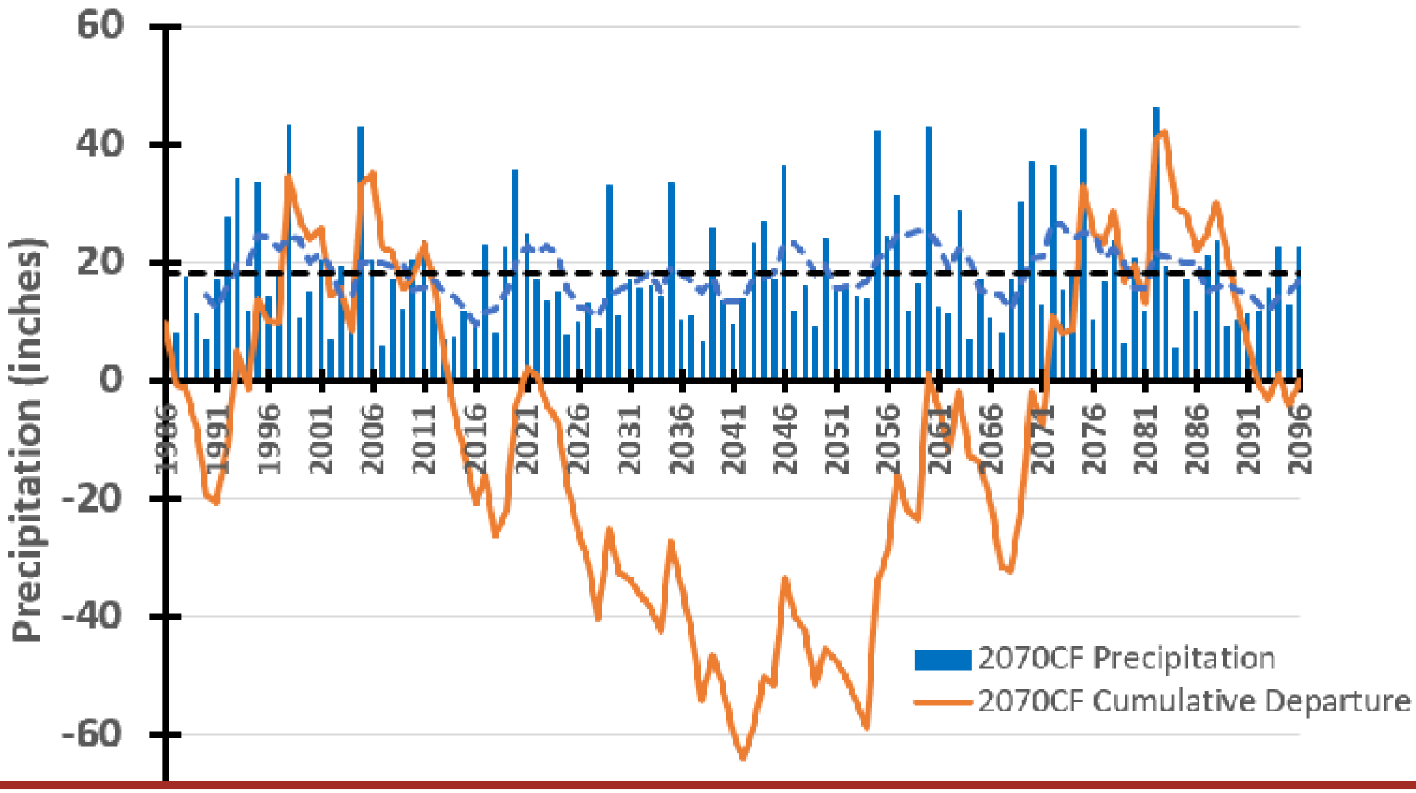
FILLMORE and PIRU BASINS

Groundwater Sustainability Plan
Public Review Draft - Appendices A-J



August 6, 2021

Prepared for

Fillmore and Piru Basins Groundwater Sustainability Agency

PO Box 1110
Fillmore, CA 93016

Prepared by

DBS&A
Daniel B. Stephens & Associates, Inc.
A Geo-Logic Company

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Santa Barbara, California 93105

APPENDICES

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APPENDIX A

Joint Powers Authority (JPA) Agreement

BOARD MINUTES
BOARD OF SUPERVISORS, COUNTY OF VENTURA, STATE OF CALIFORNIA

SUPERVISORS STEVE BENNETT, LINDA PARKS,
KELLY LONG, PETER C. FOY AND JOHN C. ZARAGOZA
April 25, 2017 at 11:00 a.m.

Adoption of a Resolution Authorizing and Directing the Execution of a Joint Exercise of Powers Agreement Creating the Fillmore and Piru Basins Groundwater Sustainability Agency. (Public Works Agency)

(X) All Board members are present.

(X) The following persons are heard: Jeff Pratt and Tony Morgan.

(X) The following document is submitted to the Board for consideration:
(X) Board Letter
(X) JPA
(X) Exhibit 1
(X) Handout: Letter from United Water Conservation District
(X) Comment Letters from Tony Morgan, David Rowlands, and E. Remson

(X) Upon motion of Supervisor Long, seconded by Supervisor Bennett, and duly carried, the Board hereby approves recommendations and changes Section 1.25 to "Representative" means an employee of The County of Ventura authorized to act on behalf of the Board of Supervisors or an employee of the City of Fillmore authorized to act on behalf of the Fillmore City Council or an employee of United Water Conservation District authorized to act on behalf of the United Water Conservation District Board of Directors.; and Section 6.4.3 to One (1) Member Director appointed by the Board of Directors for the United Water Conservation District. The Member Director will be a member of the United Water Conservation District Board of Directors or a Representative.

I hereby certify that the annexed instrument is a true and correct copy of the document which is on file in this office.
Dated: 4/27/17
MICHAEL POWERS
Clerk of the Board of Supervisors
County of Ventura, State of California
By: Lori Gama
Deputy Clerk of the Board

By: [signature]
Brian Palmer
Chief Deputy Clerk of the Board

Item #33
4/25/17

RESOLUTION NO. 17-022

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF VENTURA APPOINTING A SUPERVISOR OR REPRESENTATIVE TO THE BOARD OF DIRECTORS OF THE FILLMORE AND PIRU BASINS GROUNDWATER SUSTAINABILITY AGENCY

WHEREAS, the United Water Conservation District, the City of Fillmore, and the County of Ventura ("Member Agencies") intend to enter into a joint exercise of powers agreement ("JPA Agreement") creating the Fillmore and Piru Basins Groundwater Sustainability Agency ("FPBGSA"); and

WHEREAS, the JPA Agreement requires the governing board of each Member Agency to appoint a Director to the FPBGSA Board of Directors ("FPBGSA Board") by resolution;

NOW, THEREFORE, BE IT RESOLVED that the Ventura County Board Supervisors takes the following actions:

1. The Board of Supervisors hereby appoints Kelly Long to the FPBGSA Board.
2. The Board of Supervisors hereby confirms that the Director appointed pursuant to this resolution is authorized to represent the County's interests with respect to all matters that come before the FPBGSA Board.

Upon motion of Supervisor Bennett, seconded by Supervisor, Parks, and duly carried, the Board hereby approves and adopts this resolution on the 18th day of April, 2017

Chair, Board of Supervisors
County of Ventura

COUNTY OF VENTURA * CALIFORNIA *

ATTEST:
Michael Powers,
Clerk of the Board of Supervisors
County of Ventura, State of California.

By:
Deputy Clerk of the Board

RESOLUTION NO. 17-024

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF VENTURA AUTHORIZING AND DIRECTING THE EXECUTION OF A JOINT EXERCISE OF POWERS AGREEMENT CREATING THE FILLMORE AND PIRU BASINS GROUNDWATER SUSTAINABILITY AGENCY

WHEREAS, the California Legislature has adopted, and the Governor has signed into law, the Sustainable Groundwater Management Act of 2014 ("SGMA"), which authorizes local agencies to manage groundwater in a sustainable fashion; and

WHEREAS, in order to exercise the authority granted in SGMA, a local agency or combination of local agencies must elect to become a groundwater sustainability agency ("GSA") ; and

WHEREAS, the United Water Conservation District, the City of Fillmore, and the County of Ventura, ("Member Agencies") are all local agencies, as SGMA defines that term; and

WHEREAS, the Member Agencies each exercise jurisdiction upon lands overlying the Fillmore Basin and Piru Basins (designated basin numbers 4-4.05, and 4-4.06 respectively in the California Department of Water Resources' CASGEM groundwater basin system) ("Basins") and are all committed to the sustainable management of the Basin's groundwater resources; and

WHEREAS, the Member Agencies have determined that the sustainable management of the Basins pursuant to SGMA may best be achieved through the cooperation of the Member Agencies operating through a joint powers authority; and

WHEREAS, the County of Ventura is a County duly organized and validly existing under the Constitution and laws of the State of California; and

WHEREAS, the County, upon authorization of the Ventura County Board of Supervisors, may pursuant to Article 1 (commencing with Section 6500) of Chapter 5 of Division 7 of Title 1 of the Government Code ("JPA Act"), enter into a joint exercise of powers agreement with one or more other public agencies pursuant to which such contracting parties may jointly exercise any power common to them or conferred on them by the JPA Act; and

WHEREAS, all of the Member Agencies are public agencies as defined in the JPA Act; and

WHEREAS, the Member Agencies intend to enter into a joint exercise of powers agreement pursuant to the JPA Act ("JPA Agreement") pursuant to which the Fillmore and Piru Basins Groundwater Sustainability Agency ("FPBGSA") will be created to, among other things, take all actions deemed necessary by the FPBGSA to ensure sustainable management of the Basins as required by SGMA; and

WHEREAS, under California law and the JPA Agreement, the FPBGSA will be a public entity separate and apart from the parties to the JPA Agreement and the debts, liabilities, and obligations of the FPBGSA will not be the debts, liabilities, or obligations of the County or of the other Member Agencies, or of any representatives of either the County or the other Member Agencies serving on the governing body of the FPBGSA ("FPBGSA Board"); and

WHEREAS, the Board of Supervisors has determined it to be in the County's best interest and in the public interest to execute the JPA Agreement attached to this Resolution as Exhibit 1 ; and

WHEREAS, adoption of this resolution does not constitute a "project" under the California Environmental Quality Act (CEQA) because it involves organizational or administrative activities that will not result in direct or indirect physical changes in the environment (CEQA Guidelines Section 15378(b)(5).).

NOW, THEREFORE, BE IT RESOLVED that the Ventura County Board Supervisors takes the following actions:

1. The JPA Agreement attached hereto as Exhibit 1 is hereby approved.

2. The Chair of the Board of Supervisors is hereby authorized to sign the JPA Agreement on behalf of the County of Ventura.

3. The Clerk of the Board of Supervisors is hereby authorized and directed to attest the signature of the authorized signatory, and to affix and attest the seal of the County of Ventura as may be required or appropriate in connection with the execution and delivery of the JPA Agreement.

Upon motion of Supervisor Long, seconded by Supervisor Bennett, and duly carried, the Board hereby approves and adopts this resolution on the 25th day of April, 2017.

Chair, Board of Supervisors County of Ventura

ATTEST:
Michael Powers,
Clerk of the Board of Supervisors
County of Ventura, State of California.

By ____________________
Deputy Clerk of the Board

RESOLUTION 17-3594

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF FILLMORE APPOINTING A COUNCIL MEMBER OR REPRESENTATIVE TO THE BOARD OF DIRECTORS OF THE FILLMORE AND PIRU BASINS GROUNDWATER SUSTAINABILITY AGENCY

WHEREAS, the United Water Conservation District, the City of Fillmore, and the County of Ventura ("Member Agencies") intend to enter into a joint exercise of powers agreement ("JPA Agreement") creating the Fillmore and Piru Basins Groundwater Sustainability Agency ("FPBGSA"); and

WHEREAS, the JPA Agreement requires the governing board of each Member Agency to appoint a Director to the FPBGSA Board of Directors ("FPBGSA Board") by resolution; and

WHEREAS, the City Council of the City of Fillmore desire to appoint a Councilmember or representative to the FPBGSA Board.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF FILLMORE, CALIFORNIA DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. That Carrie Broggie is hereby appointed to the FPBGSA Board.

Section 2. That the City Council hereby confirms that the person appointed pursuant to this Resolution is authorized to represent the City's interests with respect to all matters that come before the FPBGSA Board.

PASSED, APPROVED AND ADOPTED this 23 th day of May, 2017.

Carrie Broggie, Mayor

ATTEST:

Oliva Carrera Lopez, City Clerk

APPROVED AS TO FORM:

Tiffany J. Israel, City Attorney

01148.0001/371582.1

CITY OF FILLMORE)

COUNTY OF VENTURA)§

STATE OF CALIFORNIA)

I, Oliva Carrera Lopez, City Clerk of the City of Fillmore, California, do hereby certify that the foregoing Resolution No. 17-3594 was duly passed and adopted by the City Council of the City of Fillmore at the regular meeting thereof, held on the 23 th day of May, 2017, and was signed by the Mayor of the said City, and that the same was passed and adopted by the following vote:

AYES: Broggie, McCall, Minjares, Austin, Holmgren

NOES: None

ABSENT: None

ABSTAIN: None

Oliva Carrera Lopez, City Clerk

01148.0001/371582.1

JOINT EXERCISE OF POWERS AGREEMENT

by and among

THE CITY OF FILLMORE,

THE COUNTY OF VENTURA

and

UNITED WATER CONSERVATION DISTRICT

creating

THE FILLMORE AND PIRU BASINS GROUNDWATER SUSTAINABILITY AGENCY

April 2017

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JOINT EXERCISE OF POWERS AGREEMENT
THE FILLMORE AND PIRU BASINS GROUNDWATER SUSTAINABILITY AGENCY

This **Joint Exercise of Powers Agreement** ("**Agreement**") is made and effective on the last date executed ("**Effective Date**"), by and among the City of Fillmore, the County of Ventura, and United Water Conservation District, sometimes referred to herein individually as a "**Member**" and collectively as the "**Members**" for purposes of forming the Piru Fillmore Groundwater Sustainability Agency ("**Agency**") and setting forth the terms pursuant to which the Agency shall operate. Capitalized defined terms used herein shall have the meanings given to them in Article 1 of this Agreement.

RECITALS

A. Each of the Members is a local agency, as defined by the Sustainable Groundwater Management Act of 2014 ("**SGMA**"), duly organized and existing under and by virtue of the laws of the State of California, and each Member can exercise powers related to groundwater management.

B. For groundwater basins designated by the Department of Water Resources ("**DWR**") as medium- and high-priority but that have not been designated by DWR as subject to critical conditions of overdraft, SGMA requires establishment of a groundwater sustainability agency ("**GSA**") by June 30, 2017, and adoption of a groundwater sustainability plan ("**GSP**") by January 31, 2022.

C. The Piru Basin (designated basin number 4-4.06 in the DWR's Bulletin No. 118) is designated as a high priority sub-basin of the Santa Clara River Valley Basin. The Fillmore Basin (designated basin number 4-4.05 in the DWR's Bulletin No. 118) is designated as a medium-priority sub-basin of the Santa Clara River Valley Basin.

D. Under SGMA and pursuant to Government Code Section 6500, *et seq.*, a combination of local agencies may form a GSA through a joint exercise of powers agreement.

E. The Members have determined that the sustainable management of the Basins pursuant to SGMA may best be achieved through the cooperation of the Members operating through a joint powers agreement.

F. The Joint Exercise of Powers Act of 2000 ("**Act**") authorizes the Members to create a joint powers authority, and to jointly exercise any power common to the Members and to exercise additional powers granted under the Act.

G. The Act, including the Marks-Roos Local Bond Pooling Act of 1985 (Government Code sections 6584, *et seq.*), authorizes an entity created pursuant to the Act to issue bonds, and under certain circumstances, to purchase bonds issued by, or to make loans to, the Members for financing public capital improvements, working capital, liability and other insurance needs or projects whenever doing so would result in significant public benefits, as determined by the Members. The Act further authorizes and empowers a joint powers authority to sell bonds so issued or purchased to public or private purchasers at public or negotiated sales.

H. Based on the foregoing legal authority, the Members desire to create a joint powers authority for the purpose of taking all actions deemed necessary by the joint powers authority to ensure sustainable management of the Basins as required by SGMA.

I. The governing board of each Member has determined it to be in the Member's best interest and in the public interest that this Agreement be executed.

TERMS OF AGREEMENT

In consideration of the mutual promises and covenants herein contained, the Members agree as follows:

ARTICLE 1
DEFINITIONS

The following terms have the following meanings for purposes of this Agreement:

1.1 "Act" means the Joint Exercise of Powers Act, set forth in Chapter 5 of Division 7 of Title 1 of the Government Code, sections 6500, *et seq.*, including all laws supplemental thereto.

1.2 "Agreement" has the meaning assigned thereto in the Preamble.

1.3 "Auditor" means the auditor of the financial affairs of the Agency appointed by the Board of Directors pursuant to Section 13.3 of this Agreement.

1.4 "Agency" has the meaning assigned thereto in the Preamble.

1.5 "Basins" means the Fillmore Basin and Piru Basin, collectively.

1.6 "Board of Directors" or "Board" means the governing body of the Agency as established by Article 6 of this Agreement.

1.7 "Bylaws" means the bylaws adopted by the Board of Directors pursuant to Article 11 of this Agreement to govern the day-to-day operations of the Agency.

1.8 "Director" shall mean a Member Director or Stakeholder Director appointed pursuant to Article 6 of this Agreement.

1.9 "DWR" has the meaning assigned thereto in Recital B.

1.10 "Effective Date" has the meaning assigned thereto in the Preamble.

1.11 "Executive Director" means the chief administrative officer of the Agency to be appointed by the Board of Directors pursuant to Article 10 of this Agreement.

1.12 "Farm Bureau" means the Farm Bureau of Ventura County

1.13 "FBPA" means the Fillmore Basin Pumpers Association, Inc.

1.14 "Fillmore Basin" means the Fillmore Groundwater Basin as designated in DWR's Bulletin 118 as basin number 4-4.05.

1.15 "GSA" has the meaning assigned thereto in Recital B.

1.16 "GSP" has the meaning assigned thereto in Recital B.

1.17 "Member" has the meaning assigned thereto in the Preamble and further means each party to this Agreement that satisfies the requirements of Section 5.1 of this Agreement, including any new members as may be approved by the parties, pursuant to Section 17.3 of this Agreement.

1.18 "Member Director" means a Director appointed pursuant to Article 6 of this Agreement that represents a Member.

1.19 "Officer(s)" means the Chair and Vice Chair/Secretary to be appointed by the Board of Directors pursuant to Section 7.1 of this Agreement.

1.20 "PBPA" means the Piru Basin Pumpers Association, Inc.

1.21 "Piru Basin" means the Piru Groundwater Basin as designated in DWR's Bulletin 118 as basin number 4-4.06.

1.22 "SGMA" has the meaning assigned thereto in Recital A.

1.23 "Stakeholder Director" means a Director appointed pursuant to Article 6 that represents stakeholder interests.

1.24 "State" means the State of California.

1.25 "Representative" means an employee of The County of Ventura authorized to act on behalf of the Board of Supervisors, or an employee of the City of Fillmore authorized to act on behalf of the Fillmore City Council, or an employee of United Water Conservation District authorized to act on behalf of the United Water Conservation District Board of Directors.

1.26 "Nature Conservancy" means The Nature Conservancy

ARTICLE 2
CREATION OF THE AGENCY

2.1 Creation of Agency. There is hereby created pursuant to the Act a joint powers authority, which will be a public entity separate from the Members to this Agreement and shall be known as the Fillmore and Piru Basins Groundwater Sustainability Agency ("**Agency**"). Within thirty (30) days after the Effective Date of this Agreement and after any amendment, the Agency shall cause a notice of this Agreement or amendment to be prepared and filed with the office of the California Secretary of State containing the information required by Government Code section 6503.5. Within ten (10) days after the Effective Date of this Agreement, the Agency shall cause a statement of the information concerning the Agency, required by Government Code section 53051, to be filed with the office of the California Secretary of State and with the County Clerk for the County of Ventura, setting forth the facts required to be stated pursuant to Government Code section 53051(a).

2.2 Purpose of the Agency. Each Member to this Agreement has in common the power to study, plan, develop, finance, acquire, construct, maintain, repair, manage, operate, control, and govern water supply, projects and exercise groundwater management authority within either or both of the Basins either alone or in cooperation with other public or private non-member entities, and each is a local agency eligible to serve as the GSA, either alone or jointly through a joint powers agreement as provided for by SGMA. This Agreement is being entered into in order to jointly exercise some or all of the foregoing common powers, as appropriate, and for the exercise of such additional powers as may be authorized by law in the manner herein set forth, in order to effectuate the purposes of this Agreement. The purpose of this Agency is to serve as the GSA for the Basins and to develop, adopt, and implement the GSPs for the Basins pursuant to SGMA and other applicable provisions of law.

ARTICLE 3
TERM

This Agreement shall become effective upon its execution by each of the Members and shall remain in effect until terminated pursuant to the provisions of Article 16 (Withdrawal of Members) of this Agreement.

ARTICLE 4
POWERS

The Agency shall possess the power in its own name to exercise any and all common powers of its Members reasonably related to the purposes of the Agency, including but not limited to the following powers, together with such other powers as are expressly set forth in SGMA and as it may be amended in the future. For purposes of Government Code section 6509, the powers of the Agency shall be exercised subject to the restrictions upon the manner of exercising such powers as are imposed on the County of Ventura, and in the event of the withdrawal of the County of Ventura as a Member under this Agreement, then the manner of exercising the Agency's powers shall be those restrictions imposed on the City of Fillmore.

4.1 To exercise all powers afforded to the Agency under SGMA, including without limitation:

4.1.1 To adopt rules, regulations, policies, bylaws and procedures governing the operation of the Agency.

4.1.2 To develop, adopt and implement a GSP for the Basins, and to exercise jointly the common powers of the Members in doing so.

4.1.3 To obtain rights, permits and other authorizations for, or pertaining to, implementation of a GSP for the Basins.

4.1.4 To collect and monitor data on the extraction of groundwater from, and the quality of groundwater in, the Basin.

4.1.5 To acquire property and other assets by grant, lease, purchase, bequest, devise, gift, or eminent domain, and to hold, enjoy, lease or sell, or otherwise dispose of, property, including real property, water rights, and personal property, necessary for the full exercise of the Agency's powers.

4.1.6 To establish and administer a conjunctive use program for the purposes of maintaining sustainable yields in the Basins consistent with the requirements of SGMA.

4.1.7 To exchange and distribute water.

4.1.8 To regulate groundwater extractions as permitted by SGMA.

4.1.9 To spread, sink and inject water into the basin to recharge the groundwater Basins.

4.1.10 To store, transport, recapture, recycle, purify, treat or otherwise manage and control water for beneficial use.

4.1.11 To develop and facilitate market-based solutions for the use, sale, or lease, and management of water rights.

4.1.12 To impose assessments, groundwater extraction fees or other charges, and to undertake other means of financing the Agency as authorized by Chapter 8 of SGMA, commencing at section 10730 of the Water Code.

4.1.13 To exercise the common powers of its Members to develop, collect, provide, and disseminate information that furthers the purposes of the Agency, including but not limited to the operation of the Agency and adoption and implementation of a GSP for the Basins to the Members' legislative, administrative, and judicial bodies, as well as the public generally.

4.1.14 To perform other ancillary tasks relating to the operation of the Agency pursuant to SGMA, including without limitation, environmental review, engineering, and design.

4.2 To apply for, accept and receive licenses, permits, water rights, approvals, agreements, grants, loans, contributions, donations or other aid from any agency of the United States, the State of California or other public agencies or private persons or entities necessary for the Agency's purposes.

4.3 To make and enter contracts necessary to the full exercise of the Agency's power.

4.4 To employ, designate, or otherwise contract for the services of, agents, officers, employees, attorneys, engineers, planners, financial consultants, technical specialists, advisors, and independent contractors.

4.5 To incur debts, liabilities or obligations, to issue bonds, notes, certificates of participation, guarantees, equipment leases, reimbursement obligations and other indebtedness, as authorized by the Act.

4.6 To cooperate, act in conjunction and contract with the United States, the State of California, or any agency thereof, counties, municipalities, public and private corporations of any kind (including without limitation, investor-owned utilities), and individuals, or any of them, for any and all purposes necessary or convenient for the full exercise of the powers of the Agency.

4.7 To sue and be sued in the Agency's own name.

4.8 To provide for the prosecution of, defense of, or other participation in, actions or proceedings at law or in public hearings in which the Members, pursuant to this Agreement, have an interest and employ counsel and other expert assistance for these purposes.

4.9 To accumulate operating and reserve funds for the purposes herein stated.

4.10 To invest money that is not required for the immediate necessities of the Agency, as the Agency determines is advisable, in the same manner and upon the same conditions as Members, pursuant to Government Code section 53601, as that section now exists or may hereafter be amended.

4.11 To undertake any investigations, studies, and matters of general administration.

4.12 To perform all other acts necessary or proper to carry out fully the purposes of this Agreement.

ARTICLE 5
MEMBERSHIP

5.1 Members. The Members of the Agency shall be the City of Fillmore, the County of Ventura, and United Water Conservation District, as long as they have not, pursuant to the provisions hereof, withdrawn from this Agreement.

ARTICLE 6
BOARD OF DIRECTORS

6.1 Formation of the Board of Directors. The Agency shall be governed by a Board of Directors ("**Board of Directors**" or "**Board**"). The Board shall consist of six (6) Directors comprised of representatives who shall be appointed in the manner set forth in Section 6.4 as follows:

6.1.1 Three (3) Member Directors, with one Member director appointed by the governing board of each Member;

6.1.2 A Piru Basin Pumper Stakeholder Director to represent basin pumpers interests within the Piru Basin;

6.1.3 A Fillmore Basin Pumper Stakeholder Director to represent basin pumpers interests within the Fillmore Basin.

6.1.4 An Environmental Stakeholder Director to represent the interests of environmental organizations engaged in the enhancement or protection of the environment overlying the Fillmore Basin or Piru Basin, or both.

6.2 Stakeholder Director Qualifications. For each of the respective Piru and Fillmore Pumper Stakeholder Directors, the Stakeholder Director shall be an individual, or a duly authorized representative of an entity or individual, that either: (i) owns land from which groundwater was produced from the Fillmore or Piru Basin, respectively, for beneficial uses within the year preceding the Stakeholder Director's appointment to the Board; (ii) is a party to an unexpired contract entitling the individual or entity to produce groundwater from land overlying the Fillmore or Piru Basins, respectively, that is owned by another party to the contract and groundwater has been produced pursuant to such contract within the year preceding the Stakeholder Director's appointment to the Board; or (iii) is a mutual water company that produces and serves groundwater from the Fillmore or Piru Basin, respectively, to its shareholders. For the Environmental Stakeholder Director, the Stakeholder Director shall be an active member of a nonprofit, 501(c)(3) organization which has an adopted budget and, at the sole discretion of the Member Directors, meets the following requirements: (i) is currently active within lands overlying the Fillmore Basin or Piru Basin, or both; and (ii) has a mission that advances, or is furthered by, groundwater sustainability.

6.3 Duties of the Board of Directors. The business and affairs of the Agency, and all of the powers of the Agency, including without limitation all powers set forth in Article 4 (Powers), are reserved to and shall be exercised by and through the Board of Directors, except as may be expressly delegated to the Executive Director or others pursuant to this Agreement, Bylaws, or by specific action of the Board of Directors.

6.4 Appointment of Directors. The Directors shall be appointed as follows:

6.4.1 One (1) Member Director appointed by the City Council for the City of Fillmore, which Member Director shall be a member of the City Council for the City of Fillmore or a representative.

6.4.2 One (1) Member Director appointed by the County of Ventura Board of Supervisors. Member Director will be a Supervisor or representative. Strong consideration should be given to appoint the Supervisor representing a district that overlies the Basins at least in part.

6.4.3 One (1) Member Director from appointed by the Board of Directors for the United Water Conservation District. The Member Director will be a member of the United Water Conservation District Board of Directors or a Representative.

6.4.4 The Three (3) Stakeholder Directors shall be appointed as follows:

a) Piru Basin Pumper Stakeholder Director. The Member Directors shall consider, and if acceptable, approve (by a simple majority vote) the Piru Pumper Stakeholder Director, which will be nominated by the PBPA, or the Farm Bureau of Ventura County if, and only if the PBPA is unwilling or unable to nominate a potential Piru Basin Pumper Stakeholder Director. If the Member Directors do not accept a potential Piru Basin Pumper Stakeholder Director nominated by the PBPA or the Farm Bureau of Ventura County, as applicable, the Member Directors shall request additional nomination(s), as necessary. The PBPA, or the Farm Bureau of Ventura County, shall submit its nominees to the Member Directors pursuant to a process specified in the Bylaws, unless directed otherwise by Member Directors. The Member Directors shall consider the nominees at a regular meeting and at that meeting shall approve and appoint the Piru Basin Pumper Stakeholder Director.

b) Fillmore Basin Pumper Stakeholder Director. The Member Directors shall consider, and if acceptable, approve (by a simple majority vote) the Fillmore Basin Pumper Stakeholder Director, which will be nominated by the FBPA, or the Farm Bureau of Ventura County if, and only if the FBPA is unwilling or unable to nominate a potential Fillmore Basin Pumper Stakeholder Director. If the Member Directors do not accept a potential Fillmore Basin Pumper Stakeholder Director nominated by the FBPA or the Farm Bureau of Ventura County, as applicable, the Member Directors shall request additional nomination(s), as necessary. The FBPA, or the Farm Bureau of Ventura County, shall submit its nominees to the Member Directors pursuant to a process specified in the Bylaws, unless directed otherwise by Member Directors. The Member Directors shall consider the nominees at a regular meeting and at that meeting shall approve and appoint the Fillmore Basin Pumper Stakeholder Director.

c) Environmental Stakeholder Director. The Member Directors shall consider, and if acceptable, approve (by a simple majority vote) the Environmental Stakeholder Director, which will be a nominee nominated by the following environmental organizations collectively:

1. Friends of the Santa Clara River
2. California Trout
3. National Audubon Society
4. Sierra Club
5. Santa Clara River Watershed Conservancy
6. Los Padres Forest Watch
7. Central Coast Alliance United for a Sustainable Economy
8. The Nature Conservancy
9. Wishtoyo Foundation
10. Keep Sespe Wild
11. Surfrider Foundation
12. CFROG (Citizens for Responsible Oil & Gas)

or, The Nature Conservancy if, and only if the aforementioned list of organizations is unwilling or unable to nominate a potential Environmental Stakeholder Director. If the Member Directors do not accept a potential Environmental Stakeholder Director nominated by aforementioned list of organizations or The Nature Conservancy, as applicable, the Member Directors shall request an additional nomination, as necessary. The aforementioned list of organizations, shall submit its nominee to the Member Directors pursuant to a process specified in the Bylaws, unless directed otherwise by Member Directors. The Member Directors shall consider the nominees at a regular meeting and at that meeting shall approve and appoint the Environmental Stakeholder Director.

6.5 Director Terms and Removal. Each Director shall be appointed by resolution of that Member's governing body to serve for a term of two years. To stagger the terms of the Directors, the initial terms of the Directors from the City of Fillmore, United Water Conservation District, and Piru Basin Pumpers Association shall be three years. Subsequent terms for those Directors will be two years. A Member's Director may be removed during his or her term or reappointed for multiple terms at the pleasure of the Member that appointed him or her and shall cease to be a Director when no longer a member of their governing agency's governing board. No individual Director may be removed in any other manner, including by the affirmative vote of the other Directors.

6.6 Vacancies. A vacancy on the Board of Directors shall occur when a Director resigns, is removed, or at the end of the Director's term as set forth in Section 6.5. For Member Directors, a vacancy shall also occur when he or she is removed by his or her appointing Member. Upon the vacancy of a Director, the seat shall remain vacant until a replacement Director is appointed as set forth in Section 6.4. Members shall submit any changes in Director positions to the Executive Director by written notice signed by an authorized representative of the Member. The written notice shall include a resolution of the governing board of the Member directing such change in the Director position.

ARTICLE 7
OFFICERS

7.1 Officers. Officers of the Agency shall be a chair and vice chair/secretary. A treasurer shall be appointed consistent with the provisions of Section 13.3. The vice chair/secretary shall exercise all powers of the chair in the chair's absence or inability to act.

7.2 Appointment of Officers. Officers shall be elected annually by, and serve at the pleasure of, the Board of Directors. Officers shall be elected at the first Board meeting, and thereafter at the first Board meeting following January 1st of each year. An Officer may serve for multiple consecutive terms, with no term limit. Any Officer may resign at any time upon written notice to the Board, and may be removed and replaced by a simple majority vote of the full Board.

7.3 Principal Office. The principal office of the Agency shall be established by the Board of Directors, and may thereafter be changed by a simple majority vote of the full Board. The principal office of the Agency shall be located within the jurisdictional boundaries of one or more of the Members.

ARTICLE 8
DIRECTOR MEETINGS

8.1 Initial Meeting. The initial meeting of the Board of Directors shall be held in the County of Ventura, California within sixty (60) days of the Effective Date of this Agreement.

8.2 Time and Place. The Board of Directors shall meet at least quarterly, at a date, time and place set by the Board within the jurisdictional boundaries of one or more of the Members, and at such times as may be determined by the Board.

8.3 Special Meetings. Special meetings of the Board of Directors may be called in accordance with the Ralph M. Brown Act (Government Code section 54950 *et seq.*).

8.4 Conduct. All meetings of the Board of Directors, including special meetings, shall be noticed, held, and conducted in accordance with the Ralph M. Brown Act (Government Code sections 54950, *et seq.*). The Board may use teleconferencing in connection with any meeting in conformance with and to the extent authorized by applicable law.

8.5 Local Conflict of Interest Code. The Board of Directors shall adopt a local conflict of interest code pursuant to the provisions of the Political Reform Act of 1974 (Government Code sections 81000, *et seq.*) at the first meeting following the appointment of the three Stakeholder Directors.

ARTICLE 9
VOTING

9.1 Quorum. A quorum of any meeting of the Board of Directors prior to the approval of the Stakeholder Directors shall consist of two (2) of the Member Directors. Upon approval of the Stakeholder Directors by the Board of Directors, a quorum of any meeting of the Board of Directors shall consist of a majority of the Directors. In the absence of a quorum, any meeting of the Directors may be adjourned by a vote of a simple majority of Directors present, but no other business may be transacted. For purposes of this Article, a Director shall be deemed present if the Director appears at the meeting in person or participates telephonically or by other electronic means, provided the telephone or electronic appearance is consistent with the requirements of the Ralph M. Brown Act.

9.2 Director Votes. Voting by the Board of Directors shall be made on the basis of one vote for each Director, provided however that if the matter to be voted on exclusively concerns one of the Basins and not the other, the pumper Stakeholder Director representing pumper interests in the unaffected Basin may participate in Board discussions of the matter but shall not vote on the matter. Examples of matters that exclusively concern one of the Basins and not the other include, without limitation, a water budget for one Basin, identification of undesirable results in one Basin, groundwater extraction fees applicable to one Basin, groundwater extraction allocations in one Basin, retention of consultants to study or advise the Board concerning an issue in one Basin, and adoption of a GSP for one Basin. For matters that concern both Basins, both of the pumper Stakeholder Directors may vote on the matter.

9.3 Affirmative Decisions of the Board of Directors. Except as otherwise specified in this Agreement, all decisions of the Board of Directors shall require the affirmative vote of at least four (4) Directors unless either: (i) one or more Directors is absent or conflicted from voting on the matter; or (ii) one of the pumper Stakeholder Directors is prohibited from voting pursuant to Section 9.2, in which case a decision of the Board of Directors shall require the affirmative vote of at least three (3) Directors.

ARTICLE 10
EXECUTIVE DIRECTOR AND STAFF

10.1 Appointment. The Board of Directors may appoint an Executive Director, who may be, though need not be, an officer, employee, or representative of one of the Members. The Executive Director's compensation, if any, shall be determined by the Board of Directors.

10.2 Duties. If appointed, the Executive Director shall be the chief administrative officer of the Agency, shall serve at the pleasure of the Board of Directors, and shall be responsible to the Board for the proper and efficient administration of the Agency. The Executive Director shall have the powers designated by the Board, or otherwise as set forth in the Bylaws.

10.3 Term and Termination. The Executive Director shall serve until he/she resigns or the Board of Directors terminates his/her appointment.

10.4 Staff and Services. The Executive Director may employ such additional full-time and/or part-time employees, assistants and independent contractors who may be necessary from time to time to accomplish the purposes of the Agency, subject to the approval of the Board of Directors. The Agency may contract with a Member or other public agency or private entity for various services, including without limitation, those related to the Agency's finances, purchasing, risk management, information technology and human resources. A written agreement shall be entered between the Agency and the Member or other public agency or private entity contracting to provide such service, and that agreement shall specify the terms on which such services shall be provided, including without limitation, the compensation, if any, that shall be made for the provision of such services.

ARTICLE 11
BYLAWS

The Board of Directors shall cause to be drafted, approve, and amend Bylaws of the Agency to govern the day-to-day operations of the Agency. The Bylaws shall be adopted at or before the first anniversary of the Board's first meeting.

ARTICLE 12
COMMITTEES

The Board of Directors may from time to time appoint one or more advisory committees or establish standing or ad hoc committees to assist in carrying out the purposes and objectives of the Agency. The Board shall determine the purpose and need for such committees and the necessary qualifications for individuals appointed to them. Each standing or ad hoc committee shall include a Director as the chair thereof. Other members of each committee may be composed of those individuals approved by the Board of Directors for participation on the committee. However, no committee or participant on such committee shall have any authority to act on behalf of the Agency.

ARTICLE 13
ACCOUNTING PRACTICES

13.1 General. The Board of Directors shall establish and maintain such funds and accounts as may be required by generally accepted public agency accounting practices. The Agency shall maintain strict accountability of all funds and report all receipts and disbursements of the Agency.

13.2 Fiscal Year. Unless the Board of Directors decides otherwise, the fiscal year for the Agency shall run concurrent with the calendar year.

13.3 Appointment of Treasurer and Auditor; Duties. The treasurer and Auditor shall be appointed in the manner, and shall perform such duties and responsibilities, specified in sections 6505, 6505.5 and 6505.6 of the Act. The treasurer shall be bonded in accordance with the provisions of section 6505.1 of the Act. The treasurer of one of the Members shall be the treasurer of the Agency, to be the depository and have custody of all money of the Agency from whatever source, provided that the Board of Directors may at any time select another treasurer. The Auditor shall be of the same public agency as treasurer, and shall draw all warrants to pay demands against the Agency approved by the Board.

ARTICLE 14
BUDGET AND EXPENSES

14.1 Budget. Within ninety (90) days after the first meeting of the Board of Directors, and thereafter prior to the commencement of each fiscal year, the Board shall adopt a budget for the Agency for the ensuing fiscal year. In the event that a budget is not so approved, the prior year's budget shall be deemed approved for the ensuing fiscal year, and any groundwater extraction fee or assessment(s) of contributions of Members, or both, approved by the Board during the prior fiscal year shall again be assessed in the same amount and terms for the ensuing fiscal year.

14.2 Agency Funding and Contributions. For the purpose of funding the expenses and ongoing operations of the Agency, the Board of Directors shall maintain a funding account in connection with the annual budget process. The Board of Directors may fund the Agency as provided in Chapter 8 of SGMA, commencing with section 10730 of the Water Code. As authorized by Government Code Section 6504, the Members may make initial contributions, payments and advances for operating the Agency, all of which shall be repaid to the Members pursuant to, and with accrued interest, as set forth in Section 14.3 herein. The Members agree that the Agency, and not the Members, have the sole responsibility to develop and implement a funding program to fiscally and fully implement the Agency's SGMA compliance efforts and ongoing operations.

14.3 Return of Contributions. In accordance with Government Code section 6512.1, repayment or return to the Members of all or any part of any contributions made by Members and any revenues by the Agency may be directed by the Board of Directors at such time and upon such terms as the Board of Directors may decide; provided that (1) any distributions shall be made in proportion to the contributions paid by each Member to the Agency, and (2) any capital contribution paid by a Member voluntarily, and without obligation to make such capital contribution pursuant to Section 14.2, shall be returned to the contributing Member, together with accrued interest at the annual rate published as the yield of the Local Agency Investment Fund administered by the California State Treasurer, before any other return of contributions to the Members is made. The Agency shall hold title to all funds and property acquired by the Agency during the term of this Agreement.

14.4 Issuance of Indebtedness. The Agency may issue bonds, notes or other forms of indebtedness, as permitted under Section 4.5, provided such issuance be approved at a meeting of the Board.

ARTICLE 15
LIABILITIES

15.1 Liability. In accordance with Government Code section 6507, and as authorized by Government Code Section 6508.1, the debt, liabilities and obligations of the Agency shall be the debts, liabilities and obligations of the Agency alone, and not the Members.

15.2 Indemnity. To the fullest extent permitted by law, funds of the Agency may be used to defend, indemnify, and hold harmless the Agency, each Member, each Director, and any officers, agents and employees of the Agency for their actions taken within the course and scope of their duties while acting on behalf of the Agency. To the fullest extent permitted by law, the Agency agrees to save, indemnify, defend and hold harmless each Member from any liability, claims, suits, actions, arbitration proceedings, administrative proceedings, regulatory proceedings, losses, expenses or costs of any kind, whether actual, alleged or threatened, including attorney's fees and costs, court costs, interest, defense costs, and expert witness fees, where the same arise out of, or are in any way attributable in whole or in part, to acts or omissions of the Agency or its employees, officers or agents or negligent acts or omissions (not including gross negligence or wrongful conduct) of the employees, officers or agents of any Member, while acting within the course and scope of a Member relationship with the Agency. In addition, to the fullest extent permitted by law, the Agency shall indemnify, defend and hold harmless, each Member from any liabilities incurred as a result of handling, receipt, use, or disposal of hazardous materials, hazardous substances, and hazardous wastes how so ever defined under Federal, State, or local laws, ordinances, or regulations.

15.3 Privileges and Immunities. All of the privileges and immunities from liability, exemption from laws, ordinances and rules, all pension, relief, disability, workers compensation, and other benefits which apply to the activity of officers, agents, or employees of any of the Members when performing their respective functions shall apply to them to the same degree and extent while engaged in the performance of any of the functions and other duties under this Agreement. None of the officers, agents, or employees appointed by the Board of Directors shall be deemed, by reason of their employment by the Board of Directors, to be employed by any of the Members or, by reason of their employment by the Board of Directors to be subject to any of the requirements of such Members.

15.4 Liability Insurance. The Board of Directors shall obtain, and maintain in effect, appropriate liability insurance to cover the activities of the Agency's Directors and staff in the ordinary course of their duties.

ARTICLE 16
WITHDRAWAL OF MEMBERS

16.1 Unilateral Withdrawal. Subject to the Dispute Resolution provisions set forth is Section 17.9, a Member may unilaterally withdraw from this Agreement without causing or requiring termination of this Agreement, effective upon one hundred eighty (180) days written notice to the Executive Director.

16.2 Rescission or Termination of Agency. This Agreement may be rescinded and the Agency terminated by unanimous written consent of all Members, except during the outstanding term of any Agency indebtedness.

16.3 Effect of Withdrawal or Termination. Upon termination of this Agreement or unilateral withdrawal, a Member shall remain obligated to pay its share of all debts, liabilities and obligations of the Agency required of the Member pursuant to terms of this Agreement, and that were incurred or accrued prior to the effective date of such termination or withdrawal, including, without limitation, those debts, liabilities and obligations pursuant to Sections 4.11 and 14.4. Any Member who withdraws from the Agency shall have no right to participate in the business and affairs of the Agency or to exercise any rights of a Member under this Agreement or the Act, but shall continue to share in distributions from the Agency on the same basis as if such Member had not withdrawn, provided that a Member that has withdrawn from the Agency shall not receive distributions in excess of the contributions made to the Agency while a Member. The right to share in distributions granted under this Section 16.3 shall be in lieu of any right the withdrawn Member may have to receive a distribution or payment of the fair value of the Member's interest in the Agency.

16.4 Return of Contribution. Upon termination of this Agreement, any surplus money on-hand shall be returned to the Members in proportion to their contributions made. To the extent permitted by law, the Board of Directors shall first offer any property, works, rights and interests of the Agency for sale to the Members on terms and conditions determined by the Board of Directors. If no such sale to Members is consummated, the Board of Directors shall offer the property, works, rights, and interest of the Agency for sale to any non-member for good and adequate consideration. The net proceeds from any sale shall be distributed among the Members in proportion to their contributions made.

ARTICLE 17
MISCELLANEOUS PROVISIONS

17.1 No Predetermination or Irretrievable Commitment of Resources. Nothing herein shall constitute a determination by the Agency or any of its Members that any action shall be undertaken or that any unconditional or irretrievable commitment of resources shall be made, until such time as the required compliance with all local, state, or federal laws, including without limitation the California Environmental Quality Act, National Environmental Policy Act, or permit requirements, as applicable, has been completed.

17.2 Notices. Notices to a Director or Member hereunder shall be sufficient if delivered to the Board Clerk, City Clerk or Board Secretary of the respective Director or Member and addressed to the Director or Member. Delivery may be accomplished by U.S. Postal Service, private mail service or electronic mail.

17.3 Amendments to Agreement. This Agreement may be amended or modified at any time only by subsequent written agreement approved and executed by all of the Members.

17.4 Agreement Complete. The foregoing constitutes the full and complete Agreement of the Members. This Agreement supersedes all prior agreements and understandings, whether in writing or oral, related to the subject matter of this Agreement that are not set forth in writing herein.

17.5 Severability. Should any part, term or provision of this Agreement be decided by a court of competent jurisdiction to be illegal or in conflict with any applicable federal law or any law of the State of California, or otherwise be rendered unenforceable or ineffectual, the validity of the remaining parts, terms, or provisions of this Agreement shall not be affected thereby, provided, however, that if the remaining parts, terms, or provisions do not comply with the Act, this Agreement shall terminate.

17.6 Withdrawal by Operation of Law. Should the participation of any Member to this Agreement be decided by the courts to be illegal or in excess of that Member's authority or in conflict with any law, the validity of this Agreement as to the remaining Members shall not be affected thereby.

17.7 Assignment. The rights and duties of the Members may not be assigned or delegated without the written consent of all other Members. Any attempt to assign or delegate such rights or duties in contravention of this Agreement shall be null and void.

17.8 Binding on Successors. This Agreement shall inure to the benefit of, and be binding upon, the successors, and assigns of the Members, whose assignments have complied with Section 17.7 herein.

17.9 Dispute Resolution. In the event that any dispute arises among the Members relating to (i) this Agreement, (ii) the rights and obligations arising from this Agreement, (iii) a

Member proposing to withdraw from membership in the Agency, or (iv) a Member proposing to initiate litigation in relation to legal rights to groundwater within, or the management of, either of the Basins, the aggrieved Member or Members proposing to withdraw from membership shall provide written notice to the other Members of the controversy or proposal to withdraw from membership. Within thirty (30) days after such written notice, the Members shall attempt in good faith to resolve the controversy through informal means. If the Members cannot agree upon a resolution of the controversy within thirty (30) days from the providing of written notice specified above, the dispute shall be submitted to mediation prior to commencement of any legal action or prior to withdrawal of a Member proposing to withdraw from membership. The mediation shall be no less than a full day (unless agreed otherwise among the Members) and the cost of mediation shall be paid in equal proportion among the Members. The mediator shall be either voluntarily agreed to, or, if the parties cannot agree upon a mediator, appointed by the Superior Court upon a suit and motion for appointment of a neutral mediator. Upon completion of mediation, if the controversy has not been resolved, any Member may exercise all rights to bring a legal action relating to the controversy or withdraw from membership as otherwise authorized pursuant to this Agreement. The Agency shall also participate in mediation upon request by a Stakeholder Director concerning a dispute alleged by the Stakeholder Director concerning the management of either of the Basins or rights to extract groundwater from either of the Basins, with the terms of such mediation to be conducted in the same manner provided for in this Section 17.9 for disputes between or among Members.

17.10 Counterparts. This Agreement may be executed in counterparts. No counterpart shall be deemed to be an original or presumed delivered unless and until the counterpart executed by the other Members to this Agreement is in the physical possession of the Member seeking enforcement thereof.

17.11 Singular Includes Plural. Whenever used in this Agreement, the singular form of any term includes the plural form and the plural form includes the singular form.

17.12 Member Authorization. The governing bodies of the Members have each authorized execution of this Agreement, as evidenced by the respective signatures below.

IN WITNESS WHEREOF, the Members hereto have executed this Agreement by authorized officials thereof on the dates indicated below, which Agreement may be executed in counterparts.

[Signatures on Following Page]

CITY OF FILLMORE

DATED: 6-1-2017

APPROVED AS TO FORM:

By: Carrie L Broggie

Title: Mayor, Fillmore

By: Tiffany J Israel

Title: City Attorney

COUNTY OF VENTURA

DATED: ______________________

APPROVED AS TO FORM:

By: ______________________

Title: ______________________

By: ______________________

Title: ______________________

UNITED WATER CONSERVATION DISTRICT

DATED: ______________________

APPROVED AS TO FORM:

By: ______________________

Title: ______________________

By: ______________________

Title: ______________________

CITY OF FILLMORE

DATED: ______________________

APPROVED AS TO FORM:

By: ______________________ By: ______________________

Title: ______________________ Title: ______________________

COUNTY OF VENTURA

DATED: 5/22/17

APPROVED AS TO FORM:

By: [signature] By: [signature]

Title: Director - PWA Title: Assistant County Counsel

UNITED WATER CONSERVATION DISTRICT

DATED: May 5, 2017

APPROVED AS TO FORM:

By: [signature] By: [signature]

Title: President Title: District Legal Counsel

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APPENDIX B

Communication and Engagement Plan (C&EP)

Fillmore and Piru Basins Groundwater Sustainability Agency Stakeholder Communications and Engagement Plan

February 20, 2020

Fillmore and Piru Basins
Groundwater Sustainability Agency

Contents

Purpose

California's Sustainable Groundwater Management Act (SGMA) of 2014 requires broad and diverse stakeholder involvement in the development and implementation of Groundwater Sustainability Plans (GSP) by Groundwater Sustainability Agencies (GSA). The purpose of this Stakeholder Communications and Engagement Plan (C&E Plan) is to set forth the Fillmore and Piru Basins Groundwater Sustainability Agency's (FPBGSA or Agency) methods for conducting stakeholder engagement during development of its GSPs, consistent with the requirements of SGMA. This C&E Plan provides a roadmap and tools for the Agency to use during GSP development and makes transparent to stakeholders, their opportunities to participate and contribute during the GSP development process.

SGMA requires GSAs to consider the interests of all Beneficial Users and Uses of groundwater in the Basins. Beneficial Users and Uses are defined in SGMA Section 10723.2 (discussed below under "SGMA Stakeholder Engagement Requirements and Guidance"). The GSP Emergency Regulations (Section Section 354.10) require that GSAs document in a communication section of the GSP, their efforts to actively engage diverse social, cultural, and economic elements of the population within their basins; opportunities provided for public engagement and input; and how public input is used by the Agency.

Broad and meaningful stakeholder engagement and active participation in the decision-making process throughout GSP development will assure regulatory compliance and will increase community awareness of the GSP and potential Beneficial User support during SGMA implementation.

Note: This Plan presents a set of potential outreach methods and a preliminary plan for stakeholder engagement by the FPBGSA during preparation of GSPs for the Fillmore and Piru Basins. The Agency will select appropriate outreach tools for each stakeholder event. In order to ensure an adaptive, responsive approach to stakeholder outreach and engagement, this plan may be updated and amended during its implementation.

Background

Fillmore and Piru Basins

The Fillmore and Piru Groundwater Subbasins (Basins) are within the Santa Clara River Valley in Ventura County. The California Department of Water Resources (DWR) has assigned a High Priority ranking to both Basins, principally because groundwater is the primary source of water for all water users.

The Basins are situated downstream and west of the Santa Clara River Valley East Subbasin, and upstream and east of the Santa Paula Subbasin, and are hydrogeologically connected to each other and to the upstream and downstream basins.

The Basins are characterized by diverse communities and varying land use including urban and agricultural areas. By acreage, agricultural use makes up the largest developed portion of the Basins.

Basin Governance, Decision-Making, and Guiding Principals

The FPBGSA is a joint powers authority created by the County of Ventura, City of Fillmore, United Water Conservation District (UWCD) for the purpose of implementing SGMA and is governed by a Joint Exercise of Powers Agreement (JPA). The JPA establishes a Board of Directors comprised of three Member Directors (one from each Member Agency), one Director representing the Fillmore Pumpers

Association, one Director representing the Piru Pumpers Association, and an Environmental Stakeholder Director to govern and make decisions for the Agency. The JPA and the Agency's Bylaws set forth voting procedures that shall be used to make decisions on the GSP and its implementation (JPA Section 9,2 and Bylaws Section 3.4).

According to these procedures, voting by the Board of Directors shall be made on the basis of one vote for each Director, provided however, that if the matter to be voted on exclusively concerns one of the Basins and not the other, the pumper Stakeholder Director representing pumper interests in the unaffected Basin may participate in Board discussions of the matter but shall not vote on the matter. All decisions of the Board shall require the affirmative vote of at least four (4) Directors, unless one or more Directors is absent or conflicted from voting on the matter, or a pumper Stakeholder Director is prohibited from voting per this section, in which case a decision of the Board shall require the affirmative vote of at least three (3) Directors.

The FPBGSA has developed a set of Guiding Principles that describe commitments and common interests Agency leaders have agreed to follow as they implement SGMA. These Guiding Principles are posted on the Agency's website (https://s29420.pcdn.co/wp-content/uploads/2019/11/2019-11-21-FPBGSA-Guiding-Principles-FINAL-Approved-on-11-21-19.pdf). They include general principles of understanding and specific principles related to governance, communication and education, funding and finances, and SGMA implementation and sustainability.

SGMA Stakeholder Engagement Requirements and Guidance

SGMA and its GSP Emergency Regulations provide a number of requirements related to stakeholder engagement during GSP preparation and of documentation within the GSP. These requirements include:

- SGMA (Section 10723.2) calls for consideration of all interests of all beneficial uses and users of groundwater:

  The groundwater sustainability agency shall consider the interests of all beneficial uses and users of groundwater, as well as those responsible for implementing groundwater sustainability plans. These interests include, but are not limited to, all of the following:

  (a) Holders of overlying groundwater rights, including:

  (1) Agricultural users.

  (2) Domestic well owners.

  (b) Municipal well operators.

  (c) Public water systems.

  (d) Local land use planning agencies.

  (e) Environmental users of groundwater.

  (f) Surface water users, if there is a hydrologic connection between surface and groundwater bodies.

  (g) The federal government, including, but not limited to, the military and managers of federal lands.

  (h) California Native American tribes.

(i) Disadvantaged communities, including, but not limited to, those served by private domestic wells or small community water systems.

(j) Entities listed in Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater basin managed by the groundwater sustainability agency.

- SGMA (Section 10723.4) requires the maintenance of an interested persons list:

  The groundwater sustainability agency shall establish and maintain a list of persons interested in receiving notices regarding plan preparation, meeting announcements, and availability of draft plans, maps, and other relevant documents. Any person may request, in writing, to be placed on the list of interested persons.

- SGMA GSP Emergency Regulations (Section 354.10) set forth notification requirements as follows:

  Each Plan shall include a summary of information relating to notification and communication by the Agency with other agencies and interested parties including the following:

  > *(a) A description of the beneficial uses and users of groundwater in the basin, including the land uses and property interests potentially affected by the use of groundwater in the basin, the types of parties representing those interests, and the nature of consultation with those parties.*
  >
  > *(b) A list of public meetings at which the Plan was discussed or considered by the Agency.*
  >
  > *(c) Comments regarding the Plan received by the Agency and a summary of any responses by the Agency.*
  >
  > *(d) A communication section of the Plan that includes the following:*
  >
  > > *(1) An explanation of the Agency's decision-making process.*
  > >
  > > *(2) Identification of opportunities for public engagement and a discussion of how public input and response will be used.*
  > >
  > > *(3) A description of how the Agency encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin.*
  > >
  > > *(4) The method the Agency shall follow to inform the public about progress implementing the Plan, including the status of projects and actions.*
  > >
  > > 1. *An explanation of the Agency's (GSAs) decision-making process.*
  > > 2. *Identification of opportunities for public engagement and a discussion of how public input and response will be used.*
  > > 3. *A description of how the Agency (GSA) encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin.*

4. *The method the Agency (GSA) shall follow to inform the public about progress implementing the Plan, including the status of projects and actions.*

DWR has prepared a *Guidance Document for Groundwater Sustainability Plan Stakeholder Communication and Engagement* (DWR Guidance Document) (January 2018) to assist GSAs in providing broad and meaningful stakeholder engagement. **Figure 1** presents a summary of SGMA required engagement and notification requirements for all phases of SGMA as presented in the Guidance Document.

Stakeholders (Beneficial Users and Interested Parties)

As described above, SGMA requires the FPBGA to consider all interests of all Beneficial Uses and Users of groundwater and maintain an interested parties list.

To assist GSAs in identifying stakeholders that reflect diverse social, cultural and economic elements of the population, the DWR Guidance Document provides a Stakeholder Engagement Chart that lists various interest and examples of stakeholder groups within each of these categories. This chart is shown below as **Table 1**. For purposes of this C&E Plan, Beneficial Users and interested parties are collectively referred to as stakeholders. The FPBGSA developed an initial stakeholder list, considering the requirements of SGMA, GSP Regulations, and the DWR Guidance Document. This list is presented in **Appendix A** (omitting contact and confidential personal information). It includes Beneficial Users, people who have signed up for the Agency's email list, and other potentially interested parties including local businesses, government agencies, associations, and service organizations.

The list will evolve during GSP development as additional stakeholders are identified.

Public Notification, Education, and Engagement Meetings and Media

The FPBGSA seeks to provide multiple opportunities and formats to notify the public about upcoming meetings, provide GSP status updates, educate all Beneficial Users, and obtain public input about various GSP components. These include Board Meetings, Stakeholder Workshops, the Agency's website, Board Director updates and discussions at meetings held by other agencies and organizations, emails and mailings, social media postings, and local media advertisements and articles. The anticipated functions of these meetings and media are summarized on **Table 2**. The outreach methods listed on Table 2 and described below are intended to present a range of options available to the FPBGSA as it conducts stakeholder engagement. The FPBGSA will chose the appropriate and most effective methods from among these options (likely using some but not necessarily all of the listed options) as well as additional methods that may become available. The outreach approach may change during the course of developing the GSP based on insights gained and feedback from stakeholders.

Figure 1: SGMA Notification and Engagement Requirements

Phase 1 Engagement Requirements

- **Establish and Maintain List of Interested Parties** §10723.4
- **GSA Formation Public Notice** §10723(b)
- **GSA Formation Public Hearing** §10723(b)
- **GSA Formation (due 6/30/17)** §10723(b)
  Notify DWR:
  - Include list of interested parties
  - Explain how parties' interests will be considered
- **Pre-GSP Development** §10727.8
  Provide a written statement describing how interested parties may participate to:
  - DWR
  - Cities within the GSA boundary
  - Counties within the GSA boundary

Phase 2 Engagement Requirements

- **GSP Initial Notification** §353.6*
- **GSP Preparation** §10727.8 and §10723.2
  - Encourage active involvement
  - Consider beneficial uses and users of groundwater when describing *Undesirable Results, Minimum Thresholds, and Projects & Actions*
- **GSP Communications Section** §354.10*
  - GSA decision-making process
  - Opportunities for engagement and how public input is used
  - How GSA encourages active involvement
  - Method of informing the public
- **Public Notice of Proposed Adoption** §10728.4
- **GSP Adoption Public Hearing** §10728.4
- **GSP Submittal** §354.10*
  - Include a summary of communications: description of beneficial uses/users, list of public meetings, comments received/responses

Phase 3 Engagement Requirements

- **60 Day Comment Period** §353.8*
  - Any person may provide comments to DWR regarding a proposed or adopted GSP via the SGMA Portal at http://sgma.water.ca.gov/portal/
  - Comments will be posted to DWR's website

Phase 4 Engagement Requirements

- **Public Notices and Meetings** §10730
  - Before amending a GSP
  - Prior to imposing or increasing a fee
- **Encourage Active Involvement** §10727.8

Engagement Requirements Applicable to ALL PHASES

- **Beneficial Uses and Users** §10723.2
  Consider interests of all beneficial uses and users of groundwater
- **Advisory Committee** §10727.8
  GSA may appoint and consult with an advisory committee
- **Public Notices and Meetings** §10730
  - Before electing to be a GSA
  - Before adopting or amending a GSP
  - Prior to imposing or increasing a fee
- **Encourage Active Involvement** §10727.8
  Encourage the active involvement of diverse social, cultural, and economic elements of the population within the groundwater basin
- **Native American Tribes** §10720.3
  - May voluntarily agree to participate
  - See Engagement with Tribal Government Guidance Document
- **Federal Government** §10720.3
  - May voluntarily agree to participate

Table 1: Stakeholder Engagement Chart for GSP Development

Category of Interest	Examples of Stakeholder Groups
General Public	• Citizens groups • Community leaders
Land Use	• Municipalities (City, County planning departments) • Regional land use agencies
Private users	• Private pumpers • Domestic users • School systems • Hospitals
Urban/ Agriculture users	• Water agencies • Irrigation districts • Mutual water companies • Resource conservation districts • Farmers/Farm Bureaus
Industrial users	• Commercial and industrial self-supplier • Local trade association or group
Environmental and Ecosystem	• Federal and State agencies – California Department of Fish and Wildlife (CDFW) • Wetland managers • Environmental groups
Economic Development	• Chambers of commerce • Business groups/associations • Elected officials (Board of Supervisors, City Council) • State Assembly Members • State Senators
Human right to water	• Disadvantaged Communities • Small community systems • Environmental Justice Groups
Tribes	• Tribal Government
Federal lands	• Military bases. Department of Defense • Forest Service • National Park Service • Bureau of Land Management • CDFG
Integrated Water Management	• Regional water management groups (IRWM regions) • Flood agencies • Recycled water coalition

Table 2: Notification, Education, and Engagement Meetings and Media

Meetings/Media	Notify and Inform about Upcoming Meetings and Project Status	Educate (SGMA and GSP Topics)	Obtain Public Input
FPBGSA Board Meetings	√	√	√
FPBGSA Stakeholder Workshops	√	√	√
FBBGSA Website	√	√	√
FPBGSA Board Director outreach at meetings held by other agencies and organizations	√	√	
Emails and mailings	√		
Social media (FPBGSA Facebook page)	√		
Local media (newspaper, radio, TV) ads	√		
Local news media articles	√	√	
Other agency and organization communications (websites, newsletters, etc.)	√		

FPBGSA Board Meetings

The FPBGSA Board holds monthly meetings, generally on the third Thursday of the month. These meetings are held in the evenings at the Fillmore City Council Chamber. The Board operates and provides notice for these meetings consistent with the Brown Act (California Government Code 54950 et seq.). As described below regarding the FPBGSA Website, all meeting materials are available to the public on the Agency's website. Public comments are accepted at each meeting.

During GSP development, the GSP consultant will make presentations and hold open forums on various aspects of GSP development. Upcoming Board discussion topics are posted on the Agency's website and Facebook page, and the public is encouraged to attend. Information presented at Board Meetings will also be presented and expanded upon at Stakeholder Workshops as described below.

FPBGSA Stakeholder Workshops and Implementation Timeline

The FPBGSA will provide Stakeholder Workshops throughout the GSP preparation process. These workshops will provide an opportunity for the public to learn about key topics and milestones, ask questions, and provide input. **Appendix B** provides a preliminary schedule and list of workshop topics based on the current project schedule. The list and schedule are preliminary and subject to change based on the project schedule, stakeholder feedback, and the Board's discretion. At each of these workshops, Agency leadership, staff and/or consultant (as directed by the Agency) will provide a presentation to be followed by ample time for public discussion, questions and answers, and stakeholder input. A budget update will also be provided at each workshop.

The Agency will provide handouts in English and Spanish and Spanish interpretation during the workshops, as warranted.

Appendix C provides a tool to track advertising for these workshops and document discussion topics, attendance, and evaluation comments for use in planning subsequent workshops.

Venues for Stakeholder Workshops

Four local facilities have been identified as potential venues for Stakeholder Workshops in the community:

- Veteran's Memorial Building, 511 2nd Street, Fillmore
- Fillmore Adult Active Center, 533 Santa Clara St, Fillmore
- Piru Community Center, 802 Orchard Street, Piru
- Fillmore City Council Chamber, 250 Central Avenue, Fillmore

Appendix D provides information about the features of each of these venues (e.g., capacity, hours during which the venue is available, internet availability, parking, accessibility, etc.) for consideration as workshops are planned.

The Agency anticipates that these workshops will be held during weekday evenings. It is researching the technical and financial feasibility of providing remote access to these workshops via webcast, livestream, and/or recording.

FPBGSA Website

The FPBGSA maintains a website (https://www.fpbgsa.org/) that provides the Agency's transparent, comprehensive Administrative Record of public input and additional information, including:

- Information about the Agency, the entities comprising the GSA (Ventura County, City of Fillmore, and UWCD), and its Board of Directors
- Notice of Board of Directors and other meetings
- Board of Directors Meeting materials, including agendas (provided in advance of Board Meetings), Board packets, minutes, and presentations
- SGMA information and resource documents
- Recorded presentations
- Technical reports
- Agency administrative documents (JPA, Bylaws, Budget, DWR Grant Application)
- Request for Public Records form
- Press releases
- Agency contact information (phone number and email form)

To support public awareness, the website will provide the following information:

- Stakeholder Workshop invitations and calendar
- A periodically updated list of frequently asked questions (FAQs) and answers
- Public input received at Stakeholder Workshops
- Stakeholder Workshop summaries
- Public Drafts of all SGMA required documents
- A portal for submitting public comment (text and/or document upload)

Outreach at Meetings Held by Other Agencies and Organizations

In addition to the Stakeholder Workshops provided by the GSA for the purpose of GSP engagement, there are a number of meetings held by other agencies and organizations that provide opportunities for stakeholder outreach. FPBGA Board Directors will provide GSP updates and information at the meetings they attend as representatives of their respective constituencies. Such meetings attended by current Board Directors include but may not be limited to:

- **Ventura County Director**
    - Ventura County Board of Supervisors meetings
    - Santa Clara River Watershed Committee meetings
- **UWCD Director**
    - Ventura County Farm Bureau meetings
    - UCWD Board meetings
- **City of Fillmore Director**
    - Fillmore City Council meetings
- **Fillmore Pumper Stakeholder Director**
    - Fillmore Basin Pumpers Association meetings
    - Santa Paul Basin Pumpers Association meetings
- **Environmental Stakeholder Director**
    - Friends of the Santa Clara River Board meetings
    - Santa Clara River Watershed Committee
    - Santa Clara River Steelhead Coalition
    - Santa Clara River Environmental Groundwater Committee
    - Great Ventura County Groundwater Sustainability Agency Environmental Stakeholder Collaborative
    - California Non-Governmental Groundwater Collaborative
    - Ventura County Integrated Water Management Program Disadvantaged Community stakeholder outreach and education meetings ("WaterTalks" Meetings)
    - GSA Environmental Stakeholder Workshops
- **Piru Pumper Stakeholder Director**
    - Piru Basin Pumpers Association meetings

Appendix E provides a tool to assist in the documentation of outreach conducted at these meetings.

Other meetings that provide opportunities for outreach are:

- Piru Neighborhood Council meetings
- Santa Clarita Valley Water Agency monthly meetings with UWCD

Emails and Mailings

The FPBGSA will send emails and mailings to stakeholders about upcoming Stakeholder Workshops and will provide general GSP updates. Emails will be sent to those on the stakeholder list, described above and shown in Appendix A.

GSP updates will also be provided within mailed UWCD invoices (twice per year, February and September/October) and GSA bills (twice per year, late February/early March and October/November).

Social Media

The Agency maintains a FPBGSA Facebook page (https://www.facebook.com/FPBGSA/) with posts about upcoming meetings. The Agency will provide posts about upcoming Stakeholder Workshops. It will also investigate using Nextdoor as an additional social media platform.

Local Media

The FPBGSA may choose to advertise upcoming Stakeholder Workshops in local newspapers, radio and TV stations, including the following:

- Newspapers:
  - Ventura County Star *(contact: Darrin Peschka, dpeschka@vcstar.com,(805-437-0254)*
  - Fillmore Gazette *(contact: Tenea Golson, info@fillmoregazette.com, 805-524-2481)*
  - Santa Paula Times *(contact: Peggy Kelly, sptimesnewspaper@gmail.com, 805 525-1890)*
  - Citizens Journal *(online news journal, contact: Editor@citizensjournal.us)*
- Radio stations
  - KCLU *(contact: Lance Orozco, kclunews@aol.com (805) 493-3900)*
  - KQRU – Santa Clarita *(for inter-basin communication, contact: Santa Clarita Organization for Planning the Environment, exec-scope@earthlink.net, 661-255-6899)*
  - KVTA – AM, local news *(contact: Tom Spence, tom@kvta.com, studio: 805 650-1590, office: 805 289-1400)*
- Television stations
  - Fillmore Access Television (Channel 10), community bulletin board: https://www.fillmoreca.com/departments/media-services/fillmore-access-television

The Agency may also prepare press release and communicate with journalists to support feature stories in local news media.

Other Agencies' and Organizations' Communication Channels

The FPBGSA may request that the other organizations include information about the GSP and upcoming meetings in their newsletters and/or on their websites, including but not limited to:

- Farm Bureau of Ventura County newsletter (hard copy and email) *(http://www.farmbureauvc.com/)*
- Ventura County Coalition of Labor, Agriculture, and Business website *(http://colabvc.org/)*
- Santa Clara River Conservancy newsletter and website *(https://santaclarariver.org/)*
- Keep Sespe Wild newsletter and website *(http://www.sespewild.org/, Editor Alasdair Coyne: sespecoyne@gmail.com)*
- Los Padres Forest Watch newsletter and website *(https://lpfw.org/)*
- Environmental Coalition newsletter *(contact: Andy Prokopow, andy_prokopow@mail.com, 805-642-4919)*
- Ventura County Agricultural Association newsletter *(https://www.ventura.org/agricultural-commissioner/)*
- Chamber of Commerce website *(http://venturachamber.com/)*
- "Fillmore News…What's Happening Today?" Facebook page *(https://www.facebook.com/groups/235415826509708/?epa=SEARCH_BOX)*

Key Messages

As the FPBGSA begins the process of reaching out to stakeholders to inform and engage them in groundwater management issues and items, it is critical that it share clear and consistent key messages to avoid confusion and misunderstanding. Key messages are as follows:

1. Preparing a GSP is **required** by SGMA.
2. SGMA allows for **local control** if the GSP is prepared within the specified timeline (by January 31, 2022).
3. The information obtained during this process will help us understand the Basins' sustainable yield and **empowers** us to manage and maintain the basins.
4. The GSP will increase **certainty** about the future sustainability of our ground water supply.
5. The FPBGSA is committed to an **open and transparent** GSP preparation process.

As described above, the FPBGSA has identified a set of Guiding Principles (posted on the Agency's website (https://s29420.pcdn.co/wp-content/uploads/2019/11/2019-11-21-FPBGSA-Guiding-Principles-FINAL-Approved-on-11-21-19.pdf). These Principles identify additional messages about how the Agency intends to implement SGMA.

Consideration and Use of Public Input

As described in this C&E Plan and to ensure consistency with SGMA Regulations (Section 354.10), the FPBGSA will conduct extensive and broad outreach efforts to engage and seek stakeholder input. To assure that this input is incorporated into the Board's decision-making, the Agency will conduct the following:

1. All public input will be assembled, documented, and maintained as part of the Agency's Administrative Record.
2. The Administrative Record will be maintained by the Clerk of the Board and will be available to the public at the United Water Conservation District.
3. The Agency will aim to make presentation materials available on its website three days prior to each public meeting.
4. The Agency will highlight public input received at each public meeting (questions and comments) in meeting minutes, which will be available on its website.
5. The Administrative Record will be updated prior to each Board Meeting and available to FPBGSA Board members and the public three days before a SGMA decision is made.
6. For each Board meeting at which a decision regarding the GSP shall be made, the Board packet shall include a summary of the public input relevant to that decision as of the time the packet is prepared. This summary shall also be verbally presented to the Board prior to its deliberation. The Board meeting minutes shall memorialize the Board's discussion and consideration of public input prior to Board's decision action.

Evaluation and Assessment

The FPBGSA will evaluate the effectiveness of its outreach and engagement methods throughout the process and in particular following each Stakeholder Workshop. Among the factors to be considered are:

- How well was the workshop attended?
- How did workshop participants find out about the meeting?
- What topics were participants most interested in during the workshop?
- Were the presentations clear and effective in conveying the information needed by stakeholders to understand and take part in GSP development?
- Was there ample time for discussion, questions, and answers?
- Did participants have an opportunity to provide meaningful input?

Appendix F provides an evaluation form that the Agency may use to obtain participant feedback.

Appendix A: Stakeholder List

The following table provides a list of Beneficial Users and potentially interested parties identified to date. This list will evolve during the GSP preparation process.

Beneficial User/Interested Party Category	Stakeholder Name
Beneficial User - public water system	Brownstone Mutual Water Company
Beneficial User - public water system	Citrus Mutual Water Company
Beneficial User - municipal well operator	City of Fillmore
Beneficial User – public water system	Community Mutual Water Company
Beneficial User – public water system	Fillmore Irrigation Company
Beneficial User – public water system	Goodenough Mutual Water Company
Beneficial User – public water system	Hardscrabble Mutual Water Company
Beneficial User – public water system	San Cayetano Mutual Water Company
Beneficial User – public water system	South Mountain Mutual Water Company
Beneficial User – public water system	Southside Improvement Company
Beneficial User – public water system	Storke Mutual Water Company
Beneficial Users – surface water users	Surface water users
Beneficial User – public water system	Timber Canyon Mutual Water Company
Beneficial User – public water system	Toland Road Water System
Beneficial User – public water system	Warring Water Service, Inc.
Beneficial User - public water system	United Water Conservation District
Beneficial Users - well owners, surface water users	UWCD rate payers
Public agency - agricultural	Agricultural Commissioner's Office
Public agency - housing	Area Housing Authority
Association - water agencies	Association of Water Agencies (AWAVC)
Special district - cemetery	Bardsdale Cemetery District
Public agency - library	Blanchard Library
Non-profit - youth	Boys and Girls Club of Santa Clara Valley
Public agency - education	Briggs Elementary School District
Non-profit - housing	Cabrillo Economic Development Corporation
Public agency - environmental	California Department of Fish and Wildlife
Non-profit - environmental	CalTrout
Public agency - city	City of Santa Paula
Non-profit - environmental	Climate First Replacing Oil and Gas (CFROG)
Business - tourist attraction	Fillmore & Western Railway
Association - business	Fillmore Association of Businesses

Appendix A: Stakeholder List (continued)

Public agency - fire protection	Fillmore Fire
Non-profit - fire protection	Fillmore Fire Foundation
Business - news media	Fillmore Gazette
Non-profit - historic museum	Fillmore Historical Museum
Public agency - library	Fillmore Library
Non-profit - community service	Fillmore Lions Club
Public agency - land use planning	Fillmore Planning Department
Public agency - police	Fillmore Police Department
Association - groundwater users	Fillmore Pumpers Association
Non-profit - community service	Fillmore Rotary Club
Public agency - public safety	Fillmore Search and Rescue
Public agency - education	Fillmore Unified School District
Other – interested individuals	Individuals who have signed up for the FPBGSA email list
Non-profit - environmental	Friends of the Santa Clara River
Non-profit - agricultural labor	House Farmworkers
Non-profit - environmental	Keep Sespe Wild
Non-profit - Latino community	League of United Latin American Citizens (LULAC) Santa Clara Valley
Union - labor	LiUNA! Southern California District Council of Laborer's
Non-profit - environmental	Los Padres Forest Watch
Non-profit - Latino community	LULAC District 17
Business - housing	Many Mansions
Public agency - education	Mupu Elementary School District
Public agency - environmental	National Marine Fisheries Service
Non-profit - teens	One Step a La Vez
Special district - cemetery	Piru Cemetery District
Non-profit - community	Piru Neighborhood Council
Association - groundwater users	Piru Pumpers Association
Public agency - education	Santa Clara Elementary School District
Non-profit - environmental	Santa Clara River Environmental Committee
Non-profit - environmental	Santa Clara River Steelhead Coalition
Public agency - environmental	Santa Clara River Watershed Committee
Non-profit - environmental	Santa Clara River Watershed Conservancy
Non-profit - health	Santa Clara Valley Hospice
Public agency – upstream GSA	Santa Clarita Valley Groundwater Sustainability Agency
Public transportation - transportation	Santa Paula Airport
Association - business	Santa Paula Chamber of Commerce
Non-profit - disaster preparedness	Santa Paula Citizen Corps

Appendix A: Stakeholder List (continued)

Public agency - housing	Santa Paula Housing Authority
Non-profit - Latino community	Santa Paula Latino Townhall
Association - religious	Santa Paula Ministerial Association
Public agency - police	Santa Paula Police
Non-profit - community service	Santa Paula Rotary
Business - news media	Santa Paula Times
Public agency - education	Santa Paula Unified School District
Non-profit - environmental	Sierra Club Los Padres Chapter
Non-profit - community service	Soroptomist International of Fillmore
Non-profit - homelessness	Spirit of Santa Paula
Public agency - environmental	State Coastal Conservancy
Non-profit - environmental	Surfrider Foundation
California Native American tribe (no official tribal lands within the Basins)	The Barbareño/Ventureño Band of Mission Indians
Business - news media	The Mountain Enterprise
Non-profit - environmental	The Nature Conservancy
Public agency - education, research	UC Santa Barbara - Riparian Invasion Research Laboratory
Public agency - education	University of California Cooperative Extension
Non-profit - environmental	Ventura Audubon Society
Non-profit - environmental	Ventura Coastkeeper
Public agency - county	Ventura County
Non-profit - labor, agriculture	Ventura County Coalition of Labor, Agriculture and Business (CoLAB)
Public agency - education	Ventura County Community College District (VCCCD)
Association - economic	Ventura County Economic Development Association (VCEDA)
Association - agriculture	Ventura County Farm Bureau
Public agency - fire protection	Ventura County Fire Department (VCFD)
Pubic agency - land use planning	Ventura County Planning Division
Special district - environmental	Ventura County Resource Conservation District
Public agency - sheriff	Ventura County Sheriff's Office
Public agency - environmental	Watersheds Coalition of Ventura County
Non-profit – tribal, environmental	Wishtoyo Foundation

Appendix B: Preliminary Stakeholder Workshop List and Schedule

The following list is preliminary and subject to change based on the project schedule, stakeholder feedback, and the Board's discretion.

