.00
White Fence Farms Mutual Water Company No. 3	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
LV Ritter Ranch, LLC	950.87	950.87	950.87	792.39	633.91	475.44	316.96	158.48	0.00
Robar Enterprises, Inc., HI-Grade Materials, Co., and CJR, a General Partnership	675.00	675.00	675.00	596.67	517.33	438.00	358.67	279.33	200.00
Total	1,863.88	1,863.88	1,863.88	1,611.20	1,357.52	1,103.84	850.16	596.48	342.80

Table A-2 Exhibit 4 Overlying Producers Rampdown Schedule

Original Exhibit 4 Producers	Transferees	Pre-Rampdown Production[1] (AF)	Rampdown Targets (AF)							Production Right (AF)
			2016	2017	2018	2019	2020	2021	2022	
60th Street Association Water System	-	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	**2.16**
Adams Bennett Investments, LLC	-	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Antelope Park Mutual Water Company	-	208.75	208.75	208.75	202.27	195.80	189.32	182.84	176.37	**169.89**
Antelope Valley Joint Union High School District	-	**71.74**	**71.74**	**71.74**	**66.62**	**61.49**	**56.37**	**51.25**	**46.12**	**41.00**
Antelope Valley Mobile Estates	-	19.88	19.88	19.88	18.03	16.17	14.32	12.46	10.61	**8.75**
Antelope Valley Water Storage LLC	-	**1,772.00**	**1,772.00**	**1,772.00**	**1,772.00**	**1,772.00**	**1,772.00**	**1,772.00**	**1,772.00**	**1,772.00**
Antelope Valley-East Kern Water Agency (AVEK)	-	4,000.00	4,000.00	4,000.00	3,925.00	3,850.00	3,775.00	3,700.00	3,625.00	**3,550.00**
Aqua-J Mutual Water Company	-	**44.90**	**44.90**	**44.90**	**44.81**	**44.72**	**44.63**	**44.53**	**44.44**	**44.35**
AV Solar Ranch 1, LLC	-	96.00	96.00	96.00	96.00	96.00	96.00	96.00	96.00	**96.00**
Averydale Mutual Water Company	-	**257.95**	**257.95**	**257.95**	**257.35**	**256.75**	**256.15**	**255.55**	**254.95**	**254.35**
Bahlman: Gene Bahlman	Hernandez: Luis Hernandez, property sale (2017)	5.25	5.25	5.25	5.21	5.17	5.13	5.08	5.04	**5.00**
Baxter Mutual Water Company	-	**44.75**	**44.75**	**44.75**	**43.13**	**41.51**	**39.89**	**38.26**	**36.64**	**35.02**
Benz: Mark W. And Nancy L. Benz	Terrazas: Gloria Terrazas; property sale (2015)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
Big Rock Mutual Water Company	-	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Bittner Trust, Glen Brittner, Trustee	-	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	**4.00**
Bleich Flat Mutual Water Company	-	**33.50**	**33.50**	**33.50**	**33.50**	**33.50**	**33.50**	**33.50**	**33.50**	**33.50**
Blum: Sheldon R. Blum, Trustee of the 1998 Family Trust	-	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	**50.00**
Bolthouse Properties LLC	-	**16,805.89**	**16,805.89**	**16,805.89**	**15,662.41**	**14,518.93**	**13,375.45**	**12,231.96**	**11,088.48**	**9,945.00**
Bookman: Thomas and Julie Bookman 2007 Trust	-	272.50	272.50	272.50	249.75	227.00	204.25	181.50	158.75	**136.00**
Borax: U.S. Borax	-	**1,905.00**	**1,905.00**	**1,905.00**	**1,905.00**	**1,905.00**	**1,905.00**	**1,905.00**	**1,905.00**	**1,905.00**
Bridwell: James and Elizabeth Bridwell	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
Burrows/200 A40 H LLC	-	**295.00**	**295.00**	**295.00**	**295.00**	**295.00**	**295.00**	**295.00**	**295.00**	**295.00**
Calandri Water Company, LLC (Sonrise Farms)	-	3,803.00	3,803.00	3,803.00	3,465.17	3,127.33	2,789.50	2,451.67	2,113.83	**1,776.00**
Cardile: Sal and Connie Cardile	**Pool: Noel Pool; property sale (2015)**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Carle: Irma Ann Carle Trust, Irma-Anne Carle, Trustee	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
Chavez: Effren Chavez	-	**44.00**	**44.00**	**44.00**	**44.00**	**44.00**	**44.00**	**44.00**	**44.00**	**44.00**
City of Los Angeles, Department of Airports	-	7,851.00	7,851.00	7,851.00	7,205.00	6,559.00	5,913.00	5,267.00	4,621.00	**3,975.00**
Close: C. Louise R. Close Living Trust	-	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Colorado Mutual Water Company	-	25.90	25.90	25.90	25.84	25.78	25.72	25.66	25.60	**25.54**
Copa De Oro Land Company	-	**325.00**	**325.00**	**325.00**	**325.00**	**325.00**	**325.00**	**325.00**	**325.00**	**325.00**
County Sanitation Districts of Los Angeles 14 & 20	-	8,000.00	8,000.00	8,000.00	7,233.33	6,466.67	5,700.00	4,933.33	4,166.67	**3,400.00**
Del Sur Ranch LLC	-	**600.00**	**600.00**	**600.00**	**600.00**	**600.00**	**600.00**	**600.00**	**600.00**	**600.00**
Diamond Farming/Crystal Organic LLC/Grimmway/Lapis	-	3,354.00	3,354.00	3,354.00	3,126.00	2,898.00	2,670.00	2,442.00	2,214.00	**1,986.00**
Dickey: Randall and Billie Dickey	-	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
El Dorado Mutual Water Company	-	276.05	276.05	276.05	275.40	274.75	274.11	273.46	272.81	**272.16**
eSolar Inc.; Red Dawn Suntower LLC	**Rosamond Community Services District (2016)**	**150.00**	**150.00**	**150.00**	**150.00**	**150.00**	**150.00**	**150.00**	**150.00**	**150.00**
eSolar Inc ; Sierra Sun Tower, LLC	-	5.76	5.76	5.76	5.30	4.84	4.38	3.92	3.46	**3.00**
eSolar Inc.; Tumbleweed Suntower LLC	-	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Evans: Lawrence Dean Evans, Jr. and Susan Evans	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
Evergreen Mutual Water Company	-	**69.50**	**69.50**	**69.50**	**69.34**	**69.18**	**69.02**	**68.86**	**68.70**	**68.54**
Findley: Ruth C. Findley	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
First Mutual Water Company	-	**15.62**	**15.62**	**15.62**	**13.89**	**12.16**	**10.44**	**8.71**	**6.98**	**5.25**
Frankenberg: Leah Frankenberg	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
Godde: Steve, Pamela & Gary Godde c/o Rife Silva & Co LLC	***[Receives IWRF Rights from Forrest Godde (an Exhibit 8 Party (2017))]***	**1,461.50**	**1,461.50**	**1,461.50**	**1,331.75**	**1,202.00**	**1,072.25**	**942.50**	**812.75**	**683.00**
Gorrindo Resourceful LLC	-	629.00	629.00	629.00	629.00	629.00	629.00	629.00	629.00	**629.00**
Granite Construction Company (Big Rock Facility)	-	**126.00**	**126.00**	**126.00**	**126.00**	**126.00**	**126.00**	**126.00**	**126.00**	**126.00**
Granite Construction Company (Little Rock Sand and Gravel, Co.)	Rampdown & Production Rights split equally between Granite Construction and Little Rock Sand and Gravel (6/27/18 Stipulation and Order).	400.00	400.00	400.00	372.33	344.67	317.00	289.33	261.67	**234.00**
Griffin: Laura Griffin Trustee of the Family Bypass Trust	-	**1,170.00**	**1,170.00**	**1,170.00**	**1,086.33**	**1,002.67**	**919.00**	**835.33**	**751.67**	**668.00**
H & N Development Co West Inc.	-	1,799.75	1,799.75	1,799.75	1,634.46	1,469.17	1,303.88	1,138.58	973.29	**808.00**
Healy: Jane Healy and Healy Enterprises Inc.	-	**700.00**	**700.00**	**700.00**	**700.00**	**700.00**	**700.00**	**700.00**	**700.00**	**700.00**
Kyle: Trustees of the Kyle Revocable Living Trust	-	9,275.00	9,275.00	9,275.00	8,340.83	7,406.67	6,472.50	5,538.33	4,604.17	**3,670.00**
Land Projects Mutual Water Company	-	**622.50**	**622.50**	**622.50**	**621.01**	**619.51**	**618.02**	**616.53**	**615.03**	**613.54**
Landale Mutual Water Company	-	157.75	157.75	157.75	157.39	157.02	156.66	156.30	155.93	**155.57**
Landinv Inc.	**FS Land Holding Company, LLC; property sale; 736.44 AF (2016)** / **600 AFY to Diamond Farming (217 AF), Crystal Organic (180 AF), Grimmway (193 AF) (2018)** / **Remain with FS Land Holding Company, LLC: 136.44 AF (2018)**	**2,000.00**	**1,520.00**	**1,520.00**	**600.00**	**600.00**	**600.00**	**600.00**	**600.00**	**600.00**
					789.41	**658.81**	**528.22**	**397.63**	**267.03**	**136.44**
	Redcast: merger, 232.56 AF (2017)			**480.00**	**480.00**	**438.76**	**397.52**	**356.28**	**315.04**	**273.80**	**232.56**
Lands of Promise Mutual Water Company	-	64.61	64.61	64.61	57.46	50.30	43.15	36.00	28.84	**21.69**

Table A-2 Exhibit 4 Overlying Producers Rampdown Schedule

Original Exhibit 4 Producers	Transferees	Pre-Rampdown Production[1] (AF)	Rampdown Targets (AF)							Production Right (AF)
			2016	2017	2018	2019	2020	2021	2022	
Lane Family Trusts	-	1,402.00	1,402.00	1,402.00	1,297.17	1,192.33	1,087.50	982.67	877.83	**773.00**
LeClair: Marie A. Unini and Robert J. LeClair	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
Leer: James M. Leer, III and Diane Leer	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
Littlerock Aggregate Co., Inc., Holliday Rock Co., Inc.	-	405.00	405.00	405.00	362.67	320.33	278.00	235.67	193.33	**151.00**
Llano Del Rio Water Company	-	572.65	572.65	572.65	523.71	474.77	425.83	376.88	327.94	**279.00**
Llano Mutual Water Company	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Maritorena: Trustees of the Maritorena Living Trust	-	3,800.55	3,800.55	3,800.55	3,462.96	3,125.37	2,787.78	2,450.18	2,112.59	**1,775.00**
McWilliams: Dennis M. and Diane K. McWilliams	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
Miner: Richard Miner	-	1,089.40	1,089.40	1,089.40	1,074.33	1,059.27	1,044.20	1,029.13	1,014.07	**999.00**
Miracle Improvement Corporation dba Golden Sands Mobile Home Park/Trailer Park	New Goldensands Investment; property sale (2016)	45.40	45.40	45.40	42.33	39.27	36.20	33.13	30.07	**27.00**
Munz: 2014 Revocable Trust, Terry A. & Kathleen M. Munz	-	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	**5.00**
Nebeker: Eugene B. Nebeker	-	4,016.00	4,016.00	4,016.00	3,642.50	3,269.00	2,895.50	2,522.00	2,148.50	**1,775.00**
Northrop Grumman Systems Corporation	-	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	**2.00**
NRG Solar Alpine, LLC	-	64.21	64.21	64.21	59.84	55.47	51.11	46.74	42.37	**38.00**
R and M Ranch, Inc.	-	1,458.00	1,458.00	1,458.00	1,329.33	1,200.67	1,072.00	943.33	814.67	**686.00**
Reca: John and Adrienne Reca	-	501.45	501.45	501.45	459.71	417.97	376.23	334.48	292.74	**251.00**
Richter: Suzanne J. Richter	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
Rosamond High School	-	586.40	586.40	586.40	522.37	458.34	394.32	330.29	266.26	**202.23**
Rosamond Ranch	FS Land Holding Company, LLC, property sale (2015)	598.00	598.00	598.00	598.00	598.00	598.00	598.00	598.00	**598.00**
Rose Villa Apartments	-	22.72	22.72	22.72	20.20	17.69	15.17	12.65	10.14	**7.62**
Sahara Nursery and Farm	-	22.18	22.18	22.18	22.15	22.12	22.09	22.06	22.03	**22.00**
Saint Andrew's Abbey, Inc.	-	175.00	175.00	175.00	162.83	150.67	138.50	126.33	114.17	**102.00**
Schilling: Lawrence J. and Mary P. Schilling Trustees of the L&M Schilling 1992 Family Trust	-	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	**4.00**
Selak: Lilia Mabel Selak; Barbara Aznarez Decd Trust and Mabel Selak Trust	[Received 1 AF from Siebert (July 2018)] See Siebert for this reporting.	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	**150.00**
Service Rock Products, L.P.	-	503.00	503.00	503.00	463.67	424.33	385.00	345.67	306.33	**267.00**
SGS Antelope Valley Development, LLC	-	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00	**57.00**
Shadow Acres Mutual Water Company	-	52.60	52.60	52.60	52.46	52.31	52.17	52.03	51.88	**51.74**
Sheep Creek Water Company	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Siebert: Jeffrey and Nancee Siebert	**Remaining Siebert Rights after 1 AF transferred to Selak (July 2018)**	200.00	200.00	200.00	183.33	167.67	152.00	136.33	120.67	**105.00**
	Transferred 1 AF to Selak (July 2018)	1.00			1.00	1.00	1.00	1.00	1.00	**1.00**
Sonrise Ranch, LLC	-	662.00	662.00	662.00	551.67	441.33	331.00	220.67	110.33	**0.00**
Southern California Edison Company	-	17.75	17.75	17.75	16.13	14.50	12.88	11.25	9.63	**8.00**
Sundale Mutual Water Company	-	472.23	472.23	472.23	472.23	472.23	472.23	472.23	472.23	**472.23**
Sunnyside Farms Mutual Water Company, Inc.	-	75.40	75.40	75.40	75.21	75.02	74.83	74.64	74.45	**74.26**
Tejon Ranchcorp and Tejon Ranch Co.	-	3,414.00	3,414.00	3,414.00	3,117.33	2,820.67	2,524.00	2,227.33	1,930.67	**1,634.00**
Tierra Bonita Mutual Water Company	-	40.75	40.75	40.75	40.68	40.61	40.54	40.46	40.39	**40.32**
Tierra Bonita Ranch	-	505.00	505.00	505.00	492.50	480.00	467.50	455.00	442.50	**430.00**
Triple M Property Co.	-	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	**15.00**
Turk Trust dated December 16, 1998	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
Van Dam: Craig Van Dam, Marta Van Dam, Nick Van Dam, Janet Van Dam	**Van Dam: Craig and Marta: 610 AFY (2018)**	1,037.00	1,037.00	1,037.00	925.32	862.26	799.19	736.13	673.06	**610.00**
	Van Dam, Nick and Janet: 30 AFY (2018)				45.51	42.41	39.31	36.20	33.10	**30.00**
Van Dam Family Trust - 1996; High Desert Dairy	-	9,931.50	9,931.50	9,931.50	8,812.08	7,692.67	6,573.25	5,453.83	4,334.42	**3,215.00**
Vulcan Materials Co., Vulcan Lands Inc., Consolidated Rock Products Co., Calmat Lands, Co., Allied Concrete & Materials	-	519.10	519.10	519.10	475.92	432.73	389.55	346.37	303.18	**260.00**
WAGAS Land Company LLC	-	984.15	984.15	984.15	916.79	849.43	782.08	714.72	647.36	**580.00**
WDS California II, LLC	-	2,397.00	2,397.00	2,397.00	2,190.67	1,984.33	1,778.00	1,571.67	1,365.33	**1,159.00**
Weatherbie: Michael and Dolores A. Weatherbie	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**
West Side Park Mutual Water Co.	-	280.75	280.75	280.75	280.10	279.45	278.81	278.16	277.51	**276.86**
White Fence Farms Mutual Water Co.	-	783.05	783.05	783.05	781.23	779.41	777.59	775.77	773.95	**772.13**
William Fisher Memorial Water Company	-	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53	**4.53**
Willow Springs Company: Richard Nelson	-	180.65	180.65	180.65	173.04	165.43	157.83	150.22	142.61	**135.00**
Wilson: Donna Wilson	-	10.00	10.00	10.00	9.50	9.00	8.50	8.00	7.50	**7.00**
Total		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

1. Exhibit 4 of the Judgment shows a Pre-Rampdown Production total of 105,878.08 AF due to the inadvertent omission of the last two entries in the sum on Exhibit 4 (Donna Wilson and William Fisher Memorial Water Company). The corrected sum of 105,892.63 will be used going forward.

Appendix B

Water Accounting Tables

B-1. Exhibit 3 Non-Overlying Producers Water Accounting

B-2. Exhibit 4 Overlying Producers Water Accounting

B-3. Other Parties (Non Exhibit 3 or Exhibit 4) Water Accounting

B-4. New Production Water Accounting

Table B-1 Exhibit 3 Non-Overlying Producers Water Accounting

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	18	20	21	
	Water Available for Use in 2018 (AF)						2018 Water Use and Accounting (AF)											2019 Water Supplies (AF)				
Original Exhibit 3 Producers Public Water Suppliers	Production Right	2018 [illegible]	Unused Federal Reserve Right for use in 2018	Imported Water Return Flows for 2018	Carry Over Water for use in 2018	Total Water for use in 2018	2018 Total Groundwater Production	Production Right Used	[illegible]	Unused Federal Reserve Right Used	IWRF Used	Carry Over Used	Over Production	Replacement Obligation[1]	Production Right to Carry Over for use in 2019	IWRF to Carry Over for use in 2019	Remaining Carry Over Water	2019 Apportionment	Unused Federal Reserve Right	Imported Water Return Flows for 2019	Carry Over Water for use in 2019	Transfers (Not Permanent)
	Judgment	As per Resolution R-18-22	Allocated as per Judgment	Imported Water Use Table from AVEK and Information from PWD and LCID	From 2017 Annual Report	2+3+4+5	Annual Production Reporting	If [7>1] then [1], otherwise [7]	If [7≤8] then 0, If [7>2] then [2-8], otherwise [7-8]]	If [7≤8+9] then 0, If [7-8-9>3] then [3], otherwise [3-(7-8-9)]	If [7≤8+9+10] then 0, If [7-8-9-10>4] then 4], otherwise [7-8-9-10]	If [7≤8+9+10+11] then 0, If [7-8-9-10-11>5] then 5], otherwise [7-8-9-10-11]	If [7-8-9-10-11-12]>0 then [7-8-9-10-11-12], otherwise 0	[13]	If [1-8]>0 then [1-8], otherwise 0	If [4-11]>0 then [4-11], otherwise 0	[5-12]	Agreed Upon	Allocated as per Judgment (6,278.73 AF)	Imported Water Use Table from AVEK	[15+16+ 17]	See Appendix F
Boron Community Services District	50.00	135.85	0.00	67.83	50.18	253.86	180.52	50.00	85.85	0.00	44.67	0.00	0.00	0.00	0.00	23.16	50.18	118.68	0.00	68.77	73.34	-
California Water Services Company	343.14	548.66	179.93	0.47	0.08	729.14	242.06	242.06	0.00	0.00	0.00	0.00	0.00	0.00	101.08	0.47	0.08	507.56	175.80	1.32	101.63	-
Desert Lake Community Services District	73.53	73.53	38.56	33.21	221.52	366.82	0.82	0.82	0.00	0.00	0.00	0.00	0.00	0.00	72.71	33.21	221.52	73.53	37.67	35.90	327.44	-
Littlerock Creek Irrigation District	796.58	1,316.25	417.69	0.00	0.00	1,733.94	1,358.50	796.58	519.67	375.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,212.32	408.12	0.00	0.00	-
Los Angeles County Waterworks District No. 40, Antelope Valley	6,789.26	6,789.26	3,559.98	9,957.61	8,310.44	28,617.29	17,273.64	6,789.26	0.00	3,559.98	6,924.40	0.00	0.00	0.00	0.00	3,033.21	8,310.44	6,789.26	3,478.41	9,782.54	11,343.65	-
North Edwards Water District	49.02	93.94	25.70	0.00	0.00	119.64	79.04	49.02	30.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.95	25.11	0.00	0.00	-
Palm Ranch Irrigation District[1]	465.69	990.51	244.19	10.06	0.00	1,244.76	1,358.93	465.69	524.82	244.19	10.06	0.00	114.17	114.17	0.00	0.00	0.00	885.55	238.59	7.68	0.00	2,850.00
Palmdale Water District[2]	2,769.63	2,769.63	1,452.27	3,828.41	3,911.94	11,962.25	6,058.06	2,769.63	0.00	1,452.27	1,836.16	0.00	0.00	0.00	0.00	1,992.25	3,911.94	2,769.63	1,418.99	3,798.05	5,904.19	100.00
Quartz Hill Water District	563.73	2,091.53	295.59	1,110.43	2,619.95	6,117.51	1,737.40	563.73	1,173.67	0.00	0.00	0.00	0.00	0.00	0.00	1,110.43	2,619.95	1,785.97	288.82	1,055.44	3,730.38	-
Rosamond Community Services District	404.42	2,498.97	212.06	14.43	57.22	2,782.68	2,430.00	554.42	1,875.58	0.00	0.00	0.00	0.00	0.00	0.00	14.43	357.22	2,080.06	207.20	5.02	371.65	-
Transfer from eSolar Inc.; Red Dawn Suntower LLC - Exhibit 4	150.00	150.00	0.00	0.00	300.00	450.00												150.00	0.00	0.00		-
West Valley County Water District	40.00	160.83	0.00	0.00	0.00	160.83	130.51	40.00	90.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	136.67	0.00	0.00	21,852.28	-
Total[3]	12,495.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.00	114.17	114.17	[illegible]	[illegible]	[illegible]	[illegible]	6,278.73	[illegible]	[illegible]	2,950.00

1. In March 2019, a 2,850 AF one-time transfer to Palm Ranch ID was approved. A portion of this will be applied to its 2018 Replacement Water Assessment. The remainder will be for use in 2019.
2. In December 2018, a 100 AF one-time transfer to PWD was approved. This will be applied to its 2018 water use resulting in an increase of 100 AF of Carry Over Water for use in 2019.
3. Production Right total of 12,495 AF does not include the 150 AF that RCSD received from an Exhibit 4 Party transfer (eSolar Inc., Red Dawn Suntower LLC)
Future tables may include rights to Stored Water.

Table B-2 Exhibit 4 Overlying Producers Water Accounting

Original Parties & Overlying Producers	Transferee	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		Judgment	Judgment	Imported Water Use Table from AVEK	From 2017 Annual Report	2+3+4	Annual Production Reporting	If [6>1] then [1], otherwise [6]	If [6≤7] then 0, If [6>2] then [7-7], otherwise [6-7]	If [6≤7+8] then 0, If [6-7-8>3] then [3], otherwise [6-7-8]	If [6≤7+8+9] then 0, If [6-7-8-9>4] then [4], otherwise [6-7-8-9]	If [6-7-8-9-10>0] then [6-7-8-9-10], otherwise 0	[11]	If [1-7]>0 then[1-7], otherwise 0	If [3-9]>0, then [3-9], otherwise 0	[4-10]	Rampdown Tables	Imported Water Use Table from AVEK	[13+14+15]	See Appendix F
60th Street Association Water System	-	2.16	2.16	0.00	Missing 2016 & 2017 production reporting	2.16		0.00	0.00	0.00	0.00	0.00	0.00	2.16	0.00	#VALUE!	2.16	0.00	#VALUE!	-
Adams Bennett Investments, LLC	-	0.00	0.00	0.00	Missing 2016 & 2017 production reporting	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!	0.00	0.00	#VALUE!	-
Antelope Park Mutual Water Company	-	169.89	202.27	0.00	106.55	308.82	109.32	109.32	0.00	0.00	0.00	0.00	0.00	60.57	0.00	106.55	195.80	0.00	167.12	-
Antelope Valley Joint Union High School District[1]	-	43.00	66.62	0.00	0.00	66.62	125.18	43.00	23.62	0.00	0.00	58.54	58.54	0.00	0.00	0.00	81.48	0.00	0.00	-
Antelope Valley Mobile Estates	-	8.75	18.03	0.00	Missing 2017 production reporting	18.03	6.22	6.22	0.00	0.00	0.00	0.00	0.00	2.53	0.00	#VALUE!	16.17	0.00	#VALUE!	-
Antelope Valley Water Storage LLC	-	1,772.00	1,772.00	0.00	1,181.16	2,953.16	954.00	954.00	0.00	0.00	0.00	0.00	0.00	818.00	0.00	1,181.16	1,772.00	0.00	1,999.16	-
Antelope Valley-East Kern Water Agency (AVEK)[2]	-	3,550.00	3,925.00	1,017.55	0.00	4,942.55	1,221.72	1,221.22	0.00	0.00	0.00	0.00	0.00	2,328.78	1,017.55	0.00	3,850.00	862.73	3,346.33	-
Aqua-J Mutual Water Company	-	44.35	44.81	0.00	46.05	90.86	26.25	26.25	0.00	0.00	0.00	0.00	0.00	18.30	0.00	46.05	44.72	0.00	64.35	-
AV Solar Ranch 1, LLC	-	96.00	96.00	0.00	163.66	259.66	7.12	7.12	0.00	0.00	0.00	0.00	0.00	88.88	0.00	163.66	96.00	0.00	252.54	-
Averydale Mutual Water Company	-	254.35	257.35	0.00	11.39	268.74	233.57	233.57	0.00	0.00	0.00	0.00	0.00	20.78	0.00	11.39	256.75	0.00	32.17	-
Bahlman: Gene Bahlman	Hernandez: Luis Hernandez: property sale (2017)	5.00	5.21	0.00	0.00	5.21	1.00	1.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	5.17	0.00	4.00	-
Baxter Mutual Water Company	-	35.02	43.13	0.00	0.00	43.13	35.50	35.02	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.51	0.00	0.00	-
Benz: Mark W. And Nancy L. Benz	Terrazas: Gloria Terrazas: property sale (2015)	1.00	1.00	0.00	Missing 2016 & 2017 production reporting	1.00		0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	#VALUE!	1.00	0.00	#VALUE!	-
Big Rock Mutual Water Company	-	0.00	0.00	0.00	Missing 2017 production reporting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!	0.00	0.00	#VALUE!	-
Bittner Trust, Glen Bittner, Trustee	-	4.00	4.00	0.00	Missing 2016 & 2017 production reporting	4.00		0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	#VALUE!	4.00	0.00	#VALUE!	-
Bleich Flat Mutual Water Company	-	33.50	33.50	0.00	Missing 2017 production reporting	33.50	13.00	13.00	0.00	0.00	0.00	0.00	0.00	20.50	0.00	#VALUE!	33.50	0.00	#VALUE!	-
Blum: Sheldon R. Blum, Trustee of the 1998 Family Trust	-	50.00	50.00	0.00	100.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	100.00	50.00	0.00	150.00	-
Bolthouse Properties LLC	-	9,945.00	15,682.41	0.00	0.00	15,682.41	14,320.19	8,945.00	4,375.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14,516.83	0.00	0.00	-
Bookman: Thomas and Julie Bookman 2007 Trust	-	196.00	249.75	0.00	54.62	304.37	53.75	53.75	0.00	0.00	0.00	0.00	0.00	82.25	0.00	54.62	227.00	0.00	136.87	-
Borax: U.S. Borax	-	1,905.00	1,905.00	410.58	2,229.05	4,544.63	1,169.42	1,169.42	0.00	0.00	0.00	0.00	0.00	735.58	410.58	2,229.05	1,905.00	414.66	3,375.23	-
Bridwell: James and Elizabeth Bridwell	-	1.00	1.00	0.00	Missing 2016 & 2017 production reporting	1.00		0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	#VALUE!	1.00	0.00	#VALUE!	-
Burrows/200 A40 H LLC	-	295.00	295.00	0.00	Missing 2016 & 2017 production reporting	295.00		0.00	0.00	0.00	0.00	0.00	0.00	295.00	0.00	#VALUE!	295.00	0.00	#VALUE!	-
Calandri Water Company, LLC (Sonrise Farms)[3]	-	1,776.00	3,465.17	0.00	0.00	3,465.17	2,159.27	1,776.00	383.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3,127.33	0.00	0.00	-
Cardile: Sal and Connie Cardile	Pool: Noel Pool: property sale (2015)	1.00	1.00	0.00	Missing 2016 & 2017 production reporting	1.00	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.50	0.00	#VALUE!	1.00	0.00	#VALUE!	-
Carle: Irma Ann Carle Trust, Irma Anne Carle, Trustee	-	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	-
Chavez: Elfren Chavez	-	44.00	44.00	0.00	Missing 2017 production reporting	44.00	48.000	44.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	#VALUE!	44.00	0.00	#VALUE!	-
City of Los Angeles, Department of Airports	-	3,975.00	7,205.00	0.00	1,260.48	8,465.48	2,914.88	2,914.88	0.00	0.00	0.00	0.00	0.00	1,060.12	0.00	1,260.48	6,559.00	0.00	2,320.60	-
Close: C. Louise R. Close Living Trust	-	1.00	1.00	0.00	Missing 2016 & 2017 production reporting	1.00		0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	#VALUE!	1.00	0.00	#VALUE!	-
Colorado Mutual Water Co.	-	25.54	25.84	0.00	20.31	46.15	16.32	16.32	0.00	0.00	0.00	0.00	0.00	9.22	0.00	20.31	25.78	0.00	29.53	-
Copa De Oro Land Company	-	325.00	325.00	0.00	650.00	975.00	103.60	103.60	0.00	0.00	0.00	0.00	0.00	221.40	0.00	650.00	325.00	0.00	871.40	-
County Sanitation Districts of Los Angeles 14 & 20	-	3,400.00	7,233.33	0.00	6,255.50	13,488.83	240.99	240.99	0.00	0.00	0.00	0.00	0.00	3,159.01	0.00	6,255.50	6,466.67	0.00	9,414.51	-2,850.00
Del Sur Ranch LLC	-	600.00	600.00	0.00	Missing 2017 production reporting	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	600.00	0.00	#VALUE!	600.00	0.00	#VALUE!	-
Diamond Farming/Crystal Organic LLC/Grimmway/Lapis	-	1,986.00	3,126.00	0.00	0.00	3,126.00	2,774.92	1,986.00	788.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,898.00	0.00	0.00	-
Dickey: Randall and Billie Dickey	-	1.00	1.00	0.00	Missing 2017 production reporting	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	#VALUE!	1.00	0.00	#VALUE!	-
El Dorado Mutual Water Company	-	272.16	275.40	1.19	58.82	335.41	207.27	207.27	0.00	0.00	0.00	0.00	0.00	64.89	1.19	58.82	274.75	3.57	124.90	-
eSolar Inc.; Red Dawn Suntower LLC	RCSD: Exhibit 3 Party	150.00	See Exhibit 3 Rosamond Community Services District for this water accounting				see RCSD on Exhibit 4	-	-	-	-	-	-	-	-	-	-	-	-	-
eSolar Inc.; Sierra Sun Tower, LLC	-	3.00	5.30	0.00	Missing 2016 & 2017 production reporting	5.30		0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	#VALUE!	4.84	0.00	#VALUE!	-
eSolar Inc.; Tumbleweed Suntower LLC	-	0.00	0.00	0.00	Missing 2016 & 2017 production reporting	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!	0.00	0.00	#VALUE!	-
Evans: Lawrence Dean Evans, Jr. and Susan Evans	-	1.00	1.00	0.00	2.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	2.00	1.00	0.00	3.00	-
Evergreen Mutual Water Company	-	68.54	89.34	0.00	13.77	89.11	61.70	61.70	0.00	0.00	0.00	0.00	0.00	6.84	0.00	13.77	69.18	0.00	20.61	-
Findley: Ruth C. Findley	-	1.00	1.00	0.00	Missing 2016 & 2017 production reporting	1.00		0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	#VALUE!	1.00	0.00	#VALUE!	-
First Mutual Water Company	-	9.29	13.89	0.00	4.95	18.84	4.29	4.29	0.00	0.00	0.00	0.00	0.00	0.98	0.00	4.95	13.18	0.00	5.91	-
Frankenberg: Leah Frankenberg	-	1.00	1.00	0.00	Missing 2016 & 2017 production reporting	1.00		0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	#VALUE!	1.00	0.00	#VALUE!	-