- **SGMA 101 and Basin Setting – April 2, 2020, Veteran's Memorial Building, 250 Central Avenue, Fillmore, 6 pm – 8 pm**
    - SGMA 101
    - Hydrogeological Conditions
    - Model preparation - preliminary discussion about the need, value, and timing for the model
    - Budget update
- **Model and Water Budget – June/July 2020 (Location to be determined [TBD])**
    - Technical discussion of the model
    - Water budget
    - Budget update
- **Sustainable Management Criteria - August/September 2020** (possible separate meetings for each Basin) (Location TBD)
    - Sustainability goals
    - Undesirable results
    - Minimum thresholds
    - Measurable objectives
    - Budget update
- **Proposed Projects and Management Actions - October 2020** (possible separate meeting for each Basin) (Locations TBD)
    - Proposed Projects and Management Actions to be considered in the GSP
    - Budget update
- **Public Draft GSPs** – **June 2021** (separate meeting for each basin) (Locations TBD)
    - Review of Public Draft GSP
    - Budget update

Appendix C: Stakeholder Workshop Outreach Tracking and Documentation Tool

Meeting Date/Location	Email-blast to Stakeholder List? when?	Mailings? When?	Flyer distributed at other meetings/events? Where and when?	Additional outreach and publicity (press release, ads, posting on other websites, notice in other newsletters)	Topics discussed at meeting	# of participants, interests represented	Evaluation, additional comments

Appendix D: Venues for Stakeholder Workshops

Venue	Venue Contact	Room Capacity	Availability (days/hours)	Audiovisual Equipment, Internet Access/Wifi	Parking	Accessible?	Cost
Veteran's Memorial Building 511 2nd Street, Fillmore	Julie Latshaw, jlatshaw@ci.fillmore.ca.us	Ballroom - 500 Back room - 175	24/7	Pull down screen, no projector, no WiFi	Limited parking in the back of the building, street parking. High School parking lot across the street available during non-school hours	Yes (ramp is located in back of building)	Ballroom: $125/2 hours, $275/6 hours Back room: $50/2 hours, $250/6 hours
Fillmore Adult Active Center 533 Santa Clara Street, Fillmore	Julie Latshaw, jlatshaw@ci.fillmore.ca.us	200	Weekdays after 5 pm and weekends	No equipment or WiFi, can project onto back wall	On-site	Yes	No charge
Piru Community Center 802 Orchard Street, Piru	Ventura County Parks Reservation Center: 805-654-3951	Large room- 125 Small room - 65	8 am-10 pm, 7 days/week	No equipment or WiFi	On-site	Yes	Large room: $250; Small room: $125 Plus $20 reservation fee and $275 security deposit, On-site security mandatory for events after 6 pm

Appendix D: Venues for Stakeholder Workshops (continued)

Fillmore City Council Chamber 250 Central Avenue, Fillmore	Julie Latshaw, jlatshaw@ci.fillmore.ca.us	Varies depending on layout (dais not conducive for community meetings)	Varies	Must use own equipment; screen on the wall	Behind the building and street parking	Yes	No charge

Appendix E: FPBGSA Board Director Outreach Documentation Tool

Agency/Organization	Meeting Date, Location	Stakeholder interests represented at meeting	GSP information shared/topic discussed	Notes/Comments

Appendix F: Stakeholder Workshop Evaluation Form

Fillmore Piru Basins Groundwater Sustainability Agency
Groundwater Sustainability Plan
Stakeholder Workshop Evaluation

Workshop Date: ______________________

Please answer the following questions about today's program by circling the appropriate number.

	Excellent	Good	Average	Poor	Very Poor	N/A No Opinion
	(5)	(4)	(3)	(2)	(1)	(0)
1. What is your overall rating of today's program?	5	4	3	2	1	0
2. Rate the usefulness to you of the information in today's program	5	4	3	2	1	0
3. Rate how clearly the material was presented	5	4	3	2	1	0
4. Rate the opportunity provided to ask questions, discuss concerns, and provide input to the GSP	5	4	3	2	1	0
5. Rate the location and accessibility of today's program	5	4	3	2	1	0
6. Rate the length of today's program	5	4	3	2	1	0

ADDITIONAL QUESTIONS AND SPACE FOR COMMENTS ON REVERSE SIDE

Contact Information (OPTIONAL):

*Name:*____

*Email address:*____

Phone number: ____

Appendix F: Stakeholder Workshop Evaluation Form (continued)

7. How did you hear about this meeting?

8. What information did you find to be most useful?

9. What additional information or presentations would be useful and interesting to you? *(Please provide your phone number and/or email address if you would like the Agency to contact you regarding this information.)*

10. What suggestions do you have to improve these meetings?

11. Please include any additional comments that you have regarding the event:

Fillmore and Piru Groundwater Subbasins
Guiding Principles

The following describes commitments and common interests that combined leadership from the Fillmore and Piru Groundwater Subbasins (Basins) have agreed on as a way to influence current and future compliance with the Sustainable Groundwater Management Act (SGMA). Under the requirements of SGMA, certain groundwater basins must create one or more Groundwater Sustainability Agencies (GSA) to regulate groundwater and implement SGMA. The Basins have created a joint GSA titled the Fillmore and Piru Basins Groundwater Sustainability Agency (FPBGSA) to achieve this requirement. Similarly, SGMA requires the development of one or more Groundwater Sustainability Plans (GSP) for each groundwater basin. Once approved by the State, a GSP guides implementation of SGMA for a 20-year period (with accommodation for periodic revisions of the GSP if warranted). The FPBGSA will prepare two GSPs, one for each Basin, to achieve coordinated SGMA compliance for sustainable groundwater management.

As reflected in this introduction, SGMA is a complex law that mandates the local and State-scale regulation of groundwater. Attachment A (below) presents significant background and context about SGMA and groundwater conditions in the Basins and readers of the following Guiding Principles are encouraged to review the Attachment.

The following Guiding Principles reflect unanimous agreements by the FPBGSA Board of Directors.

General Principles of Understanding

Gen1. SGMA requires that GSAs (including the FPBGSA) consider the interests of all Beneficial Uses and Users of groundwater in compliant groundwater basins. (See Attachment B for a list of these interests as defined in SGMA). More specifically, SGMA requires that GSAs encourage the active involvement of diverse social, cultural, and economic elements of the population within a groundwater basin. The FBPGSA is committed to uphold this inclusive approach through all aspects of GSP development and SGMA implementation.

Gen2. Pursuant to SGMA, all Beneficial Users and Uses are required to comply with SGMA and by extension, the GSPs prepared by the FPBGSA which will guide SGMA implementation.

Gen3. The FPBGSA supports a partnered approach among various local agencies and organizations to support SGMA implementation. A partnered approach to groundwater management is in the best interest of the Basins' Beneficial Users because it will maximize efficiencies, keep costs at a minimum, and capitalize on skills and strengths of various partners. This approach will reflect mutual respect for each partner's role and mission, governmental authorities (when applicable), expertise, knowledge of groundwater conditions, rights, needs and concerns.

Gen4. Implementation of SGMA may be expensive and all Beneficial Users will need to contribute in some way. Failure to implement SGMA locally will result in State intervention and even greater costs and regulation.

Gen5. Local control of groundwater should be preserved to the maximum extent practicable, and State intervention to implement SGMA should be avoided.

Gen6. Sustainable groundwater conditions in the Basins are critical to support, preserve, and enhance the economic viability, social well-being, environmental health, and cultural norms of all Beneficial Users and Uses including Tribal, domestic, municipal, agricultural, environmental and industrial users.

Gen7. FPBGSA is committed to conduct sustainable groundwater practices that balance the needs of and protect the groundwater resources for all Beneficial Users in the Basins.

Gen8. The FPBGSA will have an open, transparent process for GSP development and SGMA implementation. Extensive outreach is a priority of FPBGSA members to inform Beneficial Users about implementation and potential effects of SGMA, and to ensure the FBPGSA is informed of all Beneficial User input as a means to support GSA decision-making.

Gen9. SGMA implementation is new to water users throughout the State, thus there are many unknowns. Willingness by all GSA members and Beneficial Users to adapt and adjust during GSP development (based on science and facts) and SGMA implementation is crucial to the Basins' success.

Specific Principles of Understanding

Governance

Gov1. The FPBGSA operates as a governing public agency, granted with regulatory authorities provided in SGMA.

Gov2. The FPBGSA's purpose is to implement SGMA in the Basins. The FPBGSA is committed to develop local SGMA compliance and sustainability solutions, and thereby maintain local control and avoid State intervention and management of local groundwater resources. It is also committed to solutions that will avoid costly litigation between stakeholders.

Gov3. The FPBGSA Joint Exercise of Powers Agreement (JPA) is the legal foundational document for the GSA. These Guiding Principles are intended to be consistent with and in furtherance of the JPA. In the event of a conflict between the JPA and these principles, the JPA take precedence.

Gov4. The JPA requires its Board of Directors to include representative directors from Member Agencies (the City of Fillmore, County of Ventura, and United Water Conservation District) and stakeholder directors (Fillmore Basin and Piru Basin Pumper Stakeholder Directors and an environmental stakeholder director). The FPBGSA is committed to maintaining this diverse and balanced representation in its governance and decision-making.

Gov5. While the FPBGSA Board of Directors have unique responsibilities to serve their respective organizations and interests, these individuals also have a responsibility (as signatory parties to the JPA) to serve the interests and regulatory authorities of the FBPGSA in its required role to identify, achieve, and maintain sustainable groundwater conditions in the Basins. FPBGSA Directors and staff are committed to fulfill this SGMA-specific responsibility.

Gov6. The FPBGSA represents and seeks to preserve the groundwater interests of all Beneficial Users and Uses in the Basins equitably and transparently.

Gov7. The FPBGSA will comply with all applicable State and federal regulations and statutes.

Gov8. Discussions among the FPBGSA Board of Directors, staff, and Beneficial Users may be challenging at times. The FPBGSA will conduct these discussions in a collaborative manner with a commitment to respectful civil discourse among all participants.

Communication and Education

Com1. In addition to its statutory responsibilities and authorities, the FPBGSA is committed to provide consistent, transparent educational opportunities for all Beneficial Users about water resources, land uses and water management in the Basins

Com2. The FPBGSA is committed to partner, now and in the future, with other agencies and organizations not currently engaged in GSP development and SGMA implementation.

Com3. The FPBGSA will engage with neighboring basins to achieve coordinated groundwater management and to ensure that consistent and productive communication takes place for the mutual best interests of Beneficial Users in the Basins and all adjacent basins.

Funding and Finances

Fund1. The FPBGSA recognizes its duty to taxpayers, ratepayers, and future generations to ensure that financial resources are used effectively and responsibly to promote sustainable groundwater conditions. The FPBGSA is committed to carefully use collected fees in the most prudent ways possible to fully comply with SGMA and to avoid expanding beyond the scope of SGMA in a manner that might create undo costs to Beneficial Users.

Fund2. The budgeting process and ongoing management of the FPGGSA will be fully transparent to all stakeholders. Budgets may be changed by unexpected circumstances but the FPBGSA Board and staff are committed to follow budget projections as closely as possible. The FPBGSA recognizes its duty to assessment payers and future generations to ensure that its financial resources are used effectively and responsibly to promote sustainable groundwater conditions.

Fund3. The FPBGSA is committed to pursue financial and infrastructure solutions and beneficial partnerships with other agencies within and adjacent to the Basins to provide sustainable water supplies for all constituents within the framework of SGMA.

Fund4. The GSPs should encourage maximum flexibility to adapt to changes in FPBGSA membership, funding and planning oversight as the parties build their relationships and mutual trust.

Fund5. Data collection and groundwater studies are essential to increase knowledge and to support groundwater management decisions. Funding (including rate increases and grants) and implementing such studies is and will be a priority and a shared responsibility among all FBPGSA members and Beneficial Users.

Fund6. The FPBGSA will seek alternative sources of funding beyond rate payers and is committed to defer funding choices from local FPBGSA member agencies whenever feasible.

SGMA Implementation and Sustainability

Sus1. Future sustainable groundwater conditions will depend on land uses and water demand targets being in balance with available water resources. The FPBGSA is committed to work with land use agencies in the Basins to promote land use practices and water demand targets that achieve sustainable water resources.

Sus2. The FPBGSA is committed to enhance groundwater resiliency to protect the Basins from undesirable results as defined by the six SGMA indicators of basin health and sustainability and outcomes of future climate change variables.

Sus3. As described in Appendix A, imported water plays a role in the overall surface water portfolio of the Basins. This imported water may become a more significant source of future recharge water for the Basins and will be considered in the process of formulating the GSPs and subsequent SGMA implementation.

Sus4. The GSPs will encourage utilizing surface water to its full extent as available, feasible, and legal, and conserving groundwater for use during dry periods when surface water is not readily available or affordable.

Sus5. FPBGSA members and Beneficial Users may have different requirements under different water resource conditions to ensure that minimum thresholds are achieved or exceeded. These potential different requirements will be defined in the GSPs and implemented by the FPBGSA.

Sus6. Groundwater conditions throughout the Basins are not uniform. Conditions vary by location, surface water conditions, precipitation, and water year type. While all Beneficial Uses and Users will share the obligation to achieve sustainability, solutions will need to reflect these geographic and hydrogeographic differences.

Sus7. The FPBGSA recognizes that groundwater recharge occurs through many different means. Applied surface water, precipitation, porous supply and drain ditches, and Best Management Practices utilized by Beneficial Users contribute to the Basins recharge. Studies will quantify the availability of such recharge and provisions will be included in the

GSPs to ensure that future groundwater extractions are consistent with quantified recharge and the sustainable yields of the Basins.

Sus8. Integrated water management is a set of methods to extract, transport, store, use, and share groundwater and surface water throughout a groundwater basin to ensure a resilient water supply for all water users. To support SGMA objectives and Basin-wide water needs, the FPBGSA will pursue an integrated water management approach for the Basins. An integrated water management approach will honor the social, cultural, natural, and economic diversity of the Basins. It will seek to ensure that all Beneficial Users have necessary water resources. An integrated water management approach may rely on but may not be limited to:

a. Science-based decision-making.
b. Projects and methods to recover and restore the Basin aquifers.
c. Collective and individual groundwater use requirements to ensure that groundwater elevations are not depleted below minimum thresholds.

SGMA requires that groundwater dependent ecosystems be considered in GSPs as part of potential interconnectedness between groundwater and surface water. In this context:

Sus9. The FPBGSA acknowledges the interconnectedness of groundwater and surface water resources in the Basins, the contributions to the groundwater system from surface water applications and that this interaction plays an important role in the Santa Clara River (River) ecosystem (e.g., at the boundary between the Basins; and the boundaries between the up-gradient and down-gradient adjacent River subbasins). Within the Basins, the River is a largely naturalized water feature with significantly fewer built impediments than found in other southern California river systems. The River ecosystem (including tributaries) includes aquatic and adjacent terrestrial habitats for a multitude of species, including those with State and Federal threatened and endangered status. The FPBGSA is committed to assess these water and ecological relationships and to minimize undesirable results on groundwater dependent ecosystems in the Basins.

Sus10. SGMA requires, and the FPBGSA is committed to, robust analysis of current and future climate-based conditions to ensure that the Basins are resilient to climate change-related impacts.

Sus11. Groundwater recharge, surface water deliveries, and the base flows of the Basins' tributaries will be impacted by climate change and associated water conditions. The FPBGSA will ensure the use of best available science to inform management decisions before, during, and after extreme climate-based conditions, within the scope of SGMA.

Under SGMA, groundwater users that extract two acre-feet of groundwater or less per year for domestic purposes are defined as "de minimis." This classification limits the statutory financial and measurement responsibilities of these groundwater extractors and is a means through which some SGMA-related burdens are minimized for this select set of groundwater extractors. In this context:

Sus12. The FPBGSA is committed to the definition of de minimis and will explore opportunities to minimize SGMA-related impacts to all groundwater extractors and users, in particular disadvantaged communities who rely solely on groundwater.

Sus13. The de minimis classification does not excuse a Beneficial User from their legal responsibility to comply with SGMA.

Sus14. The FPBGSA will evaluate and account for the incremental impacts that de minimis water users have on the Basins’ water budgets.

Sus15. The FPBGSA is committed to provide appropriate compliance benefits that are afforded to de minimis users but to also ensure that potential groundwater use impacts are not imposed on other Beneficial Users that do not meet the de minimis definition.

ATTACHMENT A
The Fillmore and Piru Subbasins – Background and Conditions

Introduction and Background

The Fillmore (4-004.05) and Piru (4-004.06) Groundwater Subbasins (Basins) are located in Ventura County in the Santa Clara River Valley. The Basins are defined by the California Department of Water Resources (DWR) in "*Bulletin 118*", the official State publication on the occurrence and nature of statewide groundwater conditions. The Basins are technically defined as two of a series of alluvial groundwater subbasins of the larger Santa Clara River Valley Basin and are situated downstream and west of the Santa Clara River Valley East Subbasin, and upstream and east of the Santa Paula Subbasin, all of which are similarly defined by DWR in Bulletin 118. As illustrated by the proximities described above, the Basins are hydrogeologically connected to each other and to the upstream and downstream basins.

The Basins are characterized by diverse communities and varying land use including urban and agricultural areas. By acreage, agricultural use makes up the largest developed portion of the Basins.

Groundwater and Associated Watershed Conditions

Groundwater is currently the primary source of water in the Basins for agriculture, and municipal and industrial use. The largest source of groundwater recharge is from rainfall. Other sources of groundwater recharge include two Los Angeles County Wastewater Reclamation Plants (i.e., Saugus and Valencia Plants) that discharge tertiary treated water directly into the Santa Clara River, contributing recharge to the east end of Piru Basin; and by a relatively small amount of State Water Project (SWP) surface water imported by the United Water Conservation District (UWCD) and released into the Santa Clara River. Beyond this small SWP contribution, snowpack in the Sierra Nevada does not contribute significantly to recharge in the Basins. UWCD releases water from Lake Piru and Castaic Lake through the Santa Clara River over the Piru, Fillmore, and Santa Paula Basins. Lake Piru (current capacity of 82,000 acre-feet) is filled primarily by rainwater but may also receive SWP imported water through Pyramid Reservoir. Castaic Lake is already partially replenished with SWP water.

Historically, groundwater in the Basins has been quick to recharge during average or above-average rainfall years through winter flows of the Santa Clara River and many local tributaries and creeks including Sespe Creek, Pole Creek, Hopper Canyon Creek, Piru Creek, and others. Sespe Creek may support surface flows to the Santa Clara River into late summer during average or above-average rainfall years. By example, substantial groundwater level recovery of both Basins occurred during recent (2019) above-average rainfall periods, which followed the most intense drought in recent local history. Groundwater levels in all but the east end of the Piru Basin dropped to the lowest recorded levels during the recent drought but recovered quickly to near pre-drought conditions following above average rainfall in 2019. This pattern of groundwater level declines during major droughts, followed by recovery, is observable in the historical data and is likely to persist into the future. Groundwater quality of the Basins was not degraded by the recent drought or by lower than average groundwater levels, but the quality of water moving into the Basins from upstream basins is a concern and will be considered in the Groundwater Sustainability Plans (GSP) (described further below).

Lower than average groundwater levels caused by the recent drought have not resulted in reported permanent (inelastic) land subsidence impacts in the Basins or a reduction in groundwater aquifer storage capacity. Due to the generally coarse-grained sediments comprising the aquifers, subsidence is not anticipated to be a significant concern in the Basins.

Historical Groundwater Management in the Basins

California Assembly Bill 3030 was enacted in 1992, which established in the California Water Code sections 10750-10756, a systematic procedure for a local agency to develop a groundwater management plan. Subsequently, in 1995, a Memorandum of Understanding (M.O.U.) was signed among United Water Conservation District (United Water or United), the City of Fillmore, water companies and other pumpers to establish how an AB 3030 groundwater management plan would be formulated for the Piru and Fillmore groundwater basins (M.O.U.,1995). The M.O.U. established that the Management Plan would be a cooperative plan for the Basins. After the adoption of the M.O.U., a Groundwater Management Plan (Plan) was formulated and adopted in 1996. The Plan outlined the roles of the various parties in implementing a groundwater management program, including the establishment of a Groundwater Management Council to manage the Plan. The Council consisted of seven members: two City Council representatives from Fillmore, four pumpers (of which two were from private entities and two from investor-owned companies or mutual water companies), and one elected board member from United Water.

SB 1938 (2002) and AB 359 (2013) required additional elements be included in all AB 3030 management plans, and an updated Draft Piru/Fillmore Basins AB 3030 Groundwater Management Plan was submitted to the AB 3030 Groundwater Management Council in 2011. The Draft Plan update included Basin Management Objectives (BMOs) for groundwater elevations, groundwater quality and surface water quality at various locations. It also included a groundwater export policy which provoked considerable discussion. In 2013 an updated version of the Draft Plan was submitted to the Council. The revised draft of the Plan was never adopted by the Council and therefore never finalized. The AB 3030 process has since been superseded by the Sustainable Groundwater Management Act.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) was passed by the State legislature and signed by Governor Brown in 2014 and was enacted on January 1, 2015. It requires the formation of Groundwater Sustainability Agencies (GSA) in priority groundwater basins. It further requires that these GSAs prepare GSPs, submit them for approval to DWR and then implement the GSP over a 20-year period during which each basin must achieve and maintain sustainable groundwater conditions.

SGMA defines sustainable groundwater management as "*the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.*" Sustainable conditions are generally defined as those conditions that existed as of January 2015 when SGMA became a law.

Per SGMA, there are six indicators that are used to determine if a basin has sustainable conditions. A basin will be considered unsustainable if there are significant and unreasonable conditions and Undesirable Results (see Attachment B) in the basin from one or more of the following:

- Chronic lowering of groundwater levels;
- Reduction of groundwater storage;
- Land subsidence that substantially interferes with surface land uses;
- Degraded water quality, including the migration of contaminant plumes that impair water supplies;
- Depletions of interconnected surface water and groundwater; or
- Seawater intrusion.

As stated above, certain groundwater basins are required to comply with SGMA based on their priority. Groundwater basins that have gone through an adjudication process (e.g., the down-gradient Santa Paula Basin) are exempt from a number of the SGMA requirements but do have new requirements to report basin conditions to the DWR. In addition to characterizing the location of all groundwater basins in the state, DWR also has the responsibility to set (and at times, modify) the priority of each basin into one of four categories: High, Medium, Low, or Very Low. Prioritization is conducted for each basin using a set of variables that includes but is not limited to: current and projected basin population, groundwater elevation, groundwater connectedness to surface water, total number of wells, irrigated acreage, groundwater reliance by beneficial users, and similar. All High and Medium priority basins are required to comply with SGMA. In addition to the prioritization process, some High priority basins were also designated as being "Critically Overdrafted". Critically Overdrafted Basins are required to prepare and submit their GSPs two years earlier than all other priority basins. These basins must submit their GSPs to DWR by January 31, 2020. All other SGMA compliant basins (including the Fillmore and Piru Subbasins) must complete and submit their GSPs by January 31, 2022. The FPBGSA's target for GSP adoption and submittal to DWR is therefore on or before January 31, 2022. The GSPs must be updated every five years. Actions to achieve sustainable conditions by 2042 will be described in the GSPs for the Basins.

The Basins are individually ranked "High" priority by DWR, principally because groundwater is the primary source of water for all water users. Other reasons include a lack of recent subsidence data, and declining groundwater levels during the 2012-2017 drought that contributed to lower scoring for the habitat and streamflow components of the prioritization methods.

SGMA compliant evaluations of the sustainability indicators in the Basins will be extensive. All indicators will be assessed with the likely exception of Seawater Intrusion. All current data shows that the Basins are not affected by seawater intrusion due to their inland location and groundwater elevations consistently above mean sea level, even during droughts.

ATTACHMENT B
SGMA EXCERPTS

10723.2. CONSIDERATION OF ALL INTERESTS OF ALL BENEFICIAL USES AND USERS OF GROUNDWATER

The groundwater sustainability agency shall consider the interests of all beneficial uses and users of groundwater, as well as those responsible for implementing groundwater sustainability plans. These interests include, but are not limited to, all of the following:

(a) Holders of overlying groundwater rights, including:
  (1) Agricultural users.
  (2) Domestic well owners.

(b) Municipal well operators.

(c) Public water systems

(d) Local land use planning agencies.

(e) Environmental users of groundwater.

(f) Surface water users, if there is a hydrologic connection between surface and groundwater bodies.

(g) The federal government, including, but not limited to, the military and managers of federal lands.

(h) California Native American tribes.

(i) Disadvantaged communities, including, but not limited to, those served by private domestic wells or small community water systems.

(j) Entities listed in Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater basin managed by the groundwater sustainability agency.

10721. DEFINITIONS

(x) "Undesirable result" means one or more of the following effects caused by groundwater conditions occurring throughout the basin:

  (1) Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and groundwater recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods.

  (2) Significant and unreasonable reduction of groundwater storage.

(3) Significant and unreasonable seawater intrusion.

(4) Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.

(5) Significant and unreasonable land subsidence that substantially interferes with surface land uses.

(6) Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

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APPENDIX C

List of Public Meetings / Response to Comments

FPBGSA Public Meetings on GSP Development		
Date	**Meeting Type**	**GSP Topics**
July 18, 2019	**FPBGSA Board Meeting**	**GSP development update, roles and responsibilities of the GSA and Board Members**
September 27, 2019	**FPBGSA Board Meeting**	**GSP development update, Groundwater model progress**
November 21, 2019	**FPBGSA Board Meeting**	**GSP development update, draft Guiding Principles, C&E Plan**
December 19, 2019	**FPBGSA Board Meeting**	**GSP development update, C&E Plan**
January 16, 2020	**FPBGSA Board Meeting**	**GSP development update, C&E Plan, Sampling and Analysis Plan**
February 20, 2020	**FPBGSA Board Meeting**	**GSP development update, C&E Plan**
April 16, 2020	**FPBGSA Board Meeting**	**GSP development update, Sustainable Management Criteria (SMC)**
May 21, 2020	**FPBGSA Board Meeting**	**GSP development update, Groundwater Dependent Ecosystems (GDEs)**
June 18, 2020	**FPBGSA Board Meeting**	**GSP development update, groundwater model, management areas**
June 25, 2020	**Stakeholder Workshop**	**Introduction to SGMA, hydrogeological conditions, groundwater model, water budget**
July 16, 2020	**FPBGSA Board Meeting**	**GSP development update, water budget, future conditions**
August 20, 2020	**FPBGSA Board Meeting**	**GSP development update, future conditions, SMC**

September 17, 2020	**FPBGSA Board Meeting**	**GSP development update, future conditions**
October 1, 2020	**Stakeholder Workshop**	**SMC**
October 15, 2020	**FPBGSA Board Meeting**	**GSP development update, SMC**
November 4, 2020	**FPBGSA Special Board Meeting**	**SMC**
November 19, 2020	**FPBGSA Board Meeting**	**GSP development update, SMC**
December 9, 2020	**Stakeholder Workshop**	**Groundwater model**
December 17, 2020	**FPBGSA Board Meeting**	**GSP development update, SMC**
January 21, 2021	**FPBGSA Board Meeting**	**GSP development update, SMC**
February 18, 2021	**FPBGSA Board Meeting**	**GSP development update, SMC**
March 18, 2021	**FPBGSA Board Meeting and Stakeholder Workshop**	**GSP development update, GDEs, SMC**
April 1, 2021	**FPBGSA Special Board Meeting and Stakeholder Workshop**	**GDEs, SMC**
April 15, 2021	**FPBGSA Board Meeting**	**GSP development update, SMC**
May 6, 2021	**FPBGSA Special Board Meeting**	**SMC**
May 20, 2021	**FPBGSA Board Meeting**	**GSP development update, SMC**
June 10, 2021	**FPBGSA Special Board Meeting**	**SMC**
June 17, 2021	**FPBGSA Board Meeting**	**GSP development update**
July 15, 2021	**FPBGSA Board Meeting**	**GSP development update**

APPENDIX C2
RESPONSE TO COMMENTS ON EARLY DRAFT TECHNICAL MEMORANDA - SUBSIDENCE

The following technical memorandum on subsidence was released as preliminary drafts in February 2021 to provide an opportunity for stakeholder input early in the GSP preparation process:

- *Fillmore and Piru Basins **Land Subsidence Evaluation** Technical Memorandum, DBS&A, February 4, 2021. (Link to February 4, 2021 Draft Subsidence Tech Memo)*

RESPONSE TO COMMENTS ON FEBRUARY 2021 DRAFT LAND SUBSIDENCE EVALUATION

Comment Letter 7. County of Ventura Public Works, March 5, 2021

Comment 7-1:

Background

- *The memo states subsidence related to oil and gas withdrawal in the subbasins has not been historically observed or determined. How are conclusions drawn regarding hydrocarbon extraction without quantifiable or known hydrocarbon extraction data? It appears that there are plugged oil and gas wells within both subbasins which could have historically had an impact on subsidence.*
- *There is no discussion regarding hydrogeological continuity with the Santa Clara River Valley East Subbasin, groundwater extraction from this subbasin and the effect of recharge on the Piru/Fillmore subbasins, and surficial deposition and sedimentation from tributaries and the upper reaches of the Santa Clara River.*

Response to Comment 7-1:

The quantity of hydrocarbons removed from the subsurface in the Fillmore and Piru basins cannot definitively determined due to lack of adequate reporting of historical operations. For the purposes of SGMA, the quantity of the hydrocarbons is of secondary importance to the physical manifestations of land subsidence. While hydrocarbon extraction is a documentable causative factor in some oil fields, there is no readily identifiable evidence of land subsidence associated with historical hydrocarbon extraction operations. Very few currently active hydrocarbon extraction wells are found in or near these basins and likewise, no subsidence has been documented with their operations. The 2020 Ventura County General Plan does not refer to land subsidence associated with hydrocarbon extraction as a current hazard.

Groundwater extraction from the Santa Clara River Valley East Subbasin does not have a direct effect on the water levels in the Piru basin. A significant proportion of the surface water flow from the Santa Clara River East Subbasin is effluent from the waste water treatment plants in that Subbasin. The water levels near the Ventura / Los Angeles County Line are generally very stable (Appendix K) as a result of that effluent and there is little groundwater extraction occurring in that area. More detailed discussions of the relationship between the waste water treatment plant effluent and water levels in the Piru basin are contained in the GSP (for example Section 2 and Appendix K) with supplemental data contained in the online database (www. https://fillmore-piru.gladata.com/).

Surficial deposition/sedimentation is not a sustainability indicator defined in SGMA. Any potential compaction of the sediments due to self-weight loading is beyond the scope of this Plan. SGMA is focused on subsidence due to groundwater extractions.

Comment 7-2:

<u>Geodetic Surveys</u>

- *Overall, the historical survey data is not very representative of groundwater extraction-related subsidence. It shows a good case for a need for more survey locations overlying the subbasins. It currently does not provide enough data to support any trends.*

Response to Comment 7-2:

We agree that the geodetic data from the existing CGPS is not necessarily representative of the potential land movements of the parts of the basin underlain by alluvium and where groundwater extractions are most extensive. The FPBGSA Board of Directors will consider the need for additional CGPS monitoring locations as more InSAR data becomes available (see Section 4 of GSPs). The long-term trends were supplied by UNAVCO.

Comment 7-3:

<u>InSAR Data</u>

- *The memo states that general land surface movement trends can be seen in the InSAR data. Agreed, the data and data collection locations are representative of minor subsidence occurring in the Fillmore Subbasin and indicative of potential elastic rebound via groundwater replenishment in the central Piru Subbasin.*

Response to Comment 7-3:

It is important to recognize that the InSAR data shows, in almost all locations, that the land surface movements derived from the satellite-generated data, are less than the instrumental resolution of the technology. While it is tempting to draw inferences from the data values less than the technologies resolution, it is generally not considered a sound scientific conclusion.

Comment 7-4:

<u>Future Potential Subsidence</u>

- *There is no discussion of the potential for future planned development to impede surface water infiltration and percolation (elastic subsidence) or the effect of increased pumping due to development.*

Response to Comment 7-4:

The future planned development in these basins is negligible based on information supplied by the City of Fillmore and Ventura County. These basins are not likely to experience large urbanization programs that would materially change of the amount of impervious cover and alter infiltration of runoff.

The effects of increased future groundwater extractions were considered in Section 6 of this technical memorandum. The groundwater flow model for these basins was used to simulate what water levels are expected to be in the future using the 2070 Climate Change Factors proposed by CA DWR. The future scenarios included climate change, increases in groundwater extraction (as defined by Fillmore Basin Pumpers Association, Piru Basins Pumpers Association, City of Fillmore, and Waring Water), changes in waste water treatment plant effluents for City of Fillmore and County of Ventura, and potential changes in waste water effluent from the treatment plants in Santa Clarita (see GSP section 2, Appendices E, F, H, I, J, and K). Figure 8 in the Subsidence Technical Memorandum illustrates how future groundwater levels are not likely to fall below the estimated historical low water levels.

RESPONSE TO COMMENTS

Comment number	Comment	Organization	Issue	Response
GDE_001	**Do Not Eliminate GDEs Based on the 30-foot Depth to GroundwaterCriterionComment:** 2.1.2 Procedure, starting on p. 11 - GDE identification, required per California Code of Regulations, Title 23 § 354.16(g), is based on methods that risk exclusion of ecosystems that may depend on groundwater. **Issue #1:** The GDE-FPB Memo utilizes Rohde *et al* . (2018) by "*assigning GDE status to vegetation communities either within 30 feet of the ground surface or where interconnected surface waters are observed* " (pg. 11). This depth-to-groundwater method applied to the Natural Communities Commonly Associated with Groundwater (NCCAG) dataset to eliminate potential GDEs is fallible.	CDFW	Do not use 30 ft depth to Groundwater	The 30 foot depth to water threshold does a reasonable job of capturing phreatophytes in the basins and is considerably deeper than the rooting depth of most of the mapped vegetation which is <15 ft. In addition, because the gradient in groundwater is relatively steep outside the zones of rising groundwater, increasing the threshold depth would not change the extent of GDEs very much (see Figure 2.1-2 in the revised document).
GDE_002	**Issue #2:** CDFW is concerned with the removal of potential GDEs with a depth to groundwater greater than 30 feet from the 2005-2015 baseline. The 2005-2015 baseline that the analysis depends on (starting pg. 74) falls several years into a historic drought when groundwater levels throughout the Fillmore Basin were trending lower than usual due to reduced surface water availability. As such, this period of groundwater elevations with several years of a historic drought does not consider representative climate conditions or account for GDEs that can survive a finite period without groundwater access (Naumburg et al. 2005). Naumburg *et al* .(2005) presents several models that evaluate how GDEs rely on fluctuating groundwater elevations for long-term survival. GDEs have been sustained by groundwater, despite the depth of the groundwater table being greater than 30 feet below ground surface due to these fluctuating groundwater elevations.	CDFW	Do not use 30 ft depth to Groundwater	Our approach used the highest groundwater data (e.g., Spring 2019) that was available to us. Our goal was to include vegetation communities that could potentially use groundwater at any time in their life history (i.e., not just in summer or drought years). We did not exclude GDEs within 30 ft, but do note where the rooting depth of most plants is shallow and groundwater is deep. The text was revised to clarify the approach we used.
GDE_003	**Recommendation:** CDFW recommends developing a hydrologically robust baseline that considers the groundwater elevation fluctuations associated with climate conditions. This approach would also account for the inter-seasonal and inter-annual variability of GDE water demand.	CDFW	Develop new baseline hydrology	See above, we do this by using the highest groundwater available.
GDE_004	**Comment**: 3.3.1 Piru Groundwater Basin, p. 27 - data gap regarding effluent releases in Los Angeles County. Issue: CDFW agrees with the GDE-FPB Memorandum that effluent releases in Los Angeles County are believed to be a significant contributor to surface water flow. Riparian habitat, a GDE within the basin, relies on various locations with a high groundwater table and the subsurface flows that help to maintain the high groundwater table.	CDFW	Effluent into basin as a data gap	Given the relatively thin alluvial sediments in this reach, the team was unable to find a suitable place to monitor groundwater.
GDE_005	Recommendation: CDFW recommends closely monitoring effluent releases in Los Angeles County, to understand and incorporate how much the effluent releases contribute to not only surface flow, but also subsurface flow and groundwater recharge.	CDFW	Effluent into basin as a data gap	Releases from Los Angeles County will continue to be monitored by UWCD.
GDE_006	Comment #3: Additional Remote Sensing and Shallow Groundwater Wells are Needed to Understand Groundwater Elevations for GDE Units Comment: 3.1 Groundwater Levels, p. 19 - data gaps "because there are no representative wells located in or near the unit. Many of the wells used in the analysis below are screened below the shallow groundwater depths used by GDEs and may not accurately represent the actual groundwater elevation."	CDFW	Sparse monitoring network	See response GDE_008
GDE_007	Issue: CDFW agrees with the GDE-FPB Memorandum that the groundwater levels may not be accurate under the GDEs due to lack of critical groundwater level data. According to p. 30 - "The role of shallow groundwater elsewhere in the basin is less certain and will be assessed based on interpolated groundwater elevation and vegetation." The current monitoring network lacks enough representative distribution of shallow groundwater monitoring wells to monitor impacts to environmental beneficial uses and users of groundwater and interconnected surface waters [23 CCR § 354.34(2)].	CDFW	Sparse monitoring network	See response GDE_008
GDE_008	Recommendation: CDFW recommends the installation of shallow groundwater monitoring wells near potential GDEs and interconnected surface waters, potentially pairing multiple-completion wells with additional streamflow gauges. CDFW agrees with the GDE-FPB Memorandum's recommendation on p. 91 that states: "remote sensing and shallow groundwater elevation monitoring, particularly during and following droughts is recommended." This will facilitate an improved understanding of surface water-groundwater interconnectivity and the overall health of GDEs.	CDFW	Sparse monitoring network	The Fillmore and Piru Basins GSA has identified 6 new or modified wells to monitor groundwater elevations. These wells are located near GDEs and cover gaps in the data record.
GDE_009	Many wells are located at higher elevations compared to GDEs, and when comparing depth-to-groundwater well data to plant rooting depths this can result in misinterpretation in groundwater-connectivity. Recommendation: Instead of using groundwater well data near GDEs, correct for land surface elevation at GDEs to determine depth-to-groundwater at the GDEs. See Best Practice #5 in this TNC guidance: https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_NCdataset_BestPracticesGuide_2019.pdf	FSCR	Sparse monitoring network	Added description of GDE elevation transects to Section 3.1. Added maximum and minimum GDE elevations to depth to water plots and discussion.
GDE_010	Section 5.4.3 should describe groundwater thresholds for the 3 GDE units most susceptible to groundwater impacts. For example, it is highly recommended that groundwater levels at Cienega be restored to pre-drought (circa 2011) levels. This will ensure that groundwater conditions can facilitate riparian succession can occur, that the invasive non-native Arundo donax doesn't take over and increase evapotranspiration losses in the basin, and critical species habitat isn't permanently lost. Recommendation: One way to determine thresholds and objectives (ideal conditions) for your three target GDEs is to plot NDVI versus depth to groundwater (DEM corrected). This would assist in determining what depth to groundwater conditions are needed to maintain GDE conditions. Use a baseline prior to the recent drought, which is more hydrologically robust, building in resilience and taking precautions for future droughts and accounting for projected mega-droughts. The average 2011 hydrograph and groundwater level in the shallowest aquifer could perform as a measurable objective.	FSCR	Describe groundwater thresholds for GDE units	Added depth to water and NDVI plots to the technical memo.
GDE_011	The Nature Conservancy has new updated guidance on developing groundwater thresholds and objectives for ecosystems. Recommendation: Please review https://groundwaterresourcehub.org/public/uploads/pdfs/GroundwaterThresholdFramework_Final_updated_Dec2020.pdf	FSCR	Updated Nature Conservancy guidance on depth to water	Added description of GDE elevation transects to Section 3.1. Added max/min GDE elevations to depth to water plots and discussion.
GDE_012	Reevaluate Elimination of GDE's Based on a 30-foot Depth to Groundwater Criteria. At the March 18, 2021 FPBGSA stakeholder workshop, California Department of Fish and Wildlife representative Steve Slack noted that the Department has noted GDE's with the rooting depth to groundwater that was greater than 30 feet and voiced concern with the removal of potential GDEs using this criteria. Page 3 of 9 FPBGSA Draft GDE Tech Memo Recommendation: Follow CDFW suggestion to develop a hydrologically robust baseline that considers groundwater elevation fluctuations associated with climate conditions, inter-seasonal and inter-annual variability of GDE water demand and source species list noting GDE's with a rooting depth greater than 30 feet.	FSCR	Do not use 30 ft depth to Groundwater	See Response to GDE_002.
GDE_013	Projected Flow Releases from Los Angeles County. Effluent releases from Santa Clarita wastewater treatment works and bypass flows from Pyramid Dam (Southern State Water Project) are contributors to surface water flow, and riparian habitat and GDEs within the basin. Both facilities are going through re-permitting processes. Recommendation: Monitoring and/or request reporting of effluent releases from Los Angeles County needs to be adequately captured in the inter-basin memorandum of understanding. The MOU should include timelines to adequately capture any and all foreseen changes to future releases, particularly if these trigger minimum thresholds associated with sustainable management criteria for beneficial users and uses.	FSCR	Effluent into basin as a data gap	UCWD will continue to monitor effluent releases from LA County.
GDE_014	However, the potential effects on non-vegetative beneficial users and uses such as Southern steelhead, and the subsequent steps of setting of sustainability criteria for these, needs further development and improvement. Without a thorough understanding of hydrologic/biotic relationship, the draft Groundwater Sustainability Plan cannot ensure that significant and unreasonable adverse impacts from groundwater depletion are avoided (California Department of Water Resources 2016).	FSCR	Non-vegetation GDEs	Text changes were made to section to specifically address O. mykiss.
GDE_015	Recommendation: Further analysis and efforts to assess the quantity and timing of interconnected surface water and groundwater is necessary for GDE's. These either need to be developed or captured as a data gap with actionable study to address data gap by the five-year review of the GSP. Installation of additional shallow groundwater monitoring wells and streamflow gauges near GDEs are necessary to understand the interconnectedness and monitor ongoing health and SMC compliance.	FSCR	Interconnected surface water	Additional monitoring wells are discussed in the monitoring appendix. These wells are located near GDEs and should improve our understanding of shallow groundwater dynamics. There is a section on interconnected flows in the document and we have more explicitly discussed fish passage and interconnected surface water.

RESPONSE TO COMMENTS				
Comment number	**Comment**	**Organization**	**Issue**	**Response**
GDE_016	Currently, the Draft Sustainability Criteria for GDEs are based on statewide data on "vegetation known to use groundwater" and doesn't include minimum thresholds and measurable objectives for groundwater used by other biological resources, such as seasonal migration of fishes. The TNC framework does call for further biological assessment in the case of endangered species. The lack of further biological assessment and SMC development would be a gross omission in thoroughly identifying GDE needs in the Draft Plan. In addition to supplying water to the root zone of plants, groundwater can also contribute to surface flows, influencing the timing, duration, and magnitude of surface flows, particularly base flows that support aquatic invertebrates, avian fauna, and fish species, including native resident and anadromous fishes. Groundwater that supports seasonal surface flows can also contribute to the life-cycle of migratory fishes, such as steelhead and lamprey, that can make use of intermittent flows for both migration, spawning and rearing. While we appreciate and commend Stillwater Sciences on identifying GDE, the current vegetative-centric approach to minimum thresholds and measurable objectives of GDE's is not sufficient to capture the potential impact to other beneficial uses/biota.	FSCR	Interconnected surface water	We have added more information on O. mykiss passage related to groundwater. O. Mykiss rearing in the mainstem is a data gap. SMC development is discussed elsewhere in the GSP.
GDE_017	Recommendation: All identified environmental beneficial uses and users need to be explicitly included in the Draft Plan's sustainability goals, not solely vegetative communities. SMC's need to be developed that will capture and protect all GDE's identified. Model-based predictions suggest a minimum flow of 800 cfs is required to provide a depth of 0.6 ft continually across 10ft of channel (Keller et.al, 2006), and should be considered when setting sustainability criteria for a wider set of beneficial uses/users in the GSP.	FSCR	Assess impacts on in-stream habitat	The beneficial users have been more explicitly described in the text. Text changes were made to section to specifically address O. mykiss in relation to interconnected surface water.
GDE_018	While these groundwater-influenced flows may not support permanent vegetative cover, they can nevertheless support seasonal use of this reach of the Santa Clara River for migratory or rearing purposes, depending on the amount, and timing of annual rainfall and runoff and the groundwater elevation. The Santa Clara River along its entire reach is always connected to an aquifer because it either receives water from the surrounding sediments or supplies water to the surrounding sediments, or both. This reach is also designated critical steelhead habitat and constitutes a beneficial use.	FSCR	Assess impacts on in-stream habitat	We have expanded this discussion. Note that interconnected surface water requires that the groundwater be connected to surface flows through a continuous saturated zone. Groundwater recharge from disconnected surface water is common in many reaches of the Santa Clara River.
GDE_019	It is also important to recognize that the TNC assessment of groundwater water conditions reflects conditions that have been and continue to be significantly influenced by extensive water developments within the Santa Clara River watershed, including extensive water diversion and groundwater pumping programs (e.g., Pyramid, Santa Felicia, and Castaic dams); these activities have had a cumulative affect on groundwater levels and related surface flows within the Fillmore and Piru basins (Stillwater 2011a). Past and/or current effects of anthropogenic activities should not exclude or significantly delay the capacity of the aquatic environment to develop or maintain essential physical or biological features that species rely upon for growth and survival, otherwise the SMC's and ultimately the GSP would not be consistent with the sustainability requirements of SGMA. This reiterates the importance of the MOU and inter-basin agreement with upstream users aforementioned...To ensure that the Fillmore and Piru Basins GSA's GDE Tech Memo and subsequent GSP's adequately recognizes instream beneficial uses of the Santa Clara River that are potentially affected by the management of groundwater within the basins, the sustainable management criteria, minimum thresholds, and measurable objectives, must analyze and capture the important relationship between the extensive surface diversions and groundwater recharge program within the basins, and its potential adverse effects on GDE's and namely the federally endangered steelhead (Oncorhynchus mykiss).	FSCR	Assess impacts on in-stream habitat	Text changes were made to section to specifically address O. mykiss in relation to interconnected surface water.
GDE_020	Undesirable results for Southern steelhead include any adverse loss or modification to critical steelhead habitat (rearing, spawning and migration corridors) that hinders the ability of designated critical habitat to provide for steelhead survival because of pumping. Outside of the aforementioned flow metricadditional complementary sustainability metrics could include those used in NMFS "envelope method"3. Many natural variables such as seasonal surface flow patterns, water quality including temperature and established wetted channel, are significantly impacted by artificial modification in freshwater habitat and are possible metrics for minimum thresholds and measurable objectives. Ultimately identifying a metric that will identify an affect to the timing, duration and/or magnitude of surface flows essential for steelhead migration, spawning and rearing due to sub-surface extractions. Steelhead metrics will likely have a spatial and temporal component, as sustainability needs may vary due to life-cycle needs and migration windows, which may require dedicated management areas.	FSCR	Assess impacts on in-stream habitat	Steelhead rearing in the Santa Clara River is a data gap. There is no data on steelhead rearing in the Fillmore and Piru basins, although previous research has identified the mainstem Santa Clara River as a migration corridor (Stoecker and Kelley 2005). We have adjusted the text to reflect the connection bewteen rising groundwater and steelhead passage.
GDE_021	. To adequately address Southern steelhead impacts, a steelhead limiting factor analysis may likely be needed, as the Recovery Plan's analysis may be too course for these two basins. This is a data gap that can better inform management decisions that invariably may impact the endangered species. The GSA needs to identify the flow levels that effectively support essential life-history functions, specifically flows that adequately support adult steelhead and smolt migration during the winter and spring, and juvenile rearing year-round. The steelhead limiting factor analysis, shallow groundwater monitoring wells paired with stream flow gauges will begin to address the existing data gap around hydrologic/biotic relationships. Low summer baseflow is a significant stress to steelhead, and groundwater inputs can affect fine scale surface flow conditions and will need to be closely monitored in identified GDE areas.	FSCR	Assess impacts on in-stream habitat	Based on the lack of data on steelhead use of interconnected surface water in the Fillmore and Piru Basins, a limiting factors analysis is beyond the scope of the GSA's responsibility, but the GSA would offer letters of support for such a study.
GDE_022	While pool depths and riffle depth were discussed as possible sustainability metrics, it was acknowledged that changing channel morphology makes it difficult to map in a reliable way. Furthermore, we would caution using a minimum instream flow need, as these don't necessarily address broader life history needs and habitat requirements for long-term survival and recovery. Functional flows that incorporate and provide migration cues for adult steelhead and ecological flow functions will need to be sustained.	FSCR	Assess impacts on in-stream habitat	See previous comments regarding steelhead.
GDE_023	FSCR requests that a revised Draft Tech Memo and Sustainable Management Criteria Matrix be re-circulated to give interested parties an opportunity to review and comment on the memo before it is finalized. Particularly, as per the TNC Critical Species Lookbook, it behooves the GSA to formally request NMFS' comments on the draft at this juncture. Further input from the Santa Clara River Steelhead Coalition could also be requested to ensure pertinent stakeholders are adequately engaged.	FSCR	Additional agency input	Noted.
GDE_024	We do however recommend removal of the California Condor, as known condor habitats are not associated valley floor riparian areas.	UWCD	Change species inventory	Condor is removed as a GDE species because the habitat is not part of a GDE in these basins.
GDE_025	As noted by the authors, the Tech Memo also includes multiple incorrect references to Pacific lamprey occurrence in the Santa Clara River upstream of Sespe Creek and in lower Piru Creek. Please remove those inaccurate references.	UWCD	Change species inventory	This has been fixed.

RESPONSE TO COMMENTS				
Comment number	**Comment**	**Organization**	**Issue**	**Response**
GDE_026	The authors appear to presuppose that all riparian habitats in the Piru and Fillmore basins are Groundwater Dependent Ecosystems (GDEs). The documents consistently refers to all riparian communities as "GDE Units." Simply "riparian plant communities" or "potential GDE Units" would be a much better working reference throughout the document. Consistent use of the GDE Unit term applied to areas that are finally determined to not be GDEs provides ample opportunity for inaccurate or misleading citations or references to the Tech Memo. Notable, the authors drop the GDE Unit tag in Section 5.4.3 when three Riparian Complexes are identified as important GDEs for consideration in the Groundwater Sustainability Plans (GSPs) for the Piru and Fillmore basins.	UWCD	GDE vs riparian unit	We've added some discussion to clarify this and describe the GDEs as potential GDEs, then discuss GDE likelihood in Section 5.
GDE_027	The Tech Memo lacks a clear definition of what distinguishes a GDE from other riparian communities sustained by surface water flows, soil moisture, or shallow local/perched groundwater occurrence that is not subject to significant influence from pumping from the main aquifers of the basins. It would be helpful if these definitions were included early in the document.	UWCD	GDE vs riparian unit	This has been clarified in the text.
GDE_028	Discussion of the hydrology associated with the Del Valle Riparian Complex could be much improved. United's understanding is that rising groundwater primarily occurs in the upper portions of this complex in the western portion of the Eastern basin (in Los Angeles County). Less than a mile downstream of the county line (the rather arbitrary head of the Piru basin), the abandoned Blue Cut gaging station is located on a bedrock high. From this point downstream to the Las Brisas bridge, surface flow is thought to be stable, and sustained by the rising water and recycled water discharges in Los Angeles County. The river transitions to a losing reach near the Las Brisas bridge, the current location of the USGS stream gage. A shallow water table commonly exists in this area, but is clearly sustained by the surface water flows from upstream areas. Please take care to describe this area in more detail and note that the occurrence of rising water in this area is not influenced by any known groundwater pumping in the Fillmore basin.	UWCD	Del Valle hydrology discussion	Added description of Del Valle and upstream hydrology, following UCWD comments.
GDE_029	Please take care when referencing United's groundwater elevation contours. Noting a shallow depth to water in a single year near the western margins of Santa Clara River Riparian Shrubland habitats in the Piru and Fillmore basins should not suggest that United believes shallow groundwater is common across those habitats. United agrees with Stillwater's assessment that Tributary Riparian areas are not likely to be "connected to groundwater."	UWCD	UCWD groundwater elevation contour references	We've added a map of the contour depth and text that clarifies that these are high groundwater conditions and are not reflective of typical groundwater levels.
GDE_030	Well 03N20W08A01S may be a poor choice to represent shallow groundwater elevations in the East Grove Riparian Complex. Water level records from this well appear to show a confined aquifer response from deeper production zones. One would expect shallow groundwater levels to be much more stable in this area known to commonly have groundwater discharge to the channel of the Santa Clara River.	UWCD	Selection of representative wells	Well deleted.
GDE_031	Regarding the Del Valle Riparian Complex, surface water flow in the first mile of the Santa Clara River within the Piru basin likely includes groundwater inputs, but below Blue Cut the river is stable or losing. Care should be taken to appropriately characterize how or if groundwater production in the Piru basin would significantly influence the health or extent of the Del Valle Riparian Complex.	UWCD	Impact of groundwater production in Piru basin on Del Valle unit	Added discussion of Del Valle.
GDE_032	Page 2 states flows on Piru Creek have been regulated except for the 1969 flood. In 2005 the dam also spilled (12,000 cfs?) and so there may be other instances of this. UWCD staff should check the records to verify this statement.	Ventura Co Public Works	Piru surface water	Refer this question/comment to United.
GDE_033	Page 4, reference to USGS gauge 11114000 seems to indicate it is still active. The USGS has not maintained or published the data for this gauge for sometime. Currently this is done by Watershed Protection for their gauge 723 and wehave operated the gauges at locations 720 and 724 as well.	Ventura Co Public Works	Gage 11114000	The period of record (1927-2004) was added to the text.
GDE_034	The inconsistent use of plant community nomenclature throughout the document, as well as the lack of clear community descriptions, invalidates the conclusions regarding ecological value and dependence on groundwater.	Ventura Co Public Works	Vegetation descriptions	We have clarified some of the community names in the text (e.g., tamarisk versus saltcedar). We decided to use the community name assigned by the relevant vegetation map (there were 3 different). We then used our experience in the basin to assess dominant species and things like rooting depth.
GDE_035	Incorrect usage/spelling of common and scientific names occurs throughout the text.	Ventura Co Public Works	Vegetation descriptions	This has been edited.
GDE_036	For special-status species, we suggest emphasizing that SWFL and WYBC requiremore extensive and contiguous riparian woodlands, compared to LBVI which canmake use of smaller scrub patches.	Ventura Co Public Works	Vegetation descriptions	Added text to describe this.
GDE_037	We agree that m ore shallow wells are needed to discern the true level and extent of groundwater in the GDEs. Incomplete data sets lead to many assumptions in the analyses.	Ventura Co Public Works	Sparse monitoring network	Comment noted.
GDE_038	We agree with the conclusion that the Del Valle, Cienega, and East Riparian Complexes are the most important GDE units Grove to consider in the GSP analyses. We recommend more study and data collection to determine how the Santa Clara River Riparian Shrubland GDE units are affected by groundwater and if its management wou ld affect them. The Shrublands form substantial cover within the river and provide habitat connectivity among the Riparian Complexes.	Ventura Co Public Works	Sensitivity of SCR Riparian Shrubland units to GW changes	One of the monitoring wells proposed by FPBGSA is located near the downstream end of the riparian shrubland. This unit has very shallow rooted plants, disconnected surface water and very rare shallow groundwater.
GDE_039	In this section, please clarify why the FPBGSA has not determined projects and/or management actions are needed. Do the conclusions in this and other reports indicate the GDEs are adequately sustained and current groundwater extractions are not affecting them? Or has the FPBGSA not yet developed management actions due to a need for more information or time?	Ventura Co Public Works	Projects and management actions	This is clarified in the Draft GSPs.
GDE_040	The Stillwater Sciences 2013 reference page 11 is not included in the list of literature cited.	Ventura Co Public Works	References	Reference updated.
GDE_041	As explained more fully in the enclosure, the Draft Memorandum does not, but should, adequately address the recognized instream beneficial uses of the Santa Clara River, or other GDE, potentially affected by the management of groundwater within the Fillmore and Piru Groundwater Basins. In particular, the revised Draft Memorandum should adequately recognize or analyze the important relationship between the extensive groundwater extractions program within Fillmore and Piru Groundwater Basins (and the conjunctively managed Fox Canyon Groundwater Basin) and its potential adverse effects on the federally endangered steelhead (Oncorhynchus mykiss) and habitat for this species.	NMFS	Assess impacts on in-stream habitat	We have clarified the discussion of interconnected surface water where the interconnected water occurs and have highlighted special status species dependent on interconnected water.
GDE_042	Management of the groundwater of the Fillmore and Piru Basins has affected the water resources and other related natural resources in the Santa Clara River Watershed. For example, extraction of groundwater from these basins has lowered groundwater levels to the point of inducing eliminated artesian springs that supported a wide variety of plant and animal species, and affected surface flows that support the migrations of endangered steelhead in the Santa Clara River Watershed (Stillwater Sciences 2007a, 2007b, 2011a, 2011b, Beller et al. 2011). The development and operation of surface water supply facilities throughout the Santa Clara River are integral in the management of the groundwater resources associated with the Santa Clara River. Facilities such as Pyramid Reservoir, Santa Felicia Dam, Piru Creek Diversion and spreading basins, and the Vern Freeman Diversion Dam and spreading basins have profoundly altered the natural surface flow and groundwater recharge patterns in the Santa Clara River Watershed, from the headwaters to the Pacific Ocean (e.g., NMFS 2008a, 2008b). Unless the Draft Memorandum is revised to reflect the operation of these integral components of the groundwater management program for the Santa Clara River, the future adopted GSP will be unable to meet the requirement of SGMA to explicitly provide for the protection of habitats, including those recognized instream beneficial uses that are dependent on groundwater such as fish migration, spawning and rearing, as well as other GDE.	NMFS	Assess impacts on in-stream habitat	We have expanded the discussion of O. mykiss and compared groundwater flows with passage flows and more explicitly indicated that while this reach of the Santa Clara is thought to be primarily a migration corridor, the use of the interconnected portions of the stream for rearing is a data gap.

RESPONSE TO COMMENTS				
Comment number	**Comment**	**Organization**	**Issue**	**Response**
GDE_043	When analyzing impacts on steelhead or other aquatic organisms resulting from groundwater and related streamflow diversions, identifying flow levels that effectively support essential life functions of this organism is critical (Belin 2018, Barlow and Leake 2012). Specifically, it is essential to determine what flows (and pool depths) adequately supports adult steelhead migration during the winter and spring, and juvenile rearing year round. Without an understanding of these hydrologic/biotic relationships, a GSP cannot ensure that significant and unreasonable adverse impacts from groundwater depletion (and in the case of the Santa Clara River, the integrally related surface water diversion/groundwater recharge program) are avoided (Heath 1983, California Department of Water Resources 2016	NMFS	Assess impacts on in-stream habitat	We have added information on passage flows for the mainstem Santa Clara. See response to NMFS 2 regarding rearing habitat.
GDE_044	page 1. The Draft Memorandum relies heavily on the Nature Conservancy's (TNC) guidance for GDE analysis (Rohde et al. 2018). According to this guidance, GDE are defined on their dependence on groundwater for all or a portion of their water needs. The Draft Memorandum concludes, "Mapping GDEs requires mapping vegetation that can tap groundwater through their root systems, assessing where the depth of groundwater is within the rooting depth of that vegetation, and mapping the extent of surface water that is interconnected with groundwater (Rohde et al. 2018)." The method used by TNC in identifying GDE is based on statewide data on "vegetation known to use groundwater", and therefore does not adequately reflect the uses made of groundwater by other biological resources, such as seasonal migration of fishes, or other organisms such as invertebrates that have differing life-cycles and environmental requirements than plants (TNC 2018). In addition to supplying water to the root zone of plants, groundwater can also contribute to surface flows, influencing the timing, duration, and magnitude of surface flows, particularly base flows. These base flows provide essential support to aquatic invertebrates, avian fauna, and fish species, including native resident and anadromous fishes. In addition, groundwater that only seasonally supports surface flows can contribute to the life-cycle of migratory fishes, such as steelhead, that can make use of intermittent flows for both migration, spawning and rearing (Boughton et al. 2009, 2006).	NMFS	Non-vegetation GDEs	We have expanded the discussion of interconnected surface water as GDEs and the influence of base flows.
GDE_045	pages 5-7 The Draft Memorandum relies almost exclusive on historical ecology study of Beller et al. (2011). This study, while providing valuable information on the type and distribution of various vegetative communities does not provide comparable information on aquatic species associated with the Santa Clara River. The habitats covered Beller et al (2011) are principally riparian and terrestrial, omitting coverage of various types of aquatic habitats (e.g., pools, runs, riffles, glades, etc.) should be covered explicitly.	NMFS	Assess impacts on in-stream habitat	See discussion of aquatic habtats in the Section 4.1.4. Given the correspondence between the historical wetlands and interconnected surface water Beller et al. (2011) seems appropriate. We do not know the changes to the extent of habitat units through time, but this is likley tied to changes in geomorphology rather than groundwater.
GDE_046	pages 8-14 methodology focuses exclusively on vegetation known to use groundwater and, therefore, ignores the seasonal variation in the groundwater levels in the reach of the Santa Clara River underlain by the Fillmore and Piru Basins that can periodically (seasonally, or intra-annually) support surface flows by affecting their timing magnitude, and duration.	NMFS	Interconnected surface water	We have clarifiied the correspondence between the historical wetland units and interconnected surface water.
GDE_047	The surface flows at the confluence of Piru Creek, Hopper Creek, Pole Creek and Sespe Creek are important for maintaining surface hydrologic connectivity for steelhead (and other native aquatic-dependent species) attempting to migrate between these major tributaries and the middle reaches of the Santa Clara River (Kelley 2004, Kajtaniak 2008, Francis 2009). While these groundwater-influenced flows may not be sufficient to support permanent vegetative cover, they can nevertheless support seasonal use of this reaches of the Santa Clara River for migratory or rearing purposes, depending on the amount and timing of annual rainfall and runoff and the groundwater elevation. (For a study of the role of intermittent flows in the rearing phase of O. mykiss, see Erman and Hawthorne 1976, Boughton et al. 2009).	NMFS	Assess impacts on in-stream habitat	Groundwater connection of these reaches is not known.
GDE_048	page 16 In describing its procedure to identifying sensitive species, the Draft Memorandum includes "Direct—species directly dependent on groundwater for some or all water needs (e.g., cottonwood with roots in groundwater, juvenile steelhead in dry season)." We would note that groundwater levels can influence late spring surface flows, and these flows can be important for juvenile O. mykiss attempting to emigrate out of the Santa Clara River Watershed, including from the Piru Creek, Hopper Creek, and Sespe Creek tributaries that are within the boundaries of the Fillmore and Piru Basins.	NMFS	Assess impacts on in-stream habitat	We expanded the discussion of O. Mykiss.
GDE_049	page 19. The revised Draft Memorandum should recognize that the effects of droughts on groundwater levels can be and often are exacerbated by groundwater extractions. One of the primary purposes of SGMA is to identify these anthropogenic effects on groundwater levels (and the related GDE) so that groundwater resources may be managed in a way to protect all beneficial uses of groundwater, including fish and wildlife, such a southern California steelhead (as well as other native aquatic resources). Therefore, when revising the Draft Memorandum, every effort should be made to ensure that: 1) all anthropogenic effects on the amount and extent of groundwater are properly and accurately cataloged, 2) practices are defined to remedy the cataloged effects on GDE, and 3) the practices are instituted and the effects adaptively managed to ensure GDE receive sufficient protection in accordance with the SGMA.	NMFS	anthropogenic effects on groundwater levels	New modeling information discussing the effects of groundwater pumping on surface flows have been added to the discussion.
GDE_050	page 19. The Draft Memorandum also notes, "Long-term records of shallow groundwater are relatively rare in the Fillmore and Piru groundwater basins." And, "We were unable to examine the groundwater levels in the Tributary Riparian GDE unit because there are no representative wells located in or near the unit." As noted above, groundwater levels that support surface flows, particularly in the late spring can be important in maintaining surface flow connectivity between the Santa Clara River and the tributaries (Sespe Creek, Pool Creek, Hopper Creek, Piru Creek) which lay within the boundaries of the Fillmore and Piru Basins. These surface flows can be important for juvenile O. mykiss attempting to emigrate out of the Santa Clara River watershed, including from the Piru Creek, Hopper Creek, Pole Creek, and Sespe Creek tributaries. Interrupting the timing, magnitude, and duration of these flows as a result of groundwater extraction can be deleterious to juvenile O. mykiss. Groundwater levels should be monitored in the Tributary Riparian GDE, and any potential effects should be addressed in the revised Draft Memorandum.	NMFS	Interconnected surface water	It is not clear that these reaches have interconnected surface water and most of the Tributary Riparian Unit is unlikley to be affectd by groundwater extraction.
GDE_051	page 27. The Draft Memorandum notes, "Surface waters within the Piru and Fillmore groundwater basins have varying degrees of connection to groundwater." And the "Santa Clara River has alternating perennial and intermittent reaches with perennial reaches occurring where rising groundwater contributes the vast majority of the surface water (except during storm events with significant runoff) and the intermittent reaches are losing reaches that are disconnected from groundwater during most of the year." The pattern of alternating perennial and intermittent/or ephemeral surface flows are known as an "interrupted" surface flow regime, and is common in southern California watersheds, particularly where groundwater play a role in maintaining surface flows. This pattern can be altered through changing the groundwater elevations; this issue should be addressed in the revised Draft Memorandum.	NMFS	Interconnected surface water	The area's rising and falling groundwater have persisted since the earliest records (see Beller et al. 2011) and are geologically controlled by variations int the valley width rather than by grounwater extractions.
GDE_052	The Draft Memorandum notes, "Several small ephemeral tributaries to the Santa Clara River and Piru Creek occur in the reach and are disconnected from groundwater." It is not clear what tributaries are being referred to here. In addition to several unnamed tributaries in this reach (which may be ephemeral), there are also two other significant tributaries which enter from the north side of the Piru Basin (Piru Creek and Hopper Creek); neither of these should be classified as intermittent, though both have been impacted by water surface water diversions (Santa Felecia Dam on Piru Creek) and groundwater extractions (from both Piru Creek and Hopper Creek).	NMFS	Piru surface water	We are not aware of evidence suggesting that Piru Creek was historically perennial in the basin and would be happy to get some. Similarly, the degree to which Hopper Creek within the basin is disconnected due to groundwater pumping rather than due to deep surface groundwater is not known.

RESPONSE TO COMMENTS				
Comment number	Comment	Organization	Issue	Response
GDE_053	page 28. The Draft Memorandum also notes, "To our knowledge, there has not been a systematic exploration of the extent of surface water in lower Piru Creek." We would note that similarly there is no known systematic exploration of the extent of surface water in lower Hopper Creek. For a discussion of the hydrology and steelhead resources of Piru Creek, (including lower Piru Creek, see NMFS (2008b).	NMFS	Piru surface water	Uncertainty surrounding Hopper Creek has been added.
GDE_054	page 28. The Draft Memorandum notes, "Other tributaries within the Fillmore Groundwater Basin, including Pole Creek, Boulder Creek, and Timber Creek are typically ephemeral or intermittent." The upper reaches of Pole Creek maintains perennial flows, but surface flows in the lower reaches within the Fillmore Groundwater Basin have been impacted by development on the alluvial fan formed by the confluence of Pole Creek and the Santa Clara River. As noted above groundwater levels that support surface flows, particularly in the late spring can be important in maintaining surface flow connectivity between the Santa Clara River and the tributaries (Pole Creek and Sespe Creek) which lay within the boundaries of the Fillmore Basin. These surface flows are important for juvenile O. mykiss attempting to emigrate out of the Santa Clara River watershed. Interrupting the timing, magnitude, and duration of these flows as a result of groundwater extraction can be deleterious to juvenile O. mykiss. This potential effect should be addressed in the revised Draft Memorandum.	NMFS	Assess impacts on in-stream habitat	The lower reaches of Pole Creek are not currently connected to groundwater, and the degree to which the upper reaches are connected to groundwater or to the main aquifer is a data gap.
GDE_055	page 28. The Draft Memorandum noted, "This period includes [a] relatively wet 2011 and the 2012–2016 drought." The revised Draft Memorandum should provide correlative groundwater extraction rates for these years to better understand the effects of variable groundwater levels and precipitation.	NMFS	anthropogenic effects on groundwater levels	We have included a model showing the change to surface flows if 50% of the pumping (pumping near the river) was eliminated.
GDE_056	page 28. Additionally, the timeframe for depicting historic hydrologic conditions is relatively short, and does not capture the hydrological conditions that prevailed before large-scale water development in the Santa Clara River Watershed. Using an environmental baseline that has been highly modified as framework for identifying impacts to GDE and developing management strategies to address those impacts runs the risk of falling into the "shifting baseline syndrome" that results in a distorted view of ecosystem functions, and inappropriate conservation goals and objectives (Pauly 1995, 2019).	NMFS	Develop new baseline hydrology	We are limited in our baseline hydrology by the available groundwater data.
GDE_057	page 30. The Draft Memorandum noted, "There are few shallow groundwater wells in the Fillmore and Piru groundwater basins, but many of the deeper wells show that there continues to be shallow groundwater and interconnected surface water at the basin boundaries at the historical Del Valle, Cienega, and East Grove riparian woodlands (Figure 1.4-1)." Without shallow groundwater wells that would provide specific data on relationship between groundwater levels and surface flows is not clear how an assessment can be made of the effects extracting groundwater from these areas might effect GDE. This appears to be a significant data gap. The revised Draft Memo should address this by identifying the installation of shallow groundwater wells (or piezometers) to better describe these relationships.	NMFS	Sparse monitoring network	The text has been updated to be more clear. Shallow groundwater wells will be installed near the Cienega site and East Grove.
GDE_058	pages 30-55. See comments above regarding the focus on vegetative GDE.	NMFS	Non-vegetation GDEs	We have clarified the correlation between GDE units and surface water extent.
GDE_059	Page 35-38. In addition to designating critical habitat for the federally listed endangered Southern California Steelhead DPS, NMFS has also identified intrinsic potential habitat in the watershed for this species as part of its recovery planning process. As noted above, this habitat includes habitats that has the potential to provide spawning and rearing habitat. Within the Fillmore and Piru Basin, NMFS identified intrinsic potential habitat in Sespe Creek, upper Pole Creek, Hopper Creek, and Piru Creek (Boughton and Goslin 2006). The ability of these habitats to provide spawning and rearing opportunities has been negatively affected by surface water diversions and groundwater extractions. As noted above, reducing the connectivity between the mainstem of the Santa Clara River and the lower reaches of these tributaries impairs the intrinsic potential of these habitats. Restoring and maintaining surface hydrologic connectivity for steelhead attempting to migrate to or emigrate out of these major tributaries to the middle reaches of the Santa Clara River is an important objective of NMFS's Southern California Steelhead Recovery Plan. When revising the Draft Memorandum, the recognition of this GDE is should be explicit, and the GSP should ensure that, this GDE is not unreasonably impacted by groundwater extraction from the Fillmore and Piru Basin.	NMFS	Assess impacts on in-stream habitat	We have expanded our discussion of O. mykiss needs. The degree to which groundwater pumping inhibits passage is not known.
GDE_060	Pages 47 – 51. This section of the Draft Memorandum contains only a brief discussion fishes, and specifically discusses only one tributary, Piru Creek. There is no recognition or discussion of the Hopper Creek. The lower reach of Hopper Creek within the Piru Basin boundaries has been designated critical habitat; additionally NMFS has identified intrinsic potential spawning and rearing habitat throughout the Hopper Creek watershed; see Francis 2009. The Draft Memorandum indicates, "Most of the fish species listed in Table 4.1-4 are likely to occur in perennial reaches within the basin." It should also recognize that the anadromous species (e.g., O mykiss and Entosphenus tridentata) may also occur in the intermittent reaches, and that non-migratory species (e.g., Catostomus santaanae) fishes (as well as other native aquatic organisms) may occur in intermittent reaches. Therefore, the Draft Memorandum should be revised to provide a complete and accurate characterization of the environmental setting.	NMFS	Non-vegetation GDEs	Added Hopper Creek critical habitat to the text. Added potential use of Hopper Creek to the text.
GDE_061	Pages 62-65 This section of the Draft Memorandum contains only a brief discussion fishes, and specifically mentions only one tributary, Sespe Creek. There is no recognition of discussion of the Pole Creek; see, Kajtaniak (2008) for a survey of this watershed. The Draft Memorandum indicates, "Disconnected ephemeral tributaries in the Fillmore Groundwater Basin can be used by fish species seasonally, but do not contain surface water yearround and are not connected to groundwater and thus not considered here." Sespe Creek is a major tributary to the Santa Clara River whose confluence is within the boundaries of the Fillmore Basin. This tributary is currently intermittent in its lowermost reaches. However, its base surface flows have been and continued to be impacted by both surface diversions and groundwater extraction. Pole Creek, which is joins the Santa Clara River within the boundaries of the Fillmore Basin is intermittent (not ephemeral) in its lower reaches, and is perennial in its upper reaches; see Kajtaniak (2008) for a survey of this watershed. The revised Draft Memorandum should reflect this information.	NMFS	Non-vegetation GDEs	Added a discussion of Pole Creek to the document. Given that access to Pole Creek is blocked, only about 500 feet of the channel occurs upstream of the community within the basin, we have not included an extensive investigation of Pole Creek.
GDE_062	Page 69 The Draft Memorandum indicates, "The ecological value of each GDE unit was characterized by evaluating the presence and groundwater-dependence of special-status species and ecological communities, and the vulnerability of these species and their habitat to changes in groundwater levels (Rohde et al. 2018)." As noted above the method used by The Nature Conservancy in identifying GDE is based on statewide data on "vegetation known to use groundwater", and therefore does not adequately reflect the uses made of groundwater by other biological resources, such as seasonal migration of fishes, or other organisms such as invertebrates that have differing life-cycle and environmental requirements than plants.	NMFS	Non-vegetation GDEs	The GDEs include interconnected surface waters and aquatic beneficial users. We have made this more explicit in the updated draft.
GDE_063	Pages 69-70 In assessing the ecological values of the GDE in the Piru Basin, the Draft Memorandum did not, but should, consider the ecological values of Hopper Creek. This is a significant omission, because the surface hydrologic connectivity between Hopper Creek and the mainstem of the Santa Clara River can be affected by groundwater extractions; see additional comments above regarding Hopper Creek.	NMFS	Interconnected surface water	A discussion of Hopper Creek has been been added to the tributary riparian section.

RESPONSE TO COMMENTS				
Comment number	**Comment**	**Organization**	**Issue**	**Response**
GDE_064	Page 70-71 In assessing the ecological values of the GDE in the Piru Basin, the Draft Memorandum did not, but should, consider the ecological values of Pole Creek. This is a significant omission, because the surface hydrologic connectivity between Pole Creek and the mainstem of the Santa Clara River can be affected by groundwater extractions; see additional comments above regarding Pole Creek.	NMFS	Interconnected surface water POLE CREEK	Pole Creek has been added to the text.
GDE_065	Page 74 The Draft Memorandum notes, "This section focuses on changes in vegetation through time using remote sensing data. While increases or decreases in vegetation health do not provide a definitive indication that other components of the ecosystem are thriving or under stress, it provides a reasonable first-order check on the clear linkage between groundwater and the other communities that compose the ecosystem." While changes to vegetation is an important component in assessing the ecological health aquatic habitats (Faber et al. 1989), it should not be used, as it is here, essentially as a substitute for other metrics, e.g., such as measured effects on surface flows, or depth or extent of pool habitat in response to artificial depletion of groundwater levels. See comments above regarding GDE Identification.	NMFS	Interconnected surface water	We have added text in the report to clarify this point and point to the difficulty of assessing changes in other features of the ecosystem.
GDE_066	Pages 75-79 The focus of the analysis is on vegetative features of four areas: De Valle Riparian Scrub GDE, Santa Clara River Riparian Scrub GDE, Piru Creek Riparian GDE, and Piru Basin Tributary GDE. None of these directly involves aquatic habitats. Also, the Draft Memorandum does not, but should, recognize Hopper Creek. As noted above, the surface flows at the confluence of Hopper Creek are important for maintaining surface hydrologic connectivity for steelhead (but also other native aquatic species) attempting to migrate between this tributary and the middle reaches of the Santa Clara River. Interrupting the timing, magnitude, and duration of these flows as a result of groundwater extraction can be deleterious to juvenile O. mykiss. This potential effect should be addressed in the revised Draft Memorandum.	NMFS	Assess impacts on in-stream habitat	Hopper Creek has been added to the discussion on tributary ripairan streams.
GDE_067	Pages 79-86 The focus of the analysis is on vegetative features of five areas: Santa Clara River Riparian Scrub, Cienega Riparian Complex GDE, East Grove Riparian Complex GDE, Fillmore Basin Tributary Riparian GDE, and Sespe Creek Riparian. None of these deals directly with aquatic habitats. Also, the Draft Memorandum does not recognize or provide any consideration or discussion of Hopper Creek. As noted above, the surface flows at the confluence of Pole Creek are important for maintaining surface hydrologic connectivity for steelhead (but also other native aquatic species) attempting to migrate between this tributary and the middle reaches of the Santa Clara River. Interrupting the timing, magnitude, and duration of these flows as a result of groundwater extraction can be deleterious to juvenile O. mykiss. This potential effect should be addressed in the revised Draft Memorandum.	NMFS	Assess impacts on in-stream habitat	We have adapted the text to clarify that three of the areas (Del Valle, Cienega, and the East Grove) have interconnected surface water. Pole Creek does not appear to be interconnected within the Fillmore and Piru Basins and currently has both passage and barriers. Nevertheless we do discuss the potential for O. mykis habitat in Pole Creek.
GDE_068	Page 86 The Draft Memorandum asserts, "As an overview, the future groundwater levels forecast with assumed climate change factors (2070CF [climate change factor]) are not materially different from those recorded during the historical record. There is no suggestion of long-term chronic declines in groundwater levels." The basis for this statement is unclear, and appears to conflict with general predictions for a drying climate in southern California, with consequent reduction in rainfall, runoff, and groundwater recharge. The reduction in surface water supplies stored in reservoirs, has frequently led to increased extraction of groundwater basins, with consequent reductions in base flows of rivers and streams, like the Santa Clara River and its tributaries that are interconnected groundwater-surface water systems. Ensuring groundwater recharge (and control of groundwater extraction for out-of-stream uses) can be an important mechanism for protecting base flows that are critical for the rearing phase of juvenile steelhead (as well as other native aquatic resources). Maintaining groundwater levels can serve as a buffer against projected climate change effects on stream flow. For a recent assessment of the effects of climate change on mean and extreme river flows, and effects of over pumping of groundwater basins on stream flow, see Burke et al. (2021), Gudmundsson et al. (2021), Jasechko (2021).	NMFS	Climate change	The analysis of climate change was based on the model used for the GSP and recommendations from DWR.
GDE_069	Page 86 As noted above, there is no recognition or discussion of Hopper Creek. This omission should be addressed in the revised Draft Memorandum.	NMFS	Interconnected surface water	Hopper Creek has been added to the tributary riparian section.
GDE_070	Page 89 Ecological Value: The Draft Memorandum concludes, "Although the Santa Clara River in the Unit provides migration habitat for Southern California steelhead and Pacific lamprey, the migration habitat has low vulnerability to groundwater reduction because most fish migration occurs during seasonal high surface water flow periods." This assertion does not appear to be corroborated in any meaningful way in the Draft Memorandum. Also, be aware that while adult steelhead are more likely to migrate during higher flows during winter months, steelhead smolts can emigrate downstream through the late spring in the absence of winter flows. Groundwater extractions that decrease these base surface flows can therefore negatively affect the successful emigration of steelhead (and possibly Lamprey ammocoetes) out of the Santa Clara River to the ocean. This assertion should be revised in the Draft Memorandum to accurately reflect what is known about the migratory behavior and ecology of steelhead and the expected impacts of groundwater withdrawals on habitat characteristics and condition for this species.	NMFS	Non-vegetation GDEs	We have added text to quantify flows from rising groundwater relative to upstream passage. We also clarified that for the Riparian shrubland, surface water flows are not connected with groundwater. United water releases water from Santa Felicia dam for outmigration of juveniles. Because this migration requires continuous surface flows, rising groundwater on its own is not sufficient to promote migration.
GDE_071	page 89 Ecological Condition: The Draft Memorandum concludes, "Groundwater provides little or no contribution to the ecological function and habitat value of the Santa Clara River in the Unit, which is intermittent and mainly supports seasonal migration habitat for anadromous fishes." The intermittent nature of a reach is not determinative of the contribution of groundwater to a GDE. Additionally, as noted above, steelhead smolts emigrate downstream through the late spring, among other times of the year, including during periods between elevated rain-induced discharge pulses. Groundwater extractions that decrease these base surface flows can therefore negatively affect the successful emigration of steelhead out of the Santa Clara River to the ocean (Booth 2016, 2020).	NMFS	Assess impacts on in-stream habitat	Comment noted. The role of groundwater in supplying downstream passage flows is not clear, but, where reaches are disconnected from groundwater, changes to pumping are unlikely. Booth 2020 also states that "Migration opportunities only result from storm events of sufficient magnitude and duration to generate extended surface flows." The degree to which groundwater extraction has altered surface flows in the Fillmore and Piru Basins is not clear, but the intermittent reaches betweeen the groundwater upwelling zones are currently dependent on surface water flows rather than rising groundwater.
GDE_072	Page 90 Susceptibility to Changing Groundwater Conditions: The Draft Memorandum concludes, "The Unit includes an intermittent reach of the mainstem Santa Clara River that does not provide perennial aquatic habitat or beneficial uses." While groundwater-influenced flows may not be sufficient to support perennial flows, they can nevertheless support seasonal use of this reach of the Santa Clara River for migratory or rearing purposes, depending on the amount and timing of annual rainfall and runoff and the groundwater elevation.	NMFS	Assess impacts on in-stream habitat	We do not see evidence that flow in the intermittent reaches is supported by groundwater within the basin.
GDE_073	Page 90 The Draft Memorandum concludes, "Modeling suggests that groundwater levels are likely to be stable in this reach. Moreover, the vegetation that makes up this unit may use groundwater when groundwater levels are high in the spring, but high groundwater levels are likely not persistent in this unit. The unit is therefore likely not strongly dependent upon groundwater and is comprised of sparse low water use species with relatively shallow rooting depths. Therefore, the potential for effects on this unit is low. " This conclusion, as much of the analysis, is based almost entirely on effects on vegetation, and ignores the potential effects on aquatic organisms that are dependent on surface flows (or ponding), and may make seasonal use of aquatic habitats, even though they are intermittent.	NMFS	Non-vegetation GDEs	We do not see evidence that flow in the intermittent reaches is supported by groundwater within the basin.