TODD GROUNDWATER
Watermaster Engineer

Table B-2 Exhibit 4 Overlying Producers Water Accounting

Original Exhibit 4 Overlying Producers	Transfers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		Judgment	Judgment	Imported Water Use Table from AVEK	From 2017 Annual Report	2+3+4	Annual Production Reporting	If [6>1] then [1], otherwise [6]	If [6≤7] then 0, if [6>2] then [2-7], otherwise [6-7]	If [6≤7+8] then 0, if [6-7-8>3] then [3], otherwise [6-7-8]	If [6≤7+8+9] then 0, if [6-7-8-9>4] then [4], otherwise [6-7-8-9]	If [6-7-8-9-10>0] then [6-7-8-9-10], otherwise 0	[11]	If [1-7]>0 then [1-7], otherwise 0	If [3-9]>0, then [3-9], otherwise 0	[4-10]	Rampdown Tables	Imported Water Use Table from AVEK	[13+14+15]	See Appendix F
Godde: Steve, Pamela & Gary Godde c/o Rife Silva & Co LLC	(Receives IWRF Rights from Forrest Godde (on Exhibit 8 Party	683.00	1,331.75	0.00	0.00	1,331.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	683.00	0.00	0.00	1,202.00	0.00	683.00	-
Gorrindo Resourceful LLC	-	629.00	629.00	0.00	1,258.00	1,887.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	629.00	0.00	1,258.00	629.00	0.00	1,887.00	-
Granite Construction Company (Big Rock Facility)	-	126.00	126.00	0.23	206.24	332.47	17.55	17.55	0.00	0.00	0.00	0.00	0.00	108.45	0.23	206.24	126.00	0.12	314.92	-
Granite Construction Company (Little Rock Sand and Gravel , Co.)	Rampdown & Production Rights split equally between Granite Construction and Little Rock Sand and Gravel (6/27/18 Stipulation and	234.00	372.33	0.00	21.29	393.62	235.07	234.00	1.07	0.00	0.00	0.00	0.00	0.00	0.00	21.29	344.67	0.00	21.29	-
Griffin: Laura Griffin Trustee of the Family Bypass Trust	-	668.00	1,086.33	0.00	0.00	1,086.33	2.20	2.20	0.00	0.00	0.00	0.00	0.00	665.80	0.00	0.00	1,002.67	0.00	665.80	-
H & N Development Co. West Inc.	-	808.00	1,634.46	0.00	0.00	1,634.46	1,278.46	808.00	470.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,469.17	0.00	0.00	-
Healy: Jane Healy and Healy Enterprises Inc.	-	700.00	700.00	0.00	Missing 2016 & 2017 production reporting	700.00		0.00	0.00	0.00	0.00	0.00	0.00	700.00	0.00	#VALUE!	700.00	0.00	#VALUE!	-
Kyle: Trustees of the Kyle Revocable Living Trust	-	3,670.00	8,340.83	0.00	0.00	8,340.83	5,627.05	3,670.00	1,957.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7,406.67	0.00	0.00	-
Land Projects Mutual Water Co.	-	613.54	621.01	0.00	54.08	675.09	572.00	572.00	0.00	0.00	0.00	0.00	0.00	41.54	0.00	54.08	619.51	0.00	95.62	-
Landale Mutual Water Co.	-	155.57	157.39	4.65	64.03	226.07	141.48	141.48	0.00	0.00	0.00	0.00	0.00	14.09	4.65	64.03	157.02	4.05	82.77	-
Landinv Inc.	FS Land Holding Company, LLC: 736.44 AF (2016): 448 AFY to Diamond Farming (217 AF), Crystal Organic (190 AF), Grimmway (183 AF) (2018)	600.00	600.00	0.00	0.00	600.00	232.60	232.60	0.00	0.00	0.00	0.00	0.00	367.40	0.00	0.00	600.00	0.00	367.40	-
	FS Land Holding Company, LLC: 736.44 AF (2016): Remain with FS Land Holding Company,	136.44	789.41	0.00	1,463.78	2,253.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	136.44	0.00	1,463.78	658.81	0.00	1,600.22	-
	Radcast: merger, 232.56 AF (2017)	232.56	438.76	0.00	465.12	903.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	232.56	0.00	465.12	397.52	0.00	697.68	-
Lands of Promise Mutual Water Company	-	21.69	57.46	0.00	Missing 2016 & 2017 production reporting	57.46	27.07	21.69	5.38	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!	50.30	0.00	#VALUE!	-
Lane Family Trusts	-	773.00	1,297.17	5.79	6.09	1,309.05	688.09	688.09	0.00	0.00	0.00	0.00	0.00	84.91	5.79	6.09	1,192.33	6.17	96.79	-
LeClair: Marie A. Unini and Robert J. LeClair	-	1.00	1.00	0.00	Missing 2016 & 2017 production reporting	1.00		0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	#VALUE!	1.00	0.00	#VALUE!	-
Leer: James M. Leer, III and Diana Leer	-	1.00	1.00	0.00	0.75	1.75	0.48	0.48	0.00	0.00	0.00	0.00	0.00	0.52	0.00	0.75	1.00	0.00	1.27	-
Littlerock Aggregate Co., Inc., Holliday Rock Co., Inc.	-	151.00	362.67	0.00	0.00	362.67	1,014.00	151.00	211.67	0.00	0.00	651.33	651.33	0.00	0.00	0.00	320.33	0.00	0.00	-
Llano Del Rio Water Company	-	279.00	523.71	0.00	Missing 2017 production reporting	523.71	128.44	128.44	0.00	0.00	0.00	0.00	0.00	150.57	0.00	#VALUE!	474.77	0.00	#VALUE!	-
Llano Mutual Water Company	-	0.00	0.00	0.00	Missing 2017 production reporting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!	0.00	0.00	#VALUE!	-
Markorena: Trustees of the Markorena Living Trust	-	1,775.00	3,462.96	0.00	2,620.20	6,083.16	756.19	756.19	0.00	0.00	0.00	0.00	0.00	1,018.81	0.00	2,620.20	3,125.37	0.00	3,639.01	-
McWilliams: Dennis M. and Diane K. McWilliams	-	1.00	1.00	0.00	2.00	3.00		0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	2.00	1.00	0.00	3.00	-
Miner: Richard Miner	-	999.00	1,074.33	0.00	1,558.34	2,632.67	464.07	464.07	0.00	0.00	0.00	0.00	0.00	534.93	0.00	1,558.34	1,059.27	0.00	2,093.27	-
Miracle Improvement Corporation dba Golden Sands Mobile Home Park/Trailer Park	New Goldensands Investment: property sale (2016)	27.00	42.33	0.00	0.00	42.33	60.00	27.00	15.33	0.00	0.00	17.67	17.67	0.00	0.00	0.00	39.27	0.00	0.00	-
Munz: 2014 Revocable Trust, Terry A. & Kathleen M. Munz	-	5.00	5.00	0.00	5.80	10.80		0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	5.80	5.00	0.00	10.80	-
Nebeker: Eugene B. Nebeker	-	1,775.00	3,642.50	0.00	185.00	3,827.50	568.90	568.90	0.00	0.00	0.00	0.00	0.00	1,206.10	0.00	185.00	3,269.00	0.00	1,391.10	-1,391.00
Northrop Grumman Systems Corporation	-	2.00	2.00	0.00	2.00	4.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	2.00	2.00	0.00	3.00	-
NRG Solar Alpine, LLC	-	38.00	59.84	0.00	73.39	133.23	5.48	5.48	0.00	0.00	0.00	0.00	0.00	32.52	0.00	73.39	55.47	0.00	105.91	-
R and M Ranch, Inc.	-	686.00	1,329.33	0.00	0.00	1,329.33	989.88	686.00	303.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,200.87	0.00	0.00	-
Reca: John and Adrienne Reca	-	251.00	459.71	0.00	365.00	824.71		0.00	0.00	0.00	0.00	0.00	0.00	251.00	0.00	365.00	417.97	0.00	616.00	-
Richter: Suzanne J. Richter	-	1.00	1.00	0.00	2.00	3.00	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.50	0.00	2.00	1.00	0.00	2.50	-
Rosamond High School	-	202.23	522.37	0.00	284.74	807.11		0.00	0.00	0.00	0.00	0.00	0.00	202.23	0.00	284.74	458.34	0.00	486.97	-
Rosamond Ranch	FS Land Holding Company, LLC, property sale (2015)	598.00	598.00	0.00	1,196.00	1,794.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	598.00	0.00	1,196.00	598.00	0.00	1,794.00	-
Rose Villa Apartments	-	7.62	20.20	0.00	Missing 2016 & 2017 production reporting	20.20		0.00	0.00	0.00	0.00	0.00	0.00	7.62	0.00	#VALUE!	17.69	0.00	#VALUE!	-
Sahara Nursery and Farm	-	22.00	22.15	0.00	30.10	52.25	9.29	9.29	0.00	0.00	0.00	0.00	0.00	12.71	0.00	30.10	22.12	0.00	42.81	-
Saint Andrew's Abbey, Inc.	-	102.00	162.83	0.00	0.00	162.83	14.14	14.14	0.00	0.00	0.00	0.00	0.00	87.86	0.00	0.00	150.67	0.00	87.86	-
Schilling: Lawrence J. and Mary P. Schilling Trustees of the L&M Schilling 1990 Family Trust	-	4.00	4.00	0.00	1.00	5.00	3.20	3.20	0.00	0.00	0.00	0.00	0.00	0.80	0.00	1.00	4.00	0.00	1.80	-
Selak: Lilia Mabel Selak; Barbara Aznarez Decd Trust and Mabel Selak Trust	(Received 1 AF from Siebert (July 2018)) See Siebert for this reporting.	150.00	150.00	0.00	300.00	450.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	150.00	0.00	300.00	150.00	0.00	450.00	-
Service Rock Products, L.P.	-	267.00	463.67	0.00	0.00	463.67	68.70	68.70	0.00	0.00	0.00	0.00	0.00	198.30	0.00	0.00	424.33	0.00	198.30	-
SGS Antelope Valley Development, LLC	-	57.00	57.00	0.00	Missing 2016 & 2017 production reporting	57.00		0.00	0.00	0.00	0.00	0.00	0.00	57.00	0.00	#VALUE!	57.00	0.00	#VALUE!	-
Shadow Acres Mutual Water Company*	-	51.74	52.46	58.27	40.53	152.26	85.19	51.74	0.72	32.73	0.00	0.00	0.00	0.00	26.54	40.53	52.31	53.56	67.07	-
Sheep Creek Water Co.	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-

Table B-2 Exhibit 4 Overlying Producers Water Accounting

[illegible]	[illegible]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		Judgment	Judgment	Imported Water Use Table from AVEK	From 2017 Annual Report	2+3+4	Annual Production Reporting	If [6>1] then [1], otherwise [6]	If [6≤7] then 0, if [6>2] then [2-7], otherwise [6-7]	If [6≤7+8] then 0, if [6-7-8>3] then [3], otherwise [6-7-8]	If [6≤7+8+9] then 0, if [6-7-8-9>4] then [4], otherwise [6-7-8-9]	If [6-7-8-9-10>0] then [6-7-8-9-10], otherwise 0	[11]	If [1-7]>0 then[1-7], otherwise 0	If [3-9]>0, then [3-9], otherwise 0	[4-10]	Rampdown Tables	Imported Water Use Table from AVEK	[13+14+15]	See Appendix F
Siebert: Jeffrey and Nancee Siebert	Remaining Siebert Rights after 1 AF transferred to Selak (July 2018)	105.00	183.33	0.00	105.00	288.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	105.00	0.00	105.00	167.67	0.00	210.00	-
	Transferred 1 AF to Selak (July 2018)	1.00	1.00	0.00	1.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	-
Sonrise Ranch, LLC	-	0.00	551.67	0.00	Missing 2016 & 2017 production reporting	551.67		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!	441.33	0.00	#VALUE!	-
Southern California Edison Company	-	8.00	16.13	0.00	15.15	31.27	0.22	0.22	0.00	0.00	0.00	0.00	0.00	7.78	0.00	15.15	14.50	0.00	22.93	-
Sundale Mutual Water Company	-	472.23	472.23	0.00	148.31	620.54	417.68	417.68	0.00	0.00	0.00	0.00	0.00	54.55	0.00	148.31	472.23	0.00	202.86	-
Sunnyside Farms Mutual Water Company, Inc.[1]	-	74.26	75.21	42.34	75.17	192.72	134.50	74.26	0.95	42.34	16.95	0.00	0.00	0.00	0.00	58.22	75.02	37.37	58.22	-
Tejon Ranchcorp and Tejon Ranch Co.	-	1,634.00	3,117.33	122.47	743.65	3,983.45	1,623.42	1,623.42	0.00	0.00	0.00	0.00	0.00	10.58	122.47	743.65	2,820.67	292.81	876.70	-
Tierra Bonita Mutual Water Company	-	40.32	40.68	0.00	10.62	51.30	31.99	31.99	0.00	0.00	0.00	0.00	0.00	8.33	0.00	10.62	40.61	0.00	18.95	-
Tierra Bonita Ranch	-	430.00	492.50	0.00	0.00	492.50	492.50	430.00	62.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	480.00	0.00	0.00	-
Triple M Property Co.	-	15.00	15.00	0.00	Missing 2016 & 2017 production reporting	15.00		0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	#VALUE!	15.00	0.00	#VALUE!	-
Turk Trust dated December 16, 1998	-	1.00	1.00	0.00	1.93	2.93	0.035	0.035	0.00	0.00	0.00	0.00	0.00	0.97	0.00	1.93	1.00	0.00	2.90	-
Van Dam: Craig Van Dam, Marta Van Dam, Nick Van Dam, Janet Van Dam (640 AFY Production Right)	Van Dam: Craig and Marta: 610 AFY (2018)	610.00	925.32	0.00	0.00	925.32	3.12	3.12	0.00	0.00	0.00	0.00	0.00	606.88	0.00	0.00	862.36	0.00	606.88	-400.00
	Van Dam, Nick and Janet: 30 AFY (2018)	30.00	45.51	0.00	0.00	45.51		0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	42.41	0.00	0.00	-
Van Dam Family Trust - 1996; High Desert Dairy	-	3,215.00	8,812.08	0.00	0.00	8,812.08	5,952.35	3,215.00	2,737.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7,692.67	0.00	0.00	-
Vulcan Materials Co., Vulcan Lands Inc., Consolidated Rock Products Co., Calmat Lands, Co., Allied Concrete & Materials	-	260.00	475.92	0.00	7.63	483.55	539.01	260.00	215.82	0.00	7.63	55.46	55.46	0.00	0.00	0.00	432.73	0.00	0.00	-
WAGAS Land Company LLC	-	580.00	916.79	0.00	Missing 2016 & 2017 production reporting	916.79	682.90	580.00	102.90	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!	849.43	0.00	#VALUE!	-
WDS California II, LLC	-	1,159.00	2,190.67	0.00	2,318.00	4,508.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,159.00	0.00	2,318.00	1,984.33	0.00	3,477.00	-100.00
Weatherbie: Michael and Dolores A. Weatherbie	-	1.00	1.00	0.00	2.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	2.00	1.00	0.00	3.00	-
West Side Park Mutual Water Co.	-	276.86	280.10	0.00	149.32	429.42	209.10	209.10	0.00	0.00	0.00	0.00	0.00	67.76	0.00	149.32	279.45	0.00	217.08	-
White Fence Farms Mutual Water Co.	-	772.13	781.13	70.10	761.61	1,612.94	449.01	449.01	0.00	0.00	0.00	0.00	0.00	323.12	70.10	761.61	779.41	67.66	1,154.83	-
William Fisher Memorial Water Company	-	4.53	4.53	0.00	Missing 2016 & 2017 production reporting	4.53		0.00	0.00	0.00	0.00	0.00	0.00	4.53	0.00	#VALUE!	4.53	0.00	#VALUE!	-
Willow Springs Company: Richard Nelson	-	135.00	173.04	0.00	68.00	241.04	103.13	103.13	0.00	0.00	0.00	0.00	0.00	31.87	0.00	68.00	165.43	0.00	99.87	-
Wilson: Donna Wilson	-	7.00	9.50	0.00	11.00	20.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00	11.00	9.00	0.00	18.00	-
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

1. Pursuant to Section 5.1.8 of the Judgment, Antelope Valley Joint Union High School District has an additional 29 AF of Production for use on its athletic fields and other public spaces. When recycled water becomes available to Quartz Hill High School at a price equal to or less than the lowest cost of any of the following: Replacement Obligation, Replacement Water, or other water that is delivered to AVJUHSD at Quartz Hill High School, AVJUHSD will stop producing the 29 AF groundwater and use recycled water. AVJUHSD produced 154.16 AF in 2018: 125.16 AF included in Table B-1 and 29 AF included in Table B-3.
2. AVEK's wells pumped 9,031.80 AF in 2018 but that amount was recovered stored imported water and not part of its Production Right. See Appendix C for summary of imported water, including recovery and use of stored water.
3. Calandri used its Production Rights at several areas in the basin including land owned by LA County Sanitation District.
4. There was an error in the Carry Over Water for Use in 2018 values in previous tables for Shadow Acres MWC and Sunnyside Farms MWC. Actual values are slightly higher and have been corrected in this table.
5. 2018 and 2019 one-time transfers not associated with a transfer of Production Rights: The following transfers will be subtracted from Carry Over Water for Use in 2019: 2,850 AF from County Sanitation Districts of LA 14 & 20; 1,391 AF from Eugene Nebeker; 400 AF from Craig and Marta Van Dam; and 100 AF from WDS California II.
Future tables may include rights to Stored Water.

Table B-3 Other Parties (Non Exhibit 3 or Exhibit 4) Water Accounting

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Source or Formula [with column number references]		Judgment	As per Judgment and Resolution R-18-22	Imported Water Use Table from AVEK	From 2017 Annual Report	2+3+4	Annual Production Reporting	If [6>1] then [1], otherwise [6]	If [6<7] then 0, if [6>2] then [2-7], otherwise [6-7]	If [4≤7+8] then 0, if [6-7-8>3] then [3], otherwise [6-7-8]	If [4≤7+8+9] then 0, if [6-7-8-9>4] then [4], otherwise [6-7-8-9]	If [6-7-8-9-10>0] then [6-7-8-9-10], otherwise 0	[11]	If [1-7]>0 then [1-7], otherwise 0	If [3-9]>0, then [3-9], otherwise 0	[4-10]	Agreed Upon	Imported Water Use Table from AVEK	[13+14+15]	See Appendix F
United States[1]		7,600.00	7,600.00	0.00	0.00	7,600.00	1,321.27	1,321.27	0.00	0.00	0.00	0.00	0.00	6,278.73	0.00	0.00	7,600.00	0.00	0.00	-
Department of Water Resources		104.00	104.00	0.00	Missing 2016 & 2017 production reporting	104.00		0.00	0.00	0.00	0.00	0.00	0.00	104.00	0.00	#VALUE!	104.00	0.00	#VALUE!	-
Department of Parks and Recreation		9.00	9.00	2.58	Missing 2016 & 2017 production reporting	11.58	0.08	0.08	0.00	0.00	0.00	0.00	0.00	8.92	2.58	#VALUE!	9.00	2.58	#VALUE!	-
Department of Transportation		47.00	47.00	0.00	Missing 2016 & 2017 production reporting	47.00		0.00	0.00	0.00	0.00	0.00	0.00	47.00	0.00	#VALUE!	47.00	0.00	#VALUE!	-
State Lands Commission		3.00	3.000	0.00	Missing 2016 & 2017 production reporting	3.000		0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	#VALUE!	3.00	0.00	#VALUE!	-
Department of Corrections and Rehabilitation		3.00	3.00	0.00	Missing 2016 & 2017 production reporting	3.00		0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	#VALUE!	3.00	0.00	#VALUE!	-
50th District Agricultural Association		32.00	32.00	0.00	64.00	96.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.00	0.00	64.00	32.00	0.00	96.00	-
Department of Veteran Affairs		3.00	3.00	0.00	Missing 2016 & 2017 production reporting	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	#VALUE!	3.00	0.00	#VALUE!	-
Highway Patrol		3.00	3.00	0.00	Missing 2016 & 2017 production reporting	3.00		0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	#VALUE!	3.00	0.00	#VALUE!	-
Department of Military		3.00	3.00	0.00	Missing 2016 & 2017 production reporting	3.00		0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	#VALUE!	3.00	0.00	#VALUE!	-
Desert Breeze MHP, LLC		18.10	19.98	0.00	Not applicable	19.98	18.30	18.10	0.20	0.00	0.00	0.00	0.00	0.00	0.00	Not Applicable	19.60	0.00	Not Applicable	-
Milana VII, LLC dba Rosamond Mobile Home Park		21.70	26.95	0.00	NA; missing 2016 production reporting	26.95	25.27	21.70	3.57	0.00	0.00	0.00	0.00	0.00	0.00	Not Applicable	25.90	0.00	Not Applicable	-
Reesdale Mutual Water Company		23.00	23.00	0.00	NA; missing 2016 & 2017 production reporting	23.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Not Applicable	23.00	0.00	Not Applicable	-
Juanita Eyherabide, Eyherabide Land Co., LLC and Eyherabide Sheep Company		12.00	14.13	0.00	0.00	14.13		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Not Applicable	13.71	0.00	Not Applicable	-
Clan Keith Real Estate Investments, LLC dba Leisure Lake Mobile Estates		64.00	134.08	0.00	0.00	134.08	152.59	64.00	70.08	0.00	0.00	18.51	18.51	0.00	0.00	Not Applicable	120.07	0.00	Not Applicable	-
White Fence Farms Mutual Water Company No. 3		4.00	4.00	0.00	NA; missing 2016 & 2017 production reporting	4.00	2.50	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Not Applicable	4.00	0.00	Not Applicable	-
LV Ritter Ranch, LLC		0.00	792.39	0.00	NA; missing 2016 & 2017 production reporting	792.39		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Not Applicable	633.91	0.00	Not Applicable	-
Robar Enterprises, Inc., Hi-Grade Materials, Co., and CJR, a General Partnership		200.00	596.67	0.00	NA; missing 2016 production reporting	596.67	315.79	200.00	115.79	0.00	0.00	0.00	0.00	0.00	0.00	Not Applicable	517.33	0.00	Not Applicable	-
Antelope Valley Joint Union High School District[2]		29.00	29.00	0.00	0.00	29.00	29.00	29.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Not Applicable	29.00	0.00	Not applicable	-
City of Lancaster		500.00	500.00	0.00	0.00	500.00	473.04	473.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Not Applicable	500.00	0.00	Not applicable	-
Phelan Pinon Hills CSD[3]		1,200.00	1,200.00	0.00	0.00	1,200.00	385.18	385.18	0.00	0.00	0.00	0.00	385.18	0.00	0.00	Not Applicable	1,200.00	0.00	Not applicable	-
Antelope Valley Country Club		3.00	3.00	41.70	0.00	44.70	157.05	3.00	0.00	41.70	0.00	112.35	112.35	0.00	0.00	0.00	3.00	38.82	0.00	400.00
Long Valley Road L.P.		3.00	3.00	0.00	0.00	3.00	325.69	3.00	0.00	0.00	0.00	322.69	322.69	0.00	0.00	0.00	3.00	0.00	0.00	1,391.00
A.V. Materials		0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
Antelope Valley Water Company		0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
Edgemont Acres MWC		0.00	0.00	61.88	0.00	61.88		0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.88	0.00	0.00	60.48	61.88	-
Godde: Forrest Godde		0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
Harter: Scott Harter		0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
Warnack Trust		0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-

1. United States Production Right to Carry Over for use in 2019 is the Unused Federal Reserved Water Right available to 9 public water suppliers in 2019 as per the Judgment.

2. Pursuant to Section 5.1.8 of the Judgment, Antelope Valley Joint Union High School District has an additional 29 AF of Production for use on its athletic fields and other public spaces. When recycled water becomes available to Quartz Hill High School at a price equal to or less than the lowest cost of any of the following: Replacement Obligation, Replacement Water, or other water that is delivered to AVJUHSD at Quartz Hill High School, AVJUHSD will stop producing the 29 AF groundwater and use recycled water. This 29 AF has been subtracted from their reported 2016 and 2017 Production shown on the Exhibit 4 Overlying Producers Water Accounting table.

3. Phelan Pinon Hills CSD Replacement Obligation is equal to its total groundwater production as per Judgment Section 6.4.1.2.

4. 2019 one-time transfers not associated with a transfer of Production Rights. A 400 AF one-time transfer to Antelope Valley County Club and a 1,391 AF one-time transfer to Long Valley Road. A portion of these transfers will be applied to 2018 Replacement Water Obligations. The remainders will be for use in 2019.

5. The 3.0 acre-foot Production Right for the Small Pumper Class reflects the maximum annual Production by Small Pumper Class members without incurring a Replacement Water Assessment.
Future tables may include rights to Stored Water.

Table B-4 New Production Water Accounting

Includes all approved New Production Applications through May 2019

New Production (date approved)	Estimated Production on Application (AFY)	2018[1] (AFY)		
		2018 Total Groundwater Production	Inside State Water Contractor Area	Replacement Water Assessment[2]
Alegre, Juan Carlos & Ceidy D. (March 2018)	<1.0	None Submitted to Date[4]	Yes	-
Ambriz, Juan (December 2018)	<1.0	None Submitted to Date[4]	Yes	-
Carmen Vela, Maria del (July 2018)	<1.0	None Submitted to Date[4]	Yes	-
Castillo, Juan (March 2018)	<1.0	None Submitted to Date[4]	Yes	-
Collins, Raymond & Maryann (January 2019)	<2.0	None Submitted to Date[4]	Yes	-
Connelly, Myles (January 2019)	≤1.0	None Submitted to Date[4]	Unclear if in PWD boundaries	-
Cooper, Ron (March 2018)	<1.0	None Submitted to Date[4]	Yes	-
Espinoza, Leticia (April 2019)	<3.0	None Submitted to Date[4]	Yes	-
Fong, Alama (April 2018)	<1.0	None Submitted to Date[4]	Yes	-
French, Christopher & Nancy (March 2018) **DRY**	<1.0	Borehole was dry so applicant withdrew application		
Jimenez Esparza, David (June 2018)	<1.0	None Submitted to Date[4]	Yes	-
Juniper Hills Land Conservation Trust (May 2019)	<1.0	None Submitted to Date[4]	Unclear if in PWD boundaries	-
Korn, Carrie (March 2018) **DRY**	<1.0	Borehole was dry so applicant withdrew application		
LA COSEPA (May 2018)[3]	14.16	None Submitted to Date[4]	Yes	-
Magana, Paul (March 2018)	<1.0	None Submitted to Date[4]	Yes	-
Ming, Lin (April 2019)	<1.0	None Submitted to Date[4]	Yes	-
Ovespyan, Andrey (May 2019)	<1.0	None Submitted to Date[4]	Yes	-
Park, Young (August 2018)	3.0	None Submitted to Date[4]	Unclear if in PWD boundaries	-
Perez, Espiridion and Yvonne (March 2018)	<1.0	None Submitted to Date[4]	Yes	-
Rodriguez, Erik (March 2019)	<1.0	None Submitted to Date[4]	Yes	-
Trang, Sroy (May 2019)	<1.0	None Submitted to Date[4]	Yes	-
Webster, Anthony (March 2018)	<1.0	None Submitted to Date[4]	Yes	-
Witmeyer Trust (Randy Sharp) (March 2018)	<1.0	None Submitted to Date[4]	Yes	-
Zaghian, Roben (May 2019)	2.0-3.0	None Submitted to Date[4]	Yes	-

1. 2018 was the first year New Production was approved.
2. The 2018 Replacement Water Assessment (RWA) for wells within the boundaries of AVEK, PWD or LCID is $415. This rate will increase to $451 in 2019. The RWA for wells outside these boundaries is $948 for 2019.
3. Estimated production amount listed is water demand at full buildout of project.
4. Watermaster Administrative staff will reach out to these Parties in mid-2019 to confirm status of well installation and production. Below is a summary of the status of some of the New Production wells as of April 30, 2019:
Ambriz – Well drilled by Vic's Drilling. Waiting for final inspection by the county.
Castillo – Decided not to drill at this time.
Cooper – Unable to build his proposed house. Well drilled by Abundant and capped.
Esparaza – Well is drilled – will get meter installed.
Fong – Well is drilled and will install meter when electricity is connected.
La Cosepa – Drilled well - will get meter installed.
Webster – Decided not to drill a well.
Parks – Well is drilled. Waiting on County for final approval.

Appendix C

Imported Water Tables

C-1. Imported Water, 2018

C-2. Imported Water Storage Changes in 2018

Appendix C-1 Imported Water, 2018

Importer of State Water Project (SWP) Water	2018 Imported Water (AF)
Antelope Valley-East Kern Water Agency (AVEK)[1]	49,629.16
Palmdale Water District (PWD)	10,210.00
Littlerock Creek Irrigation District (LCID)	0.00
Total Imported SWP Water	59,839.16

AVEK Use of Imported Water (Inside Adjudicated Area)	2018 Imported Water (AF)
SWP Deliveries to Treatment Plants	28,497.87
SWP Deliveries of Untreated Ag/M&I	4,783.79
SWP Deliveries to High Desert Water Bank (Spread)	2,991.80
SWP Deliveries to Westside Water Bank (Spread)	12,559.00
SWP Deliveries to Eastside Water Bank (Spread)	778.00
Operational Losses	18.70
Total	49,629.16

PWD Use of Imported Water	2018 Imported Water (AF)
SWP Entering Lake Palmdale for Customer Use	10,210.00
Total	10,210.00

1. AVEK imported a total of 51,318.10 AF in 2018 but 1,688.94 AF of this was delivered to customers outside the Adjudicated Area.

TODD GROUNDWATER
Watermaster Engineer

Appendix C-2 Imported Water Storage Changes in 2018

Total Storage of Imported Water	Acre-feet
Antelope Valley-East Kern Water Agency (AVEK)	
Total Recoverable Stored Water at end of 2017	68,174.76
Amount Spread in 2018	16,328.80
Storage Loss Factor[1]	10%
Additional Amount of Water Stored in 2018 (after applying 10% loss factor)[1]	**14,695.92**
Amount Recovered for use inside Adjudicated Area[2]	7,248.67
Amount Recovered for use outside Adjudicated Area	674.16
Total Amount of Stored Water Recovered in 2018	**7,922.83**
Amount of Recoverable Stored Water for use inside Adjudicated Area[3]	65,337.83
Amount of Recoverable Stored Water for use outside Adjudicated Area[4]	9,810.00
Total of Recoverable Stored Water at end of 2018	75,147.83

Total Storage of Imported Water	Acre-feet
Willow Springs Water Bank	
Total Recoverable Stored Water at end of 2017	18,610.10
Amount Spread in 2018	0.00
Storage Loss Factor[1]	-
Additional Amount of Water Stored in 2018 (after applying 10% loss factor)[1]	-
Amount Recovered for use inside Adjudicated Area	0.00
Amount Recovered for use outside Adjudicated Area	0.00
Total Amount of Stored Water Recovered in 2018	**0.00**
Amount of Recoverable Stored Water for use inside Adjudicated Area[5]	18,610.10
Amount of Recoverable Stored Water for use outside Adjudicated Area	0.00
Total of Recoverable Stored Water at end of 2018	18,610.10

Total Storage of Imported Water	Acre-feet
Tejon Ranchcorp and Tejon Ranch Company	
Total Recoverable Stored Water at end of 2017	29,606.24
Amount Spread in 2018	17,330.00
Storage Loss Factor[1]	6%
Additional Amount of Water Stored in 2018 (after applying 6% loss factor)[1]	**16,290.20**
Amount Recovered for use inside Adjudicated Area	0.00
Amount Recovered for use outside Adjudicated Area	0.00
Total Amount of Stored Water Recovered in 2018	**0.00**
Amount of Recoverable Stored Water for use inside Adjudicated Area[6]	45,896.44
Amount of Recoverable Stored Water for use outside Adjudicated Area[6]	
Total of Recoverable Stored Water at end of 2018	45,896.44

Recoverable water is stored water that has had a loss factor already applied to it.

1. The storage loss factors have not yet been verified by the Watermaster Engineer.

2. This is the amount of imported water that AVEK recovered from storage to provide to customers in 2018. This is in addition to the deliveries listed in Appendix C-1. It is the total 2018 imported water AVEK delivered to customers (Appendix C total - PWD imported water) minus the water delivered to treatment plants and ag/M&I (Appendix C-1).

3. Includes a small portion of annual recovered water that is provided to AVEK's two customers outside of the Adjudicated Area. Actual amounts provided to these outside customers will be included in annual report in which the water was used. For example, in 2018, 674.20 AF (9%) was provided to outside customers.

4. This is the amount of recoverable water that AVEK has stored for agencies outside of the Adjudicated Area.

5. A 0.39 AF adjustment was made to the original amount of recoverable stored water at the end of 2017 (18,609.71 AF) to get the corrected number of 18,610.10 AF (Iqbal, 2019).

6. Tejon stores imported water within the Adjudicated Area for use on land it owns that are both within and outside the Adjudicated Area.

Appendix D

Imported Water Return Flows

Appendix D Imported Water Return Flows, 2016-2018 (for Parties listed on Exhibit 8 of Judgment)

A.V. Materials	M&I	39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Antelope Valley Country Club	**M&I**	**39**	**76.50**	**134.14**	**125.57**	**76.78**	**105.17**	**88.00**	**139.12**	**88.68**	**103.63**	**105.93**	**106.93**	**99.55**	**40.42**	**41.31**	**41.70**	**38.82**
Antelope Valley-East Kern Water Agency (AVEK) (Amount sold to Parties not on Exhibit 8)	M&I	39	2,565.28	2,668.56	2,389.40	2,155.94	1,897.88	2,132.00	2,260.03	2,282.25	2,335.41	2,248.76	2,167.05	2,145.62	910.81	877.01	845.15	836.79
	Ag	34	3,107.41	1,969.88	2,195.17	134.82	47.65	40.65	116.97	41.33	1,490.99	877.63	507.05	76.28	506.94	298.40	172.40	25.94
Antelope Valley Water Company	**M&I**	**39**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Antelope Valley Water Storage, LLC	Ag	34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boron CSD[3]	**M&I**	**39**	**195.75**	**201.59**	**197.01**	**180.13**	**158.50**	**162.21**	**171.75**	**209.13**	**186.60**	**179.89**	**173.92**	**176.34**	**72.77**	**70.16**	**67.83**	**68.77**
California Department of Parks	M&I	39	4.50	6.00	6.00	5.50	9.07	6.57	6.00	6.00	6.21	6.63	6.63	6.63	2.42	2.58	2.58	2.58
California Water Service Company-Lancaster	**M&I**	**39**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**5.00**	**10.87**	**0.00**	**0.20**	**1.20**	**3.37**	**0.00**	**0.08**	**0.47**	**1.32**
Copa de Oro Land Co.	Ag	34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crystal Organic Farms	**Ag**	**34**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Desert Lake CSD	M&I	39	112.63	116.14	90.67	82.21	92.50	78.99	81.46	125.14	98.83	92.10	85.17	92.06	38.54	35.92	33.21	35.90
Diamond Farming Company	**Ag**	**34**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Edgemont Acres MWC	M&I	39	145.23	191.86	182.31	165.51	131.33	154.34	159.85	164.34	163.25	165.07	158.67	155.07	63.67	64.38	61.88	60.48
El Dorado MWC	**M&I**	**39**	**0.00**	**0.00**	**4.58**	**4.59**	**1.02**	**3.57**	**1.53**	**35.10**	**2.04**	**2.75**	**3.06**	**9.16**	**0.79**	**1.07**	**1.19**	**3.57**
Eyherabide Sheep Co.	Ag	34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Godde, Forrest	**Ag**	**34**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Granite Construction Co	M&I	39	2.50	2.00	1.50	0.50	1.00	0.00	0.00	0.00	1.50	1.00	0.60	0.30	0.59	0.39	0.23	0.12
Grimmway	**Ag**	**34**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
H&N Development Co. West	M&I	39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Harter, Scott	**Ag**	**34**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
LADPW- District No. 40	M&I	39	30,110.72	31,259.56	31,170.24	22,741.50	20,344.18	26,459.24	26,946.45	28,925.81	27,125.24	26,394.94	25,532.32	25,083.44	10,578.84	10,294.03	9,957.61	9,782.54
Landale MWC	**M&I**	**39**	**6.76**	**0.00**	**8.51**	**0.00**	**32.29**	**0.00**	**18.78**	**0.82**	**9.51**	**8.16**	**11.92**	**10.38**	**3.71**	**3.18**	**4.65**	**4.05**
Lane Family Trust	Ag	34	18.50	19.78	22.59	15.61	15.90	15.70	15.40	28.18	18.48	17.92	17.04	18.16	6.28	6.09	5.79	6.17
Littlerock Aggregate, Co.	**M&I**	**39**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Littlerock Creek ID	M&I	39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Palm Ranch ID	**M&I**	**39**	**594.53**	**97.91**	**35.53**	**2.85**	**3.00**	**56.64**	**30.98**	**4.97**	**146.76**	**39.19**	**25.80**	**19.69**	**57.24**	**15.28**	**10.06**	**7.68**
Palmdale WD[4]	M&I	39	10,032.29	16,365.15	10,599.21	8,353.44	5,853.82	10,451.26	13,824.40	10,210.00	10,240.78	10,324.58	9,816.43	9,738.58	3,993.90	4,026.58	3,828.41	3,798.05
Quartz Hill WD	**M&I**	**39**	**3,883.40**	**4,229.00**	**3,352.78**	**3,436.24**	**2,608.19**	**2,453.25**	**2,385.86**	**2,647.75**	**3,501.92**	**3,215.89**	**2,847.26**	**2,706.26**	**1,365.75**	**1,254.20**	**1,110.43**	**1,055.44**
Rosamond CSD	M&I	39	333.75	40.09	122.85	30.42	1.41	10.38	19.92	2.21	105.70	41.03	37.00	12.87	41.22	16.00	14.43	5.02
Shadow Acres MWC	**M&I**	**39**	**217.61**	**204.88**	**235.25**	**84.39**	**139.70**	**139.12**	**161.40**	**162.07**	**176.37**	**160.67**	**151.97**	**137.34**	**68.78**	**62.66**	**59.27**	**53.56**
St. Andrew's Abbey, Inc.	M&I	39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sunnyside Farms MWC	**M&I**	**39**	**154.94**	**159.16**	**148.46**	**103.37**	**55.98**	**111.12**	**123.87**	**84.71**	**124.38**	**115.62**	**108.56**	**95.81**	**48.51**	**45.09**	**42.34**	**37.37**
Tejon Ranch Co.	Ag	34	0.00	1,046.80	1,801.00	0.00	0.00	0.00	0.00	4,306.03	569.56	569.56	360.20	861.21	193.65	193.65	122.47	292.81
U.S. Borax	**M&I**	**39**	**1,872.88**	**1,617.09**	**1,172.19**	**866.90**	**1,127.86**	**931.87**	**1,165.22**	**1,224.78**	**1,331.36**	**1,143.16**	**1,052.79**	**1,063.31**	**519.23**	**445.83**	**410.59**	**414.69**
Warmack Trust	Ag	34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Westside Park MWC	**M&I**	**39**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
White Fence Farms MWC	M&I	39	157.19	200.00	230.26	112.12	154.12	184.54	217.74	198.86	170.74	176.21	179.76	173.48	66.59	68.72	70.10	67.66

1. Imported water use data from AVEK with the exception of PWD and LCID.
2. Some water use types were uncertain and assigned a likely type.
3. As per Judgment, Boron CSD has the right to Produce Imported Water Return Flows, up to 78 AFY, based on the applicable percentage multiplied by the average amount of Imported Water used by Boron CSD outside the Basin, but within its service area in the preceding five Year period (not including Imported Stored Water in the Basin) without having to establish that the Imported Water Return Flows augment the Basin Groundwater supply.
4. Amounts shown are the total amount of water that PWD imported.
5. Imported Water Deliveries include a portion of water AVEK recovered from banking in previous years

TODD GROUNDWATER
Watermaster Engineer

Appendix E

Replacement Obligations, 2018

Appendix E Replacement Obligations, 2018

Entity	2018 Groundwater Production Subject to a Replacement Obligation (AF)	Replacement Assessment for Entities within State Water Contractor Areas ($413/AF)	Notes
Palm Ranch Irrigation District	114.17	NA (see notes)	In 2019, Palm Ranch ID received a one-time transfer of 2,850 AF of which 114.17 AF will be used as its Replacement Water Obligation for 2018 overproduction.
Littlerock Aggregate Co., Inc., Holliday Rock Co., Inc.	651.33	$270,301.95	
Antelope Valley Joint Union High School District	58.54	$24,294.10	
New Goldensands Investment (Miracle Improvement Corporation dba Golden Sands Mobile Home Park/Trailer Park)	17.67	$7,333.05	
Vulcan Materials Co., Vulcan Lands Inc., Consolidated Rock Products Co., Calmat Lands, Co., Allied Concrete & Materials	55.46	$23,015.90	
Clan Keith Real Estate Investments, LLC dba Leisure Lake Mobile Estates	18.51	$7,681.65	
Phelan Pinon Hills CSD	385.18	To Be Determined (note that the Watermaster has not yet established the 2018 RWA for lands outside the SWP Contractor service areas).	PPHCSD does not have Production Rights but can pump up to 1,200 AFY from Well #14 and pay a Replacement Water Assessment
Long Valley Road L.P.	322.69	NA (see notes)	In 2019, Long Valley Road received a one-time transfer of 1,391 AF of which 322.69 AF will be used as its Replacement Water Obligation for 2018 overproduction.

Other entities have potential Replacement Obligations and are in discussion with the Watermaster Attorney and include Small Pumpers pumping more than 3 AFY and entities with no rights to produce.

Additional unidentified entities may also have Replacement Obligations and will be added to the table when identified.

Appendix F

F-1. Transfers, 2015 through May 2019

F-2. Amounts Transferred to Other Parties (associated with temporary, one time transfers), 2015 through May 2019

Appendix F-1 Transfers, 2015 through May 2019

Transferor	Transferee	Type of Transfer	Amount (AFY)	Original Parcel(s) (APN#)	Parcels Water Transferred to (APN#)	Type of Right Transferred	Voting Rights after Transfer	Date/Comments
Bahlman: Gene Bahlman	Luis Hernandez	Transfer in connection with property sale	5	3310-003-014	same	Exhibit 4 Production Right	No Change-Exhibit 4	**Prior to June 2017** (as per June 20, 2017 letter)
Benz: Mark W. and Nancy L. Benz	Gloria Terrazas	Transfer in connection with property sale	1	3059-008-049	same	Exhibit 4 Production Right	No Change-Exhibit 4	**Prior to December 15, 2015** (as per October 9, 2017 letter): Sold property in 2015 but paid 2016 and 2017 Administrative Assessments. Requested to have new property owners billed at 10640 Four Winds Road, Juniper Hills , CA 93543.
Cardile: Sal and Connie Cardile	Noel Pool	Transfer in connection with property sale	1	3059-018-126	same	Exhibit 4 Production Right	No Change-Exhibit 4	**July 2015** (as per December 28, 2016 email to Watermaster)
County Sanitation District #14 of Los Angeles County (via an agreement with Calandri Farms)	Palm Ranch Irrigation District	One time transfer (via an agreement with Calandri Farms)	2,850	3307-017-902 3307-017-935 3307-007-936 3307-017-937 3307-017-938 3307-017-941 3307-017-948 3307-017-959	3203-016-900 3203-032-902 3204-012-902 3204-012-903	Exhibit 4 Production Right	One time transfer, therefore will remain an Exhibit 4 landowner voting right	February 2019 Transfer application. The District leased 1,039 acres and 2,850 AFY to Calandri via a 2017 Groundwater and Land Lease Agreement and a subsequent amendment to that agreement. Under that agreement, Calandri is permitted to transfer the entire 2,850 AF in 2019, and 50 percent of it in subsequent years, pending Watermaster approval.
eSolar Inc ; Red Dawn Suntower LLC	Rosamond Community Services District	Transfer in connection with Property sale. Production Right will be pumped from a RCSD well	150	3256-006-901 (new LA County numbering- was previously 3256-006-013)	RCSD Service Area, specifically Well #9 on 375-113-19	Exhibit 4 Production Right	Will need to remain an Exhibit 4 landowner voting right although transferred to an Exhibit 3 Party	**February 16, 2016** Purchase and Sale Agreement.
FS Holding Company (originally Landinv rights)	Diamond Farming	Transfer of Production Rights	217	358-030-03 359-011-28 359-051-01 359-051-02	346-031-08 346-031-10 346-031-11 3376-032-001 3378-001-003 3378-001-004 3378-001-005 3378-001-006 3378-002-002 3378-002-004 3378-002-005 3386-014-005	Exhibit 4 Production Right	No Change-Exhibit 4	**September 27, 2017** Water Rights Grant Deed: Landinv, Inc. had 969 AFY of Overlying Production Rights. In 2016, 736.44 AF was transferred to FS Land Holding Company. This FS Land Holding transfer to Diamond is for a portion (217 AF) of those rights. Transfer form signed July 26, 2018.
	Grimmway Enterprises	Transfer of Production Rights	193		346-031-08 346-031-10 346-031-11 3376-032-001 3378-001-003 3378-001-004 3378-001-005 3378-001-006 3378-002-002 3378-002-004 3378-002-005 3386-014-005	Exhibit 4 Production Right	No Change-Exhibit 4	**September 27, 2017** Water Rights Grant Deed: Landinv, Inc. had 969 AFY of Overlying Production Rights. In 2016, 736.44 AF was transferred to FS Land Holding Company. This FS Land Holding transfer to Grimmway is for a portion (193 AF) of those rights. Transfer form signed July 26, 2018.
	Crystal Organic Farms	Transfer of Production Rights	190		346-031-08 346-031-10 346-031-11 3376-032-001 3378-001-003 3378-001-004 3378-001-005 3378-001-006 3378-002-002 3378-002-004 3378-002-005 3386-014-005	Exhibit 4 Production Right	No Change-Exhibit 4	**September 27, 2017** Water Rights Grant Deed: Landinv, Inc. had 969 AFY of Overlying Production Rights. In 2016, 736.44 AF was transferred to FS Land Holding Company. This FS Land Holding transfer to Crystal Organic is for a portion (190 AF) of those rights. Transfer form signed July 26, 2018.
Godde: Forrest G. Godde 1998 Trust (has only Imported Water Return Flow rights - No Production Rights)	Steven F. Godde, Pamela M. Godde, Gary M. Godde	All interests of Forrest G. Godde 1998 Trust assigned to Steven, Pamela, and Gary Godde.	Right to Imported Water Return Flows	3205-001-084	3205-001-084 3219-015-001 374-302-04	Imported Water Return Flow Right	Not applicable since only Imported Water Return Flows were transferred	**June 8, 2017** signed Assignment to Steven Forrest Godde, Pamela Marie Godde, and Gary Matthias Godde. Steven, Pamela, and Gary Godde have a combined Exhibit 4 Production Right.
Landinv, Inc.	FS Land Holding Company, LLC via North Rosamond Solar	Transfer in connection with property sale (subsequently transferred 600 AFY to Grimmway, Diamond, Crystal-see separate entry for FS Land Holding Company)	736.44	358-030-03 359-011-28 359-051-01 359-051-02	same	Exhibit 4 Production Right	No Change-Exhibit 4	**July 21, 2016 & December 15, 2016** (as per January 19, 2017 letter): Landinv, Inc. has 969 AFY of Overlying Production Rights. Landinv, Inc. transferred a portion of its overlying production rights (736.44 AFY) from four parcels to North Rosamond Solar on July 21, 2016. On December 15, 2016 North Rosamond Solar deeded rights to FS Land Holding Company.
	RADCAST Investments, Inc.	Transfer in connection with a company merger	232.56	3201-003-005 3201-003-006 3201-004-007	same	Exhibit 4 Production Right	No Change-Exhibit 4	**July 30, 2017** (as per February 6, 2018 letter): Landinv, Inc. merged into RADCAST investments. The remaining rights are 969 - 736.44 = 232.56 AFY.
Miracle Improvement Corporation dba Golden Sands Mobile Home Park dba Golden Sands Trailer Park	New Goldensands Investment, LLC	Transfer in connection with property sale	27	3154-002-024	same	Exhibit 4 Production Right	No Change-Exhibit 4	**December 2016** (as per January 30, 2018 letter): Gesham Savage sent AVWM a letter requesting to intervene as a Party to the Judgment and recognize the transfer of Overlying Production Rights. (Transfer form dated 7/10/18).
Nebeker: Gene	Long Valley Road L.P.	One time transfer of Carry Over Water	1,391	3260-010-108 3260-010-109	3075-007-001 3075-007-002 3075-007-003 3075-007-009 3075-007-010	Exhibit 4 Carry Over	Exhibit 4 to Small Pumper for Replacement Water	

Appendix F-1 Transfers, 2015 through May 2019

Transferor	Transferee	Type of Transfer	Amount (AFY)	Original Parcel(s) (APN#)	Parcels Water Transferred to (APN#)	Type of Right Transferred	Voting Rights after Transfer	Date/Comments
Rosamond Ranch	FS Land Holding Company, LLC via Willow Springs Solar	Transfer in connection with property sale	598	359-031-02 359-031-03 359-031-04 359-031-05 359-031-06 359-052-02	same	Exhibit 4 Production Right	No Change-Exhibit 4	**October 15, 2015 & February 7, 2017** (as per March 14, 2017 letter): Rosamond Ranch has 598 AFY Production Rights. Rosamond Ranch transferred all Production Rights to Willow Springs Solar, LLC (Grant Deed dated 10/15/15) who then deeded Production Rights to FS Land Holding Company, LLC on 2/7/17.
Siebert: Jeffrey and Nancee Siebert	Selak: Steven and Christine Selak	Transfer of a portion of their Production Rights	1	3256-018-001 3256-018-005 to -012 3256-008-005 3256-008-009	Buying as investment	Exhibit 4 Production Right	No Change-Exhibit 4	Transfer form dated 4/23/18
Van Dam: Craig Van Dam, Marta Van Dam, Nick Van Dam, Janet Van Dam	Craig and Marta Van Dam	Split up Production Rights (640 AF total)	610	3220-006-006 3220-006-097 3220-006-098 3220-006-099 3220-006-100 3384-001-001 3384-001-002 3384-001-003	3220-006-006 3220-006-097 3220-006-099 3384-001-001 3384-001-002 3384-001-003	Exhibit 4 Production Right	No Change-Exhibit 4	As of **July 1, 2018** (as per Transfer form signed 6/4/18)
	Nick and Janet Van Dam		30		3220-006-098 3220-006-100	Exhibit 4 Production Right	No Change-Exhibit 4	As of **July 1, 2018** (as per Transfer form signed 6/4/18)
Van Dam: Craig and Marta Van Dam	Antelope Valley Country Club	One time transfer of Carry Over Water	400	3220-006-097 3384-001-001 3384-001-003	3005-004-081 3005-003-026 to -029	Exhibit 4 Carry Over	Not applicable since a one-time transfer	
WDS California II, LLC	Palmdale Water District	One time transfer of Carry Over Water	100	359-331-24 359-321-01 359-175-01 359-174-12 359-041-30 359-041-27 359-011-05 359-011-01 261-194-45	PWD service area	Exhibit 4 Production Right	Not applicable since a one-time transfer	**September 11, 2018** Transfer Request. Water to be used in 2018.

Appendix F-2 Amounts Transferred to Other Parties (associated with temporary, one time transfers), 2015 through May 2019

Transferor	Transferee	Type of Transfer	Amount (AFY)	Date Approved
County Sanitation District #14 of Los Angeles County (via an agreement with Calandri Farms)	Palm Ranch Irrigation District	One time transfer of Production Rights (via an agreement with Calandri Farms)	2,850	March 2019
Nebeker: Gene	Long Valley Road L.P.	One time transfer of Carry Over Water	1,391	May 2019
Van Dam: Craig and Marta Van Dam	Antelope Valley Country Club	One time transfer of Carry Over Water	400	April 2019
WDS California II, LLC	Palmdale Water District	One time transfer of Carry Over Water	100	December 2018

This table is a repeat of the temporary, one time transfers listed in Appendix F-1 and is included here to assist with water accounting. See Table F-1 for additional information on these transfers.

Appendix G

Storage Agreements

[No storage agreements have been completed yet]

Appendix H

Approved Well Applications and Small Pumper Qualifying Documentation

Appendix H Approved Well Applications and Small Pumper Qualifying Documentation

Date on Application	Date Todd Received Complete Application	APN#	Request Type	Use of Well	Provided Small Pumper Qualifying Documentation	Subarea	Applicant/ Property Owner	Owner Phone	Owner email	Well Driller	Driller email	Driller Phone	In State Water Contractor Service Area (AVEK, PWD or LCID)[1]	Estimated Pumping	Well Depth (feet)	Screened Interval (feet-depth)	Casing Diameter (inches) and Material
Approved Applications: May 2017 - January 2018 (23 total). Beginning in March 2018, all applications were approved at the AVWM Board meetings.																	
7/6/2017 (well application form not available when approved. Completed it later)	5/9/17 (Robert Wagner forwarded LA County email to Todd)	3384-009-001	Replacement well	Domestic	No	Central Antelope	Sheldon Blum	408-377-7320	sheldonblum@sbcglobal.net	Bertram Drilling (Travis Copeland)	copeland.travis@gmail.com	406-259-2532	AVEK	30 to 50 AFY	400	Lower 200'	12" (material not provided)
6/30/2017	7/6/2017	3060-020-062	Continue drilling with previous permit	Domestic	No (include in wells drilled between 1/2016 and ~5/2017)	South East	Archie Floyd	661-944-5073	roadrunnerpump@roadrunner.com	Bret Douglas Drilling	info@douglasdrilling.net	406-445-2152	No	(less than anticipated)	400	Not provided	5" SDR 21 PVC
8/4/2014 (assume 2017)	8/22/2017	3145-009-015	Test Well Only	Test	No	Central Antelope	Mitchell's Avenue E MHP/Ron Cooper	818-381-7649	patandchuck@aerthlink.net	Abundant Water Wells	abundantwaterwells@yahoo.com	661-713-3443	AVEK	Not Provided	580	540 to 580	4.5" Sch 80 PVC
8/24/2017	9/1/2017	3378-013-912	Monitoring well	Monitoring	No	Central Antelope	Palmdale Water District	661-456-1020	jriley@palmdalewater.org	Abundant Water Wells	abundantwaterwells@yahoo.com	661-713-3443	AVEK	0.67 AFY	385	330 to 360	5" Sch 80 PVC
8/24/2017	9/1/2017	3378-013-912	Monitoring well	Monitoring	No	Central Antelope	Palmdale Water District	661-456-1020	jriley@palmdalewater.org	Abundant Water Wells	abundantwaterwells@yahoo.com	661-713-3443	AVEK	0.67 AFY	355	300 to 330	5" Sch 80 PVC
8/24/2017	9/1/2017	3378-013-912	Monitoring well	Monitoring	No	Central Antelope	Palmdale Water District	661-456-1020	jriley@palmdalewater.org	Abundant Water Wells	abundantwaterwells@yahoo.com	661-713-3443	AVEK	0.67 AFY	325	270 to 300	5" Sch 80 PVC
9/5/2017	9/6/2017	3175-003-002	Monitoring well	Monitoring	No	Central Antelope	Waste Management, Inc.	661-945-4085	charles.carmel@bp.com	Gregg Drilling & Testing	jmckeen@greggdriling.com	562-427-6899	AVEK	<0.001 AFY	80	70 to 80	2" Sch 40 PVC
9/5/2017	9/6/2017	3175-003-002	Monitoring well	Monitoring	No	Central Antelope	Waste Management, Inc.	661-945-4085	charles.carmel@bp.com	Gregg Drilling & Testing	jmckeen@greggdriling.com	562-427-6899	AVEK	<0.001 AFY	95	85 to 95	2" Sch 40 PVC
9/5/2017	9/6/2017	3175-009-002	Monitoring well	Monitoring	No	Central Antelope	Waste Management, Inc.	661-945-4085	charles.carmel@bp.com	Gregg Drilling & Testing	jmckeen@greggdriling.com	562-427-6899	AVEK	<0.001 AFY	80	70 to 80	2" Sch 40 PVC
9/5/2017	9/6/2017	3175-009-002	Monitoring well	Monitoring	No	Central Antelope	Waste Management, Inc.	661-945-4085	charles.carmel@bp.com	Gregg Drilling & Testing	jmckeen@greggdriling.com	562-427-6899	AVEK	<0.001 AFY	80	70 to 80	2" Sch 40 PVC
9/5/2017	9/6/2017	~~3175-025-128~~ 3145-025-128	Monitoring well	Monitoring	No	Central Antelope	Waste Management, Inc.	661-945-4085	charles.carmel@bp.com	Gregg Drilling & Testing	jmckeen@greggdriling.com	562-427-6899	AVEK	<0.001 AFY	70	60 to 70	2" Sch 40 PVC
8/18/2017	9/1/2017	3240-006-023	Well Yield Test, existing Small Pumper	Domestic	No	Willow Springs	Irma Torres (Quintero)	323-697-0900	torres.irma@sbcglobal.net	Bryant Pump & Drilling	bryantsh2o4u@yahoo.com	661-256-2117	AVEK	Existing well is 30 gpm	322	165 to 322	6" SDR 21 PVC
11/6/2017	11/7/2017	Right of way, next to 3170-015-006	Monitoring well	Monitoring	No	Central Antelope	County Sanitation District Nos. 14 and 20 of Los Angeles County	562-908-4288 x2728	jennytanphanich@lacsd.org	BC2 Environmental	ksamuelson@bc2env.com	714-744-2990	AVEK	<100 gal/yr	~550 to 600	~490-540 to 550-600	4" Sch 80 PVC
11/6/2017	11/7/2017	Right of way, next to 3170-014-012	Monitoring well	Monitoring	No	Central Antelope	County Sanitation District Nos. 14 and 20 of Los Angeles County	562-908-4288 x2728	jennytanphanich@lacsd.org	BC2 Environmental	ksamuelson@bc2env.com	714-744-2990	AVEK	<100 gal/yr	~550 to 600	~490-540 to 550-600	4" Sch 80 PVC
11/6/2017	11/7/2017	Right of way, next to 3170-015-007	Monitoring well	Monitoring	No	Central Antelope	County Sanitation District Nos. 14 and 20 of Los Angeles County	562-908-4288 x2728	jennytanphanich@lacsd.org	BC2 Environmental	ksamuelson@bc2env.com	714-744-2990	AVEK	<100 gal/yr	~550 to 600	~490-540 to 550-600	4" Sch 80 PVC
11/6/2017	11/7/2017	3025-023-285	Monitoring well	Monitoring	No	Central Antelope	County Sanitation District Nos. 14 and 20 of Los Angeles County	562-908-4288 x2728	jennytanphanich@lacsd.org	BC2 Environmental	ksamuelson@bc2env.com	714-744-2990	AVEK	<100 gal/yr	~550 to 600	~490-540 to 550-600	4" Sch 80 PVC
11/7/2017	11/7/2017	3004-013-~~010~~014	Monitoring Well, replacement	Monitoring	No	Central Antelope	Waste Management, Inc.	661-947-7197	nstetson@wm.com	Cascade Drilling	mromero@cascade-env.com	909-946-1605	AVEK	Not Provided	105	85 to 104.6	2" Sch 40 PVC
11/7/2017	11/7/2017	3004-013-~~011~~015	Monitoring Well, replacement	Monitoring	No	Central Antelope	Waste Management, Inc.	661-947-7197	nstetson@wm.com	Cascade Drilling	mromero@cascade-env.com	909-946-1605	AVEK	Not Provided	125	105 to 124.6	2" Sch 40 PVC
8/17/2017	9/1/2017	3060-022-017	Replacement well	Domestic	No	South East	Rudy Turk	661-944-0720	Not provided	Lundigan Drilling	lundiganbritt@gmail.com	661-944-3129	AVEK	0.125 to 1 AFY	Not provided	Not provided	4.5-5" PVC
11/20/2017	11/28/2017	3135-027-025	Monitoring well	Monitoring	No	Central Antelope	Atlantic Richfield Co.	657-529-4503	charles.carmel@bp.com	Gregg Drilling & Testing	jmckeen@greggdriling.com	562-427-6899	AVEK	Not Provided	78 (+/-) 5	15' (63.5 to 78.5 +/- 5)	2" Sch 40 PVC
11/30/2017	12/13/2017	3032-004-021	Replacement well	Agricultural	No	South East	WM. Bolthouse Farms	661-366-7209	dwilke@bolthouse.com	Rottman Drilling Company	edward.robledo@rottmandrilling.com	661-942-6125	AVEK	300 AFY	620	320 to 620	16" Grade A53B mild steel
11/30/2017	12/13/2017	3032-004-021	Replacement well	Agricultural	No	South East	WM. Bolthouse Farms	661-366-7209	dwilke@bolthouse.com	Rottman Drilling Company	edward.robledo@rottmandrilling.com	661-942-6125	AVEK	300 AFY	620	320 to 620	16" Grade A53B mild steel
1/22/2018	1/29/2018	Right of way, next to 3170-015-006	Monitoring well	Monitoring	No	Central Antelope	County Sanitation District Nos. 14 and 20 of Los Angeles County	562-908-4288 x2728	jennytanphanich@lacsd.org	BC2 Environmental	ksamuelson@bc2env.com	714-744-2990	AVEK	<100 gal/yr	~550 to 600	~490-540 to 550-600	4" Sch 80 PVC
Approved Well Applications: March 2018 - December 2018																	
Approved on 3/28/18 (13)																	
3/5/2018	3/20/2018	252-231-032	**DRY WITHDRAWN New Production**	Domestic	No	West Antelope	Christopher & Nancy French	661-313-2221	chris@CWFBuilders.com	Boetsch Well Drilling (Gerald Boetsch)	botch1@wildblue.net	661-824-9007	AVEK	< 1 AFY	550	Bottom 150'	6" SDR 17 PVC
3/8/2018	3/20/2018	3064-013-047	**DRY WITHDRAWN New Production**	Domestic	No	Southeast	Carrie Korn	818-807-4991	carrieskorn@gmail.com	Donald C. Vickery Well Drilling	doncvickery@live.com	760-388-4907	No	0.5 AFY	650	50' (to 10' from bottom of well)	6" 188 steel
3/8/2018	3/22/2018	375-190-008	New Production	Domestic	No	Central Antelope	Espiridion and Yvonne Perez	661-361-3432/ 661-992-3432	ychuchies@yahoo.com	Bryant Pump & Drilling (Glenn (Bud) Bryant)	bryantsh2o4u@yahoo.com	661-886-5220	AVEK	1 AFY	400	260-400	6" SDR 17 PVC

Appendix H Approved Well Applications and Small Pumper Qualifying Documentation

Date on Application	Date Todd Received Complete Application	APN#	Request Type	Use of Well	Provided Small Pumper Qualifying Documentation	Subarea	Applicant/ Property Owner	Owner Phone	Owner email	Well Driller	Driller email	Driller Phone	In State Water Contractor Service Area (AVEK, PWD or LCID)?	Estimated Pumping	Well Depth (feet)	Screened Interval (feet-depth)	Casing Diameter (inches) and Material
3/9/2018	3/21/2019	3080-009-002	New Production	Domestic	No	South East	Ron Cooper	336-404-8009	rjcooper98@aol.com	Abundant Water Wells (David Clayton)	abundantwaterwells@yahoo.com	661-713-3443	AVEK	1 AFY	300	100-300	5" SDR 17
3/18/2018	3/22/2018	3154-013-026	New Production	Domestic	No	Central Antelope	Juan Carlos & Ceidy D. Alegre	661-674-6989	alegre4321@aol.com	Paramount Drilling & Pump (Morsa Jimenez)	casa_paramount@yahoo.com	661-251-3454	AVEK	15-20 gpm	400	Perforate bottom 100'	3" or 5" (material not provided)
3/20/2018	3/31/2018	3154-012-014	New Production	Domestic	No	Central Antelope	Juan Castillo	661-810-0278	castilloconcrete@icloud.com	Paramount Drilling & Pump (Morsa Jimenez)	casa_paramount@yahoo.com	661-251-7891	AVEK	1 AFY	400	Perforate bottom 100'	5" (material not provided)
3/13/2018	3/23/2018	3203-003-083	New Production	Domestic	No	Central Antelope	Paul Magana	661-202-6712	woodstone1991@aol.com	Paramount Drilling & Pump (Morsa Jimenez)	casa_paramount@yahoo.com	661-251-7891	AVEK	1 AFY	250 (also says 400?)	Perforate bottom 100'	5" (material not provided)
3/19/2018	3/23/2018	3084-003-009	New Production	Domestic	No	South East	Witmeyer Trust (Randy Sharp)	613-730-7968	Randy.Sharp@sympatico.ca	Abundant Water Wells (David Clayton)	abundantwaterwells@yahoo.com	661-713-3443	AVEK	1 AFY	300	Bottom 200'	5" SDR 17 PVC
3/15/2018	3/26/2018	3078-007-012	New Production	Domestic	No	South East	Anthony Webster	818-397-5339	tonnysmith12@gmail.com	Lundigan Drilling (Britt Lundigan)	lundiganbritt@gmail.com	661-944-3129	AVEK	0.5 to 1 AFY	Not provided	Not provided	4.5-5" PVC
3/19/2018	3/21/2018	3060-018-029	Replacement well (shared well)	Domestic	Yes	South East	Pete Trono	661-944-1890	petertrono@atccconsulting.org	Lundigan Drilling (Britt Lundigan)	lundiganbritt@gmail.com	661-944-3129	No	15 gpm/1 to 3 AFY	Not provided	Not provided	4 5-5" PVC
3/23/2018	3/23/2018	358-052-007	Replacement well	Domestic	Yes	Willow Springs	Keenan Moody	310-499-8770	ksmoody88@gmail.com	Bryant Pump & Drilling (Glenn (Bud) Bryant)	bryantsh2o4u@yahoo.com	661-886-5220	AVEK	30 gpm/1 AFY	300	140-300	6" SDR 17 PVC
3/17/2018	3/26/2018	315-050-038	Replacement well	Domestic	Yes	Willow Springs	Fatima and Gilderdo Corona	661-618-2654 (661-256-3168	82fatimacoron@gmail.com	Bryant Pump & Drilling (Glenn (Bud) Bryant)	bryantsh2o4u@yahoo.com	661-886-5220	AVEK	1 AFY	400	Bottom 140'	6" SDR 17 PVC
3/22/2018	3/22/2018	3240-009-003	Small Pumper Qualifying	Domestic	Yes	West Antelope	Richard Hyde	562-405-0484	Not provided	Existing well	Not Applicable	Not Applicable	AVEK	2 AFY	460	100-300, 320-420, 440-460	6" SDR 21 PVC
Approved on 4/25/18 (5)																	
3/26/2018	4/6/2018	3029-018-032	New Production	Domestic	No	South East	Alama Fong	323-359-4986	flyingual2@aol.com	Not Provided	Not Provided	Not Provided	AVEK	1 AFY	400	Bottom 300'	5" SDR 17
3/27/2018	4/20/2018	374-450-008	New Point of Extraction (shared well)	Domestic	Yes	Central Antelope (border of West Antelope)	Prudencio Landaverde	323-356-1019	landaverde359@gmail.com	Bryant Pump & Drilling (Glenn (Bud) Bryant)	bryantsh2o4u@yahoo.com	661-886-5220	AVEK	2 AFY	400	260-400	6" SDR 17 PVC
4/6/2018	4/6/2018	3302-027-901	New Point of Extraction	Agricultural	No	Central Antelope	County Sanitation District No. 14 of Los Angeles County	562-908-4288 x2728	jennytanphanich@lacsd.org	Not determined yet	Not determined yet	Not determined yet	AVEK	2,500 gpm	1,400	~700-1,400	16" low carbon steel, 0.375" wall thickness
4/6/2018	4/6/2018	3307-017-946	New Point of Extraction	Agricultural	No	Central Antelope	County Sanitation District No. 14 of Los Angeles County	562-908-4288 x2728	jennytanphanich@lacsd.org	Not determined yet	Not determined yet	Not determined yet	AVEK	2,500 gpm	1,400	~700-1,400	16" low carbon steel, 0.375" wall thickness
4/6/2018	4/6/2018	3307-017-921	New Point of Extraction	Agricultural	No	Central Antelope	County Sanitation District No. 14 of Los Angeles County	562-908-4288 x2728	jennytanphanich@lacsd.org	Not determined yet	Not determined yet	Not determined yet	AVEK	2,500 gpm	1,400	~700-1,400	16" low carbon steel, 0.375" wall thickness
Approved on 5/23/18 (2)																	
3/7/2018	5/14/2018	3075-003-008	New Production	Domestic, Church Complex	No	South East	LA COSEPA Rojas Benito (Lucino Gopar)	661-390-2524 (661-416-9829)	capitalcampaign@christofthedesertmsp.org; rojasbenito@hotmail.com	Paramount Drilling & Pump (Morsa Jimenez)	casa_paramount@yahoo.com	661-251-7891	AVEK	14.16 AFY at buildout	290 (well completed on 4/14/17)	Well Completion rpt indicates 0-290' but cement seal from 0-50'	5" PVC Sch 40
3/23/2018	5/10/2018	374-450-06	New Point of Extraction (shared well)	Domestic	Yes	Central Antelope (border of West Antelope)	Rafael Ossio & Nieves Lapa	661-268-2732	rafael.ossio@yahoo.com	Bryant Pump & Drilling (Glenn (Bud) Bryant)	bryantsh2o4u@yahoo.com	661-886-5220	AVEK	1 AFY	420	Not provided	6" SDR 17 PVC
Approved on 6/27/18 (2)																	
5/25/2018	5/30/2018	3049-013-015	Small Pumper Qualifying	Domestic	Yes	South East	Leo Thibault	661-944-1384	JoLe7190@aol.com	Existing well	Not Applicable	Not Applicable	LCID	1 AFY	240	unknown	6.625" 188 Galv. Steel
6/15/2018	6/15/2018	3307-014-054	New Production	Domestic	No	Central Antelope	David Jimenez Esparza	562-505-3882	Not provided	Paramount Drilling & Pump/Abundant Water Wells (David Clayton)	abundantwaterwells@yahoo.com	661-713-3443	AVEK	1 AFY	Not Provided	Bottom 100'	Not Provided
Approved on 7/25/18 (2)																	
6/20/2018	6/21/2018	3059-019-010	Replacement well	Domestic	Yes	South East	Herschel and Debra Hill	661-609-2464	grandpknows@yahoo.com	Lundigan Drilling (Britt Lundigan)	lundiganbritt@gmail.com	661-944-3129	PWD	1 AFY	Not provided	Not provided	4.5-5" PVC
6/25/2018	6/27/2018	3278-021-025	New Production	Domestic	No	West Antelope	Maria Del Carmen Vela	805-708-4919	jasmin.ll@yahoo.com	Paramount Drilling & Pump/Abundant Water Wells (David Clayton)	abundantwaterwells@yahoo.com	661-713-3443	AVEK	1 AFY	300	Bottom 200'	5" SDR17
Approved on 8/22/18 (12)																	
7/18/2018	8/6/2018	3170-029-903	Monitoring well	Monitoring	No	Central Antelope	US Air Force - Plant 42	937-904-3748	george.warner@us.af.mil	Not Provided	Not Provided	Not Provided	AVEK	only for purging before sampling	<400	< bottom 40'	4" Sch 80 PVC
7/18/2018	8/6/2018	3022-029-904	Monitoring well	Monitoring	No	Central Antelope	US Air Force - Plant 42	937-904-3748	george.warner@us.af.mil	Not Provided	Not Provided	Not Provided	AVEK	only for purging before sampling	<400	< bottom 40'	4" Sch 80 PVC