RESPONSE TO COMMENTS				
Comment number	Comment	Organization	Issue	Response
GDE_074	Page 92 Susceptibility to Changing Groundwater Conditions: The Draft Memorandum concludes, "Piru Creek in this GDE unit has perennial flow due to releases from Santa Felicia Dam, but surface flow is not connected to groundwater. The lower portion of Piru Creek near the confluence with the Santa Clara River periodically lacks surface flow. As described previously, releases from Santa Felicia Dam likely raise groundwater levels and help maintain baseflows in Piru Creek." The construction of both Santa Felicia Dam and Pyramid Dam have significantly altered natural the flow patterns in Piru Creek, including those below the current site of Santa Felicia Dam (see, for example, NMFS 2008b). The language of this section incorrectly implies that but for the releases from Santa Felicia Dam, lower Piru Creek would naturally exhibit an intermittent, or ephemeral flow regime.	NMFS	anthropogenic effects on groundwater levels	Added under current conditions to clarify that currently releases from Santa Felicia help maintain baseflow.
GDE_075	page 92. Also, the claim that the "surface flow is not connected to groundwater" is contradicted by the assertion that "releases from Santa Felicia Dam likely raise groundwater levels and help maintain baseflows in Piru Creek".	NMFS	Interconnected surface water	The conceptual model of this reach is that releases from Santa Felicia infiltrate into the subsurface while also maintaining baseflows. Clarified that baseflows over some portion of the length of Piru Creek are maintained by releases.
GDE_076	Page 92 The Draft Memorandum notes, "Available data are insufficient to discern a clear effect on GDEs related to groundwater management in the Piru Creek Riparian Complex GDE Unit." The GSP should identify and include monitoring provisions that would enable the effects of groundwater extractions or recharge activities on this GDE to be determined.	NMFS	Sparse monitoring network	Clarified that under current conditions it is disconnected. It is unknown if Piru Creek was connected under historical conditions.
GDE_077	Page 92 Groundwater Dependence: The Draft Memorandum notes, "There are no shallow groundwater measurements in this unit." The GSP should identify and include monitoring provisions that would enable the effects of groundwater extractions or recharge activities on this GDE to be determined.	NMFS	Sparse monitoring network	The monitoring plan has gained access to a privately owned well to monitor groundwater levels in Piru Creek.
GDE_078	Tributary Riparian Unit Ecological Value: The Draft Memorandum concludes, "The species and ecological communities in the Unit have low vulnerability to changes in groundwater levels. The tributary streams in this GDE Unit are considered ephemeral and are not connected to groundwater, thus they provide little habitat value for fish and other aquatic species. They do, however, support valuable riparian habitat and likely movement corridors for a variety of native wildlife species." This Tributary Riparian GDE includes Hopper Creek, which is not ephemeral. Hopper Creek is not recognized or discussed. This omission should be addressed in the revised Draft Memorandum. See comments above regarding Hopper Creek.	NMFS	Assess impacts on in-stream habitat	See above. Hopper Creek has been added.
GDE_079	Tributary Riparian Unit Ecological Condition: The Draft Memorandum concludes, "Groundwater likely provides little or no contribution to the ecological function and habitat value of the ephemeral tributaries in the Unit, which support vegetation but have little habitat value for fish or other aquatic species." See comments above regarding Hopper Creek.	NMFS	Assess impacts on in-stream habitat	See above. Hopper Creek has been added.
GDE_080	Tributary Riparian Unit Susceptibility to Changing Groundwater Conditions: The Draft Memorandum concludes, "Streams within the Unit includes [sic] are ephemeral and do not provide perennial aquatic habitat or beneficial uses." This Tributary Riparian GDE includes Hopper Creek, which is not ephemeral. Hopper Creek is not recognized or discussed. This omission should be addressed in the revised Draft Memorandum. See comments above regarding Hopper.	NMFS	Assess impacts on in-stream habitat	See above. Hopper Creek has been added.
GDE_081	Tributary Riparian Unit Potential Effects The Draft Memorandum concludes, "Based on the position of this GDE unit in the watershed it is unlikely that groundwater management will affect the health of the GDE. Model results suggest that the groundwater levels will remain constant in the Fillmore and Piru Basins under climate change (DBS&A 2021). If groundwater pumping were to increase in this GDE unit, monitoring of groundwater levels and GDE health (using remote sensing) would be necessary. GDEs in the unit likely have low susceptibility to future changes in groundwater conditions and the synergistic effects of climate change." As noted above, the basis for this statement regarding climate change is unclear, and appears to conflict with general predictions for a drying climate in southern California, with consequent reduction in rainfall, runoff, and groundwater recharge. The reduction in surface water supplies stored in reservoirs has frequently led to increased extraction of groundwater basins, with consequent reductions in baseflows of rivers and streams, like the Santa Clara River and its tributaries, which are interconnected groundwater-surface water systems. Ensuring groundwater recharge (and control of groundwater extraction for out-of-stream uses) can be an important mechanism for protecting base flows that are critical for the rearing phase of juvenile steelhead (as well as other native aquatic resources). Maintaining groundwater levels can serve as a buffer against projected climate change effects on streamflow. For a recent assessment of the effects of climate change of mean and extreme river flows, and effects of over pumping of groundwater basins on stream flow, see Burke et al. (2021), Gudmundsson et al. (2021), Jasechko (2021).	NMFS	Climate change	The assessment of climate change on hydrology in the Santa Clara River was completed following DWR guidelines and is the best information we currently have for the basin.
GDE_082	Page 94 As noted above, there is no recognition or discussion of Pole Creek. This omission should be addressed in the revised Draft Memorandum.	NMFS	Interconnected surface water	Pole Creek included.
GDE_083	SCR riparian shrubland Groundwater Dependence: The Draft Memorandum notes, "There are few shallow groundwater measurements in this unit. Spring 2019 water contours provided by United water showed groundwater levels within 5-10 feet of the ground surface in parts of the unit." But nevertheless concludes, "Surface water flows are not interconnected with groundwater." The conclusion is questionable for a for at least two reasons: First, though the data provided in the Spring of 2019 followed an above average wet year it was proceed by a pronounced drought that lasted six years, depressing groundwater levels. Second, the number of wells were limited (and screened below shallow groundwater depths) and not likely to provide a complete picture of the groundwater conditions throughout the GDE. The GSP should identify and include monitoring provisions that would enable the effects of groundwater extractions or recharge activities on this GDE to be determined.	NMFS	Interconnected surface water	We added a discussion about the uncertainty of the contours in this reach. The lack of surface flows suggest surface water is not connected to groundwater in this reach.
GDE_084	page 94 SCR riparian shrubland Ecological Value: The Draft Memorandum note, "Although the Santa Clara River in the Unit provides migration habitat for Southern California steelhead and Pacific lamprey, the migration habitat has low vulnerability to groundwater reduction because most fish migration occurs during seasonal high surface water flow periods." While adult steelhead are more likely to migrate during higher flows during winter months, steelhead smolts emigrate downstream through the late spring, among other times of the year, including between periods of elevated flows. Groundwater extractions that decrease this base surface flow can therefore negatively affect the successful emigration of steelhead (and possibly ammocoetes) out of the Santa Clara River to the ocean (Reid and Goodman 2016).	NMFS	Assess impacts on in-stream habitat	There is no evidence that surface flows are interconnected with groundwater, and the intermittent nature of the reach suggests the flows are disconnected and not dependent on groundwater. United currently releases water to support outmigration of juvenilles.
GDE_085	page 94 SCR riparian shrubland Ecological Conditions: The Draft Memorandum concludes, "Because surface water in this reach is largely disconnected from groundwater, groundwater provides little or no contribution to the ecological function and habitat value of the Santa Clara River in the Unit, which is intermittent and mainly supports seasonal migration habitat for anadromous fishes." It is not clear what is meant by "largely disconnected". Also, this assertion appears to be contradicted by the assessment of susceptibility to changing groundwater conditions (see below). This should be addressed in the revised Draft Memorandum.	NMFS	Interconnected surface water	"largely" was deleted.

RESPONSE TO COMMENTS				
Comment number	**Comment**	**Organization**	**Issue**	**Response**
GDE_086	page 94 Susceptibility to Changing Groundwater Conditions: "The Draft Memorandum notes, "Future changes in groundwater conditions in the Unit related to increased groundwater production or climate change could cause groundwater levels to fall below the baseline range and result in mortality to vegetation that comprises the GDE."(emphasis added). Additionally, the Draft Memorandum notes, "Projections of climate change and groundwater pumping in the future suggest that changes in groundwater elevation are unlikely. However, based on widespread tree mortality during the 2012–2016 drought, future changes in the frequency or duration of droughts similar to 2012–2016 could have a deleterious effect on the GDE, particularly at the downstream margin of the unit." These two statements appear to contradict each other, and should clarified in the revised Draft Memorandum	NMFS	Climate change	Added "climate changes that differ from modeled predictions "
GDE_087	Page 94 Also, "The Unit includes an intermittent reach of the mainstem Santa Clara River that does not provide perennial aquatic habitat or beneficial uses." As noted previously, while groundwater-influenced flows may not be sufficient to support perennial flows, they can nevertheless support seasonal use of this reach of the Santa Clara River for migratory or rearing purposes, depending on the amount and timing of annual rainfall and runoff and the groundwater elevation.	NMFS	Assess impacts on in-stream habitat	Our understanding of this reach is that groundwater is never shallow enough to connect with surface water (i.e., even during wet years this is a losing reach).
GDE_088	Page 95 The Draft Memorandum notes, "Modeling suggests that groundwater levels near the Santa Clara River Riparian Shrubland GDE unit are unlikely to change due to climate change or modest changes to groundwater pumping. However, GDEs in the Unit are moderately susceptible to future changes in groundwater conditions and the synergistic effects of climate change, which in combination could cause groundwater levels to fall below the baseline range and result in potential effects on GDEs." Again, these two statements appear contradictory. See comments above regarding climate change.	NMFS	Climate change	Clarifed that climate change effects could influence groudnwater levels if the models are incorrect.
GDE_089	Page 97 Groundwater Dependence: The Draft Memorandum notes, "There are no shallow groundwater measurements in this unit. Based on the position in the landscape a connection to the regional aquifer is unlikely." The GSP should identify and include monitoring provisions that would enable the effects of groundwater extractions or recharge activities on this GDE to be determined. Also, we note that this Tributary Riparian Unit include Pole Creek, which was omitted from the investigation. See comments above.	NMFS	Sparse monitoring network	A sentence discussing Pole Creek has been added. We propose monitoring the GDEs rather than groundwater in this reach because there is little pumping in the tributaries and the resources to install new wells were focused in higher priority areas more susceptible to groundwater management.
GDE_090	Page 98 Ecological Value: The Draft Memorandum concludes, "The species and ecological communities in the Unit have low vulnerability to changes in groundwater levels. The tributary streams in this GDE Unit are considered ephemeral and are not connected to groundwater, thus they provide little habitat value for fish and other aquatic species. They do, however, support valuable riparian habitat and likely movement corridors for a variety of native wildlife species." This Tributary Riparian Unit includes Pole Creek, which was omitted from the investigation. See comments above.	NMFS	Interconnected surface water	Pole creek has been added to the discussion here.
GDE_091	Page 98 Ecological Condition: The Draft Memorandum concludes, "Groundwater provides little or no contribution to the ecological function and habitat value of the ephemeral tributaries in the Unit, which support vegetation but have little habitat value for fish or other aquatic species." This Tributary Riparian Unit includes Pole Creek, which was omitted from the investigation. See comments above.	NMFS	Interconnected surface water	Pole creek has been added to the discussion here.
GDE_092	page 98 The Draft Memorandum concludes, "Based on the position of this GDE unit in the watershed it is unlikely that groundwater management will affect the health of the GDE. If groundwater pumping were to increase in this GDE unit monitoring of groundwater levels and GDE health (using remote sensing) would be necessary. GDEs in the Unit likely have low susceptibility to future changes in groundwater conditions and the synergistic effects of climate change." See the above comments regarding the potential effects of climate change.	NMFS	Climate change	Clarified the climate change effects on groundwater levels are unlikely.
GDE_093	Page 99 Groundwater Conditions: The Draft Memorandum notes, "Surface water flows are perennial for the upper portions of the reach and intermittent downstream. The connection to groundwater in the upper portion is unknown but unlikely." The GSP should identify and include monitoring provisions that would enable a determination of connectivity, and any potential effects of groundwater extractions or recharge activities on this GDE to be determined.	NMFS	Interconnected surface water	See below for additional monitoring well.
GDE_094	Page 99 Susceptibility to Changing Groundwater Condition: The Draft Memorandum notes, "Sespe Creek's connection to groundwater is undetermined" The GSP should identify and include monitoring provisions that would enable a determination of connectivity, and any potential effects of groundwater extractions or recharge activities on this GDE to be determined.	NMFS	Interconnected surface water	Modifications to an existing shallow well are planned for one site in Sespe Creek.
GDE_095	Page 99 The Draft Methodology concludes, "The GSP should identify and include monitoring provisions that would enable the effects of groundwater extractions or recharge activities on this GDE to be determined." See comments above regarding the potential effects of climate change.	NMFS	Climate change	Clarified uncertainty on Sespe Creek.
GDE_096	Page 100 The following additional GDE should be added to the list of GDE to be included in the GSP analyses for the development of "Sustainable Management Criteria": lower reaches of Sespe Creek, Pole Creek, Hopper Creek, and Piru Creek. As noted above, each of these contains either or/both designated critical habitat or intrinsic potential habitats for the federally listed endangered southern California steelhead DPS.	NMFS	Additional GDE	It is not clear that these reaches have interconnected surface water and hence may not be GDEs. O. mykiss was considered when setting SMCs.
GDE_097	Page 11 principal aquifer. This is an important distinction.	TNC (MMR inline)	GDE determination	Changed "regional" to "principal".
GDE_098	Page 11 with no connection to a principal aquifer	TNC (MMR inline)	GDE determination	Changed "regional" to "principal".
GDE_099	Page 14 Thank you for doing this!	TNC (MMR inline)	GDE determination	Noted.
GDE_100	Page 30 I highly recommend using the well data and a digital elevation model to estimate depth to groundwater under GDEs. Most wells exist at higher elevation than GDEs. See Best Practice #5 in this TNC document: https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_NCdataset_BestPracticesGuide_2019.pdf	TNC (MMR inline)	Updated Nature Conservancy guidance on depth to water	Added description of GDE elevation transects to Section 3.1. Added max/min GDE elevations to depth to water plots and discussion.
GDE_101	Page 89 If you corrected for land surface elevation at the GDE, does the groundwater surface get within mulefat rooting depths?	TNC (MMR inline)	Updated Nature Conservancy guidance on depth to water	Text updated to clarify use of depth to water surface.
GDE_102	Page 91 But, groundwater levels must also be restored to pre-drought conditions to promote riparian succession of cottonwoods/willows and avoid establishment of arundo.	TNC (MMR inline)	Cienega riparian complex	Noted.
GDE_103	Page 91 Is this still true if you correct for land surface elevation at the GDE using a DEM?	TNC (MMR inline)	Updated Nature Conservancy guidance on depth to water	Text updated to clarify use of depth to water surface.
GDE_104	Page 96 I'd say the ecological condition is "Poor" given the widespread mortality that occurred here.	TNC (MMR inline)	Cienega riparian complex	Agreed and changed.
GDE_105	Page 97 And increased ET losses from arundo in the basin water budget... Also, reduced habitat for two federally listed species.	TNC (MMR inline)	Cienega riparian complex	Noted.
GDE_106	Page 99 Low or uncertain? How do you know the model output is correct if there are no shallow monitoring wells in the vicinity?	TNC (MMR inline)	Sespe Creek Riparian Complex	Changed to undetermined, likely low.
GDE_107	Page 100 GDEs Important to Consider When Establishing Sustainable Management Criteria.	TNC (MMR inline)	Text	Changed text.
GDE_108	Page 100 i	TNC (MMR inline)	Text	Typo fixed.
GDE_109	Page C-1 Why is this species not considered a GDE?	TNC (MMR inline)	Blue oak	Blue Oak occurs outside of the aquifer on the ridges and noses of the uplands and is not likley affected by pumping.

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APPENDIX D

Assessment of Groundwater Dependent Ecosystems for the Fillmore and Piru Basins Groundwater Sustainability Agency (Stillwater Sciences, 2021a)

TECHNICAL MEMORANDUM ◦ AUGUST 2021

Assessment of Groundwater Dependent Ecosystems for the Fillmore and Piru Basins Groundwater Sustainability Plan

PREPARED FOR

Fillmore and Piru Basins Groundwater Sustainability Agency
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1 BACKGROUND AND SETTING

This Technical Appendix to the Fillmore and Piru Basins Groundwater Sustainability Plan (GSP) addresses the extent and condition of groundwater dependent ecosystems (GDEs) in the Fillmore and Piru Valley Groundwater Basins of the Santa Clara River Valley Groundwater Basin. The Fillmore and Piru groundwater basins are managed by Fillmore and Piru Basins Groundwater Sustainability Agency (FPBGSA). As part of the California's Sustainable Groundwater Management Act (SGMA), Groundwater Sustainability Agencies (GSAs) are required to consider GDEs and other beneficial uses of groundwater when developing their GSPs. SGMA defines GDEs as "ecological communities of species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" (23 CCR § 351(m)). As described in The Nature Conservancy's guidance for GDE analysis (Rohde et al. 2018), a GDE's dependence on groundwater refers to reliance of GDE species and/or ecological communities on groundwater or interconnected surface water for all or a portion of their water needs. SGMA defines interconnected surface water as "surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer" where "the overlying surface water is not completely depleted". Interconnected surface water is also called areas of rising groundwater or a gaining stream. Mapping riparian or terrestrial GDEs requires mapping vegetation that can tap groundwater through their root systems, assessing the elevation of groundwater relative to the rooting depth of that vegetation, and mapping the extent of surface water that is interconnected with groundwater (Rohde et al. 2018). Mapping aquatic GDEs requires mapping the extent of interconnected surface water, which changes based on season and the water year type. Once the GDEs are mapped, the occurrence of special-status species can be used to assess the beneficial users of GDEs and the ecological value of GDEs in the basin, while remote sensing measurements can be used to track the health of groundwater dependent vegetation through time. This information will be used to inform sustainable management criteria for each management unit. This appendix relies on hydrologic and geologic data presented in the GSP and its technical appendices.

Plants can rely on water infiltrating into the soil via local rainfall, groundwater, or surface water. GDEs are ecosystems linked to groundwater through plant roots or direct users of interconnected surface water, and the plants typically have greater water requirements than found in the soil from local rainfall. Riparian plants, which are often present in GDEs, may instead be connected to surface water through their roots. Some species may be connected to groundwater when it is available, but not require groundwater for survival (e.g., mulefat [*Baccharis salicifolia*]), while other species (e.g., willows and cottonwoods) would not survive without additional water from groundwater or surface water. The presence of non-groundwater sources such as surface water and soil moisture within and near a GDE does not preclude the possibility that the GDE is supported by groundwater. A GDE is distinct from other riparian ecosystems in that it is either connected to a principal aquifer or is a beneficial user of a surface water or shallow/perched groundwater source that is connected to a principal aquifer.

1.1 Physiography

The Fillmore and Piru groundwater basins occupy the alluvial valley of the Santa Clara River from just west of the Los Angeles/Ventura County line to approximately 1 mile upstream of Santa Paula, California (Figure 1.1-1). The alluvial valley of the Santa Clara River serves as the floodplain of the Santa Clara River and the adjacent alluvial terraces and alluvial fans. The valley width ranges from approximately half a mile at the eastern boundary of the Piru subbasin, just west of the Los Angeles/Ventura County line, to over 4 miles at the confluence of Sespe Creek and the Santa Clara River. Together, the basins extend approximately 21 river miles along the valley axis and cover over 25,000 acres. Ground surface elevation ranges from 280 feet above sea level in the western Fillmore Groundwater Basin to about 1,000 feet above sea level in the eastern Piru Groundwater Basin and along the northern edge of the Fillmore Groundwater Basin (DWR 2016).

The basins are bounded to the north by Miocene to Pliocene marine deposits (the Pico Formation) of the Topatopa Mountains, uplifted by Tertiary thrusting along the San Cayetano Fault. The basins are bounded to the south by Oligocene continental deposits and Miocene to Pliocene marine deposits of the Oak Ridge and the Santa Susana mountains, uplifted by similar motion on the Oak Ridge Fault (Downs et al. 2020). The Santa Clara River occupies a valley between these ranges. Tectonic activity also influences drainage network patterns in the basins (Stillwater Sciences 2011).

Upstream of the Fillmore and Piru groundwater basins, the Santa Clara River is largely unregulated except for Castaic Dam on Castaic Creek and Bouquet Dam on Bouquet Creek. Castaic Dam regulates a large (154 square miles [mi^2]) watershed and forms Castaic Lake, which is operated with Pyramid Lake as a hydroelectric pumped storage project. Castaic Dam generally operates as a run-of-the river facility but may retain water for future release when inflows to Castaic Lake are high. Bouquet Dam regulates less than 1% of the Santa Clara River watershed area and is also unlikely to have a significant impact on watershed hydrology (Stillwater Sciences 2011). There is a strong rainfall gradient from the relatively wet Sespe and Piru drainages in the western part of the watershed to the drier upper Santa Clara watershed in Los Angeles County,

The largest tributary to the Piru Groundwater Basin is Piru Creek, which joins the Santa Clara River about 6 miles downstream of the Piru Groundwater Basin boundary near Buckhorn. Piru Creek has a drainage area of 438 square miles and is regulated by Santa Felicia Dam and Lake Piru 5.7 miles upstream of the confluence with the Santa Clara River. The Piru Groundwater Basin extends up Piru Creek from the Santa Clara River to Santa Felicia Dam. Santa Felicia Dam was constructed in 1955, and the subsequent peak flow was 28,800 cubic feet per second (cfs) in 1969. Releases are from the dam are rarely greater than 600 cfs (Dan Detmer, personal communication). Pyramid Dam was completed further upstream on Piru Creek in 1971 to impound water imported to the watershed via the California Water Project. Flows are released through Santa Felica Dam annually to recharge groundwater storage in the Fillmore and Piru groundwater basins and other downstream basins and to provide water for groundwater replenishment facilities further downstream. Hopper Canyon Creek joins the Santa Clara River approximately 3 miles downstream of the Piru Creek confluence.

The largest tributary in the Fillmore Groundwater Basin is Sespe Creek, which joins the Santa Clara River about 4.4 miles downstream of the boundary between the Fillmore and Piru groundwater basins just downstream of the town of Fillmore. Sespe Creek has a drainage area of 260 square miles and is undammed. The older portions of the City of Fillmore were situated on the alluvial fan built by sediments from Pole Creek, a smaller (10.7-square-mile) tributary between Sespe and Hopper Canyon creeks, which joins the Santa Clara River about 3 miles upstream of Sespe Creek. The drainage area of the Santa Clara River at the downstream end of the Fillmore Groundwater Basin is 1,476 square miles.

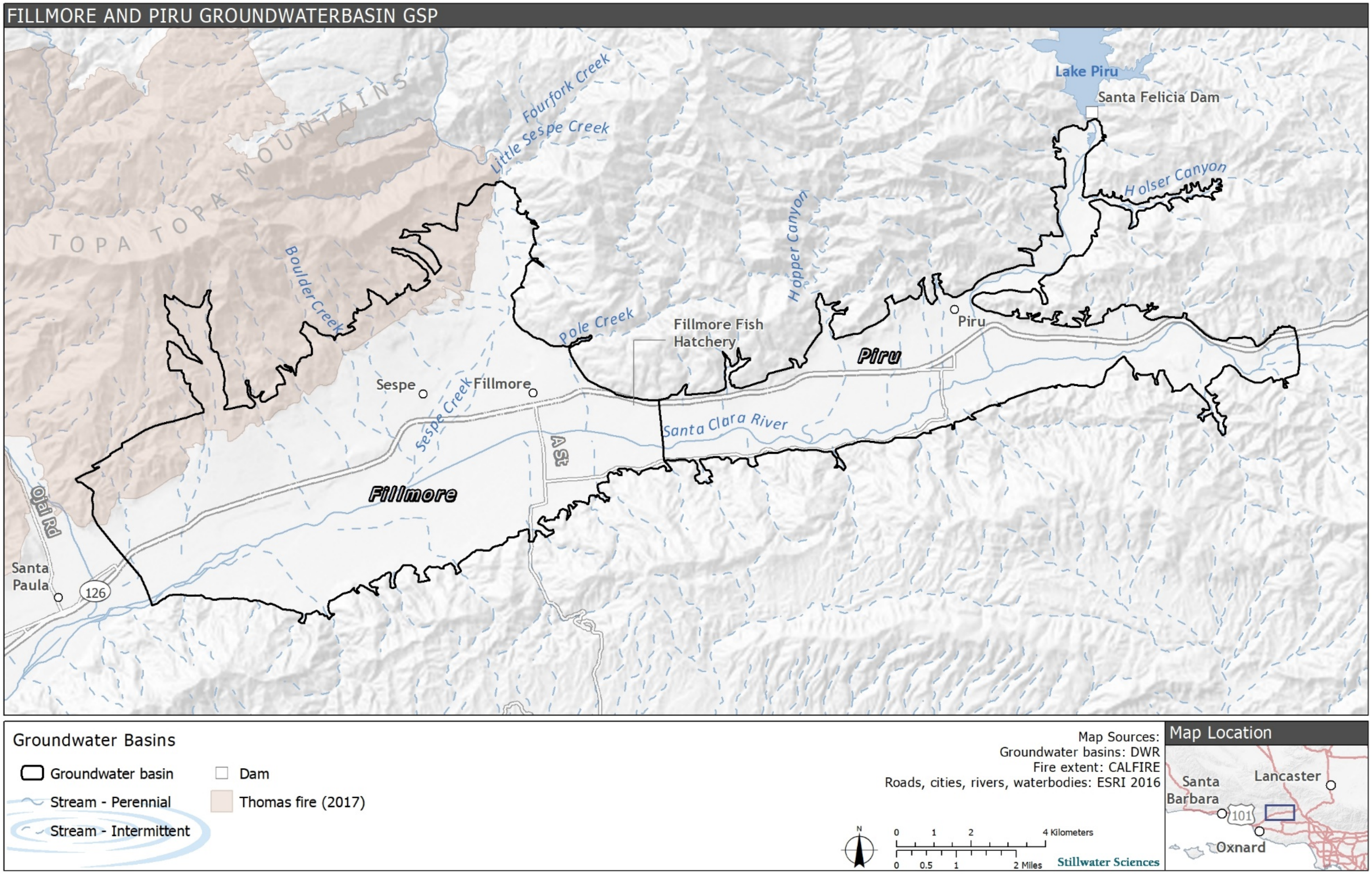

Figure 1.1-1. Fillmore and Piru groundwater basins.

1.2 Aquifer and Soils

The Fillmore and Piru groundwater basins are in the distinctive geological province of the west-east trending Transverse Ranges. The Santa Clara River watershed has a drainage area of 1623 square miles (mi^2) that retains a relatively natural state compared with other large watersheds in coastal southern California. In general, both groundwater basins consist of an upper aquifer of sand and gravel Quaternary alluvium underlain by Pleistocene Saugus Formation, which consists of permeable sand and gravels folded into an east-west trending syncline.

The Piru Groundwater Basin's eastern boundary coincides with exposures of shale and thinning of the surface alluvium to about 20 feet. The basin extends westward to the Fillmore Fish Hatchery, approximately 1 mile upstream of the City of Fillmore, where bedrock constriction of the alluvial basin forces groundwater closer to the land surface, resulting in seepage from the aquifer to the Santa Clara River. Recent alluvium is typically 60–80 feet thick in the Piru Groundwater Basin and is underlain by older alluvium, which occurs as terrace deposits up to 80 feet thick. Beneath the alluvium, the Saugus Formation extends to depths of up to 8,800 feet. Discontinuous clay layers also occur in the basin (Mann 1959).

The Fillmore Groundwater Basin lies directly west of the Piru Narrows, a constriction in the valley width located at the boundary between the Fillmore and Piru basins (Figure 1.1-1). The Fillmore Groundwater Basin includes the Santa Clara River alluvial valley, the Pole Creek fan, and Sespe Creek floodplain. The western boundary of the basin is located approximately half a mile east of the City of Santa Paula and coincides with shallow groundwater and a gaining reach of the Santa Clara River. At the eastern boundary, recent alluvium is approximately 60 feet thick, deepening to 80 feet downstream. Older alluvium reaches depths of approximately 100 feet. Along the valley, the Saugus Formation reaches a depth of approximately 8,400 feet; at the western boundary, it shallows to 5,000–6,000 feet. The northern portion of the basin is characterized by recent Quaternary alluvium. The most extensive alluvial fan, Pole Creek, is located between Sespe Creek and the Santa Clara River and underlies much of the City of Fillmore (Figure 1.1-1). West of Fillmore, the recent Sespe Creek alluvium is approximately 80 feet thick (Mann 1959).

Soils in the basins are alluvial or eolian in origin and are derived from the upper Santa Clara River and surrounding mountains. Three soil associations occur in the basins (Edwards et al. 1970). The Santa Clara River floodplain is covered by Riverwash-Sandy Alluvial Land, an excessively drained, highly stratified complex of sediment ranging in size from sand to cobbles with minimal silt and clay. The Pico-Metz-Anacapa association occurs on alluvial terraces and extends into some of the westerly drainages in the Fillmore Groundwater Basin. This association is characterized by well- to excessively drained sandy loam and is 60 or more inches deep. Within this association, Anacapa soils are slightly alkaline. The Mocho-Sorrento-Garretson association occurs at higher elevations in tributaries at the mountain front, particularly on the north side of the basins. These well-drained loams to silty clay loams reach depths of over 60 inches and are some of the most agriculturally productive in Ventura County.

1.3 Hydrology

Natural surface flows in the Santa Clara River are supplemented by controlled releases from Lake Piru and, upstream of the Piru Groundwater Basin, releases from Castaic Lake. Major tributaries in the Fillmore and Piru groundwater basins include Piru, Hopper, and Sespe creeks. Apart from high flows associated with high-intensity rainfall events, flows in the Santa Clara River are generally low. At Montalvo (USGS gage 11114000) daily flows from 1927–2004 (the period of record) were less than 10 cfs for 50% of the year (Stillwater Sciences 2007d). Upstream of the Piru Groundwater Basin, at the county line (USGS gage 11108500), flow is typically 20–28 cfs (UWCD 2016). The low-flow hydrology of the Santa Clara River in the basin area has been characterized by alternating reaches of perennial and intermittent flow (Beller et al. 2016) based on bedrock constrictions and the resultant connection of the riverbed to the shallow aquifer. In the Fillmore and Piru groundwater basins, perennial flow commonly occurs at the basin boundaries, with the extent of the perennial reaches varying based on inflows to the basin.

In the Fillmore and Piru groundwater basins, the Santa Clara River is a dynamic semi-confined braided stream with perennial reaches at the basin boundaries with large intermittent reaches between. The Santa Clara River Basin has an extremely high sediment supply and is subject to extremely large floods (Stillwater Sciences 2011). Minor channel shifting occurs during most 5–10-year floods (frequently associated with El Niño years), but the largest changes in channel alignment occur during less frequent larger magnitude floods that exceed a 10-year recurrence interval (Stillwater Sciences 2007, Stillwater Sciences 2011).

Groundwater recharge primarily occurs though infiltration of surface waters into the bed of the Santa Clara River and its tributaries (UCWD 2016). The shallow aquifers in both the Fillmore and Piru groundwater basins are unconfined aquifers with deeper aquifers having varying degrees of confinement. In the Piru Groundwater Basin, groundwater generally flows from east to west, parallel to the river channel, in both the alluvium and the Saugus formation. At the bedrock constriction near the Fillmore Fish Hatchery, the narrower aquifer cross-section drives the water table upward locally, resulting in a perennial gaining reach of the Santa Clara River in all but the driest years. Downstream, in the Fillmore Groundwater Basin, the alluvium widens and depth to the water table increases. Near the boundary of the Fillmore Groundwater Basin and the Santa Paula Basin to the west, low-permeability bedrock constricts the alluvium, albeit less than near the fish hatchery (DBS&A 2020). Approaching the constriction, the narrower aquifer cross-section and southwest flow of recharged groundwater from the Sespe Creek alluvium drive the water table toward the surface. Downstream of the constriction, the water table deepens. This reach of the Santa Clara River experiences perennial gaining conditions even in dry years. Minimum depth to groundwater was less than 10 feet at both constrictions in 2015 during a period of drought (UWCD 2016)

The primary source of groundwater recharge is percolation from the Santa Clara River in the wider areas of the valley and alluvium and from Piru and Sespe creeks. Longitudinal Groundwater inflow from the Santa Clara River Valley East Groundwater Basin is a significant source of recharge to the Piru Groundwater Basin, as is inflow to the Fillmore Groundwater Basin from the Piru Groundwater Basin. In both basins, recharge also occurs from stream percolation into outcrops of the Saugus Formation to the north, from direct precipitation on the alluvium and northern alluvial fans, and from agricultural return flow.

Groundwater levels in both basins are sensitive to changes in surface flow. Annual conservation releases from Lake Piru by United Water resulted in approximately10-foot increases in groundwater levels in the Piru Groundwater Basin and approximately 5-foot increases in the Fillmore Groundwater Basin from 2009 to 2012 (UWCD 2016). Conversely, groundwater levels declined significantly during the 2012–2016 drought period, during which no conservation releases were made.

1.4 Historical Ecology

The strongest process control on the distribution of floodplain wetland and riparian vegetation in the Santa Clara River is the availability of groundwater. Areas of rising groundwater that result in perennial surface flow and dense riparian woodlands are interspersed with “losing reaches” with intermittent surface flow conditions and less dense vegetation (Stillwater Sciences 2007a, Beller et al. 2011, Orr et al. 2011, Beller et al. 2016, Stillwater Sciences 2016). Within the forested wetland areas, flood disturbances are an important secondary control, with large floods causing significant adjustment of the channel and floodplain topography that periodically resets the pattern of vegetation. Surface erosion of the floodplain and bank erosion associated with lateral migration of channel causes uprooting of established trees while, subsequently, processes of deposition as the flood recedes establish barren surfaces suitable for vegetation regeneration.

Together, surface water flows and fluvial geomorphic processes are the basis for vegetation recruitment and succession in GDEs, with surface water or shallow groundwater availability critical for vegetation growth. Such controls are common to GDEs, with previous studies of riparian vegetation in semi-arid river systems highlighting controls such as the magnitude and frequency of flood disturbance (Bendix 1994, 1997; Harris 1999; Bendix and Hupp 2000), depth to groundwater (as reflected in preference for gaining versus losing reaches; Stromberg et al. 1996, Shafroth et al. 1998), and a combination of the two (Hupp and Osterkamp 1996, Lite 2003, Bagstad et al. 2006, Leenhouts et al. 2006, Osterkamp and Hupp 2010).

Prior to Euro-American settlement in valley in the late 1700s, mature stands of riparian woodland or forest were focused on four locations in the Santa Clara River corridor. Evidence suggests that these locations had discrete patches of dense, persistent cottonwood-willow (*Populus* and *Salix* species) riparian forest, and that they corresponded to hydrologically gaining reaches of rising groundwater (Boughton et al. 2006, Stillwater Sciences 2007c, Beller et al. 2011, Orr et al. 2011, Beller et al. 2016). While the extent of these four riparian forests has reduced over time as population increased in the Santa Clara valley, their locations have been persistent, pointing to the fundamental role of hydrogeological control on forest existent (Beller et al., 2016). Three of the four locations—the East Grove, Cienega, and Del Valle—occur in the Fillmore and Piru groundwater basins (Figure 1.4-1), with the East Grove located at the downstream end of the Fillmore Groundwater Basin, Cienega at the boundary between the Fillmore and Piru groundwater basins, and Del Valle at the upstream end of the Piru Groundwater Basin (Figure 1.4-1). All are areas where groundwater occurs close to the floodplain surface.

Although the general locations suitable for forested wetlands are unchanged from historical conditions as a function of hydrogeology, surface water and shallow groundwater conditions are now influenced by surface water diversions, managed water releases, and treated wastewater releases. As a result, despite significant changes in general to the vegetation of the Santa Clara River valley and riparian corridor (see for example, descriptions presented in Beller et al. 2011 and Stillwater Sciences 2016), remnants of the three historically persistent riparian-forested wetlands in the Fillmore and Piru groundwater basins that were dominated by willows and cottonwoods are still supported, albeit in a more fragmented form (Orr et al. 2011, Beller et al. 2016). This decreasing extent mirrors changes in the Santa Clara valley in the Fillmore and Piru basins. Between the mid-nineteenth century and 2005, the extent of active riparian corridor decreased by nearly half, from an estimated 15,500 acres to 8,000 acres (Beller et al., 2016). Agricultural and urban development and subsequent levees and berms reduced the area of riparian forest relative to historical conditions, particularly in the Cienega and East Grove areas (Downs et al. 2013, Beller et al. 2016).

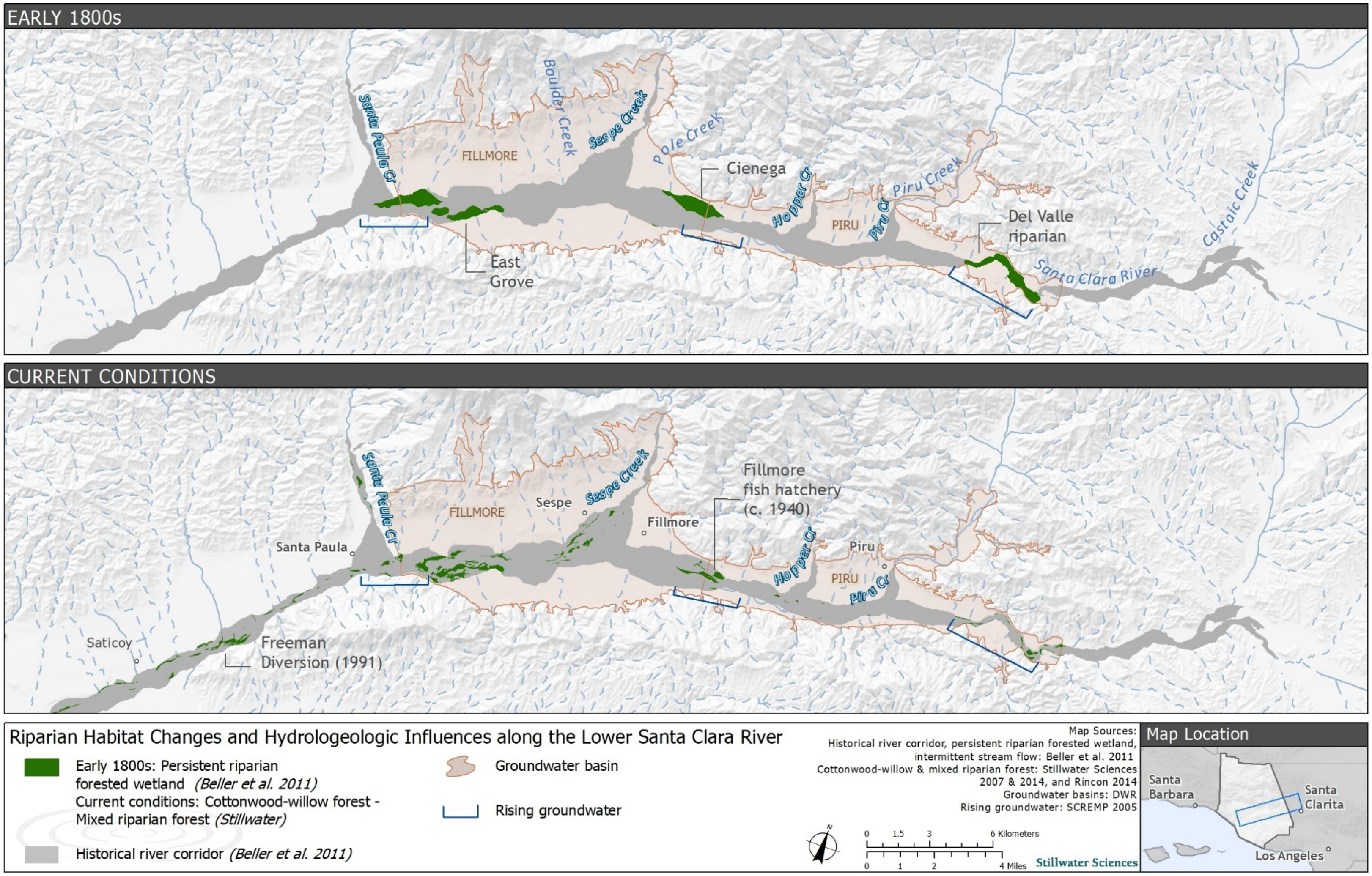

Figure 1.4-1. Riparian wetland forest extent along the Santa Clara River under historical and current conditions. Note the persistence of the three main forested wetland patches identified from historical source from at least the early 1800s to the present. (Adapted from Beller et al. 2016 and Stillwater Sciences 2016).

2 Methods of GDE IDENTIFICATION And Special-Status Species Assessment

This section details the methods used to map potential GDEs (Section 2.1) and identify special-status species that are likely dependent on groundwater (Section 2.2).

2.1 Vegetation and Wetland Communities

Potential GDE units in the Fillmore and Piru groundwater basins were identified based on the vegetation present and the presence of interconnected surface water. Several studies have identified the extent of reaches of the Santa Clara River that are connected to groundwater (URS 2005, Stillwater Sciences 2008, Beller et al. 2011, Beller et al. 2016). Interconnected reaches were identified as part of the GDE units. California Department of Water Resources' (DWR) maintains an indicators of groundwater dependent ecosystems (iGDE) database. The database, which is published online and referred to as the Natural Communities Commonly Associated with Groundwater dataset (DWR 2020), includes vegetation and wetland natural communities. These data were reviewed and augmented with additional vegetation mapping datasets to produce a map of final GDE units; additional information on vegetation community composition, aerial imagery, depth to groundwater modeled from local wells (where available), plant and species distributions in the area, and plant species rooting depths were also reviewed to support this determination. Interconnected surface water was identified based on vegetation mapping (which identifies surface water), UWCD (2017), and field observations by Stillwater scientists. Maximum rooting depths from the literature are provided in Appendix C, Table C-1. Another way to explore the rooting depth of plants is to assess their elevation relative to the river channel surface (the relative elevation). Assuming that the groundwater elevation near the stream is similar to the stream elevation, we can assess the likely rooting depth of plants based on their relative elevation. Stillwater Sciences (2007a) assessed the relative elevation of various plant types in the Santa Clara River. Those results are provided in Appendix C, Table C-2.

2.1.1 Data sources

This section includes brief descriptions of the vegetation community data and other information sources used to identify and aggregate potential GDEs into final GDE units. The iGDE database (DWR 2020) was reviewed in a geographic information system (GIS) and used to generate a preliminary map to serve as the primary basis for initial identification of potential GDEs in the Fillmore and Piru groundwater basins. This dataset is a combination of the best available data obtained from the following publicly available sources:

- Vegetation Classification and Mapping Program (VegCAMP), California Department of Fish and Wildlife (CDFW)
    - Santa Clara River Parkway Vegetation Database (Stillwater Sciences 2007b). *Imagery date: 2005; Minimum mapping unit (MMU): 1-acre.*
- Classification and Assessment with Landsat of Visible Ecological Groupings (CalVeg) – United States Department of Agriculture - Forest Service (USDA 2014). *Imagery date: 2005; Minimum mapping unit (MMU): 2.5-acre.*
- National Wetlands Inventory - Version 2.0 (NWI v2.0), U.S. Fish and Wildlife Service (USFWS 2018). *Minimum mapping unit (MMU): 0.5-acre.*

A more recent vegetation mapping effort for the Santa Clara River was completed in 2018. This dataset was used in the final GDE identification in place of the Santa Clara River Parkway Vegetation Database (Stillwater Sciences 2007b) referenced above.

- Vegetation Mapping of the Santa Clara River, Ventura County and Los Angeles County, California. Prepared for the Western Foundation of Vertebrate Zoology (Stillwater Sciences 2019). *Imagery date: 2016; Minimum mapping unit (MMU): 0.5-acre.*

The extent of the integrated data sources is shown in Table 2.1-1 and Figure 2.1-1.

Table 2.1-1. Vegetation and wetland data sources for Fillmore and Piru groundwater basins.

Data source	Mapped area (acres)		
	Fillmore	**Piru**	**Total**
Vegetation			
CalVeg	17,997.0	6,489.6	24,486.6
Vegetation Mapping of the Santa Clara River	4,580.4	4,405.6	8,986.0
Wetland			
NWI	8.5	0.3	8.8
Total[1]	**22,585.9**	**10,895.4**	**33,481.4**

[1] Totals may not appear to sum exactly due to rounding error.

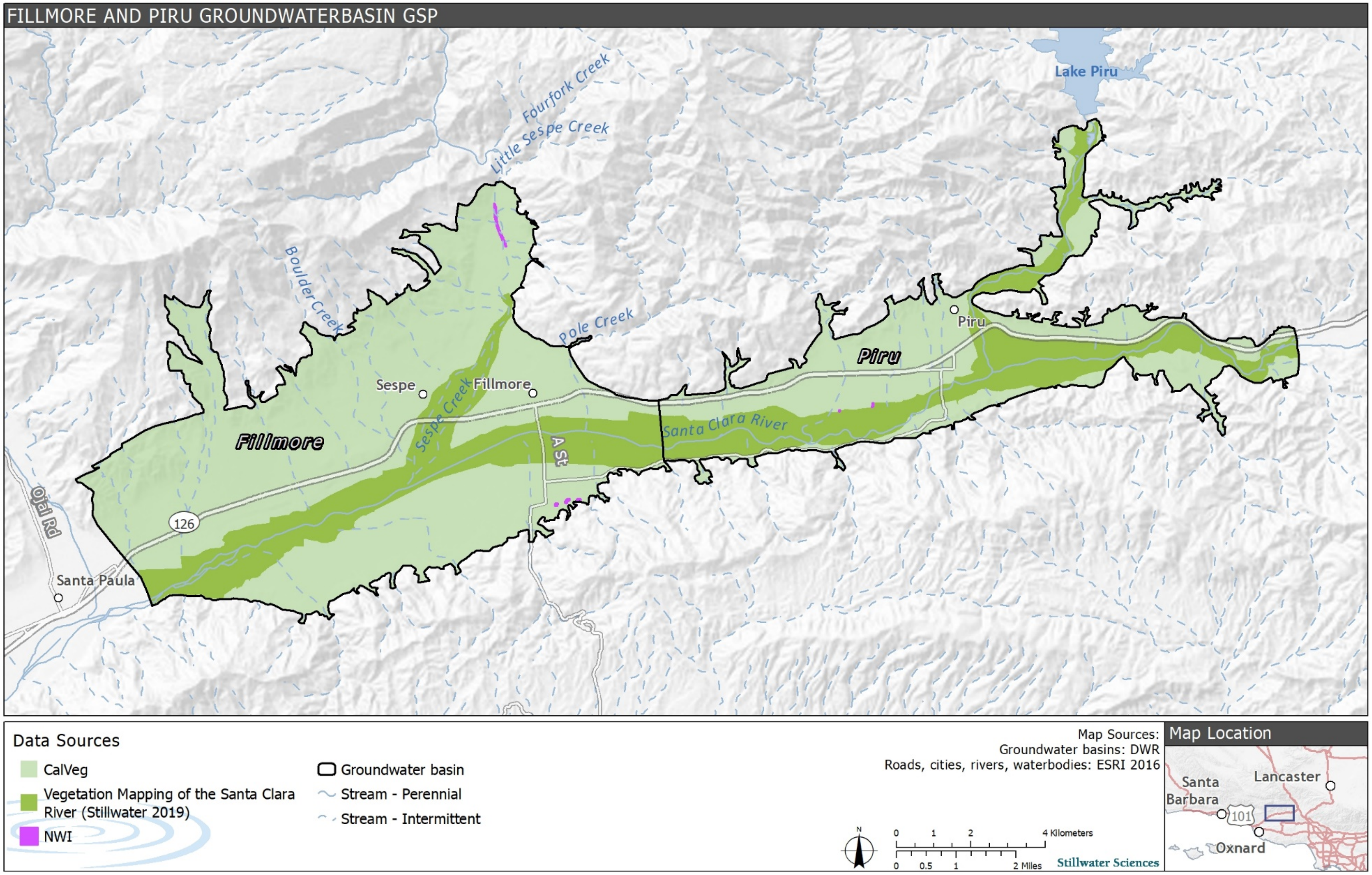

Figure 2.1-1. Vegetation and wetland data sources used for the final GDE map.

2.1.2 Procedure

The steps for defining and mapping GDEs outlined in Rohde et al. (2018) were used as a guideline for this process. A decision tree was applied to determine when species or biological communities were considered groundwater dependent based on definitions found in SGMA (State of California 2014) and Rohde et al. (2018). This decision tree, created to systematically and consistently address the range of conditions encountered, is summarized below; the term "unit" refers to an area with consistent vegetation and hydrology:

The unit is a GDE if groundwater is likely:

1. Interconnected with surface water OR
2. An important hydrologic input to the unit during some time of the year, AND
3. Important to survival and/or natural history of inhabiting species, AND
4. Associated with a principal aquifer used as a regionally important source of groundwater

The unit is not a GDE if its hydrologic regime is primarily controlled by:

1. Disconnected surface water and groundwater greater than 30 feet (ft) below the ground surface (to account for uncertainty in groundwater data and rooting depths). If groundwater is greater than 30 ft below the ground surface groundwater is unlikely a source of water for the plants that therfore rely on surface water or rainfall.
1. Surface discharge or drainage from an upslope human-made structure(s) with no connection to a principal aquifer, such as an irrigation canal, irrigated fields, reservoir, cattle pond, or water treatment pond/facility.
2. Precipitation inputs directly to the unit surface. This excludes vernal pools from being GDEs where units are hydrologically supplied by direct precipitation and very local shallow subsurface flows from the immediately surrounding area.

Interconnected surface water occurs at the three historical wetlands (Figure 1.4-1) along the Santa Clara River at the upstream end of the Piru Basin (Del Valle), at the boundary between the basins (Cienega), and at the downstream end of the Fillmore Basin (East Grove). Because vegetation communities tend to co-occur with areas of rising groundwater (Stillwater Science 2007b), vegetation and interconnected surface water GDEs were combined where they coincide.

The vegetation community mapping data sources identified in Section 2.1.1 were combined in GIS to create a groundwater basin-wide vegetation map. Consistent with Klausmeyer et al. (2018), the most recent and highest resolution mapping was prioritized over earlier and coarser scale datasets. The datasets were prioritized in the following order, with the highest priority data sources listed first: Vegetation Mapping of the Santa Clara River (Stillwater Sciences 2019) and CalVeg (USDA 2014). A crosswalk between the two mapping classification systems (i.e., Manual of California Vegetation [Vegetation Mapping of the Santa Clara River] and CalVeg) can be found in Appendix A (Table A-1).

Finally, additional wetland mapping was incorporated where vegetation data were coarse and did not accurately capture wetland features. These additional wetland data sources were incorporated unilaterally across the selected vegetation data source and were chosen to represent the best available data for the extent of each vegetation data source. CalVeg was supplemented with the iGDE wetland mapping (DWR 2020), which is derived from the National Wetlands Inventory (USFWS 2018). The Vegetation Mapping of the Santa Clara River dataset was mapped to a scale that did not require supplemental wetland data.

Depth to Groundwater

Rohde et al. (2018) recommend that maps of potential GDEs be compared with local groundwater elevations to determine where groundwater is within the rooting depth of potential GDEs. Given uncertainties in extrapolating well measurements to GDEs and differences in surface elevation of wells and GDEs, Rohde et al. (2018) recommend assigning GDE status to vegetation communities either within 30 feet of the ground surface or where interconnected surface waters are observed. To make this determination, we subtracted groundwater elevation contours for the spring of 2019 (United Water 2020) from 2018 ground surface LiDAR (USGS 2018) in GIS. Figure 2.1-2 shows the 2019 groundwater elevation contours and resultant depth to water contours. The groundwater elevation in spring 2019 was used because the groundwater elevation was higher (i.e., closer to the ground surface) than other available years. Use of the highest groundwater elevation period likely results in an overestimate of potential GDE area; the presence of shallow groundwater in a single year does not necessarily indicate that shallow groundwater is common in a particular area. The groundwater elevation contours focus on the Santa Clara River alluvial plain, where shallow groundwater data are more common than along Sespe and Piru creeks. Contours to groundwater data are uncertain, particularly in the intermittent reaches where shallow groundwater wells are rare or absent.

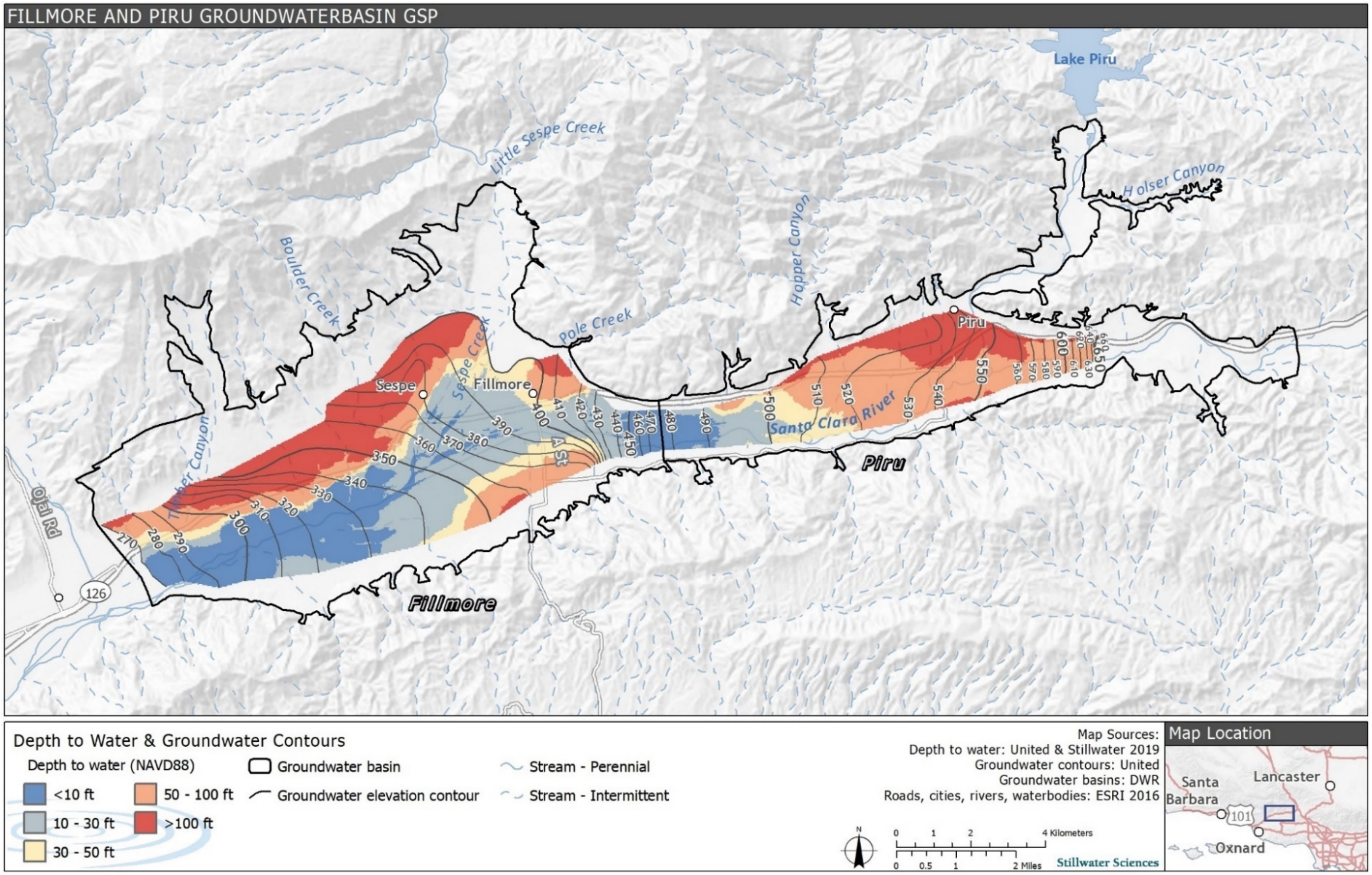

Figure 2.1-2. Spring 2019 depth to water and groundwater elevation contours.

2.1.3 Refine potential GDE map

To inform the assessment of GDE condition and potential effects (Sections 4 and 5), the basin-wide vegetation and wetland map was reviewed, and each community was assigned a groundwater dependence category (i.e., unlikely or likely; Figure 2.1-3). This determination was based on species composition and the groundwater dependency of dominant species, whether they were considered groundwater dependent by the iGDE database (DWR 2020) and wetland indicator status (Lichvar et al. 2016). Although Klausmeyer et al. (2018) includes species with upland facultative wetland indicator status (Lichvar et al. 2016) in their list of groundwater dependent mapping units, these upland facultative species were classified as unlikely to be groundwater dependent based on their typical elevation relative to the low-flow channel in the Santa Clara River watershed. Figure 2.1-4 shows the differences between the iGDE database and the potential GDE map. Section 4.1 discusses the vegetation communities that were identified as likely to depend on groundwater.

These potential GDEs were overlaid with the depth to water dataset (as discussed in Section 2.1.2) in GIS and any communities occurring outside of 30-ft depth to groundwater were removed. The depth to water modeling data did not cover the entire extent of both the Fillmore and Piru groundwater basins; in these areas, a manual review of potential GDEs was performed using aerial imagery. Coast live oak (*Quercus agrifolia*) communities were included as potential GDEs when they occurred in riparian areas or drainages; any mapped stands growing on a clear slope were excluded based on landscape position and improbable connection to groundwater.

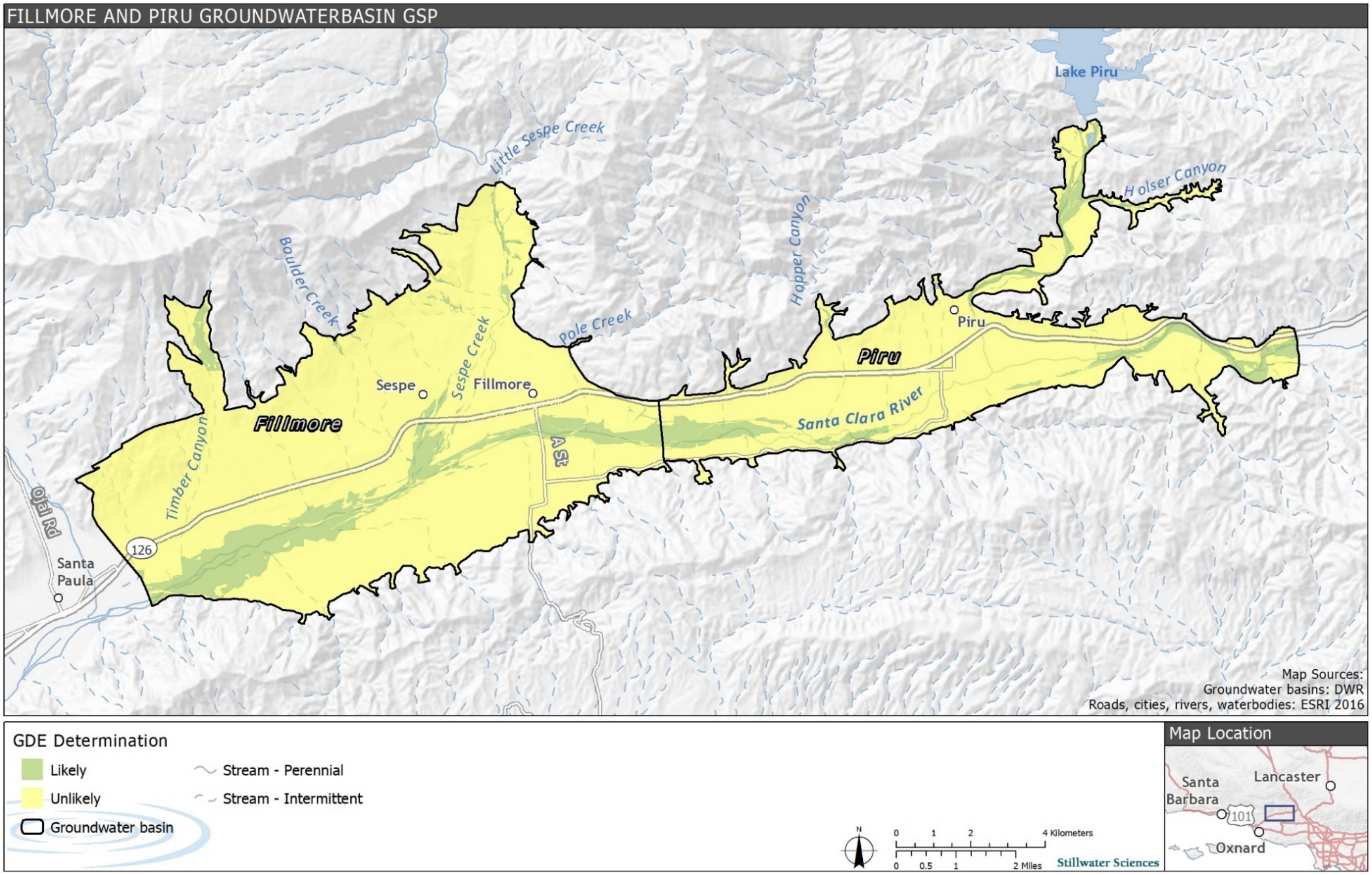

Figure 2.1-3. Potential GDE determination based on the methods outlined in Section 2.1.

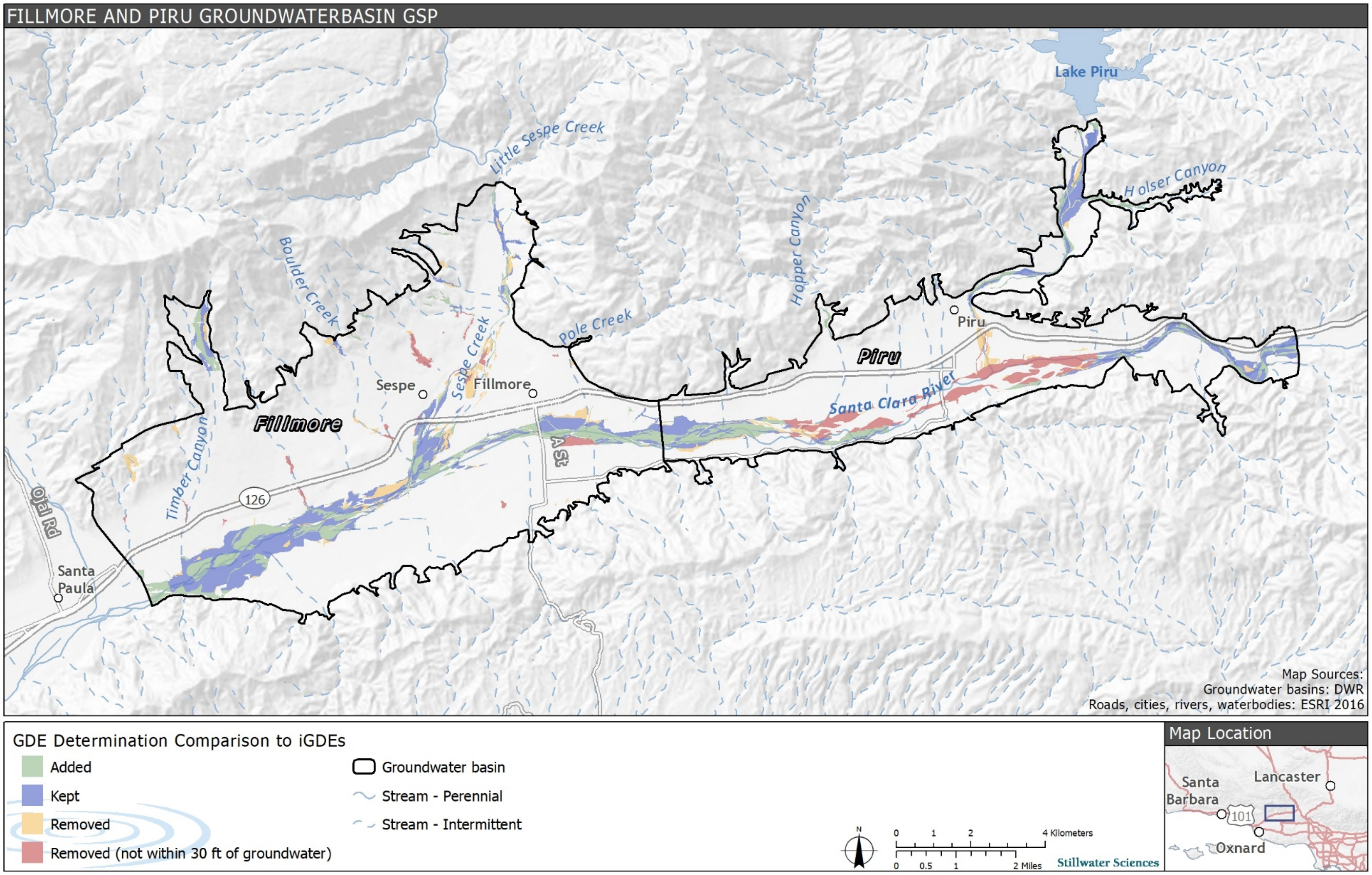

Figure 2.1-4. Potential GDE determination compared to iGDE mapping (Klausmeyer et al. 2018). The final GDEs are indicated by kept and added classes.

2.2 Special-status Species

As part of this analysis, special-status species and sensitive natural communities that are potentially associated with GDEs in the Fillmore and Piru groundwater basins were identified. Groundwater dependent special status species in the basin are beneficial users of groundwater. For the purposes of this document, special-status species are defined as those:

- listed, proposed, or under review as endangered or threatened under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA);
- designated by CDFW as a Species of Special Concern;
- designated by CDFW as Fully Protected under the California Fish and Game Code (Sections 3511, 4700, 5050, and 5515);
- designated as Forest Service Sensitive according to the Regional Forester's Sensitive Species Management Guidelines listed per USFS Memorandum 2670 (USFS 2011);
- designated as Bureau of Land Management (BLM) sensitive;
- designated as rare under the California Native Plant Protection Act (CNPPA); and/or
- included on CDFW's most recent Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2020a) with a California Rare Plant Rank (CRPR) of 1, 2, 3, or 4.

Sensitive natural communities are defined as vegetation communities identified as critically imperiled (S1), imperiled (S2), or vulnerable (S3) on the most recent California Sensitive Natural Communities List (CDFW 2020b).

2.2.1 Data sources

Stillwater ecologists queried databases on regional and local occurrences and spatial distributions of special-status species within the Fillmore and Piru groundwater basins. Spatial database queries included potential GDEs plus a 1-mile buffer. Databases queried included:

- California Natural Diversity Database (CNDDB) (CDFW 2019);
- Vegetation Mapping of the Santa Clara River, Ventura County and Los Angeles County, California, prepared for the Western Foundation of Vertebrate Zoology (Stillwater Sciences 2019);
- California Native Plant Society (CNPS) Manual of California Vegetation (2020);
- eBird (2021); and
- The Nature Conservancy (TNC) freshwater species lists generated from the California Freshwater Species Database (CAFSD) (TNC 2020).

2.2.2 Procedure

Stillwater reviewed the database query results and identified special-status species and community types with the potential to occur within or be associated with the vegetation and aquatic communities in or immediately adjacent to the potential GDEs. Stillwater ecologists then consolidated these special-status species and sensitive community types into a list along with summaries of habitat preferences, potential groundwater dependence, and reports of any known occurrences (Section 4.2.2 and Appendix A).

Wildlife species were evaluated for potential groundwater dependence using determinations from the Critical Species Lookbook (Rohde et al. 2019) or by evaluating known habitat preferences, life histories, and diets. Species GDE associations were assigned one of three categories:

- Direct—species directly dependent on groundwater for some or all water needs (e.g., cottonwood with roots in groundwater, juvenile steelhead in dry season).
- Indirect—species dependent upon other species that rely on groundwater for some or all water needs (e.g., riparian birds).
- No known reliance on groundwater.

Sensitive natural communities were classified as either likely or unlikely to depend on groundwater based on species composition using the same methodology as vegetation communities (Section 2.1.3). Plant species were evaluated for potential groundwater dependence based on their habitat (Jepson Flora Project 2020) and association with vegetation communities classified as GDEs. Special-status plant GDE associations were assigned one of three categories: likely, possible, or unlikely. The "possible" category was included to classify plant species with limited habitat data or where a species may have an association with a vegetation community identified as a GDE (e.g., Coast live oak, California sagebrush [*Artemisia californica*]).

Database query results for local and regional special-status species occurrences were combined with their known habitat requirements to develop a list of groundwater dependent special-status species (Section 4.2.2) that satisfy the following criteria: (1) documented to occur within the GDE unit, or (2) known to occur in the region and suitable habitat present in the GDE unit.

3 POTENTIAL GDE UNITS

3.1 Potential GDE Units

Seven potential GDE units were identified based on hydrologic and ecological conditions of the GDEs identified using the methods outlined in Section 2.1.3 (Table 3.1-1 and Figure 3.1-1). Potential GDE units are units that may use groundwater but could also be using water from other sources (e.g., soil moisture, agricultural runoff, or surface flows). The likelihood of groundwater dependence for each potential GDE unit is explored in Section 6. The exterior boundaries of each unit were established using the extent vegetation communities. Adjacent GDE units were differentiated based on changes in the dominant vegetation community such as a transition from willows and cottonwoods to mulefat or the presence of interconnected surface water. Three of the units mostly coincide with areas of rising groundwater and thus contain interconnected surface water as part of the GDE.

Table 3.1-1. Potential GDE unit description.

Potential GDE units	Description
Del Valle	Historical Del Valle complex located at the upstream end of the Piru Groundwater Basin. Unit is predominantly dense riparian forest, with established Freemont cottonwood and red willow. This unit includes the interconnected surface water portions of the Santa Clara River, which extends from the basin boundary downstream to approximately Las Brisas Bridge.
Santa Clara River Riparian Shrubland	Riparian zone along the Santa Clara River; dominated by facultative phreatophytes and riparian shrubland habitat. Unit occupies both Fillmore and Piru groundwater basins. Unit is characterized by lower density and low-stature shrubs and is dominated by mulefat.

Potential GDE units	Description
Cienega	Historical Cienega complex located near the Fillmore Fish Hatchery. Unit occurs in both Fillmore and Piru groundwater basins. Unit is dominated by mulefat and giant reed of variable density throughout. This unit includes interconnected surface water in the Santa Clara River.
East Grove	Historical East Grove complex located at the downstream end of the Fillmore Groundwater Basin. Unit is occupied by dense riparian forest dominated by mulefat, black cottonwood, and red willow. This unit includes interconnected surface water on the Santa Clara River.
Piru Creek Riparian	Riparian zone along Piru Creek from Santa Felicia Dam to Highway 126. Unit is characterized by a thin but dense riparian corridor, dominated by mulefat, Freemont cottonwood, and red willow.
Tributary Riparian	Riparian habitat within tributaries to both Fillmore and Piru groundwater basins. Predominantly located to the north of the Santa Clara River draining the Topa Topa mountain range. Unit is dominated by oaks and other hardwoods.
Sespe Creek Riparian	Riparian zone along Sespe Creek from the boundary of the Fillmore Groundwater Basin to Highway 126. Unit is dominated by mixed hardwood and low-stature willows.

Potential GDE units in the Fillmore and Piru groundwater basins contain 3,955.1 acres of GDE habitats, with the majority (65%) occurring in the Fillmore Groundwater Basin (Table 3.1-2). The Santa Clara River Riparian Shrubland and East Grove are the largest potential GDE units and together account for 83% of the GDE units in the Fillmore Groundwater Basin.

Table 3.1-2. Extent of potential GDEs by GDE unit by Groundwater Basin (acres).

GDE unit	Fillmore	Piru	Total
Cienega	133.6	159.6	293.2
Del Valle	-	466.1	466.1
Santa Clara River Riparian Shrubland	1,046.0	342.1	1,388.1
East Grove	1,101.9	-	1,101.9
Piru Creek Riparian	-	336.9	336.9
Tributary Riparian	196.6	68.9	265.5
Sespe Creek Riparian	103.4	-	103.4
Total	**2,581.5**	**1,373.6**	**3,955.1**

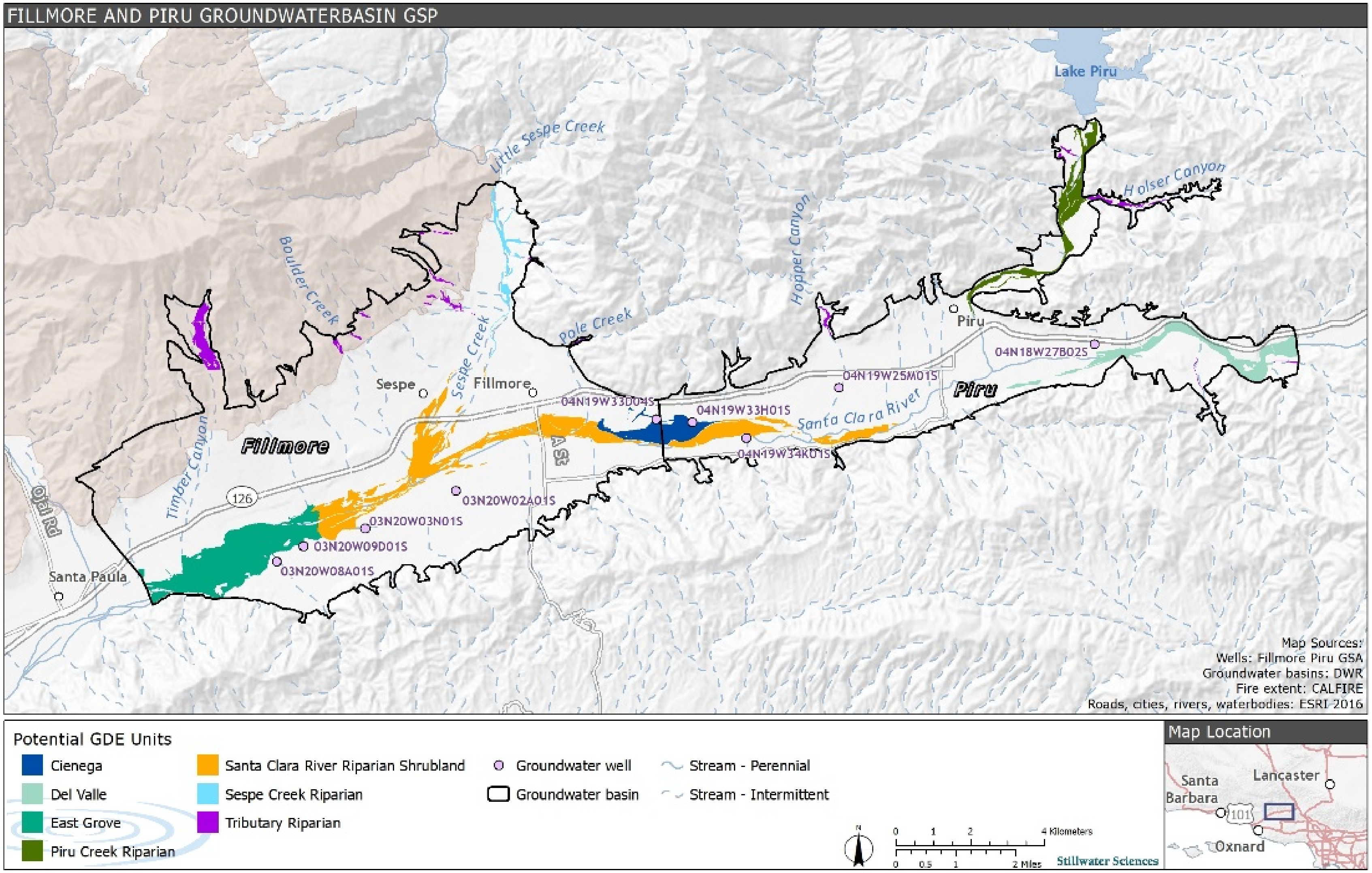

Figure 3.1-1. Potential GDE units and groundwater wells for the Fillmore and Piru groundwater basins.