Appendix H Approved Well Applications and Small Pumper Qualifying Documentation

Date on Application	Date Todd Received Complete Application	APN#	Request Type	Use of Well	Provided Small Pumper Qualifying Documentation	Subarea	Applicant/ Property Owner	Owner Phone	Owner email	Well Driller	Driller email	Driller Phone	In State Water Contractor Service Area (AVEK, PWD or CID)?	Estimated Pumping	Well Depth (feet)	Screened Interval (feet-depth)	Casing Diameter (inches) and Material
8/8/2018	8/6/2018	3170-029-902	6 Monitoring Wells	Monitoring	No	Central Antelope	US Air Force - Plant 42	937-904-3748	george.warner@us.af.mil	Cascade Drilling	rquintero@cascade-env.com	909-931-4014	AVEK	only for purging before sampling <0.25 AFY	5 wells ~425 1 well ~600	< bottom 40'	5' Stainless Steel
7/30/2018	8/6/2018	3060-030-029	New Production	Domestic	No	South East	Young M. Park	231-392-1143	YPARK@TAKE-A-BYTE.NET	Lundigan Drilling (Britt Lundigan)	lundiganbritt@gmail.com	661-944-3129	PWD?	3 AFY	500-600'	Not provided	4.5" PVC
5/17/2018	8/10/2018	359-041-12	New Point of Extraction	Agricultural	No	West Antelope	Maritorena Trust on Antelope Valley Water Storage property (Willow Springs Water Bank)	AVWS: 323-860-4824	zahinga@cigroup.com	Existing AVWS well	Not Applicable	Not Applicable	AVEK	67 AFY	804	280-804	14" Steel
5/17/2018	8/10/2018	359-041-34	New Point of Extraction	Agricultural	No	West Antelope	Maritorena Trust on Antelope Valley Water Storage property (Willow Springs Water Bank)	AVWS: 323-860-4824	zahinga@cigroup.com	Existing AVWS well	Not Applicable	Not Applicable	AVEK	71.5 AFY	713	Not available	12" Steel
8/2/2018	8/10/2018	3080-012-002	Small Pumper Qualifying	Domestic	Yes	South East	David Savko #1 (second well request for Sept Board meeting)	661-313-9599	davesavko@gmail.com	Existing well drilled in 2013	Not Applicable	Not Applicable	AVEK	2 AFY	250	bottom 100'	5" PVC
Approved on 9/26/18 (9)																	
8/2/2018	8/15/2018	3080-014-029	Small Pumper Qualifying	Domestic	Yes	South East	David Savko #2 (has an Aug 2018 approved SmP Q request at diff. parcel)	661-313-9599	davesavko@gmail.com	Existing well drilled by Paramount Drilling, completed on 12/3/15	Not Applicable	Not Applicable	AVEK	2 AFY	250	bottom 100'	5" PVC
8/5/2018	8/15/2018	375-103-02	Small Pumper Qualifying	Domestic	Yes	Central Antelope	Michael Clipperton	805-538-8791	mikeclipperton@yahoo.com	Existing well drilled by Bryant Pump & Drilling in 2007	bryantsh2o4u@yahoo.com	661-256-2117	AVEK	<1 AFY	360	180-360	6" PVC
8/9/2018	9/10/2018	3154-010-006	Small Pumper Qualifying	Commercial	Yes	Central Antelope	Allyn A. Young, Young Trust	661-722-4799	Not provided	Existing well drilled by Rottman Drilling in 1991	edward.robledo@rottmandrilling.com	661-942-6125	AVEK	<3 AFY	370	210-370	6" PVC
9/6/2018	9/7/2018	3047-014-004	Small Pumper Qualifying	Domestic	Yes	South East	George & Deanna Govednik	661-944-1010	mail@govednik.us	Well/pump installed in 2000	Not Applicable	Not Applicable	PWD	1-2 AFY	700	200-700	6" PVC
9/10/2018	9/10/2018	3047-016-008	Small Pumper Qualifying	Domestic	Yes	South East	William and Elizabeth Waters	661-944-9244	EANDW.93543@gmail.com	Existing well drilled by Aqua Drilling in 1988	Not Applicable	Not Applicable	PWD	40 gpm	217/240	112-217	6.625" Steel
8/17/2018	9/10/2018	3145-018-005	Replacement well	Domestic	Yes	Central Antelope	Laurance P. Shelar	661-946-1413	FuzzyLP661@yahoo.com	Bryant Pump & Drilling (Glenn (Bud) Bryant)	bryantsh2o4u@yahoo.com	661-886-5220	AVEK	1 AFY	260	120-260	6" SDR 17 PVC
9/11/2018	9/11/2018	3047-016-003	Small Pumper Qualifying	Domestic-Multifamily Residential	Yes	South East	Glenn Vance	661-944-2481	Greg.vance103@gmail.com	Existing pump set in 2004; well older(?)	Not Provided	Not Provided	PWD	1-2 AFY	155	75-155	10" Steel
9/7/2018	9/14/2018	3059-019-011	Small Pumper Qualifying	Domestic	Yes	South East	Terry Adams and Christine Keel-Adams	661-202-4258	7219terry@gmail.com	Not Provided	Not Provided	Not Provided	PWD?	Not Available	Not Available	Not Available	Not Available
9/5/2018	9/14/2018	3060-015-015	Small Pumper Qualifying	Domestic	Yes	South East	Fred Knox Jr. and Debra Anderson 2014 Trust	661-944-5732	fred@xnavypilots.net	Existing well drilled in 1991	Not Provided	Not Provided	PWD?	0.2 AFY/ 9 gpm	150	Not Available	6.625" Steel
Approved on 10/24/18 (8 Applicants/9 Parcels)																	
9/11/2018	9/18/2018	3037-023-003	Small Pumper Qualifying	Domestic	Yes	South East	Orien Glenn Vance Jr. and Anna Mary Vance	661-944-2751	None	Existing well drilled in 1954	Not Provided	Not Provided	No	1-2 AFY	103	30-103	9.75" Steel
9/12/2018	9/17/2018	3047-013-005	Small Pumper Qualifying	Domestic	Yes	South East	Carl Carlson	661-675-7202	ACTIONSEALS@gmail.com	Existing well drilled in 1985	Not Provided	Not Provided	PWD?	<2 AFY	140	100-140	6" Plastic
9/7/2018	9/18/2018	3060-022-040	Small Pumper Qualifying	Domestic	Yes	South East	Douglas and JoAnn Prutsman	661-803-1544	prutsman@avradionet.com	Existing well drilled in 1991	Not Provided	Not Provided	PWD?	2 AFY	700	400-700	6" Steel
9/24/2018	10/9/2018	3059-019-037	Small Pumper Qualifying	Domestic	Yes	South East	Ann Washington Irrevocable Trust	949-642-2627	ann@curlyhorseranch.com	Not Provided	Not Provided	Not Provided	PWD?	Not Provided	Not Provided	Not Provided	Not Provided
9/24/2018	10/9/2018	3059-019-038	Small Pumper Qualifying	Domestic	Yes	South East	Ann Washington Irrevocable Trust	949-642-2627	ann@curlyhorseranch.com	Not Provided	Not Provided	Not Provided	PWD?	Not Provided	Not Provided	Not Provided	Not Provided
9/28/2018	10/10/2018	3059-025-018	Small Pumper Qualifying	Domestic	Yes	South East	Enrique & Jennifer Velazquez	661-944-8964	jennyv@QNET.com	Not Provided	Not Provided	Not Provided	PWD?	Not Provided	Not Provided	Not Provided	Not Provided
10/9/2018	10/10/2018	3145-029-032	Small Pumper Qualifying	Domestic	Yes	Central	Juan Villalobos	323-401-9650	juanvillalobos@gmail.com	Bryant Pump & Drilling (Glenn (Bud) Bryant)	bryantsh2o4u@yahoo.com	661-256-2117	AVEK	30 gpm	240	120-240	6" Sch 40 PVC
10/9/2018	10/10/2018	3059-021-039	Small Pumper Qualifying	Domestic	Yes	South East	Robin Holden and Dennis Heimbach	661-857-3149	BKLYNCWGRL@aol.com	Not Provided	Not Provided	Not Provided	PWD?	Not Provided	Not Provided	Not Provided	Not Provided
10/5/2018	10/11/2018	3047-016-025	Small Pumper Qualifying	Domestic	Yes	South East	Daniel A Franco	661-944-1986	None	Existing 2 wells drilled in 1950s	Not Provided	Not Provided	PWD?	2 wells: 1 gpm (0.5 AFY) & 5 gpm (1-2 AFY)	150 & 185	75-150 & 75-185	both 6"
Approved on 12/5/18 (1 New Production, 15 SM P Q applications and 4 MWs) 20 total																	
10/23/2018	10/26/2018	3135-027-027	Monitoring well	Monitoring	No	Central Antelope	Atlantic Richfield Co.	360-594-7989	Wade.Meiton@BP.com	Gregg Drilling LLC	jmckeen@greggdriling.com	562-427-6899	AVEK	Not Provided	75	60-75	2" Sch 40 PVC
10/23/2018	10/26/2018	3135-027-025	Monitoring well	Monitoring	No	Central Antelope	Atlantic Richfield Co.	360-594-7989	Wade.Meiton@BP.com	Gregg Drilling LLC	jmckeen@greggdriling.com	562-427-6899	AVEK	Not Provided	75	60-75	2" Sch 40 PVC

Appendix H Approved Well Applications and Small Pumper Qualifying Documentation

Date on Application	Date Todd Received Complete Application	APN#	Request Type	Use of Well	Provided Small Pumper Qualifying Documentation	Subarea	Applicant/ Property Owner	Owner Phone	Owner email	Well Driller	Driller email	Driller Phone	In State Water Contractor Service Area (AVEK, PWD or LCID)?	Estimated Pumping	Well Depth (feet)	Screened Interval (feet-depth)	Casing Diameter (inches) and Material
10/23/2018	10/26/2018	3135-027-025	Monitoring well	Monitoring	No	Central Antelope	Atlantic Richfield Co.	360-594-7989	Wade.Melton@BP.com	Gregg Drilling LLC	jmckeen@greggdriling.com	562-427-6899	AVEK	Not Provided	75	60-75	2" Sch 40 PVC
10/23/2018	10/26/2018	3135-027-027	Monitoring well	Monitoring	No	Central Antelope	Atlantic Richfield Co.	360-594-7989	Wade.Melton@BP.com	Gregg Drilling LLC	jmckeen@greggdriling.c	562-427-6899	AVEK	Not Provided	75	60-75	2" Sch 40 PVC
10/22/2018	10/24/2018	3047-016-004	Small Pumper Qualifying	Domestic	Yes	South East	Daniel Franco	661-944-1986	None	Existing well drilled in 1950s	Not Provided	Not Provided	PWD?	2 gpm/1-2 AFY	185	50-180	6" Steel
10/20/2018	10/25/2018	3060-018-030	Small Pumper Qualifying (Shared)	Domestic	Yes	South East	Robert and Deborah Field	661-944-3469	coyotebear@aol.com	Existing well drilled in 1979	Not Provided	Not Provided	PWD?	7 gpm, < 3 AFY	288	Not Available	6" Steel
10/9/2018	10/19/2018	3059-018-127	Small Pumper Qualifying	Domestic	Yes	South East	Robin Bernd Knauer	661-944-5537	barbarabenchoff@gmail.com	Well redrilled in 1978	Not Provided	Not Provided	PWD?	5.6 gpm	~180	Not Available	Not Available
10/12/2018	10/22/2018	3059-011-018	Small Pumper Qualifying (Shared well-see Fernandez)	Domestic	Yes	South East	Anna Steele	661-944-5537	barbarabenchoff@gmail.com	Existing well drilled in 1979	Not Provided	Not Provided	PWD?	Not Available	Not Available	Not Available	Not Available
10/12/2018	10/22/2018	3059-014-015	Small Pumper Qualifying (Shared well-see Steele)	Domestic	Yes	South East	Efren and Alicia Fernandez	805-905-8857	alicia.fernandez75@gmail.com	Existing well drilled in 1979	Not Provided	Not Provided	PWD?	Not Available	Not Available	Not Available	Not Available
10/1/2018	10/22/2018	3059-014-012	Small Pumper Qualifying (Shared well-Steele property)	Domestic	Yes	South East	Martin & Karen Ostler	661-944-9844	moe1@antelecom.net	Existing well drilled in 1979	Not Provided	Not Provided	PWD?	Not Available	Not Available	Not Available	Not Available
10/1/2018	10/22/2018	3059-014-014	Small Pumper Qualifying (Shared well-Steele property)	Domestic	Yes	South East	Jon Meyer and Valerie Zera	661-917-0961	saddierthe@aol.com	Existing well drilled in 1979	Not Provided	Not Provided	PWD?	Not Available	Not Available	Not Available	Not Available
9/7/2018	10/11/2018	3059-026-010	Small Pumper Qualifying (crosses Adjudicated Area)	Domestic	Yes	South East	Dean Smith and Melissa Winings-Smith	661-480-6868	ecouple13@gmail.com	Well on property before 1998	Not Provided	Not Provided	PWD?	11-14 gpm, 1 AFY	Not Available	225'	Not Available
10/19/2018	10/31/2018	3266-010-001	Small Pumper Qualifying	Domestic	Yes	Central Antelope	Peter Thompson	661-916-4282	pthompson@palmdalewater.org	Existing well drilled in 2006	Rottman Drilling	661-942-6125	AVEK	12 gpm, ~2 AFY	640	480-640	6" SDR 17 F480
10/23/2018	10/31/2018	3060-021-044	Small Pumper Qualifying	Domestic	Yes	South East	James and Sandra Fry	661-944-1490	antiquesndy@hughes.net	Existing well drilled in 1937	Not Available	Not Available	PWD?	<3 AFY	Not Available	Not Available	Not Available
10/25/2018	11/2/2018	3060-020-034	Small Pumper Qualifying	Domestic	Yes	South East	Leo Curd	661-944-9650	amy.curd@ey.com	Existing well drilled in 1955	Not Available	Not Available	PWD?	<3 AFY	100	Not Available	Not Available
10/26/2018	11/2/2018	3059-025-020	Small Pumper Qualifying	Domestic	Yes	South East	Stephen Kissling	661-947-8799	rapide@earthlink.net	Well on property before 2001	Not Available	Not Available	PWD?	10 gpm, < 3 AFY	Not Available	Not Available	Not Available
10/11/2018	11/7/2018	3059-024-062	Small Pumper Qualifying	Domestic	Yes	South East	Susan Crawford Vila	661-944-2222	zancrawford@gamil.com	Existing well drilled around 1990	Not Available	Not Available	PWD?	<3 AFY	Not Available	Not Available	Not Available
11/5/2018	11/12/2018	3060-020-094	Small Pumper Qualifying	Domestic	Yes	South East	Richard & Catherine Conrad	661-944-9804	rc8jamm@msn.com	Allens Drilling: Existing well drilled in 2006	Not Available	Not Available	PWD?	2-3 gpm;	296	96-296	6" PVC SDR-21
11/18/2018	11/19/2018	3059-012-030	Small Pumper Qualifying	Domestic	Yes	South East	Robin Soper and Monica McCarthy	415-308-2098	rrrobinsoper@gmail.com	Existing well drilled around 1967	Not Available	Not Available	PWD?	1 AFY	Not Available	Not Available	Not Available
9/25/2018	11/19/2018	3039-031-013	New Production	Domestic	No	South East	Juan Ambriz	916-832-5504	janamb30@gmail.com	Abundant Water Wells (David Clayton)	abundantwaterwells@yahoo.com	661-713-3443	AVEK??	0.5 AFY	500	50-500??	5" SDR 17

Appendix I

Metering Requirements

TODD GROUNDWATER

September 27, 2017

FINAL MEMORANDUM

To: Antelope Valley Watermaster

From: Chad Taylor, PG, CHG and Phyllis Stanin, PG, CHG
Todd Groundwater, Watermaster Engineer

Re: Recommendations for Meter Requirements
Antelope Valley Watermaster Rules and Regulations

According to the Final Judgment for the Antelope Valley Groundwater Cases, the Watermaster Engineer is mandated to propose requirements for devices and methods for measuring groundwater production (herein, "meters"). These requirements are to be approved and adopted by the Watermaster into its rules and regulations and submitted to the Court for approval. Meters are required to be installed on all production wells (except for the Small Pumper Class wells) by December 23, 2017. The goal of the metering is to provide accurate reporting of the amount of groundwater produced from the basin.

To ensure that these requirements are workable for the Producers in the Antelope Valley, we discussed preliminary and draft meter requirements with the Advisory Committee on May 31 and July 19, 2017. We have also consulted the Advisory Committee's technical advisor, Larry Rottman, to better understand local well conditions. We have incorporated comments received during Advisory Committee meetings, as well as numerous verbal and email comments from various parties to the Judgment. In addition, we have considered state and federal standards, as well as manufacturer specifications, for meter installation and operation.

The final draft requirements were presented to the Advisory Committee on August 16, 2017. Additional comments and requests for revisions were made at that meeting; these requests have been considered and incorporated into this final memorandum. The Advisory Committee unanimously approved the final draft on September 21, 2017.

The final draft meter requirements were posted to the Watermaster website on August 25, 2017 to coincide with a 30-day notice of a public hearing at the September 27, 2017 Watermaster Board Meeting. At the hearing, the Watermaster Engineer discussed the development of the requirements, along with final edits. After considering comments at the public hearing and approving the final edits, the Board adopted Resolution R-17-07, which approved the revised meter requirements on September 27, 2017. Given the impending deadline, and noting that rules and regulations must be approved by the Court, we recognize the urgency for Board and Court approval of these requirements.

ARTICLE 1 – MONITORING

1.1 Production Monitoring

By December 23, 2017, all parties other than the Small Pumper Class shall install meters on their wells for monitoring production and submit proof thereof to the Watermaster (¶8.1 of the Judgment). Each party shall bear the cost of installing its meter(s) (¶8.1). The Watermaster Engineer shall propose, and the Watermaster shall adopt and maintain, rules and regulations regarding determination of Production amounts and installation of individual water meters (¶18.5.5). The rules and regulations shall set forth approved devices or methods to measure or estimate Production (¶18.5.5). Producers who meter Production on the date of entry of this Judgment shall continue to meter Production (¶18.5.5).

Meter installations are also required for any member of the Non-Pumper Class who has complied with the New Production Application Procedure specified in ¶18.5.13 of the Judgment. Producing Non-Pumper Class members shall report production to the Watermaster, and prior to the commencement of production, shall install a meter consistent with the requirement of these Rules and Regulations (¶9.2.2).

All references to annual or quarterly reports herein are based on a calendar year (January 1 through December 31).

1.2 Approved Meter Installer and Tester

Meters shall be installed, tested, or repaired by pre-qualified persons, firms, or corporations shown to be qualified for installing, repairing and/or testing water measuring devices. Such persons, firms, or corporations must submit their qualifications to the Watermaster Engineer for approval and inclusion on the Pre-Qualified Meter Installer list maintained by the Watermaster. The list will include the name, address, and telephone number of all Watermaster-approved meter installers and testers. Persons, firms, or corporations will only be approved for installing and or testing the type(s) of meters for which they can demonstrate experience to the Watermaster Engineer. Persons, firms, or corporations may also be approved for field calibration of meters after demonstrating sufficient experience and expertise.

All approved persons, firms, or corporations will be instructed in the expectations for meter selection, installation, and documentation and testing. For meter testing, the Watermaster Engineer shall either instruct approved testers on appropriate testing tools and techniques or coordinate with approved testers to confirm that their standard approach is satisfactory to the Watermaster Engineer. The Watermaster shall provide forms to submit documentation of meter installation and testing.

The Watermaster shall make the list of approved persons, firms, and corporations available at the office of Watermaster and on the Watermaster's website.

1.3 Acceptable Meter Types

Each water production well of all parties other than the Small Pumper Class shall be equipped with a meter. Acceptable meters shall be of the singlejet, multijet, turbine, propeller, venturi, electromagnetic, or transit-time ultrasonic type as described in American Water Works Association (AWWA) standards M6 and M33. Other types of meter or variations on the types listed above may be considered if specifically requested in writing to the Watermaster Engineer prior to installation. Requests for meter type variances shall include documentation of meter specifications from the manufacturer, including installation requirements.

All meters shall be equipped with totalizers sufficient to capture at least five months of anticipated production volume. All meters shall be new or factory refurbished and calibrated within a year prior to installation. All meter installations must be documented to the satisfaction of the Watermaster Engineer, as described below in Section 1.6.

1.4 Meter Selection

All meters shall be appropriate for the individual application. Meter selection should consider size, range, accuracy, error, maintenance, and longevity and other factors described in AWWA M6 and M33 and all other applicable AWWA standards[1]. At a minimum:

- Each meter must be appropriately sized for the production rate and discharge piping of the well.
- Each meter must have a measurement range that matches the expected range of production rates from the well on which it is to be installed.
- The error in the reading of each meter shall be no greater than two (2) percent of rate or full scale, whichever is less.

It shall be the responsibility of each party to work with their selected approved meter installer to ensure selection of appropriate meters. Selected meters shall be of one of the types described in Section 1.3. If a party wishes to employ an alternative meter type, they must submit a request for a variance to the Watermaster Engineer as described in Section 1.3.

Some parties may choose to employ more than one meter for a single well as backup or secondary meters for use during regular meter maintenance or recalibration. This is acceptable so long as the meters are of the same type, manufacture, and model.

[1] Different AWWA standards are developed for specific meter types; please refer to all standards regarding the specific meter being used. A list of potentially applicable AWWA standards is provided at the end of these requirements.

1.5 Meter Installation

Meters must be installed in strict adherence to all applicable manufacturer recommendations, AWWA standards, and industry norms regarding the proper installation of flowmeters in closed piping systems.

Meters have limitations related to piping configurations; upstream and downstream pipe diameter and length are important considerations. Meters are calibrated with a uniform velocity profile distribution such as the one produced by a long length of undisturbed upstream and downstream conditions.

Each meter type measures a specific parameter (e.g., number of revolutions of a propeller or pressure differential) – referred to in AWWA standards as the "influenced parameter" – that is converted into a flow rate. A mathematical relationship between the influenced parameter and flow is fixed based on a certain factor or function derived from calibration test data. This mathematical relationship dictates the accuracy of the flowmeter. A skewed or distorted velocity profile will cause the influenced parameter to become less stable and the calibration factor or function to become either partially or fully inapplicable; this increases the flowmeter's error, often in a considerable and unpredictable manner. Therefore, meters should not be placed in close proximity to a bend, valve, or other fitting that is likely to disturb the velocity profile at the meter. Such disturbances are magnified if the bends or fittings are out of plane in such a manner as to cause a swirl or crossflow.

The industry standard minimum is straight pipe upstream of the meter that is 10 pipe diameters in length and straight pipe downstream of the meter that is 5 pipe diameters in length; the straight pipe shall have no valves, angled or reducing/enlarging fittings, or other obstructions. Meters shall be installed to meet both manufacturers recommendations and this industry standard. If the manufacturers recommendations for installation are less stringent than this industry standard, the party and the approved installer shall request a variance from the Watermaster Engineer prior to installation of any such meter. Requests for variances are discussed below.

The Watermaster Engineer may consider a variance to these specifications if it can be demonstrated that accurate readings will be achieved. If it is unfeasible to achieve the standard or manufacturer recommended straight pipe intervals before and after a meter, flow straighteners or flow conditioners may be used with prior approval from the Watermaster Engineer. To apply for a variance to use a flow straightener, flow conditioner, or manufacturers recommendations that are less stringent than the industry standard, the party or the approved installer must submit a request to the Watermaster Engineer. Requests for variances to allow flow conditioners, flow straighteners, or less stringent installation standards shall be made in writing and shall include details regarding the reason the variance is required, the manufacturer of the proposed meter and/or flow conditioner/straightener, and the proposed installation specifics. The Watermaster Engineer will review and evaluate such requests for variances and no flow conditioners, flow straighteners, or less stringent installation standards shall be employed without written approval from the Watermaster Engineer.

All new or existing meters shall be calibrated prior to first use. Calibration may be performed by the manufacturer (factory calibration) or in the field, as appropriate for the type of meter. A record of calibration shall be submitted to the Watermaster Engineer in accordance with the documentation requirements in Section 1.6.

All existing, new, or replacement meter installations shall be documented in accordance with Section 1.6. In addition, any changes to the pump or equipment of a metered well must be reported to the Watermaster Engineer within 30 days in accordance with requirements in Section 1.6. Meter details and configurations do not need to be re-documented if the meter is not being replaced.

Some parties may choose to employ more than one meter for a single well as backup or secondary meters for use during regular meter maintenance or recalibration. This is acceptable so long as each meter is documented individually.

1.6 Documentation and Records

Each existing, new, or replacement meter must be documented and recorded with the Watermaster Engineer. Documentation shall consist of all pertinent details regarding each meter, records of calibration, specifics regarding installation, and initial meter readings. The following specific documentation will be provided to the Watermaster Engineer:

1. Production rate or range of production rates for well as currently equipped.
2. Identification (name or number) of well and map showing location of well with sufficient detail to allow the Watermaster Engineer to locate the well.
3. Manufacturers specifications exactly matching the make and model of the installed meter. These specifications shall include:
    a. Manufacturer name
    b. Meter type
    c. Manufacturer model number
    d. Meter number
    e. Meter accuracy
    f. Meter flow range
4. Date of manufacture or date of original purchase of the meter.
5. Proof of most-recent meter calibration from the manufacturer or an approved meter installer with qualifying expertise.
6. Manufacturer's requirements or recommendations for installation of meters. At a minimum, this shall include the specifications for flow conditions leading to and from the meter.
7. As built drawings (computer generated or hand drawn) showing relative locations of wellhead, meter, and all flow restrictions (e.g., valves, elbows, reducers, etc.) and dimensions (lengths and diameters) of all pipes, fittings, valves, and meters.
8. Volumetric units of the totalizer.
9. At least one photograph showing the installed meter and associated piping from the wellhead.
10. At least one readable photograph showing the installed meter totalizer face.

The Watermaster Engineer shall review and assess the completeness of each documentation submittal. Upon establishing that meter documentation is complete, the Watermaster Engineer will assign each installed meter a unique identifying number in our database for internal tracking. The unique meter number from the manufacturer will also be recorded in the database for communications with the meter owner. The unique number on the meter will be used to refer to the meter for reporting production, recalibration, or maintenance. The Watermaster Engineer shall maintain the documentation records for each installed meter and shall use these records for cross-checking production reports and tracking compliance with the Judgement.

Any time the pumping equipment or plumbing within 10 pipe diameters upstream and 5 pipe diameters downstream of the meter at the well associated with a documented meter is changed, the responsible party will resubmit documentation identifying all changes to the Watermaster Engineer within 30 days.

1.7 Regular Meter Testing and/or Calibration

All meters shall be maintained to meet or exceed the accuracy requirements indicated in Section 1.4. Each meter shall either be tested or calibrated regularly to ensure that it meets measurement error and accuracy requirements of these Rules and Regulations. All meters associated with parties that produce over 10 acre-feet per year (AFY) on aggregate shall be tested at least once per calendar year or calibrated at least every three (3) calendar years. All meters associated with parties that produce up to and including 10 AFY shall be tested at least once every two (2) calendar years or calibrated at least every five (5) calendar years. It shall be the responsibility of each party to ensure that each of their meters are either tested or calibrated in accordance with this schedule. Meters need not be calibrated so long as annual testing demonstrates that they are within the accuracy requirements in Section 1.4.

Meter testing shall be conducted by an approved meter tester (as described in Section 1.2) employing tools and techniques pre-approved by the Watermaster Engineer. Responsibility for coordination and costs of meter testing shall be borne by each party that owns the well meter. Meter testing shall be reported to the Watermaster Engineer using Watermaster-supplied forms within 10 days of each test. If the results of any testing event indicate that any meter is operating outside of the accuracy range indicated in Section 1.4, the party shall have the meter repaired or calibrated within 30 days of the date of the test report. If the meter is repaired or replaced, see additional requirements in Section 1.8. For each calibration resulting from a failed meter test, the party shall submit documentation of calibration to the Watermaster Engineer. This documentation shall include identification of the individual or organization that performed the meter calibration. Calibration and documentation of calibration shall conform to the requirements identified in Section 1.6.

If a party chooses to forgo meter testing for any or all of their meters, then the party shall calibrate each meter every three (3) calendar years for parties that produce more than 10 AFY on aggregate or every five (5) calendar years for parties that produce up to and including 10 AFY on aggregate. More frequent meter calibration shall be required if recommended by the manufacturer for the meter type and application. Calibration will be

performed according to the meter manufacturer recommendations by either the manufacturer or pre-qualified meter installer. Following each calibration, the party shall submit documentation of calibration, including the individual or entity performing the calibration, to the Watermaster Engineer. Calibration and documentation of calibration shall conform to the requirements identified in Section 1.6.

If a backup or secondary meter is installed during regular meter calibration, the date on which the meters were switched, the ending totalizer reading for the outgoing meter, and the beginning totalizer reading for the incoming meter must be recorded and submitted to the Watermaster along with the next scheduled production report. If the backup meter is a meter loaned from the manufacturer, it must be an in-kind meter as the one being replaced; the loaned meter must also be documented with the Watermaster Engineer, including the dates used to record production. Use of an over- or under-sized meter shall be avoided.

It is the responsibility of each party to ensure that all their meters have been appropriately tested or calibrated in accordance with this section.

1.8 Repair or Replacement of Inaccurate Meters

Should a party discover that the meter which measures the water Production from the party's well is measuring inaccurately, the party must notify the Watermaster Engineer within 10 days of the problem, and have the meter repaired or replaced. Defective or inaccurate meters shall be repaired or replaced within thirty (30) calendar days after discovery of the problem. The tolerance standard for repairing each meter shall be to return the meter to an error of not more than two (2) percent of the instantaneous rate reading. Upon completion of such repair, said repaired meter shall be tested by any meter tester authorized by the Watermaster Engineer. Results of such meter tests shall be furnished to the Watermaster Engineer within ten (10) business days after testing.

If a backup or secondary meter is installed during meter repair or off-site calibration, the date on which the meters were switched and the ending and beginning totalizer readings for each meter must be recorded and submitted to the Watermaster Engineer along with the next scheduled production report. If the backup meter is a meter loaned from the manufacturer, it must be an in-kind meter as the one being replaced; the loaned meter must be documented with the Watermaster Engineer including the dates used to record production. Use of an over- or under-sized meter shall be avoided.

If defective or inaccurate meters are not repaired within the prescribed time limit, the violator will be provided notification to appear before the Watermaster to discuss remedy[2]. In the event the violator and the Watermaster cannot reach a mutually agreeable solution within forty-five (45) days thereafter, the Watermaster shall obtain the Court's permission to allow the Watermaster Engineer or its representative to enter onto the violator's property to repair or replace the defective or inaccurate meter. All costs incurred by the Watermaster to repair or replace the defective or inaccurate meter, including the legal fees

[2] *Information in this paragraph may be subject to legal review.*

and costs to obtain the Court's permission to enter the violator's property, shall be billed and collected from the violator within fifteen (15) days after receipt of the Watermaster's bill for such costs.

1.9 Estimation of Production Due to Lack of Accurate Meter Measurements

When Production must be estimated due to lack of accurate meter measurements for any reason including a defective or inaccurate meter or a meter removed for off-site calibration, and a back-up or secondary meter has not been used, the Watermaster Engineer must approve the method of estimation. A copy of the estimate calculations shall be supplied to the Watermaster Engineer.

1.10 Small Pumper Class Monitoring

The primary means for monitoring the Small Pumper Class Member groundwater use will be based on physical inspection and other means by the Watermaster Engineer, including the use of aerial photographs, land use maps, and/or satellite imagery. Should the Watermaster Engineer develop a reasonable professional opinion that a Small Pumper Class Member household is using more than 3 acre-feet per year, a meter may be required on the Small Pumper Class Member wells at the Small Pumper Class Member's expense (¶5.1.3.2).

ARTICLE 2 – PRODUCTION REPORTS

Each party to the Judgment shall monitor and record production volumes from each of their wells and report production volumes from each well to the Watermaster Engineer. Parties that produce more than 10 AFY on aggregate shall monitor and record production volumes monthly and report groundwater production volumes from each well to the Watermaster Engineer quarterly. Parties that produce up to and including 10 AFY on aggregate shall monitor and record production volumes at least quarterly and shall report these values to the Watermaster Engineer quarterly; monthly monitoring and recording is preferred for all parties. Production from each well can be listed on one Production Report form, provided by the Watermaster. Administrative Staff will provide the report to the Watermaster Engineer for review and recordation. Each report shall include:

- Identification of the Party
- County in which the property is located
- Well coordinates
- Assessor's Parcel Number (APN) of the parcel on which each well is located
- APN(s) for the parcel(s) on which the water is used for Overlying Production parties (Exhibit 4), if not previously provided[3]

[33] The Watermaster Engineer is compiling APNs applicable for each of the Overlying parties listed in Exhibit 4 of the Judgment. If a party has not already supplied APNs to the Watermaster for parcels on which produced groundwater will be used, those APNs are requested on this Production Report. For Non-Overlying parties on Exhibit 3, produced water is assumed to be used within the respective

- Unique meter number (see Section 1.6)
- Date and time for each meter reading
- Totalizer value and units for each meter reading
- A readable photograph of the totalizer readout corresponding to the last monthly measurement collected each quarter.

Reports of monthly groundwater production for the previous quarter will be submitted to the Watermaster Engineer electronically via email by the end of the first month of each quarter. Reports shall therefore be due to the Watermaster Engineer no later than January 31, April 30, July 31, and October 31 for production in the previous quarter.

service area. If produced groundwater is used outside of the service areas of Exhibit 3 parties, or outside of parcels owned by the reporting Exhibit 4 party, APNs of those areas are required.

APPLICABLE AWWA STANDARDS:

AWWA C700-15 Cold-Water Meters—Displacement Type, Metal Alloy Main Case
AWWA C701-15 Cold-Water Meters–Turbine Type, for Customer Service
AWWA C702-15 Cold Water Meters—Compound Type
AWWA C704-15 Propeller-Type Meters for Waterworks Applications
AWWA C708-15 Cold-Water Meters—Multijet Type
AWWA C712-15 Cold-Water Meters, Singlejet Type
AWWA C750-16 Transit-Time Flowmeters in Full Closed ConduitsM6 Water Meters–Selection, Installation, Testing and Maintenance, Fifth Edition
M33 Flowmeters in Water Supply, Second Edition

Appendix J

Wastewater and Recycled Water, 2018

Appendix J Wastewater and Recycled Water, 2018

Plant	Treatment Plant Effluent Flow (AF)	Reused Flow (AF)	
Lancaster WRP	14,922	12,601[1]	
Palmdale WRP	8,995	8,397[1]	
Plant	**Treatment Plant Effluent Flow (AF)**	**Irrigation (AF)**	**To Evaporation Ponds (AF)**
RCSD[2]	1,280	0	1,280
Edward AFB-Main Plant[2]	412	333	79
Edwards AFB-AFRL[2]	33	0	33

1. All the effluent is recycled. Effluent totals may not match reuse amounts because of changes in storage, losses due to evaporation, and metering differences.

2. Totals do not include potential losses but only the amounts sent to evaporation ponds and used for irrigation.

Data from: LACSD email received 4/4/19

RCSD data from email received 3/25/19

EAFB data from email received 3/14/19

Appendix K

Watermaster Administrative Financial Budgets

K-1. Financial Budget, 2018

K-2. Proposed Administrative Budget, 2019

K-3. Financial Audit, 2018

ANTELOPE VALLEY WATERMASTER
SCHEDULE OF REVENUES AND EXPENSES - PROPRIETARY FUND TYPE
BUDGET AND ACTUAL
FOR THE YEAR ENDED DECEMBER 31, 2018

	ORIGINAL BUDGET	FINAL BUDGET	2018 ACTUAL	OVER/(UNDER) BUDGET
OPERATING REVENUES				
Production Rights	$ 635,195	$ 635,195	$ 362,374	$ (272,821)
Variable Assessments	-	-	128,310	128,310
Application Fees	45,261	-	26,366	26,366
Total Operating Revenues	680,456	635,195	517,050	(144,511)
OPERATING EXPENSES				
Contracted Administrative Services	49,000	49,000	48,742	(258)
Watermaster Engineer	304,648	304,648	439,968	135,320
Watermaster Special Contract	32,510	32,510	19,969	(12,541)
Information and Document	14,900	14,900	12,346	(2,554)
Legal & Professional Fees	275,000	275,000	258,212	(16,788)
Insurance Expenses	6,000	6,000	3,521	(2,479)
Postage and Printing	650	650	182	(468)
Dues & Subscriptions	-	-	205	205
Total Operating Expenses	682,708	682,708	783,145	100,437
Operating Income (Loss)	(2,252)	(47,513)	(266,095)	(244,948)
NON-OPERATING REVENUES - UNRESTRICTED				
Imported Water Return Flow	78,000	78,000	180,364	102,364
Other Revenues	-	-	912	912
Total Non-Operating Rev - Unrestricted	78,000	78,000	181,276	103,276
NON-OPERATING REVENUES - RESTRICTED				
Replacement Water Assessments	-	-	63,732	63,732
Water Transfer Request Fees	-	-	2,100	2,100
Total Non-Operating Rev - Restricted	-	-	65,832	65,832
Total Non-Operating Revenues	78,000	78,000	247,108	169,108
Non-Operating Income (Loss)	78,000	78,000	247,108	169,108
Increase (Decrease) in Net Position	$ 75,748	$ 30,487	$ (18,987)	$ (75,840)

The accompanying notes are an integral part of the financial statements.

K-2. Proposed Administrative Budget, 2019

Exhibit "A"
Antelope Valley Watermaster
Administrative Budget CY 2019

	Revenue	BUDGET 2019	PROJECTED 2018	BUDGETED 2018	ACTUAL 2017	ACTUAL 2016
1000	Non-Overlying Production Rights (Exhibit 3)	84,225	107,109	159,250	86,312	12,345
1100	Overlying Production Rights (Exhibit 4)	370,000	370,652	425,000	319,537	55,577
1300	Small Pumpers	TBD	Deferred	Deferred	Deferred	Deferred
1500	State of California	1,035	2,992	1,035	1,035	-
1600	City of Lancaster	2,500	2,500	2,500	2,568	500
1650	Phelan Pinon Hill CSD		2,697	7,200	-	-
1675	Supporting Landowner Parties	1,710	1,749	2,210	2,057	-
1700	Federal Reserve Water Right	8,000	1,094	8,000	8,000	-
1800	Unused Federal Reserve Water Right	25,500	-	30,000	-	-
1900	Imported Water Return Flows	90,000	179,621	78,000	-	-
1950	Miscellaneous					
	Application Fees	25,000	20,900	1,500	1,500	-
	Outstanding Assessments	12,443	-	43,761		(926)
1975	New Production Parties	130	-	-	-	-
1990	Excess / (Loss) from Previous Year	(74,451)	(23,853)	(69,682)	35,013	
	Total Revenue Plus Prior Year Excess / (Loss)	**546,092**	**665,461**	**688,774**	456,022	67,496

	Expenses	BUDGET 2019	PROJECTED 2018	BUDGETED 2018	ACTUAL 2017	ACTUAL 2016
2000	Contracted Administrative Expenses					
	AVEK Interim Administrative Staff		35,000		20,000	10,954
	PWD Interim Administrative Staff		10,000		8,187	4,400
	Administrative Services - AVEK and PWD Proposal	108,901		45,000		
	Annual Financial Audit	4,000	7,000	4,000		
2100	Postage and Printing					
	Postage and P.O. Box Rental	100	96	500	163	48
	Outside Printing and Supplies	250	200	150	61	53
2200	Information and Document Management					
	Glotrans Document Management	14,400	14,400	14,400	14,400	2,000
	Computer Software	150	120	500	294	28
2300	Membership and Insurance					
	ACWA Annual Membership/Dues	400	375			
	D&O Coverage	2,200	3,520	6,000	5,783	-
2400	Watermaster Legal Services					
	Legal Services - Board and Administrative Functions	255,000	265,000	275,000	52,466	-
2500	Watermaster Engineer					
	Watermaster Engineer - Per Approved 3-Yr. Contract	252,538	289,648	289,648	348,521	-
	Watermaster Engineer - Amendment No. 1 (2018 Scope)		98,653			
	Watermaster Engineer - Amendment No. 2 (2019 Scope)	(111,412)				
	USGS Contract - Water Level Monitoring (25%)	16,225	15,900	15,000	15,000	-
2600	Watermaster Special Contract Services					
	Watermaster Engineer Recruitment Contract	-	-	-	15,000	15,000
2700	Watermaster Administrative Stabilization Fund	-	-	32,510	-	
	Total Administrative Expenses	542,752	739,912	**682,708**	**479,875**	32,483
	Net Excess / (Loss)	3,340	(74,451)		(23,853)	

Notes:
1) 2016 Administrative Assessments = $1/AF on Production Right (Fixed)
2) 2017 Administrative Assessments = **$5/AF** on **Production Right (Fixed)** and **$1/AF** on Variable Production
3) 2018 Administrative Aseessments = **$5/AF** on **Production Right and** Variable **Prod**uction
4) **Proposed 2019 Administrtaive Assessments = $5/AF on Production Right and Variable Production**

K-3. Financial Audit, 2018

ANTELOPE VALLEY WATERMASTER

COUNTY OF LOS ANGELES
PALMDALE, CALIFORNIA

AUDITED FINANCIAL STATEMENTS
DECEMBER 31, 2018

BURKEY COX EVANS & BRADFORD
Accountancy Corporation
1058 West Avenue M-14, Suite B
Palmdale, CA 93551

ANTELOPE VALLEY WATERMASTER
ORGANIZATION AND BOARD OF DIRECTORS
DECEMBER 31, 2018

BOARD OF DIRECTORS

MEMBER	OFFICE
Robert Parris	Chairman - AVEK Water Watermaster
Dennis Atkinson	Vice Chairperson – Landowner Representative
Adam Ariki	Director – LA County Water Works District 40 Rep
Derick Yurosek	Director – Landowner Representative
Leo Thibault	Director - Public Water Suppliers Representative

GENERAL MANAGER - INTERIM

Dwayne Chisam

ANTELOPE VALLEY WATERMASTER
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DECEMBER 31, 2018

FINANCIAL INFORMATION

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ACCOUNTANCY CORPORATION

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TEL: (760) 375-1508
FAX: (760) 375-8865

5122 AVENIDA ENCINAS, SUITE 120
CARLSBAD, CALIFORNIA 92008-4342
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JANETTE HENRIQUEZ, CPA
EMILY SCHOONMAKER, CPA
MAYANK MADHAVANI, CPA, MBA
HAROLD MANNING, CPA
SARAH E. COX, EA

INDEPENDENT AUDITORS' REPORT

Board of Directors
Antelope Valley Watermaster
Palmdale, California

Report on the Financial Statements

We have audited the accompanying financial statements of the business-type activities of Antelope Valley Watermaster (the Watermaster), as of and for the year ended December 31, 2018, and the related notes to financial statements, which collectively comprise the Watermaster's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Watermaster's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the business-type activities of Antelope Valley Watermaster as of December 31, 2018, and the respective changes in financial position and, where applicable, cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and budgetary comparison information on pages 3 through 5 and page 14, respectively, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Burkey Cox Evans + Bradford

BURKEY COX EVANS & BRADFORD
Accountancy Corporation

Palmdale, California
July 25, 2019

MANAGEMENT'S DISCUSSION AND ANALYSIS

Statement of Net Position

	December 31, 2018	December 31, 2017	Change
Assets:			
Current Assets	$79,335	$126,243	($46,908)
Total Assets	79,335	126,243	(46,908)
Liabilities:			
Current Liabilities	56,083	84,004	(27,921)
Total Liabilities	56,083	84,004	(27,921)
Net Position:			
Unrestricted	(42,580)	42,239	(84,819)
Restricted	65,832	-	65,832
Total Net Position	23,252	42,239	(18,987)
Total Liabilities and Net Position	$79,335	$126,243	($46,908)

Current assets consist of cash in bank and accounts receivable from customers. Current liabilities consist of accounts payable to suppliers. As noted earlier, net position may serve over time as a useful indicator of a government's financial position. In the case of the Watermaster, assets exceeded liabilities by $23,252 and $42,239 as of December 31, 2018 and 2017, respectively.

At the end of fiscal years 2018, the Watermaster showed a positive balance in its unrestricted net position of $23,252 which may be utilized in future years.

Statement of Revenues, Expenses, and Changes in Net Position

	December 31, 2018	December 31, 2017	Change
Operations:			
Operating Revenues	$517,050	$410,474	$106,576
Operating Expenses	783,145	405,339	377,806
Net Income (Loss) from Operations	(266,095)	5,135	(271,230)
Non-Operating Revenues - Unrestricted:			
Imported Water Return Flow	180,364	1,300	179,064
Other Revenues	912	-	912
Total Non-Operating Revenues - Unrestricted	181,276	1,300	179,976
Non-Operating Revenues - Restricted:			
Replacement Water Assessments	63,732	-	63,732
Water Transfer Request Fees	2,100	-	2,100
Total Non-Operating Revenues - Restricted	65,832	-	65,832
Net Income from Non-Operations	247,108	1,300	245,808
Change In Net Position	(18,987)	6,435	(25,422)
Net Position, Beginning of Year	42,239	35,804	6,435
Net Position, End of Year	$23,252	$42,239	($18,987)

The Statement of Revenues, Expenses, and Changes in Net Position shows how the Watermaster's net position changed during the years. In the case of the District, net position decreased by $18,987 for the year ended December 31, 2018.
A closer examination of the sources of changes in net position reveals that:

The Watermaster's fiscal year 2018 operating revenues increased by $106,576, and the operating expenses increased by $377,806. The increase in operating revenues and operating expenses is primarily due to fiscal year 2016 being the Watermaster's first year of operations. Operating revenues for fiscal year 2018 saw a full year of production rights and variable assessments being paid to the Watermaster and the increase in operating expenses is primarily due to fees paid to the Watermaster Engineer.

The Watermaster's fiscal year 2018 non-operating revenues increased by $245,808. The increase in non-operating revenues is primarily due to imported water return flow charges and replacement water assessments.

BUDGETARY HIGHLIGHTS

Total operating revenues were $144,511 below budget projections for fiscal year ended December 31, 2018. The lower than budgeted revenues is primarily due to the Watermaster receiving lower than anticipated overlying production rights revenues.

Total operating expenses were $100,437 above budget projections for fiscal year ended December 31, 2018. Of this amount, $135,320 is related higher than anticipated Watermaster Engineer costs.

ECONOMIC FACTORS AND NEXT YEAR'S BUDGET AND RATES

In fiscal year 2019, revenues are projected to increase by 6% to $546,092. This is primarily due to a projected increase in administrative assessments on production from parties not listed in the Judgement.

Expenses are projected to decrease to $542,752. This is primarily due to a projected $20,000 decrease in legal services and a $148,000 decrease in Watermaster Engineer scope-of-work.

CONTACTING THE WATERMASTER'SFINANCIAL MANAGEMENT

This financial report is designed to provide our customers, creditors, and other interested parties with a general overview of the Watermaster's finances and to demonstrate the Watermaster's accountability for the money it receives. If you have questions about this report or need additional information, contact the Watermaster's General Manager at 6500 W. Avenue N, Palmdale, California 93551.

BASIC FINANCIAL STATEMENTS

ANTELOPE VALLEY WATERMASTER
STATEMENT OF NET POSITION
AS OF DECEMBER 31, 2018

ASSETS	ENTERPRISE FUND DECEMBER 31, 2018
CURRENT ASSETS	
Cash and Cash Equivalents	$ 3,047
Accounts Receivable	76,288
Total Current Assets	79,335
LIABILITIES	
CURRENT LIABILITIES	
Accounts Payable	56,083
Total Current Liabilities	56,083
NET POSITION	
Unrestricted	(42,580)
Restricted	65,832
Total Net Position	$ 23,252

The accompanying notes are an integral part of the financial statements.

ANTELOPE VALLEY WATERMASTER
STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION
FOR THE YEAR ENDED DECEMBER 31, 2018

	ENTERPRISE FUND DECEMBER 31, 2018
OPERATING REVENUES	
Fixed Production Rights	$ 362,374
Variable Assessments	128,310
Application Fees	26,366
Total Operating Revenues	517,050
OPERATING EXPENSES	
Contracted Administrative Services	48,742
Watermaster Engineer	439,968
Watermaster Special Contract	19,969
Information and Document	12,346
Legal & Professional Fees	258,212
Insurance Expenses	3,521
Postage and Printing	182
Dues & Subscriptions	205
Total Operating Expenses	783,145
Operating Income (Loss)	(266,095)
NON-OPERATING REVENUES - UNRESTRICTED	
Imported Water Return Flow	180,364
Other Revenues	912
Total Non-Operating Revenues - Unrestricted	181,276
NON-OPERATING REVENUES - RESTRICTED	
Replacement Water Assessments	63,732
Water Transfer Request Fees	2,100
Total Non-Operating Revenues - Restricted	**65,832**
Non-Operating Income	247,108
Increase (Decrease) in Net Position	(18,987)
NET POSITION - BEGINNING OF YEAR	42,239
NET POSITION - END OF YEAR	$ 23,252

The accompanying notes are an integral part of the financial statements.

ANTELOPE VALLEY WATERMASTER
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED DECEMBER 31, 2018

	ENTERPRISE FUND DECEMBER 31, 2018
CASH FLOWS FROM OPERATING ACTIVITIES	
Cash Received from Customers	$ 723,032
Cash Paid for Supplies to Suppliers	811,066
Net Cash Provided (Used) by Operating Activities	(88,034)
Net Change in Cash and Cash Equivalents	(88,034)
Cash and Cash Equivalents - Beginning	91,081
Cash and Cash Equivalents - Ending	$ 3,047
RECONCILIATION OF OPERATING INCOME (LOSS) TO NET CASH PROVIDED (USED) BY OPERATING ACTIVITIES	
Operating Income (Loss)	$ (18,987)
Adjustments to Reconcile Operating Income (Loss) to Net Cash Provided (Used) by Operating Activities:	
Changes in Assets - (Increase)/Decrease in:	
Accounts Receivable	(41,126)
Changes in Liabilities - Increase/(Decrease) in:	
Accounts Payable	(27,921)
Net Cash Provided (Used) by Operating Activities	$ (88,034)

The accompanying notes are an integral part of the financial statements.

NOTES TO FINANCIAL STATEMENTS

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Antelope Valley Watermaster (the Watermaster) financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America (GAAP) as applied to governmental units. The Governmental Accounting Standards Board (GASB) is the accepted standard-setting body of establishing governmental accounting and financial reporting principles. The more significant of the Watermaster's accounting policies are described below.

A. Description of the Reporting Entity

The Watermaster was formed by the Antelope Valley Groundwater Cases Final Judgment Santa Clara Case No. 1-05-CV-049053 signed on December 23, 2015, to provide groundwater production within the Antelope Valley Groundwater Basin. The Judgment provides for a Watermaster Board comprising of two Landowner Representatives and single Representatives from the Antelope Valley – East Kern Water Agency, Los Angeles County Waterworks District No. 40 and the Public Water Suppliers. The Watermaster operates under an elected Board of Directors-Manager form of government.

In evaluating how to define the Watermaster, for financial reporting purposes, management has considered all potential component units. The decision to include a potential component unit in the reporting entity was made by applying the criteria set forth in GAAP. The basic – but not the only – criterion for including a potential component unit within the reporting entity is the governing body's ability to exercise oversight responsibility. The most significant manifestation of this ability is financial interdependency. Other manifestations of the ability to exercise oversight responsibility include, but are not limited to, the selection of governing authority, the designation of management, the ability to significantly influence operations and accountability for fiscal matters. The other criterion used to evaluate potential component units for inclusion or exclusion from the reporting entity is the existence of special financing relationships, regardless of whether the Watermaster is able to exercise oversight responsibilities. Based upon the application of these criteria the Watermaster has no potential component units.

The Watermaster, for financial purposes, includes all funds relevant to the operations of the Watermaster. The Board of Directors has governance responsibilities over all activities related to the Watermaster. The Watermaster receives funding from local, county, state and federal government sources and must comply with the requirements of these funding source entities. However, the Watermaster is not included in any other governmental "reporting entity" as defined in Section 2100, Codification of Governmental Accounting and Financial Reporting Standards, since board members are elected by the public and have decision making authority, the power to designate management, the responsibility to significantly influence operations and primary accountability for fiscal matters.

The Watermaster is a reporting entity which consists of the Watermaster as the oversight unit. Oversight responsibility is determined by such criteria as financial interdependency, selection of governing authority and designation of management, budget control and ability to significantly influence operations.

B. Measurement Focus, Basis of Accounting, and Financial Statement Presentation

The Watermaster accounts for its operation in an enterprise fund using the economic resources measurement focus and the accrual basis of accounting. Revenues are recorded when earned, and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows.

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

B. Measurement Focus, Basis of Accounting, and Financial Statement Presentation (Continued)

Enterprise funds are used to account for operations that are financed and operated in a manner similar to private business enterprises, where the intent of the governing body is that the costs (expenses, including depreciation) of providing goods or services to the general public on a continuing basis be financed or recovered primarily through user charges, or where the governing body has decided periodic determination of revenues earned, expenses incurred, and/or net income is appropriate for capital maintenance, public policy, management control, accountability, or other purposes. Operating revenues are those revenues that are generated by water production assessments, while operating expenses pertain to the furnishing of those services. Non-operating revenues and expenses are those revenues and expenses generated that are not directly associated with the normal business of water services. Non-operating revenues mainly consist of program grants, tax revenues, investment income, and miscellaneous income.

C. Budgets and Budgetary Accounting

In accordance with the Judgment, the Watermaster shall prepare a proposed administrative budget for each Year. The Watermaster shall hold a public hearing regarding the proposed administrative budget and adopt an administrative budget. The administrative budget shall set forth budgeted items and Administrative Assessments in sufficient detail to show the allocation of the expenses among the Producers. The Watermaster's Governing Board satisfied these requirements.

The Judgment provides that administrative assessments to fund the administrative budget are to be levied uniformly on an annual basis. In all but two cases, the assessments are to be levied according to the production right, not according to actual production. The two exceptions are the United States, which is subject to assessment only on its actual production, and the unused federal reserved water right, which is subject to assessment only if used by the non-overlying production rights holders. Accordingly, the assessments on these two categories can only be calculated and levied after the end of each year.

All budgets were adopted on a basis that materially conforms to generally accepted accounting principles (GAAP).

D. Cash and Cash Equivalents

All deposits of the Watermaster are made in board-designated official depositories and are secured as required by State Law. The Watermaster may designate as an official depository any bank or savings and loan association. Also, the Watermaster may establish time deposit accounts such as money market accounts and certificates of deposits.

E. Accounts Receivable and Allowances for Uncollectible Accounts

Accounts receivable are recorded at gross value. Allowances for uncollectible accounts are maintained on all types of receivables that historically experience uncollectible amounts. Allowances are based on collection experience and management's evaluation of the current status of existing receivables. There is no allowance for uncollectible accounts as of December 31, 2018, as management believes all accounts will be collected.

F. Accrued Liabilities

All payables and accrued liabilities are reported in the financial statements. In general, liabilities that mature or come due for payment during the fiscal year are considered to have been made with current available financial resources.

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

G. Water Production Rights

Fixed and variable production rights are assessed at $5 per acre foot.

H. Net Position

The financial statements utilize a net position presentation. Net position is categorized as follows:

- **Net Investment in Capital Assets** – This component of net position consists of capital assets, net of accumulated depreciation and reduced by any debt outstanding against the acquisition, construction, or improvement of those assets. As of December 31, 2018, the Watermaster has no Net Investments in Capital Assets.

- **Restricted Net Position** – This component of net position represents constraints on resources that are either a) externally imposed by creditors, grantors, contributors, or laws or regulations of other governments or b) imposed by law through constitutional provisions or enabling legislation. As of December 31, 2018, the Watermaster has $65,832 in Restricted Net Assets for replacement water assessments and water transfer request fees which are restricted for buying replacement water.

- **Unrestricted Net Position** – This component of net position consists of net position that does not meet the definition of *restricted* or *net investment in capital assets*.

When an expenditure is incurred for purposes for which both restricted and unrestricted fund balance is available, the Watermaster considers restricted funds to have been spent first.

I. Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States require management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

J. Recent Pronouncements

In June 2017 the GASB issued Statement No 87, "Leases". The objective of this Statement is to better meet the information needs of financial statement users by improving accounting and financial reporting for leases by governments. This Statement increases the usefulness of governments' financial statements by requiring recognition of certain lease assets and liabilities for leases that previously were classified as operating leases and recognized as inflows of resources or outflows of resources based on the payment provisions of the contract. It establishes a single model for lease accounting based on the foundational principle that leases are financings of the right to use an underlying asset. Under this Statement, a lessee is required to recognize a lease liability and an intangible right-to-use lease asset, and a lessor is required to recognize a lease receivable and a deferred inflow of resources, thereby enhancing the relevance and consistency of information about governments' leasing activities. The requirements of this Statement are effective for reporting periods beginning after December 15, 2019. Earlier application is encouraged. The Watermaster is evaluating the impact of this standard on the financial statements.

NOTE 2 – CASH AND CASH EQUIVALENTS

Cash and cash equivalents consists of the following:

		Dececmber 31, 2018
Unrestricted		
Cash in Bank	$	3,047
Total Cash	$	3,047

NOTE 3 – ACCOUNTS RECEIVABLE

Accounts receivable consist of the following:

		Dececmber 31, 2018
Accounts Receivable	$	76,288
Less: Allowance for Doubtful Accounts		-
Net Accounts Receivable	$	76,288

NOTE 4 –JOINT POWERS AGREEMENT (ACWA/JPIA)

The Watermaster is a member of the Association of California Water Agencies Joint Powers Insurance Authority (ACWA/JPIA). The relationship between the Watermaster and the JPA is such that the JPA is not a component unit of the Watermaster's for financial reporting purposes.

The JPA is composed of nearly 400 California water agencies and is organized under a joint powers agreement pursuant to California Government Code §6500 et seq. The California JPIA began covering claims of its members in 1979. The purpose of the JPA is to arrange and administer programs for the pooling of self-insured losses, to purchase excess insurance or reinsurance, and to arrange for group purchased insurance for property and other lines of coverage. The JPA is independently accountable for its fiscal matters. The insurance group maintains its own accounting records. Budgets are not subject to any approval other than that of the governing board. Each member government has an elected official as its representative on the Board of Directors. The Board operates through a nine-member Executive Committee.

During the past three fiscal years, none of the programs of protection experienced settlements or judgments that exceeded pooled or insured coverage. There were also no significant reductions in pooled or insured liability coverage in 2018. The Watermaster's share of year-end assets, liabilities or fund equity has not been calculated. Complete separate financial statements for the ACWA/JPIA may be obtained at 2100 Professional Drive, Roseville, California 95661.

NOTE 5 – EXCESS OF EXPENDITURES OVER APPROPRIATIONS

Excess of expenditures over appropriations for the year ended December 31, 2018 were as follows:

	December 31, 2018
Watermaster Engineer	$ 135,320
Dues & Subscriptions	205

NOTE 6 – RELATED PARTIES

For fiscal year ended December 31, 2018, Palmdale Water District provided administrative staff who handle administrative support, document management, and all communication with Parties/Groundwater Producers. Antelope Valley - East Kern Water Agency provided financial and consulting support.

NOTE 7 – COMPLIANCE AND ACCOUNTABILITY

A. Finance-Related Legal and Contractual Provisions

In accordance with GASB Statement No. 38, "Certain Financial Statement Note Disclosures," violations of finance-related legal and contractual provisions, if any, are reported below, along with actions taken to address such violations:

Violation	Action Taken
None reported.	Not applicable.

B. Deficit Fund Balance of Fund Net Position of Individual Funds

The following are funds having deficit fund balances or fund net assets at year-end, if any, along with remarks, which address such deficits:

Fund Name	Deficit Amount	Remarks
Unrestricted	$42,580	As of December 31, 2018, the Watermaster has a deficit unrestricted fund balance.

REQUIRED SUPPLEMENTARY INFORMATION

ANTELOPE VALLEY WATERMASTER
SCHEDULE OF REVENUES AND EXPENSES - PROPRIETARY FUND TYPE
BUDGET AND ACTUAL
FOR THE YEAR ENDED DECEMBER 31, 2018

	ORIGINAL BUDGET	FINAL BUDGET	2018 ACTUAL	OVER/(UNDER) BUDGET
OPERATING REVENUES				
Production Rights	$ 635,195	$ 635,195	$ 362,374	$ (272,821)
Variable Assessments	-	-	128,310	128,310
Application Fees	45,261	-	26,366	26,366
Total Operating Revenues	680,456	635,195	517,050	(144,511)
OPERATING EXPENSES				
Contracted Administrative Services	49,000	49,000	48,742	(258)
Watermaster Engineer	304,648	304,648	439,968	135,320
Watermaster Special Contract	32,510	32,510	19,969	(12,541)
Information and Document	14,900	14,900	12,346	(2,554)
Legal & Professional Fees	275,000	275,000	258,212	(16,788)
Insurance Expenses	6,000	6,000	3,521	(2,479)
Postage and Printing	650	650	182	(468)
Dues & Subscriptions	-	-	205	205
Total Operating Expenses	682,708	682,708	783,145	100,437
Operating Income (Loss)	(2,252)	(47,513)	(266,095)	(244,948)
NON-OPERATING REVENUES - UNRESTRICTED				
Imported Water Return Flow	78,000	78,000	180,364	102,364
Other Revenues	-	-	912	912
Total Non-Operating Rev - Unrestricted	78,000	78,000	181,276	103,276
NON-OPERATING REVENUES - RESTRICTED				
Replacement Water Assessments	-	-	63,732	63,732
Water Transfer Request Fees	-	-	2,100	2,100
Total Non-Operating Rev - Restricted	-	-	65,832	65,832
Total Non-Operating Revenues	78,000	78,000	247,108	169,108
Non-Operating Income (Loss)	78,000	78,000	247,108	169,108
Increase (Decrease) in Net Position	$ 75,748	$ 30,487	$ (18,987)	$ (75,840)

The accompanying notes are an integral part of the financial statements.