4 GROUNDWATER AND INTERCONNECTED SURFACE WATER HYDROLOGY

Changes to groundwater elevations and interconnected surface water flows through time can lead to changes in GDE health and extent. This section uses available groundwater level data to assess temporal trends in the groundwater elevations for potential GDE units with well data (Section 4.1). Section 4.2 explores groundwater quality and its potential effect on GDEs. Finally, Section 4.3 explores the extent of interconnected surface water and spatial trends in interconnected surface water that can later be used to assess potential impacts of groundwater management to GDEs. These changes in groundwater levels and interconnected surface water are linked with changes to GDE health in Section 6.

4.1 Groundwater Levels

Historical dry periods and droughts play a major influence on groundwater elevations across the Fillmore and Piru groundwater basins. Droughts in 1974–1977, 1986–1991, and 2012–2016 had significant signatures in the hydrographs of shallow wells located beside the identified GDEs. Most recently, basins were near to full capacity in 2011 (i.e., groundwater levels very close to the surface) ahead of the 2012–2016 drought, which generally caused water levels in wells to decline. The largest drops were seen in wells in the central part of Piru Groundwater Basin the higher elevation portions of the basin along Sespe Creek (the Sespe Upland) and Pole Creek Fan area of Fillmore Groundwater Basin. The greatest seasonal fluctuations are seen in the same areas (central Piru Groundwater Basin, Sespe Upland, and Pole Creek Fan), where hydraulic gradients are relatively steep. In general, ground surface elevation in the Sespe Upland areas increases steeply to the north, unlike the relatively flat topography near to the Santa Clara River channel. As such, depths to groundwater tend to be greatest along the Sespe Upland.

Long-term records of shallow groundwater are relatively rare in the Fillmore and Piru groundwater basins. Below we use well data presented in the Monitoring Plan and Data Gaps Analysis Appendix (DBS&A 2020) to explore shallow groundwater trends for the GDE units shown in Figure 3.3-1 from east to west. We were unable to examine the groundwater levels in the Tributary Riparian GDE unit because there are no representative wells located in or near the unit.

Many of the wells considered in the analysis below are screened below the shallow groundwater used by GDEs (Table 3.1-1) and may not accurately represent the actual shallow groundwater elevation. Additionally, land surface elevation, and therefore depth to water, at a monitoring well site may differ from that at the GDEs it represents, particularly with distance from the river channel. GDEs are typically located closer to channels and at lower elevations than their representative well sites. We used a DEM to extract land surface elevations at GDEs along cross-channel transects at each well. The range of ground elevation for the GDEs is represented by the green shaded area in figures 4.1-1 through 4.1-5. In addition to depth to water data at each well site, we present the range of elevation of potential GDEs along each transect to provide rough constraints on depth to water at the potential GDEs.

The following sections analyze groundwater elevation changes for some of the GDE units. In light of the limitations of the monitoring well data, the groundwater elevation data presented in this section are intended to illustrate general trends within GDE units. The spring 2019 depth to water surface (Section 2.1.2), as opposed to monitoring well data, is used to establish GDE connectivity with shallow groundwater.

4.1.1 Piru Basin

Del Valle

Well 04N18W27B02S is an active agricultural well installed in 1932, with a screen depth of 140–255 feet (Table 4.1-1). The well is approximately 1,500 ft north of the downstream end of the Del Valle unit. The depth of groundwater in this well varies from about 19–160 feet below ground surface (ft bgs) (Figure 4.1-1). The shaded green areas in this and subsequent figures represent the range of elevation of the GDE along a transect perpendicular to the valley axis. After a period of low water elevation levels in the 1960s, the water level between droughts was generally within 10–30 ft bgs. During droughts, the water level dropped to greater than 100 ft bgs before recovering. The low water levels prior to the 1970s occurred before the effluent releases from Los Angeles County increased. Groundwater elevation has increased since the 2012–2016 drought but by early 2020 had not yet reached the long-term average depth. GDE elevations in this unit are 7 to 15 ft below the well site elevation, so depth to water at GDEs is likely to be shallower than at the well. (Figure 4.1-1).

Table 4.1-1. Characteristics for wells used for the groundwater quality and groundwater level assessment. The location of the wells is shown on Figure 2.3-1.

Well	Basin	GDE Unit	Screen depth (ft bgs)	Data type[1]	Water quality data available	Water level data available
04N18W27B02S	Piru	Del Valle	140–255	WQ, WL	1960–2004	1932–2020
04N19W34K01S	Piru	Santa Clara River Riparian Shrubland	5–120	WQ, WL	1931–2016	1972–2019
04N19W33H01S	Piru	Cienega	237–362	WQ	1954–1958	2007–2011**
04N19W33D04S	Fillmore	Cienega	140–486	WQ, WL	1951–1985	1972–2020
03N20W03N01S	Fillmore	Santa Clara River Riparian Shrubland	120–172	WQ, WL	1981–1994	1959–2020
03N20W09D01S	Fillmore	East Grove	210–310	WQ, WL	1969–2019	1988–2019

[1] WQ=groundwater quality, WL= groundwater level

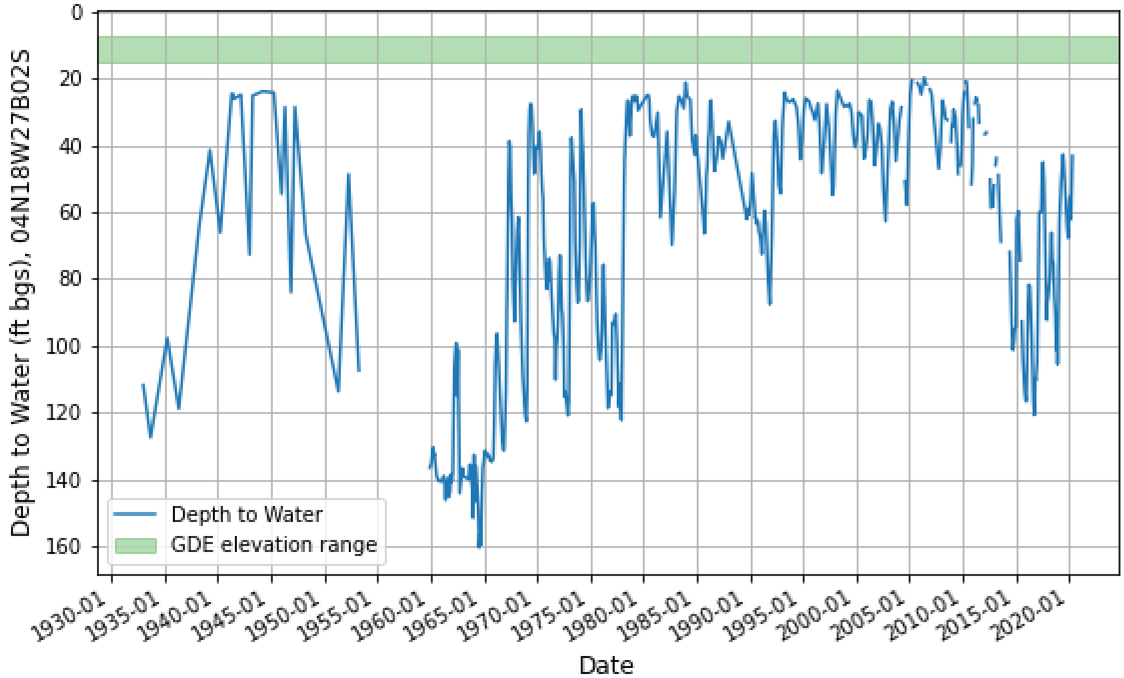

Figure 4.1-1. Depth to groundwater and potential GDE elevation range on well transect, Well 04N18W27B02S in the Del Valle GDE Unit. Well site elevation is assumed to be 0 ft bgs.

Santa Clara River Riparian Shrubland

Well 04N19W34K01S within the Santa Clara River Valley Riparian Shrubland GDE Unit in the Piru Basin and 0.45 miles east of the Cienega Riparian Complex boundary has a screen depth of 5–120 feet bgs and was installed in 1972. The average depth to groundwater over the period or record was 19.5 feet bgs. Groundwater levels in well declined sharply to 49–62 ft bgs during droughts (Figure 4.1-2), but quickly recovered to the long-term average values. Since 2016, water elevations have risen, but still had not fully recovered to a normal range of 15 feet bgs or less by fall 2019. GDE elevations in this unit range from 1.5 ft above to 12 ft below the well site elevation. In general, depth to water at GDEs is likely to be shallower than at the well (Figure 3.1-2).

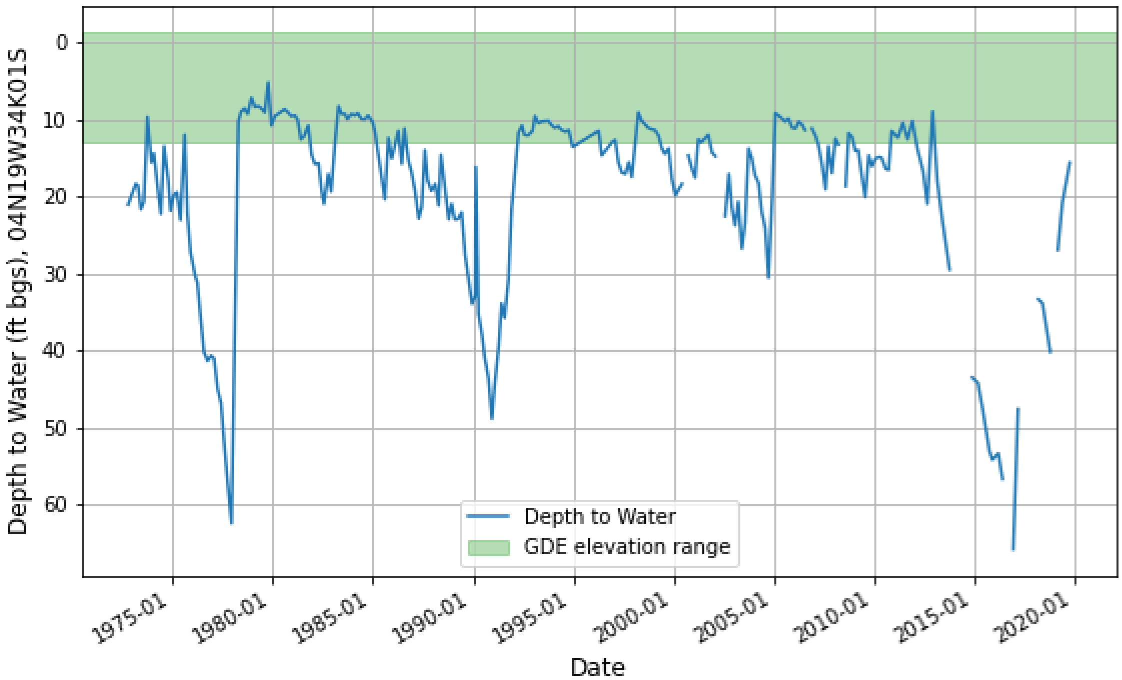

Figure 4.1-2. Depth to groundwater and potential GDE elevation range on well transect, Well 04N19W34K01S in the Santa Clara River Riparian Shrubland GDE Unit (Piru). Well site elevation is assumed to be 0 ft bgs.

4.1.2 Fillmore Basin

Cienega

Well 04N19W33D04S lies within the Cienega GDE Unit in the Fillmore Groundwater Basin and is screened at 140–486 feet (Table 4.1-1). It became operational in 1972 and the average depth to water from 1972–2019 was 5.4 feet bgs (Figure 4.1-3). The well data show significant declines during droughts, with groundwater level dropping to 25–33 feet during the droughts before returning to 5–10 ft bgs between the droughts. GDE elevations in this unit range from 2 feet above to 6 feet below the well site elevation (Figure 4.1-3).

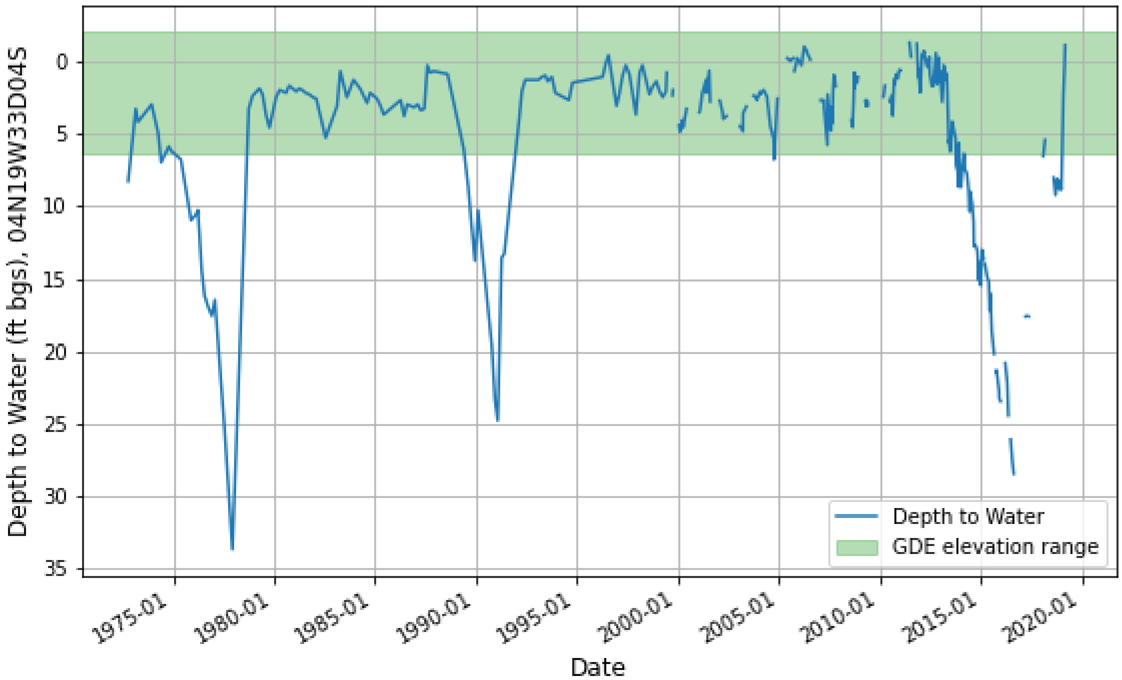

Figure 4.1-3. Depth to groundwater and potential GDE elevation range in well cross-section, Well 04N19W33D04S in the Cienega GDE Unit. Well site elevation is assumed to be 0 ft bgs.

Santa Clara River Riparian Shrubland

Well 03N20W03N01S is in the Fillmore Groundwater Basin, 0.1 miles outside of the Santa Clara River Valley Riparian Shrubland boundary (0.75 miles east of the East Grove GDE Unit) and has been operational since 1959. This well has a screen depth of 120–172 feet bgs (Table 4.1-1). Over the 60 years of recorded depths to groundwater, this well averages 14.7 feet bgs (Figure 4.1-4). Similar to the other wells in the basin, the water elevation drops during droughts, with the largest drop occurring in 2016, when the water elevation was greater than 40 ft bgs. Following the droughts, the water elevation recovers to its average long-term value. GDE elevations in this unit range from 1 ft above to 12.5 ft below the well site elevation. In general, depth to water at GDEs is likely to be shallower than at the well because groundwater depths are increasing downstream toward the area of rising groundwater in the East Grove.

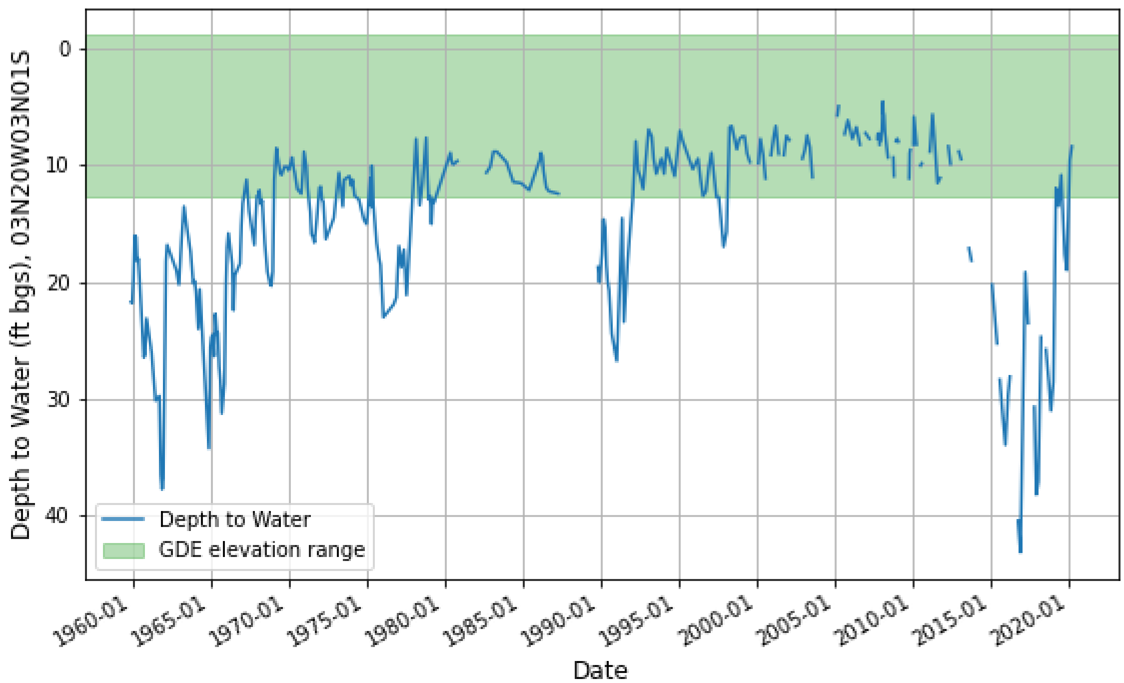

Figure 4.1-4. Depth to groundwater and potential GDE elevation range in well cross-section, Well 03N20W03N01S in the Santa Clara River Riparian Shrubland GDE Unit (Fillmore). Well site elevation is assumed to be 0 ft bgs.

East Grove

Well 03N20W09D01S, in operation since 1988, is an agricultural well that has a screen depth of 210–310 feet bgs (Table 4.1-1). The average water level from 1988–2019 was 8.7 feet bgs (Figure 4.1-5). Groundwater data are relatively sparse in this well, particularly after 2010. This well shows a similar pattern to other wells described above, with declines in groundwater elevation during droughts followed by recovery. During the 2012–2016 drought, recorded groundwater depths decreased to almost 25 ft bgs. Adam Lambert (UCSB) has established numerous groundwater monitoring points (<12 ft) in the East Grove GDE Unit. These wells show similar results to Figure 4.2-5, but the magnitude of changes varies based on the location and relative elevation. GDE elevations in this unit are up to 11 feet below the well site elevation. In general, depth to water at GDEs is likely to be shallower than at the well (Figure 4.1-5).

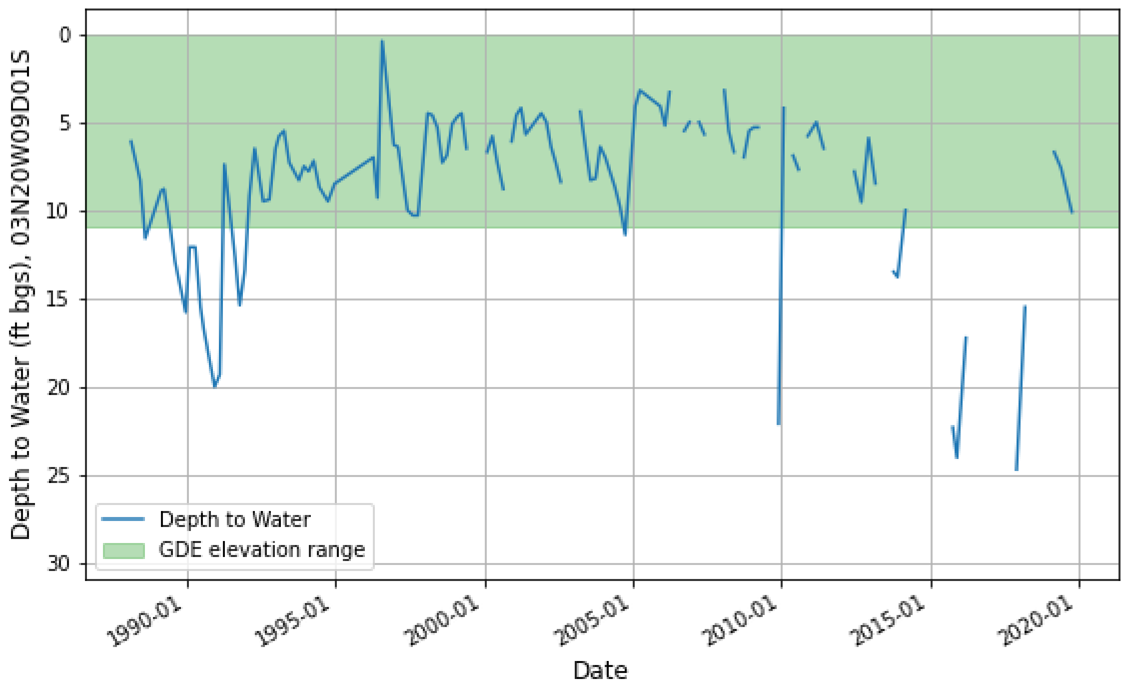

Figure 4.1-5. Depth to groundwater and potential GDE elevation range in well cross-section, Well 03N20W09D01S in the East Grove GDE Unit. Well site elevation is assumed to be 0 ft bgs.

4.2 Groundwater Quality

In general, groundwater in the Fillmore and Piru groundwater basins is high-quality with a few exceptions (DBS&A 2020). Between 1951 and 1968, elevated concentrations of TDS, sulfate, chloride, and boron near the Ventura/Los Angeles County line were generally connected to loosely regulated oil fields in Los Angeles County. Some of these elevated concentrations persisted after the Clean Water Act reduced impacts from the oil fields (DBS&A 2020). High chloride concentrations in the Santa Clara River originating in Los Angeles County cause the largest concern for water quality, particularly for agricultural uses in the Piru Groundwater Basin. Historically, water quality chemicals of concern (COCs) in the basins include:

- Total dissolved solids (TDS)

- Sulfate
- Chloride
- Nitrate
- Boron

The inter-quartile range of concentration for the five contaminants of concern and the EPA maximum contaminant level (MCL) in drinking water are shown in Table 4.2-1. In general, while concentrations for the contaminants of concern exceeded MCLs at times, they were not sufficiently high to impact GDEs. Moreover, shallow groundwater (used by GDEs) is usually younger and recharged by the surface waters of the Santa Clara watershed and has less legacy contamination than deeper groundwater (VCWPD 2016).

Table 4.2-1. Inter-quartile range and peak concentration (in square brackets) for selected contaminants observed in wells in the GDE units.

Well number	Basin	GDE unit	TDS (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Nitrate (mg/l)	Boron (mg/l)
04N18W27B02S	Piru	Del Valle	2413–2696 [3123]	150–151 [159]	365– 1412 [1536]	14–44 [66]	0.7–0.73 [1]
04N19W34K01S	Piru	Santa Clara River Riparian Shrubland	1366–1520 [1520]	41–55 [67]	616–339 [710]	9.2–13.6 [28]	0.6–0.8 [1.0]
04N19W33D04S	Piru	Cienega	966–1180 [1221]	31 to 47 [49]	458-522 [1332]	9.8–16 [32]	1–1.1 [1.1]
04N19W33H01S	Fillmore	Cienega	980 [n/a]	33–54 [54]	487–720 [720]	8.5–42 [42]	0.86–0.89 [0.89]
03N20W03N01S	Fillmore	Santa Clara River Riparian Shrubland	1048–1300 [1400]	41–62 [70]	476–580 [580]	17–41 [48]	0.8–0.9 [0.9]
03N20W09D01S	Fillmore	East Grove	1290–1516 [1516]	74–79 [81]	587–616 [650]	39.5–73 [73]	0.5–0.8 [0.9]
MCL (mg/l)			500[a]	250[a]	250[a]	45[b]	1[c]

[a] EPA secondary Maximum Contaminant Level
[b] EPA Maximum Contaminant Level
[c] California State Notification Level

4.3 Interconnected Surface Waters

Surface waters within the Piru and Fillmore groundwater basins have varying degrees of connection to groundwater. Generally, surface waters can be categorized into three major surface water types: perennial reaches, intermittent reaches, and ephemeral reaches. For this discussion we define perennial reaches as those that have surface flow except during prolonged and severe droughts. For the Santa Clara River, perennial reaches are generally supported by rising groundwater and are areas of interconnected surface water (UCWD 2017). Surface flows occur for prolonged periods in intermittent reaches, but the reaches tend to go dry during most years. Ephemeral reaches occur in smaller tributaries within the basin and only support surface flow immediately after storm events.

As discussed in Section 1.4, the Santa Clara River has alternating perennial and intermittent reaches with perennial reaches occurring where rising groundwater contributes the vast majority of the surface water (except during storm events with significant runoff) and the intermittent reaches are losing reaches that are disconnected from groundwater during most of the year. Perennial reaches include the Del Valle, Cienega, and East Grove GDE units (Figure 1.4-1). . Continuous surface water flow across the Fillmore and Piru basins can also occur due to effluent from Los Angeles County or dam releases, such as in the reach immediately downstream of Piru Dam.

4.3.1 Piru Groundwater Basin

The Piru Groundwater Basin has three perennial reaches that generally co-occur with the Del Valle GDE Unit, the Cienega Riparian Complex GDE unit, and Piru Creek from Santa Felicia Dam to the confluence with the Santa Clara River. The Del Valle Reach occurs at the upstream end of the Piru Groundwater Basin where the valley width is still narrow, and the alluvial basin is shallow relative to downstream reaches. The Del Valle Reach was historically perennial (Beller et al. 2016) and flows are currently augmented by effluent releases in Los Angeles County. The extent of dry season surface flow in the Cienega Reach was mapped from 2011–2018 by United Water and is discussed below. The degree to which Hopper Canyon Creek is currently connected to groundwater within the Piru Basin is unknown. Several small ephemeral tributaries to the Santa Clara River and Piru Creek occur in the reach and are disconnected from groundwater. To our knowledge, there has not been a systematic exploration of the extent of surface water in lower Piru Creek or Hopper Canyon Creek.

Flows in the Del Valle Reach were monitored at the Santa Clara River near Piru gage (USGS Gage Number 11109000) from 1928–1932 and since water year 1997 at the Las Brisas Bridge, and at the USGS gage at the Ventura County line (also known as Blue Cut, USGS Gage Number 11108500) from 1953–1996. These gage records show that this reach is perennial, but shallow groundwater levels are not monitored in this reach. Rising groundwater is thought to occur upstream of this reach, in the adjacent Santa Clara River Valley East groundwater basin. USGS Gage 111085000 is located on a bedrock high; from the gage downstream to the Las Brisas Bridge, surface flow is thought to be stable and sustained by rising groundwater upstream and effluent releases from Los Angeles County (Dan Detmer personal communication). Near the Las Brisas Bridge, the river transitions to a losing reach. Shallow groundwater commonly occurs in this area, is sustained by surface flow from upstream areas. The occurrence of shallow groundwater in this reach is not influenced by any known groundwater pumping in the Piru Basin (UWCD 2021).

A 6.5-mile-long intermittent, losing reach occurs between Del Valle and the Cienega Reach of the Santa Clara River in the Piru Groundwater Basin. The groundwater is relatively deep in this reach and when the Santa Clara River flows, the surface flow is disconnected from groundwater. During very wet years (e.g., 1998 and 2005), prolonged surface water releases from Santa Felicia Dam or Castaic Lake in combination with high recharge rates during storms cause high stream bed infiltration rates that replenish the groundwater beneath and near the river and can cause groundwater levels to reach the stream bed. This condition abates when the surface water flows cease (or decrease dramatically) and the mounded groundwater beneath the river declines and the surface water flow returns to a disconnected state with the aquifer.

Flow in lower Piru Creek is maintained by releases from Santa Felicia Dam, which likely also raises the groundwater level in this area. This reach of Piru Creek was historically intermittent (Beller et al. 2016) but there is currently perennial flow at least in the upper portion of the reach.

4.3.2 Fillmore Groundwater Basin

The Santa Clara River in the Fillmore Groundwater Basin has two reaches with rising groundwater (i.e., interconnected surface water) that correspond to the Cienega and the East Grove GDE units. Surface flows in both of these reaches are typically dominated by rising groundwater except during storm flows. The rising groundwater flows can be supplemented by man-made releases from Santa Felicia Dam or Castaic Lake. The extent of rising groundwater (the source of the perennial flow) varies based on water year type (see section 4.3.3 for a discussion). Between these two reaches the Santa Clara River is an intermittent, losing reach for approximately 5 miles.

Sespe Creek is perennial at the USGS gage near the Fillmore Groundwater Basin boundary (where the creek exits the mountains) but the downstream extent of perennial flow is not known, although the lower portion of Sespe Creek is intermittent. Other tributaries within the Fillmore Groundwater Basin, including Pole Creek, Boulder Creek, and Timber Creek, are typically ephemeral or intermittent (i.e., disconnected from groundwater). United Water mapped the extent of surface water from 2011–2017 and that is explored below.

4.3.3 Variations in the extent of surface water 2011-2017 in the western Piru and Fillmore basins

United Water used field observations and photographs to map the extent of dry-season surface water in the Santa Clara River from 2011–2017 (UCWD 2017, Figure 4.3-1). This period includes relatively wet 2011 and the 2012–2016 drought and subsequent recovery in 2017. The wetted area was mapped as extending downstream to the Freeman Diversion (red triangles on the west end of the images in Figure 4.3-1) if a diversion occurred according to the diversion rate operations log. Santa Clara River flow rates were measured at the Fillmore Fish Hatchery (eastern circle in Figure 4.3-1, downstream end of Piru Groundwater Basin) and Willard Road (the western circle in Figure 4.3-1, downstream end of Fillmore Groundwater Basin). Sespe Creek flow was measured at the USGS gage (northernmost circle in August 2011 and June 2012). Castaic Lake and Santa Felicia Dam releases were absent for six months prior to the measurements shown on Figure 3.3-1 and the flows are therefore assumed to be entirely groundwater dependent.

Figure 4.3-1 shows that the extent of surface water and the magnitude of surface flows both decreased during the drought. The total length of the wetted stream channel in the Ventura County portion of the Santa Clara River decreased from approximately 17 miles in Fall 2012 to less than 5 miles in Fall 2016 (Figure 4.3-1). Streamflow at the Fillmore Fish Hatchery declined from 25 cfs in 2011 to 6 cfs in fall 2013. Surface flows were absent near the fish hatchery from 2014 to 2016 before returning in 2017. Streamflow at the downstream end of the Fillmore Groundwater Basin declined from 42 cfs in August 2011 to 1 cfs in October 2016. Subsequent dry-season flow measurements at Willard Road in 2018 and 2019 (not shown) ranged up to 16 cfs. Lower Sespe Creek remained dry from spring 2013 through November 2017. Surface flows at both the fish hatchery and Willard Road are linked with groundwater elevation (UCWD 2017, UCWD 2021a).

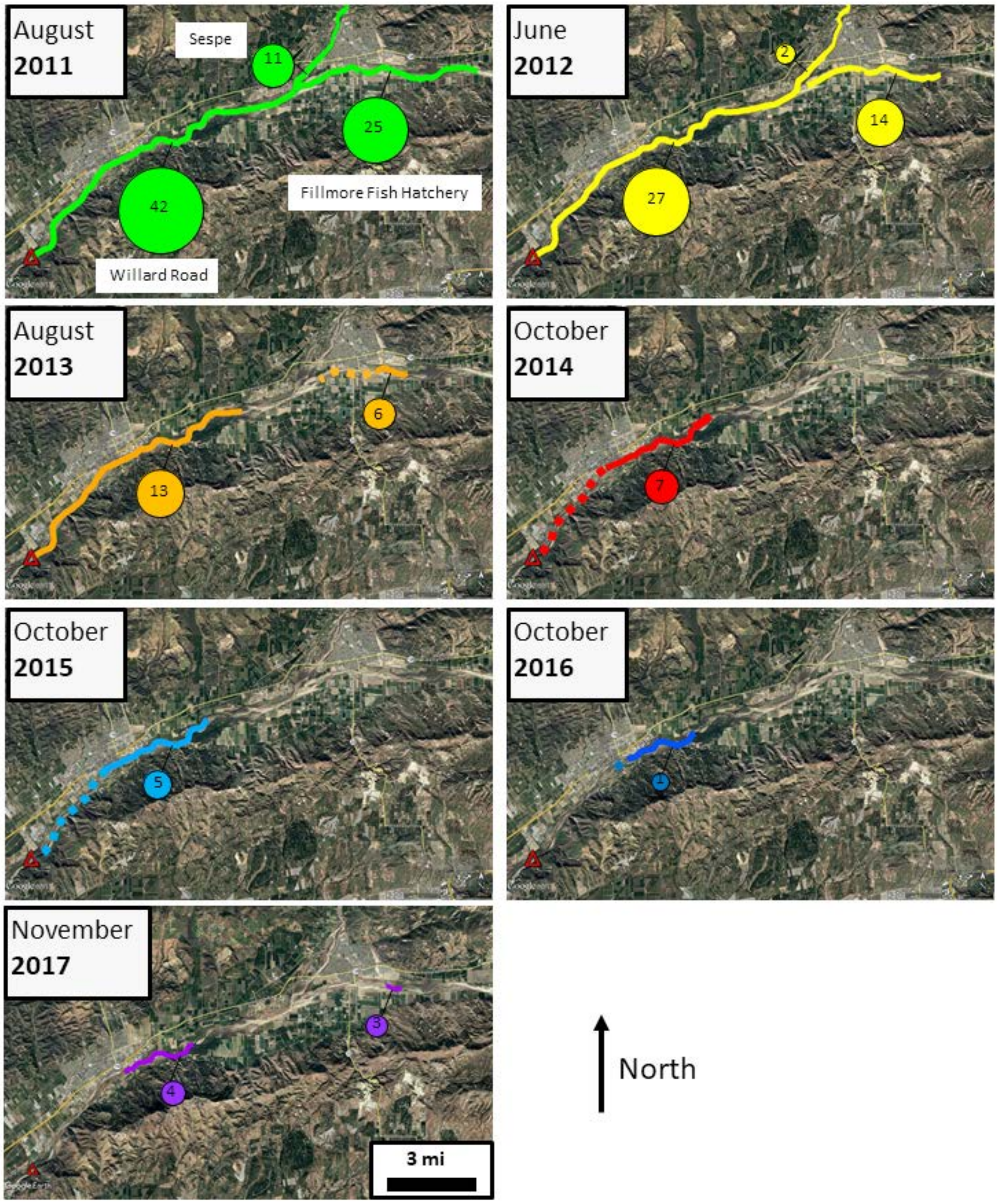

Figure 4.3-1. Dry season surface flow extent measured in the Fillmore Groundwater Basin and the downstream portion of the Piru Groundwater Basin. The solid-colored lines correspond to the extent of surface flow with the flow in cfs indicated in bubbles. The red triangle is the Freeman Diversion Dam, downstream of the Fillmore and Piru groundwater basins. Reaches where the downstream extent of surface water flow is inferred based on diversion at Freeman Dam are indicated by dotted lines. Figure from UWCD (2017).

5 GDE CONDITION

This section characterizes the potential GDE units based on their hydrologic and ecological conditions and assigns a relative ecological value to each unit by evaluating its ecological assets and its vulnerability to changes in groundwater (Rohde et al. 2018).

5.1 Ecological Conditions

GDEs include terrestrial and aquatic habitat and other open-water aquatic habitats. There are few shallow groundwater wells (wells screened within the rooting zone of GDEs) in the Fillmore and Piru groundwater basins. In the absence of shallow wells, deeper wells, which may or may not reflect shallow groundwater conditions, coupled with observations of surface flow and ecological observations can be used to assess the extent of shallow groundwater. These data suggest that there continues to be shallow groundwater and interconnected surface water at the basin boundaries at the historical Del Valle, Cienega, and East Grove riparian woodlands (compare Figure 1.4-1 with Figure 3.1-1). The Cienega and East Grove riparian woodlands are located at sites of rising groundwater due to constrictions in the valley width. The beneficial uses of interconnected surface waters are discussed in Section 5.2.1. The role of shallow groundwater elsewhere in the basin is less certain and will be assessed based on interpolated groundwater elevation and vegetation.

The GDE determination (i.e., likely or unlikely) is shown in Figure 3.1-2.

5.1.1 Vegetation communities and GDE habitats

Piru

The Piru Groundwater Basin contains 1,373 acres of mapped GDEs, which compose 13% of the total area of the basin. The Del Valle GDE Unit contains the largest area of GDEs within the Piru Groundwater Basin along with the Santa Clara River Riparian Shrubland and Piru Creek Riparian GDE units. GDEs within the basin are predominately riparian communities. The most prevalent vegetation community across all GDE units is mulefat thickets, which makes up 41% of all mapped area of GDEs in the basin. Red willow riparian woodland and forest (*Salix laevigata* Woodland Alliance) and Freemont cottonwood woodland and forest (*Populus fremontii* Forest Alliance) are present in 19% and 17% of the GDE extent across the Piru Basin, respectively.

The Del Valle GDE Unit contains 35% (458.1 acres) of the mapped extent of GDE within the Piru Basin and is predominantly riparian habitat. Freemont cottonwood woodland and forest (127.7 acres) and red willow riparian woodland and forest (120.8 acres) are the dominant vegetation types within this unit, with mulefat thickets (73.7 acres) also present throughout (Figure 5.1-1). These dominant vegetation communities are associated with the riparian zone on the mainstem Santa Clara River The maximum rooting depth reported in the literature for the cottonwood and willows is 6.9 ft, while mulefat has maximum reported rooting depths of about 2 ft (Appendix C). The shallowest depth to groundwater at monitoring well 04N18W27B02S is just less than 30 ft, but this well is located downstream of the Del Valle GDE Unit and likely records deeper groundwater than what occurs under the GDE.

As discussed in Section 4.3.1, the Del Valle GDE Unit has perennial flow from the basin boundary downstream to Blue Cut (Las Brisas Bridge). This flow is supported by upstream releases and rising groundwater and therefore supports aquatic GDEs. Groundwater dependent special-status aquatic species discussed in Section 5.2.

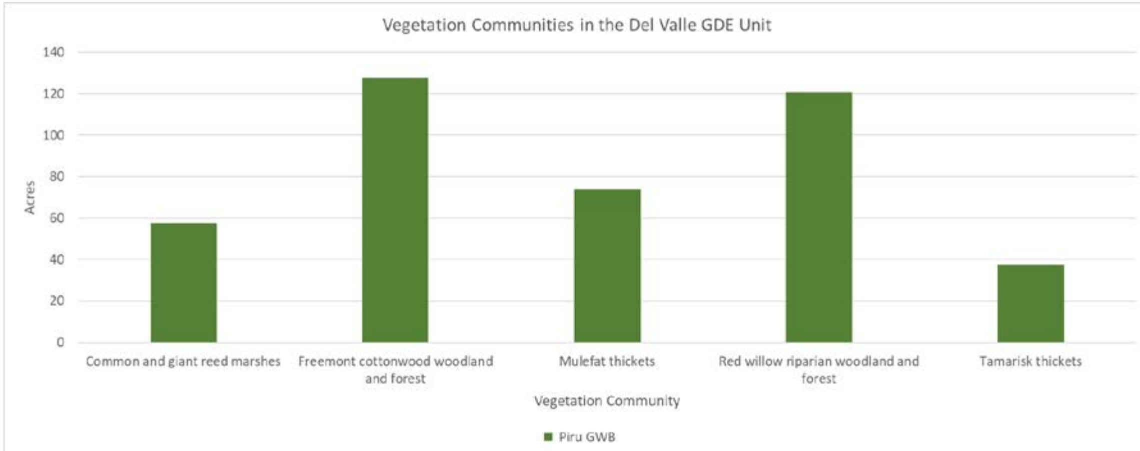

Figure 5.1-1. Five most common vegetation types OR communities in the Del Valle GDE Unit, by acreage.

The Santa Clara River Riparian Shrubland GDE Unit represents 25% (329.8 acres) of mapped GDE extent within the Piru basin and is predominantly riparian habitat. Mulefat thickets (267.4 acres) are the dominant GDE type within this unit, with common and giant reed marshes (50.3 acres) also present throughout (Figure 5.1-2). These herbaceous and shrub communities, which are associated with the riparian zone of the mainstem Santa Clara River, are more tolerant of the drier conditions in this unit.

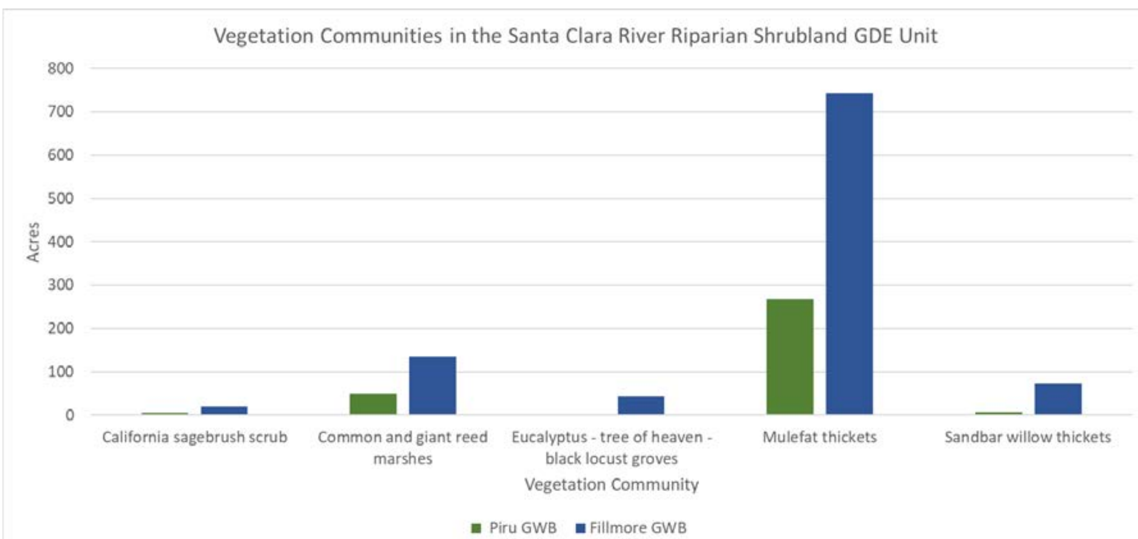

Figure 5.1-2. Five most common vegetation communities in the Santa Clara River Riparian Shrubland GDE Unit, by acreage.

During parts of wetter years, interconnected surface waters may occur in the downstream end of Santa Clara River Riparian Shrubland in both the Fillmore and Piru basins, where groundwater levels are shallower than upstream portions of the unit. The extent of interconnected surface water relative to surface water derived from upstream is not known. Because interconnected surface waters likely only cover a portion of the Santa Clara River in this unit, and are likely short-lived, this unit may provide short-term habitat for aquatic species. Additional details for aquatic species are discussed in Section 4.2.

The Cienega GDE Unit contains 12% (159.6 acres) of the mapped GDE units within the basin and is predominantly riparian habitat. Mulefat thickets (84.7 acres) and red willow riparian woodland and forest (44.0 acres) and are the dominant GDE types within this unit (Figure 5.1-3). These dominant vegetation communities are associated with the riparian zone and the historical Cienega wetland complex on the mainstem Santa Clara River. Prior to the 2012–2016 drought, cottonwoods and willows were much more common in this unit. Similar to the East Grove GDE Unit, the maximum rooting depths range from 2 ft for mulefat to 6.9 ft for the cottonwood and willow forests.

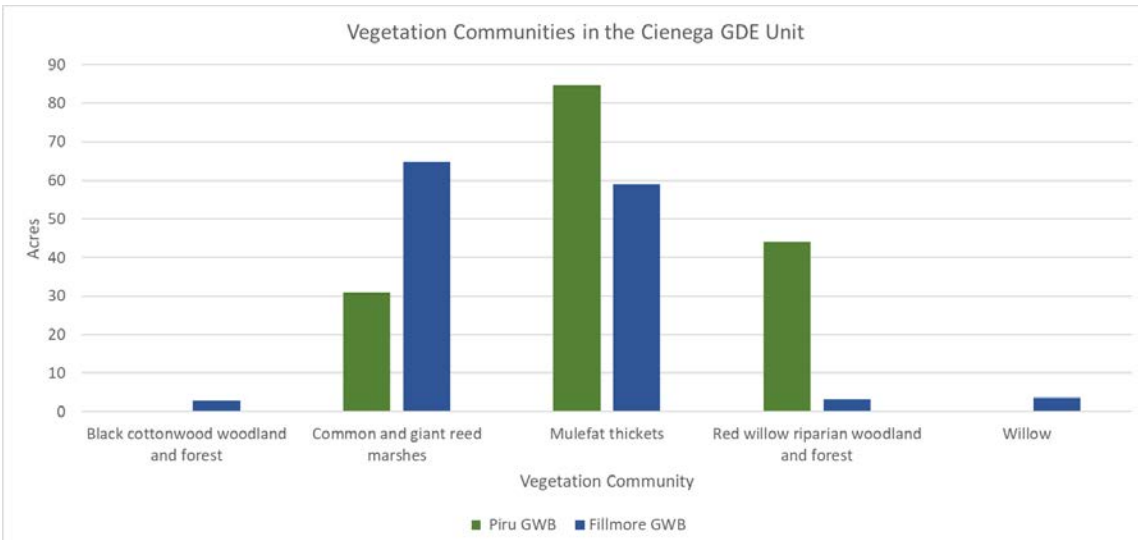

Figure 5.1-3. Five most common vegetation communities in the Cienega GDE Unit, by acreage.

The Cienega GDE unit supports interconnected surface water except for drought periods. Outside of drought periods, aquatic species use this reach of the Fillmore and Piru basins. Aquatic special-status species in the Cienega GDE unit are discussed in Section 4.2.

The Piru Creek Riparian GDE Unit contains 24% (314.9 acres) of the mapped GDE units within the basin and is predominantly riparian habitat. Mulefat thickets (118.9 acres), Freemont cottonwood woodland and forest (92.8 acres), and red willow riparian woodland and forest (81.8 acres) are the dominant GDE types within this unit (Figure 5.1-4). These dominant vegetation communities are associated with the riparian zone of Piru Creek, which is a tributary to the Santa Clara River. Similar to the East Grove Riparian Complex, the maximum rooting depths range from 2 ft for mulefat to 6.9 ft for the cottonwood and willow forests. Perennial flow in Piru Creek may sustain some of the plants.

Piru Creek is typically a losing reach downstream of Santa Felicia Dam. The presence and extent of interconnected surface water in Piru Creek is not known. Aquatic special-status species in the Piru Creek Riparian GDE unit are discussed in Section 4.2.

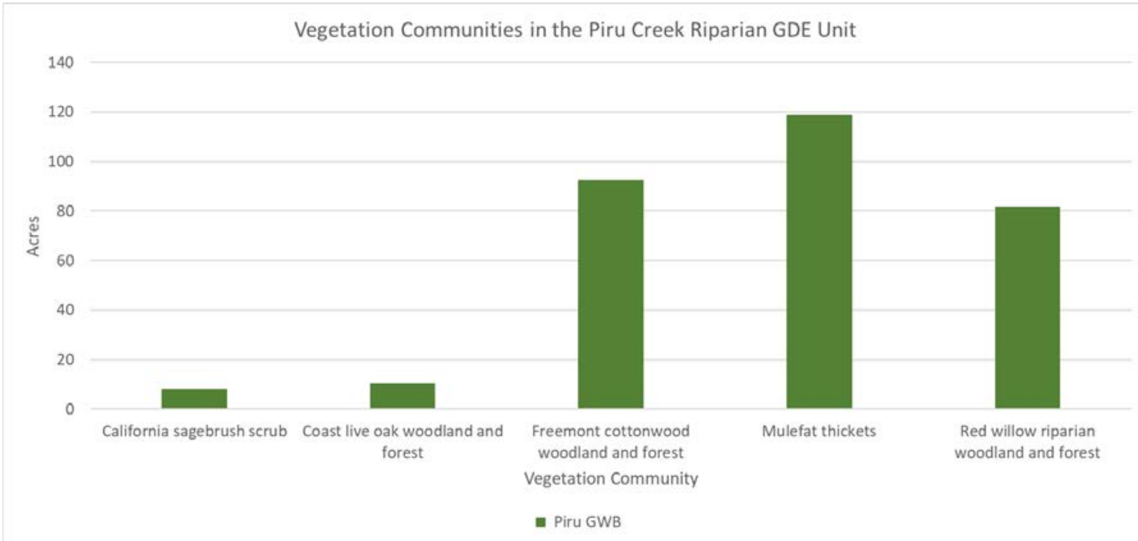

Figure 5.1-4. Five most common vegetation communities in the Piru Creek GDE Unit, by acreage.

The Tributary Riparian GDE Unit contains 4% (58.3 acres) of the mapped GDE units within the basin and is predominantly composed of Riparian Mixed Shrub Alliance (26.0 acres) and Baccharis (Riparian) Alliance (18.5 acres) (Figure 5.1-5). These vegetation communities are associated with drainages to Piru Creek and the Santa Clara River, including Holser and Hopper canyons. Vegetation along Holser Canyon is primarily comprised of Riparian Mixed Shrub Alliance, while the vegetation along Hopper Canyon is a mixture of Riparian Mixed Shrub Alliance and Riparian Mixed Hardwood. Maximum rooting depths for these vegetation types are not well documented but likely range from 2.0 ft for *Baccharis* species (i.e., Riparian Mixed Scrub Alliance) to 6.9 ft or deeper for the cottonwood and willow species present in Riparian Mixed Hardwood Alliance. This GDE unit contains no shallow groundwater data to assess groundwater linkages, but the vegetation is likely not tied to the aquifer.

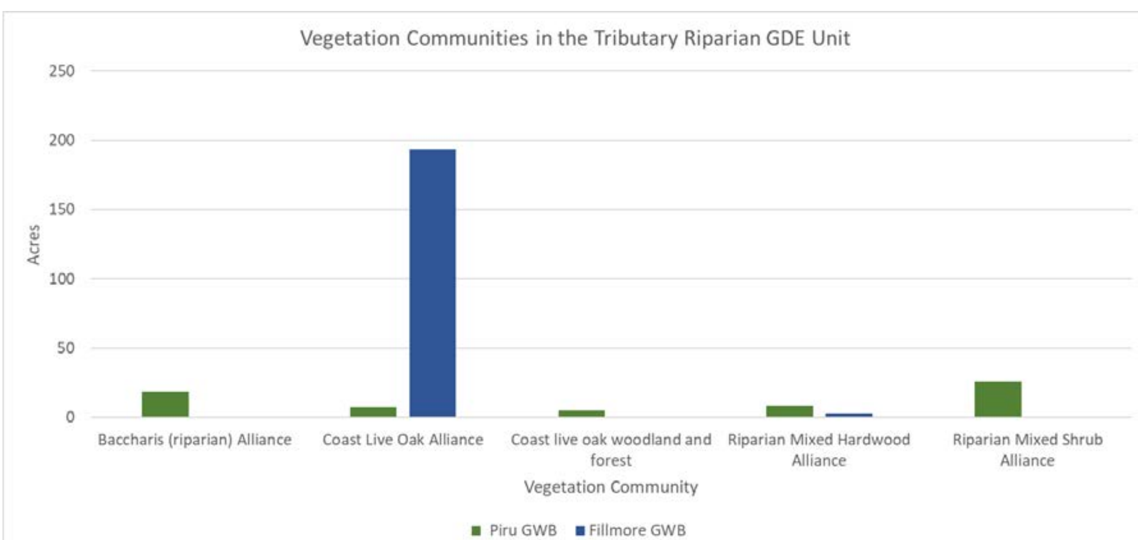

Figure 5.1-5. Five most common vegetation communities in the Tributary Riparian GDE Unit, by acreage.

Most of the streams within the Tributary Riparian unit are ephemeral or intermittent. Hopper Canyon Creek is intermittent at its downstream end, but the degree to which it is connected to groundwater in the upstream reaches within the Piru Basin is unknown. Pole Creek may sustain perennial flows in its uppermost reaches within the Fillmore Basin, but is intermittent downstream and disconnected from groundwater. The degree to which either of these tributaries were historically connected to groundwater in within the basin is unknown.

Fillmore

The Fillmore Groundwater Basin contains 2,582 acres of mapped GDEs, comprising 11% of the total area of the basin. The East Grove and Santa Clara River Riparian Shrubland GDE are the largest units within the Fillmore Groundwater Basin, and vegetation types within the basin are predominately riparian communities. The most prevalent vegetation community across all GDE units is mulefat thickets (*Baccharis salicifolia* Shrubland Alliance), which makes up 47% of the mapped extent of GDEs in the basin. Red willow riparian woodland and forest (*Salix laevigata* Woodland Alliance) and black cottonwood woodland and forest (*Populus trichocarpa* Forest Alliance) are present in 14% and 13% of the GDE, respectively.

The East Grove GDE Unit contains 43% (1,101.9 acres) of mapped GDE units within the basin and is predominantly riparian habitat. Mulefat thickets (357.5 acres), red willow riparian woodland and forest (317.0 acres), and black cottonwood woodland and forest (315.5 acres) are the dominant GDE types within this unit (Figure 5.1-6). These dominant vegetation communities are associated with the riparian zone and the historical East Grove wetland complex on the mainstem Santa Clara River. Similar to the Del Valle GDE Unit, the maximum rooting depths range from 2 ft for mulefat to 6.9 ft for the cottonwood and willow forests. The groundwater elevation in the East Grove GDE Unit is within the rooting depth of the vegetation types that make up the GDE unit during most years.

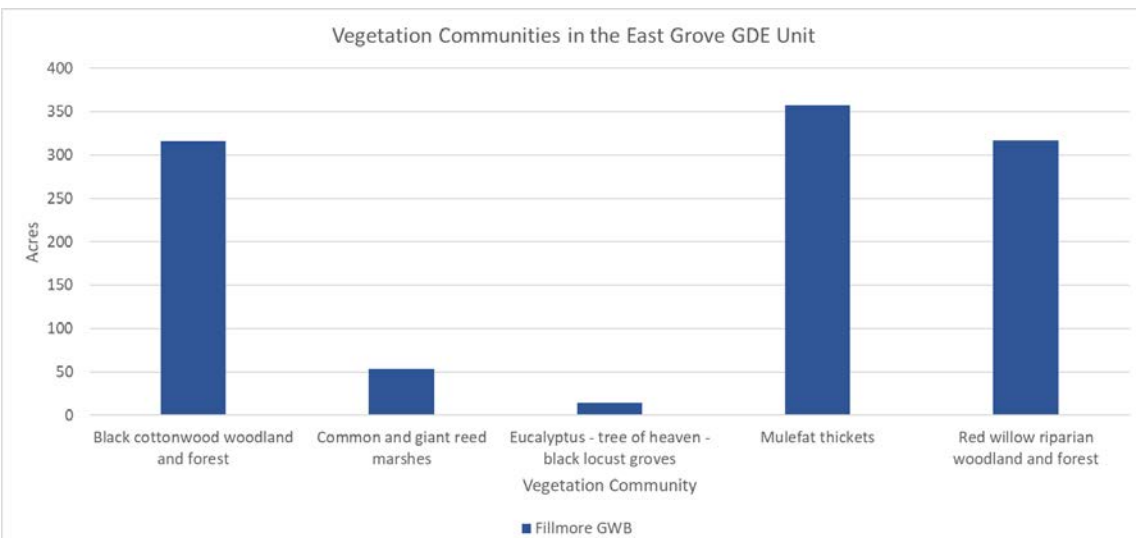

Figure 5.1-6. Five most common vegetation communities in the East Grove GDE Unit, by acreage.

Due to rising groundwater, the East Grove GDE unit supports interconnected surface water. As shown in Section 3.3, the discharge and extent of interconnected surface water decreased during the drought form 2012–2016 in this unit. Because rising groundwater allowed surface discharge to persist over at least part of this reach during the drought, this GDE likely acted as a refuge for aquatic species during this period. Aquatic special-status species in the East Grove GDE unit are discussed in Section 4.2.

The Santa Clara River Riparian Shrubland GDE Unit contains 40% (1,046 acres) of mapped GDE units within the basin and is also predominantly riparian habitat. Mulefat thickets (743.6 acres) and the common and giant reed marshes association (*Phragmites australis - Arundo donax* Herbaceous Semi-Natural Alliance; 134.3 acres) are the dominant GDE types within this unit (Figure 5.1-2). These herbaceous and shrub communities, which are associated with the riparian zone of the mainstem Santa Clara River, are more tolerant of the drier conditions in this unit. Mulefat has maximum reported rooting depths of about 2 ft and Arundo (*Arundo donax*), the dominant plant species of the common and giant reed marshes Herbaceous Semi Natural Alliance, has rooting depths up to 16 ft (Appendix C). Comparing the rooting depths to the range of groundwater depths in Figure 3.2-2 shows that groundwater elevations are often within the maximum root depth of arundo and may be within the rooting depth of mulefat at lower relative elevations during particularly wet years, although such years were not common.

The Cienega GDE Unit contains 5% (133.6 acres) of the mapped GDE units within the basin and is predominantly riparian habitat. Common and giant reed marshes (64.8 acres) and mulefat thickets (59.0 acres) are the dominant GDE types within this unit (Figure 5.1-3). These dominant vegetation communities are associated with the riparian zone and the historical Cienega wetland complex on the mainstem Santa Clara River. The rooting depth ranges from 2 ft for mulefat to 16 ft for arundo (Appendix C). Mulefat thickets typically occur at higher relative elevation in the Santa Clara River despite their shallow rooting depth, suggesting that they are often disconnected from groundwater. Prior to the 2012–2016 drought, Fremont cottonwoods and willows (both with maximum rooting depths of 6.9 ft) were common. Kibler et al. (2019) have shown that much of the cottonwood and willow species died out during the drought where the drop in groundwater was 16.4 ft or greater. The mean relative elevation of willows in the Santa Clara River ranges from 4.8 to 12.4 ft, while Fremont cottonwoods have a mean relative elevation of 9.7 ft (Appendix C, Table C–2). Common and giant reed (arundo) have a maximum reported rooting depth of 16 ft and occur at a mean relative elevation of 7.6 ft (Appendix C).

The Tributary Riparian GDE Unit contains 8% (196.6 acres) of the mapped GDE units within the basin and is predominantly composed of Coast Live Oak Alliance (193.4 acres), with Riparian Mixed Hardwood Alliance also present (3.2 acres) (Figure 5.1-5). These vegetation communities are associated with drainages from the mountain range to the north of the basin (i.e., Santa Paula Ridge and San Cayetano Mountain). Coast Live Oak has a rooting depth up to 35.1 ft, while the Riparian Mixed Hardwood Alliance has rooting depths up to 6.9 ft (Appendix C). Neither the groundwater depth nor the source of water for vegetation in this GDE is known. The tributaries are not perennial, which suggests that a combination of surface water and groundwater may support the riparian hardwood. The Coast Live Oak Alliance may tap other water sources.

The Sespe Creek Riparian GDE Unit contains 4% (103.4 acres) of the mapped GDE units within the basin and is predominantly riparian habitat. Willow (shrub) Alliance (19.6 acres) and Riparian Mixed Hardwood Alliance (19.2 acres) are the dominant GDE types within this unit (Figure 5.1-7). These dominant vegetation communities are associated with the riparian zone of Sespe Creek, which is a tributary to the Santa Clara River. Maximum rooting depths for both willows and cottonwoods in the literature is 6.9 ft (Appendix C, Table C–2). The mean relative elevation of willows ranges from 4.8 to 12.4 ft in the Santa Clara River, while Fremont cottonwoods have a mean relative elevation of 9.7 ft (Appendix C, Table C–2). Data on the depth to groundwater are sparse but can exceed 30 ft in places.

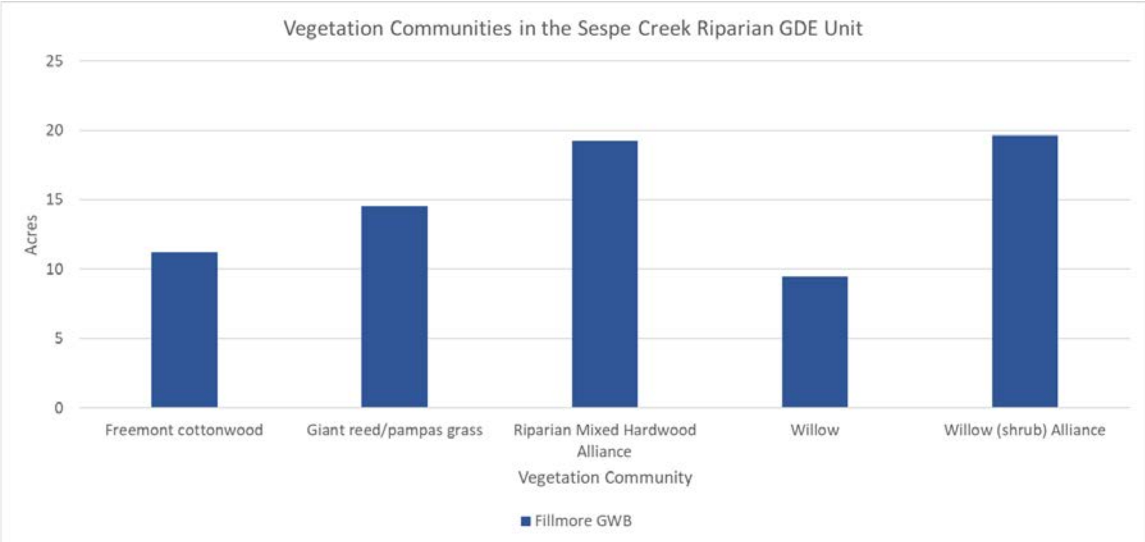

Figure 5.1-7. Five most common vegetation communities in the Sespe Creek Riparian GDE Unit, by acreage.

As discussed above, Sespe Creek is a losing reach in its downstream section and has perennial flow in its upstream section. The degree of interconnected surface water is not known in this reach. Aquatic special-status species in this unit are discussed in Section 5.2.

5.2 Beneficial Uses and Groundwater Dependent Special-status Species

5.2.1 Beneficial uses

The Water Quality Control Plan (Basin Plan) for the Los Angeles Region (LARWQCB 2014) identifies the surface waters in the GDE units as having a variety of beneficial uses pertaining to fish, wildlife, and GDEs. These beneficial uses apply to aquatic features that are fed by groundwater within the Fillmore and Piru groundwater basins. The beneficial uses for aquatic features and groundwater vary between aquatic features and include:

- Groundwater recharge (GWR);
- Freshwater replenishment (FRSH);
- Warm freshwater habitat (WARM);
- Cold freshwater habitat (COLD);
- Wildlife habitat (WILD);
- Preservation of biological habitats of special significance (BIOL);
- Support of habitat for rare, threatened, or endangered species (RARE);
- Warm and cold migration habitat (MIGR);
- Warmwater spawning habitat (SPWN); and
- Wetland habitat (WET).

- Aquaculture (AQUA).

Beneficial uses include those that directly benefit groundwater conditions (e.g., groundwater recharge [GWR]), those supported directly by groundwater via interconnected surface waters (e.g., freshwater replenishment [FRSH]; support of rare, threatened, or endangered species [e.g., Southern California steelhead, California condor] [RARE]), and those that apply to groundwater beneficial uses (i.e., aquaculture [AQUA]).

5.2.2 Special-status species

The Fillmore and Piru groundwater basins are ecologically important and provide habitat for numerous wildlife species that are groundwater dependent. Within the two groundwater basins, five plants, 11 natural communities, 10 wildlife, and four fish species were identified as indirectly or directly groundwater dependent and may occur within the Fillmore and Piru groundwater basins. Appendix B provides information for special-status terrestrial and aquatic wildlife species from the database queries that are not groundwater dependent and/or unlikely to occur in the GDE units, including each species' regulatory status, habitat associations, and documented occurrences in the groundwater basins.

The Fillmore and Piru groundwater basins include designated critical habitat for four federally listed species: California condor (*Gymnogyps californianus*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and southern California steelhead (*Oncorhynchus mykiss*) (USFWS 1976, USFWS 1977, USFWS 1994, USFWS 2013, NMFS 2005). The amount of critical habitat for each species within the Fillmore and Piru groundwater basins is shown in Table 5.2-1 and locations are shown in Figure 5.2-1. Critical habitat for the California condor occupies a 2-acre patch on the upland edge of the Fillmore Basin, and is not associated with any GDEs.

Table 5.2-1. U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) designated critical habitat[1] within the Fillmore and Piru groundwater basins.

Common name *Scientific name*	**USFWS critical habitat (acres)**			**NMFS critical habitat (miles)**		
	Fillmore	**Piru**	**Total**	**Fillmore**	**Piru**	**Total**
California condor *Gymnogyps californianus*	2	-	2	-	-	-
Least Bell's vireo *Vireo bellii pusillus*	-	1,443	1,443	-	-	-
Southwestern willow flycatcher *Empidonax traillii extimus*	2,472	2,612	5,083	-	-	-
Southern California steelhead *Oncorhynchus mykiss*	-	-	-	15.4	15.3	30.7
All species	**2,474**	**4,055**	**6,528**	**15.4**	**15.3**	**30.7**

[1] Data sources: USFWS 1976, USFWS 1977, USFWS 1994, USFWS 2013, NMFS 2005

Habitat management and special-status species recovery plans have been implemented in the Fillmore and Piru groundwater basins and include protections for special-status species and associated habitats. These plans include *United Water Conservation District Multiple Species Habitat Conservation Plan* (UWCD 2018), *Southern California Gas Company Multi-Species Habitat Conservation Plan* (SoCalGas 2020), *Santa Clara River Upper Watershed Conservation Plan* (TNC 2006), *Conservation Plan for the Lower Santa Clara River Watersheds and*

Surrounding Areas (TNC 2008), and *Santa Clara River Enhancement and Management Plan* (VCWPD and LADPW 2005).

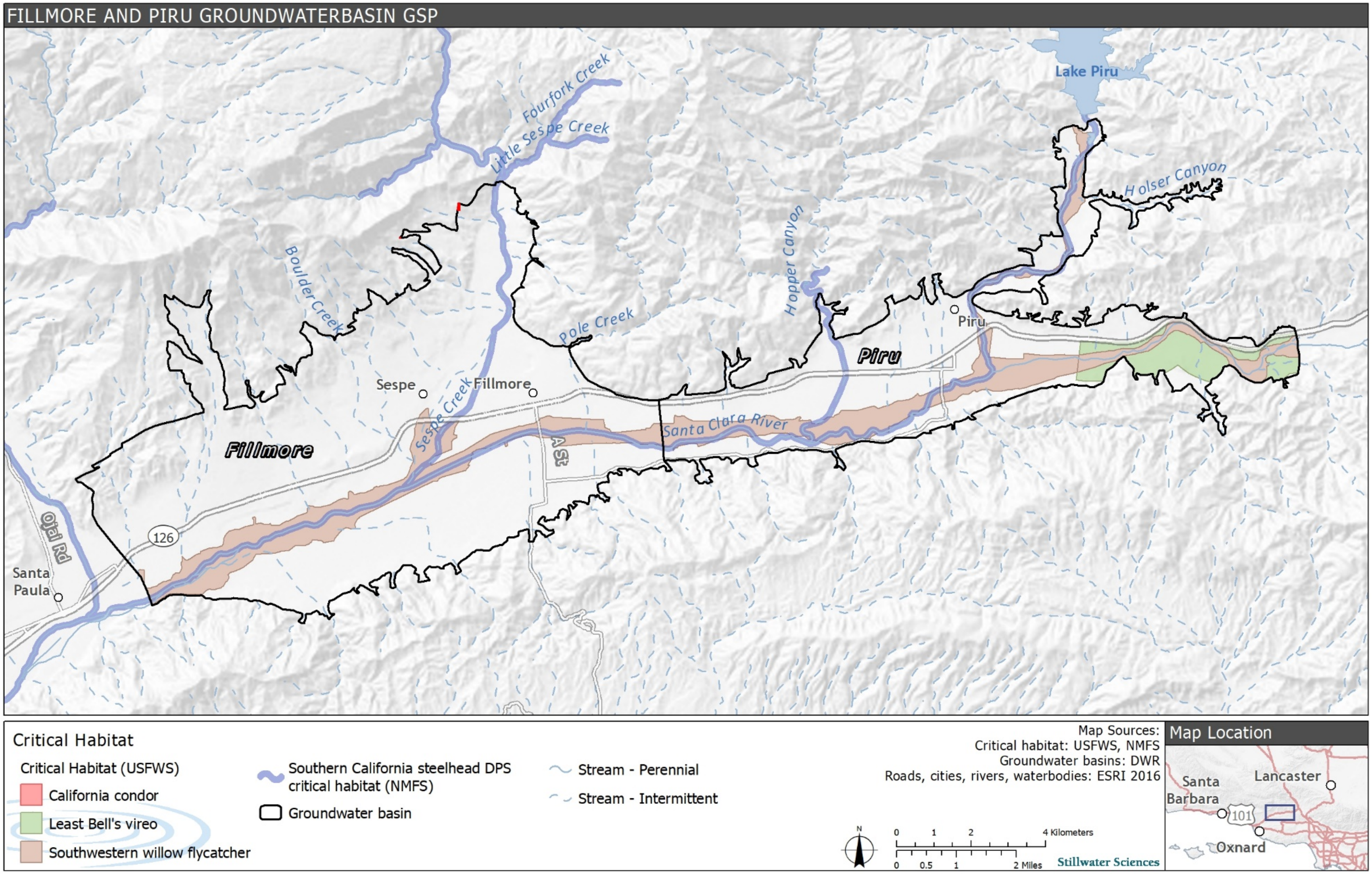

Figure 5.2-1. Critical habitat within the Fillmore and Piru groundwater basins.

Piru

Plants and natural communities

Four potentially groundwater dependent special-status plant species were documented in the Piru Groundwater Basin (Table 5.2-2). One species, white rabbit-tobacco, was identified as likely to depend on groundwater and has been observed in the open rock and sand wash bed of the Santa Clara River within the Del Valle and Cienega GDE units. Three species were identified as possibly dependent on groundwater and are predominantly associated with the Tributary Riparian GDE Unit. Slender mariposa lily (*Calochortus clavatus* var. g*racilis*) and Greata's aster are both associated with Foothill Canyon habitats, and San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), which has been observed directly upstream of the Piru Groundwater Basin, is associated with coastal sage scrub habitat.

Ten potentially groundwater dependent sensitive natural communities were documented with the potential to occur in the Piru Groundwater Basin (Table 5.2-2). Seven of these communities are identified as likely to depend on groundwater; these GDEs are predominantly riparian habitats (e.g., southern cottonwood willow riparian forest, southern willow scrub, and California sycamore woodlands [*Platanus racemosa – Quercus agrifolia* Woodland Alliance]) and occur throughout the basin in all of the GDE units present within the Piru Groundwater Basin (i.e., Del Valle, Santa Clara River Riparian Shrubland, Cienega, Piru Creek Riparian, and Tributary Riparian). Additional potentially groundwater dependent sensitive natural communities include arrow weed thickets [*Pluchea sericea* Shrubland Alliance], which is a shrubland community associated with intermittent or seasonally flooded washes and is documented in the Del Valle GDE Unit.

Table 5.2-2. Special-status plant species and sensitive natural communities with known occurrence within the Piru Groundwater Basin.

Common name *Scientific name*	**Status[1]**	**Association with GDE**	**Occurrence location**	**Source[2]**	**Habitat and occurrence**
Plants					
Slender mariposa lily *Calochortus clavatus* var. *gracilis*	1B.2, S2S3, G4T2T3, not state or federally listed	Possible	Del Valle, Piru Creek Riparian, Tributary Riparian	CNDDB	Shaded foothill canyons, chaparral; eight regional CNDDB observations, primarily in sagebrush on north-facing slopes and ridges of Newhall Ranch area.
San Fernando Valley spineflower *Chorizanthe parryi* var. *fernandina*	1B.1, S1, G2T1, SE, FPT	Possible	Tributary Riparian	CNDDB	Sandy coastal scrub, valley and foothill grassland; single CNDDB record from 2011 in Potrero Canyon near its confluence with the Santa Clara River.
Payne's bush lupine *Lupinus paynei*	1B.1, S1, G1Q, not state or federally listed	Unlikely	Piru Creek Riparian	CNDDB	Coastal and riparian scrub, valley and foothill grassland, generally on sandy soils; single CNDDB record from 2008 in Rancho Temescal.
Ojai navarretia *Navarretia ojaiensis*	1B.1, S2, G2, not state or federally listed	Unlikely	Del Valle, Tributary Riparian	CNDDB	Openings in chaparral or coastal scrub, valley and foothill grassland, generally on clay soils; four CNDDB records on clay soil in grasslands of Ventura Homestead and Newhall Ranch areas.
White rabbit-tobacco *Pseudognaphalium leucocephalum*	2B.2, S2, G4, not state or federally listed	Likely	Cienega, Del Valle	CNDDB	Sandy or gravelly benches, dry stream or canyon bottoms; CNDDB records in sandy, rocky washes.
Greata's aster *Symphyotrichum greatae*	1B.3, S2, G2, not state or federally listed	Possible	Tributary Riparian	CNDDB	Mesic areas in broadleafed upland forest, chaparral, cismontane and riparian woodland; CNDDB records in Hopper and Pine canyons.

Common name *Scientific name*	**Status[1]**	**Association with GDE**	**Occurrence location**	**Source[2]**	**Habitat and occurrence**
Sensitive Natural Communities					
Arrow weed thickets *Pluchea sericea* shrubland alliance	S3, G4	Likely	Del Valle	VMSCR	Around springs, seeps, irrigation ditches, canyon bottoms, stream borders, and seasonally flooded washes; occur in the Central Valley and desert areas of southern California.
California sycamore woodlands *Platanus racemosa – Quercus agrifolia* woodland alliance	S3, G3	Likely	Piru Creek Riparian	VMSCR	Riparian woodlands along intermittent streams, springs, seeps, riverbanks, and floodplain terraces; occur in scattered stands along California's central and southern Coast Ranges, the Sierra Nevada foothills, the Peninsular and Transverse ranges, and the western Mojave and Colorado deserts.
California walnut groves *Juglans californica* forest and woodland alliance	S3, G3	Unlikely	Piru Creek Riparian, Tributary Riparian	CalVeg, CNDDB, VMSCR	Riparian corridors, but most stands cover all hillslopes; occur along southern California coast and in Peninsular and Transverse ranges.
Fremont cottonwood forest and woodland *Populus fremontii – Fraxinus velutina – Salix gooddingii* forest and woodland alliance	S3, G4	Likely	Del Valle, Piru Creek Riparian, Santa Clara River Riparian Shrubland	CalVeg, VMSCR	On floodplains, along low-gradient rivers and streams, and in alluvial fans and valleys with a dependable subsurface water supply; occur throughout much of California except the Sierra Nevada and Modoc Plateau.
Scale broom scrub *Lepidospartum squamatum* shrubland alliance	S3, G3	Unlikely	Piru Creek Riparian, Santa Clara River Riparian Shrubland	CalVeg, VMSCR	Intermittently or rarely flooded, low-gradient alluvial deposits along streams, washes, and fans; occur in southern California in the inner central Coast Ranges, Transverse and Peninsular ranges, and the Mojave Desert.
Southern cottonwood willow riparian forest	S3.2, G3	Likely	Piru Creek Riparian	CNDDB	Frequently flooded lands along rivers and streams; occur in the Transverse and Peninsular ranges from Santa Barbara County south and east to the edge of the deserts.
Southern mixed riparian forest	S2.1, G2	Likely	Tributary Riparian	CNDDB	Frequently flooded lands along rivers and streams; sand and gravel bars close to river channels; occur along and at the mouths of perennial and intermittent streams of the southern Coast Ranges.
Southern riparian scrub	S3.2, G3	Likely	Santa Clara River Riparian Shrubland	CNDDB	Sand and gravel bars close to river channels; occur along and at the mouths of perennial and intermittent streams of the southern Coast Ranges.

Common name ***Scientific name***	**Status**[1]	**Association with GDE**	**Occurrence location**	**Source**[2]	**Habitat and occurrence**
Southern willow scrub	S2.1, G3	Likely	Del Valle, Piru Creek Riparian, Santa Clara River Riparian Shrubland	CNDDB	Generally on alluvium deposited near stream channels during floods; occur along major rivers of coastal southern California.
Valley oak riparian	S2.1, G3	Unlikely	Tributary Riparian	CNDDB	Valley bottoms and gentle slopes that are intermittently flooded; occur in the Coast Ranges, Central Valley, and foothills of the Sierra Nevada, Cascade, and Klamath ranges.

[1] Status codes:

G = Global
T = Subspecies or variety

Federal
FT = Listed as threatened under the federal Endangered Species Act
FPT = Proposed as threatened under the federal Endangered Species Act
FD = Federally delisted

State
S = Sensitive
SE = Listed as Endangered under the California Endangered Species Act
ST = Listed as Threatened under the California Endangered Species Act
SSC = CDFW species of special concern
SFP = CDFW fully protected species

Rank
1 Critically Imperiled—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
2 Imperiled—At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
3 Vulnerable—At moderate risk of extinction or elimination due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
4 Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
5 Demonstrably Secure—Common; widespread and abundant.
Q Taxonomic questions associated with this name
Ranks such as S2S3 indicate a ranking between S2 and S3

California Rare Plant Rank (CRPR)
1B Plants rare, threatened, or endangered in California and elsewhere
2B Plants rare, threatened, or endangered in California, but more common elsewhere
4 More information needed about this plant, a review list
4 Plants of limited distribution, a watch list

CRPR Threat Ranks:
0.1 Seriously threatened in California (high degree/immediacy of threat)
0.2 Fairly threatened in California (moderate degree/immediacy of threat)
0.3 Not very threatened in California (low degree/immediacy of threats or no current threats known)

[2] Sources: CNDDB (CDFW 2019), CalVeg (USDA 2014), VMSCR (Vegetation Map of the Santa Clara River; Stillwater Sciences 2019).