Appendix L

Notice List

Appendix L Notice List

Producer A-Z	Party	Producer Name	Street Address	City, State and Zip	Phone	Email
60th Street Association Water System	Exhibit 4	60th Street Association Water System	5929 Margarita Lane	Rosamond, Ca 93560		
Adams Bennett Investments, LLC	Exhibit 4	Adams Bennett Investments, LLC	200 S. Main St Suite 200	Corona, CA 92882		mye@rmca.com
Alegre, Juan & Ceidy	New Production	Juan and Ceidy Alegre	4001 East Avenue E	Lancaster, Ca 93535		
Ambriz, Juan	New Production	Juan Ambriz	PO Box 382	Pearblossom, Ca 93553	(661) 713-3443	
Antelope Park Mutual Water Company	Exhibit 4	Antelope Park Mutual Water Company	P.O. Box 1712	Lancaster, CA 93539		apmw615@yahoo.com, greydog1835@yahoo.com
Antelope Valley Joint Union High School District	Exhibit 4	Antelope Valley Joint Union High School District	44811 Sierra Hwy	Lancaster, CA 93534		
Antelope Valley Mobile Estates	Exhibit 4	Antelope Valley Mobile Estates	9301 Samoline Ave.	Downey, CA 90240		jeanettesc@aol.com
Antelope Valley Resource Conservation District	Unauthorized Pumper	Antelope Valley Resource Conservation District	10148 West Avenue I	Lancaster, CA 93536		
Antelope Valley Water Storage LLC	Exhibit 4	Antelope Valley Water Storage LLC	4700 Wilshire Blvd	Los Angeles, CA 90010		mbeuhler@wswaterbank.com
Aqua-J Mutual Water Company	Exhibit 4	Aqua-J Mutual Water Company	P.O. Box 4778	Lancaster, CA 93539	(661) 733-6147	dougm@executives.com
AV Solar Ranch 1, LLC	Exhibit 4	AV Solar Ranch 1, LLC	300 Exelon Way, Suite 330	Kennett Square, PA 19348		
AVEK	Exhibit 4	AVEK	6500 W Avenue N	Palmdale, CA 93551		dchisam@avek.org
Averydale Mutual Water Company	Exhibit 4	Averydale Mutual Water Company	P.O. Box 191 Lancaster, CA 93584	Lancaster, CA 93584		bbraman1@msn.com, averydale@verizon.net
Basner, William	Unauthorized Pumper	William Basner c/o Aaron DeFranco	48745 3 Points Road	Lake Hughes, CA 93532	909-583-4045	a.defranco@kw.com
Baxter Mutual Water Company	Exhibit 4	Baxter Mutual Water Company	46163 125th Street East	Lancaster, CA 93535		tencowfam@gmail.com
Big Rock Mutual Water Company	Exhibit 4	Big Rock Mutual Water Company	32810 165th St E	Llano, CA 93544		
Bittner, George	Exhibit 4	George Bittner	P.O. Box 720173	Pinon, CA 92372		
Bleich Flat Mutual Water Company	Exhibit 4	Bleich Flat Mutual Water Company	P.O. Box 1307	Lancaster, CA 93584		cassidy.skelton@yahoo.com, bfwaterco@gmail.com
Blum, Sheldon R. Blum, Trustee of the 1998 Family Trust	Exhibit 4	Sheldon R. Blum, Trustee of the 1998 Family Trust	2242 Camden Ave. Suite 104	San Jose, CA 95124		blumlaw@sbcglobal.net
Bolthouse Properties LLC c/o Brad DeBranch	Exhibit 4	Bolthouse Properties LLC c/o Brad DeBranch	PO Box 20157	Bakersfield, CA 93390		bdebranch@bolthouseproperties.com, dyurosek@bolthouseproperties.com
Bookman: Thomas and Julie Bookman 2007 Trust	Exhibit 4	Thomas and Julie Bookman 2007 Trust	46806 120th St. E	Lancaster, CA 93535		
Boron Community Services District	Exhibit 3	Boron Community Services District	PO Box 1060	Boron, CA 93596		boroncsd@yahoo.com
Bridwell, James & Elizabeth	Exhibit 4	James & Elizabeth Bridwell	9363 Colley Pl.	Littlerock, Ca 93543		
Burrows/200 A40 H LLC	Exhibit 4	Burrows/200 A40 H LLC	PO Box 802948	Santa Clarita, CA 91380		
C. Louise R. Close Living Trust	Exhibit 4	C. Louise R. Close Living Trust				
Calandri Water Company, LLC.	Exhibit 4	Calandri Water Company, LLC.	P.O. Box 8010	Lancaster, CA 93539		connie@calandrisonriseferms.com
California Department of Corrections and Rehabilitation	State of California	California Department of Corrections and Rehabilitation	9838 Old Placerville Road, Suite B-2	Sacramento, CA 95827	(916) 255-3029	SBDVBEAdvocate@CDCR.ca.gov
California Department of Military	State of California	California Department of Military	Joint Force Headquarters 9800 Goethe Road	Sacramento, CA 95827	(916) 854 – 3000	
California Department of Parks and Recreation	State of California	California Department of Parks and Recreation	P.O. Box 942896	Sacramento, CA 94296	(916) 653-6995	info@parks.ca.gov
California Department of Transportation	State of California	California Department of Transportation	1120 N Street MS 49	Sacramento, CA 95814	(916) 654-7287	Assistant.to.Budgets@dot.ca.gov
California Department of Veteran Affairs	State of California	California Department of Veteran Affairs	P.O. Box 942895	Sacramento, CA 94295	(916) 653-1961	phil.mcallister@calvet.ca.gov
California Department of Water Resources	State of California	California Department of Water Resources	P.O. Box 1187	Pearblossom, Ca 93553	(916) 653-5791	
California Highway Patrol	State of California	California Highway Patrol	601 North 7th Street	Sacramento, CA 95811	(916) 843-3000	
California State Lands Commission	State of California	California State Lands Commission	100 Howe Avenue, Suite 100 South	Sacramento, CA 95825	(916) 574-1900	Brian.Bugsch@slc.ca.gov
California Water Services Company	Exhibit 3	California Water Services Company	5015 West Avenue L-14 Suite #2	Quartz Hill, CA 93536		jojede@calwater.com
Castillo, Juan	New Production	Alma R. Fong	1534 East Lingard Street	Lancaster, Ca 93535		
Chavez, Effren	Exhibit 4	Effren Chavez	17340 High Acres Ave.	Palmdale, CA 93591		
City of Lancaster	Others with Rights to Produce	City of Lancaster	44933 Fern Avenue	Lancaster, CA 93534		
City of Los Angeles, Department of Airports	Exhibit 4	City of Los Angeles, Department of Airports	6053 W. Century Blvd., Suite 400	Los Angeles, CA 90045		VHowell@lawa.org, spowell@kmtg.com
Clan Keith Real Estate Investments, LLC	Supporting Land Owners	Clan Keith Real Estate Investments, LLC	Latham & Watkins c/o Lucas Quass 355 South Grand Avenue, Suite 100	Los Angeles, CA 90071	(213) 891-8532	lucas.quass@lw.com
Collins, Raymond & Maryam	New Production	Raymond & Maryam Collins	1865 Greenfield Avenue, #201	Los Angeles, Ca 90025	(651) 639-9449	
Colorado Mutual Water Co.	Exhibit 4	Colorado Mutual Water Co.	P.O. Box 482	Lancaster, CA 93584		showtimeranch@msn.com
Connelly, Myles	New Production	Myles Connelly	PO Box 1816	Simi Valley, Ca 93062		
Cooper, Ronald	New Production	Ronald J. Cooper	1155 W 104th Street	Los Angeles, Ca 90044	(760) 388-4907	carrieskorn@gmail.com
Copa De Oro Land Company	Exhibit 4	Copa De Oro Land Company	315 South Beverly Drive Suite 407	Beverly Hills, CA 90212		
Corona, Gilardo	Qualified Small Pumpers	Gilardo R. Corona	8715 Favorito Ave.	Rosamond, CA 93560	(661) 256-3168	
County Sanitation Districts of Los Angeles 14 & 20	Exhibit 4	County Sanitation Districts of Los Angeles 14 & 20	1955 Workman Mill Rd.	Whittier, CA 90601		
Crystal Organic LLC/Grimmway/Lapis	Exhibit 4	Crystal Organic LLC/Grimmway/Lapis	P.O. Box 81498	Bakersfield, CA 93380		jgreen@grimmway.com, gcappello@grimmway.com
Dayan, Benjamin & Flor	Unauthorized Pumper	Benjamin & Flor Dayan	449 N. Laurel	Los Angeles, CA 90048		
Del Carmen Vala, Maria	New Production	Maria Del Carmen Vala	2131 Ivanhoe Avenue	Oxnard, Ca 93030		
Del Sur Gardens, LLC. (RV Park)	New Production	Del Sur Ranch LLC			562-908-4288 ext.2705	spegadiotes@LACSD.org
Del Sur Ranch LLC	Exhibit 4	Del Sur Ranch LLC	16633 Ventura Blvd. Suite 1040	Encino, CA 91436		george@haggargroup.com
Derrick, Olin	Over Pumping Small Pumper	Becki Derrick	8847 East Avenue G-12	Lancaster, CA 93535		
Desert Breeze MHP, LLC	Supporting Land Owners	Desert Breeze MHP, LLC	c/o Daniel Epstein P.O. Box 17482	Encino, CA 91416	(661) 256-4577	
Desert Lake Community Services District	Exhibit 3	Desert Lake Community Services District	12200 Del Oro Street	Boron, CA 93596		desertlakecsd@gmail.com
Dickey, Randall & Billie	Exhibit 4	Randall and Billie Dickey	P.O. Box 694	Pearblossom, CA 93553		
Edwards Air Force Base	Supporting Land Owners	412 CE/CENP – FIS2AA	255 N. Rosamond Blvd Bldg 3500	Edwards, AFB, CA 93524	(661) 277-4695	gerald.boetsch.1@us.af.mil
El Dorado Mutual Water Company	Exhibit 4	El Dorado Mutual Water Company	PO Box 900519	Palmdale, CA 93590		eldmwc@gmail.com
eSolar Inc.; Sierra Sun Tower, LLC	Exhibit 4	eSolar Inc.; Sierra Sun Tower, LLC	P.O. Box 10189	Burbank, CA 91510		
eSolar Inc.; Tumbleweed Suntower LLC	Exhibit 4	eSolar Inc.; Tumbleweed Suntower LLC	3355 W. Empire Ave. Suite 200	Burbank, CA 91504		
eSolar Inc.; Red Dawn Suntower LLC	Exhibit 4	eSolar Inc.; Red Dawn Suntower LLC	3355 W. Empire Ave. Suite 200	Burbank, CA 91504		
Esparza Jimenez, David	New Production	David Esparza Jimenez	2330 East Avenue J-8 #39	Lancaster, Ca 93535		
Espinoza, Leticia	New Production	Leticia Espinoza	1805 La France Drive	Bakersfield, Ca 93307		
Estrada, Juan & Mayra	New Production	Juan & Mayra Estrada	PO Box 2071	Littlerock, Ca 93543	(770) 496-1893	
Evans, Lawrence Dean and Susan	Exhibit 4	Lawrence Dean Evans, Jr. and Susan Evans	P.O. Box 560	Pearblossom, Ca 93553		
Evergreen Mutual Water Company	Exhibit 4	Evergreen Mutual Water Company	4646 Lumbar Street	Lancaster, CA 93535		todd_lemen@msn.com
Eyherabide Sheep Co., Eyherabide Land Co., LLC	Supporting Land Owners	Eyherabide Sheep Co., Eyherabide Land Co., LLC	5284 Kent Drive	Bakersfield, CA 93306		
Felder, William	Over Pumping Small Pumper	William Felder	5859 East Avenue F	Lancaster, CA 93535	661-609-9866	
Findley, Ruth	Exhibit 4	Ruth Findley	9363 Colley Pl.	Littlerock, CA 93543		

Appendix L Notice List

Producer A-Z	Party	Producer Name	Street Address	City, State and Zip	Phone	Email
First Mutual Water Company	Exhibit 4	First Mutual Water Company	5848 Gobi Avenue	Rosamond, Ca 93560		papa@global.net
First Solar Development/Willow Springs	Exhibit 4	Willow Springs/First Solar Development	2049 Century Park East, Suite 3550	Los Angeles, CA 90067		BHerrema@bhfs.com
First Solar, Inc.	Exhibit 4	First Solar, Inc.	135 Main Street, 6th Floor	San Francisco, CA 94105		Jack.Pigott@firstsolar.com
Fong, Alma	New Production	Alma Fong	PO Box 989	Littlerock, Ca 93543		
Frankenburg, Leah	Exhibit 4	Leah Frankenberg	PO Box 99	Littlerock, Ca 93543	661-623-3197	
French, Christopher & Nancy	New Production	Nancy & Christopher French	4800 50th Street West	Rosamond, Ca 93560		
Garcia, Ervin & Espina, Caroline	New Production	Ervin Garcia & Caroline Espina	PO Box 456	Littlerock, Ca 93543		alegre4321@aol.com
Godde: Steve Pam and Gary	Exhibit 4	Steve, Pamela & Gary Godde c/o Rife Silva & Co LLC	22 State Route 208	Yerington, NV 89447		g_godde@msn.com
Gorrindo Resourceful LLC	Exhibit 4	Gorrindo Resourceful LLC	P.O. Box 341	Minden, NV 89423		bob@gorrindo.com
Granite Construction Company (Big Rock Facility)	Exhibit 4	Granite Construction Company (Big Rock Facility)	213 East Avenue M	Lancaster, CA 93535		William.taylor@gcinc.com
Granite Construction Company (Little Rock Sand and	Exhibit 4	Granite Construction Company (Little Rock Sand and	213 East Avenue M	Lancaster, CA 93535		William.Taylor@gcinc.com
Griffin, Laura	Exhibit 4	Laura Griffin	48009 70th Street East	Lancaster, CA 93535		
H & N Development Co. West Inc.	Exhibit 4	H & N Development Co. West Inc.	P.O. Box 1496	Santa Cruz, CA 95061		
Healy Enterprises, Inc.	Exhibit 4	Jane Healy and Healy Enterprises Inc.	4450 Village Ct Suite 103	Palm Desert, CA 92260		
Hemme, John	Over Pumping Small Pumper	John Hemme	43719 Sierra Highway	Lancaster, CA 93534		
Hernandez, Luis	Exhibit 4	Luis Hernandez	49007 120th Street East	Lancaster, CA 93535		
High Desert Dairy	Exhibit 4	High Desert Dairy	9753 East Avenue F-8	Lancaster, CA 93535		vandamgary@gmail.com, avfarming@yahoo.com
Hounanian, Masis	New Production	Masis Hounanian	10909 Woodward Ave	Sunland, Ca 91040		
Hyde, Richard	Qualified Small Pumpers	Richard L Hyde	43627 Colony Drive	Lancaster, CA 93536		
Irma Ann Carle Trust, Irma-Anne Carle, Trustee	Exhibit 4	Irma Ann Carle Trust, Irma-Anne Carle, Trustee	30701 Longview Rd	Pearblossom, Ca 93553		
Joshua Memorial Park	Unauthorized Pumper	Joshua Memorial Park	808 East Lancaster Blvd	Lancaster, CA 93535		
Juniper Hills Land Conservation Trust	New Production	Juniper Hills Land Conservation Trust	1634 W. Glenoaks Blvd. #254	Glendale, CA 91201		
Korn, Carrie	New Production	Carrie Korn	253 Mountain Avenue	Monrovia, Ca 91016	(661) 944-1384	
Kyle Revocable Living Trust	Exhibit 4	Trustees of The Kyle Revocable Living Trust	12345 E. Ave. J	Lancaster, CA 93535		gitrdunkyle@msn.com
La Cosepa (Christ of the Desert)	New Production	La Cosepa Christ of the Desert	3900 East 170th Street	Lake Los Angeles, Ca 93591		
Land Projects Mutual Water Co.	Exhibit 4	Land Projects Mutual Water Co.	8810 W Ave. E8	Lancaster, CA 93536		
Landale Mutual Water Co.	Exhibit 4	Landale Mutual Water Co.	P.O. Box 5808	Lancaster, CA 93539		landale1948@gmail.com
Landaverde, Angela	Qualified Small Pumpers	Angela Landaverde	10503 Alexander Avenue	South Gate, CA 90280		
Lands of Promise Mutual Water Company	Exhibit 4	Lands of Promise Mutual Water Company	P.O. Box 874	Buttonwillow, CA 93506		davejackson@yahoo.com
Lane Family Trust	Exhibit 4	Lane Family Trust	42220 10th St. West Suite 101	Lancaster, CA 93534		mvbs@verizon.net
LeClair Robert, Unini Marie	Exhibit 4	LeClair Robert, Unini Marie	PO Box 207	Pearblossom, Ca 93553		
Leer, James and Dianna	Exhibit 4	James and Diana Leer	11850 Nearwood Rd.	Juniper Hills, CA 93543	(661) 265-7788	roe@mail.org
Littlerock Aggregate Co., Inc., Holliday Rock Co.	Exhibit 4	Littlerock Aggregate Co., Inc., Holliday Rock Co.	1401 N. Benson Ave.	Upland, CA 91786		
Littlerock Creek Irrigation District	Exhibit 3	Littlerock Creek Irrigation District	35141 87th Street East	Littlerock, Ca 93543		bhogan@avc.edu
Llano Del Rio Water Company	Exhibit 4	Llano Del Rio Water Company	32810 S. 165th St East	Llano, CA 93544		
Llano Mutual Water Company	Exhibit 4	Llano Mutual Water Company	32810 S. 165th St East	Llano, CA 93544		
Long Valley Road LP	Over Pumping Small Pumper	Long Valley Road LP	23475 Long Valley Road	Woodland Hills, CA 91367		
Los Angeles County Waterworks District No. 40	Exhibit 3	Los Angeles County Waterworks District No. 40	PO Box 7508	Alhambra, CA 91802		aariki@dpw.lacounty.gov
LV Ritter Ranch	Supporting Land Owners	LV Ritter Ranch	333 South Hope Street 16th Floor	Los Angeles, CA 98071		
Magana, Paul (Woodstone Construction)	New Production	Paul Magana	2332 Oak Crest Avenue	Palmdale, Ca 93550	(661) 713-3443	
Maritorena, Jose	Exhibit 4	Trustees of the Maritorena Living Trust	300 Panama Rd.	Bakersfield, CA 93307		jmsheep@aol.com
McWilliams, Dennis & Diane	Exhibit 4	Dennis & Diane McWilliams	15335 E. Ave. G Apt G	Lancaster, CA 93535		
Miner, Richard	Exhibit 4	Richard Miner	9678 Dawn Rd.	Rosamond, CA 93560		rhmfarmer@gmail.com
Ming, Lin	New Production	Lin Ming	425 Keiffer Dr.	Rincon, GA 31326	(661) 803-7698	
Molina, Magaly	Over Pumping Small Pumper	Magaly Molina	62 Parc Place Drive	Milpitas, CA 95035		
Moody, Dwight and Kennan	Qualified Small Pumpers	Dwight and Kennan Moody	5062 Balsawood	Irvine, CA 92612		
Munz: 2014 Revocable Trust, Terry A. & Kathleen M. Munz	Exhibit 4	Berry and Sharon Munz 2014 Revocable Trust, Terry A. & Kathleen M. Munz	45711 Munz Ranch Rd	Lancaster, CA 93536		
Nebeker, Eugene	Exhibit 4	Eugene Nebeker	400 N. Rockingham Ave.	Los Angeles, CA 90049		enebeker@roadrunner.com
New Goldensands Investment, LLC	Exhibit 4	New Goldensands Investment, LLC	2478 Stevens Avenue	Rosemead, CA 91770	(661) 946-5900	lotsbabylove@gmail.com
North Edwards Water District	Exhibit 3	North Edwards Water District	13525 Fran Street	North Edwards, CA 93523		newd@verizon.net
Northrop Grumman Systems Corporation	Exhibit 4	Northrop Grumman Systems Corporation	Alston & Bird LLP 333 South Hope Street, 16th Floor	Los Angeles, CA 90071		
NRG Energy Inc.	Exhibit 4	NRG Energy Inc.	Attn: PPS Billing P.O. Box 1080	New Roads, LA 70760	(661) 528-1798	susan.jackson@nrg.com
Ossioquispe, Rafael	Qualified Small Pumpers	Rafael Ossioquispe	37012 Cooper Ter	Palmdale, CA 93550		
Ovsepyan, Andrey	New Production	Andrey Ovsepyan	38713 Tierra Subida Avenue, #30	Palmdale, CA 93551		Randy.Sharp@sympatico.ca
Palm Ranch Irrigation District	Exhibit 3	Palm Ranch Irrigation District	4871 West Columbia Way	Quartz Hill, CA 93536		pete@palmranchid.com
Palmdale Water District	Exhibit 3	Palmdale Water District	2029 East Avenue Q	Palmdale, CA 93550		dlamoreaux@palmdalewater.org
Park, Young	New Production	Young Park	325 W 124th Street	Los Angeles, Ca 90061		
Parvaneh Kadivar	Over Pumping Small Pumper	Kadivar Parvaneh	18017 Bluesail Drive	Pacific Palisades, CA 90272	310-812-8115	
Perez, Espiridion & Yvonne	New Production	Espiridion & Yvonne Perez	PO Box 2004	Rosamond, Ca 93560	(661) 942-6125	
Phelan Pinon Hills CSD	Others with Rights to Produce	Phelan Pinon Hills CSD	4176 Warbler Rd.	Phelan, CA 92371	(760) 868-1212	
Pool, Noel	Exhibit 4	Noel Pool	P.O. Box 900	Juniper Hills, CA 93543		
Quartz Hill Water District	Exhibit 3	Quartz Hill Water District	5034 West Avenue L	Quartz Hill, CA 93536		creed@qhwd.org
R and M Ranch Inc.	Exhibit 4	R and M Ranch Inc.	4655 Via Grande	Newbury Park, CA 91320		
Rancho Sierra Golf Course	Unauthorized Pumper	Rancho Sierra Golf Course	1168 Valley Quail Circle	San Jose, CA 95120		
Reca, John and Adrienne	Exhibit 4	John and Adrienne Reca	2727 W. Ave. O4	Palmdale, CA 93551		adrienne@sbmarvin.com, recaranch@att.net
Reesedale Mutual Water Company	Supporting Land Owners	Reesedale Mutual Water Company	44609 86th Street East	Lancaster, CA 93534	(661) 946-1869	
Rezvani, Mike	New Production	Mike Rezvani	19556 Shadow Glen Circle	Porter Ranch, Ca 91326	(805) 962-2318	
Richter, Suzanne	Exhibit 4	Suzanne Richter	P.O. Box 290	Pearblossom, CA 93553		
Robar Enterprises, HI-Grade Materials Co.	Supporting Land Owners	Robar Enterprises, HI-Grade Materials Co.	17671 Bear Valley Rd.	Hesperia, CA 92345		
Rodriguez, Erik	New Production	Erik Rodriguez	1221 East Avenue J-7	Lancaster, CA 93535		
Rogers, Johnny ~~(Mark Ritter)~~	Over Pumping Small Pumper	Johnny Rogers				
Rosamond Community Services District	Exhibit 3	Rosamond Community Services District	3179 35th Street W	Rosamond, Ca 93560		rsmith@rosamondcsd.com
Rosamond High School	Exhibit 4	Rosamond High School	2925 W. Rosamond Blvd.	Rosamond, CA 93560		sduran@skusd.K12.ca.us
Rosamond Mobile Home Park Milana VII LLC	Supporting Land Owners	Rosamond Mobile Home Park Milana VII LLC	c/o Milana VII LLC P.O. Box 915	Tustin, CA 92781	(661) 256-2084	
Rose Villa Apartments	Exhibit 4	Rose Villa Apartments	1223 Mt. Rainer Rd.	Rancho Palos Verdes, CA 90275		nwabuzor@cox.net
Sahara Nursery and Farm	Exhibit 4	Sahara Nursery and Farm	14848 E. Ave. J	Lancaster, CA 93535		
Saint Andrew's Abbey, Inc.	Exhibit 4	Saint Andrew's Abbey, Inc.	PO Box 40	Valyermo, CA 93563		francisbenedict@rocketmail.com
Schilling 1992 Family Trust	Exhibit 4	Trustees of the L&M Schilling 1992 Family Trust	11317 E. Ave. E	Lancaster, CA 93535		

Appendix L Notice List

Producer A-Z	Party	Producer Name	Street Address	City, State and Zip	Phone	Email
Selek Family Trust	Exhibit 4	TTEE; Barbara Aznarez Decd Trust and Selak, Mabel	1200 Lida	Pasadena, CA 91103	(626) 584-8110	steve@selakentertainment.com, ricksellssteak@aol.com
Service Rock Products, L.P.	Exhibit 4	Service Rock Products, L.P.	550 East Hospitality Lane, Suite 300	San Bernardino, CA 92408		
SGS Antelope Valley Development, LLC	Exhibit 4	SGS Antelope Valley Development, LLC	101 Ash St HQ-07	San Diego, CA 92101		cynthia.leung@sunpower.com
Shadow Acres Mutual Water Company	Exhibit 4	Shadow Acres Mutual Water Company	P.O. 900669	Palmdale, CA 93590		samwcl@gmail.com
Sheep Creek Water Co.	Exhibit 4	Sheep Creek Water Co.	P.O. Box 291820	Phelan, CA 92329		
Siebert, Jeffery and Nancee	Exhibit 4	Jeffrey and Nancee Siebert	19235 W. Ave. C	Lancaster, CA 93536		
Silva, Ruben & Maria	Unauthorized Pumper	Ruben & Maria Silva	1715 Turnbull Canyon Rd	Hacienda Heights, VA 93745		
Sonrise Ranch, LLC	Exhibit 4	Sonrise Ranch, LLC	9753 East Avenue F-8	Lancaster, CA 93535		
Southern California Edison Company	Exhibit 4	Southern California Edison Company	2244 Walnut Grove Ave.	Rosemead, CA 91770		Julia.mosel@sce.com
Sundale Mutual Water Company	Exhibit 4	Sundale Mutual Water Company	P.O. Box 6708	Lancaster, CA 93539		sundalemutual@gmail.com
Sunnyside Farms Mutual Water Company, Inc.	Exhibit 4	Sunnyside Farms Mutual Water Company, Inc.	P.O. Box 901025	Palmdale, CA 93590		ssfmwc@gmail.com
Tejon Ranchcorp and Tejon Ranch Co.	Exhibit 4	Tejon Ranchcorp and Tejon Ranch Co.	P.O. Box 1000	Lebec, CA 93243		atkinson@tejonranch.com, glopez@tejonranch.com
Terrazas, Gloria	Exhibit 4	Gloria Terrazas	10640 Four Winds road	Juniper Hills, CA 93543		
The 50th District Agriculture Association	State of California	The 50th District Agriculture Association	2551 West Avenue H, Suite 102	Lancaster, CA 93536	(661) 948-6060	
Tierra Bonita Mutual Water Company	Exhibit 4	Tierra Bonita Mutual Water Company	5159 East Avenue K-8	Lancaster, CA 93535		tierrabonitawater@yahoo.com
Tierra Bonita Ranch	Exhibit 4	Tierra Bonita Ranch	17434 Palora St.	Encino, CA 91316		
Torres, Tomas and Irma	Qualified Small Pumpers	Tomas and Irma Torres	3310 Wisconsin Avenue	South Gate, CA 90280		
Trang, Sroy	New Production	Sroy Trang	PO Box 116	Alhambra, CA 91803		
Triple M Property Co.	Exhibit 4	Triple M Property Co.	75 Malaga Cove, Suite 14	Palos Verdes Estes, CA 90274		
Trono, Peter	Qualified Small Pumpers	Peter J Trono	29125 Devils Punch Bowl Drive Rd	Pearblossom, Ca 93553		
Turk Trust	Exhibit 4	Randy Turk	P.O. Box 1016	Littlerock, CA 93543		
U.S. Borax	Exhibit 4	U.S. Borax	14486 Borax Rd.	Boron, CA 93516		nathan.francis@riotonto.com
Ugonwa, Bonaventure	New Production	Bonaventure Ugonwa	2156 Avenida Del Mar	Lancaster		
Van Dam, Martha, Nick & Janet	Exhibit 4	Marta Van Dam, Nick Van Dam, Janet Van Dam	7316 W. Ave. D8	Lancaster, CA 93536		
Vulcan Materials Co., Vulcan Lands Inc.,	Exhibit 4	Vulcan Materials Co., Vulcan Lands Inc.,	405 North Indian Hill Blvd.	Claremont, CA 91700		ksage@irmwater.com
WAGAS Land Company LLC	Exhibit 4	WAGAS Land Company LLC	906 Indianola Way	La Canada, CA 91011		
WDS California II, LLC	Exhibit 4	WDS California II, LLC	113 S. LaBrea Avenue 3rd Floor	Los Angeles, CA 90036		andrewwerner@westerndev.com
Weatherbie, Michael & Dolores	Exhibit 4	Michael and Dolores A. Weatherbie	9950 Cima Mesa Rd	Littlerock, Ca 93543		mikew@qnet.com
Webster, Anthony	New Production	Anthony Webster	11757 Satcoy Street, Apt # 101	North Hollywood, Ca 91605		
West Side Park Mutual Water Co.	Exhibit 4	West Side Park Mutual Water Co.	40317 11th St West	Palmdale, CA 93551		info@westsideparkmutual.com
West Valley County Water District	Exhibit 3	West Valley County Water District	25315 West Ideal Avenue	Lancaster, CA 93536		wvcwd@verizon.net
White Fence Farms Mutual Water Co.	Exhibit 4	White Fence Farms Mutual Water Co.	41901 20th St. West	Palmdale, CA 93551		wwf@qnet.com
White Fence Farms MWC #3	Supporting Land Owners	White Fence Farms MWC #3	P.O. Box 3411	Quartz Hill, CA 93586		
William Fisher Memorial Water Company	Exhibit 4	William Fisher Memorial Water Company	4700 District Blvd.	Bakersfield, CA 93313		rsmith@rosamondcsd.com
Willow Springs Co.	Exhibit 4	Richard Nelson	4145 Manly Rd. 2568	Rosamond, CA 93560		reserve.system@mindspring.com
Wilson, Donna	Exhibit 4	Donna Wilson	18130 West Avenue F	Lancaster, CA 93536		
Witmeyer: The Donald Witmeyer Trust (Wendy Rudisill)	New Production	The Donald Witmeyer Trust	6399 Vineyard Avenue	Ann Arbor, MI 48108		
Zaghian, Roben	New Production	Roben Zaghian	9220 West Avenue I	Lancaster, CA 93536		

Appendix M

Delinquent Administrative Assessments and Delinquent Production Reports

Antelope Valley Watermaster

Customer	Address	Email	Pending Invoices	Overdue Balance
California Water Services Company California Water Services Company Sub-Customer of 1000 Non-Overlying Production Rights	5015 West Avenue L-14 Suite #2 Quartz Hill CA 93536	jojeda@calwater.com	1 Overdue invoice	$6.60
60th Street Association Water System 60th Street Association Water System Sub-Customer of 1100 Overlying Production Rights	5929 Margaritha Lane Rosamond CA 93560		2 Overdue invoices	$17.67
C. Louise R. Close Living Trust C. Louise R. Close Living Trust Sub-Customer of 1100 Overlying Production Rights			2 Overdue invoices	$6.66
c/o George Brittner c/o George Brittner Sub-Customer of 1100 Overlying Production Rights	P.O. Box 720173 Pinon CA 92372		2 Overdue invoices	$22.00
eSolar Inc.; Sierra Sun Tower, LLC eSolar Inc.; Sierra Sun Tower, LLC Sub-Customer of 1100 Overlying Production Rights	P.O. Box 10189 Burbank CA 91510		2 Overdue invoices	$24.54
Granite Construction Company (Big Rock Facility) Granite Construction Company (Big Rock Facility) Sub-Customer of 1100 Overlying Production Rights	213 East Avenue M Lancaster CA 93535	William.taylor@gcinc.com	1 Overdue invoice	$0.60

Customer	Address	Email	Pending Invoices	Overdue Balance
James and Elizabeth Bridwell Sub-Customer of 1100 Overlying Production Rights	9363 Colley Pl. Littlerock CA 93543		1 Overdue invoice	$0.50
John and Adrienne Reca Sub-Customer of 1100 Overlying Production Rights	2727 W. Ave. O4 Palmdale CA 93551	adrienne@sbmarvin.com, recaranch@att.net	1 Overdue invoice	$125.50
LeClair Robert, Unini Marie LeClair Robert, Unini Marie Sub-Customer of 1100 Overlying Production Rights	P.O. Box 207 Pearblossom CA 93553		2 Overdue invoices	$6.66
Luis Hernandez Sub-Customer of 1100 Overlying Production Rights	49007 120th Street East Lancaster CA 93535		1 Overdue invoice	$2.25
Ruth C. Findley Sub-Customer of 1100 Overlying Production Rights	9363 Colley Pl. Littlerock CA 93543		1 Overdue invoice	$1.90
SGS Antelope Valley Development, LLC SGS Antelope Valley Development, LLC Sub-Customer of 1100 Overlying Production Rights	101 Ash St HQ-07 San Diego CA 92101	cynthia.leung@sunpower.com	2 Overdue invoices	$379.34
Tejon Ranchcorp and Tejon Ranch Co. Tejon Ranchcorp and Tejon Ranch Co. Sub-Customer of 1100 Overlying Production Rights	P.O. Box 1000 Lebec CA 93243	atkinson@tejonranch.com, glopez@tejonranch.com	1 Overdue invoice	$1,464.05
Tierra Bonita Ranch Tierra Bonita Ranch Sub-Customer of 1100 Overlying Production Rights	17434 Palora St. Encino CA 91316		1 Overdue invoice	$2,462.50
Triple M Property Co. Triple M Property Co. Sub-Customer of 1100 Overlying Production	75 Malaga Cove, Suite 14 Palos Verdes Estes CA 90274		2 Overdue invoices	$122.69

Customer	Address	Email	Pending Invoices	Overdue Balance
Rights				
U.S. Borax U.S. Borax Sub-Customer of 1100 Overlying Production Rights	14486 Borax Rd. Boron CA 93516	nathan.francis@riotonto.com	1 Overdue invoice	$2,073.45
White Fence Farms Mutual Water Co. White Fence Farms Mutual Water Co. Sub-Customer of 1100 Overlying Production Rights	41901 20th St. West Palmdale CA 93551	wwf@qnet.com	1 Overdue invoice	$338.30
William Fisher Memorial Water Company William Fisher Memorial Water Company Sub-Customer of 1100 Overlying Production Rights	4700 District Blvd. Bakersfield CA 93313	rsmith@rosamondcsd.com	2 Overdue invoices	$35.90
Antelope Valley Country Club Antelope Valley Country Club Sub-Customer of 1200 Producers with Return Flow Rights	39800 Country Club Dr Palmdale CA 93551		2 Overdue invoices	$501.02
Charlie Tapia Tapia Brother Farms c/o Robert Brumfield, III Sub-Customer of 1300 Small Pumpers	2031 F Street Bakersfield CA 93301		1 Overdue invoice	$137,365.00
Johnny Zamrzla c/o Robert Brumfield, III Sub-Customer of 1300 Small Pumpers	2031 F Street Bakersfield CA 93301		1 Overdue invoice	$273,165.00
California Department of Corrections and Rehabilitation California Department of Corrections and Rehabilitation Sub-Customer of 1500 State of California	9838 Old Placerville Road, Suite B-2 Sacramento CA 95827	SBDVBEAdvocate@CDCR.ca.gov	2 Overdue invoices	$16.50

Customer	Address	Email	Pending Invoices	Overdue Balance
California Department of Military California Department of Military Sub-Customer of 1500 State of California	Joint Force Headquarters 9800 Goethe Road Sacramento CA 95827		2 Overdue invoices	$16.50
California Department of Parks and Recreation California Department of Parks and Recreation Sub-Customer of 1500 State of California	P.O. Box 942896 Sacramento CA 94296	info@parks.ca.gov	1 Overdue invoice	$4.50
California Department of Transportation California Department of Transportation Sub-Customer of 1500 State of California	1120 N Street MS 49 Sacramento CA 95814	Assistant.to.Budgets@dot.ca.gov	2 Overdue invoices	$367.07
California State Lands Commission California State Lands Commission Sub-Customer of 1500 State of California	100 Howe Avenue, Suite 100 South Sacramento CA 95825	Brian.Bugsch@slc.ca.gov	2 Overdue invoices	$23.43
Reesdale Mutual Water Company Reesedale Mutual Water Company Sub-Customer of 1675 Supporting Landowners (Formerly 2000)	44609 86th Street East Lancaster CA 93534		2 Overdue invoices	$126.50

Appendix M Delinquent Production Reports

(as of July 23, 2019)

Blank values indicate missing production reports

Original Exhibit 4 Overlying Producers	Transferees	2016 Total Groundwater Production	2017 Total Groundwater Production	2018 Total Groundwater Production
60th Street Association Water System	-			
Adams Bennett Investments, LLC	-			
Antelope Valley Mobile Estates	-	0.005		6.22
Benz: Mark W. And Nancy L. Benz	**Terrazas**: Gloria Terrazas; property sale (2015)			
Big Rock Mutual Water Company	-	0.00		0.00
Bittner Trust, Glen Brittner, Trustee	-			
Bleich Flat Mutual Water Company	-	11.50		13.00
Bridwell: James and Elizabeth Bridwell	-			
Burrows/200 A40 H LLC	-			
Cardile: Sal and Connie Cardile	**Pool**: Noel Pool; property sale (2015)			0.50
Chavez: Effren Chavez	-	41.50		48.00
Close: C. Louise R. Close Living Trust	-			
Del Sur Ranch LLC	-	0.00		0.00
Dickey: Randall and Billie Dickey	-	0.10		0.00
eSolar Inc.; Sierra Sun Tower, LLC	-			
eSolar Inc.; Tumbleweed Suntower LLC	-			
Findley: Ruth C. Findley	-			
Frankenberg: Leah Frankenberg	-			
Healy: Jane Healy and Healy Enterprises Inc.	-			
Lands of Promise Mutual Water Company	-			27.07
LeClair: Marie A. Unini and Robert J. LeClair	-			
Llano Del Rio Water Company	-	0.00		128.44
Llano Mutual Water Company	-	0.00		0.00
McWilliams: Dennis M. and Diane K. McWilliams	-	0.00	0.00	
Munz: 2014 Revocable Trust, Terry A. & Kathleen M. Munz	-	2.10	2.10	
Reca: John and Adrienne Reca	-	52.00	85.00	
Rosamond High School	-	91.00	28.72	
Rose Villa Apartments	-			
SGS Antelope Valley Development, LLC	-			
Sonrise Ranch, LLC	-			
Triple M Property Co.	-			
Van Dam: Craig Van Dam, Marta Van Dam, Nick Van Dam, Janet Van Dam	**Van Dam: Craig and Marta:** 610 **Van Dam, Nick and Janet:** 30 AFY	855.00	745.00	3.12
WAGAS Land Company LLC	-			682.90
William Fisher Memorial Water Company	-			
Total		**1,053.21**	**860.82**	**909.24**

Blank values indicate missing production reports

State of California	Transferees	2016 Total Groundwater Production	2017 Total Groundwater Production	2018 Total Groundwater Production
Department of Water Resources				
Department of Parks and Recreation				0.08
Department of Transportation				
State Lands Commission				
Department of Corrections and Rehabilitation				
Department of Veteran Affairs				0.00
Highway Patrol				
Department of Military				
Supporting Landowners				
Milana VII, LLC dba Rosamond Mobile Home Park			22.00	25.27
Reesdale Mutual Water Company				
Juanita Eyherabide, Eyherabide Land Co., LLC and Eyherabide Sheep Company				
LV Ritter Ranch, LLC				
Robar Enterprises, Inc., HI-Grade Materials, Co., and CJR, a General Partnership			420.00	315.79

Note that this may not be a complete list and may not include other Parties such as metered Small Pumpers or those granted New Production.

TODD GROUNDWATER
Watermaster Engineer

Appendix N

Forms

- Annual Water Production Report, 2018 Calendar Year
- Monthly Flowmeter Production Reporting Form – I meter
- Monthly Flowmeter Production Reporting Form – 2 meters
- Request for Information
- Parcel Location Request
- Small Pumper Qualifying Documentation
- Replacement Well Application (for Existing Production Rights or New Non-Production Well)
- New Point of Extraction Application
- New Production Application
- Water Conservation Practices for Single Family Home
- Transfer Request Form

ANNUAL WATER PRODUCTION REPORT
2018 CALENDAR YEAR
ANTELOPE VALLEY WATERMASTER

Submit by March 1, 2019

Please mail to: Antelope Valley Watermaster, P.O. Box 3025, Quartz Hill, California 93586 OR email to: info@avwatermaster.net. Call Watermaster Administrative staff at 661-234-8233 with questions.

PRODUCER_____

Name listed in Judgment if different from that above _____

Contact Name_____

Address _____

Phone _____ **email** _____

TOTAL GROUNDWATER PRODUCED_____acre-feet in 2018

The amount of water available for use in 2018 has been summarized in tables on the **Antelope Valley Watermaster website:** https://avwatermaster.net/. See Table 1 for Pubic Water Suppliers (Exhibit 3 Parties); Table 2 for Overlying Producers (Exhibit 4 Parties): and Table 3 for Other Parties (other than those listed on Exhibits 3 and 4).

Amount of this production that is recovery of stored water (excluding Carry Over water)_____acre-feet in 2018

Total number of production wells _____

Number of these wells that have had meter documentation approval by the Watermaster Engineer _____

Anticipated date that the remaining wells will have approved meter documentation _____

Please sign below and complete the information on the next page.

I certify to the best of my knowledge and belief that the information provided on this Production Report Form is true and correct.

Signature of Producer _____ Date_____

Section 18.5.12 (Production Reports) of the Judgment states: "The Watermaster Engineer shall require each Producer, other than unmetered Small Pumper Class Members, to file an annual Production report with the Watermaster. Producers shall prepare the Production reports in a form prescribed by the rules and regulations. The Production reports shall state the total Production for the reporting Party, including Production per well, rounded off to the nearest tenth of an acre foot for each reporting period. The Production reports shall include such additional information and supporting documentation as the rules and regulations may reasonably require."

Well Production Information for 2018

State Well Number	APN # Associated with the Production	Well Designation	Production (acre-feet)	Method of Measurement

Imported Water Use in 2018

Supplier of Imported Water	APN Numbers Associated with the Imported Water Use	Point of Delivery	Imported Water Used (acre-feet)	Method of Measurement

MONTHLY FLOWMETER PRODUCTION REPORTING FORM

TO BE SUBMITTED QUARTERLY

ANTELOPE VALLEY WATERMASTER ENGINEER

email form to ctaylor@toddgroundwater.com

Call Watermaster Administrative staff at 661-234-8233 with questions.

A separate form is required for each individual metered well

Review all the notes prior to completing form

Section 1: Producer, Well, and Meter Information

Producer Name: _____

Producer Contact Phone: _____ Producer Contact Email: _____

Well Location Address: _____

Well Location County: _____

Well Location APN: _____ Produced Water Application APN(s): _____

Owner's Well No.: _____ State Well No.: _____

Meter Serial No./ID: _____ Meter Manufacturer: _____ Meter Model and Size: _____

A separate form is required for each individual metered well

Review all the notes prior to completing form

Section 2: Production Records

Monthly production for the _____ (QUARTER) of _____ (YEAR)

Record **monthly** flowmeter totalizer readings for quarter in the table below and submitt to Watermaster Engineer within 30 days of quarter's end

Copy the last entry from the previous report into the first line of the table below and report subsequent production records below.

	Date	Time	Totalizer Reading	Units	Production in Period	Units
Last Reading from Previous Report						

Notes:

Parties that produce more than 10 AFY on aggregate shall monitor and record production volumes monthly and report groundwater production volumes from each well to the Watermaster Engineer quarterly. Parties that produce up to and including 10 AFY on aggregate shall monitor and record production volumes at least quarterly and shall report these values to the Watermaster Engineer quarterly; monthly monitoring and recording is preferred for all parties.

Enclose a readable photograph of the totalizer readout corresponding to the last monthly measurement collected each quarter.

Reports of monthly groundwater production for the previous quarter will be submitted to the Watermaster Engineer electronically via email by the end of the first month of each quarter. Reports shall therefore be due to the Watermaster Engineer no later than January 31, April 30, July 31, and October 31 for production in the previous quarter.

MONTHLY FLOWMETER PRODUCTION REPORTING FORM

TO BE SUBMITTED QUARTERLY

ANTELOPE VALLEY WATERMASTER ENGINEER

email form to ctaylor@toddgroundwater.com

Call Watermaster Administrative staff at 661-234-8233 with questions.

A separate form is required for each individual metered well

Review all the notes prior to completing form

Notes Continued:

The first entry in the table should contain the last reading from the previous report; no calculation of Production in Period is required for this entry. Production in the Period for subsequent entries should be calculated by subtracting the previous totalizer reading from the current totalizer reading (e.g. in March, subtract the February reading from the March reading to calculate the volume produced between the readings).

It is the responsibility of the reporting party to track production in comparison to annual rights to produce groundwater. The Watermaster and Watermaster Engineer will compare annual production volumes to those rights for all producing parties. Those parties that have exceeded their annual rights to produce groundwater will be charged for replacement water at the current rate set by the Watermaster, as applicable in the terms of the judgement. Neither the Watermaster nor the Watermaster Engineer will compare quarterly production to annual rights to produce groundwater. In addition, neither the Watermaster nor Watermaster Engineer will provide reminders or warnings if producing parties are approaching their total production rights.

One electronic copy (scanned pdf or Excel file) of the completed Quarterly Flowmeter Production Reporting Form shall be emailed to the Watermaster Engineer at the address indicated below:

ctaylor@toddgroundwater.com

Section 3: Signature

Date of photograph of totalizer readout: _____

Signature and Date: _____

Notes:

A separate form is required for each individual metered well

Review all the notes prior to completing form

One copy to Watermaster Engineer, one copy to Producer.

MONTHLY FLOWMETER PRODUCTION REPORTING FORM

TO BE SUBMITTED QUARTERLY

ANTELOPE VALLEY WATERMASTER ENGINEER

email form to ctaylor@toddgroundwater.com

Call Watermaster Administrative staff at 661-234-8233 with questions.

A separate form is required for each individual metered well

Review all the notes prior to completing form

Section 1: Producer, Well, and Meter Information

Producer Name: _____

Producer Contact Phone: _____ Producer Contact Email: _____

Well Location Address: _____

Well Location County: _____

Well Location APN: _____ Produced Water Application APN(s): _____

Owner's Well No.: _____ State Well No.: _____

Meter Serial No./ID: _____ Meter Manufacturer: _____ Meter Model and Size: _____

A separate form is required for each individual metered well

Review all the notes prior to completing form

Section 2: Production Records

Monthly production for the _____ (QUARTER) of _____ (YEAR)

Record **monthly** flowmeter totalizer readings for quarter in the table below and submitt to Watermaster Engineer within 30 days of quarter's end

Copy the last entry from the previous report into the first line of the table below and report subsequent production records below.

Meter 1 on Well *Last Reading from Previous Report*	Date	Time	Totalizer Reading	Units	Production in Period	Units

Meter 2 on Well *Last Reading from Previous Report*	Date	Time	Totalizer Reading	Units	Production in Period	Units

Notes:

Parties that produce more than 10 AFY on aggregate shall monitor and record production volumes monthly and report groundwater production volumes from each well to the Watermaster Engineer quarterly. Parties that produce up to and including 10 AFY on aggregate shall monitor and record production volumes at least quarterly and shall report these values to the Watermaster Engineer quarterly; monthly monitoring and recording is preferred for all parties.

Enclose a readable photograph of the totalizer readout corresponding to the last monthly measurement collected each quarter.

Reports of monthly groundwater production for the previous quarter will be submitted to the Watermaster Engineer electronically via email by the end of the first month of each quarter. Reports shall therefore be due to the Watermaster Engineer no later than January 31, April 30, July 31, and October 31 for production in the previous quarter.

MONTHLY FLOWMETER PRODUCTION REPORTING FORM

TO BE SUBMITTED QUARTERLY

ANTELOPE VALLEY WATERMASTER ENGINEER

email form to ctaylor@toddgroundwater.com

Call Watermaster Administrative staff at 661-234-8233 with questions.

A separate form is required for each individual metered well

Review all the notes prior to completing form

Notes Continued:

The first entry in the table should contain the last reading from the previous report; no calculation of Production in Period is required for this entry. Production in the Period for subsequent entries should be calculated by subtracting the previous totalizer reading from the current totalizer reading (e.g. in March, subtract the February reading from the March reading to calculate the volume produced between the readings).

It is the responsibility of the reporting party to track production in comparison to annual rights to produce groundwater. The Watermaster and Watermaster Engineer will compare annual production volumes to those rights for all producing parties. Those parties that have exceeded their annual rights to produce groundwater will be charged for replacement water at the current rate set by the Watermaster, as applicable in the terms of the judgement. Neither the Watermaster nor the Watermaster Engineer will compare quarterly production to annual rights to produce groundwater. In addition, neither the Watermaster nor Watermaster Engineer will provide reminders or warnings if producing parties are approaching their total production rights.

One electronic copy (scanned pdf or Excel file) of the completed Quarterly Flowmeter Production Reporting Form shall be emailed to the Watermaster Engineer at the address indicated below:

ctaylor@toddgroundwater.com

Section 3: Signature

Date of photograph of totalizer readout: _____

Signature and Date: _____

Notes:

A separate form is required for each individual metered well

Review all the notes prior to completing form

One copy to Watermaster Engineer, one copy to Producer.

REQUEST FOR INFORMATION

ANTELOPE VALLEY WATERMASTER

Please mail to: Antelope Valley Watermaster, P.O. Box 3025, Quartz Hill, California 93586 OR email to: info@avwatermaster.net

Call Watermaster Administrative staff at 661-234-8233 with questions.

A fee may apply if the level of effort to fulfill the request is substantial. You will be notified of this fee for approval prior to initiating the request.

Date _____

Requested By _____

Agency/Company _____

Address _____

_____

_____

Phone Number _____

E-mail Address _____

Information/Document requested _____

_____

_____

_____

_____

_____

Reason or Purpose for Request _____

_____

_____

_____

To be completed by the Watermaster:

Charge: ☐ Yes ☐ No Amount _____

Date Response Provided _____

Approved 06/27/18

PARCEL LOCATION REQUEST*

ANTELOPE VALLEY WATERMASTER

Attach a fee of $25 to locate parcel. Make check out to: Antelope Valley Watermaster

Please mail to: Antelope Valley Watermaster, P.O. Box 3025, Quartz Hill, California 93586 OR email to: info@avwatermaster.net

Call Watermaster Administrative staff at 661-234-8233 with questions.

** This form is to be used by entities wishing to know if their property is within the Adjudicated Area of the Antelope Valley. Landholders within the Adjudicated Area must abide by the terms of the Antelope Valley Adjudication Judgment.*

Date _____

Property APN#(s)_____

Property Owner _____

Property Owner Mailing Address_____

_____

_____

Property Address, if different than Owner's Address _____

_____

_____

Contact Phone Number _____

Contact email _____

To be completed by the Watermaster:

Parcel Location Findings: ☐ In ☐ Out

If inside the Antelope Valley Adjudication Area, Subarea where Parcel is located:

- ☐ West Antelope Subarea
- ☐ Willow Springs Subarea
- ☐ Central Antelope Valley Subarea
- ☐ Rogers Lake Subarea
- ☐ South East Subarea

Date Response Provided _____

Approved 06/27/18

SMALL PUMPER QUALIFYING DOCUMENTATION*

ANTELOPE VALLEY WATERMASTER

Please include an application fee according to the fee schedule posted on the Watermaster website: https://avwatermaster.net. Make check out to: Antelope Valley Watermaster

Please mail to: Antelope Valley Watermaster, P.O. Box 3025, Quartz Hill, California 93586 OR email to: info@avwatermaster.net

Call Watermaster Administrative staff at 661-234-8233 with questions.

** This form is to be used by private entities who believe they qualify as "Small Pumpers" in the Antelope Valley Groundwater Adjudication and are not now on the "Small Pumper Class" list. Small Pumper Class is defined as: "All private (i.e., non-government) Persons and entities that own real property within the Basin, as adjudicated, and that have been pumping less than 25 acre-feet per Year on their property during any Year from 1946 to December 23, 2015". Any new production on a parcel that was not pumped prior to December 23, 2015 does not qualify to be in the Small Pumper Class.*

Date_____ Well Site APN#_____

Property Owner/Well Owner_____

Property Owner/Well Owner Mailing Address_____

Property Address, if different than Owner's Address _____

Contact Phone Number_____ Contact email_____

Note: Legal notices under the Judgment will be sent to the above email address. You are required to keep this information up to date. Please notify the Watermaster of any changes.

Parcel and Well

Please attach photographs showing property and existing well (cell phone photos can be emailed, if convenient)
Please attach an 8½" by 11" paper site plan of the parcel (legible hand sketch or Google map acceptable) showing:

1. Location of parcel features, including major buildings, landscaped areas, all existing wells, roads, etc.
2. Location of the existing well(s) with estimated dimensions in feet from well to nearest cross streets.

Please provide supporting documentation listed below, to the extent readily available:

- Documentation that the well was drilled on the property prior to December 23, 2015 (e.g., County well permit, DWR Well Completion Report, etc.).
- If sufficient documentation is not provided in bullet above, property owner agrees to allow Watermaster Engineer or designated agent access to the property at a mutually-agreed upon time to physically inspect the well and property.
- Uses of the existing well (for example, domestic, irrigation, livestock, etc.). Also provide an estimate of annual household occupancy (number of residents), history of land irrigation and acreage, and history of livestock/animals that resided on the property and that relied on the well during the period 1946 – 2015.
- Land deed/parcel information indicating use of land and/or historical aerial photographs of land showing land use.
- Other pertinent information that demonstrates the use and production amounts of the well during the 1946 to 2015 time period.

Voluntary Information on Existing Well, if readily available:

Existing Well Latitude/Longitude (or x, y) _____

Existing Well pumping capacity _____gpm Average annual production from Existing Well _____acre-feet/year

Use(s) of the Existing Well (agricultural, domestic, industrial, municipal, monitoring, etc.) _____

Existing Well construction date_____ Casing Materials_____ Casing Diameter_____ inches

Surface seal material and depth _____Screened interval _____feet below ground surface

Well Depth _____feet Ground surface elevation _____ feet above mean sea level

Depth to water_____ feet Is there a meter on the well? _____

Please attach a copy of the DWR Well Completion Report, if readily available.

Signatures

I understand and agree to abide by the terms of the Antelope Valley Adjudication Judgment. I certify that I own the property on which the well is located and it will be used for private (i.e., non-governmental) use. I also certify that the existing well on the property has been pumping less than 25 acre-feet per year (AFY) during any year from 1946 to December 23, 2015. I understand that if I pump more than 3 AFY from my property I may have to install a meter and pay a replacement water assessment. I understand that these water rights are not transferable from the parcel. I certify that I did not "opt out" of the Small Pumper Class during the Adjudication process. I further certify that the information given in this application is correct to the best of my knowledge and that the signature below, whether original, electronic, or photocopied, is authorized and valid, and is affixed with the intent to be enforceable.

Signature of Property Owner/Well Owner_____ Date_____

Signature of Consultant/Agent _____Date_____

To be completed by the Watermaster:

Watermaster Staff Approval _____ Date _____

Watermaster Board Approval_____ Date _____

REPLACEMENT WELL APPLICATION (FOR EXISTING PRODUCTION RIGHTS)*

ANTELOPE VALLEY WATERMASTER

Please include an application fee according to the fee schedule posted on the Watermaster website: https://avwatermaster.net. Make check out to: Antelope Valley Watermaster

Please mail to: Antelope Valley Watermaster, P.O. Box 3025, Quartz Hill, California 93586 OR email to: info@avwatermaster.net
Call Watermaster Administrative staff at 661-234-8233 with questions.

**This form is for applicants with known production rights to request a replacement well within 300 feet of an existing well owned by the applicant. If the proposed well is greater than 300 feet from an existing well, please use the New Point of Extraction Application instead of this form. If new production rights are being requested, please use the New Production Application instead of this form.*
This form can also be used for non-production wells such as monitoring wells, test wells, and cathodic protection wells that will pump only minimal amounts for groundwater sampling. Note that the application fee is lower for these types of wells (see fee schedule).

Date_____ Well Site APN#_____

Property Owner/Well Owner_____

Property Owner/Well Owner Mailing Address_____

Property Address, if different than Owner's Address _____

Contact Phone Number_____ Contact email_____

Owner's name as Appears in Antelope Valley Adjudication Judgment_____

Production Rights as listed in Antelope Valley Adjudication Judgment _____acre-feet/year

Driller Information

Drilling Company_____

Drilling Company Address_____

Drilling Company Phone Number_____ Drilling Company email_____

Existing Well Information, if applicable

Will the New Well replace an Existing Well? _____ Existing Well Latitude/Longitude (or x, y) _____

Will the New Well be used in order to stop sharing a well? _____ **Please provide a copy of the shared well agreement.**

If so, please provide estimations of annual Production of the Shared Well by year for the 1946 through 2015 time period to the best of your knowledge _____

_____

_____

_____

Estimated future annual production of the Existing Well once the New Well has been constructed _____

Will the Existing Well be destroyed? _____ If not, why not? _____

Existing Well pumping capacity _____gpm Average annual production from Existing Well _____acre-feet/year

Use(s) of the Existing Well (agricultural, domestic, industrial, municipal, monitoring, etc.) _____

Status (active, inactive) _____

Existing Well construction date_____ Casing Materials_____ Casing Diameter_____ inches

Surface seal material and depth _____Screen depths (top/bottom)_____feet

Well Depth _____feet Ground surface elevation _____ feet above mean sea level

Depth to water_____ feet

Please attach a copy of the DWR Well Completion Report, if available.

New Well Information

Will this be a New or Replacement Well? _____Distance from Existing Well (please use the *Change of Point of Extraction* form if greater than 300 feet) _____

New Well Latitude/Longitude (or x, y) _____

Use(s) of New Well (agricultural, domestic, industrial, municipal, monitoring, etc.) _____

Estimated New Well pumping capacity _____gpm Estimated annual production from New Well _____acre-feet/year

Do other wells exist on this property? _____ If Yes, indicate if active, inactive, or abandoned and show on Site Plan

Will a meter be installed on the well at the time of construction? _____ If not, when will the meter be installed? _____

Site Plan

An 8½" by 11" paper site plan must be attached to this application showing:

1. Location of site features, including major buildings, landscaped areas, all existing wells, roads, etc.
2. North arrow and scale.
3. Locations of proposed well and existing well(s) with dimensions in feet between wells and to nearest cross streets.

Proposed Well Construction

Please attach a diagram showing proposed well construction, including maximum well depth, casing diameter and materials, ground surface elevation, screen intervals, and estimated pumping capacity. A completed DWR Well Completion Report is required to be submitted to the Antelope Valley Watermaster upon completion of well.

Signatures

I understand and agree to abide by the terms of the Antelope Valley Adjudication Judgment. I certify that the information given in this application is correct to the best of my knowledge and that the signature below, whether original, electronic, or photocopied, is authorized and valid, and is affixed with the intent to be enforceable. I understand that it is my responsibility, as the well owner, to notify the Antelope Valley Watermaster of any changes in the purpose or pumping capacity of this well, from which, is indicated on this application. I also understand that additional information may be required if there is a suspected potential for a material injury as defined in the Judgment. If this well is a monitoring well, I agree to provide the Watermaster with all publicly available monitoring data.

Signature of Property Owner/Well Owner_____ Date_____

Signature of Well Driller _____Date_____

Signature of Consultant/Agent _____Date_____

To be completed by the Watermaster:

Watermaster Staff Approval _____ Date _____

Watermaster Board Approval_____ Date _____

This application is not for a well construction permit; a completed and approved application must be submitted to the appropriate well permitting agency (e.g., Kern or Los Angeles Counties) for a well construction permit, if the well is to be installed within the Antelope Valley Adjudicated Area.

NEW POINT OF EXTRACTION APPLICATION*

ANTELOPE VALLEY WATERMASTER

Please include an application fee according to the fee schedule posted on the Watermaster website: https://avwatermaster.net. Make check out to: Antelope Valley Watermaster

Mail to: Antelope Valley Watermaster, P.O. Box 3025, Quartz Hill, California 93586 OR email to: info@avwatermaster.net

Call Watermaster Administrative staff at 661-234-8233 with questions.

**This form is to be used by applicants with existing production rights to install a new well at a new point of extraction as defined by the Judgment. Please use the Replacement Well Application if the proposed well will be within 300 feet from an existing well from which the rights to produce groundwater originate. If new production rights are being requested, please use the New Production Application.*

Date_____ Well Site APN#_____

Property Owner/Well Owner_____

Property Owner/Well Owner Mailing Address_____

Property Address, if different than Owner's Address _____

Contact Phone Number_____ Contact email_____

Owner's name as Appears in Antelope Valley Adjudication Judgment_____

Production Rights as listed in Antelope Valley Adjudication Judgment _____acre-feet/year

Driller Information

Drilling Company_____

Drilling Company Address_____

Drilling Company Phone Number_____ Drilling Company email_____

Existing Well Information, if applicable and if not already provided to the Watermaster Engineer

Will the New Well replace an Existing Well? _____ Existing Well Latitude/Longitude (or x, y) _____

Will the New Well be used in order to stop sharing a well? _____ **Please provide a copy of the shared well agreement.**

Estimated future annual production of the Existing Well once the New Well has been constructed _____

Will the Existing Well be destroyed? _____ If not, why not? _____

Existing Well pumping capacity _____gpm Average annual production from Existing Well _____acre-feet/year

Use(s) of the Existing Well (agricultural, domestic, industrial, municipal, monitoring, etc.) _____

Status (active, inactive) _____

Existing Well construction date_____ Casing Materials_____ Casing Diameter_____ inches

Surface seal material and depth _____Screened interval _____feet below ground surface

Well Depth _____feet Ground surface elevation _____ feet above mean sea level

Depth to water_____ feet

Please attach a copy of the DWR Well Completion Report, if available.

New Well Information

Will this be a New or Replacement Well? _____Distance from Existing Well (please use the *New or Replacement Well Application for Existing Production Rights* form if the distance will be within 300 feet) _____

New Well Latitude/Longitude (or x, y) _____

Use(s) of New Well (agricultural, domestic, industrial, municipal, monitoring, etc.) _____

Estimated New Well pumping capacity _____gpm Estimated annual production from New Well _____acre-feet/year

Do other wells exist on this property? _____ If Yes, indicate if active, inactive, or abandoned and show on Site Plan

Will a meter be installed on the well at the time of construction? _____ If not, when will the meter be installed? _____

Proposed New Well Construction

➡ Please attach a diagram showing proposed well construction, including maximum well depth, casing diameter and materials, ground surface elevation, screen intervals, and estimated pumping capacity. A completed DWR Well Completion Report is required to be submitted to the Antelope Valley Watermaster upon completion of well.

Site Plan

➡ Please attach an 8½" by 11" paper site plan (legible hand written on Google map acceptable) with a north arrow and approximate scale to this application showing:

1. Location of site features, including major buildings, landscaped areas, all existing wells, roads, etc.
2. Locations of proposed well and existing well(s) with dimensions in feet from wells to nearest cross streets.

Material Injury (written statement not required for Small Pumper Class members requesting a combined total of <3 AFY)

➡ A written statement describing how the New Point of Extraction will not cause Material Injury. Material Injury could be in the form of significant and unreasonable 1. Chronic lowering of groundwater levels such that neighboring wells are impacted, 2. Reduction of groundwater storage, 3. Degraded water quality, 4. Land subsidence, 5. Depletions of interconnected surface water such that beneficial uses are impacted, or other adverse physical impact to the basin or to another Producer.

Signatures

I understand and agree to abide by the terms of the Antelope Valley Adjudication Judgment. I certify that the information given in this application is correct to the best of my knowledge and that the signature below, whether original, electronic, or photocopied, is authorized and valid, and is affixed with the intent to be enforceable. I understand that it is my responsibility, as the well owner, to notify the Antelope Valley Watermaster of any changes in the purpose or pumping capacity of this well, from which, is indicated on this application. I also understand that additional information may be required if there is a suspected potential for a material injury as defined in the Judgment.

Signature of Property Owner/Well Owner_____ Date_____

Signature of Well Driller _____Date_____

Signature of Consultant/Agent _____Date_____

To be completed by the Watermaster:

Watermaster Engineer Approval _____ Date _____

Watermaster Board Approval_____ Date _____

This application is not for a well construction permit; a completed and approved application must be submitted to the appropriate well permitting agency (e.g., Kern or Los Angeles Counties) for a well construction permit, if the well is to be installed within the Antelope Valley Adjudicated Area.

NEW PRODUCTION APPLICATION

ANTELOPE VALLEY WATERMASTER

Please include an application fee according to the fee schedule posted on the Watermaster website: https://avwatermaster.net. Make check out to: Antelope Valley Watermaster

Mail to: Antelope Valley Watermaster, P.O. Box 3025, Quartz Hill, California 93586 OR email to: info@avwatermaster.net
Call Watermaster Administrative staff at 661-234-8233 with questions.

Date_____ Proposed Well Site APN#_____

Property Owner/Well Owner_____

Property Owner/Well Owner Mailing Address_____

Contact Phone Number_____ Contact email_____

New Well Latitude/Longitude (or x, y) _____ Antelope Valley Subarea: _____

Use of New Well (Agricultural, Domestic, Industrial, Municipal, Monitoring, etc.) _____

If Domestic well, will well be used to supply one single family household only? Yes/No. _____

Do other wells exist on this property? Yes/No. If Yes, indicate if active, inactive, or abandoned and show on Site Plan.

When will a meter be installed on the well? _____

New Production requests are to include the following (Section 18.5.13 of the Judgment):

1. Payment of an application fee sufficient to recover all costs of application review, field investigation, reporting, and hearing, and other associated costs, incurred by the Watermaster and Watermaster Engineer in processing the application for New Production. Please attach a check to this application submittal for the fee associated with a New Production application as per the fee schedule posted on the Watermaster website. Check can be made out to Antelope Valley Watermaster.
2. Written summary describing the proposed quantity, sources of supply, season of use, purpose of use, place of use, manner of delivery, and other pertinent information regarding the New Production.
3. Maps[1] identifying the location of the proposed New Production, including Basin Subarea.
4. Well information[2] including proposed well design, estimated annual pumping, and agreement to install a meter in accordance with the Rules & Regulations. Plus, a statement that once the well is installed, the applicant will provide water well permits, specifications and well-log reports, pump specifications and testing results, and water meter specifications associated with the New Production.
5. Written confirmation that applicant has obtained all necessary entitlements and permits including all applicable Federal, State, County, and local land use entitlements and other permits necessary to commence the New Production.
6. Written confirmation that applicant has complied with applicable laws and regulations including all applicable Federal, State, County, and local laws, rules and regulations, including but not limited to, the California Environmental Quality Act (Public Resources Code §§ 21000, et. seq.).
7. Preparation of a water conservation plan, approved and stamped by a California licensed and registered professional civil engineer with expertise in groundwater hydrology, demonstrating that the New Production will be designed, constructed and implemented consistent with California best water management practices.
8. Preparation of an analysis of the economic impact of the New Production on the Basin and other Producers in the Subarea of the Basin.
9. Preparation of an analysis of the physical impact of the New Production on the Basin and other Producers in the Subarea of the Basin.
10. A written statement, signed by a California licensed and registered professional civil engineer with expertise in groundwater hydrology, determining that the New Production will not cause Material Injury. Material injury could be in the form of significant and unreasonable 1. Chronic lowering of groundwater levels, 2. Reduction of groundwater storage, 3. Degraded

[1] Maps are to include North arrow and scale, location of proposed well with dimensions in feet from well to nearest cross streets, and location of site features, including major buildings, landscaped areas, all existing wells, roads, etc.

[2] Please attach a diagram showing proposed well construction, including maximum well depth, casing diameter and materials, ground surface elevation, screen intervals, and estimated pumping capacity. A completed DWR Well Completion Report is required to be submitted to the Antelope Valley Watermaster upon completion of well.

water quality, 4. Land subsidence, 5. Depletions of interconnected surface water such that beneficial uses are impacted.

11. Written confirmation that the applicant agrees to pay the applicable Replacement Water Assessment for any New Production.
12. Other pertinent information which the Watermaster Engineer may require.

In addition, all New Production applicants who are not Parties to the Judgment[3] are to comply with Section 20.9 of the Judgment, consult with the Watermaster Engineer, and seek the Watermaster's stipulation to allow them to intervene to become bound by the Judgment prior to commencing Production. The non-Party applicant must file a motion to intervene with the court that includes reference to their effort to obtain the Watermaster's stipulation to the intervention. It is strongly recommended that the non-Party applicant consult with a lawyer to assist them with compliance with Section 20.9 of the Judgment. If applicant believes they are part of the Non-Pumper Class (see footnote below) and therefore does not need to intervene in the Judgment, please provide supporting documents or statements demonstrating adherence to items 1-6 in the footnote.

SIGNATURES

I understand and agree to be bound by the terms of the Antelope Valley Adjudication Judgment and to pay the applicable Replacement Water Assessment for any New Production. I certify that the information provided on this Request for New Production is correct to the best of my knowledge and that the signature below, whether original, electronic, or photocopied, is authorized and valid, and is affixed with the intent to be enforceable. I understand that it is my responsibility to notify the Antelope Valley Watermaster of any changes in any of the information provided on this form within 15 days. I also understand that additional information may be required if there is a suspected potential for a material injury as defined in the Judgment.

Signature of Applicant _____ Date_____

To be completed by the Watermaster:

Watermaster Engineer Approval _____ Date _____

Watermaster Board Approval_____ Date _____

NOTE: This application is not for a well construction permit; a completed and approved application must be submitted to the appropriate well permitting agency (e.g., Kern or Los Angeles Counties) for a well construction permit, if the well is to be installed within the Antelope Valley Adjudicated Area.

[3] An applicant may already be a Party to the Judgment if they are part of the Non-Pumper Class (Willis Class) and meet the criteria described in Section 3.5.22 of the Judgment, as follows:

1. They are a private party and not a "governmental" entity.
2. They (or their successor in interest—see no.4 below) own real property within the Adjudicated Area and were not pumping water at the time of the Judgment being entered as of December 2015.
3. They (or their successor in interest—see no. 4 below) did not pump water on their property "at any time during the five Years preceding January 18, 2006."
4. Non-Pumper class status applies to those who are successors in title or interest (via gift or purchase or inheritance or otherwise) to a Non-Pumper Class member's land that meets the above criteria.
5. Note the term "Non-Pumper Class Member" does not apply to those who opted out or to those connected to a municipal water system, public utility, or mutual water company from which they receive water service. Also, their land cannot be considered "improved" by the Assessor's Office of Los Angeles or Kern County, unless the person declares under penalty of perjury that they do not pump and have never pumped water on those properties.
6. Finally, the Non-Pumper Class does not include anyone individually named in the Public Water Suppliers' cross-complaint unless those persons opted into the Non-Pumper Class.

Water Conservation Practices for Single Family Home

ANTELOPE VALLEY WATERMASTER

Date_____ Proposed Well Site APN#_____

Property Owner/Well Owner_____

Property Owner/Well Owner Mailing Address_____

Contact Phone Number_____ Contact email_____

Use of New Well (Agricultural, Domestic, Industrial, Municipal, Monitoring, etc.) _____

Estimated annual pumping from New Well _____acre-feet/year and well capacity_____ gallons/minute

Briefly describe how use was estimated (attach back up information as necessary) _____

_____

Square footage of home _____

Lot/Parcel Size _____

Number of full bathrooms _____

Number of half-baths _____

Is there (or will there be) a pool? _____Size of pool _____(gallons)

Is there (or will there be) a spa/hot tub? _____ Size of spa/hot tube _____

Area to contain irrigated landscaping _____ square-feet

Description and area if each landscaping type _____

_____

_____

Will there be any fruit trees? Type and how many? _____

Please provide details on potential water use other than small domestic household inside use and outside irrigation as described above. This could include water for farm animals, etc. _____

_____

Water Conservation Checklist

Please indicate which of the following measures will be used:

- ☐ ENERGY STAR® water-conserving appliances installed, e.g., dishwasher, washing machine appl.
- ☐ Water-efficient showerhead using conventional aerator or venturi technology for flow rate < 2.5 gpm fixture
- ☐ Water-efficient sink faucets/aerators < 2.2 gallons/minute
- ☐ Ultra-low flow (< 1.6 gpm/flush) toilets installed
- ☐ Low-volume, non-spray irrigation system installed, e.g., drip irrigation, bubblers, drip emitters, soaker hose, stream-rotator spray heads
- ☐ Weather-based irrigation controllers, e.g., computer-based weather record
- ☐ Collect and use rainwater as permitted by local code
- ☐ Separate and re-use greywater as permitted by local code
- ☐ Composting or waterless toilet as permitted by local code
- ☐ Drought-resistant, native plants (site-appropriate)
- ☐ Xeriscape landscaping
- ☐ Evapotranspiration-based irrigation controller with a rain sensor
- ☐ Soil moisture sensor based irrigation controller

Please provide additional details here _____

_____

_____

_____

SIGNATURES

I understand and agree to abide by the terms of the Antelope Valley Adjudication Judgment. I certify that the information provided on this Water Conservation Practices for Single Family Home form is correct to the best of my knowledge and that the signature below, whether original, electronic, or photocopied, is authorized and valid, and is affixed with the intent to be enforceable. I understand that it is my responsibility to notify the Antelope Valley Watermaster of any changes in any of the information provided on this form within 15 days.