Terrestrial and aquatic wildlife

Ten potentially groundwater dependent special-status terrestrial and aquatic wildlife species were identified as having the potential to occur within the Piru Groundwater Basin: one amphibian species, six bird species, and two reptile species (Table 5.2-3). Additional information on these species, including regulatory status, habitat associations, and documented occurrences in the groundwater basin, is provided in Table 5.2-3.

Southwestern pond turtle and two-striped gartersnake are the only wildlife species likely present (i.e., documented occurrences) in the Piru Groundwater Basin classified as directly groundwater dependent due to their association with riverine and lentic habitats. Southwestern pond turtles likely use habitat within the Del Valle, Cienega, and Piru Creek GDE units for foraging (e.g., open water), nesting (e.g., grasses and forbs alliance), and/or overwintering (e.g., mixed riparian and willow scrub and cottonwood or willow alliance). Two-striped gartersnake likely use freshwater (e.g., perennial riverine) and riparian (e.g., riparian mixed hardwood and/or shrub) habitats within the Del Valle, Cienega, and Piru Creek Riparian GDE units for capturing prey. One special-status species, arroyo toad (*Anaxyrus californicus*), was not documented in the Piru Groundwater Basin but is an included species that could possibly occur along the Santa Clara River and within the Del Valle, Cienega, and Piru Creek Riparian GDE units (VCWPD and LADPW 2005, Stillwater Sciences 2007c).

Indirectly groundwater dependent bird species use riparian habitat (e.g., willow/willow shrub, cottonwood, mixed riparian alliances) within the Del Valle GDE Unit, Santa Clara River Riparian Shrubland, Cienega GDE Unit, and Piru Creek Riparian GDE units for foraging, nesting, and migratory habitat. These GDE units include designated critical habitat for southwestern willow flycatcher (Del Valle [433 acres], Santa Clara River Riparian Shrubland [316 acres], Cienega [154 acres], and Piru Creek Riparian [246 acres]), and least Bell's vireo (Del Valle [436 acres] and Tributary Riparian [6 acres]). In general, least Bell's vireo requires smaller vegetation patches than southwestern willow flycatcher and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) (see Table 5.2-3).

Table 5.2-3. Groundwater dependent special-status terrestrial and aquatic wildlife species with known occurrence or suitable habit in the Piru Groundwater Basin.

Common name *Scientific name*	**Status[1] Federal/State**	**Potential to occur in Piru Groundwater Basin[2]**	**Documented occurrences in GDE units**	**Query source[3]**	**GDE association[4]**	**Habitat and documented occurrences in Piru Groundwater Basin**
Amphibian						
Arroyo toad *Anaxyrus californicus*	FE/SSC	Possible (suitable habitat)	No documented occurrences	CAFSD	Direct	Washes, arroyos, sandy riverbanks, riparian areas with willows, sycamores, oaks, cottonwoods; needs exposed sandy streamsides with stable terraces for burrowing, with scattered vegetation for shelter, and areas of quiet water or pools free of predatory fishes with sandy or gravel bottoms without silt for breeding. Arroyo toads depend on groundwater for breeding in shallow still pools and riparian vegetation that provides foraging habitat (Rohde et al. 2019). Historically found in the upper and lower Santa Clara River basin and currently persists in Middle/Upper Piru Creek upstream of Lake Piru (Santa Clara River Trustee Council 2008). A habitat assessment conducted by Stillwater Sciences (2007c) estimated that there were 893 acres of potential habitat along Piru Creek below Santa Felicia Dam and the Santa Clara River upstream of the confluence with Piru Creek.
Reptile						
Two-striped gartersnake *Thamnophis hammondii*	BLMS, FSS/SSC	Likely	Cienega, Del Valle, Piru Creek Riparian	CNDDB, CAFSD	Direct	Highly aquatic snake species. Found in or near permanent fresh water, often along streams with rocky beds and riparian vegetation. Prey includes fish, fish eggs, tadpoles, newt larvae, small frogs and toads, leeches, and earthworms. Commonly found in the Santa Clara River watershed (UWCD 2018). Occurrences on Santa Clara River between Salt Creek and Summer Four Crossing in 2000; in spillway ponds downstream of Lake Piru in 2016, along Piru Creek near Piru Canyon Road in 2009 (CDFW 2019).

Common name ***Scientific name***	**Status[1] Federal/State**	**Potential to occur in Piru Groundwater Basin[2]**	**Documented occurrences in GDE units**	**Query source[3]**	**GDE association[4]**	**Habitat and documented occurrences in Piru Groundwater Basin**
Southwestern pond turtle *Actinemys pallida*[5]	BLMS, FSS/SSC	Likely	Cienega, Del Valle, Piru Creek Riparian	CNDDB, CAFSD	Direct	Ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches with basking sites. Feeds on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, and occasionally frogs and fish. Relies on surface water that may be supported by groundwater (Rhode et al. 2019). Documented throughout the Santa Clara River and in parts of the Piru Creek watersheds. Occurrences include Santa Clara River upstream of Piru in 2000, spillway ponds and downstream of Lake Piru in 2016 (CDFW 2019).
Bird						
Least Bell's vireo *Vireo bellii pusillus*	FE/SE	Likely	Cienega, Del Valle, East Grove, Piru Creek Riparian, Sespe Creek Riparian	CNDDB, CAFSD	Indirect	Nests in dense vegetative cover of riparian areas; often nests in willow or mulefat; forages in dense, stratified canopy. This species relies on groundwater dependent vegetation in riparian areas, particularly during breeding periods (Rohde et al. 2019). Eats insects, fruits, and berries. Documented throughout the Santa Clara River and Piru Creek in the Piru Groundwater Basin (CDFW 2019, eBird 2021, WFVZ 2020c). Documented breeding occurs on the TNC Sespe Cienega property (WFVZ 2020c, eBird 2021). Critical habitat located along the Santa Clara River in the Del Valle Riparian Complex GDE Unit (USFWS 1994).
Southwestern willow flycatcher *Empidonax traillii extimus*	FE/SE	Likely	Del Valle	CNDDB, CAFSD	Indirect	Dense brushy thickets within riparian woodland often dominated by willows and/or alder, near permanent standing water. Reliant on groundwater dependent riparian vegetation, including for nest sites that are typically located near slow-moving streams, or side channels and marshes with standing water and/or wet soils (Rohde et al. 2019). Feeds on insects, fruits, and berries. Occurrences throughout the Santa Clara River (CDFW 2019, eBird 2021). Critical habitat located along the Santa Clara River in the Del Valle Riparian Complex and Piru Creek GDE units between the

Common name ***Scientific name***	**Status[1] Federal/State**	**Potential to occur in Piru Groundwater Basin[2]**	**Documented occurrences in GDE units**	**Query source[3]**	**GDE association[4]**	**Habitat and documented occurrences in Piru Groundwater Basin**
						confluence with Santa Clara River and Lake Piru (USFWS 2013).
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	BLMS, FSS, FT/SE	Likely	Del Valle	CNDDB	Indirect	Summer resident of valley foothill and desert riparian habitats; nests in open woodland with clearings and low, dense, scrubby vegetation. Reliant on groundwater dependent riparian vegetation for habitat (Rhode et al. 2019). Historical populations documented along the Santa Clara River 3.5 miles east of Piru in 1979 are possibly extirpated (CDFW 2019).

Common name *Scientific name*	Status[1] Federal/State	Potential to occur in Piru Groundwater Basin[2]	Documented occurrences in GDE units	Query source[3]	GDE association[4]	Habitat and documented occurrences in Piru Groundwater Basin
White-tailed kite *Elanus leucurus*	BLMS/SFP	Likely	Cienega, Del Valle, Piru Creek Riparian, Santa Clara River Riparian Shrubland	CNDDB	Indirect	Lowland grasslands and wetlands with open areas; nests in trees near open foraging area. Predominately preys on small mammals, but its diet also includes birds, and lizards. Occurrences along Santa Clara River and Piru Creek (CDFW 2019, eBird 2021, WFVZ 2020c).
Yellow warbler *Setophaga petechia*	–/SSC	Likely	Cienega, Del Valle, Piru Creek Riparian, Santa Clara River Riparian Shrubland	CNDDB	Indirect	Open canopy, deciduous riparian woodland close to water, along streams or wet meadows. Reliant on groundwater dependent riparian vegetation for breeding habitat (e.g., willows, alders, and cottonwoods). Typically eats insects. Occurrences along Santa Clara River and Piru Creek (CDFW 2019, eBird 2021, WFVZ 2020c).
Yellow-breasted chat *Icteria virens*	–/SSC	Likely	Cienega, Del Valle, Piru Creek Riparian	CNDDB, CAFSD	Indirect	Early successional riparian habitats with a dense shrub layer and an open canopy. Occurrences along Santa Clara River (CNDDB 2019, eBird 2021, WFVZ 2020c). Occurrences along Santa Clara River and Piru Creek (CDFW 2019, eBird 2021).

[1] Status codes:

Federal
FE = Listed as endangered under the federal Endangered Species Act
FT = Listed as threatened under the federal Endangered Species Act
FSS = Forest Service Sensitive Species
BLMS = Bureau of Land Management Sensitive Species

State
SE = Listed as Endangered under the California Endangered Species Act
SSC = CDFW species of special concern
SFP = CDFW fully protected species

[2] Potential to Occur:
Likely: the species *has* documented occurrences and the habitat is high quality or quantity
Possible: no documented occurrences and the species' required habitat is moderate to high quality or quantity
Unlikely: no documented occurrences and the species' required habitat is of low to moderate quality or quantity
None: no potential to occur due to lack of habitat and/or the population is assumed extirpated

[3] Query source:
CAFSD: California Freshwater Species Database (TNC 2020)
CNDDB: California Natural Diversity Database (CDFW 2019)
eBird: (eBird 2021)

[4] Groundwater Dependent Ecosystem (GDE) association:
Direct: Species directly dependent on groundwater for some or all water needs
Indirect: Species dependent upon other species that rely on groundwater for some or all water needs

[5] Formerly *Emys marmorata marmorata*

Fish

The Santa Clara River in the Piru Groundwater Basin likely supports limited fish populations because of the presence of sub-optimal water quality conditions (e.g., high temperature, low summer flows, low dissolved oxygen), poor habitat quality (e.g., low amounts of cover that provides refuge from predators and high flows), and the presence of non-native fish (Stoecker and Kelley 2005), although there is minimal literature regarding fish populations within these reaches. Piru Creek supports diverse native and non-native fish species assemblages because it has more instream shelter cover and more riparian vegetation than the Santa Clara River (Stoecker and Kelley 2005). Instream cover supports suitable spawning, feeding, and rearing habitat for fish. Disconnected ephemeral tributaries in the Piru Groundwater Basin can be used by fish species seasonally, but do not contain surface water year-round and are not connected to groundwater. United Water currently releases water downstream of Santa Felicia Dam from Lake Piru to support southern California steelhead passage through this reach when criteria for instream flows are triggered.

Four special-status fish species have the potential to occur in the interconnected reaches of the Piru Groundwater Basin (Table 5.2-4). The interconnected reaches include the Santa Clara River from the upstream boundary of the Piru Basin to near Las Brisas Bridge, within the Del Valle GDE Unit, and the downstream boundary of the Piru Basin near the Cienega GDE Unit. The extent of interconnected surface water near the Cienega GDE Unit varies seasonally and based on the water year type. An additional species, the Santa Ana sucker, occurs in the Piru Groundwater Basin and is listed as threatened under the federal Endangered Species Act, but those occurring in the Santa Clara River and tributaries have no special status due to uncertainties at the time of its listing regarding whether it is native to the Santa Clara River watershed. In the Piru Groundwater Basin, designated critical habitat for southern California steelhead includes the mainstem Santa Clara River upstream to the Piru Creek confluence, the lower 3 miles of Hopper Canyon Creek, and Piru Creek upstream to Santa Felicia Dam (Figure 5.2-1). Due to the life history complexities, steelhead is the term used to describe the anadromous life history type and *O. mykiss* is generally used when life history types are indistinguishable, such as juveniles that have not yet exhibited a life history strategy. Southern California steelhead (steelhead) are listed as endangered under the federal Endangered Species Act, but resident *O. mykiss* or "rainbow trout" are not. Steelhead use the mainstem Santa Clara River from the boundary with the Fillmore Basin upstream to Piru Creek for passage to suitable spawning areas in tributaries potentially including Hopper and Piru creeks (NMFS 2008). Hopper Canyon Creek is intermittent within the Piru Basin and *O. mykiss* habitat on Hopper Canyon Creek is primarily upstream of the basin boundary (Francis 2010). Rainbow trout may also use these creeks and may travel between them.

Anadromous steelhead passage along the mainstem Santa Clara River between the confluences with Sespe Creek and Piru Creek (which includes the reaches of the Santa Clara River in the Piru Groundwater Basin) can occur at flows above approximately 700 cfs (Harrison et al. 2006). Flows of this magnitude occur for a few days per year during average and above average water year types (Harrison et al. 2006). Anadromous steelhead passage in Santa Clara River within Piru Basin requires an appropriate magnitude and duration of flows for steelhead to safely pass upstream or downstream through the channels. Only a small portion of the reach used for anadromous steelhead passage (near the Cienega GDE Unit) has interconnected surface water. When passage occurs during high flows, rising groundwater is <5% of the total discharge (compare rising groundwater flow from Figure 3.3-1 with flows required for passage). The modeling results are discussed in Section 2.2.2.7 of the GSP. Moreover, rising groundwater only occurs over a limited extent of the reach between Fillmore and Piru creeks and is downstream of the main passage barrier near Santa Clara River confluence with Hopper Canyon Creek observed by Harrison et al. (2006). Rising groundwater is therefore likely not an important component of anadromous steelhead passage.

There is no evidence of current summer juvenile rearing within the Santa Clara River in the Piru Basin, although summer fish surveys in the reach are sparse. Juvenile rearing conditions in the Santa Clara River in the Piru Basin are thought to be poor mainly due to high water temperatures, shallow water depths, low flows, and limited instream cover. Some limited juvenile rearing habitat for *O. mykiss* is possible where rising groundwater occurs near the Cienega GDE Unit or downstream of the water releases from Lake Piru in Piru Creek, possibly supporting cooler stream temperatures, but rearing juvenile *O. mykiss* have not been observed in this location.

Most of the fish species listed in Table 5.2-4 are likely to occur in perennial reaches within the basin.

Table 5.2-4. Groundwater dependent special-status fish with known occurrence or suitable habit in the Piru Groundwater Basin.

Common name *Scientific name*	**Native or introduced**	**Status[1] Federal/ State**	**Occurrence in interconnected reaches**	**Source(s)**	**Habitat and occurrence within the Piru Groundwater Basin**
Southern California steelhead *Oncorhynchus mykiss irideus*	Native	FE	Santa Clara River upstream to Piru Creek (likely migration, unlikely spawning and rearing), Piru Creek (possible migration, spawning, and rearing)	Howard et al. 2015, Howard and Booth 2016, ACS 2002, Stoecker and Kelley 2005	Occur in freshwater systems and require adequate water conditions suitable for migration (i.e., flow, dissolved oxygen levels within the surface water, and water temperature suitable for passage) and suitable substrate (i.e., gravels) for spawning. Juvenile *O. mykiss* require suitable cover, flow, foraging conditions, and cool temperatures for rearing. Juvenile emigration (i.e., outmigration to the ocean) requires water conditions suitable for migration. *O. mykiss* migration (both upstream and downstream) can occur in all surface water reaches of the Piru Groundwater Basin when flows are sufficiently high (Stoecker and Kelley 2005). *O. mykiss* spawning and rearing likely occurs in Piru Creek. Rearing could occur in the Santa Clara River, but is unlikely due to poor habitat and temperature conditions (Stoecker and Kelley 2005).
Unarmored threespine stickleback *Gasterosteus aculeatus williamsoni*	Native	SE, FE, SFP	Likely in the Santa Clara River and possible in Piru Creek	ACS 2002, Swift et al. 1993, CDFW 2019	Occurs in freshwater rivers and streams. Unarmored threespine stickleback populations have been documented within the interconnected mainstem Santa Clara River (CDFW 2019), could occur within Piru Creek year-round, and likely use the disconnected tributary reaches when conditions are conducive to passage. Migration is largely localized and opportunistic; this species does not exhibit defined migration.

Common name ***Scientific name***	**Native or introduced**	**Status[1] Federal/ State**	**Occurrence in interconnected reaches**	**Source(s)**	**Habitat and occurrence within the Piru Groundwater Basin**
Santa Ana sucker *Catostomus santaanae*	Native	FT (not in Santa Clara River watershed)[3]	Likely in the Santa Clara River and Piru Creek	Howard and Booth 2016, United 2018, ACS 2002, Swift et al. 1993, CDFW 2019	Occurs in freshwater rivers and streams. The species has been observed within all surface water reaches (i.e., perennial tributaries, perennial mainstem, and ephemeral reaches) in the Piru Groundwater Basin (CDFW 2019, United 2018, Howard and Booth 2016). Recent genetics studies documented Santa Ana and Owens sucker hybrids (*Catostomus santaanae* x *fumeiventris*) within the Piru Groundwater Basin.
Arroyo chub *Gila orcutti*	Introduced (but native to other nearby watersheds)	SSC	Likely in Santa Clara River, likely in Piru Creek	Howard et al. 2015, United 2018, ACS 2002, CDFW 2019	Occurs in freshwater rivers and streams. Although arroyo chub, a CDFW SSC, is not native to the Santa Clara River watershed, CDFW protects the species within the watershed. Arroyo chub has been observed in the Del Valle ISW reach within the Piru Groundwater Basin and is likely to occur in the perennial tributary reaches and ephemeral reaches when conditions are conducive to passage (CDFW 2019, Howard et al. 2015, United 2018). Arroyo chub does not exhibit defined migration and the species' movement is largely localized and opportunistic.

[1] Federal
FE = Listed as endangered under the federal Endangered Species Act
FT = Listed as threatened under the federal Endangered Species Act
FSS = Forest Service Sensitive Species
BLMS = Bureau of Land Management Sensitive Species

State
SE = Listed as Endangered under the California Endangered Species Act
SSC = CDFW species of special concern
SFP = CDFW fully protected species

[2] Potential to Occur:
Likely: the species *has* documented occurrences and the habitat is high quality or quantity
Possible: no documented occurrences and the species' required habitat is moderate to high quality or quantity
Unlikely: no documented occurrences and the species' required habitat is of low to moderate quality or quantity
None: no potential to occur due to lack of habitat and/or the population is assumed extirpated

[3] The Santa Ana sucker is federally threatened; however, because of previous uncertainty regarding whether it is native to the SCR watershed, United States Fish and Wildlife Service (USFWS) does not currently consider the species federally threatened within the SCR watershed (USFWS 2017).

Fillmore

Plants and natural communities

Four potentially groundwater dependent special-status plant species have been documented in the Fillmore Groundwater Basin (Table 5.2-5). One species, white rabbit-tobacco (*Pseudognaphalium leucocephalum*), was identified as likely to depend on groundwater. Multiple populations of white rabbit-tobacco have been observed in the open rock and sand wash bed of the Santa Clara River (East Grove GDE Unit), and at least one population has been documented within more densely wooded areas. Two species were identified as possibly dependent on groundwater, umbrella larkspur (*Delphinium umbraculorum*) and Greata's aster (*Symphyotrichum greatae*), both of which were observed in the mountain range to the north of the basin and are associated with moist oak forests and cismontane and riparian woodland, respectively. The fourth species, late-flowered mariposa lily (*Calochortus fimbriatus*) is unlikely to depend on groundwater.

Ten potentially groundwater dependent sensitive natural communities were documented with the potential to occur in the Fillmore Groundwater Basin (Table 5.2-5). Eight of these communities are identified as likely to depend on groundwater; these GDEs are predominantly within riparian habitats (e.g., black cottonwood woodland and forest, southern mixed riparian forest, southern riparian scrub) and occur in the East Grove and Sespe Creek Riparian GDE units. Additional potentially groundwater dependent sensitive natural communities include herbaceous communities associated with wetlands and marsh margins (e.g., hardstem and California bulrush marshes [*Schoenoplectus* (*acutus*, *californicus*) Herbaceous Alliance] and ashy ryegrass – creeping ryegrass turfs [*Leymus cinereus – Leymus triticoides* Herbaceous Alliance]), which were documented in the East Grove GDE Unit.

Table 5.2-5. Special-status plant species and natural communities with known occurrence within the Fillmore Groundwater Basin.

Common name *Scientific name*	**Status[1]**	**Association with GDE**	**Documented Occurrences in GDE units**	**Source[2]**	**Habitat and occurrence**
Plants					
Late-flowered mariposa lily *Calochortus fimbriatus*	1B.3, S3, G3, not state or federally listed	Unlikely	Santa Clara River Riparian Shrubland, Tributary Riparian	CNDDB	Dry, open coastal and foothill woodland, chaparral; two CNDDB occurrences in the vicinity of Santa Paula Peak and Sespe Creek.
Umbrella larkspur *Delphinium umbraculorum*	1B.3, S3, G3, not state or federally listed	Possible	Tributary Riparian	CNDDB	Moist oak forest, foothill woodland; single CNDDB record from 1999 on the north side of Santa Paula Peak.
White rabbit-tobacco *Pseudognaphalium leucocephalum*	2B.2, S2, G4, not state or federally listed	Likely	Cienega, East Grove	CNDDB	Sandy or gravelly benches, dry stream or canyon bottoms; CNDDB records in sandy, rocky washes.
Greata's aster *Symphyotrichum greatae*	1B.3, S2, G2, not state or federally listed	Possible	Tributary Riparian	CNDDB	Mesic areas in broadleafed upland forest, chaparral, cismontane and riparian woodland; CNDDB records in Hopper and Pine canyons.
Sensitive Natural Communities					
Ashy ryegrass – creeping ryegrass turfs *Leymus cinereus – Leymus triticoides* herbaceous alliance	S3, G3	Likely	East Grove	VMSCR	Poorly drained floodplains, playas, drainage and valley bottoms, and marsh margins; occur throughout much of California at elevations below 10,000 ft.
Black cottonwood forest and woodland *Populus trichocarpa* forest and woodland alliance	S3, G5	Likely	Cienega, East Grove, Santa Clara River Riparian Shrubland, Sespe Creek Riparian	VMSCR	Seasonally flooded and permanently saturated soils on stream banks and alluvial terraces; occur throughout much of California except the Central Valley, Sacramento-San Joaquin Delta, and Mojave and Sonoran deserts.

Common name *Scientific name*	Status[1]	Association with GDE	Documented Occurrences in GDE units	Source[2]	Habitat and occurrence
California walnut groves *Juglans californica* forest and woodland alliance	S3, G3	Unlikely	Sespe Creek Riparian, Tributary Riparian, Santa Clara River Riparian Shrubland	CalVeg, CNDDB, VMSCR	Riparian corridors, but most stands cover all hillslopes; occur along southern California coast and in Peninsular and Transverse ranges.
Fremont cottonwood forest and woodland *Populus fremontii – Fraxinus velutina – Salix gooddingii* forest and woodland alliance	S3, G4	Likely	Santa Clara River Riparian Shrubland	CalVeg, VMSCR	On floodplains, along low-gradient rivers and streams, and in alluvial fans and valleys with a dependable subsurface water supply; occur throughout much of California except the Sierra Nevada and Modoc Plateau.
Hardstem and California bulrush marshes *Schoenoplectus* (*acutus*, *californicus*) herbaceous alliance	S3S4, not globally ranked	Likely	East Grove	VMSCR	Brackish to freshwater marshes, stream banks and bars of river mouth estuaries, ponds and lake shores, sloughs, and roadside ditches; occur throughout most of California at elevations below 8,200 ft.
Scale broom scrub *Lepidospartum squamatum* shrubland alliance	S3, G3	Unlikely	Santa Clara River Riparian Shrubland, Sespe Creek Riparian	CalVeg, VMSCR	Intermittently or rarely flooded, low-gradient alluvial deposits along streams, washes, and fans; occur in southern California in the inner central Coast Ranges, Transverse and Peninsular ranges, and the Mojave Desert.
Southern cottonwood willow riparian forest	S3.2, G3	Likely	Sespe Creek Riparian	CNDDB	Frequently flooded lands along rivers and streams; occur in the Transverse and Peninsular ranges from Santa Barbara County south and east to the edge of the deserts.
Southern mixed riparian forest	S2.1, G2	Likely	Tributary Riparian	CNDDB	Typically, a younger successional stage of riparian forest due to disturbance or more frequent flooding.

Common name *Scientific name*	**Status**[1]	**Association with GDE**	**Documented Occurrences in GDE units**	**Source**[2]	**Habitat and occurrence**
Southern riparian scrub	S3.2, G3	Likely	East Grove, Santa Clara River Riparian Shrubland	CNDDB	Sand and gravel bars close to river channels; occur along and at the mouths of perennial and intermittent streams of the southern Coast Ranges.
Southern willow scrub	S2.1, G3	Likely	Santa Clara River Riparian Shrubland	CNDDB	Generally, on alluvium deposited near stream channels during floods; occur along major rivers of coastal southern California

[1] Status codes:

G = Global
T = Subspecies or variety

Federal
FT = Listed as threatened under the federal Endangered Species Act
FD = Federally delisted

State
S = Sensitive
SE = Listed as Endangered under the California Endangered Species Act
ST = Listed as Threatened under the California Endangered Species Act
SSC = CDFW species of special concern
SFP = CDFW fully protected species

Rank
1 Critically Imperiled—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
2 Imperiled—At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
3 Vulnerable — At moderate risk of extinction or elimination due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
4 Apparently Secure — Uncommon but not rare; some cause for long-term concern due to declines or other factors.
5 Demonstrably Secure — Common; widespread and abundant.
Q Taxonomic questions associated with this name
Ranks such as S2S3 indicate a ranking between S2 and S3

California Rare Plant Rank (CRPR)
1B Plants rare, threatened, or endangered in California and elsewhere
2B Plants rare, threatened, or endangered in California, but more common elsewhere
4 More information needed about this plant, a review list
4 Plants of limited distribution, a watch list

CRPR Threat Ranks:
0.1 Seriously threatened in California (high degree/immediacy of threat)
0.2 Fairly threatened in California (moderate degree/immediacy of threat)
0.3 Not very threatened in California (low degree/immediacy of threats or no current threats known)

[2] Sources: CNDDB (CDFW 2019), CalVeg (USDA 2014), VMSCR (Vegetation Map of the Santa Clara River; Stillwater Sciences 2019).

Terrestrial and aquatic wildlife

Ten potentially groundwater dependent special-status terrestrial and aquatic wildlife species were identified as having the potential to occur within the Fillmore Groundwater Basin: one amphibian species, seven bird species, and two reptile species (Table 5.2-6). Additional information on these species, including regulatory status, occurrences in GDE units, habitat associations, and documented occurrences in the groundwater basin, is provided in Table 5.2-6.

Southwestern pond turtle (*Actinemys pallida*) and two-striped gartersnake (*Thamnophis hammondii*) are the only wildlife species likely present (i.e., documented occurrences) in the Fillmore Groundwater Basin classified as directly groundwater dependent due to their association with riverine and lentic habitats. Southwestern pond turtles likely use habitat within the Santa Clara River GDE units (i.e., Santa Clara River Riparian Shrubland, Cienega, and East Grove) and Sespe Creek Riparian GDE for foraging (e.g., open water), nesting (e.g., grasses and forbs alliance), and/or overwintering (e.g., mixed riparian and willow scrub and cottonwood or willow alliance). Two-striped gartersnake likely use freshwater (e.g., perennial riverine) and riparian (e.g., riparian mixed hardwood and/or shrub) habitats within the Santa Clara Riparian Shrubland, Sespe Creek Riparian GDEs for capturing prey. The arroyo toad was not documented within the Fillmore Groundwater Basin; however, suitable habitat within the East Grove and Sespe Creek Riparian GDE units (e.g., freshwater wetland; riverwash; and cottonwood, willow, or mixed riparian alliances) could potentially support all the toad’s life history stages (breeding, larval juvenile rearing, juvenile and adult foraging).

Indirectly groundwater dependent bird species (i.e., least Bell’s vireo, southwestern willow flycatcher, western yellow-billed cuckoo, white-tailed kite [*Elanus leucurus*], yellow warbler [*Setophaga petechia*], and yellow-breasted chat [*Icteria virens*]) use riparian habitat (e.g., willow/willow shrub, cottonwood, mixed riparian alliances) within the Santa Clara River GDE units (i.e., Santa Clara River Riparian Shrubland, Cienega, and East Grove) for foraging, nesting, and migrating. These GDE units include designated critical habitat for the southwestern willow flycatcher (Santa Clara River Riparian Shrubland [952 acres], Cienega Riparian Complex [116 acres], and East Grove [923 acres]). The California condor’s designated critical habitat is not located within a GDE unit; habitat use in the Fillmore Basin GDE Units (e.g., Sespe Creek Riparian) may be limited to foraging.

Table 5.2-6. Groundwater dependent special-status terrestrial and aquatic wildlife species with known occurrence or suitable habit in the Fillmore Groundwater Basin.

Common name ***Scientific name***	**Status[1] Federal/State**	**Potential to** occur in **Fillmore Groundwater Basin[2]**	**Documented occurrences in GDE units**	**Query source[3]**	**GDE association[4]**	**Habitat and documented occurrences in Fillmore Groundwater Basin**
Amphibian						
Arroyo toad *Anaxyrus californicus*	FE/SSC	Possible	No documented occurrences	CAFSD	Direct	Washes, arroyos, sandy riverbanks, riparian areas with willows, sycamores, oaks, cottonwoods; needs exposed sandy streamsides with stable terraces for burrowing, with scattered vegetation for shelter, and areas of quiet water or pools free of predatory fishes with sandy or gravel bottoms without silt for breeding. The arroyo toad depends on groundwater for breeding in shallow still pools and riparian vegetation that provides foraging habitat (Rohde et al. 2019). It was historically found in the upper and lower Santa Clara River basin and currently persists in along Sespe Creek from Hot Springs Canyon upstream to the mouth of Tule Creek (Sweet 1992 as cited in USFWS 1999). Low potential to occur along the Santa Clara River (VCWPD and LADPW 2005).
Reptile						
Two-striped gartersnake *Thamnophis hammondii*	BLMS, FSS/SSC	Likely	Santa Clara Riparian Shrubland, Sespe Creek Riparian	CNDDB, CAFSD	Direct	Highly aquatic snake species. Found in or near permanent fresh water, often along streams with rocky beds and riparian vegetation. Prey includes fish, fish eggs, tadpoles, newt larvae, small frogs and toads, leeches, and earthworms. Commonly found in the Santa Clara River watershed (UWCD 2018). Occurrences along Santa Clara River bank on the south edge of Fillmore and on Sespe Creek (<1 mile upstream of the Sespe Creek Riparian GDE) unit in 2011 (CDFW 2019).

Common name ***Scientific name***	**Status[1] Federal/State**	**Potential to** occur in **Fillmore Groundwater Basin[2]**	**Documented occurrences in GDE units**	**Query source[3]**	**GDE association[4]**	**Habitat and documented occurrences in Fillmore Groundwater Basin**
Southwestern pond turtle *Actinemys pallida*[5]	BLMS, FSS/SSC	Likely	East Grove, Sespe Creek Riparian	CNDDB, CAFSD	Direct	Ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches with basking sites. Feeds on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, and occasionally frogs and fish. Relies on surface water that may be supported by groundwater (Rhode et al. 2019). Documented throughout the Santa Clara Rivera and Sespe Creek watersheds. Occurrences include Santa Clara River approximately 3 miles downstream of the confluence with Sespe Creek in 2016 and Sespe Creek between 2 and 4 miles north of Fillmore (CDFW 2019).

Common name ***Scientific name***	**Status[1] Federal/State**	**Potential to** occur in **Fillmore Groundwater Basin[2]**	**Documented occurrences in GDE units**	**Query source[3]**	**GDE association[4]**	**Habitat and documented occurrences in Fillmore Groundwater Basin**
Bird						
Least Bell's vireo *Vireo bellii pusillus*	FE/SE	Likely	Cienega, East Grove, Santa Clara River Riparian Shrubland	CNDDB, CAFSD	Indirect	Nests in dense vegetative cover of riparian areas; often nests in willow or mulefat; forages in dense, stratified canopy. This species relies on groundwater dependent vegetation in riparian areas, particularly during breeding periods (Rohde et al. 2019). Eats insects, fruits, and berries. Documented throughout the Santa Clara River and Sespe Creek in the Fillmore Groundwater Basin (CDFW 2019, eBird 2021, WFVZ 2020c). Documented breeding occurrences in the TNC properties listed: Sespe Cienega (Cienega) (eBird 2021), the Taylor property, and the Hedrick Ranch Nature Area (East Grove Riparian Complex); CDFW's Cienaga Springs Ecological Preserve (Cienega and Santa Clara River Riparian Shrubland) (WFVZ 2020a, WFVZ 2020b).
Southwestern willow flycatcher *Empidonax traillii extimus*	FE/SE	Likely	Cienega, East Grove, Santa Clara River Riparian Shrubland	CNDDB, CAFSD	Indirect	Dense brushy thickets within riparian woodland often dominated by willows and/or alder, near permanent standing water. Reliant on groundwater dependent riparian vegetation, including for nest sites that are typically located near slow-moving streams, or side channels and marshes with standing water and/or wet soils (Rohde et al. 2019). Feeds on insects, fruits, and berries. Occurrences throughout the Santa Clara River (CDFW 2019, eBird 2021). Critical habitat located along the Santa Clara River in the East Grove, Santa Clara River, and Cienega GDE units (USFWS 2013).

Common name ***Scientific name***	**Status[1] Federal/State**	**Potential to** occur in **Fillmore Groundwater Basin[2]**	**Documented occurrences in GDE units**	**Query source[3]**	**GDE association[4]**	**Habitat and documented occurrences in Fillmore Groundwater Basin**
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	BLMS, FSS, FT/SE	Likely	East Grove, Santa Clara River Riparian Shrubland	CNDDB	Indirect	Summer resident of valley foothill and desert riparian habitats; nests in open woodland with clearings and low, dense, scrubby vegetation. Reliant on groundwater dependent riparian vegetation for habitat (Rhode et al. 2019). Occurrences along Santa Clara River in the East Grove GDE (CDFW 2019, eBird 2021), and in TNC's Hedrick Ranch Nature Area (East Grove) (WFVZ 2020b). Historical populations documented along Sespe Creek west of Fillmore in 1924 are presumed extant (CDFW 2019).
White-tailed kite *Elanus leucurus*	BLMS/SFP	Likely	Cienega, East Grove, Santa Clara River Riparian Shrubland	CNDDB	Indirect	Lowland grasslands and wetlands with open areas; nests in trees near open foraging area. Predominately preys on small mammals, but its diet also includes birds and lizards. Occurrences along Santa Clara River (CDFW 2019, eBird 2021, WFVZ 2020c). Breeding documented in CDFW's Cienaga Springs Ecological Preserve (Cienega and Santa Clara River Riparian Shrubland) (WFVZ 2020a).
Yellow warbler *Setophaga petechia*	–/SSC	Likely	Cienega, East Grove, Santa Clara River Riparian Shrubland, Sespe Creek Riparian,	CNDDB	Indirect	Open canopy, deciduous riparian woodland close to water, along streams or wet meadows. Reliant on groundwater dependent riparian vegetation for breeding habitat (e.g., willows, alders, and cottonwoods). Typically eats insects. Occurrences along Santa Clara River (CNDDB 2019, eBird 2021, WFVZ 2020c) and near Sespe Creek at Grand Avenue terminus (CNDDB 2019, eBird 2021). Breeding documented in CDFW's Cienaga Springs Ecological Preserve (Cienega) (WFVZ 2020a), and TNC's Taylor property and the Hedrick Ranch Nature Area (East Grove) (WFVZ 2020b).

Common name ***Scientific name***	**Status[1] Federal/State**	**Potential to** occur in **Fillmore Groundwater Basin[2]**	**Documented occurrences in GDE units**	**Query source[3]**	**GDE association[4]**	**Habitat and documented occurrences in Fillmore Groundwater Basin**
Yellow-breasted chat *Icteria virens*	–/SSC	Likely	Cienega, East Grove, Santa Clara River Riparian Shrubland	CNDDB, CAFSD	Indirect	Early successional riparian habitats with a dense shrub layer and an open canopy. Occurrences along Santa Clara River (CDFW 2019, eBird 2021, WFVZ 2020c). Breeding documented in CDFW's Cienaga Springs Ecological Preserve (Cienega) (WFVZ 2020a), and suspected breeding in TNC's Hedrick Ranch Nature Area (East Grove) (WFVZ 2020b).

[1] Status codes:

Federal
- FE = Listed as endangered under the federal Endangered Species Act
- FT = Listed as threatened under the federal Endangered Species Act
- FSS = Forest Service Sensitive Species
- BLMS = Bureau of Land Management Sensitive Species

State
- SE = Listed as Endangered under the California Endangered Species Act
- SSC = CDFW species of special concern
- SFP = CDFW fully protected species

[2] Potential to Occur:
- *Likely:* the species *has* documented occurrences and the habitat is high quality or quantity
- *Possible:* no documented occurrences and the species' required habitat is moderate to high quality or quantity
- *Unlikely:* no documented occurrences and the species' required habitat is of low to moderate quality or quantity
- *None:* no potential to occur due to lack of habitat and/or the population is assumed extirpated

[3] Query source:
- CAFSD: California Freshwater Species Database (TNC 2020)
- CNDDB: California Natural Diversity Database (CDFW 2019)
- eBird: (eBird 2021)

[4] Groundwater Dependent Ecosystem (GDE) association:
- Direct: Species directly dependent on groundwater for some or all water needs
- Indirect: Species dependent upon other species that rely on groundwater for some or all water needs

[5] Formerly *Emys marmorata marmorata*

Fish

Fish are dependent on groundwater if they use interconnected surface water as part of their life cycle, including spawning, rearing, and migration. As discussed in Section 3.3, interconnected surface waters in the Fillmore Groundwater Basin occur in along the East Grove and Cienega GDE units of the Santa Clara River and likely in portions of Sespe Creek.

The mainstem Santa Clara River likely supports limited fish populations because of the presence of sub-optimal water conditions (e.g., high temperature, low dissolved oxygen), poor habitat quality (e.g., low amounts of cover that provides refuge from predators and high flows), and the presence of non-native fish (Stoecker and Kelley 2005), although there is minimal literature regarding fish populations within these reaches. Sespe Creek supports diverse native and non-native fish species assemblages as it has more instream shelter cover and more riparian vegetation than the Santa Clara River (Stoecker and Kelley 2005). Instream cover supports suitable spawning, feeding, and rearing habitat for fish. Disconnected ephemeral tributaries in the Fillmore Groundwater Basin can be used by fish species seasonally, but do not contain surface water year-round and are not connected to groundwater and thus not considered here.

Four special-status fish species have the potential to occur in the interconnected reaches of the Fillmore Groundwater Basin (Table 5.2-7). An additional species, the Santa Ana sucker, occurs in the Fillmore Groundwater Basin and is listed as threatened under the federal Endangered Species Act, but those occurring in the Santa Clara River and tributaries have no special status due to uncertainties at the time of its listing regarding whether it is native to the Santa Clara River watershed. In the Fillmore Groundwater Basin, the National Marine Fisheries Service (NMFS) designated critical habitat for southern California steelhead in the mainstem Santa Clara River and Sespe Creek (Figure 5.2-1). Similar to the Piru Basin, the Santa Clara River in the Fillmore Groundwater Basin is primarily a migration corridor for *O. mykiss* (Stoecker and Kelley 2005). *O. mykiss* utilize the mainstem Santa Clara River for passage to suitable spawning areas in Sespe Creek and further upstream to Piru Creek. A small population of *O. mykiss* may utilize Pole Creek, but access issues within the Fillmore and Piru Basin may limit migration (Stoecker and Kelley 2005, Kajtaniak 2008). Rising groundwater supplies only a small portion of the flows required for anadromous steelhead passage to upstream spawning grounds, calculated by comparing the measured rising groundwater flows shown in Figure 3.3-1 with minimum passage requirements determined by Harrison et al. (2006). Harrison et al. (2006) found the minimum depth for anadromous steelhead passage in the mainstem Santa Clara River in the Fillmore Basin occurred at discharges of 500 cfs downstream of the confluence with Sespe Creek (Harrison et al. 2006). The groundwater models suggest that decreasing groundwater pumping by half reduces the flow of interconnected surface water by an average of 4.7 cfs, and ranges from 0.7–10 cfs at Willard Road at the downstream end of the East Grove GDE (see section 2.2.2.7 of the GSP for a discussion of these modeling results). Reducing groundwater pumping by half would therefore supply approximately <1–2% of the discharge required for anadromous steelhead passage. Moreover, he critical riffles (riffles which are a barrier to passage at some flows) identified by Harrison et al. (2006) do not correspond to areas of rising groundwater, further reducing the effects of groundwater management on passage flows.

Native fish, including *O. mykiss*, Pacific lamprey, unarmored threespine stickleback, and Santa Ana sucker, and the non-native, protected (i.e., CDFW species of special concerns species) arroyo chub could utilize perennial reaches of the Santa Clara River for movement, spawning, and rearing along the East Grove and Cienega GDE units and the upper portions of Sespe Creek year-round and intermittent reaches when water is present. However, there are few studies of fish occurrence in these reaches. *O. mykiss* utilizing the mainstem Santa Clara River for spawning and rearing in the Fillmore and Piru basin is thought to be unlikely (Stoecker and Kelley 2005) but has not been widely investigated.

Table 5.2-7. Groundwater dependent special-status fish with known occurrence or suitable habit in the Fillmore Groundwater Basin.

Common name *Scientific name*	**Native or introduced**	**Status[1] Federal/ State**	**Occurrence in interconnected reaches**	**Source(s)**	**Habitat and occurrence within the Fillmore Groundwater Basin**
Southern California steelhead *Oncorhynchus mykiss irideus*	Native	FE	Santa Clara River (migration likely, spawning and rearing unlikely), Sespe Creek (likely migration, spawning, and rearing)	Howard et al. 2015, Howard and Booth 2016, United 2018, ACS 2002, Stoecker and Kelley 20005	Occurs in freshwater systems and requires adequate water conditions suitable for migration (i.e., flow, dissolved oxygen levels within the surface water, and water temperature suitable for passage) and suitable substrate (i.e., gravels) for spawning. Juvenile *O. mykiss* require suitable cover, flow, foraging conditions, and cool temperatures for rearing. Juvenile emigration (i.e., outmigration to the ocean) requires water conditions suitable for migration. *O. mykiss* migration (both upstream and downstream) can occur in all surface water reaches of the Fillmore Groundwater Basin when flows are sufficiently high (Stoecker and Kelley 2005). *O. mykiss* spawning and rearing occurs in Sespe Creek. Rearing is unlikely in the Santa Clara River due to poor habitat and temperature conditions (Stoecker and Kelley 2005).

Common name ***Scientific name***	**Native or introduced**	**Status[1] Federal/ State**	**Occurrence in interconnected reaches**	**Source(s)**	**Habitat and occurrence within the Fillmore Groundwater Basin**
Pacific lamprey *Entosphenus tridentatus*	Native	SSC	Santa Clara River (likely migration, pre-spawning holding, rearing), Sespe Creek (likely migration, pre-spawning holding, spawning, rearing)	Chase 2001, United 2009 Reid 2015, Stoecker and Kelley 2005	Occurs in freshwater systems and requires adequate flows for migration, suitable substrate (i.e., gravels) for spawning, and adequate cover for pre-spawning holding. Juveniles (called ammocoetes) spend an extended period of time (between four and 10 years) rearing while burrowed in sediments filter feeding on organic material and require suitable cover, flow, foraging conditions, and cool temperatures. Juvenile migrant (called macropthalmia) emigration (i.e., outmigration to the ocean) requires water conditions suitable for migration (i.e., water velocity and water depth, dissolved oxygen levels within the surface water, and water temperature suitable for passage). Pacific lamprey migration (both upstream and downstream) is likely in all surface water reaches of the Fillmore Groundwater Basin when flows are sufficiently high (Stoecker and Kelley 2005). Pacific lamprey spawning and rearing occurs in Sespe Creek.
Unarmored threespine stickleback *Gasterosteus aculeatus williamsoni*	Native	SE, FE, SFP	Likely in the Santa Clara River, possible in Sespe Creek	ACS 2002, Swift et al. 1993, CDFW 2019	Occurs in freshwater rivers and streams. Unarmored threespine stickleback populations have been documented within the interconnected mainstem Santa Clara River (CDFW 2019), could occur within Sespe Creek year-round, and likely use the disconnected tributary reaches when conditions are conducive to passage. Migration is largely localized and opportunistic; this species does not exhibit defined migration.

Common name *Scientific name*	Native or introduced	Status[1] Federal/ State	Occurrence in interconnected reaches	Source(s)	Habitat and occurrence within the Fillmore Groundwater Basin
Santa Ana sucker *Catostomus santaanae*	Native	FT (not in Santa Clara River watershed)[3]	Likely in the Santa Clara River and Sespe Creek	Howard and Booth 2016, United 2018, ACS 2002, Swift et al. 1993, CDFW 2019	Occurs in freshwater rivers and streams. The species occurs within all surface water reaches in the Fillmore Groundwater Basin (CDFW 2019, United 2018, Howard and Booth 2016). Recent genetics studies reveal the presence of the Santa Ana and Owens sucker hybrid (*Catostomus santaanae* x *fumeiventris*) within Fillmore Groundwater Basin.
Arroyo chub *Gila orcutti*	Introduced (but native to other nearby watersheds)	SSC	Likely in the Santa Clara River, possible in Sespe Creek	Howard et al. 2015, United 2018, ACS 2002, CDFW 2019	Occurs in freshwater rivers and streams. Although arroyo chub, a CDFW SSC, is not native to the Santa Clara River watershed, CDFW protects the species within the watershed. Arroyo chub occurs in the perennial mainstem within Fillmore and is likely to occur in the perennial tributary reaches and ephemeral reaches when conditions are conducive to passage (CDFW 2019, Howard et al. 2015, United 2018). Arroyo chub does not exhibit defined migration and the species' movement is largely localized and opportunistic.

[1] Status codes:

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- FT = Listed as threatened under the federal Endangered Species Act
- FSS = Forest Service Sensitive Species
- BLMS = Bureau of Land Management Sensitive Species

State
- SE = Listed as Endangered under the California Endangered Species Act
- SSC = CDFW species of special concern
- SFP = CDFW fully protected species

[2] Potential to Occur:
- *Likely:* the species *has* documented occurrences and the habitat is high quality or quantity
- *Possible:* no documented occurrences and the species' required habitat is moderate to high quality or quantity
- *Unlikely:* no documented occurrences and the species' required habitat is of low to moderate quality or quantity
- *None:* no potential to occur due to lack of habitat and/or the population is assumed extirpated

[3] The Santa Ana sucker is federally threatened; however, because of previous uncertainty regarding whether it is native to the SCR watershed, United States Fish and Wildlife Service (USFWS) does not currently consider the species federally threatened within the SCR watershed (USFWS 2017)

5.3 Invasive Species

Non-native and invasive species are distributed throughout the Santa Clara River watershed, including the Fillmore and Piru groundwater basins. Invasive species have a negative impact on the riparian corridor and threaten native species populations. Two invasive plant species, arundo (giant reed; *Arundo donax*) and saltcedar (*Tamarix* spp.), are widely distributed within the Fillmore and Piru groundwater basins. Arundo and tamarisk were included as vegetation community types (see Section 4.1.1). The extent of mapped arundo and saltcedar is shown in Figure 5.3.-1 and acreages of the communities are presented in Appendix A.

Arundo is a highly aggressive, naturalized landscape plant that invades riparian zones by establishing dense, monospecific clonal stands (DiTomaso and Healy 2007). It spreads quickly and severely impacts the ecology of the riparian corridor (Stillwater Sciences and URS 2007) and uses a large amount of water to fuel its growth (Bell 1997, Geissow et al. 2011). In California, giant reed is known to increase the risk of flooding, create fire hazards, outcompete indigenous plant species for scarce water resources, and reduce the value of riparian habitat for wildlife (Bell 1994, Bell 1997, DiTomaso 1998). The least Bell's vireo and other riparian birds require structural diversity provided by riparian scrub and mature forest communities for breeding (Zembal 1990, Bell 1994, Bell 1997). When natural riparian vegetation types are replaced by thick stands of giant reed, bird species' abundance and other native wildlife have been found to decline (Bell 1994, Bell 1997, Herrera and Dudley 2003, Kisner 2004, Labinger and Greaves 2001).

In general, invading tamarisk significantly lowers wildlife habitat value in riparian ecosystems by decreasing available food sources and altering structural characteristics (Shafroth et al. 2005). Monotypic stands provide limited cover for large mammals and fewer nesting sites for birds and herpetofauna in more southern latitudes due to lack of shading in mid- to late summer (Hunter et al. 1988, Lovich and DeGouvenain 1998, Shafroth et al. 2005). Both the endangered southwestern willow flycatcher and the candidate for federal endangered species list western yellow-billed cuckoo prefer native forests in some cases, but incorporate some habitat with tamarisk into their breeding territory (Shafroth et al. 2005).

Invasive amphibian species, American bullfrog (*Lithobates catesbeianus*) and African clawed frog (*Xenopus laevis*), are documented on the Santa Clara River, including near the confluence with lower Sespe Creek and Piru Creek (Santa Clara River Trustee Council 2008). These amphibian species are found within or adjacent to aquatic habitat, including ponds, streams, reservoirs, and lakes. Both species likely prey on native species and have negative impacts on native amphibian species (e.g., arroyo toad).

Many non-native fish species, including black bullhead (*Ameiurus melas*), various sunfish species (*Lepomis* sp.) (e.g., green sunfish [*Lepomis cyanellus*] and bluegill [*Lepomis macrochirus*]), and bass species (*Micropterus* sp.) (e.g., largemouth bass [*Micropterus salmoides*]), have been documented within the Piru and Fillmore perennial tributaries year-round or within the other reaches within the SCR watershed (Stoecker and Kelley 2005). The distribution of invasive species within the mainstem and tributaries is not fully known; however, these species are either likely to occur or have the potential to occur within the perennial mainstem and ephemeral reaches due to observation of the species throughout the SCR watershed. Non-native predatory fish may have a large impact on native fish populations (e.g., salmonids), reducing the size of already diminished populations and limiting their ability to recover in response to habitat restoration efforts. In the NMFS (2012) southern California steelhead recovery plan, non-native species were designated a "very high threat" to the steelhead population in the Santa Clara River.

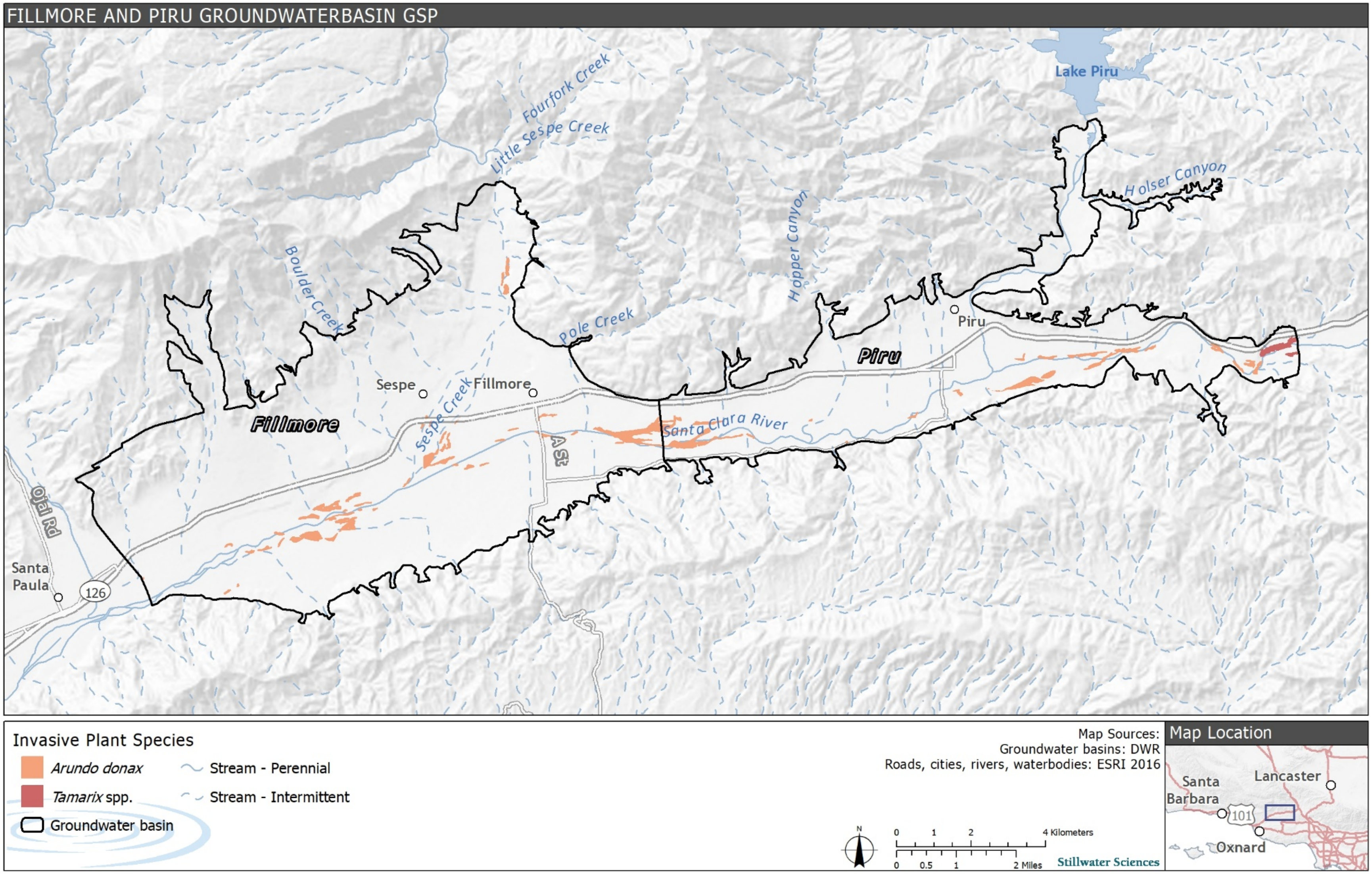

Figure 5.3-1. Invasive species mapped within the Fillmore and Piru groundwater basins.

5.4 Ecological Value

The ecological value of each GDE unit was characterized by evaluating the presence and groundwater-dependence of special-status species and ecological communities and the vulnerability of these species and their habitat to changes in groundwater levels (Rohde et al. 2018). Following Rohde et al. (2018) ecological value is divided into three categories (Table 6.1-1).

Table 6.1-1. Ecological value of GDE units (Rohde et al. 2018).

	Ecological Value classifications
High Ecological Value	• GDE unit has been designated as important habitat (e.g., designated critical habitat). • Contains species that are dependent upon groundwater for their survival or are rare and unique. • Contains species that are vulnerable to slight-moderate changes in groundwater elevation that would result in substantial spatial redistribution
Moderate Ecological Value	• GDE unit contains species that are not legally protected but may be designated as a beneficial use. • Contains species that are partially dependent on groundwater. • Contains species that are somewhat vulnerable to slight-moderate changes in groundwater elevation that would result in some spatial redistribution.
Low Ecological Value	• GDE unit does not contain legally protected species. • Contains only species that are partially dependent on groundwater. • Contains species that are not vulnerable to slight-moderate changes in groundwater elevation.

In addition, the presence of natural or near-natural conditions and ecosystem function was also considered.

5.4.1 Piru

Del Valle GDE Unit

The Del Valle GDE Unit was determined to have **high ecological value** because: (1) it supports a relatively large number of special-status species and ecological communities (Tables 5.2-2, 5.2-3, and 5.2-4), (2) contains 433 acres of designated critical habitat for southwestern willow flycatcher and 436 acres of designated critical habitat for least Bell's vireo (Figure 5.2-1), (3) supports native special-status species and natural communities with a known or high likelihood of direct groundwater dependence (two plants, three natural communities, two reptiles, and one fish; Tables 5.2-2, 5.2-3, and 5.2-4), and (4) includes species and ecological communities that are highly or moderately vulnerable to changes in groundwater discharge or groundwater levels that could alter their distribution, species composition, and/or health (Rohde et al. 2018, 2019). The reach of the Santa Clara River in the Del Valle GDE Unit is considered perennial and is typically connected to groundwater. The degree to which interconnected surface waters in this reach are maintained by releases from upstream effluent sources is unknown, but is believed to be significant. It provides important habitat for special-status aquatic and semi-aquatic species, potentially including southwestern pond turtle, two-striped gartersnake, unarmored threespine stickleback, and arroyo chub, and this habitat is vulnerable to groundwater uses that reduce the amount and quality of riverine habitat. Southern California steelhead and Pacific lamprey are not known to occur in or upstream of this reach. The Del Valle GDE Unit contains 34% of the total GDE acreage in the Piru Groundwater Basin (Table 3.1-2).

Santa Clara River Riparian Shrubland GDE Unit

The Santa Clara River Riparian Shrubland GDE Unit was determined to have **moderate ecological value** because: (1) it supports a moderate number of special-status species and ecological communities (Tables 5.2-2, 5.2-3, and 5.2-4), (2) contains 317 acres of designated critical habitat for southwestern willow flycatcher and approximately 3.8 miles of designated critical habitat for southern California steelhead (Figure 5.2-1), (3) supports native special-status species and natural communities with a known or high likelihood of direct groundwater dependence (three natural communities and three fish; Tables 5.2-2, 5.2-3, and 5.2-4), and (4) includes species and ecological communities that are somewhat vulnerable to changes in groundwater discharge or groundwater levels that could alter their distribution, species composition, and/or health (Rohde et al. 2018, 2019). The Santa Clara River in this GDE unit is considered intermittent and is not connected to groundwater. It may provide migration habitat for anadromous species (i.e., southern California steelhead), but this habitat has low vulnerability to groundwater reduction because most migration occurs during seasonal high flow periods. The unit contains 25% of the total GDE acreage in the Piru Groundwater Basin (Table 3.1-2).

Cienega GDE Unit

The Cienega GDE Unit was determined to have **high ecological value** because: (1) it supports a moderate number of special-status species and ecological communities (Tables 5.2-2, 5.2-3, and 5.2-4), (2) contains 154 acres of designated critical habitat for southwestern willow flycatcher and approximately 0.2 miles of designated critical habitat for southern California steelhead (Figure 5.2-1), (3) supports native special-status species and natural communities with a known or high likelihood of direct groundwater dependence (one plant, two reptiles, and four fish; Tables 5.2-2, 5.2-3, and 5.2-4), and (4) includes species and ecological communities that are highly or moderately vulnerable to changes in groundwater discharge or groundwater levels that could alter their distribution, species composition, and/or health (Rohde et al. 2018, 2019). The reach of the Santa Clara River in the Cienega GDE Unit is considered perennial and is connected to groundwater except during droughts. It provides important habitat for special-status aquatic and semi-aquatic species, potentially including southwestern pond turtle, two-striped gartersnake, southern California steelhead, unarmored threespine stickleback, and arroyo chub, and this habitat is vulnerable to groundwater uses that reduce the amount and quality of riverine habitat. The unit contains 12% of the total GDE acreage in the Piru Groundwater Basin (Table 3.1-2).

Piru Creek Riparian GDE Unit

The Piru Creek Riparian GDE Unit was determined to have **high ecological value** because: (1) it supports a relatively high number of special-status species and ecological communities (Tables 5.2-2, 5.2-3, and 5.2-4), (2) contains 246 acres of designated critical habitat for southwestern willow flycatcher and approximately 4.9 miles of designated critical habitat for southern California steelhead (Figure 5.2-1), (3) supports native special-status species and natural communities with a known or high likelihood of direct groundwater dependence (one plant, five natural communities, two reptiles, and five fish; Tables 5.2-2, 5.2-3, and 5.2-4), and (4) includes species and ecological communities that are highly or moderately vulnerable to changes in groundwater discharge or groundwater levels that could alter their distribution, species composition, and/or health (Rohde et al. 2018, 2019). Piru Creek in this GDE unit is considered perennial, though baseflows are maintained by releases from Santa Felicia Dam, which likely also raises the groundwater level in this area. The lower portion of Piru Creek near the confluence with the Santa Clara River periodically lacks surface flow. Piru Creek provides important habitat for special-status aquatic and semi-aquatic species, potentially including southwestern pond turtle, two-striped gartersnake, southern California steelhead, unarmored threespine stickleback, and arroyo chub. Because surface flows in Piru Creek are mostly controlled by upstream releases rather than interconnected groundwater, this habitat is not vulnerable to groundwater uses that reduce the amount and quality of stream habitat. The unit contains 25% of the total GDE acreage in the Piru Groundwater Basin (Table 3.1-2).

Tributary Riparian GDE Unit

The Tributary Riparian GDE Unit was determined to have **moderate ecological value** because: (1) it supports a relatively low number of special-status species and ecological communities (Tables 5.2-2 and 5.2-3), (2) contains 5.6 acres of designated critical habitat for least Bell's vireo (Figure 5.2-1), (3) supports few native special-status species and natural communities with a likely or possible groundwater dependence (three plants and one natural community; Tables 5.2-2 and 5.2-3), and (4) primarily includes species and ecological communities with little vulnerability to changes in groundwater discharge or groundwater levels that could alter their distribution, species composition, and/or health (Rohde et al. 2018, 2019). They do, however, support valuable riparian habitat and likely movement corridors for a variety of native wildlife species. The tributary streams in this GDE unit are considered ephemeral and are not interconnected with groundwater. Typically, these streams only support surface flow immediately after storm events and thus provide little habitat value for fish and other aquatic species. Hopper Canyon Creek may have perennial flow at its upstream end within the basin and may have historically supported aquatic species. The connection to groundwater in Hopper Canyon Creek is unknown. The unit contains 5% of the total GDE acreage in the Piru Groundwater Basin (Table 3.1-2).

5.4.2 Fillmore

Santa Clara River Riparian Shrubland GDE Unit

The Santa Clara River Riparian Shrubland GDE Unit was determined to have **moderate ecological value** because: (1) it supports a relatively high number of special-status species and ecological communities (Tables 5.2-5, 5.2-6, and 5.2-7), (2) contains 952 acres of designated critical habitat for southwestern willow flycatcher and approximately 7.6 miles of designated critical habitat for southern California steelhead (Figure 5.2-1), (3) supports native special-status species and natural communities with a known or high likelihood of direct groundwater dependence (four natural communities, one reptile, and two fish; Tables 5.2-5, 5.2-6, and 5.2-7), and (4) includes species and ecological communities that are somewhat vulnerable to changes in groundwater discharge or groundwater levels that could alter their distribution, species composition, and/or health (Rohde et al. 2018, 2019). The Santa Clara River in this GDE unit is considered intermittent and is not connected to groundwater or to upstream and downstream perennial reaches in most years (Figure 4.1-1). It provides migration habitat for special-status anadromous species (i.e., southern California steelhead, Pacific lamprey) but this habitat has low vulnerability to groundwater reduction because most migration occurs during seasonal high flow periods. The unit contains a relatively large amount of GDE area (1,046 acres), accounting for 40% of the total GDE acreage in the Fillmore Groundwater Basin (Table 3.1-2).

Cienega GDE Unit

The Cienega GDE Unit was determined to have **high ecological value** because: (1) it supports a relatively large number of special-status species and ecological communities (Tables 5.2-5, 5.2-6, and 5.2-7), (2) contains 116 acres of designated critical habitat for southwestern willow flycatcher and approximately 1.1 miles of designated critical habitat for southern California steelhead (Figure 5.2-1), (3) supports native special-status species and natural communities with a known or high likelihood of direct groundwater dependence (one plant, one natural community, and four fish; Tables 5.2-5, 5.2-6, and 5.2-7), and (4) includes species and ecological communities that are highly or moderately vulnerable to changes in groundwater discharge or groundwater levels that could alter their distribution, species composition, and/or health (Rohde et al. 2018, 2019). The reach of the Santa Clara River in the Cienega GDE Unit is considered perennial and is connected to groundwater except during droughts. It provides important habitat for special-status aquatic and semi-aquatic species, potentially including southwestern pond turtle, southern California steelhead, unarmored threespine stickleback, and arroyo chub, and this habitat is vulnerable to groundwater uses that reduce the amount and quality of riverine habitat. The unit contains 5% of the total GDE acreage in the Fillmore Groundwater Basin (Table 3.1-2).

East Grove GDE Unit

The East Grove GDE Unit was determined to have **high ecological value** because: (1) it supports a relatively large number of special-status species and ecological communities (Tables 5.2-5, 5.2-6, and 5.2-7), (2) contains 923 acres of designated critical habitat for southwestern willow flycatcher and approximately 3.2 miles of designated critical habitat for southern California steelhead (Figure 5.2-1), (3) supports native special-status species and natural communities with a known or high likelihood of direct groundwater dependence (one plant, four natural communities, one reptile, and three fish; Tables 5.2-5, 5.2-6, and 5.2-7), and (4) includes species and ecological communities that are highly or moderately vulnerable to changes in groundwater discharge or groundwater levels that could substantially alter their distribution, species composition, and/or health (Rohde et al. 2018, 2019). The reach of the Santa Clara River in the East Grove GDE Unit is considered perennial and is typically connected to groundwater. It provides important habitat for special-status aquatic and semi-aquatic species, potentially including southwestern pond turtle, southern California steelhead, Pacific lamprey, unarmored threespine stickleback, and arroyo chub, and this habitat is vulnerable to groundwater uses that reduce the amount and quality of riverine habitat. The unit contains a relatively large amount of GDE area (1,101.9 acres), accounting for 43% of the total GDE acreage in the Fillmore Groundwater Basin (Table 3.3-2).

Tributary Riparian GDE Unit

The Tributary Riparian GDE Unit was determined to have **moderate ecological value** because: (1) it supports a relatively low number of special-status species and ecological communities (Tables 5.2-5, 5.2-6, and 5.2-7), (2) contains no designated critical habitat (Figure 5.2-1), (3) supports few native special-status species and natural communities with a likely or possible dependence on groundwater (two plants and one natural community; Table 5.2-5), and (4) primarily includes species and ecological communities with little vulnerability to changes in groundwater discharge or groundwater levels that could alter their distribution, species composition, and/or health (Rohde et al. 2018, 2019). They do, however, support valuable riparian habitat and likely movement corridors for a variety of native wildlife species. The tributary streams in this GDE unit are considered ephemeral and are not connected to groundwater. Typically, these streams only support surface flow immediately after storm events and thus provide little habitat value for fish and other aquatic species. Pole Creek may have perennial flow at its upstream end within the basin and may have historically supported aquatic species. The connection to groundwater in Pole Creek is unknown. The Tributary Riparian GDE Unit contains 8% of the total GDE acreage in the Fillmore Groundwater Basin (Table 3.3-2).

Sespe Creek Riparian GDE Unit

The Sespe Creek Riparian GDE Unit was determined to have **moderately high ecological value** because: (1) it supports a moderate number of special-status species and ecological communities (Tables 5.2-5, 5.2-6, and 5.2-7), (2) contains approximately 3.2 miles of designated critical habitat for southern California steelhead (Figure 5.2-1), (3) supports native special-status species and natural communities with a known or high likelihood of direct groundwater dependence (two natural communities, two reptiles, and three fish; Tables 5.2-5, 5.2-6, and 5.2-7), and (4) includes species and ecological communities that are highly or moderately vulnerable to changes in groundwater discharge or groundwater levels that could alter their distribution, species composition, and/or health (Rohde et al. 2018, 2019). The upper 2 miles of Sespe Creek in this GDE unit are considered perennial, while the lower portion of Sespe Creek is likely intermittent (Figure 3.1-1). Sespe Creek's connection to groundwater is undetermined. Sespe Creek provides important habitat for special-status aquatic and semi-aquatic species, likely including southwestern pond turtle, two-striped gartersnake, southern California steelhead, Pacific lamprey, unarmored threespine stickleback, and arroyo chub, and this habitat is vulnerable to groundwater uses that reduce the amount and quality of stream habitat. The unit contains 4% of the total GDE acreage in the Fillmore Groundwater Basin (Table 3.3-2).

6 POTENTIAL EFFECTS OF GROUNDWATER MANAGEMENT ON GDES

This section presents the methods and results of our analysis to identify how groundwater management could affect GDEs in the Fillmore and Piru groundwater basins. Adverse effects (impacts) on GDEs are considered undesirable results under SGMA (State of California 2014). The analysis is based on the hydrologic conditions affecting GDEs and their susceptibility to changing groundwater conditions, trends in biological condition of the GDEs, and climate change projections and other anticipated conditions or management actions likely to affect GDEs in the future.

6.1 Approach

SGMA describes six groundwater conditions that could cause undesirable results, including adverse impacts on GDEs. These are (1) chronic lowering of groundwater levels, (2) reduction of groundwater storage, (3) seawater intrusion, (4) degraded groundwater quality, (5) land subsidence, and (6) depletion of interconnected surface waters. Rohde et al. (2018) identify chronic lowering of groundwater levels, degraded water quality, and depletions of interconnected surface water as the most likely conditions to have direct effects on GDEs, potentially leading to an undesirable result. Following this guidance and based on available information for the Fillmore and Piru groundwater basins, we have eliminated reduction of groundwater storage, seawater intrusion (the subbasins are not located in close proximity to the ocean), and land subsidence from consideration because they are not relevant to GDEs in the Fillmore and Piru groundwater basins.

We evaluated the potential for chronic lowering of groundwater levels, degraded groundwater quality, and depletion of interconnected surface waters to cause direct effects on GDEs compared to baseline conditions, with a focus on effects related to groundwater levels. First, we identified baseline hydrologic conditions for the GDE units using available information (Section 1.2 and Section 4). Next, we determined each GDE unit's susceptibility to changing groundwater conditions using available hydrologic data, climate change projections, and the GDE susceptibility classifications (Rohde et al. 2018), summarized in Table 6.1-1.

Table 6.1-1. Susceptibility classifications developed for evaluation of a GDE's susceptibility to changing groundwater conditions (Rohde et al. 2018).

Susceptibility classifications	
High Susceptibility	Current groundwater conditions for the selected hydrologic data fall outside the baseline range.[1]
Moderate Susceptibility	Current groundwater conditions for the selected hydrologic data fall within the baseline range but future changes in groundwater conditions are likely to cause it to fall outside the baseline range. The future conditions could be due to planned or anticipated activities that increase or shift groundwater production, causing a potential effect on a GDE.
Low Susceptibility	Current groundwater conditions for the selected hydrologic data fall within the baseline range and no future changes in groundwater conditions are likely to cause the hydrologic data to fall outside the baseline range.

[1] For purposes of this analysis, the baseline range is defined as the range of variability of the shallow groundwater depth for the period of record through 2015, with a minimum of 10 years (2005–2015).

We used these susceptibility classifications to trigger further evaluation of potential effects on GDEs. If we determined a GDE unit to have moderate or high susceptibility to changing groundwater conditions, we used biological information to assess whether evidence exists of a biological response to changing groundwater levels or degraded groundwater quality. The biological response analysis was based on changes in Normalized Difference Vegetation Index (NDVI) and Normalized Difference Moisture Index (NDMI) data for individual vegetation polygons within the GDE units (Klausmeyer et al. 2019). The polygons correspond to different GDE mapping units (i.e., different species compositions), and the size of the GDE polygons varied.

NDVI, which estimates vegetation greenness, and NDMI, which estimates vegetation moisture, were generated from surface reflectance corrected multispectral Landsat imagery corresponding to the period of July 9 to September 7 of each year, which represents the summer period when GDE species are most likely to use groundwater (see Klausmeyer et al. 2019 for further description of methods). Vegetation polygons with higher NDVI values indicate increased density of chlorophyll and photosynthetic capacity in the canopy, an indicator of vigorous, growing vegetation. Similarly, high NDMI values indicate that the vegetation canopy has high water content and is therefore not drought stressed. These indices are both commonly used proxies for vegetation health in analyses of temporal trends in health of groundwater dependent vegetation (Rouse et al. 1974 and Jiang et al. 2006 as cited in Klausmeyer et al. 2019).

Based on the NDVI and NDMI data, groundwater quality data from wells in or near GDE units in the Fillmore and Piru groundwater basins, and the likely susceptibility of the terrestrial and aquatic species and natural communities in each GDE unit to reported groundwater quality constituents, we found no evidence of a biological response associated with groundwater quality in any of the GDE units. Groundwater quality is therefore not addressed further in the analysis of potential effects.

Discharge of interconnected surface water in areas of rising groundwater is generally a function of groundwater elevation (see GSP Section 2.2.2.7), which is tied to water year type, groundwater management, and surface water releases from upstream reservoirs and water treatment plants. There is not sufficient data on the population of aquatic species that rely on interconnected surface water in the Fillmore and Piru Basins to track the health of these GDEs through time. Evidence suggests that aquatic species such as steelhead were more widespread prior to development of the Santa Clara River Valley since the mid 1900s, and the decline in populations is likely due to many factors, including dams within the Santa Clara River watershed, declining habitat quality outside of the groundwater basins, ocean conditions, and non-native species among many factors. Moreover, the degree to which *O. mykiss* spawn or rear in the basin is poorly understood. Because of these factors, use of the Santa Clara River and its tributaries is an existing data gap, and this analysis does not explore changes in aquatic ecosystem health.

6.2 Biological Data

Tracking the health of all components of groundwater dependent ecosystems through time would involve systematic tracking of populations through time and accounting for changes in driving variables such as floods, climate, and other stressors on populations. This section focuses on changes in vegetation through time using remote sensing data. While increases or decreases in vegetation health do not provide a definitive indication that other components of the ecosystem are thriving or under stress, it provides a reasonable first-order check on the clear linkage between groundwater and the other communities that compose the ecosystem. Previous work has shown that decreases in vegetation vigor are correlated to decreases in remote sensing metrics such as NDVI (e.g., Huntington et al. 2015) and that decreases in vegetation health often correlate with decreases in overall ecosystem health. Tracking the change in NDVI and NDMI for individual polygons shows how the greenness of those polygons change through time. It is crucial to remember that the Santa Clara River and its tributaries in the Fillmore and Piru groundwater basins are dynamic braided rivers that shift through time. This shifting uproots vegetation and creates new surfaces for seedlings to establish. Following floods, the proximity to the river channel (and hence distance to groundwater) as well as the relative elevation of a given vegetation polygon may change. It is therefore useful to average changes over the different GDE units to account for these changes.

To assess potential groundwater thresholds for vegetation health, we compared the average summer NDVI in each GDE unit to depth to water at corresponding monitoring wells. For each vegetation polygon within a GDE unit, the average NDVI for each year was downloaded from the GDE Pulse tool (TNC2021). This tool calculates the mean summer NDVI for each mapped vegetation polygon based on NDVI values from Landsat imagery from July 9 to September 7 (Klausmeyer et al. 2019). The annual average NDVI for each GDE unit was then calculated as the area-weighted mean of the vegetated polygons. This data is used to assess both NDVI trends through time as well as to compare NDVI data with groundwater depth changes.

For each GDE unit, the representative groundwater elevation for comparison with NDVI data was determined for the wells in Table 4.1-1. We used the depth to water measurement for the well in Section 4.1 on the closest date to August 8 (the median of the date of the summer NDVI data), for measurements taken from June 24 to September 22, a period of three months. If no groundwater data were available during this period, the water depth was not included in the analysis.

Because the NDVI analysis above does not account for changes in the extent of groundwater dependent vegetation during the 2012–2016 drought, we also analyzed the change in summer NDVI over the entire GDE unit and adjacent area from 2011–2020. For this analysis linear regression was used to fit a line to the data to track changes in NDVI through time to identify areas of NDVI decline and areas where NDVI increased using code provided by Zach Nelson of the Inyo County Water Department on Google Earth Engine.

NDVI is not a useful tool to track changes in interconnected surface water and the effect of these changes on the aquatic ecosystems. While Figure 4.3-1 shows changes to the magnitude and extent of rising groundwater through the recent drought and subsequent recovery, the effect of these changes on the aquatic ecosystem is difficult to quantify because of a paucity of species data and a lack of data on changes in surface water flows in various tributaries.

6.2.1 Piru Groundwater Basin

Del Valle

The mean NDVI and NDMI for the Del Valle GDE Unit from 1985–2018 were 0.41 and 0.08, respectively. The Del Valle GDE Unit had relatively steady NDVI values, with drops during the early 1990s drought, the 2005 flood, and after 2015. The NDVI values were lower than the other forested riparian complexes (e.g., the East Grove and Cienega GDE units), but the declines during the drought were much less severe than for the Cienega GDE unit. Mean NDMI has declined slowly since 1995, but the overall change was relatively small. This site has experienced extensive changes in vegetation in response to floods, as visible from comparison of aerial photographs. The Santa Clara River in this GDE unit has a highly dynamic braided channel that is subject to extensive erosion and deposition, even during smaller floods, which uprooted vegetation at the site. There is no evidence that the decline in NDVI (which is very small) was due to changes in groundwater management (Figure 6.2-1).

From 2011–2020, NDVI increased as indicated by the slope of a best-fit line to NDVI values through time (Figure 6.2-2). Using the slope of NDVI through time limits the importance of individual years and gives a more representative picture of NDVI changes. For the Del Valle GDE Unit, NDVI increased from 2011–2020 in the upstream sections of the riparian complex and decreased at the downstream end, likely due to decreased extent of rising groundwater during the drought.

There is no apparent correlation between NDVI at Del Valle and depth to water at Well 04N18W27B025 (Figure 6.2-3). The highest NDVI values, between 0.45 and 0.50, occur at a wide range of depth to water values, from 30 ft bgs to 108 ft bgs.

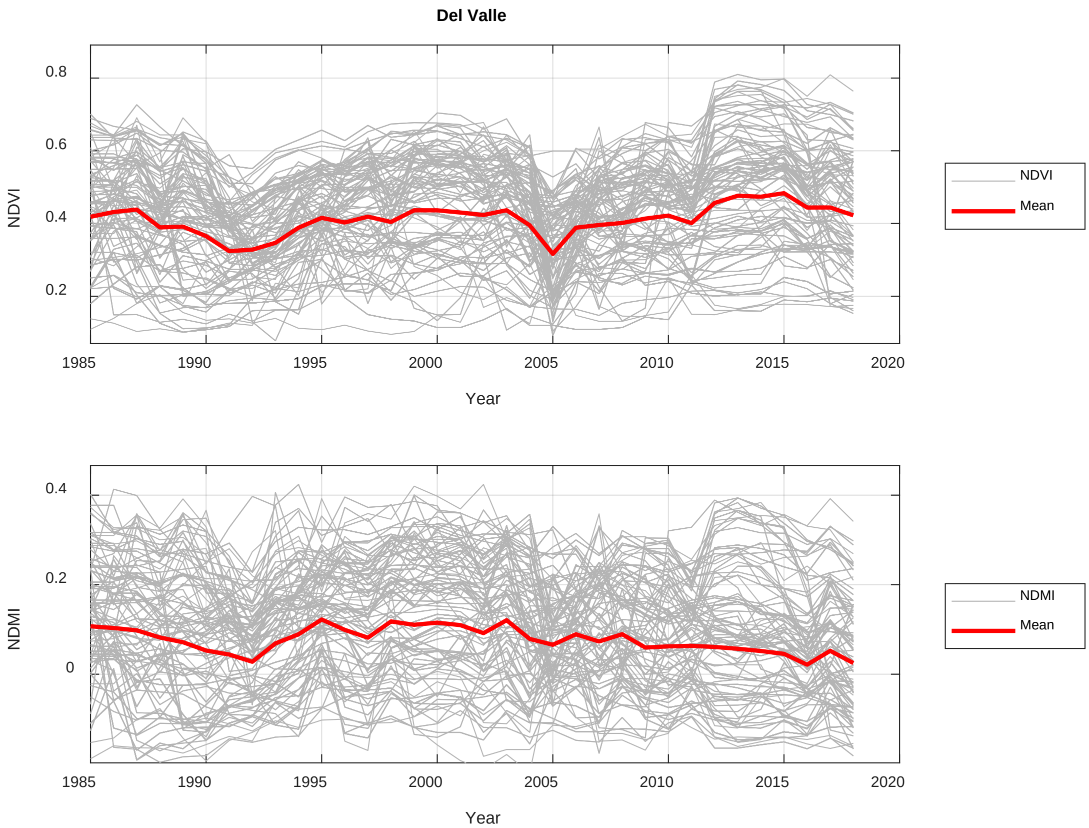

Figure 6.2-1. NDVI and NDMI for the Del Valle GDE Unit in the Piru Groundwater Basin.

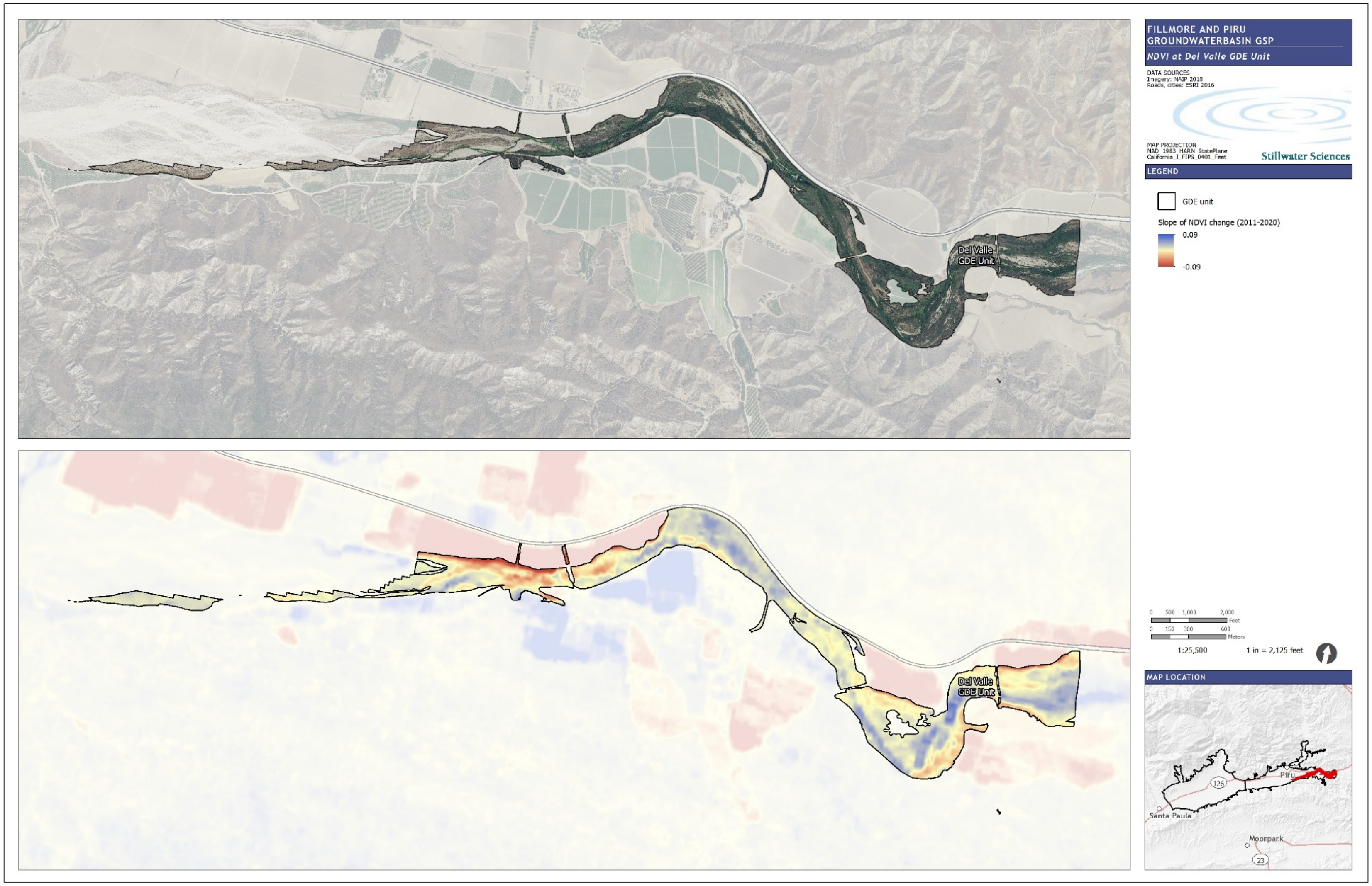

Figure 6.2-2. Slope of NDVI changes from 2011–2020 for the Del Valle GDE Unit. Blue represents increases in NDVI while red represents decreases in NDVI.

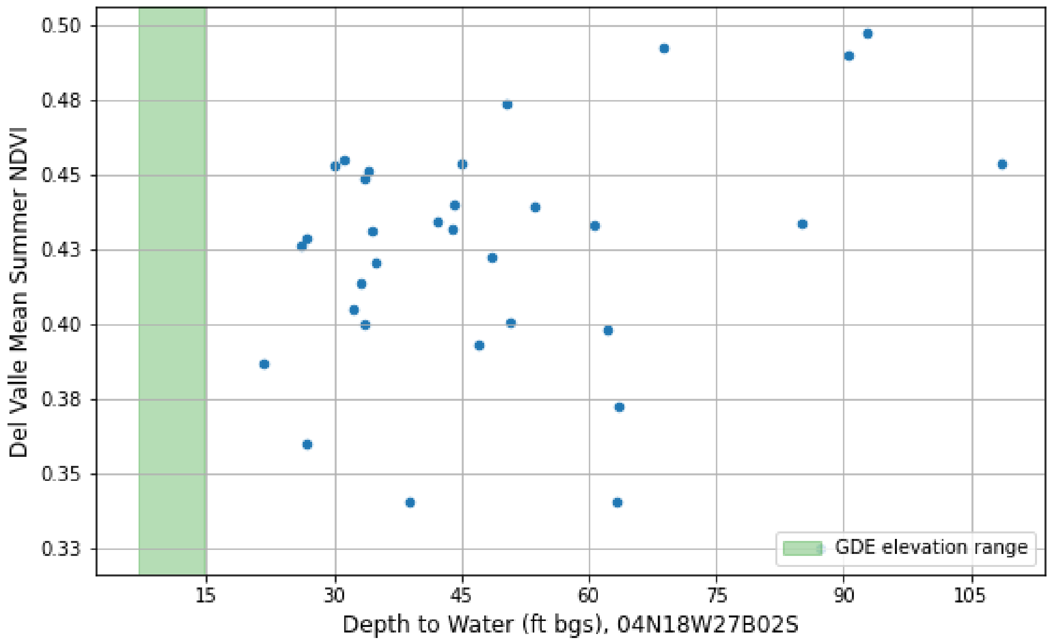

Figure 6.2-3. Mean Summer NDVI in the Del Valle GDE unit versus depth to water at Well 04N18W27B02S. Depth to water data selection method is outlined in Section 5.2.

Piru Basin Santa Clara River Riparian Shrub

The mean NDVI and NDMI for the Santa Clara River Riparian Complex in the Piru Groundwater Basin from 1985–2018 were 0.21 and -0.11, respectively (Figure 6.2-4). These values are relatively low compared to other GDE units in the Fillmore and Piru groundwater basins. The NDVI and NDMI peaked in 1995, 2006, and 2011, following relatively wet years, and declined back to background levels between these peaks. There is no long-term trend in either NDVI or NDMI for this GDE unit (Figure 6.2-4).

The highest NDVI values (>0.26) in the Santa Clara River (Piru Basin) unit typically occur when depth to water in Well 04N19W34K01S is less than 14 ft bgs, within 1 foot of the lowest potential GDEs (Figure 6.2-5).

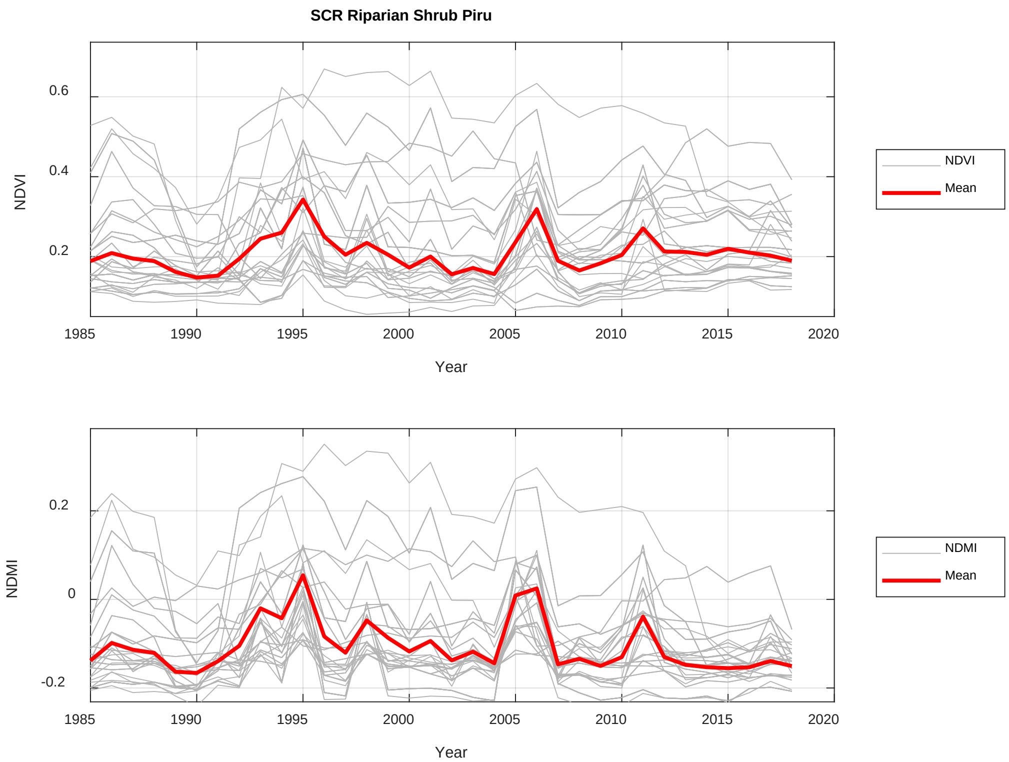

Figure 6.2-4. NDVI and NDMI for the Santa Clara River Riparian Shrub GDE Unit in the Piru Groundwater Basin.

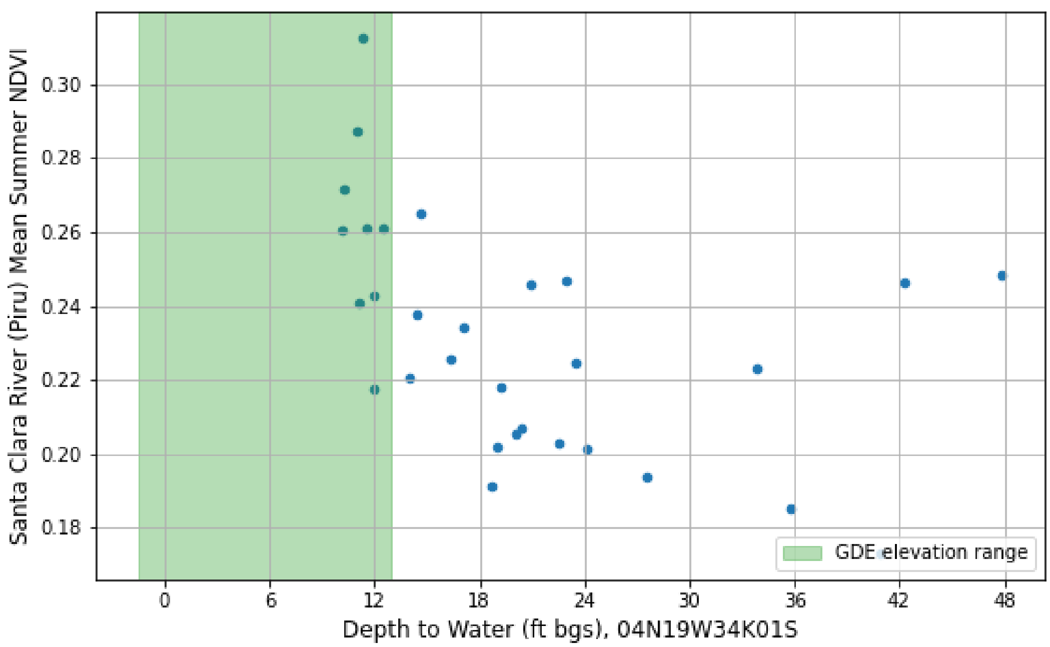

Figure 6.2-5. Mean Summer NDVI in the Piru Basin Santa Clara River GDE unit versus depth to water at Well 04N19W34K01S. Depth to water data selection method is outlined in Section 5.2.

Piru Creek Riparian GDE Unit

The mean NDVI and NDMI for the Piru Creek Riparian GDE from 1985–2018 were 0.36 and -0.026, respectively. NDVI values have been relatively steady, with a small decrease in 1996 and a gradual increase starting in 2006 through 2018 (Figure 6.2-6). There was only a small decline in NDVI during the 2012–2016 drought.

Figure 6.2-6. NDVI and NDMI for the Piru Creek Riparian GDE Unit.

Piru Basin Tributary Riparian GDE

The mean NDVI and NDMI for the Tributary Riparian GDE Unit in the Piru Groundwater Basin from 1985–2018 were 0.30 and -0.07, respectively. The NDVI was relatively steady from 1989–2007 before increasing in 2008 and remaining relatively steady through 2018 (Figure 6.2-7). NDVI was relatively steady during the 1989–1991 and 2012–2016 droughts. Drops in NDVI occurred in 1996 and 2002, but were small compared to changes in other GDE units. NDMI varied more than NDVI from 1989–2007, and had a similar increase in 2008, but declined from 2010–2018 to the mean value over the period of record.

Figure 6.2-7. NDVI and NDMI for the Piru Basin Tributary Riparian GDE Unit.

6.2.2 Fillmore Groundwater Basin

Fillmore Basin Santa Clara River Riparian Shrub

The mean NDVI and NDMI for the Santa Clara River Riparian Shrub GDE in the Fillmore Groundwater Basin from 1985–2018 were 0.29 and -0.046, respectively (Figure 6.2-8). The Santa Clara River Riparian Shrubland in the Fillmore Groundwater Basin has relatively low NDVI values typical of low-density vegetation in the GDE. The NDVI varies over 2- to 5-year cycles (Figure 6.2-8). The NDVI and NDMI values declined during the early 1990s and the 2012–2016 drought. NDVI and NDMI have not recovered from the most recent drought (Figure 6.2-8).

There is no apparent correlation between NDVI in the Santa Clara River (Fillmore Basin) unit and depth to water at Well 03N20W03N01S (Figure 6.2-9). NDVI declined when groundwater is lower but the data is sparse. Summer depth to water data typically fall in a narrow range, between eight and 13 ft bgs.

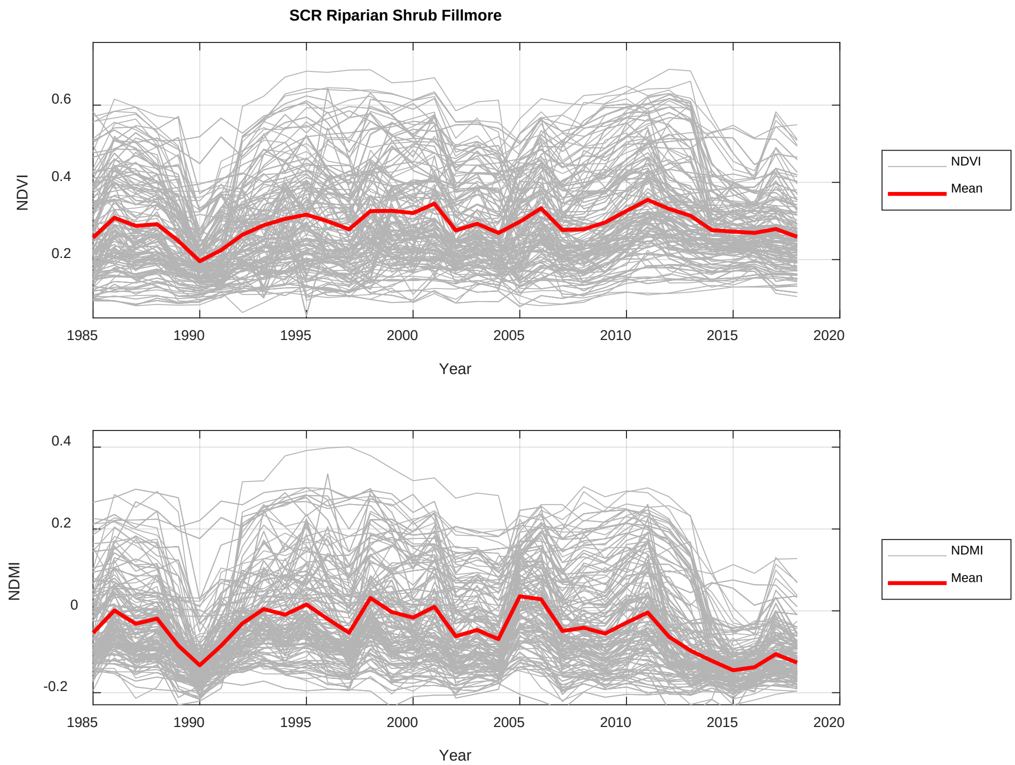

Figure 6.2-8. NDVI and NDMI for the Santa Clara River Riparian Shrub GDE Unit in the Fillmore Groundwater Basin.

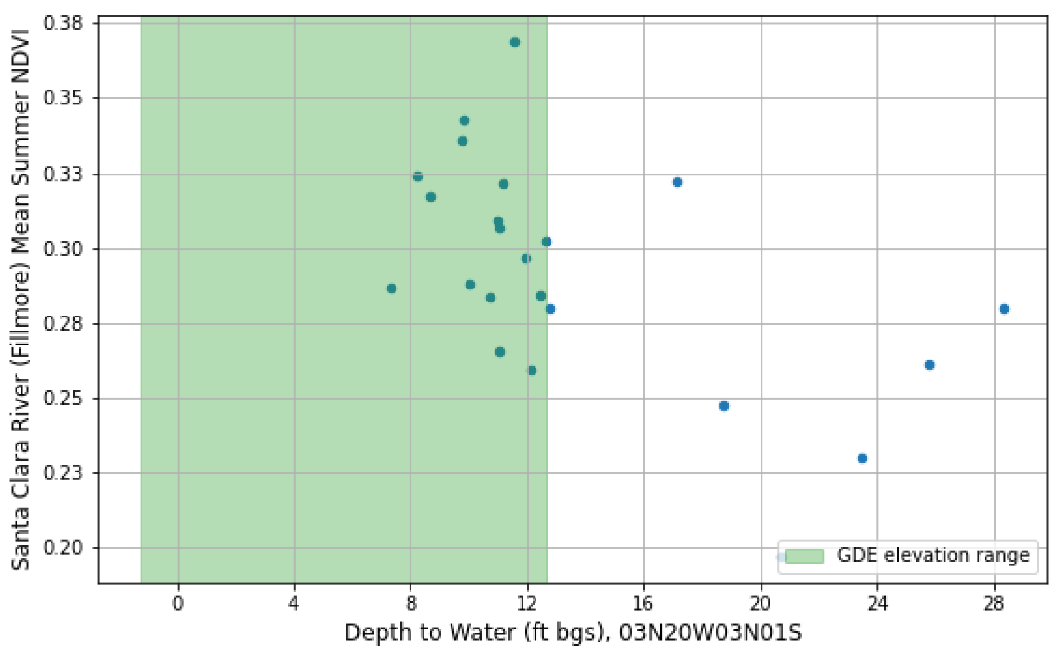

Figure 6.2-9. Mean Summer NDVI in the Fillmore Basin Santa Clara River GDE unit versus depth to water at Well 03N20W03N01S. Depth to water data selection method is outlined in Section 5.2.

Cienega

The NDVI analysis of the Cienega GDE Unit focuses on the Fillmore Basin where most of the mapped GDEs occur. The mean NDVI and NDMI values for the Cienega GDE Unit from 1985–2018 were 0.48 and 0.12, respectively. The mean NDVI in the Cienega GDE Unit was relatively consistent between 1995 and 2014 (Figure 6.2-10) but dropped by about half during the 1989–1991 and 2012–2016 droughts (Figure 6.2-10). Following the early 1990s drought, the NDVI recovered to its pre-drought value within two to three years. A similar recovery did not occur following the 2012– 2016 drought, and field observation confirms that much of the willow and cottonwood forest died during the drought (Figure 6.2-11). The 2005 flood was the only major flood during this period and resulted in a short-term increase in NDVI, likely because the wet water year supported extensive vegetation growth and new surfaces were rapidly colonized.

NDMI values declined slightly from 1995–2014 and had similar drops during the early 1990s and 2012–2016 droughts. The reason for the decline in NDMI from 1995–2014 is not known. A similar drop in vegetated health using a different remote sensing technique was observed by Kibler et al. (2019). Anecdotal evidence suggests that some of the arundo stands are recovering following the drought, but much of the willow and cottonwood forest in the GDE died during the drought.

The highest NDVI values (>0.4) in the Cienega (Fillmore Basin) unit are clustered between depth to water values of -1 and 5 ft bgs, within the elevation range of GDEs (Figure 6.2-12). When groundwater depth declines to 6-8 ft bgs, NDVI declines to below 0.40.

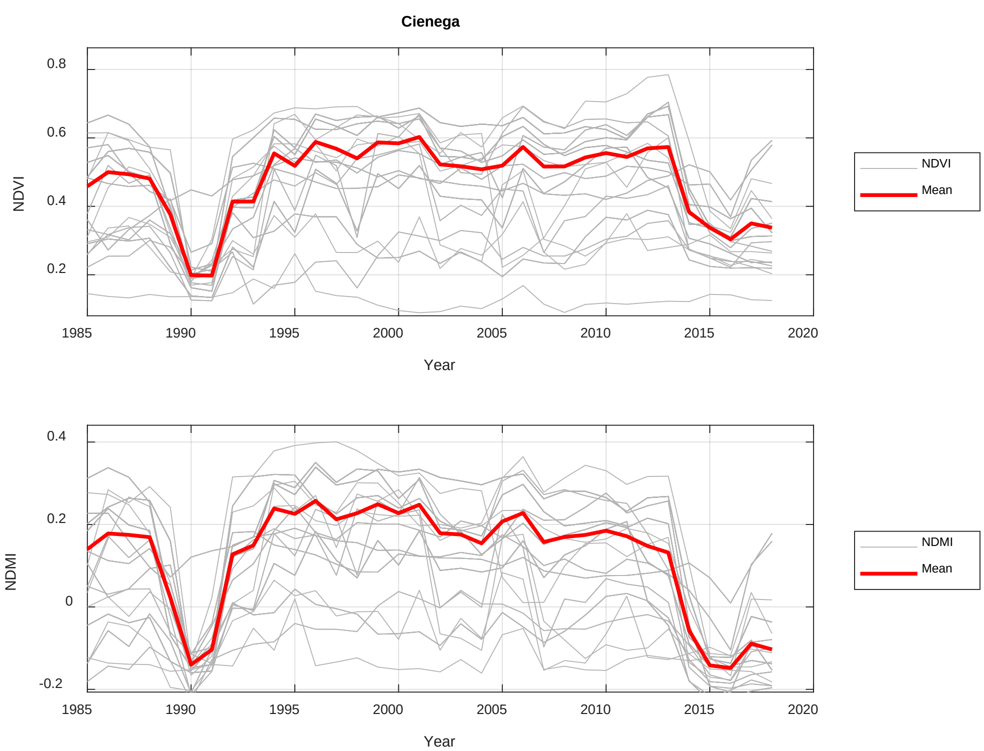

Figure 6.2-10. NDVI and NDMI for the Cienega GDE Unit.

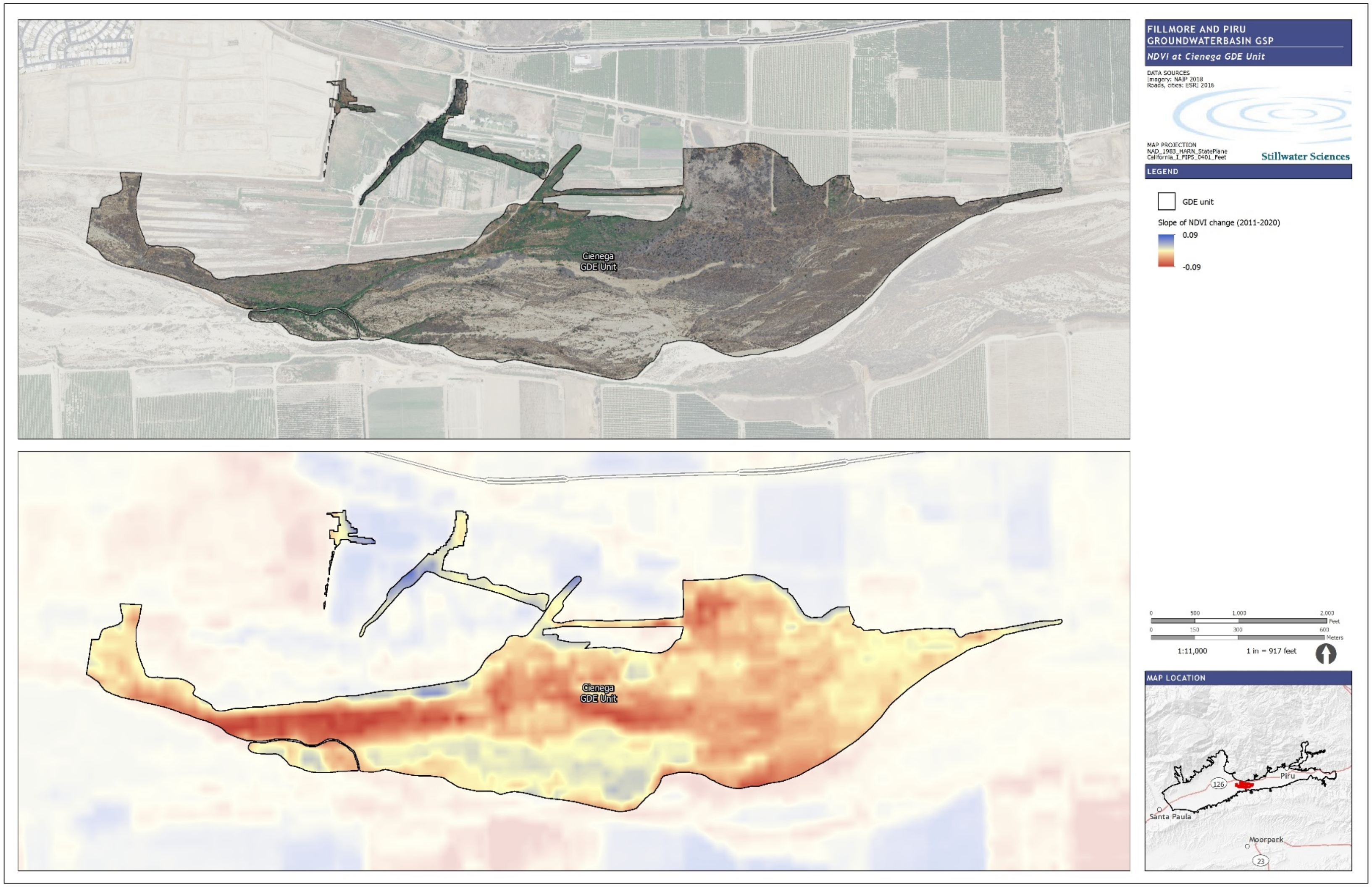

Figure 6.2-11. Slope of NDVI change in the Cienega GDE Unit in the Fillmore and Piru Basins from 2011–2020. Red areas have declining NDVI and blue areas have increasing NDVI.

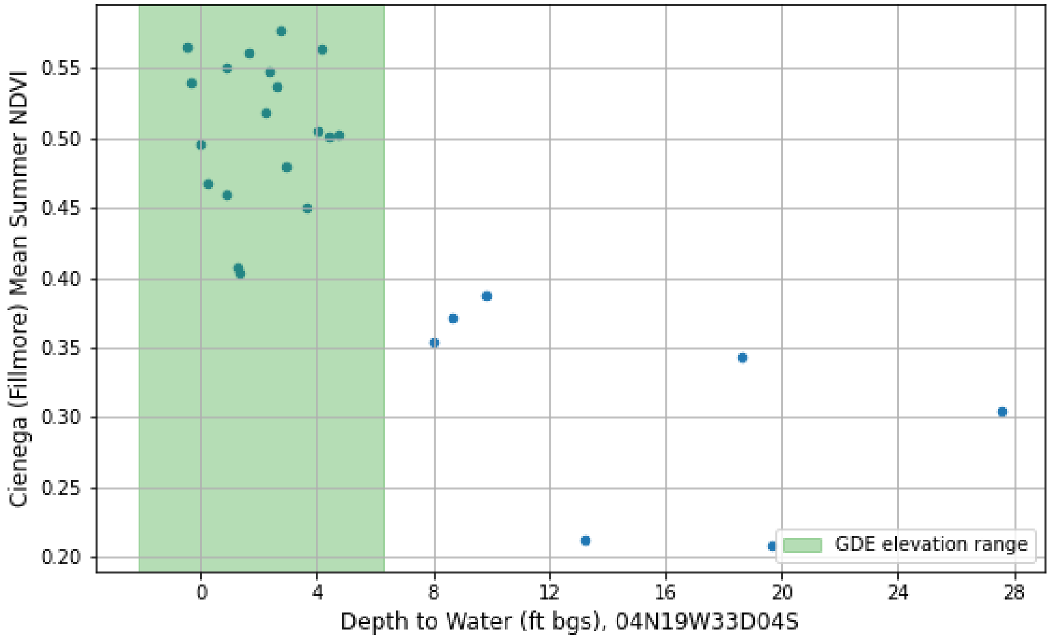

Figure 6.2-12. Mean Summer NDVI in the Fillmore Basin Cienega GDE unit versus depth to water at Well 04N19W33D04S. Depth to water data selection method is outlined in Section 5.2.

East Grove

The mean NDVI and NDMI for the East Grove GDE Unit from 1985–2018 were 0.52 and 0.16, respectively. NDVI values for the East Grove Riparian Complex were relatively steady through about 1997, with a small drop following the early 1990s drought (Figure 6.2-13).

Starting around 1998, the NDVI steadily increased until declining in 2013. There was a slight increase in NDVI following the 2005 flood. Mean NDMI was relatively constant until increasing in 2005. NDMI declined more than NDVI during the 2012–2016 drought (Figure 6.2-13).

Between 2011 and 2020, the slope of the NDVI through time was positive (i.e., NDVI increased), with decreases where the channel shifted (Figure 6.2-14). Decreases in NDVI occurred at the upstream portion of the East Grove GDE Unit, reflecting a change in the flow path of the Santa Clara River as well as a decline in vegetation health on the southeast portion of the GDE. In comparison with the Cienega GDE Unit, the increasing NDVI in the East Grove GDE Unit suggests that groundwater levels did not drop below the rooting zone of the riparian complex and hence the GDE was much more resilient.

There is no apparent correlation between NDVI at East Grove and depth to water at Well 03N20W09D01S (Figure 6.2-15).

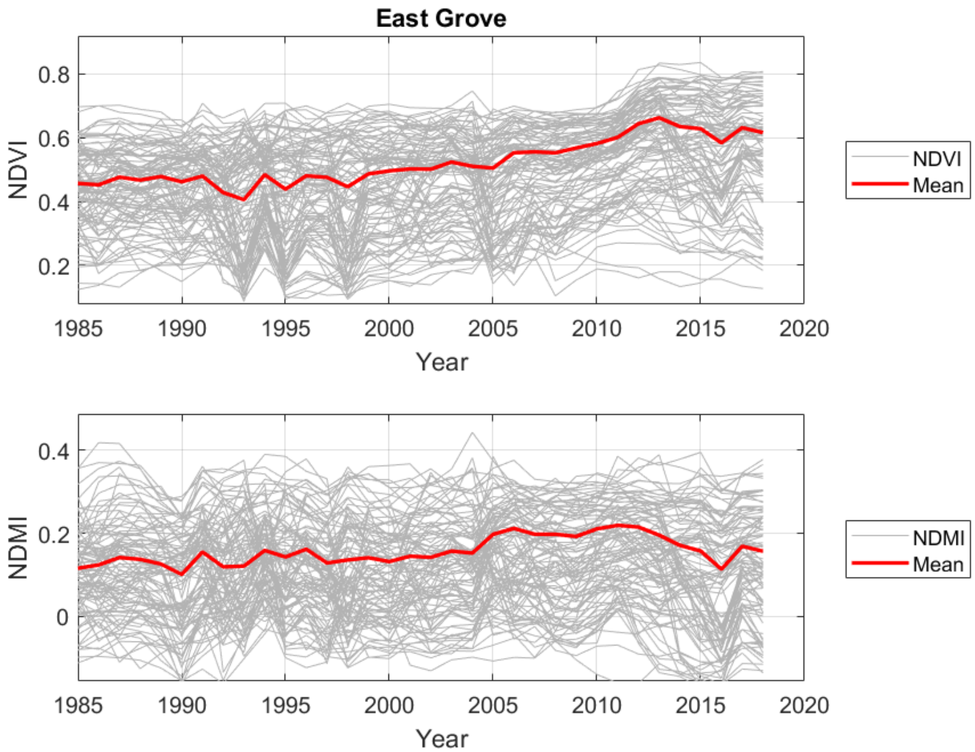

Figure 6.2-13. NDVI and NDMI for the East Grove GDE Unit.

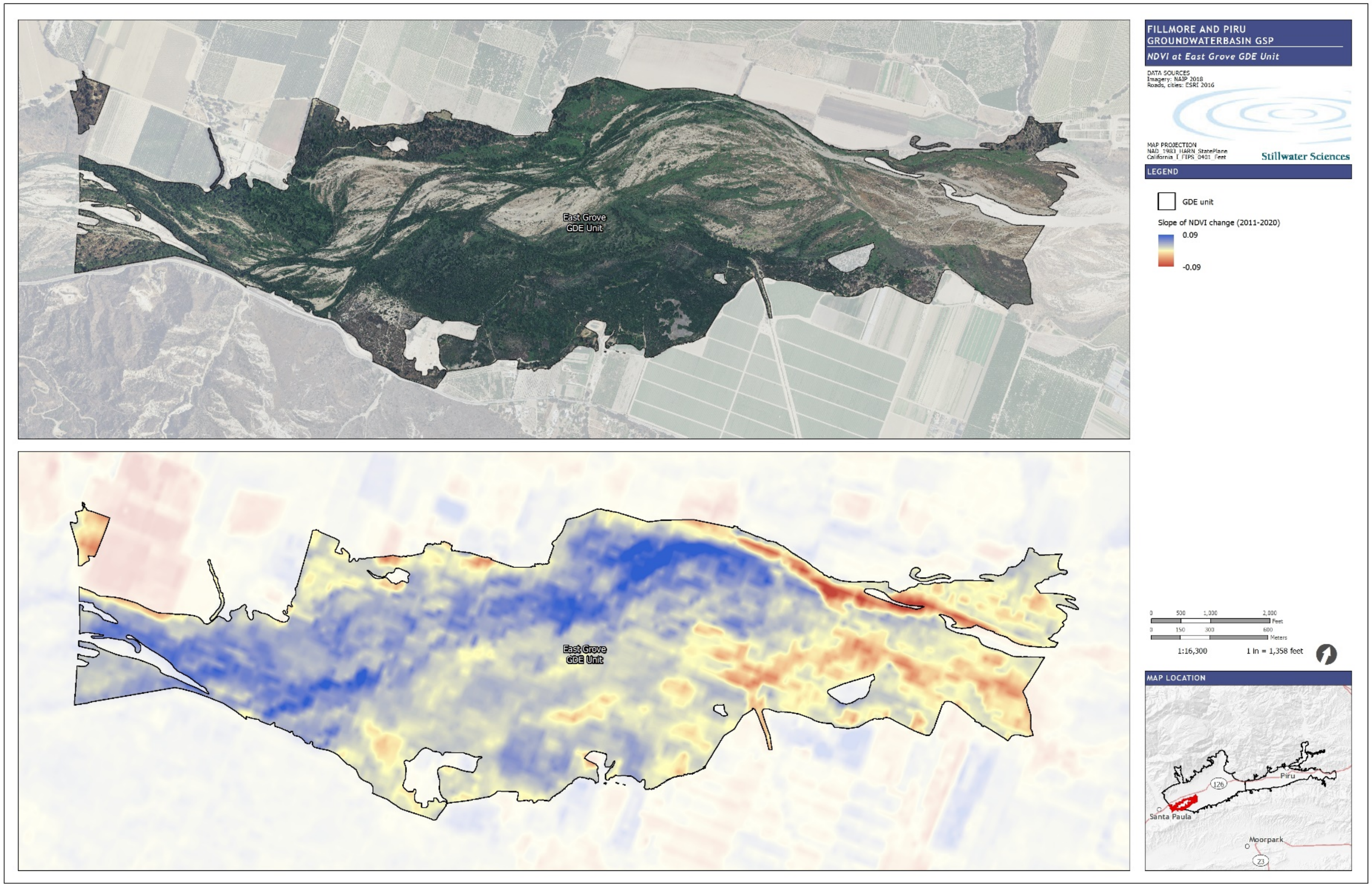

Figure 6.2-14. Slope of NDVI change in the East Grove GDE Unit in the Fillmore Basin from 2011-2020. Red areas have declining NDVI and blue areas have increasing NDVI.

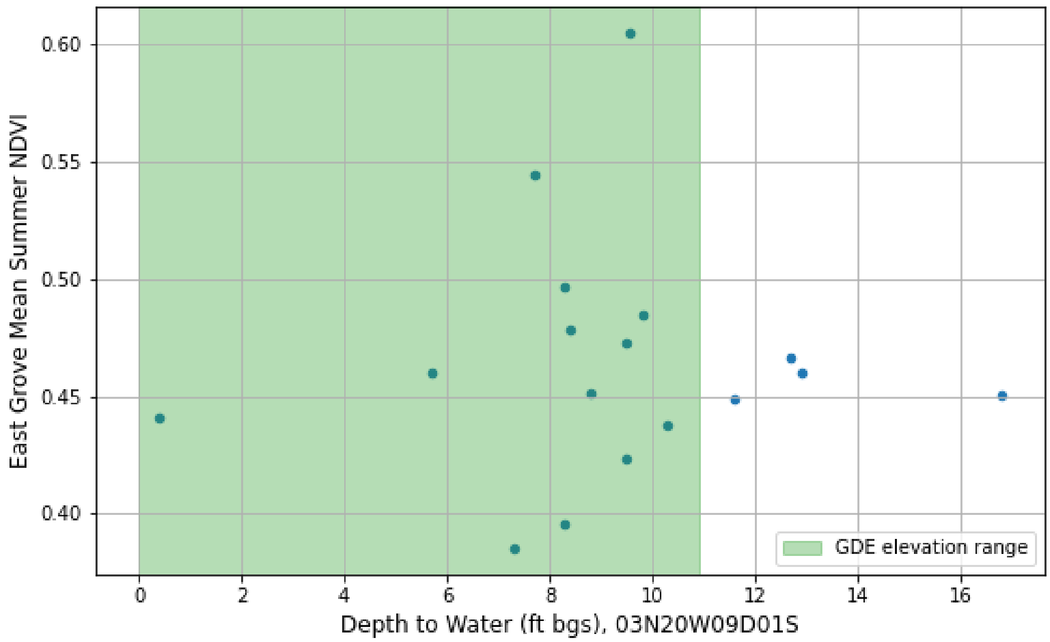

Figure 6.2-15. Mean Summer NDVI in the East Grove GDE unit versus depth to water at Well 03N20W09D01S. Depth to water data selection method is outlined in Section 5.2.

Fillmore Basin Tributary Riparian GDE Unit

The mean NDVI and NDMI for the Tributary Riparian GDE in the Fillmore Groundwater Basin from 1985–2018 were 0.50 and 0.058, respectively (Figure 6.2-16). The NDVI was relatively steady through the 1989–1991 drought and through 2017 before dropping in 2018, likely due to vegetation mortality due to the Thomas Fire. Short-term drops in NDVI occurred in 1996 and 2002, but were small compared to changes in other GDE units. NDMI declined in 2012 at the start of the 2012–2016 drought and has remained below the mean. In 2018 the NDMI further declined due to the Thomas Fire (Figure 6.2-16).

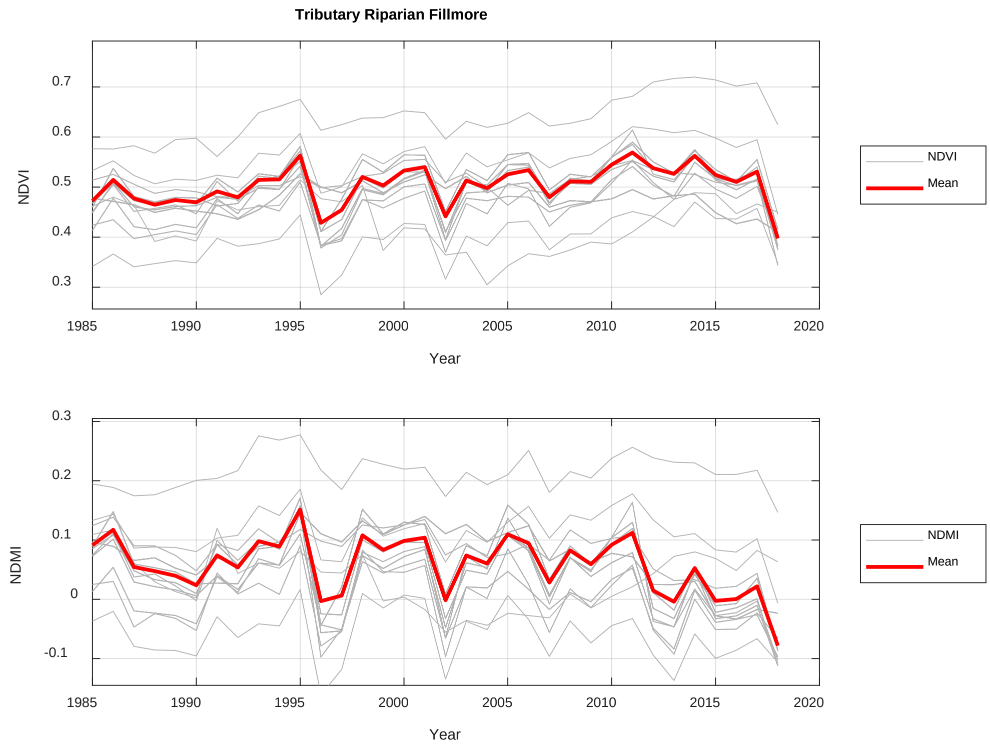

Figure 6.2-16. NDVI and NDMI for the Fillmore Basin Tributary Riparian GDE Unit.

Sespe Creek Riparian

The mean NDVI and NDMI for the Sespe Creek Riparian from 1985–2018 were 0.39 and 0.084, respectively. The Sespe Creek Riparian GDE has relatively steady intermediate NDVI of 0.3–0.4 prior to 2005, at which point NDVI dropped (Figure 6.2-17) as a result of the flood. Following the 2005 flood, NDVI gradually increased, as would be expected if the riparian forest were recovering following the flood. NDVI dropped from 2015–2018 (Figure 6.2-17). NDMI has been relatively consistent through time (Figure 6.2-17).

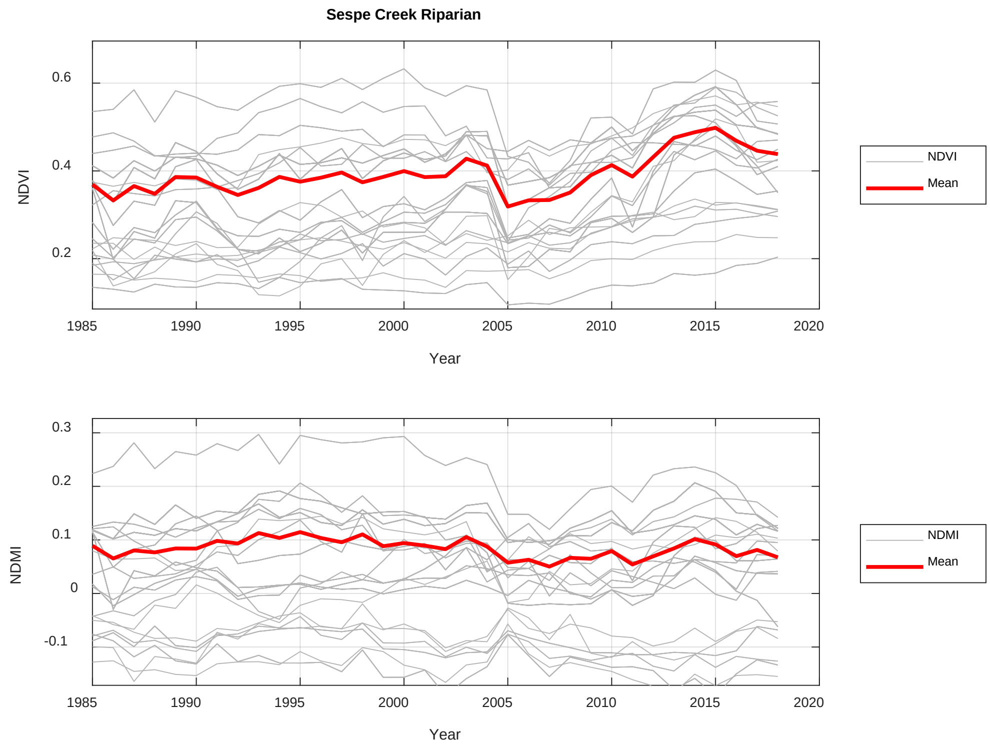

Figure 6.2-17. NDVI and NDMI for the Sespe Creek Riparian GDE Unit.

6.2.3 Summary of NDVI analysis

None of the GDE units showed a long-term decline in NDVI or NDMI, but some of the units had declines in NDVI and NDMI following floods and droughts. The largest declines in NDVI occurred following the 2012–2016 drought, where declines in vegetation health occurred in the Cienega, East Grove, and the Fillmore Basin Santa Clara River Riparian Shrubland. The largest declines in NDVI and NDMI were in the Cienega GDE unit where extensive die off of vegetation occurred during the drought and the area has yet to recover. NDVI was relatively constant through time in the Tributary Riparian GDE unit in the Fillmore and Piru Basins (outside of the effects of the Thomas Fire), and the Santa Clara River Riparian Shrubland in the Piru Basin. As expected NDVI dropped for many of the GDE units in 2005 following the 2005 flood which reworked large portions of the floodplain and uprooted vegetation.

6.3 Climate Change Effects

The effects of climate change on groundwater and interconnected surface water are discussed in DBS&A (2021). As an overview, the future groundwater levels forecast with assumed climate change factors (2070CF [climate change factor]) are not materially different from those recorded during the historical record (See GSP). The groundwater basin will continue to fill during wet years and decline during droughts. More frequent or severe droughts than those predicted by the model could affect groundwater levels and vegetation health. There is no suggestion of long-term chronic declines in groundwater levels, and models suggest that groundwater management has a small effect on rising groundwater flow.

Low water levels associated with major droughts (and accounting for future climate) are lower (typically 10–30 ft) than those of the historical time period (i.e., without the effects of climate change). Despite the lower, drought-induced water levels, the water levels return to historical high water level conditions during subsequent wet to normal precipitation periods. Statewide climate models suggest that there could be an increase in the duration, severity, and frequency of droughts and extreme floods through the remainder of 21st century (Swain et al. 2018) that could impact groundwater availability to GDEs but may also increase the frequency of flood events that are crucial for regrowth of the pioneer species that make up the GDEs along the Santa Clara River.

Climate change may alter the water demands of groundwater dependent vegetation, but the response is complex because decreased transpiration associated with increased carbon dioxide in the atmosphere may counter increased evaporation due to temperature increases (e.g., Klove et al. 2014). Monitoring of vegetation health (via NDVI) and components of the water balance in the Fillmore and Piru Basins (including rising groundwater) is therefore crucial for assessing the impacts of climate change.

6.4 Summary of Potential Effects

Potential effects on each GDE unit are summarized here based on four primary criteria:

1. The groundwater dependence of each unit (likely, uncertain, unlikely) based on hydrologic information and links with vegetation or interconnected surface water.
2. Ecological value (high, moderate, low), as described in Section 4.4.
3. Ecological condition of the GDEs within each unit (good, fair, poor), based on the information summarized in Section 4.1 and the NDVI/NDMI data presented in Section 5.2.
4. Susceptibility to changing groundwater conditions (high, moderate, low) based on available hydrologic data, climate change projections, and the GDE susceptibility classifications summarized in Table 6.1-1.

6.4.1 Piru

Del Valle GDE Unit

Groundwater Dependence: **Likely**

- Shallow groundwater measurements are rare in this unit but the historical persistence of the riparian forest and widespread willows and cottonwoods suggest that groundwater is likely within the rooting zone of plants.
- This GDE unit is a mixture of willows and cottonwoods that are likely connected to groundwater and facultative phreatophytes (e.g., mulefat and arrow-weed thickets) that may be connected to groundwater.
- Perennial surface water flows are likely connected with groundwater.

Ecological Value: **High**

- The Del Valle GDE Unit supports a relatively large number of special-status species and ecological communities, some of which are directly dependent on groundwater.
- The unit includes designated critical habitat for two federally listed species.

- The unit supports species and ecological communities that are vulnerable to changes in groundwater levels.

Ecological Condition: **Good**

- NDVI/ NDMI from 1985–2018 was relatively constant until a flood-related reduction in NDVI in 2005, followed by a gradual recovery until 2015, at which point NDVI began a gradual decline. As of 2018, NDVI had not declined below the long-term average. NDMI has declined slowly since 1995 and in 2018 was below the long-term average. These trends suggest that the structure and function of riparian vegetation in the unit may have experienced declines during the drought, particularly at the unit's downstream end. Although groundwater levels are relatively stable, and this reach receives wastewater effluent from upstream, the limited well data in this GDE unit are insufficient to determine whether groundwater pumping has contributed to the observed declining vegetation condition at the downstream end of the unit.
- Habitat suitability in the downstream portion of the unit may be somewhat compromised by the decline in vegetation condition for special-status species that rely on vegetation (e.g., riparian birds).
- Groundwater contributes to the ecological function and habitat value of the Santa Clara River, which supports native aquatic and semi-aquatic species and beneficial uses in and adjacent to the unit.

Susceptibility to Changing Groundwater Conditions: **Moderate**

- Shallow groundwater conditions in the unit since the 1930s have fluctuated considerably in response to drought and possibly other factors. An 80-ft decline with the 2012–2016 drought has been followed by a slow recovery, and by spring 2020 groundwater depth was again within the baseline range for non-drought conditions. The groundwater well is at the downstream end of the unit and therefore may not reflect groundwater elevation changes further upstream.
- Rooting depths of willows and cottonwoods in this unit range up to 6.9 ft while the average relative elevation is 10 ft for cottonwoods and 5.6 ft for red willow. The mulefat thickets are not likely connected to groundwater.
- The decline in groundwater at the downstream end of the unit exceeded the rooting depth of the vegetation. Groundwater declines in the rest of the unit were likely less based on the vegetation response to the drought, but there are no well data further upstream.
- Future changes in groundwater conditions in the unit related to increased groundwater pumping, declining effluent releases from upstream, or climate change could cause groundwater levels to fall below the baseline range and result in mortality of the trees that comprise the GDE. Projections of climate change and groundwater pumping in the future suggest that changes in groundwater elevation are unlikely.

The unit includes a perennial portion of the mainstem Santa Clara River that is considered an interconnected surface water. The degree to which interconnected surface waters in this reach are maintained by releases from upstream effluent sources is unknown, but is believed to be significant.

Potential for effects

Available data are insufficient to discern a clear effect on GDEs related to groundwater management in the Del Valle GDE Unit. Declines in vegetation health (as shown by NDVI decreases) at the downstream end of the reach suggest that GDEs in this unit are susceptible to drought conditions. However, the extent of GDEs in the unit is moderately susceptible to future decrease in groundwater elevation and surface water conditions and the synergistic effects of climate change (described in Section 5.3). In combination these changes could cause groundwater levels to fall below the baseline range and result in mortality of the trees that comprise the GDE and reduce the extent of the GDE. GDEs in this unit are not expected to experience future water levels that are lower than the historical period, but more frequent or longer duration droughts due to climate change could also affect the extent of vegetation-dominated GDEs.

Monitoring of ecological conditions and trends in vegetation-dominated GDEs and in the Santa Clara River using remote sensing is recommended and is further discussed in Section 6. Changes to upstream effluent releases may impact aquatic habitat and groundwater elevation in this GDE unit.

Santa Clara River Riparian Shrubland GDE Unit

Groundwater Dependence: **Possible**

- There are few shallow groundwater measurements in this unit. Spring 2019 water contours provided by United Water showed groundwater levels within 5–10 feet of the ground surface in parts of the unit.
- This GDE unit includes a large polygon of giant reed (arundo) at the downstream end of Piru Groundwater Basin, with patches of sandbar willows and large mulefat thickets. Given the shallow rooting depth of mulefat thickets (approximately 2 ft), they likely are connected to groundwater at shallower relative elevations, particularly near the downstream end of the GDE, where groundwater is closer to the surface. Other vegetation communities in the unit may be connected to groundwater. Small patches of sandbar willows are present in this unit and have average relative elevations in the Santa Clara River of 4.8 ft and the relative elevation ranges up to 9 ft (Appendix C).
- Intermittent surface water flows are not connected with groundwater.

Ecological Value: **Moderate**

- The Santa Clara River Riparian Shrubland GDE Unit supports a moderate number of special-status species and ecological communities, some of which are directly dependent on groundwater.
- The unit includes designated critical habitat for two federally listed species.
- This naturally intermittent reach supports regionally rare alluvial scrub habitat.
- The unit supports species and ecological communities that are somewhat vulnerable to changes in groundwater levels. Although the Santa Clara River in the unit provides migration habitat for southern California steelhead, the migration habitat has low vulnerability to groundwater reduction because most fish migration occurs during seasonal high surface water flow periods.

Ecological Condition: **Fair**

- NDVI/ NDMI values in the unit from 1985–2018 are low compared to other GDE units in the Fillmore and Piru groundwater basins, reflecting the relatively sparse vegetation. Mean NDVI and NDMI during this period increased in response to wet years and returned to long-term average values between the peaks. Mean NDVI or NDMI values in the unit do not appear responsive to drought. There is no evidence that groundwater management affects the ecological condition of this GDE unit.

- Current habitat suitability for those special-status species with likelihood to occur in the unit may have declined relative to historical conditions.
- Groundwater provides little or no contribution to the ecological function and habitat value of the Santa Clara River in the unit, which is intermittent and mainly supports seasonal migration habitat for anadromous fishes.

Susceptibility to Changing Groundwater Conditions: **Low**

- Shallow groundwater conditions in the unit since the 1970s have fluctuated in response to drought, with sharp drops followed by recovery to pre-drought levels. As of fall 2019, the shallow groundwater level recorded in the unit had apparently recovered from the large drop associated with the 2012–2016 drought and was again within the baseline range. So long as the duration and frequency of droughts does not change, the effects on this GDE unit are expected to be minimal. The sandbar willows and eucalyptus occur on the margin of the unit adjacent to agricultural lands and may subsist on agricultural runoff.
- Future changes in groundwater conditions in the unit related to increased groundwater production or climate change are not expected to cause groundwater levels to fall below the baseline range. As a result the potential effects on GDEs are deemed negligible.
- The unit includes an intermittent reach of the mainstem Santa Clara River that does not provide perennial aquatic habitat or beneficial uses.

Potential for effects

Modeling suggests that groundwater levels are likely to be stable in this reach. Moreover, the vegetation that makes up this unit may use groundwater when groundwater levels are high in the spring, but high groundwater levels are likely not persistent in this unit. The unit is therefore likely not strongly dependent upon groundwater and is comprised of sparse low water use species with relatively shallow rooting depths. Therefore, the potential for effects on this unit is low.

Monitoring of ecological conditions and trends in vegetation-dominated GDEs and in the Santa Clara River using remote sensing is recommended and is further discussed in Section 6.

Cienega GDE Unit

Groundwater Dependence: **Certain**

- Rising groundwater in this unit provides surface flows and keeps groundwater within the rooting zone (5–15 ft) of the vegetation.

Ecological Value: **High**

- The Cienega GDE Unit supports a moderate number of special-status species, some of which are directly dependent on groundwater.
- The unit includes designated critical habitat for two federally listed species.
- The unit supports species and ecological communities that are vulnerable to changes in groundwater levels.

Ecological Condition: **Poor**

- NDVI/ NDMI trends from 1985–2018 indicate vegetation responds mainly to precipitation and runoff (e.g., drought) but a decline in NDMI from 2005–2014 suggests other factors, potentially including groundwater management, may influence vegetation condition in the unit. As of 2018 the vegetation structure and functions in the Cienega GDE Unit are no longer intact or within the range of natural variability, due at least in part to vegetation mortality from the 2012–2016 drought. The degree to which groundwater management has exacerbated the decline in groundwater elevation during the recent and other droughts is not known.

- Habitat suitability in the unit for special-status species relying on vegetation (e.g., riparian birds) may be compromised by the decline in vegetation condition during droughts.
- Groundwater contributes to the ecological function and habitat value of the Santa Clara River, which supports native aquatic and semi-aquatic species and beneficial uses in and adjacent to the unit.

Susceptibility to Changing Groundwater Conditions: **High**

- Shallow groundwater conditions in the unit since the 1970s have fluctuated in response to drought, with sharp drops followed by recovery within about one year. By 2019–2020, shallow groundwater levels recorded at the single well in the unit were again within the baseline range for the period of record, but the native cottonwoods and willows died during the drought and have not yet recovered. Those species are anticipated to recover once a future flooding event(s) removes the debris and the land surface is better conditioned for repopulation. The recent expansion of arundo in this GDE unit may limit re-establishment of cottonwoods and willows, particularly if groundwater conditions decline below cottonwood and willow rooting depth. The time required for that recovery is unknown.
- Reported maximum rooting depths of willows and cottonwoods in this unit range up to 6.9 ft while the average relative elevation is 10 ft for cottonwoods and 5.6 ft for red willow. The mulefat thickets generally occur at higher relative elevations in this reach and are not likely connected to groundwater.
- Future changes in groundwater conditions in the unit related to increased groundwater production or climate change could cause groundwater levels to fall below the baseline range and result in potential mortality to vegetation that comprises the GDE. Projections of climate change and groundwater pumping in the future suggest that changes in groundwater elevation are unlikely. However, based on widespread tree mortality during the 2012–2016 drought, future changes in the frequency or duration of droughts similar to 2012–2016 could have a deleterious effect on the GDE.
- The unit includes a perennial portion of the mainstem Santa Clara River, which is considered an interconnected surface water.

Potential for effects

Modeling suggests that climate change is unlikely to cause groundwater levels to drop below the baseline range. However, changes to the duration or severity of droughts could impact the health of the GDE through increased tree mortality. Moreover, it is possible that arundo could replace the cottonwood and willow forests that died during the 2012–2016 drought, which would lead to a decrease in habitat for other species (i.e., riparian birds).

Monitoring of ecological conditions and trends in vegetation-dominated GDEs and in the Santa Clara River using remote sensing is recommended and is further discussed in Section 6. For this unit, coupling remote sensing and shallow groundwater elevation monitoring, particularly during and following droughts, is recommended.

Piru Creek Riparian GDE Unit

Groundwater Dependence: **Uncertain/Unlikely**

- Groundwater wells in the rooting zone of plants (<30 ft) are rare in this unit.
- Releases from Santa Felicia Dam sustain surface flows.

Ecological Value: **High**

- The Piru Creek Riparian Complex GDE Unit supports a relatively high number of special-status species and ecological communities, some of which are directly dependent on groundwater.
- The unit includes designated critical habitat for two federally listed species.
- The unit supports species and ecological communities whose habitat in the unit may be vulnerable to changes in groundwater levels.

Ecological Condition: **Good**

- NDVI/ NDMI from 1985–2018 was relatively constant and seemingly unresponsive to droughts and floods. These trends suggest that the structure and function of riparian vegetation in the unit are relatively intact and within the range of natural variability. Riparian vegetation in the unit may be sustained by releases from Santa Felicia Dam, which likely raise the groundwater level in this area. Available information indicates that adverse impacts are not likely occurring in the unit, at least partially as a result of current surface water releases that provide water to at least the near-channel portions of the GDE Unit even if groundwater is below the rooting depth of most riparian plants.
- Suitable habitat is present for those special-status species with likelihood to occur in the unit.
- Releases from Santa Felicia Dam likely raise groundwater levels and help maintain baseflows over some portion of the length of Piru Creek, thus contributing to the ecological function and habitat value of Piru Creek under current conditions. Piru Creek supports native aquatic and semi-aquatic species and beneficial uses in and adjacent to the unit.

Susceptibility to Changing Groundwater Conditions: **Undetermined, likely low**

- There are no monitoring wells in the unit and shallow groundwater conditions and trends in the unit are therefore unknown.
- Assuming continued releases from Santa Felicia Dam, it is unlikely that future changes in groundwater conditions in the unit related to increased groundwater production or climate change will cause groundwater levels to fall below the baseline range. As a result, the potential effects on GDEs are deemed negligible.
- Piru Creek in this GDE unit currently has perennial flow over most of its length due to releases from Santa Felicia Dam, but surface flow is not connected to groundwater. The lower portion of Piru Creek near the confluence with the Santa Clara River periodically lacks surface flow. As described previously, releases from Santa Felicia Dam likely raise groundwater levels and help maintain baseflows in Piru Creek.

Potential for effects

Available data are insufficient to discern a clear effect on GDEs related to groundwater management in the Piru Creek Riparian Complex GDE Unit. However, groundwater levels and baseflows in Piru Creek are likely maintained by releases from Santa Felicia Dam, thus the susceptibility of GDEs in the unit (i.e., vegetation mortality) to future changes in groundwater conditions and the synergistic effects of climate change is low. With continued dam releases, the potential for these combined effects to cause groundwater levels to fall below the baseline range and result in potential effects on GDEs is low.

Monitoring of ecological conditions and trends in vegetation-dominated GDEs and in Piru Creek using remote sensing is recommended and is further discussed in Section 6. Coupling remote sensing with a shallow groundwater monitoring well would help to assess the degree to which groundwater dynamics affect GDEs in this unit. In this GDE unit, changes to releases from Santa Felicia Dam may affect aquatic habitat and groundwater elevation.

Tributary Riparian GDE Unit

Groundwater Dependence: **Unlikely**

- There are no shallow groundwater measurements in this unit. Based on the position in the landscape, a connection to the regional aquifer is unlikely.
- This GDE unit contains a mixture of obligate and facultative phreatophytes that may be connected to groundwater (unlikely) or surviving on episodic surface water flows.
- Intermittent and ephemeral surface water flows are not connected with groundwater. Hopper Canyon Creek within the Piru Basin may be a passage corridor for *O. mykiss*, but is likely dependent on surface water flows rather than groundwater for passage.

Ecological Value: **Moderate**

- The Tributary Riparian GDE Unit supports a relatively low number of special-status species and ecological communities and the dependence of these species and communities on groundwater is uncertain.
- The unit includes designated critical habitat for one federally listed species.
- The species and ecological communities in the unit have low vulnerability to changes in groundwater levels. The tributary streams in this GDE unit are considered intermittent or ephemeral and are not connected to groundwater. The tributaries within the basin boundary currently provide little habitat value for fish and other aquatic species. Hopper Canyon Creek contains critical habitat for southern California steelhead, but it is not known if flows on Hopper Canyon Creek within the basin are dependent on groundwater. Hopper Canyon Creek and other tributaries support valuable riparian habitat and likely movement corridors for a variety of native wildlife species.

Ecological Condition: **Fair**

- NDVI/ NDMI trends in the unit from 1985–2018 show relatively little change in vegetation condition during most of this period, with little change in response to droughts or floods. It is unlikely that adverse impacts are occurring in the unit as a result of current groundwater management.
- Suitable habitat is present for those special-status species with likelihood to occur in the unit.
- Groundwater likely provides little or no contribution to the ecological function and habitat value of the ephemeral tributaries in the unit, which support vegetation but have little habitat value for fish or other aquatic species.

Susceptibility to Changing Groundwater Conditions: **Moderate**

- There are no monitoring wells in the unit and shallow groundwater conditions and trends in the unit are therefore unknown.
- Model results suggest that the groundwater elevations are unlikely to decline under climate change, unless droughts are more frequent or more severe. Moreover, because this GDE unit is disconnected from the aquifer, future changes in groundwater conditions in the unit related to increased groundwater production or climate change are unlikely to cause groundwater levels to fall below the baseline range and result in mortality to vegetation that comprises the GDE.
- Streams within the unit are ephemeral and do not provide perennial aquatic habitat or beneficial uses.

Potential for effects

Based on the position of this GDE unit in the watershed, it is unlikely that groundwater management will affect the health of the GDE. Model results suggest that the groundwater levels will remain constant in the Fillmore and Piru Basins under climate change (DBS&A 2021). If groundwater pumping were to increase in this GDE unit, monitoring of groundwater levels and GDE health (using remote sensing) would be necessary. GDEs in the unit likely have low susceptibility to future changes in groundwater conditions and the synergistic effects of climate change.

6.4.2 Fillmore

Santa Clara River Riparian Shrubland GDE Unit

Groundwater Dependence: **Possible**

- There are few shallow groundwater measurements in this unit. Spring 2019 water contours provided by United Water showed groundwater levels within 5–10 feet of the ground surface in parts of the unit, but these contours have a large uncertainty in this reach due to the paucity of shallow wells.
- The Santa Clara River Riparian Shrubland GDE unit is primarily made up of vegetation that may or may not rely on groundwater.
- Intermittent surface water flows are likely not interconnected with groundwater.

Ecological Value: **Moderate**

- The Santa Clara River Riparian Shrubland GDE Unit supports a relatively large number of special-status species and ecological communities, some of which are directly dependent on groundwater.
- The unit includes designated critical habitat for two federally listed species.
- This naturally intermittent reach supports regionally rare alluvial scrub habitat.
- The unit supports species and ecological communities that are vulnerable to changes in groundwater levels. Although the Santa Clara River in the unit provides migration habitat for southern California steelhead and Pacific lamprey, the migration habitat has low vulnerability to groundwater reduction because most fish migration occurs during seasonal high surface water flow periods, and flows in this reach are not connected to groundwater.

Ecological Condition: **Fair**

- NDVI/ NDMI trends in the Unit from 1985–2018 indicate a decline in vegetation condition since 2012 relative to the long-term average, likely in response to decreased precipitation and runoff (e.g., drought). The current vegetation structure and functions may be compromised and somewhat below the range of natural variability. Groundwater management is unlikely to have an adverse effect on this GDE unit because summer groundwater is typically deeper than the rooting depth of vegetation in the reach.

- Current habitat suitability for those special-status species with likelihood to occur in the unit may have declined relative to historical conditions.
- Because surface water in this reach is disconnected from groundwater, groundwater provides little or no contribution to the ecological function and habitat value of the Santa Clara River in the unit, which is intermittent and mainly supports seasonal migration habitat for anadromous fishes.

Susceptibility to Changing Groundwater Conditions: **Moderate**

- Since 2015, shallow groundwater conditions in the unit have fluctuated in response to drought, with a sharp drop in 2013 followed by slow recovery. By 2019, the shallow groundwater level recorded in the unit had nearly returned to the long-term average (i.e., just below the baseline range).
- Future changes in groundwater conditions in the Unit related to increased groundwater production or climate changes that differ from modeled predictions could cause groundwater levels to fall below the baseline range and result in mortality to vegetation that comprises the GDE. Projections of climate change and groundwater pumping in the future suggest that changes in groundwater elevation are unlikely. However, based on widespread tree mortality during the 2012–2016 drought, future changes in the frequency or duration of droughts similar to 2012–2016 could have a deleterious effect on the GDE, particularly at the downstream margin of the unit.
- The unit includes an intermittent reach of the mainstem Santa Clara River that does not provide perennial aquatic habitat or beneficial uses.

Potential for effects

Modeling suggests that groundwater levels near the Santa Clara River Riparian Shrubland GDE Unit are unlikely to change due to climate change or modest changes to groundwater pumping. However, GDEs in the unit are moderately susceptible to future changes in groundwater conditions and the synergistic effects of climate change, which in combination could cause groundwater levels to fall below the baseline range and result in potential effects on GDEs if climate change differs from modeled conditions.

Monitoring of ecological conditions and trends in vegetation-dominated GDEs and in the Santa Clara River using remote sensing is recommended and is further discussed in Section 6.

East Grove GDE Unit

Groundwater Dependence: **Certain**

- This GDE unit occurs at a site of rising groundwater.
- This GDE unit is primarily made up of cottonwoods and willows that rely on shallow groundwater.
- Perennial surface water flows are rising groundwater.

Ecological Value: **High**

- The East Grove GDE Unit supports a relatively large number of special-status species and ecological communities, some of which are directly dependent on groundwater.
- The unit includes designated critical habitat for two federally listed species.
- The unit supports species and ecological communities that are vulnerable to changes in groundwater levels.

Ecological Condition: **Good**

- NDVI/ NDMI trends from 1985–2018 show minimal change in the unit and indicate vegetation responds mainly to precipitation and runoff (e.g., drought). The vegetation structure and functions are relatively intact and within the range of natural variability, and adverse impacts are not likely occurring in the unit as a result of current groundwater management.
- Suitable habitat is present for those special-status species with likelihood to occur in the unit.
- With the exception of flow during storm events, Santa Clara River surface flows in this unit are composed of rising groundwater. As a result, groundwater contributes to the ecological function and habitat value of the Santa Clara River, which supports native aquatic and semi-aquatic species and beneficial uses in and adjacent to the unit.

Susceptibility to Changing Groundwater Conditions: **Moderate**

- Shallow groundwater conditions in the unit since the 1960s have fluctuated considerably in response to drought and possibly other factors. By 2019–2020, shallow groundwater levels recorded at the two wells in the unit were again within the baseline range for each well.
- Recorded maximum rooting depths of willows and cottonwoods in this unit range up to 6.9 ft while the average relative elevation is 10 ft for cottonwoods and 5.6 ft for red willow. Mulefat has a rooting depth of 2 ft (Appendix C), and the mulefat thickets are not likely connected to groundwater.
- Future changes in groundwater conditions in the unit related to increased groundwater production or climate change could cause groundwater levels to fall below the baseline range and result in mortality to vegetation that comprises the GDE. Projections of climate change and groundwater pumping in the future suggest that changes in groundwater elevation are unlikely. However, because the extent of rising groundwater decreased and vegetation health declined at the upstream end of the unit during the 2012–2016 drought, changes in the frequency or duration of droughts to make 2012-2016 conditions more common could have a deleterious effect on the GDE.
- The unit includes a perennial portion of the mainstem Santa Clara River, which is an area of rising groundwater.

Potential for effects

Modeling suggests that groundwater levels are unlikely to drop below the baseline range due to climate change. However, changes to the duration or severity of droughts could impact the health of the GDE through increased tree mortality.

Monitoring of ecological conditions and trends in vegetation-dominated GDEs and in the Santa Clara River using remote sensing is recommended and is further discussed in Section 6. Additionally, monitoring of surface water flows or groundwater elevations should be conducted to assess any changes to hydrology that might impact GDEs.

Cienega GDE Unit

Groundwater Dependence: **Certain**

- Rising groundwater in this unit provides surface flows and keeps groundwater within the rooting zone (5–15 ft) of the vegetation.

Ecological Value: **High**

- The Cienega GDE Unit supports a moderate number of special-status species, some of which are directly dependent on groundwater.
- The unit includes designated critical habitat for two federally listed species.
- The unit supports species and ecological communities that are vulnerable to changes in groundwater levels.

Ecological Condition: **Poor**

- NDVI/ NDMI trends from 1985–2018 indicate vegetation responds mainly to precipitation and runoff (e.g., drought) but a decline in NDMI from 2005–2014 suggests other factors, potentially including groundwater management, may influence vegetation condition in the Unit. As of 2018, the vegetation structure and functions in the Cienega GDE Unit are no longer intact or within the range of natural variability, due at least in part to vegetation mortality from the 2012–2016 drought. The degree to which groundwater management has exacerbated the decline in groundwater elevation during the recent and other droughts is not known.
- Habitat suitability in the unit may be compromised by the decline in vegetation condition during droughts for special-status species relying on vegetation (e.g., riparian birds).
- Groundwater contributes to the ecological function and habitat value of the Santa Clara River, which supports native aquatic and semi-aquatic species and beneficial uses in and adjacent to the unit.

Susceptibility to Changing Groundwater Conditions: **High**

- Shallow groundwater conditions in the unit have fluctuated in response to drought since the 1970s, with sharp drops followed by recovery within about one year. By 2019–2020, shallow groundwater levels recorded at the single well in the unit were again within the baseline range for the period of record, but the native cottonwoods and willows died during the drought and have not yet recovered. Those species are anticipated to recovery once a future flooding event(s) removes the debris and the land surface is better conditioned for repopulation. The time required for that recovery is unknown.
- Reported maximum rooting depths of willows and cottonwoods in this unit range up to 6.9 ft while the average relative elevation is 10 ft for cottonwoods and 5.6 ft for red willow. The mulefat thickets are not likely connected to groundwater.
- Future changes in groundwater conditions in the unit related to increased groundwater production or climate change could cause groundwater levels to fall below the baseline range and result in potential mortality to vegetation that comprises the GDE.
- Projections of climate change and groundwater pumping in the future suggest that changes in groundwater elevation are unlikely. However, based on widespread tree mortality during the 2012–2016 drought, future changes in the frequency or duration of droughts similar to 2012–2016 could have a deleterious effect on the GDE.

- The unit includes a perennial portion of the mainstem Santa Clara River, which is considered an interconnected surface water.

Potential for effects

Modeling suggests that groundwater levels are unlikely to drop below the baseline ranged due to climate change. However, changes to the duration or severity of droughts could impact the health of the GDE through increased tree mortality. Moreover, it is possible that arundo could replace the cottonwood and willow forests that died during the 2012–2016 drought, which would lead to a decrease in habitat for other species, including two special-status riparian bird species (i.e., southwestern willow flycatcher and least Bell's vireo). The expansion of arundo could increase evapotranspiration in this reach and reduce water availability for other beneficial users.

Monitoring of ecological conditions and trends in vegetation-dominated GDEs and in the Santa Clara River using remote sensing is recommended and is further discussed in Section 6. For this unit, coupling remote sensing and shallow groundwater elevation monitoring, particularly during and following droughts, is recommended.

Tributary Riparian GDE Unit

Groundwater Dependence: **Unlikely**

- There are no shallow groundwater measurements in this unit. Based on the position in the landscape a connection to the regional aquifer is unlikely.
- This potential GDE unit is primarily made up of coast live oaks, which are facultative phreatophytes that may be connected to groundwater or episodic surface water flows associated with storm events.
- Ephemeral surface water flows are not connected with groundwater.

Ecological Value: **Moderate**

- The Tributary Riparian GDE Unit supports a relatively low number of special-status species and ecological communities and the dependence of these species and communities on groundwater is uncertain.
- There is no designated critical habitat in the unit.
- The species and ecological communities in the unit have low vulnerability to changes in groundwater levels. The tributary streams in this GDE unit are considered ephemeral and are not connected to groundwater, thus they provide little habitat value for fish and other aquatic species. Pole Creek may have supported steelhead, but access to habitat upstream of the channelized portion of the channel is currently blocked. Currently, flows in Pole Creek within the basin are unlikely to be connected to groundwater. The tributaries support valuable riparian habitat and likely movement corridors for a variety of native wildlife species.

Ecological Condition: **Fair**

- NDVI/ NDMI trends in the unit from 1985–2018 indicate relatively little change in vegetation condition during most of this period, with a decline in response the most recent drought (2012–2016) and potential damage to vegetation in 2018 resulting from the Thomas Fire. As a result, the current vegetation structure and functions may be compromised and below the range of natural variability, but it is unlikely that adverse impacts are occurring in the unit as a result of current groundwater management.

- Current habitat suitability for those special-status species with likelihood to occur in the unit may have declined relative to historical conditions.
- Groundwater currently provides little or no contribution to the ecological function and habitat value of the ephemeral tributaries in the unit, which support vegetation but have little habitat value for fish or other aquatic species. Mapped habitat in Pole Creek is almost entirely upstream of the basin.

Susceptibility to Changing Groundwater Conditions: **Low**

- There are no monitoring wells in the unit and shallow groundwater conditions and trends in the unit are therefore unknown, but the position of the tributaries suggests they are unlikely to be linked to regional groundwater.
- Because this GDE unit is disconnected from the aquifer, future changes in groundwater conditions in the unit related to increased groundwater production or climate change are unlikely to cause groundwater levels to fall below the baseline range and result in mortality to vegetation that comprises the GDE.
- Streams within the unit are ephemeral and do not provide perennial aquatic habitat or beneficial uses.

Potential for effects

Based on the position of this GDE unit in the watershed, it is unlikely that groundwater management will affect the health of the GDE. If groundwater pumping were to increase in this GDE unit, monitoring of groundwater levels and GDE health (using remote sensing) would be necessary. GDEs in the unit likely have low susceptibility to future changes in groundwater conditions and the synergistic effects of climate change on groundwater levels.

Sespe Creek Riparian GDE Unit

Groundwater Dependence: **Possible**

- This GDE unit occurs downstream of the confined canyon reach of Sespe Creek.
- Groundwater depths are typically >30 ft bgs, but there are few wells within the shallow groundwater zone.
- This GDE unit is primarily made up of willows and cottonwoods that rely on shallow groundwater or surface water and some communities (e.g., mulefat) that may rely on groundwater for part of their water needs.
- Surface water flows are perennial for the upper portions of the reach and intermittent downstream. The connection to groundwater in the upper portion is unknown but unlikely.

Ecological Value: **Moderately High**

- The Sespe Creek Riparian GDE Unit supports a moderate number of special-status species and ecological communities, some of which are directly dependent on groundwater.
- The unit includes designated critical habitat for one federally listed species.
- The unit supports species and ecological communities whose habitat in the unit may be vulnerable to changes in groundwater levels.