Signature of Applicant _____ Date_____

TRANSFER REQUEST FORM

ANTELOPE VALLEY WATERMASTER

Please include an application fee according to the fee schedule posted on the Watermaster website: https://avwatermaster.net. Make check out to: Antelope Valley Watermaster

Mail to: Antelope Valley Watermaster, P.O. Box 3025, Quartz Hill, California 93586 OR email to: info@avwatermaster.net

Call Watermaster Administrative staff at 661-234-8233 with questions. *Transfer Requests review could take up to 60 days.*

PERMANENT TRANSFER? ___Yes or No___ or **TEMPORARY/ONE-TIME TRANSFER?** ___Yes or No_____

IF TRANSFER DUE TO CHANGE IN LAND OWNERSHIP, PLEASE ATTACH DEED AS PROOF OF SALE OR A PRELIMINARY TITLE REPORT

Date Requested_____ Amount Requested _____acre-feet

If Temporary, Calendar Year(s) to be Used_____

Which Party will be paying the annual Administrative Assessment(s) for the transferred water? _____

Is either Party a member of the Antelope Valley United Mutuals Group? ____Yes or No_____

TRANSFER FROM (SELLER/TRANSFEROR):

Name _____Street Address_____

City_____ State_____ Zip Code_____

Phone _____ email_____

APN#(s) where transfer originates (i.e., production well location(s)) _____

_____

APN#(s) (or water supply service area) where groundwater was used_____

_____

TRANSFER TO (BUYER/TRANSFEREE):

Name _____Street Address_____

City_____ State_____ Zip Code_____

Phone _____ email_____

Note: Legal notices under the Judgment will be sent to the above email address. You are required to keep this information up to date. Please notify the Watermaster of any changes.

APN#(s) (or water supply service area) where transfer will be pumped and used_____

_____

Purpose of Transfer:

- ☐ Permanent Transfer resulting from Property Sale/Transfer [PLEASE ATTACH DEED OR PRELIMINARY TITLE REPORT]
- ☐ Additional Source of Water
- ☐ Other, explain_____

Water is to be Transferred from/to: (transferred water retains its original water type):

- ☐ Current Year Production Right: amount _____acre-feet
- ☐ Carry Over Water: amount _____acre-feet
- ☐ Storage: amount _____ acre-feet
- ☐ Other, explain _____

(Transferred water retains its original water type – e.g., transferred Carry Over Water remains Carry Over water)

WATER QUALITY AND WATER LEVELS (not required if transfer is in association of change of land ownership)

Are Parties aware of any water quality issues that exist in either the area transferred from or to? Yes or No
If yes, please explain: _____

_____

_____

Please provide groundwater elevations in the areas affected by the transfer._____

_____

Are Parties aware of any water level issues that exist in either the area transferred from or to? Yes or No
If yes, please explain: _____

_____

_____

MAPS

➡ Please include a map of the area where the water was used by the Transferor and a map of the area where the water is intended to be used by the Transferee. Include locations of production facilities involved in or affected by the Transfer. This map can include all possible locations of past source and use and future source and use.

SECURITY INTEREST OR LIENHOLDERS

For Permanent Transfers, please provide a list of all parties with a recorded security interest, deed of trust or a lien in such real property or in crops growing or to be grown thereon, and attach copies of written notices to such parties and copies of return receipts. _____

_____

The transfer shall be conditioned upon:

1. Transferee shall succeed to the right of Transferor under the terms of the Judgment.
2. Transferee shall only use Transferred waters for reasonable and beneficial uses.
3. Any Transferee not already a Party to the Judgment must intervene and become a Party to the Judgment.
4. All applicable assessments (Administrative and Balance) and transfer fees are paid in full.
5. If the Watermaster determines that the transfer has resulted in a material injury, the parties will be required to work with the Watermaster Board to mitigate that material injury.
6. For Permanent Transfers, the Parties agree to duly record in the office of the appropriate County Recorder a document reflecting the Permanent Transfer reflected in this Transfer Form.

SIGNATURES

I understand and agree to abide by the terms of the Antelope Valley Adjudication Judgment. I certify that the information provided on this Transfer Request Form is correct to the best of my knowledge and that the signature below, whether original, electronic, or photocopied, is authorized and valid, and is affixed with the intent to be enforceable. I understand that it is my responsibility to notify the Antelope Valley Watermaster of any changes in any of the information provided on this form within 15 days. I also understand that additional information may be required if there is a suspected potential for a material injury as defined in the Judgment.

Signature of Transferor_____ Date_____

Signature of Transferee_____ Date_____

To be completed by the Watermaster:

Watermaster Engineer Approval _____ Date _____

Watermaster Board Approval_____ Date _____

Appendix O

Financial Analysis Study for Replacement Water Assessment

ANTELOPE VALLEY
STATE WATER CONTRACTORS ASSOCIATION

Financial Analysis Study for Replacement Water Assessment

Final Report / March 6, 2019

RAFTELIS

RAFTELIS

March 6, 2019

Mr. Matthew Knudson
General Manager
Antelope Valley State Water Contractors Association
2029 East Avenue Q
Palmdale, CA 93550

Subject: Financial Analysis Study for Replacement Water Assessment

Dear Mr. Knudson,

Raftelis Financial Consultants, Inc. (Raftelis) is pleased to provide this Financial Analysis Study for Replacement Water Assessment Report (Report) for the Antelope Valley State Water Contractors Association (AVSWCA). The primary objective of the study was to perform a financial analysis of the imported water costs associated with AVSWCA's groundwater basin recharge, and to develop Replacement Water Assessment fees to be assessed to property owners or agencies outside of AVSWCA's service area.

This Report summarizes the key findings and recommendations related to the financial analysis conducted as part of the study. It has been a pleasure working with you, and we thank you and other key staff from Antelope Valley-East Kern Water Agency, Littlerock Creek Irrigation District, and Palmdale Water District for the support provided during the course of this study.

Sincerely,
Raftelis Financial Consultants, Inc.

Sudhir Pardiwala
Executive Vice President

Charles Diamond
Consultant

445 S. Figueroa Street, Suite 2270
Los Angeles, CA 90071
www.raftelis.com

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Introduction

The Antelope Valley State Water Contractors Association (AVSWCA) is a joint powers authority created in 1999 to optimize the use of water resources and to protect surface water and groundwater storage within the Antelope Valley. AVSWCA's three member agencies include the Antelope Valley-East Kern Water Agency (AVEK), Littlerock Creek Irrigation District (LCID), and Palmdale Water District (PWD). Each of the member agencies has a contract with the California Department of Water Resources for entitlement to and delivery of imported water from the State Water Project (SWP).

The AVSWCA's service area lies within the adjudicated Antelope Valley Groundwater Basin. As part of the adjudication judgement, the Antelope Valley Watermaster is tasked with determining the amount of imported Replacement Water from the SWP to be used to recharge the groundwater basin in order to ensure that that the basin's Total Safe Yield is not exceeded. Imported SWP water to be utilized as Replacement Water will be purchased from AVSWCA's member agencies or other entities. AVSCWA is therefore interested in determining the per acre-foot (AF) cost for Replacement Water Assessments to be charged to groundwater producers within and surrounding its service area who do not have any entitlement in the SWP or rights in the Groundwater Basin.

Property owners subject to the proposed Replacement Water Assessments that reside within the service areas of AVSCWA's three member agencies contribute to the recovery of SWP capital costs through property taxes. However, property owners outside of the three member agencies' service areas (herein referred to as "Outside Users") do not own any entitlement rights and do not contribute to SWP costs. Therefore, it is appropriate for Replacement Water Assessments to be charged to Outside Users who are not SWP members or own rights in the Groundwater Basin. Although AVSWCA has preliminarily set the Replacement Water Assessment fee for groundwater users within its member agencies' service areas at $415 per acre-foot for 2018, Replacement Water Assessment fees for Outside Users have to be developed.

The AVSWCA engaged Raftelis Financial Consultants, Inc. (Raftelis) in 2018 to conduct a Financial Analysis Study for Replacement Water Assessment (Study). The primary objective of the Study was to conduct financial analyses necessary to develop the proposed Replacement Water Assessments for Outside Users related to AVSWCA's groundwater recharge activities. This Financial Analysis Study for Replacement Water Assessment Report (Report) details the analysis performed by Raftelis as well as all results and recommendations.

Methodology & Assumptions

METHODOLOGY

Based on discussions with staff from each of AVSWCA's member agencies, Raftelis recommends establishing Replacement Water Assessment fees for Outside Users based on fixed cost payments made by each member agency to the California Department of Water Resources for the importation of SWP water as well as the variable cost associated with delivering Replacement Water. The member agencies and the property owners within their service areas continue to fund the fixed costs associated with importing SWP water. Therefore, if any SWP water entitlement of the three member agencies is utilized as Replacement Water by Outside Users, it is reasonable and equitable for the Outside Users to pay a Replacement Water Assessment based in part on the investments of the SWP members. AVSWCA's member agencies have been paying the capital costs of the SWP since the 1960s. The present value of those investments in the SWP should be accounted for in determining a fair price for the Replacement Water.

The primary steps required to calculate the proposed Replacement Water Assessment to charge to Outside Users are outlined below:

1. Calculate the unit rate designed to recover SWP fixed costs:
    a) Determine the present value of SWP fixed costs through 2017 (delivery data, used in the analysis, was available through 2017) for all three member agencies as defined in Tables A, C, D, E, F, and G of each member agencies' water supply contract with the California Department of Water Resources. The SWP fixed costs included are the Capital Cost Component of the Transportation Charge, the Minimum OMP&R Component of the Transportation Charge, Delta Water Charges, Water System Revenue Bond Surcharge and Off-Aqueduct Power Facilities costs. The capital costs in each year is then converted to 2018 dollars using an average cost escalation factor of 3.9 percent which is equal to the average annual increase in the Consumer Price Index (CPI) between 1962 and 2017 as shown below in Table 1.

Table 1: Annual Cost Escalation

Key Assumption	Value	Notes
Annual Cost Escalation	3.90%	*Average CPI from 1962 to 2017*

    b) Calculate the fixed payment per acre-foot by dividing the result from Step 1a by total SWP deliveries received through 2017 across all three member agencies. This number represents the value of the SWP delivered water in dollars per acre-foot. This would represent the approximate value of purchasing SWP water entitlement and the corresponding deliveries.

2. Calculate the unit rate designed to recover variable water costs:
    a) Take the existing Untreated Water Availability Charge rate in dollars per acre-foot for agricultural water delivered under terms of water service agreements through AVEK-owned facilities and adjust to account for 10% water loss due to leakage.

3. Add the SWP fixed cost unit rate from Step 1 and the variable cost unit rate from Step 2 to determine the Replacement Water Assessment for Outside Users to be charged by AVSWCA.

The following key inputs were utilized to calculate the proposed Water Replacement Assessment fees presented in this Report. Firstly, total SWP deliveries through 2017 to each member agency are shown below in **Error! Reference source not found.**. AVEK and LCID first began receiving SWP water in 1972, while PWD began receiving SWP water in 1985. Information on SWP deliveries was provided to Raftelis by member agency staff.

Table 2: Total SWP Deliveries through 2017 in Acre-Feet

Member Agency	SWP Deliveries
AVEK	2,242,419 AF
LCID	13,310 AF
PWD	338,659 AF
Total	2,594,388 AF

Analysis & Results

This section outlines the calculation of the proposed Replacement Water Assessment for AVSWCA. Table 3 below shows the determination of the present value of total annual SWP fixed cost payments for each member agency through 2017. As stated previously, SWP fixed costs included in this analysis are the Capital Cost Component of the Transportation Charge, the Minimum OMP&R Component of the Transportation Charge, Delta Water Charges, Water System Revenue Bond Surcharges, and Off-Aqueduct Power Facilities costs. Each of these annual costs in nominal USD are contained in Tables A, C, D, E, F, and G of each member agency's Water Supply Contract with the California Department of Water Resources. Raftelis then converted these costs into 2018 USD assuming annual cost escalation of 3.90% (as shown previously in **Error! Reference source not found.**). Table 3 below shows a summary of total SWP fixed cost payments through 2017 for each member agency in both nominal and 2018 USD. Please refer to Appendices A, B, and C for detailed SWP fixed costs by year and category for AVEK, LCID, and PWD respectively.

Table 3: Present Value of SWP Fixed Costs

Member Agency	Total SWP Fixed Cost Payments (Nominal)	Present Value of Total SWP Fixed Cost Payments (2018 USD)
AVEK	$518,309,936	$1,110,446,654
LCID	$8,009,081	$17,901,835
PWD	$77,201,475	$160,873,533
Total	$602,520,492	$1,289,222,022

Table 4 below shows the development of SWP fixed cost payments per acre-foot of delivery for AVSWCA's member agencies. The present value of total SWP fixed cost payments (from Table 3) is simply divided by the SWP entitlements in acre-feet (from Table 2) to arrive at unit cost per acre-foot. This result represents the unit rate to recover SWP fixed costs as described previously in Step 1b on page 2. The SWP fixed cost unit rate constitutes the first of two rate components used to determine the proposed Replacement Water Assessment.

Table 4: Calculation of Unit Rate to Recover SWP Fixed Costs

Line	Description	Amount	Notes/Source
1	Present Value of Total SWP Fixed Cost Payments	$1,289,222,022	Table 3
2	Total SWP Deliveries	2,594,388 AF	Table 2
3	SWP Fixed Cost Unit Rate	$496.93 / AF	= [Line 1] / [Line 2]

The second of the two rate components used to determine the proposed Replacement Water Assessment is the variable cost unit rate. This unit rate is designed to recover the variable cost of Replacement Water and is determined by taking the 2019 Untreated Water Availability Charge rate of $406 per AF for agricultural water delivered under terms of water service agreements through AVEK-owned facilities and adjusting to account for an assumed 10% of water loss due to the recharge process. This calculation is shown in Equation 1 below.

$$\textbf{Equation 1: } Variable\ Cost\ Unit\ Rate = \frac{\$406/AF}{100\% - 10\%} = \$451.11/AF$$

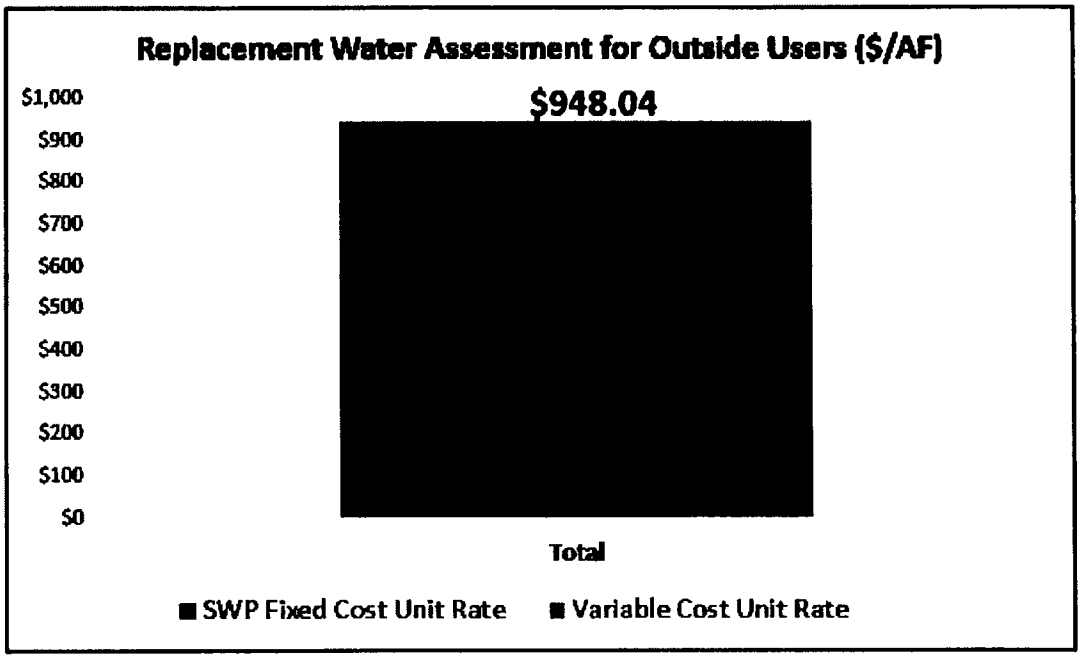
The proposed Replacement Water Assessment for Outside Users is determined by simply adding the SWP fixed cost unit rate (from Line 3 in Table 4) to the variable cost unit rate shown in Equation 1. The proposed Replacement Water Assessments for Outside is shown below in Table 5.

Table 5: Proposed Replacement Water Assessment for Outside Users

Line	Description	Amount	Notes/Source
1	SWP Fixed Cost Unit Rate	$496.93 / AF	Table 4
2	Variable Cost Unit Rate	$451.11 / AF	Equation 1
3	Proposed Replacement Water Assessment	$948.04 / AF	= [Line 1] + [Line 2]

Figure 1 shows the proposed Replacement Water Assessment per acre-foot, as determined above in Table 5. The proposed Replacement Water Assessment of $948.04 per acre-foot is split relatively evenly between the SWP fixed cost unit rate (52.4%) and variable cost unit rate (47.6%).

Figure 1: Proposed Replacement Water Assessment for Outside Users



APPENDIX A: SWP FIXED COSTS - AVEK

Tables A, C, D, E, F, and G
of the
Water Supply Contract
between
The State of California
Department of Water Resources
ANTELOPE VALLEY-EAST KERN WATER AGENCY

(in dollars except where otherwise noted)

Calendar Year	Transportation Charge			Delta Water Charges	Water System Revenue Bond Surcharge	Off-Aquaduct Power Facilities	[illegible]	[illegible]
	Capital Costs (Table D)		Minimum OMP&R Component (Table E & G)					
	Annual Payment of Principal	Annual Interest Payment						
1960	-	-	-	-	-	-	-	-
1961	-	-	-	-	-	-	-	-
1962	-	-	-	-	-	-	-	-
1963	3,656	46,478	-	-	-	-	50,132	411,121
1964	7,020	75,472	-	-	-	-	82,492	651,106
1965	13,398	47,551	-	-	-	-	60,949	463,010
1966	24,589	178,207	-	-	-	-	202,796	1,482,750
1967	47,671	250,066	-	-	-	-	297,737	2,095,201
1968	77,871	591,387	114,164	-	-	-	783,222	5,304,717
1969	114,658	867,559	88,040	-	-	-	1,070,257	6,976,698
1970	152,774	1,166,568	135,082	-	-	-	1,454,422	9,125,081
1971	188,395	1,053,317	186,373	-	-	-	1,428,085	8,623,524
1972	211,795	1,406,105	377,265	160,756	-	-	2,155,921	12,529,912
1973	227,084	1,734,633	461,155	222,207	-	-	2,645,079	14,795,794
1974	239,569	1,690,415	164,921	279,090	-	-	2,373,995	12,780,972
1975	253,219	1,507,558	574,928	319,822	-	-	2,655,527	13,760,026
1976	266,367	1,481,561	405,268	431,018	-	-	2,584,214	12,887,880
1977	280,012	1,476,986	638,666	469,922	-	-	2,865,586	13,754,693
1978	294,057	1,496,166	693,608	600,180	-	-	3,084,011	14,247,472
1979	309,317	1,480,783	712,340	720,173	-	-	3,222,613	14,328,955
1980	325,592	1,477,558	1,000,550	857,818	-	-	3,661,518	15,669,386
1981	351,120	2,268,109	733,695	1,355,100	-	-	4,708,024	19,391,613
1982	366,401	938,765	1,436,719	1,551,434	-	-	4,293,319	17,019,738
1983	392,086	1,617,658	2,407,048	1,110,994	-	1,083,881	6,611,667	25,226,392
1984	421,808	2,625,413	2,004,478	450,405	-	2,499,848	8,001,952	29,384,923
1985	449,800	1,790,324	1,944,232	565,881	-	3,749,257	8,499,494	30,040,430
1986	475,597	1,745,690	2,206,227	635,066	-	3,159,857	8,222,437	27,970,361
1987	502,492	1,782,829	2,533,025	652,450	-	3,167,759	8,638,555	28,282,844
1988	527,761	1,813,260	2,193,438	711,641	64,266	2,688,113	7,998,479	25,204,253
1989	553,780	1,824,686	3,193,094	2,083,593	205,668	2,357,669	10,218,490	30,991,144
1990	586,519	1,815,427	1,719,784	2,207,867	185,010	2,528,625	9,043,032	26,396,686

Tables A, C, D, E, F, and G
of the
Water Supply Contract
between
The State of California
Department of Water Resources
ANTELOPE VALLEY-EAST KERN WATER AGENCY

(in dollars except w here otherw ise noted)

Calendar Year	Transportation Charge			Delta Water Charges	Water System Revenue Bond Surcharge	Off-Aquaduct Power Facilities		
	Capital Costs (Table D)							
	Annual Payment of Principal	Annual Interest Payment	Minimum OMP&R Component (Table E & G)					
1991	618,476	1,785,880	2,644,074	2,454,678	296,854	1,048,414	8,848,376	24,858,983
1992	653,283	1,773,406	2,998,849	2,804,695	402,015	2,760,199	11,392,447	30,805,003
1993	688,496	1,666,698	2,667,894	2,811,318	424,871	3,559,487	11,818,764	30,758,188
1994	725,604	1,639,187	2,922,011	2,694,116	424,023	3,963,982	12,368,923	30,981,685
1995	763,215	1,652,147	3,088,320	2,883,156	500,084	4,324,009	13,210,931	31,848,649
1996	802,713	1,565,704	3,333,727	2,834,460	606,388	3,572,856	12,715,848	29,504,440
1997	842,729	1,624,187	3,322,103	3,133,957	626,151	3,411,379	12,960,506	28,943,327
1998	886,136	1,605,665	3,270,632	3,155,093	602,091	3,977,988	13,497,605	29,011,332
1999	929,559	1,593,859	4,090,299	3,262,870	826,108	3,696,973	14,399,668	29,788,448
2000	975,533	1,528,659	4,232,460	3,314,278	940,325	2,372,130	13,363,385	26,607,026
2001	1,022,242	1,512,697	4,040,411	3,315,004	925,355	2,680,895	13,496,604	25,863,590
2002	1,078,342	1,658,005	3,949,101	3,437,351	974,814	1,668,457	12,766,070	23,545,395
2003	1,130,557	1,579,003	5,598,522	3,365,016	1,015,056	1,445,146	14,133,300	25,088,621
2004	1,183,761	1,530,822	2,549,377	3,333,008	1,016,092	1,813,317	11,426,377	19,522,086
2005	1,239,565	1,489,361	2,664,386	3,461,814	959,268	2,047,638	11,862,032	19,505,685
2006	1,300,414	1,427,276	4,436,843	3,507,524	1,038,026	2,845,985	14,556,068	23,037,251
2007	1,366,303	1,373,827	4,762,823	3,855,524	666,215	2,990,954	15,015,646	22,872,574
2008	1,434,161	1,334,202	5,654,830	3,943,904	999,433	3,547,772	16,914,102	24,797,301
2009	1,503,269	1,373,641	3,726,039	4,310,140	1,080,062	3,357,450	15,350,601	21,660,342
2010	1,585,038	1,297,433	5,686,181	5,385,764	1,033,467	4,321,133	19,309,016	26,223,130
2011	1,672,991	1,250,140	4,229,644	5,928,431	1,116,181	4,952,954	19,150,341	25,031,412
2012	1,758,667	1,210,162	4,248,790	6,189,558	1,090,934	5,401,397	19,899,508	25,034,310
2013	1,812,060	1,128,915	6,343,556	6,550,942	1,186,869	2,563,236	19,585,576	23,714,509
2014	1,899,283	1,533,728	5,209,033	6,368,143	1,345,233	1,148,978	17,504,398	20,399,023
2015	1,954,611	1,479,091	9,320,182	8,666,793	1,288,246	530,003	23,238,926	26,065,298
2016	1,978,002	1,495,875	7,174,136	10,359,280	1,287,598	153,406	22,448,297	24,233,408
2017	1,906,927	1,461,139	5,510,660	9,976,357	1,186,800	120,731	20,162,614	20,948,956

APPENDIX B: SWP FIXED COSTS – LCID

Tables A, C, D, E, F, and G
of the
Water Supply Contract
between
The State of California
Department of Water Resources
Littlerock Creek Irrigation District

(in dollars except where otherwise noted)

Calendar Year	Transportation Charge							
	Capital Costs (Table D)							
	Annual Payment of Principal	Annual Interest Payment	Minimum OMP&R Component (Table E & G)	Delta Water Charges	Water System Revenue Bond Surcharge	Off-Aquaduct Power Facilities	[illegible]	[illegible]
1960	-	-	-	-	-	-	-	-
1961	-	-	-	-	-	-	-	-
1962	-	-	-	-	-	-	-	-
1963	-	-	-	-	-	-	-	-
1964	121	1,249	-	-	-	-	1,370	10,813
1965	227	1,459	-	-	-	-	1,686	12,808
1966	415	3,633	-	-	-	-	4,048	29,597
1967	809	4,875	-	-	-	-	5,684	39,999
1968	1,324	10,347	1,910	-	-	-	13,581	91,983
1969	1,966	15,024	1,474	-	-	-	18,464	120,362
1970	2,713	21,477	2,255	-	-	-	26,445	165,917
1971	3,413	20,231	3,119	-	-	-	26,763	161,609
1972	3,832	27,037	7,548	1,367	-	-	39,784	231,219
1973	4,113	31,568	9,581	2,577	-	-	47,839	267,597
1974	4,336	32,674	2,049	3,721	-	-	42,780	230,316
1975	4,580	28,656	10,631	4,752	-	-	48,619	251,927
1976	4,818	27,596	6,508	6,269	-	-	45,191	225,375
1977	5,063	28,048	11,038	6,861	-	-	51,010	244,846
1978	5,317	28,623	12,422	9,687	-	-	56,049	258,934
1979	5,590	28,167	12,223	11,889	-	-	57,869	257,307
1980	5,880	28,087	17,113	14,256	-	-	65,336	279,604
1981	6,327	42,699	13,032	22,946	-	-	85,004	350,118
1982	6,605	17,926	26,245	26,335	-	-	77,111	305,686
1983	7,051	30,737	41,811	19,002	-	1,250	99,851	380,975
1984	7,564	48,791	34,781	20,719	-	77	111,932	411,039
1985	8,060	33,467	35,571	24,474	-	-	101,572	358,994
1986	8,503	32,529	38,788	27,822	-	15,873	123,515	420,162
1987	8,946	33,733	44,658	29,064	-	95,994	212,395	695,387
1988	9,392	33,704	39,276	32,024	2,154	30,395	146,945	463,043
1989	9,846	34,245	56,576	36,301	3,763	50,948	191,679	581,334
1990	10,411	33,951	31,445	38,438	3,385	110,678	228,308	666,433

Tables A, C, D, E, F, and G
of the
Water Supply Contract
between
The State of California
Department of Water Resources
Littlerock Creek Irrigation District

(in dollars except w here otherw ise noted)

Calendar Year	Transportation Charge							
	Capital Costs (Table D)							
	Annual Payment of Principal	Annual Interest Payment	Minimum OMP&R Component (Table E & G)	Delta Water Charges	Water System Revenue Bond Surcharge	Off-Aquaduct Power Facilities	[redacted]	[redacted]
1991	10,942	33,591	46,035	40,793	5,236	65,111	201,708	566,687
1992	11,535	32,403	51,225	46,610	7,053	22,891	171,717	464,320
1993	12,141	30,180	48,657	46,720	7,437	60,615	205,750	535,462
1994	12,784	29,831	53,958	44,772	7,431	88,549	237,325	594,452
1995	13,436	30,107	51,919	47,914	8,769	43,892	196,037	472,602
1996	14,123	28,753	59,930	47,104	10,640	31,691	192,241	446,055
1997	14,821	29,517	64,464	52,082	10,972	24,319	196,175	438,097
1998	15,579	29,173	58,055	52,433	10,550	30,365	196,155	421,609
1999	16,340	28,928	81,350	54,224	14,475	18,305	213,622	441,918
2000	17,148	27,846	79,374	55,078	16,486	-	195,932	390,108
2001	17,970	27,200	67,726	55,090	16,224	-	184,210	353,002
2002	18,837	26,960	69,689	55,912	16,724	-	188,122	346,967
2003	19,745	25,148	114,340	54,735	17,415	-	231,383	410,738
2004	20,674	24,263	41,999	54,215	17,432	-	158,583	270,941
2005	21,648	23,526	37,282	56,310	16,457	-	155,223	255,246
2006	22,711	22,435	75,875	57,053	17,809	-	195,883	310,015
2007	23,854	21,500	81,033	62,714	11,413	-	200,514	305,433
2008	25,037	20,813	106,363	64,151	17,175	1,845	235,384	345,090
2009	26,245	20,274	57,372	70,109	18,529	3,269	195,798	276,279
2010	27,659	18,849	107,466	87,605	17,731	177	259,487	352,403
2011	29,173	18,001	66,537	96,432	19,149	407	231,699	302,854
2012	30,653	17,291	72,780	100,679	18,453	495	240,351	302,370
2013	32,195	15,825	116,198	106,557	20,052	3,270	294,097	356,097
2014	32,939	14,645	89,881	101,120	21,838	3,804	264,227	307,921
2015	33,975	13,707	161,605	137,621	20,924	2,214	370,048	415,052
2016	34,483	13,912	114,771	164,497	20,895	746	349,304	377,081
2017	33,301	13,387	92,259	158,416	19,257	658	317,278	329,652

APPENDIX C: SWP FIXED COSTS – PWD

Tables A, C, D, E, F, and G
of the
Water Supply Contract
between
The State of California
Department of Water Resources
PALMDALE WATER DISTRICT

(in dollars except where otherwise noted)

Calendar Year	Transportation Charge			Delta Water Charges	Water System Revenue Bond Surcharge	Off-Aquaduct Power Facilities	[redacted]	[redacted]
	Capital Costs (Table D)		Minimum OMP&R Component (Table E & G)					
	Annual Payment of Principal	Annual Interest Payment						
1960	-	-	-	-	-	-	-	-
1961	-	-	-	-	-	-	-	-
1962	-	-	-	-	-	-	-	-
1963	-	-	-	-	-	-	-	-
1964	946	8,222	-	-	-	-	9,168	72,363
1965	1,796	10,440	-	-	-	-	12,236	92,953
1966	3,323	24,593	-	-	-	-	27,916	204,109
1967	6,497	34,366	-	-	-	-	40,863	287,556
1968	10,751	73,446	14,340	-	-	-	98,537	667,385
1969	16,145	110,471	11,056	-	-	-	137,672	897,444
1970	22,300	153,990	16,970	-	-	-	193,260	1,212,518
1971	27,937	147,486	23,402	-	-	-	198,825	1,200,609
1972	31,440	193,968	52,963	13,021	-	-	291,392	1,693,530
1973	33,743	220,289	67,837	26,131	-	-	348,000	1,946,610
1974	35,597	233,427	16,970	39,631	-	-	325,625	1,753,080
1975	37,618	202,360	77,908	50,989	-	-	368,875	1,911,383
1976	39,567	199,484	49,562	67,591	-	-	356,204	1,776,445
1977	41,584	197,159	80,370	77,255	-	-	396,368	1,902,550
1978	43,662	201,374	90,048	98,345	-	-	433,429	2,002,349
1979	45,910	198,167	90,841	117,285	-	-	452,203	2,010,665
1980	48,293	197,299	126,792	138,590	-	-	510,974	2,186,702
1981	52,024	303,742	94,787	211,396	-	-	661,949	2,726,464
1982	54,285	122,914	188,716	235,100	-	-	601,015	2,382,566
1983	59,032	214,456	310,207	163,925	-	-	747,620	2,852,496
1984	63,894	346,012	258,244	174,500	-	-	842,650	3,094,396
1985	68,768	233,039	259,837	200,605	-	157,601	919,850	3,251,098
1986	73,550	225,068	284,701	223,785	-	301,486	1,108,590	3,771,104
1987	78,491	229,358	328,728	228,654	-	258,719	1,123,950	3,679,840
1988	83,316	229,980	270,456	248,146	16,240	126,639	974,777	3,071,650
1989	87,966	231,677	424,450	276,155	27,981	493,424	1,541,653	4,675,602
1990	93,341	228,640	227,818	289,119	24,956	545,342	1,409,216	4,113,513

Tables A, C, D, E, F, and G
of the
Water Supply Contract
between
The State of California
Department of Water Resources
PALMDALE WATER DISTRICT

(in dollars except where otherwise noted)

Calendar Year	Transportation Charge			Delta Water Charges	Water System Revenue Bond Surcharge	Off-Aquaduct Power Facilities	[redacted]	[redacted]
	Capital Costs (Table D)							
	Annual Payment of Principal	Annual Interest Payment	Minimum OMP&R Component (Table E & G)					
1991	97,336	226,192	340,042	306,835	38,641	488,207	1,497,253	4,206,443
1992	101,682	220,395	380,756	350,587	52,160	367,996	1,473,576	3,984,527
1993	106,683	204,334	353,768	351,415	55,045	640,919	1,712,164	4,455,886
1994	112,034	200,467	390,690	336,766	54,968	678,876	1,773,801	4,443,018
1995	117,527	201,835	404,431	360,394	64,852	636,541	1,765,580	4,304,641
1996	123,261	191,420	442,831	354,307	78,696	723,670	1,914,185	4,441,462
1997	129,259	195,880	478,826	391,745	81,146	648,652	1,925,508	4,300,033
1998	135,477	192,722	447,693	394,387	78,028	657,806	1,906,113	4,096,940
1999	141,897	190,165	607,048	407,859	107,060	710,674	2,164,703	4,478,099
2000	148,667	363,992	685,260	510,073	121,898	257,146	2,087,036	4,155,371
2001	155,717	231,130	595,727	510,185	135,581	445,872	2,074,212	3,974,820
2002	163,127	225,450	617,420	517,791	139,071	529,674	2,192,533	4,043,849
2003	170,744	213,868	961,287	506,894	144,812	277,984	2,275,589	4,039,495
2004	178,712	206,574	374,148	502,073	144,960	368,929	1,775,396	3,033,283
2005	187,084	200,581	367,640	521,475	136,853	400,828	1,814,461	2,983,663
2006	196,108	191,376	666,040	528,361	148,089	442,278	2,172,252	3,437,928
2007	205,998	183,285	707,653	580,783	95,550	710,515	2,483,784	3,783,423
2008	216,175	177,549	925,863	594,096	144,009	1,052,126	3,109,818	4,559,219
2009	226,411	173,072	517,546	649,264	154,087	1,154,433	2,874,813	4,056,482
2010	238,646	160,990	889,664	811,293	147,438	810,142	3,058,173	4,153,234
2011	251,751	154,104	642,842	893,038	159,239	551,068	2,652,042	3,466,484
2012	264,471	148,214	624,548	932,373	154,732	1,072,349	3,196,687	4,021,549
2013	277,541	135,890	1,030,792	986,811	168,130	512,798	3,111,962	3,768,010
2014	283,992	125,755	771,792	936,466	183,142	348,413	2,849,560	3,087,706
2015	292,536	117,899	1,383,482	1,274,493	175,577	131,952	3,375,939	3,786,529
2016	297,194	120,323	1,025,625	1,523,381	175,457	29,017	3,170,997	3,423,158
2017	288,693	114,988	786,871	1,467,071	161,746	21,152	2,840,521	2,951,301