Ecological Condition: **Good**

- NDVI/ NDMI from 1985–2018 was relatively constant until a sharp flood-related reduction in NDVI in 2005 followed by a gradual recovery until 2015, at which point

NDVI began a gradual decline. As of 2018, NDVI was still within the historical range of variability. NDMI has fluctuated little during the period of record. These trends suggest that the structure and function of riparian vegetation in the unit are relatively intact and within the range of natural variability. Available information indicates that adverse impacts are not likely occurring in the unit as a result of current groundwater management. Invasive species, particularly arundo, are a continuing threat to existing GDEs in this unit.

- Suitable habitat is present for those special-status species with likelihood to occur in the unit.
- It is undetermined if or to what extent groundwater contributes to the ecological function and habitat value of Sespe Creek, which supports native aquatic and semi-aquatic species and beneficial uses in and adjacent to the unit.

Susceptibility to Changing Groundwater Conditions: **Low**

- There are no shallow monitoring wells in the unit and shallow groundwater conditions and trends in the unit are therefore unknown.
- Climate change effects on Sespe Creek are unknown. Changes to the duration or extent of droughts may cause tree mortality within the GDE unit.
- The upper 2 miles or so of Sespe Creek in this GDE unit are considered perennial, while the lower portion of Sespe Creek is likely intermittent. Sespe Creek’s connection to groundwater is undetermined.

Potential for effects

Modeling suggests that groundwater elevations along the Santa Clara River are unlikely to change due to changes in climate or groundwater pumping in the future. The effects of climate change on groundwater levels further upstream on Sespe Creek are uncertain. However, changes in the duration or severity of droughts could impact the health of the GDE through increased physiological stress to riparian vegetation, leading to branch dieback or whole tree mortality.

Monitoring of ecological conditions and trends in vegetation-dominated GDEs and in Sespe Creek using remote sensing is recommended and is further discussed in Section 6. Additionally, monitoring of surface water flows or groundwater elevations should be conducted to assess any changes to hydrology that might impact GDEs. Further assessing the extent of interconnected surface water in the reach will help to determine potential groundwater impacts to aquatic habitat.

6.4.3 GDEs important to consider when establishing sustainable management criteria

The evaluations of the GDE units in the Fillmore and Piru basins suggests that the following units are the most important for inclusion in the GSP analyses and the development of Sustainable Management Criteria:

- Del Valle,
- Cienega, and
- East Grove.

These units encompass areas of rising groundwater (and hence aquatic habitat) and have historically supported large, tree-forested wetland complexes. For all of the units, impacts to aquatic and riparian habitat occur during droughts. The Del Valle GDE Unit is likely sensitive to upstream effluent releases, and decreases in effluent releases could impact habitat. Because the aquifer is thin in this GDE unit, there are few wells present.

The Cienega GDE Unit is the most sensitive to changes in groundwater associated with droughts. Prolonged droughts result in groundwater levels below the rooting depth of vegetation and caused extensive die-off during the 2012–2016 drought. During the 2012–2016 drought, the decreased elevation of groundwater stopped rising groundwater in this reach and caused the channel to go dry.

In the East Grove, impacts during the 2012–2016 drought resulted in decreased vegetation health at the upstream end of the unit, and decreased the extent of rising groundwater, but surface flows persisted over at least part of the reach for the duration of the drought. If droughts become more severe in magnitude or duration, the East Grove may be more susceptible to impacts from droughts.

7 GDE MONITORING

GDEs were considered as part of the groundwater Monitoring Program (DBS&A 2020). Remote sensing of GDEs using NDVI or other widely available data is recommended to monitor the health of GDEs through time. It is expected that NDVI will exhibit some natural variability given the dynamic nature of this river system. For example, NDVI would be expected to initially decline following the large floods that tend to uproot vegetation and provide fresh bare mineral surfaces and appropriate hydrological conditions for seedling establishment of cottonwoods and willows, but then increase again as native cottonwood and willow vegetation becomes established and individual shrubs and trees develop and mature. Groundwater wells near the basin boundaries (the Del Valle, Cienega, and East Grove GDE units) can be used to determine changes in groundwater levels. Such data on groundwater levels through time could then be examined to see if there are clear correlations with observed trends in NDVI or related indicators of GDE health. Continued monitoring of rising groundwater at the Cienega and East Grove sites will help to validate future models and help to assess the availability of aquatic habitat. Optional monitoring elements include supporting aquatic habitat assessments in the East Grove and Cienega areas.

8 PROJECTS AND MANAGEMENT ACTIONS

Projects and management actions (PMAs) are discussed in Section 4 of the GSP. At time of the release of this technical memorandum, the FPBGSA had not determined that projects and/or management actions were needed to sustainably manage the groundwater resources in the Fillmore or Piru basins.

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Appendices

Appendix A

Vegetation Communities in the Fillmore and Piru Groundwater Basins

Table A-1. All vegetation communities mapped in the Fillmore and Piru groundwater basins and corresponding vegetation classification crosswalk.

CALVEG classification	Manual of California Vegetation (MCV)[1]	Acreage	
		Fillmore Groundwater Basin	Piru Groundwater Basin
Alkaline mixed grasses and forbs Alliance	*Cressa truxillensis - Distichlis spicata* Herbaceous Alliance	-	2.2
Annual grasses and forbs Alliance	*Brassica nigra - Raphanus* spp. Herbaceous Semi-Natural Alliance	1,291.1	377.4
Arrowweed Alliance	*Pluchea sericea* Shrubland Alliance	-	31.5
Baccharis (riparian) Alliance	*Baccharis salicifolia* Shrubland Alliance	1,216.1	952.2
Barren	Riverwash Riverwash herbaceous	138.5	84.9
Black cottonwood Alliance	*Populus trichocarpa* Forest Alliance	320.6	-
Black walnut Alliance	*Juglans californica* Woodland Alliance	6.8	3.7
Big sagebrush Alliance	*Artemisia tridentata* Shrubland Alliance	4.0	54.1
Blue oak Alliance	n/a	4.0	-
Buckwheat	*Encelia californica - Eriogonum cinereum* Shrubland Alliance *Eriogonum fasciculatum* Shrubland Alliance	113.8	27.3
California sagebrush Alliance	*Artemisia californica* Shrubland Alliance *Salvia apiana* Shrubland Alliance	1,727.4	639.8
California sycamore Alliance	*Platanus racemosa* Woodland Alliance	-	4.6
Ceanothus chaparral Alliance	n/a	44.2	-
Chamise Alliance	n/a	2.8	-
Coast live oak Alliance	*Quercus agrifolia* Woodland Alliance	815.8	65.4
Coastal mixed hardwood Alliance	n/a	77.8	4.0
Coyote brush Alliance	*Baccharis pilularis* Shrubland Alliance	4.1	0.9
Eucalyptus Alliance	*Eucalyptus* spp. - *Ailanthus altissima - Robinia pseudoacacia* Woodland Semi-Natural Alliance	74.7	14.4
Fremont cottonwood Alliance	*Populus fremontii* Forest Alliance	0.7	244.8
Giant reed/pampas grass Alliance	*Phragmites australis - Arundo donax* Herbaceous Semi-Natural Alliance	271.6	183.0
Lower montane mixed chaparral Alliance	n/a	170.7	3.1
Manzanita chaparral Alliance	n/a	<0.1	-
Non-native/ornamental conifer/hardwood Alliance	n/a	13.0	2.6
Non-native/ornamental grass Alliance	Non-native Grass and Forb Mapping Unit	195.0	90.2
Non-native/ornamental hardwood Alliance	*Schinus* (*molle, terebinthifolius*) - *Myoporum laetum* Woodland Semi-Natural Alliance	75.7	20.2
Perennial grasses and forbs Alliance	*Corethrogyne filaginifolia - Eriogonum* (*elongatum, nudum*) Herbaceous Alliance *Leymus cinereus - Leymus triticoides* Herbaceous Alliance	6.3	-
Riparian mixed hardwood Alliance	*Sambucus nigra* Shrubland Alliance *Salix laevigata* Woodland Alliance	396.2	286.4

CALVEG classification	**Manual of California Vegetation (MCV)**[1]	**Acreage**	
		Fillmore Groundwater Basin	**Piru Groundwater Basin**
Riparian mixed shrub Alliance	*Heterotheca* (*oregona*, *sessiliflora*) Herbaceous Alliance *Salix exigua* Shrubland Alliance	152.2	557.1
Riversidean alluvial scrub Alliance	n/a	52.5	3.6
Saltbrush Alliance	*Atriplex lentiformis* Shrubland Alliance	54.1	58.1
Scalebroom Alliance	*Lepidospartum squamatum* Shrubland Alliance	320.1	118.0
Scrub oak Alliance	n/a	1.1	-
Soft scrub-mixed chaparral Alliance	n/a	62.9	-
Sumac shrub Alliance	n/a	522.4	0.9
Tamarisk Alliance	*Tamarix* spp. Shrubland Semi-Natural Alliance	-	37.6
Tule-cattail Alliance	*Schoenoplectus* (*acutus*, *californicus*) Herbaceous Alliance *Typha* (*angustifolia*, *domingensis*, *latifolia*) Herbaceous Alliance	8.1	3.3
Wet meadow	n/a	0.4	-
Willow/Willow (shrub) Alliance	*Salix lasiolepis* Shrubland Alliance *Salix lucida* Woodland Alliance	63.5	3.9
No corresponding CalVeg type[2]	*Olea europaea* Woodland Semi-Natural Alliance [Provisional]	-	2.7
	Pseudognaphalium leucocephalum Herbaceous Alliance [Provisional]	-	0.2
	Ricinus communis Shrubland Semi-Natural Alliance [Provisional]	-	2.2
All agriculture		12,436.9	6,123.8
All water		6.7	14.6
All development		1,968.6	903.2
Total		**22,620.3**	**10,922.0**

1 An n/a in this column signifies that no corresponding MCV type was mapped in the Vegetation Mapping of Santa Clara River dataset (Stillwater Sciences 2019).
2 These are provisional MCV alliances and as such do not have a corresponding CalVeg alliance.

Appendix B

Special-status Terrestrial and Aquatic Wildlife Species from Database Queries with No Reliance on Fillmore or Piru Groundwater Dependent Ecosystem Units

Table. B-1. Special-status terrestrial and aquatic wildlife species from database queries that are not groundwater dependent and/or unlikely to occur in the Fillmore and Piru groundwater dependent ecosystem units.

Common name *Scientific name*	**Status[1] Federal/State**	**Potential to occur in GDE Basins[2]**	**Documented occurrence location**		**Query source[3]**	**GDE . association[4]**	**Habitat and documented occurrences in GDE Management Units**
			Fillmore GDE units	**Piru GDE units**			
Amphibian							
California red-legged frog *Rana draytonii*	FT/SSC	Unlikely	No documented occurrences	No documented occurrences	CAFSD	Direct	Breeds in still or slow-moving water with emergent and overhanging vegetation, including wetlands, wet meadows, ponds, lakes, and low-gradient, slow-moving stream reaches with permanent pools; uses adjacent uplands for dispersal and summer retreat. Relies on surface water that may be supported by groundwater (Rohde et al. 2019).
Foothill yellow-legged frog *Rana boylii*	FSS, BLMS/SE	None	Extirpated	Extirpated	CNDDB, CAFSD	Direct	Shallow tributaries and mainstems of perennial streams and rivers, typically associated with cobble or boulder substrate; occasionally found in isolated pools, vegetated backwaters, and deep, shaded, spring-fed pools. The frog is reliant on surface water that may be fed by groundwater. Population has been extirpated from the Santa Clara River Valley Basin (CDFW 2019).
Western spadefoot *Spea hammondii*	BLMS/SSC	Unlikely	No documented occurrences	No documented occurrences	CAFSD	No known reliance on groundwater	Areas with sparse vegetation and/or short grasses in sandy or gravelly soils; primarily in washes, river floodplains, alluvial fans, playas, alkali flats, among grasslands, chaparral, or pine-oak woodlands; breeds in ephemeral rain pools with no predators.

Common name ***Scientific name***	**Status[1] Federal/State**	**Potential to occur in GDE Basins[2]**	**Documented occurrence location**		**Query source[3]**	**GDE . association[4]**	**Habitat and documented occurrences in GDE Management Units**
			Fillmore GDE units	**Piru GDE units**			
Reptile							
California legless lizard *Anniella sp.*	–/SSC	Likely	Santa Clara River Riparian Shrubland	Tributary Riparian	CNDDB	No known reliance on groundwater	Occurs in moist, warm, loose soil with plant cover and in sparsely vegetated areas of chaparral, pine-oak woodlands, desert scrub, and stream terraces with sycamores, cottonwoods, or oaks. Forages in loose soil, sand, and leaf litter for larval insects, beetles, termites, and spiders. Historical observation in the vicinity of Sespe Creek and Santa Clara River confluence in 1981 (CDFW2019). Observations in the vicinity of Tributary Riparian GDE Unit include Hopper Canyon in 2008 (CDFW 2019).
Coast horned lizard *Phrynosoma blainvillii*	FSS, BLMS/SSC	Likely	East Grove Riparian Complex	Santa Clara River Riparian Shrubland	CNDDB	No known reliance on groundwater	Open areas with sandy soil and/or patches of loose soil and low/scattered vegetation in scrublands, grasslands, conifer forests, and woodlands; frequently found near ant hills. Feeds on ants and other small invertebrates (e.g., spiders, beetles, and grasshoppers).
Coast patch-nosed snake *Salvadora hexalepis virgultea*	–/SSC	Likely	No documented occurrences	No documented occurrence	CNDDB	No known reliance on groundwater	Coastal chaparral, desert scrub, washes, sandy flats and rocky areas. Predominately preys upon lizards. Documented outside of groundwater basins on Hopper Canyon Creek, 2 miles northwest of Piru (CDFW 2019).
San Diegan Coastal whiptail *Aspidoscelis tigris stejnegeri*	–/SSC	Likely	No documented occurrences	Piru Creek Riparian	CNDDB	No known reliance on groundwater	Habitat generalists found in desert, woodland, and riparian communities. Feeds on small invertebrates (e.g., spiders, scorpions, centipedes, and termites) and small lizards. Documented on Piru Creek in 2009 (CDFW 2019)

Common name *Scientific name*	Status[1] Federal/State	Potential to occur in GDE Basins[2]	Documented occurrence location		Query source[3]	GDE . association[4]	Habitat and documented occurrences in GDE Management Units
			Fillmore GDE units	Piru GDE units			
Bird							
Bank swallow *Riparia riparia*	BLMS/ST	None	Extirpated	Extirpated	CNDDB, CAFSD	Indirect	Nests in vertical bluffs or banks, usually adjacent to water (i.e., rivers, streams, ocean coasts, and reservoirs), where the soil consists of sand or sandy loam. Feeds on caterpillars, insects, frog/lizards, and fruit/berries. Relies on surface water that may be supported by groundwater (Rohde et al. 2019). Historical population documented in the 1920s Santa Clara River is extirpated (CDFW 2019).
Black swift *Cypseloides niger*	FSS/SSC	Unlikely	No documented occurrences	No documented occurrences	CAFSD	No known reliance on groundwater	Nests in moist crevices behind or beside permanent or semipermanent waterfalls in deep canyons, on perpendicular sea cliffs above surf, and in sea caves; forages widely for insects over many habitats.
Burrowing owl *Athene cunicularia*	FSS/SSC	Likely	Santa Clara River Riparian Shrubland	Santa Clara River Riparian Shrubland	CNDDB	No known reliance on groundwater	Level, open, dry, heavily grazed or low-stature grassland or desert vegetation with available burrows. Preys on invertebrates and vertebrates. Occurrences along or near the bank of the Santa Clara River near Fillmore and one mile south of Buckhorn (CDFW 2019).
California condor *Gymnogyps californianus*	FE/SE	Unlikely	Sespe Creek Riparian	Piru Creek Riparian	CNDDB	Indirect	Requires vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude; deep canyons containing clefts in rocky walls and large trees provide nest sites; forages up to 100 miles from roost to nest. Forages in grasslands, oak savanna habitats; condors may rely on groundwater

Common name *Scientific name*	**Status[1] Federal/State**	**Potential to occur in GDE Basins[2]**	**Documented occurrence location**		**Query source[3]**	**GDE . association[4]**	**Habitat and documented occurrences in GDE Management Units**
			Fillmore GDE units	**Piru GDE units**			
							dependent vegetation for nesting in foothill grasslands, oak savanna habitats, and old-growth forest (Rohde et al. 2019). Habitat for condors in the basins is therefore unlikely to be groundwater dependent. Condors observed drinking water at a small perched pool near spillway canyon just west of the Santa Felicia Dam in the vicinity of the Piru Creek Riparian GDE Unit and within Piru Canyon (CDFW 2019, eBird 2021).

Common name *Scientific name*	Status[1] Federal/State	Potential to occur in GDE Basins[2]	Documented occurrence location		Query source[3]	GDE . association[4]	Habitat and documented occurrences in GDE Management Units
			Fillmore GDE units	Piru GDE units			
Mammal							
Pallid bat *Antrozous pallidus*	FSS, BLMS/SSC	Likely	No documented occurrences	No documented occurrences	CNDDB	No known reliance on groundwater	Roosts in rock crevices, tree hollows, mines, caves, and a variety of vacant and occupied buildings; feeds in a variety of open woodland habitats. Habitat and prey (e.g., insects and arachnids) not associated with aquatic ecosystems. Commonly found roosting under the bark of dead riparian trees in the Santa Clara River Watershed (UWCD 2018). Historical observations in the vicinity of Fillmore documented in 1906 and 1942 (CDFW 2019).

[1] Status codes:

Federal
- FT = Listed as threatened under the federal Endangered Species Act
- FSS = Forest Service Sensitive Species
- BLMS = Bureau of Land Management Sensitive Species

State
- SE = Listed as Endangered under the California Endangered Species Act
- ST = Listed as Threatened under the California Endangered Species Act
- SSC = CDFW species of special concern

[2] Potential to Occur:
Likely: the species *has* documented occurrences and the habitat is high quality or quantity
Possible: no documented occurrences and the species' required habitat is moderate to high quality or quantity
Unlikely: no documented occurrences and the species' required habitat is of low to moderate quality or quantity
None: no potential to occur due to lack of habitat and/or the population is assumed extirpated

[3] Query source:
CAFSD: California Freshwater Species Database (TNC 2020)
CNDDB: California Natural Diversity Database (CDFW 2019)
eBird: (eBird 2021)

[4] Groundwater Dependent Ecosystem (GDE) association:
Direct: Species directly dependent on groundwater for some or all water needs
Indirect: Species dependent upon other species that rely on groundwater for some or all water needs

Appendix C

Rooting Depths for Selected Species

Table C-1. Maximum rooting depth of dominant species.

Dominant species	Vegetation type (MCV)	Vegetation type (CalVeg)	GDE?	Maximum rooting depth (ft)	Data source
Adenostoma fasciculatum		Chamise	no	25.0	Hellmers et al. 1955 as cited in Fan et al. 2017
Artemisia tridentata	*Artemisia tridentata* Shrubland Alliance		yes	9.8	Link et al. 1995 as cited in Tumber-Davila 2017
Arundo donax	*Phragmites australis - Arundo donax* Herbaceous Semi-Natural Alliance	Giant reed/pampas grass	yes	16.1	Stromberg 2013
Baccharis pilularis	*Baccharis pilularis* Shrubland Alliance	Coyote brush	no	12.1	Naumovich 2017
Baccharis salicifolia	*Baccharis salicifolia* Shrubland Alliance	Baccharis (riparian)	yes	2.0	Stromberg 2013
Ceanothus crassifolius		Ceanothus chaparral	no	4.5	Hellmers et al. 1955 as cited in Fan et al. 2017
Elymus triticoides	*Leymus cinereus - Leymus triticoides* Herbaceous Alliance		yes	3.8	Weaver 1919 as cited in Fan et al. 2017
Eriogonum fasciculatum	*Eriogonum fasciculatum* Shrubland Alliance	Buckwheat	no	4.0	Hellmers et al. 1955 as cited in Fan et al. 2017
Eucalyptus globulus and other *Eucalyptus* species	*Eucalyptus* spp. - *Ailanthus altissima - Robinia pseudoacacia* Woodland Semi-Natural Alliance	Eucalyptus	yes	16.4	Dawson and Pate 1996 as cited in Fan et al. 2017
Juglans californica	*Juglans californica* Woodland Alliance	Black walnut	no	5.9	Faber 2017
Pluchea sericea	*Pluchea sericea* Shrubland Alliance		yes	4.3	Stromberg 2013
Populus fremontii	*Populus fremontii* Forest Alliance	Freemont cottonwood	yes	6.9	Stromberg 2013
Populus trichocarpa	*Populus trichocarpa* Forest Alliance		yes	4.1	Zhang et al. 1999 as cited in Fan et al. 2017
Quercus agrifolia	*Quercus agrifolia* Woodland Alliance	Coast live oak / Coastal mixed hardwood alliance	yes	35.1	Schenk and Jackson 2002

Dominant species	Vegetation type (MCV)	Vegetation type (CalVeg)	GDE?	Maximum rooting depth (ft)	Data source
Quercus douglasii		Blue oak	no	80.0	Schenk and Jackson 2002
Salix exigua	*Salix exigua* Shrubland Alliance	Willow (shrub)	yes	6.9[1]	Pulling 1918 as cited in Fan et al. 2017
Salix laevigata	*Salix laevigata* Woodland Alliance		yes	6.9[1]	Pulling 1918 as cited in Fan et al. 2017
Salix lasiolepis	*Salix lasiolepis* Shrubland Alliance		yes	6.9[1]	Pulling 1918 as cited in Fan et al. 2017
Salix lucida	*Salix lucida* Woodland Alliance		yes	6.9[1]	Pulling 1918 as cited in Fan et al. 2017
Salix spp		Riparian mixed shrub / Willow	yes	6.9	Pulling 1918 as cited in Fan et al. 2017
Salvia apiana	*Salvia apiana* Shrubland Alliance		no	5.0	Hellmers et al. 1955 as cited in Fan et al. 2017
Schoenoplectus spp	*Schoenoplectus* (*acutus*, *californicus*) Herbaceous Alliance		yes	2.1[1]	Stromberg 2013
Tamarix spp	*Tamarix* spp. Shrubland Semi-Natural Alliance		yes	16.1	Stromberg 2013
Typha spp	*Typha* (*angustifolia*, *domingensis*, *latifolia*) Herbaceous Alliance		yes	0.8[1]	Shaver and Billlings 1975 as cited in Fan et al. 2017

[1] Rooting depth assigned by genus or close species association.

Table C-2. Relative elevation of dominant species. Data from Stillwater Sciences (2007).

Dominant species	Alliance	Relative elevation (ft)			
		mean	**SE**	**min**	**max**
Adenostoma fasciculatum					
Artemisia tridentata	*Artemisia tridentata* Shrubland Alliance	5.2	0.5	1.0	11.0
Arundo donax	*Arundo donax* Semi-Natural Alliance	7.6	0.3	0.0	32.8
Baccharis pilularis	*Baccharis pilularis* Shrubland Alliance	15.9	1.2	2.5	26.7
Baccharis salicifolia	*Baccharis salicifolia* Shrubland Alliance	9.6	1.8	2.3	24.6
Eriogonum fasciculatum and *Artemisia californica*	*Artemisia californica- Eriogonum fasciculatum* Shrubland Alliance	18.2	2.2	7.7	27.4
Eucalyptus globulus and other *Eucalyptus* species	*Eucalyptus* spp. - *Ailanthus altissima* - *Robinia pseudoacacia* Woodland Semi-Natural Alliance	15.4	2.6	12.5	23.0
Populus fremontii	*Populus fremontii* Forest Alliance	9.7	0.8	0.0	25.0
Populus trichocarpa	*Populus balsamifera* ssp *trichocarpa* Forest Alliance	7.4	0.4	2.1	20.5
Salix exigua	*Salix exigua* Shrubland Alliance	4.8	0.4	1.0	9.4
Salix laevigata	*Salix laevigata* Woodland Alliance	5.6	0.5	0.0	20.6
Salix lasiolepis	*Salix lasiolepis* Shrubland Alliance	12.4	0.7	0.6	24.8
Salix lucida	*Salix lucida* Woodland Alliance	4.9	0.8	0.2	12.3
Tamarix spp	*Tamarix* spp. Semi-Natural Alliance	6.3	1.1	4.0	9.0

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APPENDIX E

United Water Conservation District Groundwater Model Documentation (United, 2021a,b)

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APPENDIX E-1

Ventura Regional Groundwater Flow Model Expansion and Updated Hydrogeologic Conceptual Model for the Piru, Fillmore, and Santa Paula Groundwater Basins (United, 2021a)

VENTURA REGIONAL GROUNDWATER FLOW MODEL EXPANSION AND UPDATED HYDROGEOLOGIC CONCEPTUAL MODEL FOR THE PIRU, FILLMORE, AND SANTA PAULA GROUNDWATER BASINS

United Water Conservation District
Open-File Report 2021-01
June 2021

WATER RESOURCES DEPARTMENT
UNITED WATER CONSERVATION DISTRICT

THIS REPORT IS PRELIMINARY AND SUBJECT TO MODIFICATION BASED UPON FUTURE ANALYSIS AND EVALUATIONS

ERRATA

This document dated June 15, 2021 replaces the previous document dated June 9, 2021. Changes include:

- Figure 2-12: Legend text edits
- Figure 2-25: Legend text edits
- Figure 4-58: Title edit
- Figure 4-59: Piru basin scatter plots were updated to include additional wells with "unknown" screen interval depths used in calibration analysis.
- Figure 4-60: Fillmore basin scatter plots were updated to include additional wells with "unknown" screen interval depths used in calibration analysis.
- Figure 4-61: Santa Paula basin scatter plots were updated to include additional wells with "unknown" screen interval depths used in calibration analysis.

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VENTURA REGIONAL GROUNDWATER FLOW MODEL EXPANSION AND UPDATED HYDROGEOLOGIC CONCEPTUAL MODEL FOR THE PIRU, FILLMORE, AND SANTA PAULA GROUNDWATER BASINS

United Water Conservation District
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PREPARED BY

WATER RESOURCES DEPARTMENT

JUNE 2021

THIS REPORT IS PRELIMINARY AND SUBJECT TO MODIFICATION BASED UPON FUTURE ANALYSIS AND EVALUATIONS

Preferred Citation: United Water Conservation District, 2021, *Ventura Regional Groundwater Flow Model Expansion and Updated Hydrogeologic Conceptual Model for the Piru, Fillmore and Santa Paula Groundwater Basins*, United Water Conservation District Open-File Report 2021-01. June.

Principal Authors: Dr. Jason Sun, PE, Dr. Zachary Hanson, Dr. Bram Sercu, Eric Elliot, and Dan Detmer, PG, CHG

SUMMARY

United Water Conservation District (UWCD or United), a public agency, serves as a steward for managing the surface water and groundwater resources in the Santa Clara River (SCR) Valley and much of the Oxnard Plain. In the late 1980s, United's Board of Directors (Board) recognized that a groundwater flow model capable of addressing specific aquifer issues was needed and helped sponsor the U.S. Geological Survey (USGS) to develop a regional groundwater flow model (the "USGS model") for the basins in the Ventura County portions of the SCR and Calleguas Creek watersheds (USGS, 2003). From 2003 to 2008, with the help of consultants, UWCD continued to calibrate and update the USGS model. In 2010 the UWCD staff and Board determined that a new model that explicitly simulated each aquifer would be required to improve understanding of groundwater occurrence and movement within United's service area, and to forecast the effects of potential groundwater management actions under consideration.

In 2018, UWCD completed construction and calibration of a numerical groundwater flow model for the Oxnard and Mound sub-basins of the Santa Clara River basin (referred to herein as the Oxnard and Mound basins), Pleasant Valley basin, and the western portion of the Las Posas Valley basins (referred to herein as the West Las Posas Valley basin) (UWCD, 2018). The primary objective for development of that model ("Coastal Plain Model") was to provide an improved tool (compared to a previous model of the region constructed in the 1990s by the U.S. Geological Survey [USGS]) for forecasting aquifer-specific effects of potential groundwater management actions under consideration. In 2018 and 2019 UWCD staff updated the hydrostratigraphic conceptual model for Santa Paula, Fillmore and Piru basins and expanded United's numerical groundwater flow model to include those basins. This report documents the model expansion and calibration efforts that were completed in August 2020.

The expanded regional groundwater flow model ("Regional Model") uses the same finite-difference model grid spacing (2,000 feet), MODFLOW packages, simulation period (1985 to 2015) and groundwater model software - MODFLOW-NWT (Niswonger, et al., 2011) - as United's Coastal Plain Model.

In addition to including the SCR Valley basins in the Regional Model, there are three areas of difference between the Regional Model and Coastal Plain Model:

- Unconfined basin conditions and non-marine sediments predominate in the model expansion area, and significant interaction exists between surface water and groundwater
- Expansion of the outcrop area of the Mound basin and minor recharge component refinement and updates were included.
- The Regional Model adopts a daily time step to better simulate the highly variable SCR streamflow, while the Coastal Plain model utilized a monthly time step.

The Regional Model is well calibrated to simulate the groundwater elevations throughout the seven basins (Piru, Fillmore, Santa Paula, Mound, Oxnard, Pleasant Valley, and West Las Posas Valley). The Regional Model is sufficiently calibrated and discretized to inform regional groundwater management decisions and can provide meaningful interpretation of the inter-basin flow budgets between the seven basins within United's District boundaries in southern Ventura County.

The Regional Model generally simulates the streamflow routing and interaction between streamflow in the SCR and groundwater well, based on calibration of monthly average streamflow and stream channel recharge. Daily model simulations were used to capture the variability within a month and were instrumental in achieving satisfactory calibration (based on monthly averages). The simulation of the SCR streamflow routing is somewhat limited by assumptions and functionalities available in the stream package, resulting in underestimated streamflow at the Freeman Diversion. Therefore, rather than using the Regional Model, an existing surface water model was used to calculate daily streamflow at the Freeman Diversion, and subsequently to calculate diversions, artificial recharge, and surface water deliveries to the Oxnard and Pleasant Valley basins.

In 2016 UWCD contracted with three nationally recognized experts (Dr. Sorab Panday, Mr. Jim Rumbaugh, and Mr. John Porcello) to form a model review panel (the Expert Panel) to provide objective and critical review of construction and calibration United's new groundwater flow model. The Expert Panel concluded that the Coastal Plain Model was well constructed and well calibrated, is consistent with the conceptual model for the hydrogeology of the basins and is a good tool for simulating the effects of various water supply projects and management strategies (GSI Water Solutions and others, 2018). The Expert Panel has continued to review and advise United as staff has worked to expand the model up the valley of the SCR. In 2020, the Expert Panel completed a detailed initial review of the Regional Model and concluded that "The model calibration to both heads and streamflows is very good".

The completion of the Regional Model marks an important milestone of UWCD's effort in securing a working, well calibrated, and thoroughly reviewed regional groundwater model covering the United's service area. The Regional Model as well as the Coastal Plain Model can simulate the aquifer-specific groundwater flow to support its groundwater conservation and management. The Coastal Plain Model and the Regional Model have been used to simulate and analyze future groundwater conditions for the Groundwater Sustainability Plans (GSPs) of local Groundwater Sustainability Agencies, including the Fox Canyon Groundwater Management Agency (FCGMA), the Fillmore and Piru Basins Groundwater Sustainability Agency, and the Mound Basin Groundwater Sustainability Agency. UWCD has also used the Coastal Plain Model and Regional Model for internal project assessments, as well as supporting projects by local city and agency.

Looking forward, when more and/or newer data become available, UWCD will periodically (likely every 5 years) update and improve the groundwater models. Similarly, when new versions of

MODFLOW become available, UWCD will consider adopting new versions of MODFLOW, e.g., MODFLOW-USG (Panday and others, 2013), to take advantage of the technological improvement in new versions of MODFLOW.

ACKNOWLEDGEMENTS

We want to acknowledge the importance of the U.S. Geological Survey effort in the 1990s and 2000s to establish a regional groundwater monitoring-well network and construct the first MODFLOW model for the basins underlying the entire Santa Clara River and Calleguas Creek watersheds; their model was a critical “jumping-off point” for the Coastal Plain Model. United would again like to acknowledge the financial support provided by the Fox Canyon Groundwater Management Agency (FCGMA) and the Santa Clara River Watershed Committee when the Coastal Plain model was being developed. United would also like to acknowledge the various water and sanitation districts (including Ventura County Watershed Protection District), municipalities, diverters, farmers and other individuals that provided data to support development of the expanded Regional Model. Without the rich datasets that have been developed with great effort and consistency over decades in Ventura County basins the calibration of a regional groundwater flow model such as the one detailed here would be impossible.

The authors would also like to recognize the foresight, support and patience of United’s Board of Directors, General Manager and management team while we have worked to develop this tool. Significant contributions were made by other Water Resources Department staff, both past and current, and all those contributions were helpful and are appreciated. In addition, we thank and acknowledge the participants of the Expert Panel (Dr. Sorab Panday, James Rumbaugh, and John Porcello) convened by United to review and provide guidance for improving the model. The critical review by the Expert Panel has helped us develop a better model with confidence.

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1 INTRODUCTION

United Water Conservation District (United) is a California special district (i.e., a public agency) with a service area of approximately 335 square miles (214,000 acres) of southern Ventura County. United's service area includes the Ventura County portion of the Santa Clara River (SCR) Valley and much of the Oxnard coastal plain, including the lower part of the Calleguas Creek watershed, as shown on Figure 1-1. United serves as a steward for managing the surface water and groundwater resources within all or part of seven groundwater basins. It is governed by a seven-person board of directors elected by region, and receives revenue from property taxes, pump charges, recreation fees, and water delivery charges. United is authorized under the California Water Code to conduct water resource investigations, acquire water rights, build facilities to store and recharge water, construct wells and pipelines for water deliveries, commence actions involving water rights and water use, prevent interference with or diminution of stream/river flows and their associated natural subterranean supply of water, and to acquire and operate recreational facilities (California Water Code, section 74500 et al).

1.1 PURPOSE

This report documents the expansion of United's active numerical groundwater flow model domain beyond the Oxnard coastal plain to include the remaining groundwater subbasins of the SCR Valley within Ventura County, California. The coastal basins are connected subbasins in the larger groundwater system of the SCR Valley (California Department of Water Resources [DWR] basin number 4-004), but the common vernacular is to refer to them as basins. United's expanded groundwater flow model now includes the following basins: Piru (DWR 4-004.06), Fillmore (DWR 4-004.05), and Santa Paula (DWR 4-004.04; Figure 1-2). The recent effort of extending the numerical groundwater modeling builds from United's prior model development effort (Figure 1-3; United, 2018) which included the coastal basins of the SCR Valley (Oxnard (DWR 4-004.02) and Mound (DWR 4-004.03)) as well as the Pleasant Valley groundwater basin (DWR 4-006) and the western portion of the Las Posas Valley basin (DWR 4-008). With completion of the model expansion described in this document, United's Regional Model includes all basins within the District boundaries, and the portions of these groundwater basins that exist outside the District boundaries.

1.2 LOCATION

The SCR is located in Southern California, running 83 miles from the north side of the San Gabriel Mountains in Los Angeles County and through Ventura County until it meets the Pacific Ocean near the cities of Ventura and Oxnard (Figure 1-1). The SCR is the largest river in the Southern California region that remains in a relatively natural state (Los Angeles Regional Water Quality Control Board, 2006). The SCR flows through the Santa Clarita Valley within Los Angeles County, then flows through a narrow and thin geologic constriction near the Ventura County line where the river and minor volumes of groundwater underflow enter the SCR Valley within Ventura County. The SCR flows west and southwest over the alluvial Piru, Fillmore, and Santa Paula groundwater basins before entering the coastal basins near the Pacific Ocean (Figure 1-2). Along the SCR Valley, recharge from the river is a major source of water supply for irrigation, municipal and domestic wells that rely on water stored in the underlying groundwater basins. The Piru, Fillmore, and Santa Paula groundwater basins constitute the majority of the portion of the study area that was added to the model as described in this model expansion report. However, additional areas outside the groundwater basin boundaries which are hydraulically connected to the basins were included in the model. The study area is described in further detail in Section 2.1, below.

1.3 PREVIOUS INVESTIGATIONS

Nearly all previous hydrologic investigations that have included the Piru, Fillmore, and Santa Paula groundwater basins have been part of broader regional studies. The first detailed hydrologic investigation that included these basins began in the late 1920s and was performed by predecessor agencies to the State of California's Department of Water Resources (DWR, 1933). This and other early investigations provided datasets and analysis of streamflow, groundwater elevations, and underlying geologic formations, and included estimates of water budget components for each of the groundwater basins (DWR, 1956; Mann and Associates, 1959). Beginning in the 1970s, investigations by the Department of Water Resources and Ventura County Public Works Agency began to refine the understanding of the basin settings through additional review and collection of data in order to support the first numerical modeling efforts related to water quantity and quality issues within the County (DWR, 1974 and 1975). Later, the United States Geological Survey (USGS) collected field data to contribute to and refine previous efforts for development of their numerical flow model (USGS, 1995); these efforts ultimately resulted in completion of a 2-layer MODFLOW model of groundwater and surface water flow within the SCR and Calleguas Creek watersheds (Figure 1-4; USGS, 2003). Local funding for development of the USGS model came from United, Calleguas Municipal Water District (CMWD), and the Fox Canyon Groundwater Management Agency (FCGMA).

The Santa Paula groundwater basin was adjudicated in 1996 (United Water Conservation District vs. City of San Buenaventura, original March 7, 1996, amended August 24, 2010). Members of the Santa Paula Basin Pumpers Association (SPBPA) and the City of San Buenaventura exercise rights to pump groundwater from the basin for reasonable and beneficial uses. Through this legal process, several investigations of hydrogeologic conditions were conducted, but numerical groundwater flow modeling was not applied (Law/Crandall, 1993; Bachman, 2015; DBS&A and RCS, 2017).

Following completion of the USGS (2003) model, United worked with consultants to attempt to refine and improve the 2-layer model for various regional planning activities (e.g. FCGMA and others, 2007), particularly related to overdraft issues on the Oxnard Plain and the resulting seawater intrusion concerns. United's efforts to refine of the USGS model ended by 2008. In 2012 United began initial development of a new numerical groundwater flow model for the basins of the Oxnard coastal plain in order to construct an "improved tool for simulating future occurrence and movement of groundwater within the study area" (United, 2018).

In addition to previous investigations related to the lower SCR Valley, several investigations took place during the 2000s focusing on the Santa Clarita Valley, located upstream of the Piru basin within the SCR watershed in Los Angeles County (CH2M HILL 2004, 2005; CH2M HILL/HGL, 2008). These efforts are relevant to development of the model described in this report, specifically the estimates of future streamflow and subsurface underflow entering the Piru groundwater basin from the SCR Valley East subbasin (Figure 1-2; this area is also referred to as the Santa Clarita Valley area). Currently, the Santa Clarita Valley Groundwater Sustainability Agency (SCVGSA) is working on an updated model for the East subbasin, based in part on the previous numerical groundwater flow models in the East subbasin, for GSP development. Coordination between SCVGSA, United, the Fillmore and Piru Basins Groundwater Sustainability Agency (FPBGSA) and the Mound Basin Groundwater Sustainability Agency (MBGSA) on developing assumptions for future land use, water use and hydrologic conditions has allowed for information from that updated modeling related to subsurface underflow from the East subbasin to be incorporated into United's modeling of the SCR Valley basins (Section 3.5.1.2).

The previous studies and estimated water budget component briefly described here are described in detail in United's Open-File Report 2020-02, titled *Summary of Past Groundwater Models and Water Budgets for the Piru, Fillmore, and Santa Paula Groundwater Basins* (UWCD, 2020). Water budget estimates from those prior studies are summarized in Section 2.6, below.

2 HYDROGEOLOGIC CONCEPTUAL MODEL

This section provides a summary of the hydrogeologic conceptual model for the area covered by United's expanded groundwater flow model. As previously mentioned, the Regional Model builds from the previous numerical model developed by United for the Oxnard coastal plain (UWCD, 2018) and incorporates the remaining groundwater basins along the SCR Valley within Ventura County (Figures 1-2 and 2-1). In order to construct the Regional Model in a manner that explicitly and accurately represents all major hydrostratigraphic units, United staff made a significant effort to review available geophysical well logs and lithologic data and build a hydrostratigraphic conceptual model for the study area. Section 2.5 of this report provides documentation of this updated Basin Conceptual Model (hereafter referred to as BCM 14), which incorporates some important changes in the understanding of the characteristics of aquifers and aquitards in the study area based on United's review of the data. The description of the hydrogeologic conceptual model generally follows the hydraulic gradient down the SCR Valley from Piru to Fillmore to Santa Paula.

2.1 STUDY AREA PHYSICAL SETTING AND LAND USE

The study area for this Regional Model report includes the Piru, Fillmore, and Santa Paula groundwater basins (Figures 1-2 and 2-1), which are now included in order to expand the Regional Model from the 2018 Coastal Plain Model (United, 2018). The SCR watershed has a total area of 1,625 square miles and a channel length of approximately 83 miles, and flows from headwaters on the north slope of the San Gabriel Mountains near Acton in the east to the Pacific Ocean in the west. The study area is oriented east to west and is bounded by the Topa Topa Mountains to the north and South Mountain to the south (Figure 2-1). The model domain contains about 29 miles of the main channel of the SCR and about 55,600 acres (86.9 mi^2) within the underlying alluvial groundwater basins (Piru: 10,900 acres (17.0 mi^2); Fillmore: 22,580 acres (35.3 mi^2); Santa Paula: 22,110 acres (34.5 mi^2)). The SCR watershed encompasses three significant tributary watersheds that flow into the groundwater basins of the study area—those of Piru, Sespe, and Santa Paula Creeks (Figures 2-1 and 2-2). Much of the flow in the SCR is derived from streamflow originating in the mountain regions drained by these tributaries.

In addition to expanding the model into the Piru, Fillmore, and Santa Paula basins, there were also minor changes made in the Mound basin. Specifically, the active model domain in Mound basin was expanded to correspond with DWR's 2019 groundwater basin boundary updates, and a general-head boundary used to simulate groundwater underflow between Santa Paula and Mound basins in United's 2018 model was eliminated (it became unnecessary when the model was extended to include Santa Paula, Piru, and Fillmore basins). In addition, some minor recharge component refinement and updates were implemented in the hydrogeologic conceptual model (described in Sections 2.3.7, 2.3.9 and 2.7, below). Implementation of these modifications in the numerical model is discussed in Section 3.

Compared to the basins of the Oxnard coastal plain, urban development within the model expansion area remains relatively modest, with the dominant land use being agricultural. Figure 2-3 shows the extent of farmland and “urban/built-up” (municipal and industrial) land within the SCR Valley in Ventura County as of 2016, based on data available online from the California Department of Conservation’s Farmland Mapping and Monitoring Program (http://www.conservation.ca.gov/dlrp/fmmp). Figure 2-3 shows the expansion of urban and built-up land since 1984, immediately prior to the beginning of the historical model calibration period, in 6- to 8-year increments. Inspection of Figure 2-3 indicates that the majority of urban/built-up land within the study area was developed before 1985, with relatively minor expansion since that time.

Population nearly doubled in the unincorporated town of Piru between the years 2000 and 2010, but its area of urban/built-up land remains small, and the rate of population increase appears to have slowed between 2010 and 2019 (Table 2-1). The population and area of the Cities of Fillmore and Santa Paula are both significantly larger than Piru, with Santa Paula having about twice the population of Fillmore. Both cities have experienced lesser population growth rates relative to Piru since 2000, with both Fillmore’s and Santa Paula’s population growth at about 15%. Urban development often represents a conversion from agricultural land to largely impervious surfaces and typically results in reduced recharge to groundwater basins in the areas of urban growth, although the increased runoff and discharge of treated wastewater to percolation ponds in unconfined alluvial basins does result in some opportunity for subsequent recharge in areas downstream.

Figure 2-3 also shows the extent of agricultural lands within Ventura County as of 2016, based on Ventura County Agriculture Commissioner datasets. Within the areas of the expanded model domain, open space along the SCR and other tributary channels, as well as agricultural land, occupy the majority of the land area. The Piru basin contains approximately 5,920 acres of agricultural land (54% of total basin area), the Fillmore basin contains approximately 12,430 acres of agricultural land (55% of total basin area), and the Santa Paula basin contains approximately 10,660 acres of agricultural land (54% of total basin area). Citrus and avocados remain the predominant crop for all three basins – with citrus having been more so historically. Over the past 20 years the Piru basin has seen a significant conversion from citrus to row crops. Over the same time-period, the Fillmore basin also saw a significant conversion from citrus to row crops, particularly in the Bardsdale area on the south side of the SCR. Although less significant than in the Piru basin within the past decade, both the Fillmore and Santa Paula basins have seen an increase in the conversion from citrus to avocados, as well as major expansion of avocado acreage up the hillsides adjacent the valley floor in recent years.

2.2 CLIMATE

According to the updated Köppen-Geiger climate classification system (Rubel et al., 2017), the climate type for the study area is classified as warm-summer Mediterranean (Csb), characterized by warm, dry summers and cool winters with variable precipitation (i.e. sometimes wet). Santa Paula air temperature data from 1951- 2008 (available record period for National Climatic Data Center site number 7957) had a mean daily minimum air temperature of 48 degrees Fahrenheit, mean daily maximum air temperature of 74 degrees Fahrenheit, record minimum daily air temperature of 25 degrees Fahrenheit, and record maximum daily air temperature of 109 degrees Fahrenheit. The Fillmore and Piru basins typically show similar temperature trends, but minimum and maximums do vary slightly compared to the Santa Paula basin due to the increased elevation and a more inland location up the SCR valley and away from the coast. Long-term precipitation datasets covering the extent of the three additional groundwater basins (Figure 2-2) show similar statistics representing overlapping periods (Table 2-2).

Figure 2-4 shows the time-seies for annual (Water Year) precipitation totals for Santa Paula Gage 245 from water years 1850 – 2019 as well as the 5-year moving average. This plot highlights the decadal variability that is present within the study area, with wet periods bracketed by dry periods that range from several years to a decade. Several major wet years within the 1985-2015 calibration period drive the 5-year moving average far above the long-term average of 16.8 inches for the Santa Paula Gage 245 (Table 2-2). The Regional Model used precipitation data from 70 rain gauges in the region, which were used to interpolate monthly precipitation across the study area. The monthly totals were then distributed evenly across the month for estimates of direct recharge from precipitation (see section 3.5.2.3).

2.3 SURFACE WATER HYDROLOGY

The interaction between surface water and the underlying groundwater basins in the study area plays a significant role in the occurrence, movement, and quality of groundwater. In particular, the SCR flows westward into Ventura County (and the study area) from Los Angeles County, and receives large volumes of water from several primary tributaries within the groundwater basins of the study area, including Piru Creek, Sespe Creek, and Santa Paula Creek (Figure 2-1). Two smaller tributaries to the SCR are also gaged (Hopper Creek and Pole Creek), however many smaller tributaries from the surrounding mountains and drainages are ungaged (Figure 2-5). Surface water flowing in the SCR can percolate downward and recharge the underlying groundwater basins within the study area. In addition to United's Freeman Diversion Facility, there are several smaller active diversions for agricultural irrigation along the SCR. Availability and the quality of historical data on diversion rates for these smaller diversions is highly variable. Each of these subjects is discussed below in more detail.

2.3.1 SANTA CLARA RIVER

Downward percolation of surface flows in the SCR is the primary source of recharge to each of the groundwater basins within the study area. Its watershed extends well beyond the study area, draining a total area of 1,625 square miles (Figure 2-1). The primary source of surface water flows in the SCR within the study area is surface runoff from the largest tributaries discharging into the main channel (Piru Creek, Sespe Creek, and Santa Paula Creek) and surface flow entering the Piru Basin at the Los Angeles/Ventura County line (Figure 2-5). Flow in the SCR can be described as interrupted perennial flow, with certain reaches being predicably wet or dry in most years (SFEI, 2011).

At the eastern portion of the model domain, the Piru basin adjoins the SCR Valley East Subbasin (Eastern basin) at the Ventura/Los Angeles County Line. The USGS has maintained daily streamflow records near this location dating back to 1952. USGS streamflow gage 11108500 at Blue Cut ceased operation in 1996 after the USGS streamflow gage 11109000 was installed approximately 2.75 river-miles downstream at the Las Brisas Bridge. Streamflow in the reach between these two locations is observed to be fairly stable and the alluvial channel deposits are fairly thin, allowing for a reasonable assumption that flow consistency can be considered to exist between the two measurement locations. Daily data from these USGS gages was obtained from these gages and used as input for streamflow entering the eastern boundary of the Regional Model domain for daily simulations. Streamflow statistics for calendar years 1985 – 2015 are shown in Table 2-3.

United’s Freeman Diversion is located 25 miles downstream (west-southwest) of the Los Angeles County line, approximately 1.5 river-miles upstream from where the SCR channel exits the Santa Paula groundwater basin, and approximately 11 miles inland from the Pacific Ocean. United maintains daily observations of streamflow and diversions at Freeman Diversion. The average annual discharge (water years 1950 to 2015) of the SCR at the Freeman Diversion is 266 cubic feet per second (192,400 acre-feet per year [AFY]). However, annual average discharge of the SCR, like most largely ephemeral streams in southern California, is highly variable, ranging from 6 cubic feet per second (4,100 AFY) in water year 1951 to 1,590 cubic feet per second (1,152,000 AFY) in water year 2005, as shown on Figure 2-6. Discharge also varies significantly on a monthly basis, generally peaking during the wet season (January to March), with lower and more consistent base flows occurring year-round in the Santa Paula basin during all but the driest years. More discussion on streamflow, diversions, and streamflow past Freeman Diversion in the model simulations is described in Sections 3.5.2.1 and 4.2.5 below. In addition to the stormflows that are present in the SCR flow regime, conservation releases that originate from Piru Creek are also present and discussed more in Section 2.3.2.

2.3.1.1 RISING GROUNDWATER AT BASIN BOUNDARIES ALONG THE SANTA CLARA RIVER

The Piru and Fillmore basins commonly discharge significant volumes of groundwater to the channel of the SCR when groundwater elevations near the basin boundaries are higher than the elevation of the river channel (DWR, 1956; Mann 1959; United, 2016). This "rising groundwater" commonly occurs near the boundaries between Piru and Fillmore basins, and between Fillmore and Santa Paula basins. These are locations where the groundwater basins are narrow, and geologic features at depth may also restrict regional groundwater flow down the valley. The water table may then intersect the ground surface elevation within the channel and the SCR, resulting in an increase in surface water flow (and a loss to the groundwater flow system). Measurements of rising groundwater at the Piru-Fillmore and Fillmore-Santa Paula basin boundaries are available for the period 2011-2019, which includes periods with high and low groundwater elevations. Observations were available for dry months only, as it is difficult to measure rising groundwater when streamflow is high and dynamic. For both basins, observed rising groundwater correlates well with groundwater elevations at selected wells, as shown on Figures 2-7 and 2-8. Locations of rising groundwater along the SCR in the study area are shown on Figure 2-9.

2.3.1.1.1 PIRU - FILLMORE BASIN BOUNDARY

The reach of the SCR within the "Piru narrows" is located about one mile upstream from the City of Fillmore (Figure 2-9), and displays perennial rising groundwater (a gaining stream reach) in most years. The gaining stream reach can extend upstream to the vicinity of Hopper Creek when the Piru basin is full, and the wetted channel reach retreats downstream towards the basin boundary as groundwater levels fall within in the basin. The channel of the SCR is commonly dry upstream of the boundary area in all but the wettest of years, and this area of the mid-Piru basin is sometimes called the "dry gap." Streamflow at the western Piru basin boundary has been observed to go dry following a period of drought. The SCR channel at the basin boundary was dry in fall of 2014 and for much of calendar year 2015. This is a rare condition, directly related to drought conditions and resulting low groundwater levels in the Piru basin (Figure 2-7). Rising groundwater discharging from the Piru basin will often percolate back into the groundwater system within Fillmore basin, though during wet periods surface water may flow all the way to the confluence with Sespe Creek and on to the Santa Paula basin.

2.3.1.1.2 FILLMORE - SANTA PAULA BASIN BOUNDARY

Near the Fillmore - Santa Paula basin boundary exists another reach of the SCR that displays perennial rising groundwater (gaining stream conditions) even in dry years (Figure 2-9). The upstream extent of the gaining stream reach is greatest when water levels are high in the Fillmore and Santa Paula basins, and length of the wetted reach decreases as groundwater elevations fall in the Fillmore basin. This reach flowed continuously during the dry conditions experienced in calendar years 2014 and 2015. Available manual stream gaging data collected by United near the basin boundary suggest that surface water infiltration in this reach of the SCR is limited, and several variables (e.g., evapotranspiration, diversions for irrigation, interaction with the alluvial aquifer) remain difficult to quantify (UWCD, 2013). Additionally, river percolation under high-flow conditions remains undetermined, as channel conditions make high-flow measurements difficult to obtain. Higher percolation rates would be anticipated when flood flows inundate wider areas within the floodplain, although the duration of flood inundation is generally limited to a maximum of a few days per year (UWCD, 2013).

2.3.2 PIRU CREEK

Piru Creek is within the study area and flows over basin alluvial deposits just downstream from Santa Felicia Dam (SFD) (Figure 2-5). The USGS streamflow gage 11109800, with a drainage area of 425 square miles of the Piru Creek watershed, is located just downstream of the SFD penstocks. The gage is located upstream of the confluence from the SFD spillway channel, which receives flow only in the wettest conditions (the most recent spill event was in 2005). Daily data from the USGS gage at this location records releases from SFD and is used as input for streamflow entering into the Regional Model domain for daily simulations. Annual average discharges at this gage, with SFD spill data from an active USGS gage located just above Lake Piru, was added to the lower USGS gage data; therefore, annual SFD spill volumes are included in Tables 2-3 and 2-4.

2.3.2.1 LAKE PIRU CONSERVATION RELEASES

United’s conservation releases from Lake Piru are conducted to provide groundwater recharge to the Piru, Fillmore, Santa Paula and Oxnard basins at times when natural runoff in the SCR watershed is limited. United contracts with the USGS to maintain the gage and records for daily release discharge volumes from Lake Piru. The conservation releases also help to sustain groundwater underflow that exists between the downstream groundwater basins, including the Piru, Fillmore, and Santa Paula basins, as well as the Mound and Oxnard basins. Released water that does not percolate into the Piru and Fillmore basins flows downstream to the Santa Paula basin, and is diverted at the Freeman Diversion for subsequent surface water deliveries and managed aquifer recharge operations in the Oxnard basin. The conservation releases typically span over a month to several months in order to optimize the recharge in the downstream groundwater basins.

Table 2-5 shows the measured distribution of released water to each basin for United’s conservation releases from 1999 through 2015. Most of the released water is natural inflow from the Piru Creek watershed, but in many recent years a portion of the released water is imported State Water Project water (State Water) purchased by United and conveyed from storage in Pyramid Lake by way of middle Piru Creek (UWCD, 2014). Natural inflows originating from the portion of the watershed upstream of Pyramid Lake are mixed with State Water stored in Pyramid

Lake before being released to middle Piru Creek under the current inflow-outflow regime. Therefore, releases to middle Piru Creek often have a significant percentage of State Water, whether they consist of natural flows from the watershed or State Water purchased by United.

Due to drought conditions and low inflows into Lake Piru, United did not perform conservation releases between 2013 and 2015. The last time prior to 2013 that there was no conservation release was during drought conditions in 1990. United is, however, required to release water continuously to maintain fish habitat in lower Piru Creek. Current habitat water release requirements range between 7 and 20 cfs, depending on cumulative annual rainfall at the Piru-Temescal Guard Station rain gage at Lake Piru (Ventura County gage #160; see Figure 2-2) (UWCD, 2012). Most of the habitat water releases recharge to the Piru basin. Piru Mutual Water Company and Rancho Temescal operate diversions on lower Piru Creek that divert a portion of the creek flow for agricultural uses, as discussed in more detail in Section 2.3.8.

2.3.2.2 PIRU SPREADING GROUNDS

United's Piru Spreading Grounds are located just west of Piru Creek adjacent the town of Piru (Figure 2-5) and sometimes receive diversions from Piru Creek for recharge into the underlying groundwater flow system. Details regarding this United operation during the calibration period is detailed further is Section 2.3.8.1, below.

2.3.3 HOPPER CREEK

Hopper Creek is a tributary to the SCR within the Piru basin (Figure 2-5). USGS streamflow gage 11110500, with a drainage area of 23.6 square miles, drains a steep watershed directly into the SCR at a location about halfway between the confluence of Piru Creek with the SCR and the Piru basin's western boundary with Fillmore basin. Daily data from the USGS gage was obtained from this location and used as an input for streamflow entering into the Regional Model domain for daily simulations. Discharge statistics for calendar years 1985 – 2015 are shown in Table 2-3. Preliminary measurements indicate that percolation from Hopper Creek is minimal.

2.3.4 POLE CREEK

Pole Creek is a tributary to the SCR within the Fillmore basin (Figure 2-5). Ventura County Watershed Protection District (VCWPD; https://vcwatershed.net/hydrodata/) streamflow gage 713 is located northeast of the City of Fillmore and drains a small and steep watershed with an area of 8.09 square miles. Much of the eastern areas of the City of Fillmore are located on the Pole Creek alluvial fan. An engineered creek channel now turns southward once the creek emerges from the foothills and passes under Highway 126 and into a large sediment capture basin before flowing into the SCR main channel. Daily data from the VCWPD gage was obtained from this location and used as input for streamflow entering into the Regional Model domain for daily simulations. Discharge statistics for calendar years 1985 – 2015 are shown in Table 2-3.

2.3.5 SESPE CREEK

Sespe Creek drains a large (252 square mile) undeveloped watershed within the Los Padres National Forest, located north of the study area, and flows into the Fillmore groundwater basin from the north (Figures 2-1 and 2-5). Agricultural developments are located along the banks of Sespe Creek as it enters into Fillmore basin, and the City of Fillmore is located further downstream on its eastern banks. Infiltration of surface flows in Sespe Creek is a major source of recharge to the Fillmore basin on the Sespe Fan alluvium as well as within the SCR channel. Measured percolation rates along Sespe Creek range from approximately 2 cfs to 15 cfs, for observed discharges at the mouth of the canyon entering the Fillmore basin ranging from about 10 cfs to over 100 cfs (DWR, 1933). The USGS streamflow gage (USGS 11113000, "SESPE C NR FILLMORE") is located near where Sespe Creek enters the Fillmore basin, with measurements dating back to 1911. Historically a diversion for the Fillmore Irrigation Company was located upstream of USGS streamflow gage and upstream of the Fillmore basin boundary. Water was diverted and delivered downstream to the agriculture fields within the Fillmore basin along the western banks along Sespe Creek. An old USGS stream gage was located in the diversion canal (USGS 11112500, "FILLMORE IRR CO CN NR FILLMORE CA"), and an additional gage recorded the combined streamflow and diversions (USGS 11113001, "SESPE C + FILLMORE IRR CO CN NR FILLMORE CA"). However, data gaps are present within all of these available records within the 1985-2015 simulation period, and these were filled as estimates by United on a daily basis as part of the Regional Model development using: 1) a correlation developed between Sespe Creek and Santa Paula Creek gages, or 2) USGS gages 11113001 and 11112500 records (Table 2-6). Diversions by the Fillmore Irrigation Company ceased in 2007. Diversion values and data gaps are further detailed in Section 2.3.8.2. Final discharge statistics for calendar years 1985 – 2015 are shown in Table 2-3.

2.3.6 SANTA PAULA CREEK

The watershed of Santa Paula Creek (Figure 2-5) drains approximately 45 square miles, and much of the area consists of steep, mountainous terrain. The steep terrain tends to produce significant runoff, and the erodible sedimentary rocks of the region produce high sediment loads during flood events (Stillwater Sciences, 2007a and 2007b). The alluvial fan at the mouth of Santa Paula Creek is completely developed, with agricultural land uses dominant (until recently) on the east bank and residential development in and adjacent the City of Santa Paula the dominant land use on the west bank. Industrial land use dominates in the areas south of the railroad bridge. The high flows and high sediment loads of Santa Paula Creek resulted in persistent flooding problems in the lower reach of the creek since the time the area was first developed (HDR CDM, 2012). Historically, percolation rates in lower Santa Paula Creek were similar to the Sespe Fan in the Fillmore basin; however, as a result of flood control projects constructed by the U.S. Army Corps of Engineers in the late 1990s, which included channelization and lining, little to no percolation now occurs in lower Santa Paula Creek (UWCD, 2013). Daily data from the USGS gage was obtained from upstream of this location and used as input for streamflow entering into the Regional Model domain for daily simulations. Discharge statistics for calendar years 1985 – 2015 are shown in Table 2-3. The USGS gauging station is located upstream from Canyon Irrigation's Harvey Diversion, so estimates of Santa Paula Creek flow reaching the SCR based on gage data are generally thought to be higher than the flows in the lower reach. Diversions from Santa Paula Creek are accounted for and described in Section 2.3.8, below.

2.3.7 MOUNTAIN FRONT RECHARGE AND UNGAGED WATERSHEDS

In addition to the SCR main channel and associated tributaries detailed above, there are additional watershed areas in the model expansion area representing 118.10 square miles of ungaged runoff and mountain front recharge from the mountain slopes bounding the study area to both the north and the south (Figure 2-5; not shown are 8.55 square miles of additional ungaged watershed that are related to Mound basin following the expansion to 2019 DWR groundwater basin boundaries). Ungaged runoff may percolate into the ground along the runoff channel or reach the SCR channel. The range for previous estimates for mountain front recharge is small compared to other major water budget components in the Piru, Fillmore, and Santa Paula basins, and values from previous studies for these basins are presented later in Section 2.6.1.

2.3.8 STREAMFLOW DIVERSIONS

The model expansion domain includes 14 surface water diversions based on water use records submitted to the State, in addition to United's Freeman Diversion (Figure 2-10). The reported active and historical diversions include:

- Camulos Ranch (SCR, Piru basin)
- Isola (SCR, Piru basin)
- Rancho Temescal 1 and 2 (Piru Creek, Piru basin),
- Piru Mutual (Piru Creek, Piru basin),
- UWCD Piru Spreading Grounds (Piru Creek, Piru basin)
- Fillmore Irrigation Company (Sespe Creek, Fillmore basin)
- Limoneira (minor; Boulder Creek, Filmore basin)
- Beans Ranch (Boulder Creek, Fillmore basin)
- Canyon and Farmer's Irrigation Companies (Santa Paula Creek, Santa Paula basin)
- Zaragosa (minor; SCR, Santa Paula basin)
- Diversions related to Hyde Ditch (SCR, Santa Paula basin)

- Southfork Ranch (SCR, Santa Paula basin)
- UWCD Freeman Diversion (SCR, Santa Paula basin).

This section will provide a brief description for each diversion relating to their source and water destination locations for each. Diversion data was obtained from:

- previous investigation reports in the area (CH2M HILL/HGL, 2008),
- reported monthly data to California's State Water Resources Control Board's California Integrated Water Quality System available to the public (https://ciwqs.waterboards.ca.gov/ciwqs/ewrims/EWMenuPublic.jsp),
- communication with diversion owners/operators, and from United's records for the diversions operated by United.

California's State Water Resources Control Board began requesting diversions to be reported in the 1980s and 1990s, but available records suggest early compliance was fairly sparse. However, the State required that mandatory monthly diversion totals to be provided on an annual basis beginning in 2009, which resulted in much more recent diversion information being reported on a regular basis. Monthly records were acquired or estimated for diversions within the model domain, and reported monthly totals were distributed equally across the month for the daily simulations in the model. Available records for diversions are fairly consistent since 2009, but data gaps were identified and diversions estimated in some instances. Those estimation methods are briefly described below.

2.3.8.1 PIRU BASIN

The Piru basin contains diversions from the SCR as well as Piru Creek below Santa Felicia Dam (Figure 2-10). Both Camulos Ranch and Isola currently have, or previously had, operating diversions located in the eastern portion of Piru basin, upstream from the confluence with Piru Creek. Camulos Ranch was active through 2015, but Isola has not diverted any water since 2005. The Camulos Ranch diversion has records available over the majority of the 1985 – 2015 simulation period (1985 – 2005, 2010 – 2013). In order to fill data gaps for the Camulos records (2006-2009, 2014-2015), a ratio of reported monthly diversions to observed streamflow in the SCR upstream of the diversion (USGS gages 11108500 and 11109000) was calculated for all months with data. The data gaps were filled with either individual average monthly diversions (i.e. January average, February average, …, December average) or the individual average monthly ratio was used to set as a limit for estimated diversions when compared to individual average monthly diversions. This method ensured that representative diversions were estimated and that diversions in excess of historical diversion to streamflow ratio were not applied. Camulos irrigates approximately 770 acres and supplements groundwater well use with the diverted water, with annual diversion rates, from 1985 – 2015 provided in Table 2-7. The Isola diversion ceased operating after 2005 and had monthly records available from 1985 – 2005 through the CH2M Hill/HGL (2008) documentation (Table 2-7). Isola irrigated approximately 210 acres and supplemented groundwater use with the diverted surface water.

Rancho Temescal has two diversions on Piru Creek which were not used prior to 2002 (no data reported to the State). The first diversion is located immediately downstream of Santa Felicia Dam and supplements groundwater use to irrigate approximately 242 acres to the west of Piru Creek. The second diversion is located further downstream, nearby Piru Mutual's diversion, and supplements groundwater well use to irrigate approximately 314 acres to the east of Piru Creek. The annual diversion rates from 2002 – 2015 for these two diversions are provided in Table 2-7. Piru Mutual Water Company's diversion is located on Piru Creek in the same location as Rancho Temescal's second (lower) diversion. Piru Mutual has records available over the majority of the 1985 – 2015 simulation period (1985 – 2005, 2011 – 2013). In order to fill data gaps for these Piru Mutual records (2006-2010, 2014-2015), the same method described above for Camulos Ranch was used for Piru Mutual data, but with the USGS gage 11109800 located on Piru Creek, and with Santa Felicia Dam Spills included as well (Tables 2-3 and 2-4). Piru Mutual irrigated approximately 546 acres with the diverted water.

United used to divert water from Piru Creek to spreading grounds in order to recharge groundwater supplies. United's Piru Spreading Grounds are located just west of Piru Creek (Figure 2-5) and received diversions from Piru Creek for recharge into the underlying groundwater system. United maintains records for daily diversions, and these records were used for implementation into the Regional Model. The Piru Spreading Grounds diversion was active from 1985 – 2008, with annual diversion rates provided in Table 2-7. On average, nearly half of the annual diversion flows by volume were diverted in April, May, and June, often during periods when Lake Piru was spilling. The Piru Spreading Grounds have not been used since 2008 due to permitting restrictions at the facility (the diversion structure lacks a fish screen).

2.3.8.2 FILLMORE BASIN

Fillmore basin has three diversions, with the largest being historically operated by the Fillmore Irrigation Company. The Fillmore Irrigation Company diversion is located outside of the groundwater basin boundary on Sespe Creek, and applies water for agricultural application along the northern portion of the basin west of Sespe Creek (Figure 2-10), with a service area around 1,105 acres. Since 2007 no water has been diverted by the Fillmore Irrigation Company, and the dataset of the annual records prior to 2007 are incomplete. Diversion values and data gaps for Fillmore Irrigation Company diversion are provided in Tables 2-7 and 2-8. As described in Section 2.3.5, above, there were several USGS gages available related to Sespe Creek and the Fillmore Irrigation Company's diversion. Similar to filling data gaps for Sespe Creek streamflow, data gaps for the Fillmore Irrigation Company's Diversion were filled on a daily basis using 1) a correlation developed between rainfall at VCWPD gage 171 (Figure 2-2) Sespe Creek and or 2) USGS gages 11113001 and 11112500 records. The remaining two diversions are located in the same area, where Boulder Creek drains a small watershed (5.57 square miles) into Fillmore basin from the north (Figures 2-5 and 2-10). Bean's Ranch is the larger of the two diversions over the simulation period (Table 2-7) and applies water for agriculture and livestock along the northern edges of the

Fillmore basin. Monthly records are fairly complete after 2002, and data gaps before that (1985-1993 and 1996-2001) were filled with average annual totals reported for 1994 and 1995. In the vicinity as the Bean's Ranch diversion, Limoneira is reported to also have historically had a diversion for application to about 126 acres for agricultural land application in the northern portion of Fillmore basin. Limoneira records show periodic diversions from 2000 – 2015 (Table 2-7). Records are limited prior to 2000 and it was assumed to no diversions occurred except for the years when Limoneira provided data to the State.

2.3.8.3 SANTA PAULA BASIN

Santa Paula basin includes diversions from the SCR as well as Santa Paula Creek (Figure 2-10). The Canyon Irrigation Company operates the Harvey Diversion, located on Santa Paula Creek downstream of the USGS streamflow gage and just upstream from the confluence of Santa Paula Creek and Mud Creek. Mud Creek drains a minor watershed east of the diversion location. Through United correspondence with Canyon Irrigation Company, a complete monthly record set was provided from the operators for the 1985 – 2015 time-period (Frank Brommenschenkel personal communication, January 2020). Canyon Irrigation Company diverted water to their service area (approximately 784 acres). Beginning in 2001, Canyon Irrigation Company began selling and distributing diverted water from the Harvey Diversion on Santa Paula Creek to the Farmer's Irrigation Company for conjunctive use across their service area (approximately 3,178 acres) located across much of the western portion of the Santa Paula basin. Annual diversion rates, from 1985 – 2015 are provided in Table 2-7 for both the Canyon Irrigation Company and the Farmer's Irrigation Company.

In addition to the Harvey Diversion on Santa Paula Creek, there are four known diversions located along the SCR in Santa Paula Basin, three of which are on the south side of the river where groundwater production is more limited (Figure 2-10). There is a minor diversion that reportedly applied water for agricultural land application on the north side of the SCR, beginning in 2011 (Zaragosa Diversion, Table 2-7). Downstream from that location, water is diverted from the SCR through what was historically known as the Hyde-Turner Ditch, for application to the agricultural land. The Hyde-Turner Ditch diversion more recently consisted of the parties of Carmichael, Furnas, Green Thought LLC, the Wishtoyo Foundation, and several predecessor land owners and diversion right holders related to the Hyde-Turner Ditch. Collectively, the Hyde-Turner Ditch diversions have historically applied diverted water for agriculture purposes to approximately 346 acres located along the south bank of the SCR within the Santa Paula basin. Annual diversion rates, from 1985 – 2015 are provided in Table 2-7.

Further downstream is the Southfork Ranch diversion, which diverts water out of the SCR and applies it mainly to agricultural land with some livestock use, but all application is located outside of the Santa Paula basin (Figure 2-10). Reported data was available from 2012-2015, but reporting was infrequent for years prior. Data gaps were filled with annual averages and linear interpolation using the years where reported data was present (1991-1992, 1994, 2008). Annual diversion rates, from 1985 – 2015 are provided in Table 2-7.

Lastly, United's Freeman Diversion is located within Santa Paula basin, where diversions are directed downstream by canals to major artificial recharge facilities for replenishment of groundwater within the Oxnard groundwater basin (Figure 2-10). United has complete records for this diversion and annual diversion rates, from 1985 – 2015, are provided in Table 2-7.

2.3.9 IMPORTED SURFACE WATER

Wastewater discharges to the SCR in Los Angeles County, most notably from the Valencia Water Reclamation Plant located adjacent to the SCR near Interstate 5, have contributed to surface water flows in the SCR in the study area. A large percentage of these flows is comprised of State Water that is imported into the SCR Valley East basin within Los Angeles County (4-004.07; Figure 1-2). Urban development has continued since State Water was first imported into the basin beginning in 1980, and the community relies on local groundwater in addition to imported State Water supplies (CH2M HILL/HGL, 2006). Figure 2-11 shows historical annual surface water flows for the SCR near the Los Angeles/Ventura County Line plotted with historical precipitation from a Piru basin gage. Related to the increase in surface flows from upstream development, subsurface underflow into Piru basin has been estimated to have increased from around 240 AFY, representative of 1930s – 1970s (Mann, 1959; DWR, 1974 and 1975) to approximately 1,100 AFY after the 1980s (HydroMetric's 2008 analysis performed from United of CH2M HILL/HGL [2008]). The basin boundaries related to this underflow comparison are similar; however, it is noted that significant basin boundary changes shifted the current 2019 DWR boundaries closer to the Los Angeles/Ventura County Line and result in substantial increase in underflow for the current effort because the aquifer thickness at the new boundary is thicker and capable of transmitting larger volumes of water downstream within the subsurface (UWCD, 2020). Continuous surface water flow sometimes extends across this "dry gap" (which commonly extends from near the historic Rancho Camulos to around Cavin Road) during the wet season when runoff from storms generates enough flow to overcome the significant infiltration capacity of this reach.

Additionally, United is party to a water conservation agreement between the California Department of Water Resources and the Downstream Water Users (DWUs), which dates back to 1978. The DWUs consist of United, Los Angeles County Waterworks District, Newhall Land and Farming (currently FivePoint), and Valencia Water Company (currently Santa Clarita Valley Water Agency). The program is designed to hold back flood flows in Castaic Lake (Figure 1-1) and release them at a later date (typically in the spring) in a manner that allows the flows to percolate in the basins downstream of the dam, benefiting the DWUs with water rights that predate construction of Castaic Lake (United, 2014). United represents the DWUs in coordinating the storage and release of water with DWR, which operates Castaic Lake, and by monitoring the associated releases to ensure that the flows are optimally benefiting the basins. In most years the majority of released water that makes it to the Ventura County line percolates in the SCR channel within the Piru basin, while in some years surface flow may make it to the Fillmore basin where the remainder percolates. Castaic Lake releases generally do not occur during dry years, for example during the recent drought from 2012-2016.

Near the western boundary of the model domain the City of Ventura's Water Department (Ventura Water) obtains approximately 5,000 AFY of surface water from the Ventura River watershed (sources include water from Casitas Municipal Water District and Ventura Water's facilities at Foster Park) for blending and distribution throughout its service area, which lies mostly within Mound basin, but also includes portions of northern Oxnard basin and western Santa Paula basin. The quantity of water reported above was averaged for the period from 1985 to 2015 (Ventura Water, 2020). This imported surface water was not included in United's Coastal Plain Model (UWCD, 2018); however, it is included in the current model. Only a small fraction of this imported water reaches the underlying aquifers in the Regional Model domain as municipal and industrial return flows (see Section 2.7 below).

2.3.10 WASTEWATER TREATMENT PLANT DISCHARGES

There are four water treatment plants located within the expanded study area; their locations are shown on Figure 2-12.

The Piru Wastewater Treatment Plant (WWTP) is located west of the town of Piru and on the east bank of Hopper Creek. Plant discharge flows through a pipeline that runs parallel with Hopper Creek toward the confluence with SCR. Plant effluent discharges into 2 percolation basins located adjacent the SCR main channel where the effluent percolates into the subsurface. Monthly reported data is provided to the State Water Resources Control Board (https://geotracker.waterboards.ca.gov/) on an annual reporting basis, but that reporting was not as complete prior to the 2000s. There were several data gaps in the Piru WWTP records (1985-1989, April 1993, October-December 2000, and 2005-2006). These data gaps were filled with representative monthly averages. Monthly records were acquired or estimated and monthly totals were equally distributed across the month for implementation into daily simulations. The average annual discharge for the Piru WWTP is provided in Table 2-9.

The Fillmore Water Reclamation Plant (WRP) was located along the SCR main channel near the southwestern edge of the city until 2008, when it was relocated about a half-mile northwest, near the Sespe Creek confluence with the SCR (Figure 2-12). Prior to 2008, the Fillmore plant discharged its effluent onsite into percolation basins adjacent to the SCR, and directly into the SCR at times. Following new plant construction and relocation in 2008, about one-third of the discharge is used to irrigate public space within the City of Fillmore through shallow drip lines. The remaining effluent is discharged into onsite percolation basins located near Sespe Creek at the west end of River Street. Similar to Piru WWTP records, there were some data gaps in the available Fillmore WRP reported records (1985 – 1997, 2000, 2005-2006, July 2007 – December 2008), and these also were filled with representative monthly averages. Because of the limited historical data regarding discharges to the SCR from the Fillmore WRP, it was assumed that discharge prior to 1998 went to the WRP percolation ponds only. The average annual discharge for the Fillmore WRP is provided in Table 2-9.

The Santa Paula Water Reclamation Facility (WRF) is located on the southwestern edge of Santa Paula about one-third of a mile north of the SCR main channel (Figure 2-12). Up until 2010, this WRF discharged treated wastewater directly into the SCR via the Peck Road drain. Due to discharge permit issues related to water quality, the City of Santa Paula worked to construct an improved facility that now percolates to discharge basins setback at least 0.15 miles away from the SCR. Average annual discharge records for the Santa Paula WRF are shown in Table 2-9.

The Todd Road Jail Wastewater Treatment Plant (Todd Rd. Jail WWTP) that is located north of the SCR near the southern end of Todd Road, downstream from the Santa Paula WRF in Santa Paula basin (Figure 2-12) and began operations in 1995. Reported records were not available prior to 2011 and representative monthly averages were used to fill the data gap. The average annual discharge for the Fillmore WRP is provided in Table 2-9.

2.3.11 RIPARIAN VEGETATION

The SCR and its tributaries contain riparian vegetation habitat for various classes of vegetation, including forest, woodland, shrubland, herbaceous, and *Arundo donax*, which together extend across the river corridor, as shown by Stillwater Science's 2016 (Stillwater Sciences, 2019) mapping of the SCR vegetation (Figure 2-9). Within the SCR, there with several expansive and distinct reaches that are wide sandy channel with minimal in-channel or bank vegetation. These "dry gaps" occur in areas where rising groundwater is absent. Specifically related to the hydrogeologic conceptual model, riparian vegetation consumes water through evapotranspiration (ET). Previous estimates for the range of ET rates within the SCR valley in Ventura County have ranged from 1.1 ft/yr (DWR, 1974 and 1975) to 5.2 ft/yr (Mann and Associates, 1959). Studies relating to mixed riparian communities of arid and Mediterranean-type climates have estimated ET rates ranging from 0.36 ft/yr to 5.2 ft/year (UCLA, 2011). Additionally, *Arundo donax* is a reed-like invasive species that is of special interest to natural resource and water managers because of the amount of habitat and potential amount of water that it utilizes. This invasive species has some presence within the entire expansion domain, with the largest infestations occurring in reaches with perennial surface water and shallow groundwater (Stillwater Sciences, 2019). Studies related to *Arundo donax* ET rates have reported estimates ranging from 0.8 ft/yr to as much as 58 ft/yr (The Nature Conservancy, 2019; UCLA, 2011), with the majority of the studies presenting average annual consumption of 10 ft/yr or less (The Nature Conservancy, 2019; Table 1).

2.4 GEOLOGY

Southern Ventura County is located in the Transverse Ranges geomorphic province of California. Within this province, the axes of mountain ranges and valleys are oriented east-west rather than northwest-southeast as is typical in the adjacent Peninsular and Coastal Ranges geomorphic provinces. Most of the study area overlies an elongate, structurally complex syncline that trends west-southwest to east-northeast, referred to as the Ventura structural basin (Yeats and others, 1981). Active thrust faults border the Ventura structural basin, causing uplift of the adjacent mountains while the basin continues to deepen.

The groundwater basins within the study area include the broad extent of the active floodplain of the SCR, located along the southern portion of the valley, with a generally west-southwest to east-northeast oriented axis from Ventura County line to the Saticoy area, where the SCR enters the Oxnard coastal plain and then at Highway 101 trends west to its mouth near Ventura Harbor. The Piru and Fillmore groundwater basins are considered unconfined basins with large extents of alluvium deposited above thick Pleistocene freshwater-bearing deposits of the Saugus and San Pedro Formations (United, 2017). The Saugus Formation is identified by Dibblee and other investigators, and constitutes the fluvial silt, sand, and gravel deposits of the upper San Pedro Formation (Dibblee, 1990 and 1991; USGS, 2003). Past investigations (Mann, 1959, USGS, 2003, 2011, CH2M HILL/HGL, 2006) have referred to both the Saugus Formation and the San Pedro Formation; this report will use the Saugus/San Pedro Formation naming convention. The Piru and Fillmore basins are largely the extent to which the Saugus/Upper San Pedro Formation is mostly composed of continental fluvial deposits, and lack marine environment deposition more common to the Santa Paula, Mound and Oxnard basins to the west.

Located to the west and downstream of the Piru and Fillmore basins, Santa Paula basin's stratigraphy is also mapped as alluvial deposits overlying the Saugus/San Pedro Formation (Mann, 1959, DBS&A and RCS, 2017). The alluvial deposits in all three basins facilitate interaction between the groundwater and surface water flow systems. However, the Santa Paula basin is believed to be semi-confined due to the presence of thick clay deposits below the alluvium in much of the eastern portion of the basin. Confining clay deposits are observed near the confluence of the SCR and Santa Paula Creek, and channel modifications for flood control purposes likely has reduced the amount of surface water that directly percolates as groundwater recharge along lower Santa Paula Creek (UWCD, 2011).

2.4.1 GEOLOGIC UNITS PRESENT IN STUDY AREA

Hydrostratigraphic units (strata) exposed at land surface within the study area are commonly classified as follows, from youngest (top) to oldest (bottom):

- Recent (active) stream-channel deposits along the present course of the SCR and its tributaries;
- Recent surficial and colluvium deposits along the flanks of the basins;
- Undifferentiated younger alluvium of Holocene age, covering much of the Piru and Fillmore basins and a portion of the Santa Paula basin;
- Undifferentiated older alluvium of Holocene to late Pleistocene age, underlying the undifferentiated younger alluvium of Holocene age across much of the Piru, Fillmore, and Santa Paula basins;
- Semi-consolidated alluvial gravel, sand, and clay deposits of the Saugus/San Pedro Formation

These exposed strata in the study area were classified based largely on their hydrogeologic characteristics, as these are the units that typically bear freshwater in usable quantities and are of primary interest for groundwater supply. Other researchers have divided these deposits in other, equally valid ways, based on their geomorphological or other characteristics (e.g., Mukae and Turner, 1975; USGS, 2003).

Older (lower) strata, which are regarded as hydrologic bedrock in the region, or non-water bearing, are also described. These strata include (following the descriptions of the USGS [2011]):

- Marine shales, mudstones, siltstones, and sandstones of the Santa Barbara Formation, of Late Pleistocene age;
- Marine siltstones, sandstones, and conglomerates of the Pico Formation, of Pliocene or early Pleistocene age;
- Shales and sandstones of the Monterey Formation, of late Miocene age
- Terrestrial sandstones and claystones of the Sespe Formation, of Oligocene age

It is important to distinguish the geologic strata from the hydrostratigraphic units which are described in subsequent sections. The strata described above, which are present in the study area, are classified by geologic characteristics including age and depositional setting. The hydrostratigraphic units were identified and classified by distinct hydrogeologic properties as discussed in Section 2.5 below, and do not always necessarily conform to the geologic strata classifications.

2.4.2 FAULTS

Geologic faults can be pathways or barriers for groundwater movement. In crystalline or cemented rocks, faults can create fractures that act as conduits to groundwater flow. However, the aquifers within the study area consist of semi-consolidated sedimentary formations, which tend to create fine-grained, low-permeability “smear zones” when faulted, effectively producing weak to strong barriers to groundwater flow, particularly in the deeper aquifers. Within the study area, the trend of many, but not all, of the faults is west-southwest to east-northeast, consistent with regional structural trends (Figure 2-13). The Oak Ridge, San Cayetano, and Country Club Faults have previously been identified as significantly limiting or diverting groundwater flow (Mann, 1959; Mukae and Turner, 1975). The study area is flanked to the south by the Oak Ridge fault, a steeply south-dipping reverse fault, and to the north by the San Cayetano fault, a north-dipping thrust/reverse fault (Mukae and Turner, 1975). The southern and western portion of the Santa Paula basin boundary is bounded by the Country Club fault, a steeply south-dipping reverse fault which acts as a barrier to groundwater flow (Mukae and Turner, 1975, USGS, 2003).

2.4.3 FOLDS

Similar to the faults in the study area, the axes of major anticlines and synclines in the sedimentary strata tend to be oriented approximately west-southwest to east-northeast. Related to the discussion of faulting, above, the works of Mann (1959), USGS (2003), and other previous investigators provide more details on the potential effects of folds on groundwater flow within the study area.

The Ventura-Santa Clara basin syncline is recognized as the major fold feature within the study area. This feature, a result of north-south compressional forces, extends from Los Angeles County east of Piru basin to offshore near Ventura, CA. The synclinal axis trends west-southwest to east-northeast, and is generally oriented parallel with the SCR channel (Figure 2-13). To the north, the San Pedro Formation crops out at land surface and may receive recharge through precipitation or streamflow percolation. To the south, the syncline is in contact with non-water bearing rocks at the Oak Ridge Fault (Mukae and Turner, 1975).

The limbs of the folds are gently dipping within most of the freshwater bearing strata in the study area; therefore, it is unlikely that the folds themselves have a notable direct impact on groundwater flow. However, it is recognized that changes in thickness (which affects transmissivity), outcrop area (which affects where recharge occurs), and other hydrogeologic properties of strata can be indirectly influenced by fold geometry.

2.4.4 PIRU BASIN

Piru basin is a westward sloping alluvial strip that consists of recent and older alluvium underlain by the Pleistocene Saugus/San Pedro formations. The basin is bounded on the north and south by mountains composed of non-water-bearing formations. Piru basin is approximately 9.75 miles long and 1.75 miles wide (excluding the Piru Creek limb of the basin). The recent and older alluvium exists nearly basin-wide and is made up primarily of coarse sand and gravel. The recent alluvium ranges in thickness from approximately 20 feet near Blue Cut at the east end of the basin (underlain by non-water bearing Pico formation at the most eastern extent) to over 120 feet near the SCR channel; the thickness varies in the remainder of the basin. The older alluvium crops out in some areas as terrace deposits, but mostly occurs as a layer of variable thickness (up to 150 feet) under the recent alluvium.

The Saugus/San Pedro Formations are folded into a syncline with a west-southwest to east-northeast-oriented axis. These formations underlie the older alluvium, except at the east end of the basin where the older alluvium is underlain by impermeable Pico Formation. The San Pedro Formation consists primarily of permeable sand and gravel and can extend to a depth of approximately 8,800 feet, as interpreted from oil well electrical logs (Mann, 1959). Few water wells deeper than 700 feet currently exist in the Piru basin.

Three principal faults bound the Piru basin: The Oak Ridge fault to the south, and the San Cayetano and Camulos Faults to the north (Figure 2-13). These faults largely define the north and south basin boundaries, separating the aquifers from the adjacent non-water-bearing rocks. Thin “shoestring” alluvial deposits of Holocene to recent age, deposited in minor drainages and tributaries from upland areas, commonly overlie older formations that are displaced by these faults (Figure 2-13).

The channel of the SCR is constrained at the southern margin of the Piru basin by the alluvial fans of the tributaries entering the basin from the north. Downstream of the Las Brisas Bridge, east of Camulos Ranch in the eastern portion of the basin, the river channel broadens significantly. The percolation of surface water in the channel of the SCR is the largest source of recharge to the Piru basin. There are no known structural or stratigraphic barriers impeding recharge from the SCR in the Piru basin downstream of this area.

2.4.5 FILLMORE BASIN

The Fillmore basin is a wider (than the Piru basin), westward-sloping alluvial basin that consists of recent and older alluvium underlain by the Saugus/San Pedro Formation. It is approximately 9.5 miles long and 4.25 miles wide. The northern portion of the Fillmore basin in the area west of Sespe Creek is called the Sespe Upland (Figure 2-14). The Sespe Upland is characterized by steep south-sloping alluvial fan material, including complex terrace deposits, older alluvial fan deposits and recent alluvial fan deposits, which unconformably overlie the Saugus/San Pedro formation (Mann, 1959).

The Pole Creek Fan is located between Sespe Creek and the SCR and forms the northeastern portion of the basin underlying much of the City of Fillmore. This area is primarily composed of fine-grained alluvial fan material.

The area of the Fillmore basin located south of the SCR is covered by recent sand and gravel deposits from the SCR. The recent sand and gravel of the SCR near the Fillmore Fish Hatchery at the eastern boundary of the basin extend to a depth of about 60 feet, and the older alluvial material extends from depths of approximately 60 to 100 feet. In the Bardsdale area, the combined thickness of this alluvial fill is as much as 250 feet. At the downstream basin boundary near Willard Road, the recent alluvium is approximately 80 feet thick. West of the City of Fillmore, the recent alluvium of Sespe Creek is approximately 80 feet thick. The recent sand and gravel deposits associated with Sespe Creek and the SCR are highly permeable.

The Saugus/San Pedro Formation underlies most of the Fillmore basin and is folded into a syncline with a west-southwest to east-northeast oriented axis. Along the main axis of the syncline near the center of the basin, the Saugus/San Pedro Formation reaches a depth of 8,430 feet (Mann, 1959). The depth from which groundwater production is suitable for agricultural and urban use and can be reasonably extracted is considerably shallower than 8,430 feet. Few wells in the basin are deeper than 800 feet in the Fillmore basin with one notable exception discussed in subsequent section 2.5.6. At the western basin boundary, the Saugus/San Pedro formation extends to a depth of 5,000 to 6,000 feet.

The two principal faults that bound the Fillmore basin are the Oak Ridge Fault to the south and the San Cayetano Fault to the northeast (Figure 2-13).

The SCR and Sespe Creek are major surface water features in Fillmore basin. Infiltration of surface water in their channels and underflow from Piru basin are recognized as the major sources of recharge to the Fillmore basin. Significant structural or stratigraphic barriers that might impede recharge from either the SCR or Sespe Creek have not been identified.

2.4.6 SANTA PAULA BASIN

The Santa Paula basin is located downstream of the Fillmore basin and is bounded by the Sulphur Mountain foothills on the northwest and South Mountain on the southeast. The basin is elongated in a northeast-southwest orientation and slopes generally westward. It is approximately 10 miles long and 3.5 miles wide. The elevations of the surface of the valley fill deposits range from 130 feet above sea level (near Saticoy) to 270 feet above sea level near the City of Santa Paula. The major fresh water-bearing strata utilized for groundwater production are the San Pedro Formation and younger overlying river deposits of the SCR; alluvial fan deposits; and recent river and stream deposits (DBS&A and RCS, 2017; Mann, 1959).

Similar to Piru and Fillmore basins, sediments in Santa Paula basin have been warped into a syncline that is oriented in a northeast-southwest direction. To the south, the Oak Ridge fault forms a barrier to groundwater movement. To the north, a portion of the aquifer represented by the San Pedro Formation is exposed in an outcrop along the Sulphur Mountain foothills (Figures 2-13). The Santa Paula basin borders the Oxnard basin (Forebay area) to the southwest and the Mound basin to the west. To the east, the Santa Paula basin is in hydraulic connection with the Fillmore basin; underflow from Fillmore basin provides the largest portion of groundwater inflow to Santa Paula basin (DBS&A and RCS, 2017). Rising groundwater in the western Fillmore basin produces perennial surface flows in the SCR. However, during periods of extended drought, dry season flow may not extend downstream to the Freeman Diversion.

Hydrogen and oxygen isotope data, and other recorded data, indicate that the Santa Paula basin receives recharge from the SCR (USGS, 1999). However, thick clay deposits exist in the eastern portions of the Santa Paula basin. Other sources of recharge to the Santa Paula basin include: rainfall percolation through the San Pedro Formation outcrops that are exposed along the foothills to the north, percolation of streams crossing these sediments, and underflow from the Fillmore Basin (UWCD, 2013).

2.5 UPDATE OF HYDROSTRATIGRAPHIC CONCEPTUAL MODEL

Strata with distinct hydrogeologic characteristics are commonly referred to as hydrostratigraphic units (HSUs). United's previously published groundwater flow model for the Oxnard coastal plain included 13 layers, which included seven aquifers and 6 aquitards (UWCD, 2018). In the coastal basins, the basal Fox Canyon Aquifer and Grimes Canyon Aquifer were designated as Layers 11 and 13, respectively. However, these aquifers do not extend into the Piru, Fillmore, and Santa Paula basins, and layering in the expanded model domain reflects these changes in the conceptual model, with United identifying and mapping just ten HSUs (six aquifers and four aquitards) in the expanded model domain. The revised model layering for the upper basins is compared the coastal basins model layering (for reference) in Tables 2-10 and 2-11. Figures 2-15 to 2-17 show the locations and areal coverage of the stratigraphic sections. Representative schematic cross sections are shown in Figures 2-18 to 2-22 that illustrate the relationships between the mapped hydrostratigraphic units within Piru, Fillmore, and Santa Paula basins.

The hydrostratigraphic model forms the basic framework required to define the geometry and layering of the aquifers and aquitards for the numerical groundwater flow model. Available borehole e-logs were reviewed to determine the depth and quality of the logs, and that locations of the wells were plotted appropriately. A subset of available e-logs (~575) was selected based on quality, depth and location/distribution; this subset was then digitized. The digitized logs were imported to RockWorks® (ver. 15), the software used to record aquifer picks, record relevant comments and construct cross-sections. Lines for cross-sections were identified in GIS, where shapefiles of oil well and water well locations, faults, basin boundaries, surface geology and other pertinent features were available to aid in selection of optimal section lines. Alignments were selected to intersect locations of known structural and stratigraphic change in the subsurface while utilizing as many e-logs as practical. Land surface elevations for the well heads with e-logs were determined based on the USGS National Elevation Data Set digital elevation model. E-logs from selected wells along the various sections were printed on plotter paper for identification of HSUs ("aquifer picks") and correlation of those units. Vertical exaggeration of the various plotted sections was determined by the depths of the well logs and the length of the section. Lithologic descriptions from additional wells along and near the lines of section were commonly noted on the working sections to help identify aquitards and aquifer units. Upon finalization of picks for a given section, depths of the various HSUs were entered into a RockWorks® database, along with notes supporting the unit picks, as necessary.

For the Piru, Fillmore, and Santa Paula basins, over 200 wells and control points were included in updating and refining the conceptual model. These well data were used to identify and determine the geometries of the HSUs within the basins. Elevations of the tops and bottoms of HSUs were then used to create digitally-interpolated elevation surfaces using Kriging methods. These elevation surfaces define the thickness and extent of the model layers within the model domain, as described in Section 3.

Additionally, 12 control points were manually added in specific areas to better define the geometry of known geologic structures. Generally, these control points were added near the basin boundaries or geologic features (such as faults) in order to accurately represent the boundary feature and terminate thinning stratigraphic units. Ten of the control points were added to the north of the basins, where faulting and folding result in units "pinching-out." A basal model layer was designated with one foot of thickness. Two control points in Piru basin located near the southern basin boundary also serve as basal layer points. Figures 2-15 to 2-17 show the locations and areal coverage of the stratigraphic sections.

The following subsections describe areas of importance and refinements in understanding of the hydrogeology in the upper basins as a result of United's effort in developing BCM 14.

2.5.1 EXTENT AND MERGENCE OF ALLUVIAL AQUIFERS

Throughout much of the Piru and Fillmore basins, thick sequences of alluvial sediments have been deposited as a result of differential stream erosion along the Ventura-Santa Clara basin syncline (Mann, 1959). The younger and older alluvial aquifer units are mapped as being continuous over much of the valley floor area of the basins and are understood to provide little impediment to vertical flow. The Piru and Fillmore basins are considered to be unconfined and these permeable alluvial deposits allow for water to move downward from recharge sources unimpeded. Layers 3 and 5, typically representing the younger and older alluvium respectively, are often merged (Layer 4 aquitard is absent) within the vicinity of the SCR channel and are generally laterally continuous east to west across all the basins of the SCR valley. These unconsolidated alluvial sediments unconformably overlie the Saugus/San Pedro Formation.

Alluvial sediments consist primarily of coarse sands and gravels, with some occasional finer-grained sediments. The older alluvium of late Holocene to Pleistocene age typically shows a greater occurrence of finer-grained lenses and more interbedding in the Piru and Fillmore basins, and somewhat less permeable sediments overall compared to the younger alluvium. Hydraulic conductivities and aquifer properties are described in subsequent sections.

Thickness of the alluvial aquifers vary throughout the basin (see Figures 2-18 through 2-22). Within the vicinity of the SCR channel, Layer 1 and 2 deposits are generally absent, and Layer 3 is mapped to ground surface. In the Santa Paula basin, Layer 3 is mapped to the surface within the active SCR channel, and northward to approximately Highway 126. North of the highway, Layer 1, alluvial fan and surficial colluvium deposits are commonly present to the base of the foothills, and often forms a surficial deposit on top of San Pedro formation outcrop in the foothills. However, in some areas of the upper basins, aquitards of various thickness and extent are mapped to exist between these young alluvial aquifers.

2.5.2 EAST PIRU ALLUVIUM

The eastern portion of Piru basin, near the Ventura and Los Angeles County line, has a scarcity of subsurface data compared with the rest of the basin. The limited well data in this area shows that the alluvium is thin and overlies the non-water bearing Pico Formation. United relied on geophysical log data and exploratory borings drilled by Geomatrix Inc. in 2006 and 2007 (Geomatrix, 2006, 2007). These data show the alluvium is just tens of feet thick at and near the County Line, with saturated thickness estimated to be around 5 feet just upstream of Blue Cut and thickening to around 25 feet east of the County Line. In this area, east of Piru Creek, Layer 1 is mapped as the terrace features and slopes near the basin boundary, and Layer 3 was designated as the active stream channel deposits. This allows for underflow into the basin and percolation of streamflow within the shallow sediments. Downstream of this area, the Pico Formation steeply plunges along the synclinal axis, and the alluvium that overlies the Saugus/San Pedro Formation becomes significantly thicker and wider in the main portion of the basin (USGS, 2003).

2.5.3 PIRU CREEK ALLUVIUM

Downstream of Santa Felicia Dam (Lake Piru), thin alluvial sediments overlie the Monterey and Pico Formations along lower Piru Creek to the mouth of Piru canyon, approximately where the

San Cayetano fault is mapped and overturned beds of the Saugus/Sand Pedro and Pico Formations are mapped in outcrop. The terraces and upslope deposits outside of the active stream channel were mapped as Layer 1, surficial colluvium and slope fill. The active stream channel was mapped as a thin alluvial Layer 3 to a depth of 20 to 30 feet below ground surface, based on lithologic data from wells 04N18W10C02S and 04N18W15M01S. An underlying Lower Saugus/San Pedro (Layer 9) was mapped where aquifer materials became more indurated, as indicated from lithologic records.

2.5.4 POLE CREEK FAN DEPOSITS

Near the mouth of Pole Creek, a thick deposit of interbedded and poorly-sorted clay and cobbles was observed in the lithologic log of well 04N19W30H01S. This assemblage of poorly stratified material is interpreted to be alluvial fan and fanglomerate deposits of significant thickness (up to 480 feet), but relatively limited extent. The deposit thins radially and was not identified in wells to the west or northwest, approximately a mile away. This deposit was mapped as an aquitard (Layer 2).

2.5.5 SESPE UPLAND RECENT STRUCTURAL UPLIFT

In the Fillmore basin there is an area of relatively recent structural uplift, designated as the Sespe Upland (Mann, 1959). This area is located west of the Sespe Creek channel and north of the current SCR channel and the associated recent SCR alluvial deposits (Figure 2-14). Here, at the base of slope of the upland, the alluvial deposits of Sespe Creek and the SCR are interfingered and transition to finer-grained sediments and interbedded minor clays deposited by tributaries and minor drainages, most notably the Timber Canyon and Boulder Canyon drainages (Figure 2-5). Well data show that recent alluvial deposits and colluvium (Layer 1), derived from the steep northern tributaries is over 350 feet thick in some areas (Chevron S 15, API: 1110046). These sediments overlie an aquitard of variable thickness (Layer 6), and the Upper Saugus/San Pedro Formation. Layers 3 and 5 are notably not present, a result of deposition of fan deposits from Timber and Boulder Canyons and the uplift creating a barrier restricting the river channel to the southern portion of the basin.

2.5.6 04N20W24R02S - FILLMORE MUNICIPAL WELL #4

The City of Fillmore drilled well 04N20W24R02S in 1963; United pumping records show usage from 1979 (when United first required reporting of pumping) until 2005, with the majority of pumping occurring prior to 1998. The well was drilled to a total depth of 2,018 ft and was screened at various intervals to a depth of 1,820 ft. This well is the deepest known production well in the Piru and Fillmore basins, and represents the deepest pumping from Layer 10. To accommodate this historical pumping, Layer 10 was mapped from 1,140 ft to 1,827 ft. at this location, resulting in a significant increase in Layer 10 thickness in this vicinity. At these depths the Saugus/San

Pedro Formation is not likely to be a significant source of future water production, but Layer 10 was assigned to this production zone and represents the thickest mapped portion of the Saugus/San Pedro Formation.

2.5.7 AREAS OF RISING GROUNDWATER/BASIN BOUNDARIES

There are two important areas of rising groundwater within the expanded model domain; the boundary between Piru and Fillmore basins and the boundary between the Fillmore and Santa Paula basins. In these areas, the water table intersects the SCR channel invert elevation, resulting in surface flows. Topographic narrowing of the basins by older and more indurated rock also constricts groundwater flow down the valley in these areas.

At the Piru-Fillmore basin boundary, the basin narrows in the area upstream of the Fillmore Fish Hatchery. A deposit of finer-grained material of relatively limited extent, mapped as Layer 6, separates the alluvial aquifers from the underlying Upper Saugus/San Pedro Formation (Figure 2-21), as identified in log signatures from wells 04N19W33M08S, 04N19W33F01S, and 04N19W33D05S. This change in stratigraphy, as well as the constriction of the basin, contributes to groundwater being discharged in the SCR as surface flow. A thinner, less extensive deposit of finer-grained material (Layer 4) was also identified in the resistivity log of well 04N19W32L02S, separating the alluvial aquifers.

Near the mapped boundary between the Fillmore and Santa Paula basins, the valley again narrows, and finer-grained deposits of varying thickness and extent were identified between both the alluvial aquifers and the Upper Saugus/San Pedro Formation. A shallow clay layer (Layer 2) of limited extent was identified to the east-northeast of the Fillmore/Santa Paula basin boundary. Aquitard material designated as Layer 4, which is observed to be thickest in the central portion of the Santa Paula basin, is mapped as extending upstream across the boundary and into the western portion of the Fillmore basin. The aquitard material separating the older alluvium aquifer from the Saugus/San Pedro Formation (Layer 6) has a similar depositional extent near the active river channel, but extends northeast to Sespe Creek, underlying the Sespe Upland area (Figures 2-19 and 2-20).

These clay deposits, which are particularly prevalent in the eastern portion of the basin near the confluence of Santa Paula Creek and the SCR, reduce infiltration of surface water resulting in semi-confined groundwater conditions. These deposits are penetrated by wells 03N21W12F06S, 03N21W12F07S, and 03N21W12B04S, located near the basin boundary and north of the active river channel. Artesian conditions have been observed in a number of wells near this basin boundary, indicating some degree of confinement. The Oakridge fault mentioned previously in this report, roughly parallels the southern basin boundaries at this location.

2.5.8 EXTENT OF SANTA PAULA BASIN CONFINING UNITS

As previously mentioned, the alluvial aquifers of Santa Paula basin are separated by a relatively extensive and laterally continuous aquitard, mapped as Layer 4. This aquitard is primarily composed of clay, sandy clay, and fine sand. The USGS-drilled well 03N21W15G01S has been instrumented with transducers and monitored by United since the mid-1990s. Wells screened above and below Layer 4 here commonly record head differences of 20 feet or more, indicating that the clay layers at least partially isolate the aquifers and restrict the vertical movement of water. In the Piru and Fillmore basins the mapping of HSU Layer 5 is generally comparable to the mapped extent of the Older Alluvium of Mann (1959) and others. In the Santa Paula basin Layer 5 is mapped deeper and below the extensive confining layer 4, and as such deviates from the traditional geologic description of Older Alluvium in the SCR Valley.

Another extensive aquitard, Layer 6, extends upstream beyond the Fillmore/Santa Paula basin boundary and is generally laterally continuous across the Sespe Upland area. Layer 6 is also mapped across the majority of the Santa Paula basin, and is interpreted to be present up to the base of slope of the Sulphur Mountain foothills to the north. These interpretations are largely consistent with previous investigations (DBSA and RCA, 2017)

2.5.9 HYDRAULIC PROPERTIES

As discussed in Section 2.5 above, the study area contains water-bearing formations which include the recent and older alluvial deposits and those of the underlying Saugus/San Pedro Formations. In relation to the numerical modeling that is detailed further in Section 3, Figure 2-23 relates the HSU layering of the Basin Conceptual Model to Aquifer System units (A, B, and C) that are used in the model calibration and results sections. These Aquifer System designations have combined various stratigraphic units in similar fashion to the historically used aquifer system designations used in the basins of the Oxnard coastal plain. Aquifer System A represents the Surficial Deposits and Colluvium (Layer 1), Aquitard (Layer 2), and Recent (younger) Alluvium (Layer 3). Aquifer System B represents an Aquitard (Layer 4), Older Alluvium (Layer 5), another Aquitard (Layer 6), and the Upper Saugus/San Pedro (Layer 7). Aquifer System C represents an Aquitard (Layer 8), Lower Saugus/San Pedro (Layer 9), and the Undifferentiated Sedimentary Deposits (Layer 10). This section provides estimates of horizontal hydraulic conductivity for each of these Aquifer Systems, or when wells are screened across multiple systems, the combinations of Aquifer Systems within each of the groundwater basins, where data are available. Estimates of horizontal hydraulic conductivity in Santa Paula basin were obtained from the Daniel B. Stephens & Associates (DBS&A) and Richard C. Slade & Associates (RCS) (DBS&A and RCS, 2017 report. The methods regarding calculation of horizontal hydraulic conductivity estimates, which pertain to the Santa Paula Basin and adjacent areas only, are presented here:

The UWCD GIS well database lists specific capacity values for a number of wells in the Basin. As reported by UWCD, the database was originally constructed by the USGS and has been only minimally updated. Specific capacity values were primarily derived from water level and pumping data listed on drillers' logs, and therefore the dataset is subject to the typical uncertainty associated with such logs.

Based on these data, transmissivity values (T) were calculated using the empirical relationship:

$$T = X * [\text{Specific Capacity}]$$

The value of X is dependent on the type of aquifer: 1,500 for unconfined aquifers, 1,750 for semiconfined aquifers, and 2,000 for confined aquifers (Driscoll, 1986). For this equation, specific capacity must be reported in gallons per minute per foot of water level drawdown (gpm/ft ddn) and the resultant T is in units of gallons per day per foot (gpd/ft). RCS assigned each well a value for X based on the perforation intervals in the data set compared to RCS's subsurface hydrogeologic interpretations. Wells perforated only in undifferentiated alluvium were assumed to be unconfined (X=1,500), whereas wells perforated in both the undifferentiated alluvium and the San Pedro Formation were assumed to be semiconfined (X=1,750), and wells perforated within the San Pedro Formation only were assumed to be confined (X = 2,000). After transmissivity was determined, the transmissivity was divided by the total listed perforated length for each well (assumed to be continuous between the reported top and bottom of perforation information) to provide an estimate of lateral [horizontal] hydraulic conductivity. By dividing the transmissivity equally among the perforated sections in a well, this method of estimation assumes that each of the water-bearing zones perforated by the well have equal hydraulic conductivities.

The DBS&A and RCS (2017) report presented estimated horizontal hydraulic conductivity values (in units of gpd/ft^2) for 48 wells within the Santa Paula Basin and adjacent areas (see Table D-1 in DBS&A and RCS, 2017). The same method was then applied to wells located within the Piru and Fillmore groundwater basin boundaries, assuming unconfined conditions within all formations. Location of well screen within the Aquifer Systems (A, B, C) were based on United's wells database (Section 2.7, above, and Section 3.5.2.5, below). From the data provided in the sections below, it is clear that many wells in the Piru, Fillmore, and Santa Paula basins are screened in Aquifer Systems A and B or a combination of the two. The pump test data presented in the following section can help serve as a starting point for aquifer properties in the calibration exercise. However, from the following sections, the variability for estimated hydraulic conductivity based on available well pump test data and well construction data within a given Aquifer System and a given basin is large (see estimated minimum and maximum values reported in Tables 2-12 to 2-14). This variability in the available pump test data emphasizes the high uncertainty of the hydraulic conductivity estimated primarily from specific-capacity data and the importance of estimating the basin-scale hydraulic conductivity through the numerical model calibration process based on the extensive observed water level data that are available.

2.5.9.1 PIRU BASIN

The Piru groundwater basin had a total of 13 wells within United's GIS database which had both the necessary specific capacity and well screen perforation data available (Figure 2-24). From these data the horizontal hydraulic conductivity statistics were calculated for wells screened in Aquifer Systems A and B (AB), Aquifer System B (wells only screened in B), and for wells screened in Aquifer Systems B and C (BC) within Piru basin (Table 2-12). The sample size available is relatively small, with no data available along Piru Creek or the area south of the SCR. From the estimated values, Piru basin has an average horizontal hydraulic conductivity estimated at about 197 ft/day for wells screened within both A and B (Layers 1-7), 236 ft/day for wells screened in B only (Layers 4-7), and 87 ft/day for wells screened in both B and C systems (Layers 4-10).

2.5.9.2 FILLMORE BASIN

The Fillmore basin had a total of 30 wells within United's GIS database which had both the necessary specific capacity and well screen perforation data available (Figure 2-24). From these data the horizontal hydraulic conductivity statistics were calculated for wells screened in Aquifer Systems: A only, A and B (AB), A, B, and C (ABC), B only, and C only within Fillmore basin (Table 2-13). Wells with pump test data are distributed across the Fillmore basin. For the Fillmore basin, an average horizontal hydraulic conductivity is estimated at about 149 ft/day for wells screened within A (Layers 1-3), 134 ft/day for A and B (Layers 1-7), 3 ft/day for wells screened across A, B, and C (Layers 1-10), 79 ft/day for B only (Layers 4-7), and 5 ft/day for wells screened in Aquifer System C systems (Layers 8-10).

2.5.9.3 SANTA PAULA BASIN

United's GIS database had a total of 31 wells located within Santa Paula basin which had both the necessary specific capacity and well screen perforation data available (Figure 2-24). From these data the horizontal hydraulic conductivity statistics were calculated for wells screened in Aquifer Systems A only, A and B (AB), and B only within Santa Paula basin (Table 2-14). For Santa Paula basin, an average horizontal hydraulic conductivity is estimated at about 152 ft/day for wells screened within A (Layers 1-3), 72 ft/day for A and B (Layers 1-7), and 100 ft/day for B only (Layers 4-7).

2.6 GROUNDWATER INFLOW AND OUTFLOW COMPONENTS

As described in Section 1.3, there have been several major hydrologic investigations that have taken place within Ventura County and surrounding areas over the past century which have included the current Regional Model expansion area. This section will first summarize the range of various water budget described in previous investigations, as presented in United's Open-File Report 2020-02, titled *Summary of Past Groundwater Models and Water Budgets for the Piru, Fillmore, and Santa Paula Groundwater Basins* (UWCD, 2020) This section will then discuss various inflows and outflows considered in the conceptual model, many of which have already been detailed in the conceptual model sections above.

2.6.1 PREVIOUS ESTIMATES OF MAJOR WATER BUDGET COMPONENTS

United previously summarized the water budgets of the Piru, Fillmore, and Santa Paula basins based on major hydrologic investigations that have been published over the past century (UWCD, 2020), and that effort supported expansion of the numerical groundwater flow model based on review of previous knowledge and hydrologic component accounting. Table 2-15 summarizes the hydrologic investigations which contributed information regarding water budget components in the Piru, Fillmore, and Santa Paula basins. Table 2-16 summarizes the *range* of reported water budget component values for each of the groundwater basins which were presented in the previous hydrologic studies that are listed in Table 2-15. The majority of the values presented in Table 2-16 were extracted from a California Department of Water Resources (DWR, 1956) or Mann (1959), with other primary sources being CH2M HILL (2004, 2005), CH2M HILL and HydroGeoLogic (CH2M HILL/HGL, 2008), LWA and others (2015) and DBS&A and RCS (2017). It is noted here that there were several predecessor agencies to California's current Department of Water Resources (DWR). DWR was formed in 1956 with legislation that simultaneously dissolved the Water Project Authority and Division of Water Resources within the Department of Public Works as well as took over duties of a reconstituted State Water Resources Board (DWR, 2020). Values for the lower and upper ranges were sourced from the cited investigations. Each of the reports used for this review are representative of varying, sometimes overlapping, climatic periods and conditions (Table 2-15). The values reported from DWR (1956) and Mann (1959) provided the most complete summaries of basin water budgets in the previous investigations and both included time-periods with wet and dry periods. Because of this, most of the lower and upper bounds of the reported range for many of the components, presenting the results in this way is considered appropriate, and helpful, for comparison purposes.

Based on United's review (UWCD, 2020), the following conclusions based on the previous studies and reported water budgets for the Piru, Fillmore, and Santa Paula groundwater basins were made:

- The most significant inflows to each basin consist of recharge from streamflow (SCR) percolation, areal recharge from precipitation and applied water from groundwater and surface water sources, and incoming subsurface underflow from upstream groundwater basins.
- The most significant outflows to each basin consist of groundwater extractions for beneficial use and outgoing subsurface underflow to downstream groundwater basins.
- With the SCR being the largest source of recharge for the Piru and Fillmore basins, the annual water budgets for these basins are highly variable due to the dependence on local rainfall within the SCR watershed. This variability and dependence on surface water inflows leads to the large range observed in the previously reported water budget components (Table 2-16). This dependence on surface water flows is expected to continue in the future, resulting in variable water budgets of similar ranges.
- Basin boundary modifications have recently been adopted that have altered the extent of the Piru, Fillmore, and Santa Paula groundwater basins. The majority of the studies reviewed for this document utilized boundaries that captured most of the water-bearing and productive alluvial deposits and underlying aquifers along the valley floor, and the overall effect on the ranges for many of the water budget components is not expected to be significant. Changes to the upstream extent of the Piru basin will however result in an increase in the subsurface underflow into Piru basin from the east. This value is expected to increase using the Department of Water Resources (DWR, 2019) boundary moving forward due to the relative increase in saturated aquifer thickness near the Los Angeles County line compared to the downstream locations used in previous studies, with saturated thickness estimated to be around 5 feet just upstream of Blue Cut and thickening to around 25 feet near the County Line. The increased basin area from the 2019 DWR updated boundaries will also result in increased direct recharge to the underlying aquifers due to precipitation.

2.6.2 GROUNDWATER INFLOWS

Multiple sources of groundwater recharge (water that enters an underlying groundwater system from land surface) occur in the study area. Those that have been previously been described in the surface water sections, include:

- “Artificial” recharge (or “spreading”); See section 2.3.2 above.
- Stream-channel recharge; See section 2.3 above.
- Mountain-front recharge; See section 2.3.7 above.
- Percolation of treated wastewater; See section 2.3.10 above.

The hydrologic conceptual model for each of these inflows is similar to that of the previously documented Coastal Plain Model (UWCD, 2018), and each surface water inflow source has been presented within Section 2.3, above as noted. Additional sources of groundwater recharge that have not been discussed in this report, but conceptually are extended in a similar manner to what was used within the within the Coastal basins (UWCD, 2018) include:

- Deep infiltration of precipitation
- Agricultural return flows
- Municipal and industrial return flows

Locations where the various types of groundwater recharge are understood to occur in the study area are shown on Figure 2-25. In addition to the types of recharge (from land surface) listed above, groundwater underflow to and from adjacent basins also occurs the study area. Groundwater underflow to and from other basins is discussed in Section 2.8.

2.6.3 GROUNDWATER OUTFLOWS

Within the study area, groundwater discharges to water-supply wells, the SCR and to the atmosphere (via ET). Like groundwater inflows, the conceptual model for each of these outflows is similar to that of the previously documented Coastal Plain Model (UWCD, 2018). Each of these components of groundwater outflow from the study area is described in some detail below.

2.6.3.1 PUMPING FROM WATER SUPPLY WELLS

Groundwater extraction from water-supply wells is a large component of estimated groundwater discharges (or outflows) from the groundwater system in the study area, with subsurface underflow and rising groundwater in the SCR, and to a smaller degree, riparian vegetation ET, also having been previously estimated to be significant (Table 2-16).

Since 1980, United has required semi-annual reporting of pumping by well operators within United's service area, vastly improving the accuracy of pumping estimates in the study area. Reported locations and the relative magnitude of groundwater pumping for the period 1985 - 2015 in the study area are shown on Figures 2-26 and 2-27. Many of the water-supply wells that exist in the study area are screened across multiple aquifers, as the objective of drilling a supply well is typically to yield a specified production rate of acceptable-quality groundwater, preferably without drilling any deeper than necessary in order to minimize costs. Few wells are screened only in the Aquifer System A (Table 2-12 to 2-14) ,and those that at are screened in Aquifer System A are located near the SCR or major tributaries where water levels are nearest to the ground surface. Most of the wells are screened within Aquifer System B, and few are screened in Aquifer System C.

A small portion of the groundwater extracted by water-supply wells in the Piru, Fillmore, and Santa Paula basins is conveyed and used outside of the Piru, Fillmore, and Santa Paula basins to other basins within the Regional Model Domain. Additionally, some groundwater extracted by water-supply wells in the Piru, Fillmore, and Santa Paula basins is conveyed and used within the Piru, Fillmore, and Santa Paula basins but used outside of the groundwater basin of origin.

No exports from the Piru basin were documented over the calibration period, however, there is an ongoing import of water through the Newhall south bank pipeline that totals approximately 3,500 AFY of water, sourcing from wells located in Los Angeles County. This water irrigates agricultural land located south of the SCR in the eastern portion of the Piru basin (Dirk Marks of SCV Water, personal communication, December 2020).

In the Fillmore basin there have been two wells historically exporting water from the Fillmore basin into the Santa Paula basin during the 1985-2015 study period. Farmers Irrigation Company installed a well approximately 150 feet east of the basin boundary in Fillmore basin in 2012. This well has pumped about 4,050 AFY in years 2013-2015 and it is assumed that this water is distributed across their service area (Figure 2-10) within Santa Paula basin (90%) and Mound basin (10%). In addition to this well, Limoneira Company has historically pumped from a well located just east of the Santa Paula boundary within Fillmore basin as well and distributed across their land that covered Fillmore basin (40%) and Santa Paula basin (60%). This well was destroyed in 2019 with the development of Santa Paula's East Area 1, but pumped an average of about 360 AFY from 1988 – 2015.

Related to exports from the Piru, Fillmore, and Santa Paula basins to Mound basin, a long-term average of approximately 1,300 AFY of groundwater has been pumped from two water-supply wells operated by the Alta Mutual Water Company in the Oxnard basin (north of SCR) since the mid-1980s, and approximately 1,100 AFY has been exported to agricultural lands in and north of the Santa Paula basin and another 200 AFY has been exported to agricultural lands in eastern Mound basin. Further related to Mound basin, Farmers Irrigation Company has exported approximately 815 AFY from Santa Paula basin to eastern Mound basin since 1992. Lastly, related to exports to Mound basin from the Piru, Fillmore, and Santa Paula basins, Ventura Water pumped approximately 1,070 AFY of groundwater from its Saticoy wells in the Santa Paula Basin and supplies that water to portions of the city overlying the Mound and Santa Paula, and Oxnard basins (the quantity of water reported above was averaged for the period from 1985 to 2015 [Ventura Water, 2020]). Ventura Water has stated that the specific quantity of imported water from this source distributed to each basin is variable and cannot be precisely determined and so Ventura Water's imports have been assumed for modeling purposes to be evenly blended and distributed across their service area.

2.6.3.2 RISING GROUNDWATER

As described in Section 2.3.1.1 and related to rising groundwater at the basin boundaries of the Piru-Fillmore basins and Fillmore-Santa Paula basins, significant amounts of water are discharged from the shallow aquifers as the groundwater elevations intersect the invert of the SCR channel. Previous studies have estimated these discharges to range from 0 – 37,800 AFY for Piru to Fillmore, 6,030 – 48,200 AFY from Fillmore to Santa Paula, and historically it was reported that 2,040 – 17,340 AFY related to rising groundwater outflowing from Santa Paula basin

(Tables 2-15 and 2-16), however, the previously reported rising groundwater estimates exiting Santa Paula basin “do not accurately indicate the volume of rising water as it is apparent that even relatively low flows consist in part of through-flowing surface water [from Santa Paula Creek, rising groundwater existing Fillmore basin, and SCR flows and] the estimates…are considered ‘excessively high’” (Mann, 1959).

2.6.3.3 EVAPOTRANSPIRATION

ET removes significant volumes of water from soil moisture before it can infiltrate to the water table. Much of this soil moisture originates as precipitation. The majority of ET occurs at land surface or within the root zone of the soil horizon, in the unsaturated zone. This near-surface ET does not directly affect groundwater elevations or flow in the saturated zone, and thus is not explicitly included in most groundwater flow models. However, near-surface ET is included implicitly as part of net recharge calculations applied as input to the Regional Model (see further details in UWCD [2018] Sections 2.7.1.3 and 2.7.2.4). Additionally, ET may occur in the form of groundwater uptake by phreatophytes in the riparian corridors of stream channels with shallow groundwater, and this form of ET is included in the modeling (see Section 3.5.2.6). Background related to ET rates for riparian vegetation is discussed in Section 2.3.11.

2.7 GROUNDWATER OCCURRENCE AND MOVEMENT

This section provides overviews of the groundwater flow system for each groundwater basin, displaying and discussing long-term hydrographs at key wells for each basin (key well locations shown on Figure 2-28) as well as groundwater elevation maps for various representative wet and dry periods.

United’s groundwater elevation database includes historical groundwater-level data for 1,369 wells within the Regional Model domain (as of May 2020), with 502 wells being in the model expansion area. The groundwater elevation database is a compilation of information supplied by several cooperating entities. Each of these entities has their own protocol for measuring water levels, and these protocols may vary over time. Other entities that may contribute water-level data within the model expansion include the Cites of Fillmore and Santa Paula, Farmers Irrigation Company (FICO), Alta Mutual Water Company, the City of Ventura, and VCWPD. United and other entities coordinate these groundwater elevation measurements to be taken within a specific calendar period, in an effort to accurately capture basin conditions during annual climatic cycles (wet and dry periods).

Groundwater elevations are normally measured in wells that are not pumping; these measurements are referred to as “static.” When evaluating trends in long-term groundwater elevations, static groundwater level measurements are preferred. However, the water level in a non-pumping well may remain depressed for some time due to residual drawdown in the well being monitored, or because of pumping interference from a nearby well. Although it is not possible to eliminate all effects of pumping when manually measuring groundwater elevations in a developed groundwater basin, UWCD and other parties take care to measure wells when residual drawdown is not expected, and no nearby wells are known to be pumping. When groundwater elevations are measured during the low-irrigation season (winter and early spring), potential pumping effects on the measurements are typically reduced. Some area wells are equipped with pressure transducers that collect frequent measurements and seasonal high and low groundwater elevations can be assessed with greater confidence. The groundwater level database records were further used in the Regional Model development for model calibration (Section 4) with all water levels available for wells within the active model domain used. The time dependent water level measurements from each well were used in hydrographs comparing with the simulated water levels. All water level measurements were also paired with the simulated water levels in scatter plots.

2.7.1 PIRU BASIN

Groundwater flow in the alluvium (Layers 3 and 5) of the Piru basin tends to be westerly, parallel to the river channel. Near the eastern basin boundary, groundwater elevations decrease over a relatively short distance as a result of the deepening and thickening of water bearing units where the Saugus/San Pedro Formation steeply plunges (Figure 2-29). Groundwater flow is westerly in this area, however recharge associated with the major tributaries along the northern margins of the basin can however create areas of southerly flow. Groundwater flow in the Saugus/San Pedro Formation is generally westerly with a relatively minor northerly and southerly components during wetter (2010) and drier (2015) years (Figures 2-29 to 2-31). The basin is considered to be an unconfined basin (UWCD, 2016). Figures 2-32 and 2-33 show hydrographs for key wells 04N18W29M02S (29M) and 04N19W25M01S (25M1) located within Piru basin, which highlight the decadal variability in groundwater elevations in Piru basin.

2.7.2 FILLMORE BASIN

Groundwater flow in the Fillmore basin generally moves east-to-west through the alluvium (Layers 3 and 5). Near the Piru/Fillmore basin boundary, groundwater flow is westerly, and in this area the water table elevation intersects the invert of the SCR channel resulting in surface flow. Groundwater flows generally westerly in the basin from the Piru/Fillmore basin boundary to the area of Sespe Creek. Gradients are steeper in this area, near the eastern boundary, than elsewhere in Fillmore basin. Groundwater recharge from Sespe Creek generally flows towards the southwest during wetter (2010) and drier (2015) years (Figures 2-29 to 2-31). Groundwater flow beneath the Sespe Upland area is generally southwest in the Saugus/San Pedro Formation. The basin is considered to be an unconfined basin (UWCD, 2016). Figures 2-34 and 2-35 show hydrographs for key wells 04N20W23Q02S, 04N20W23N01S (23N1), and 03N20W02A01S (2A1), located within Fillmore basin. Similar to Piru Basin, these wells highlight the decadal variability in groundwater elevations in Fillmore basin due to wetter and drier climate patterns that have occurred over the past century.

2.7.3 SANTA PAULA BASIN

Groundwater flow in the Santa Paula basin is generally northeast-to-southwest (Figure 2-36), following the SCR Valley gradient seen in the upstream basins, with localized groundwater depressions appearing in fall near groups of water-supply wells (Figure 2-37). Groundwater recharge from Santa Paula Creek has a relatively minor influence on groundwater gradients, and groundwater flow in this area is generally westerly. There are thick clay deposits in much of the eastern Santa Paula basin, near the confluence of the SCR and Santa Paula Creek that likely reduces the amount of water that infiltrates to the deeper aquifers (UWCD, 2013). Portions of Santa Paula basin are confined by this deposit, but the river corridor is largely sand and gravel. Similar to the Fillmore basin, groundwater flow beneath the northern flanks of the basin is generally southerly in the deeper Aquifer Zones B and C, where the Saugus/San Pedro Formation outcrops. Flow however becomes westerly in the central and southern portions of the basin. Near the western basin boundary, there is an abrupt shift in groundwater elevations, indicating the presence of the concealed barrier of the Country Club Fault, which is observed in both wet (spring) and dry (fall) periods. Recharge is observed in groundwater level hydrographs, as groundwater elevations in the majority of wells throughout the basin show significant seasonal variability (UWCD, 2011). Figure 2-38 shows a hydrograph for well 03N21W16K01S (16K1) located within Santa Paula basin. This well shows seasonal variability and an overall declining trend. Well 02N22W02C01S (2C1), located further west within the basin follows a similar trend.

3 NUMERICAL MODEL CONSTRUCTION

This section is focused on detailing the expansion of United's (2018) Coastal Plain Model into the Piru, Fillmore, and Santa Paula basins, but will also review model construction across the remainder of the model domain for completeness regarding the expansion and connection with the downstream basins (Mound, Oxnard, Pleasant Valley, and west Las Posas Valley basins) where the numerical model grid was unchanged during the model expansion. Readers are referred to the Coastal Plain Model Report (UWCD, 2018) for details on the Oxnard, Pleasant Valley, west Las Posas Valley and Mound basins.

The groundwater flow system within the Regional Model domain (Coastal Plain Model and the expansion area into the Piru, Fillmore, and Santa Paula basins) is influenced by cycles of extended drought and wet years. Observed groundwater elevations fluctuate over hundreds of feet during these cycles. This highly fluctuating groundwater level condition requires a numerical model capable of simulating the wetting and drying of aquifers. Since the 1980s, the USGS has been developing a finite difference-based groundwater model, MODFLOW. The MODFLOW numerical model has been applied in the United States and worldwide in the past 30 years. The popularity and transparency of MODFLOW attributed to its open-source policy, has led to a thorough critique of MODFLOW and numerous research papers, further cementing MODFLOW as the leading groundwater model. Among the different versions of MODFLOW available at present, some versions perform better than others under certain conditions. One version of MODFLOW, MODFLOW-NWT (Niswonger, et al., 2011), was developed to improve simulation of the drying and rewetting of aquifers, and is particularly well suited for conditions in the Regional Model. Therefore, MODFLOW-NWT was chosen as the preferred software for the Regional Model, as it was for the Coastal Plain Model (UWCD, 2018).

3.1 MODEL DOMAIN AND BOUNDARY CONDITIONS

The active domain of the Regional Model includes the Oxnard, Pleasant Valley, West Las Posas, Mound, Santa Paula, Fillmore, Piru groundwater basins, and the submarine (offshore) outcrop areas of the principal aquifers that underlie these basins. The active domain for each of the 13 model layers varies depending on the underlying geological units expanding or pinching out (see Figures 3-1 to 3-13). The active model domain spans approximately 245,821 acres (384 square miles), of which 72% (178,144 acres or 278 square miles) is onshore and 28% (67,677 acres or 106 square miles) is offshore. With the expansion of the model domain into the SCR Valley to include the Santa Paula, Fillmore, and Piru basins, the GHB that previously represented underflow in the western portion of the Santa Paula has been removed. All other boundary conditions in the area representing the Coastal Plain Model domain are identical in the Regional Model, with several additional modifications in Mound Basin, including changes related to mountain front recharge following the expansion of the DWR basin boundaries to include more outcrops to the north as well as changes in the implementation of stream channels for Harmon Barranca (i.e. Harmon Barranca was not previously simulated in the Coastal Plain Model).

The subsurface boundary conditions vary around the active model domain, as follows:

- The eastern edge of the active model domain in west Las Posas Valley basin adopts a no-flow boundary coincident with the East Las Posas basin boundary and the Central Las Posas Fault.
- The northeastern corner in Pleasant Valley basin is assigned a groundwater flux along Arroyo Las Posas based on the groundwater model developed by Calleguas Municipal Water District (CMWD, 2018). When the flux is unavailable from CMWD, an estimate based on precipitation is made.
- The eastern edge of the active model domain in Piru basin at the Los Angeles County line is assigned a groundwater flux along the SCR to represent the groundwater flow from Los Angeles County through model calibration. Details regarding the model calibration and implementation are discussed in Section 3.5.1.2.
- The western edge of the model in the ocean is assigned with general head boundary condition based on the seawater density and the depth of the submarine outcrop of each model layer.
- All other boundary conditions are assigned no flow boundary conditions.

The surface water boundary conditions are based on the streamflow measurements along the Santa Clara River and its tributaries (Piru Creek, Hopper Creek, Pole Creek, Sespe Creek, and Santa Paula Creek), as well as Conejo Creek and Arroyo Las Posas/Calleguas Creek in the coastal basins. Several minor tributaries were implemented with no surface inflow because they are ungaged. The implementation of streamflow boundary conditions is shown on Figures 3-14 to 3-26, with observed data presented in Section 2.3. See Section 3.3 below related to the simulation period and the timescales associated with the boundary conditions in the Regional Model. Figures 3-14 to 3-26 show other boundary conditions implemented in the model expansion, apart from pumping wells, which are shown in Figures 2-26 and 2-27. Further details regarding the various boundary conditions and inputs are described in Section 3.5.

3.2 MODEL LAYERS AND NUMERICAL GRID

As noted in Section 2.5, there are ten principal hydrostratigraphic units in the expanded model domain, including six aquifers and four aquitards. In Mound basin, there are nine principal hydrostratigraphic units, including five aquifers and four aquitards. As mentioned in the Coastal Plain Model report, there are 13 principal hydrostratigraphic units in the other coastal basins, including seven aquifers and six aquitards. Correlation of these hydrostratigraphic units to model layers is shown on Figure 2-23 and Tables 2-10 and 2-11. The layer thickness for each model layer is shown on Figures 3-1 to 3-13.

The model grid is oriented at North 26° West to align the dominant groundwater flow directions (southwest and southeast) with the primary axes of the model grid, as recommended by the USGS (McDonald and Harbaugh, 1988). The coordinate offsets are 6,151,000 and 1,790,000 ft, in the NAD 1983 State Plane Zone 5 system. A uniform grid size of 2,000 was adopted, consisting of 137 columns by 75 rows (Figure 1-2). There are 26,922 active cells out of total 133,575 cells.

3.3 SIMULATION PERIOD

The simulation period of the model calibration is from January 1985 through December 2015, same as the Coastal Plain Model. The time step is daily with 12,783 total stress periods (01/01/1985 – 12/31/2015), while the Coastal Plain Model is temporally discretized into monthly time steps with 372 total stress periods. The adoption of daily time steps is to better simulate the "flashy" streamflow observed along SCR and its tributaries. The SCR streamflow varies significantly on a daily or weekly basis during winter storms. The streamflow may rise from a few or tens of cubic feet per second (CFS) to thousands or tens of thousands CFS in a day. Following each winter storm, the streamflow may decrease to hundreds of CFS in a few days or in a week. The daily time step is more appropriate to simulate the highly flashy SCR streamflow.

All boundary conditions are implemented on a monthly basis except for streamflows. Although the Regional Model is simulated using daily stress-periods, the only input condition that is varied each day in streamflow. The computation time for the 2,000-foot-grid model increased considerably with the Regional Model expansion, requiring several hours per simulation (in comparison to less than 30 minutes for the 2018 model).

3.4 AQUIFER PARAMETERS

The aquifer parameters required for the Regional Model are horizontal hydraulic conductivity, vertical hydraulic conductivity, specific yield, storage coefficient, and streambed conductance. Further discussion about how streambed conductance is defined and adjusted in calibration is available in Section 3.5.1.1, below. Sections 2.5.9.1 to 2.5.9.3 describe the estimated hydraulic conductivity for the various Aquifer System and combinations, estimated with available specific capacity data well construction data. During the initial model calibration, it was noted that the hydraulic conductivity needed to be higher than the estimated values based on the aquifer tests, which aligns with the understanding that specific capacity data tends to underestimate conductivity values due to the well losses occurring inside the pumping well where drawdown measurements are being taken. The pattern of hydraulic conductivity highest in Piru basin, and decreasing toward Fillmore and Santa Paula basins do align with those similar trends in the estimated values, especially in Aquifer Systems A and B, where the available data are concentrated.

The horizontal hydraulic conductivities ultimately applied to the calibrated model are provided for each of the model layers (Figures 3-27 through 3-39). Additionally, the horizontal hydraulic conductivities and vertical anisotropy (ratio of horizontal to vertical hydraulic conductivity) ultimately applied to the calibrated model are also presented by Zone Number for each of the model layers within the model domain (Tables 3-1 and 3-2) which map to figures representing all Zone Numbers used within the Regional Model (Figures 3-40 through 3-52). The Regional Model retains all the faults used in the Coastal Plain Model. The modeled extents of the Country Club Fault and Oak Ridge Fault were extended up the SCR Valley as the Regional Model expanded into the Santa Paula, Fillmore and Piru basins. The locations of faults in each model layer that act as horizontal flow barriers, together with the conductance across those faults, are provided (Figures 3-14 through 3-39; Table 3-3).

The default values for specific yield (dimensionless) in the A, B, and C aquifer systems are 0.15, 0.15 and 0.1, respectively. The default value for specific yield in all aquitards is 0.05. The default values for storage coefficient (dimensionless) values in all aquifers and aquitards is 0.001. For MODFLOW-NWT input, the specific storage (unit: 1/ft) is used through dividing the dimensionless storage coefficient by cell thickness. Similar to hydraulic conductivity values above, the specific yield and storage coefficient values ultimately applied to the calibrated model are also presented by Zone Number for each of the model layers within the model domain (Tables 3-4 and 3-5) which map to figures representing all Zone Numbers used within the Regional Model (Figures 3-40 through 3-52).

3.5 MODEL INPUT CONDITIONS

The Regional Model is an expansion from the Coastal Plain Model; therefore, there are input conditions common to both the Coastal Plain Model and Regional Model. However, in the Piru, Fillmore, and Santa Paula basins, the SCR plays a dominant and unique role in the groundwater systems by recharging the aquifers and gaining groundwater from the aquifers. This is in contrast with the coastal basins where artificial recharge by UWCD within the Forebay area of the Oxnard basin is the dominant input condition in the groundwater system. In the following sections, the model input conditions unique in the Piru, Fillmore, and Santa Paula basins are detailed while the input conditions common in the Coastal Plain Model and Regional Model are summarized. Readers are referred to the Coastal Plain Model report (UWCD, 2018) for further detail on the input conditions common to the Coastal Plain Model.

3.5.1 INPUT CONDITIONS UNIQUE IN SANTA CLARA RIVER BASINS MODEL EXPANSION

Several important input conditions in the Piru, Fillmore, and Santa Paula basins are detailed in the following sections, including: (1) in the Piru, Fillmore, and Santa Paula basins, the SCR plays a unique role providing recharge to and receiving discharge from the groundwater flow system through the complex interaction between surface water and groundwater, including the various streamflow conditions and diversion activities; (2) subsurface underflow entering into the Piru basin along the SCR at the Los Angeles County line; (3) the operations of the Fillmore Fish Hatchery by the California Department of Fish and Wildlife, located near the Fillmore and Piru basin boundary creates a unique local recharge process; (4) through 2008, UWCD provided artificial recharge from Piru Creek streamflow into spreading basins located within Piru basin.

3.5.1.1 SANTA CLARA RIVER STREAMFLOW AND INTERACTION WITH GROUNDWATER

The SCR, with streamflow inputs from its tributaries (Piru Creek, Hopper Creek, Pole Creek, Sespe Creek, and Santa Paula Creek) has significant interaction with groundwater in the basins of the SCR Valley. The interaction of streamflow and groundwater is implemented in the stream (STR) package, with observed daily streamflow (Table 2-3) at the model boundaries for the SCR mainstem and tributaries. Along the SCR and its tributaries, there are several public and private diversions that operated during the 1985-2015 calibration period. The STR package accounts for these diversions, and reported diversion locations and rates are detailed in Section 2.3.8. The SCR mainstem, its tributaries, and diversions are tabulated in Table 3-6 and shown on Figure 3-53.

The SCR streamflow interaction with groundwater is more complex than the Conejo Creek or Calleguas Creek, which were implemented in the Coastal Plain Model, because the SCR streamflow is flashier (Conejo Creek and Calleguas are both predominately sourced by upstream wastewater discharges), has significantly higher flowrates, and has different types of streamflow events. The SCR within the Regional Model, from Piru basin to Oxnard/Mound basins, experiences two types of major streamflow events: (1) the conservation releases from Santa Felicia Dam determined by United and (2) naturally occurring storm flows. As discussed in Section 2.3, the conservation releases typically occur over a month to several months in order to optimize the recharge in the downstream groundwater basins. This is significantly different from the storm events that can bring large quantities of water to pass through the Regional Model domain over a period of several days or less. Because of the different timescales associated with the two streamflow types, the interaction with the groundwater system is implemented in the Regional Model differently in order to capture the physical variability.

The streambed conductance used in the STR package is the product of the streambed material hydraulic conductivity, stream channel width and stream channel length and then divided by the thickness of the streambed material. The STR input conditions for Calleguas Creek were calibrated in the Coastal Plain Model and are retained in the Regional Model. The STR input condition for SCR was simplified to the product of the streambed material hydraulic conductivity and the channel length. The streambed material thickness and the stream channel width were merged into the streambed material hydraulic conductivity. This assumption simplifies the model calibration by adjusting only the streambed hydraulic conductivity. The stream channel length was calculated based on the available SCR shapefile file (based from National Hydrography Dataset, which is available at from The National Map: https://www.usgs.gov/core-science-systems/national-geospatial-program/national-map). The default vertical hydraulic conductivity of the streambed is 50 ft/day. The stream segment within Santa Paula basin is calibrated to be 10 ft/day, including Santa Paula Creek. There is a correction to the hydraulic conductivity based on the streamflow rates and the nature of streamflow detailed in the following.

(1) For the UWCD conservation releases, the interaction between the release flow and groundwater changes over the release time. The release flow is steady for several weeks to several months. During the initial days of releases, the release flow is widely distributed across the stream channel leading to higher percolation. As the release continues, a narrow channel is typically formed through the cutting by the release flow into the streambed sediments. The percolation is then reduced when the narrow stream channel is formed, and the streamflow rate is increased. In summary, the percolation of the UWCD releases is generally high in the initial 10 to 20 days and the percolation decreases after 20 days when a narrow channel is formed. Accordingly, the SCR conductance in the Piru and Fillmore basins is calibrated to be 200% of default conductance in the first 10 days of release and 150% of default conductance from the 11th to 20th days of releases. The conductance in Santa Paula basin was not affected by the UWCD releases. Overall, the conductance gradually decreases as the releases travel downstream from Piru to Fillmore and Santa Paula.

(2) For the naturally occurring streamflows that are mostly related to storms and base flows from LA County, the stream percolation is affected by the magnitude of streamflow. Generally higher streamflow leads to lower percolation because higher streamflows are more turbulent and muddy impeding the percolation. When the streamflow rate is low, the stream velocity is slow and the percolation is expected to be higher. The SCR conductance is corrected by multiplying the default SCR conductance value by the streamflow correction factor The streamflow correction factor developed through model calibration is tabulated int Table 3-7.

Table 3-7. Santa Clara River Streamflow Correction Factor

Monthly SCR streamflow (acre-ft)	Streamflow Correction Factor
< 500	3.0
500 - 3000	3.0 - 2.0
3000 - 5000	2.0 - 0.5
5000 - 10000	0.5 - 0.2
> 10000	0.2

3.5.1.2 SUBSURFACE UNDERFLOW

In addition to the surface water streamflows entering into the Piru, Fillmore, and Santa Paula basins related to the SCR and its tributaries, there is also a significant amount of subsurface underflow entering into the model domain along the SCR at the county line with Los Angeles County into the Piru groundwater basin. The literature review summary presented in Section 2.7.1 showed that previous studies have estimated the subsurface underflow into Piru Basin to range from 240 to 18,800 acre-ft annually. However, that total range represents estimates for various Piru basin boundary locations and time-periods. The current Piru basin boundary is located near the Los Angeles County line compared to the downstream locations used in serval of the previous studies, and the current boundary location results in substantial increase in saturated aquifer thickness. The initial subsurface underflow estimate is based on a recently calibrated numerical groundwater flow model developed for the SCVGSA. SCVGSA's groundwater model was developed without explicitly including the surface streamflow, however the calibrated model did estimate the subsurface underflow at the Piru basin boundaries to average 7,500 acre-ft on an annual basis, with a range of 7,000 to 8,100 AF annually during that model's 40-year calibration period (calendar years 1980 through 2019). To account for both the observed surface flows and estimated subsurface underflows near the Piru basin boundary appropriately, the Regional Model estimates the subsurface underflow at 5,000 acre-ft in addition to the observed surface streamflow that is implemented at the boundary within the stream package. The subsurface underflows are implemented in MODFLOW's well (WEL) package.

3.5.1.3 FILLMORE FISH HATCHERY

The Fillmore Fish Hatchery is located near the basin boundary between Piru and Fillmore, and the California Department of Fish and Wildlife has been using groundwater for as part of its mission since 1942 (Figure 2-9; https://wildlife.ca.gov/Fishing/Hatcheries/Fillmore/History). The discharge from the Fish Hatchery was used by neighboring watercress farms or released back to the SCR. To account for this unique operation, the pumped water for the Fillmore Fish Hatchery operation was assigned a higher groundwater return rate at 0.50, resulting in 50% of the hatchery's groundwater extraction use returning to the underlying groundwater system. To better simulate the watercress farm operations and the Fillmore Fish Hatchery operations, MODFLOW's drain return (DRT) package is used in Layer 1 (Figure 3-14) with a conductance of $1x10^7$ square feet and elevation at ground surface to simulate the water movement from the watercress farms and Fish Hatchery to the aquifer below the SCR stream channel.

3.5.1.4 UWCD PIRU SPREADING GROUNDS

Within the Regional Model expansion study area, monthly artificial recharge rates (measured and recorded by United) at the Piru spreading basins during the model calibration period (January 1985 through December 2015) were implemented. As noted in Section 2, the Piru Spreading

Grounds have not been operated since 2008. Annual totals implemented into the Regional Model were previously provided relating to diversions and applications within the expansion study area (Table 2-7).

3.5.2 COMMONLY USED INPUT CONDITIONS

The streamflow and subsurface underflow outside of the Piru, Fillmore, and Santa Paula basins are described here. Additionally, the input conditions commonly used in the Coastal Plain Model and Regional Models are described and include: areal recharge, mountain front recharge, pumping, evapotranspiration, tile drains, and the interaction with sea water.

3.5.2.1 STREAMFLOW

The major streamflow inputs outside of the SCR watershed include Calleguas Creek and its tributaries, Arroyo Las Posas and Conejo Creek. These surface water features were unchanged from the Coastal Plain Model, and like the SCR, the interaction of streamflow and groundwater is implemented in the stream (STR) package within MODFLOW. Calleguas Creek, its tributaries, and single diversion are numbered and tabulated in Table 3-6 and Figure 3-53.

3.5.2.2 SUBSURFACE UNDERFLOW

The significant subsurface underflow entering into the model domain outside of the Piru, Fillmore, and Santa Paula basins is the subsurface underflow along Arroyo Las Posas to Pleasant Valley from Las Posas basin that was implemented in the Coastal Plain Model. The Arroyo Las Posas underflow from 1985 to 2015 was simulated by a groundwater model by CMWD (CMWD, 2018) and was used in both the Coastal Plain Model and Regional Model.

3.5.2.3 AREAL RECHARGE

The 2020 Model adopts the same assumptions used in the Coastal Plain Model, implementing areal recharge using MODFLOW's recharge (RCH) package. Readers are referred to Sections 3.5.1.3 to 3.5.1.5 in the Coastal Plain Model Report (UWCD, 2018) for further detail.

The recharge rate from precipitation depends upon the precipitation intensity. The precipitation recharge rate is as follows (Table 3-8):

Table 3-8. Areal Precipitation Recharge Rates

Monthly Precipitation (inches)	Precipitation Recharge Rate (%)
0 to 0.75	0
0.75 to 1.0	0 to 10
1 to 3	10 to 30
> 3	30

The recharge rate from agricultural use is based on the salt-leaching requirement (LR). The ITRC (2010) lists LRs for various crops in Ventura; using these LRs, United calculated the average LR for the Coastal Plain Model (based on crop acreage and the distribution uniformity factor of 0.8) to be 0.14. The Coastal Plain Model calibration concluded that a LR value of 0.20 is more appropriate for all basins except that the LR value in Oxnard Basin (Oxnard Plain and Oxnard Forebay) is 0.25. During the expansion of the Regional Model, the LR value of 0.20 is applied to Piru, Fillmore, and Santa Paula basins. During wet months, the soil condition is moister than the typical months leading to higher recharge rate. Therefore, in the wet months when the precipitation recharge rates are higher than the LR values, the higher recharge rates for precipitation are used for agricultural use instead of the LR value. If the precipitation recharge rates are lower than the LR value, the LR value is used. The recharge rate from domestic (municipal and industrial) use is assumed to be constant at 5%.

Other recharges included in the groundwater model are the United artificial recharge, and the percolation ponds at wastewater treatment plants (WWTP). The percolation rate of artificial recharge is assumed to be 1.0, or 100% of artificial recharge enters the groundwater system. Similarly, percolation rates within WWTP percolation ponds are also assumed to be 1.0.

3.5.2.4 MOUNTAIN FRONT RECHARGE

During rainfall events, a portion of precipitation falling in the neighboring mountains outside of the active model domain, and resulting surface flows, may recharge the shallow alluvial aquifer and/or the deep aquifer through the San Pedro outcrop or volcanic outcrop as mountain front recharge. The recharge rate is calculated based on the area of watershed outside of the active model domain receiving the precipitation (Figure 2-5) and uses the precipitation recharge rate to determine the mountain front recharge. The mountain front recharge is implemented in the

MODFLOW's well (WEL) package (see Figures 3-14 to 3-26 for well cells within the applicable model layers). For more detail of implementation outside of the Regional Model expansion, readers are referred to Section 3.5.1.6 in the Coastal Plain Model documentation (UWCD, 2018).

3.5.2.5 PUMPING

There are 1,610 extraction wells within the model domain that were active at some point during the calibration period, with 668 within the model expansion basins: 180, 363, and 125 extraction wells in Santa Paula, Fillmore and Piru basins, respectively (Table 3-9; Figures 2-26 and 2-27). The extraction wells tend to have long screen intervals to maximize the extraction capacity. To better handle the internal flow dynamics within the multi-layer extraction, groundwater withdrawals from wells in the study area were implemented using multi-node well (MNW2) package as the MNW2 package can handle the multi-layer extraction internally without user intervention. The extraction records in these basins are mostly reported every six months directly to United. To allocate the six-month reported pumpage into monthly usage, a precipitation-weighed formula was used. If the monthly precipitation was higher than 0.6 inch, the pumping allocation for that month was reduced. If there was no precipitation, the pumping allocation was increased. Therefore, the monthly allocation is inversely proportional to the monthly precipitation, and sums to the reported 6-month total pumpage. The Regional Model uses the monthly allocated rates for the daily extraction rates during the month. The default well conductance is assumed to be 2000 square feet. Some extraction wells are also the water level monitoring wells providing the water level measurements. For these extraction wells with water level measurements, the conductance may be adjusted to better fit the water level measurements during the model calibration.

The extraction wells in Oxnard, Pleasant Valley, West Las Posas, and Mound basin implemented in the Coastal Plain Model were kept unchanged in the Regional Model.

3.5.2.6 EVAPOTRANSPIRATION

The plants and vegetation on the ground surface can withdraw groundwater in the semi-perched or the shallowest aquifer. The Regional Model assumes the same ET parameters as the Coastal Plain Model for evapotranspiration (ET) in the coastal basins. Within the coastal basins, the maximum ET flux is 0.01 feet per day over the area of stream channel and wetland. The ET surface elevation is assumed at 3 feet below ground surface, and the ET extinction depth is set at 5 feet. In the Piru, Fillmore, and Santa Paula basins, the maximum ET flux was increased to 0.014 feet per day (5.2 feet per year) in order to account for higher estimated water use with the presence of *Arundo donax* within the SCR corridor along with other vegetation species (Section 2.3.10). To account for seasonal variation in ET, the maximum ET rates were adjusted according to percentages for each month shown in Table 3-10 below. These percentages were calculated based on monthly average reference ET data obtained from the California's Department of Water

Resource's California Irrigation Management Information System (CIMIS) Santa Paula station (ID 198), with data representing April 2005 to December 2019 conditions.

Table 3-10 Monthly Variation in ET Rates

Month	Variation Percentage
January	61%
February	67%
March	95%
April	114%
May	132%
June	135%
July	139%
August	135%
September	109%
October	92%
November	67%
December	54%

3.5.2.7 TILE DRAINS

The tile drains used in the Oxnard and Mound basin in the Coastal Plain Model were retained without changes. Readers are referred to Section 3.5.2.2 in the Coastal Plain Model documentation (UWCD, 2018).

3.5.2.8 GROUNDWATER/SEAWATER INTERFACE PARAMETERS

The Regional Model adopts the same assumptions regarding the groundwater and seawater interface used in the Coastal Plain Model. Readers are referred to Section 3.5.3 in the Coastal Plain Model documentation (UWCD, 2018).

3.6 ASSIGNMENT OF INITIAL HEADS

The initial head for a groundwater model simulation starting on January 1st, 1985 should be the water level at the end of 1984. To re-create the water level on December 31st, 1984, the available water level data from fall 1984 was collected for kriging. The kriged water level was evaluated manually and edited for any unreasonable water level values. The initial head may contain certain degree of uncertainty, but it is expected to have minimal effect on the overall model simulation from 1985 to 2015 as the effect of initial head uncertainty is diminished after a short period of time, e.g. the first few months of model simulation. The initial heads for all model layers used in the Regional Model are shown on Figures 3-54 through 3-66. For context of the initial heads, the hydrologic conditions at the end of 1984 were fairly wet, with water years 1982-1984 being a brief wet period between critically dry periods (see Figures 2-4, 2-6, 2-11, 2-32, 2-33, 2-34, 2-35, and 2-38 for long-term surface and subsurface records; water year classification based on DWR's Water Year Type Dataset [DWR, 2021]).

4 MODEL CALIBRATION AND RESULTS

For groundwater models with little or no streamflow interaction, the groundwater level is typically the only physical quantity for evaluating the model calibration. In the Coastal Plain Model, the SCR flows through northern Oxnard Plain where there is a clay top layer impeding the areal recharge into the Upper Aquifer System and the streamflow along Calleguas Creek is relatively less than the SCR streamflow. The interaction of streamflow and groundwater was relatively limited in the Coastal Plain Model compared to the Regional Model, and the targets of the Coastal Plain Model calibration were the transient water level measurements from 1985 to 2015. Therefore, the Coastal Plain Model calibration was completed mainly through the adjustment of hydraulic conductivity parameters.

In the Regional Model, where the interaction of the SCR flow and groundwater is a dominant process in the Piru, Fillmore, and Santa Paula basins, the calibration was sensitive to the simulation of SCR flow interaction with the groundwater. Therefore, the calibration of the Regional Model is performed simultaneously in both the groundwater and streamflow components and related parameters. The calibration focus for the groundwater component, like the Coastal Plain Model and other groundwater models, was to compare the simulated groundwater level with the available groundwater level measurements at monitoring and extraction wells. The calibration focus for the streamflow component was to evaluate the interaction between streamflow and groundwater by comparing the simulated and observed streamflow, streamflow percolation, rising groundwater flows as well as spatial and temporal trends in the extent of gaining and losing reaches.

4.1 GROUNDWATER CALIBRATION

For the groundwater component, the hydraulic conductivities in the Piru, Fillmore, and Santa Paula basins were adjusted to minimize the differences between the water level measurements (see Section 2.7 for water level database background) and the simulated water levels through the statistical analysis (Section 4.1.1 Residuals), temporal variation (Section 4.1.2 Hydrographs), and spatial variation (Section 4.1.3 Scatter Plots and Residual Plots). The calibrated hydraulic conductivity for each of 13 model layers in the Regional Model are shown on Figures 3-27 through 3-39. The hydraulic conductivity in Oxnard, Pleasant Valley, West Las Posas, and Mound are the same as the Coastal Plain Model. In the expanded area covering the Piru, Fillmore, and Santa Paula basins, the conductivity along the SCR riverbed is relatively high and decreases in the northern hillslopes and uppermost reaches of the northern tributaries to the SCR. The conductivity also gradually decreases from Piru to Fillmore, and to Santa Paula. The vertical anisotropy ratio (horizontal conductivity to vertical conductivity) remains constant at 10.0 (Table 3-2), except in West Las Posas basin. The specific yield and the storage coefficient are mostly uniform in space across a given model layer, but do have some variation between zones (Tables 3-4 and 3-5). To avoid confusion, it is emphasized that the dimensionless storage coefficient is divided by cell thickness to become specific storage (unit: 1/ft) for input parameters used in MODFLOW-NWT. The hydraulic parameters in Oxnard, Pleasant Valley, West Las Posas were the same as the Coastal Plain Model. The hydraulic conductivity in Mound basin were slightly adjusted in the Regional Model to account for the model expansion.

4.1.1 RESIDUALS

The residual is defined as the difference between the water level measurement and the simulated water level as defined below

$$Residual\ =\ Water\ level\ measurement - Simulated\ water\ level$$

The simulated water level at each water level observation well was calculated based on the screen interval and its location in the model grid. If the screen interval spans multiple model layers, the maximum of the simulated water levels over the spanned model layers were used to represent the simulated water level. Further, the water level wells are not always at the center of model grid. The simulated water level was interpolated from the four neighboring grid cells closest to the water level well.

Four residual statistical parameters are computed:

- Residual Mean (RM): The RM is the average (arithmetic mean) of the residuals from the model simulation. The RM is expected to be close to zero. If the RM deviates from zero too much, it may be considered that there may be bias in the model.
- Absolute Residual Mean (ARM): The ARM is the average (arithmetic mean) of the absolute value of the residuals. The ARM is used to evaluate the discrepancy between the water level measurement and the simulated water level without positive and negative residuals canceling each other out like RM.
- Root Mean Square (RMS): The RMS is the square root of the mean of the squared values of the residuals. The RMS is similar to the ARM.
- Standard Deviation (Std Dev): The Std Dev is the standard deviation of residuals. The Std Dev is similar to the RM and the RMS.

Generally, only one of the ARM, RMS, or Std Dev is used in the evaluation of model calibration. This report includes all three statistics for completeness. The model is considered well calibrated if the ARM, RMS or Std Dev value is less than 10% of the range of measurements.

The residual statistics of the entire Regional Model are listed in Tables 4-1 and 4-2. The residual statistics were calculated over the whole model and for each basin. During the model calibration, it was observed that there were wells with water level measurements inconsistent with the conceptual model. For example, the well is screened in the deep model layers but the water level measurements from the well were fluctuating like the nearby wells screened in the shallow model layers. To better evaluate the model calibration, the residual statistics were prepared for all water level data and for the water level data excluding the outlier wells and wells with less than 10 available data points.

From Tables 4-1 and 4-2, it is noted that the RM is close to zero with all basins included, highlighting that the model has very little bias. For individual basin, most of RM are within ± 5 feet. More importantly the percentage of ARM, RMS, or Std Dev are all much less than 10% leading to the conclusion that the Regional Model is calibrated. Residual plots are also available (Figures 4-1 through 4-8) and are discussed in 4.1.4.

4.1.2 HYDROGRAPHS

During the model calibration, many wells in each basin were checked to ensure the simulated transient water level mimics the historical water level. The hydrographs of a selection of these wells are shown on Figure 4-9 through 4-11, and it is noted that the simulated water levels over time closely resemble the fluctuating water level measurements over wet and dry years in many of these wells.

For Piru basin, the simulated water levels in wells screened in Systems A, B, and C closely mimic the water level measurements (Figure 4-9). For Fillmore basin, the majority of wells screened in Systems A and B are close to the water level measurement. A number of wells show a higher deviation from the water level measurements (Figure 4-10). For Santa Paula basin, the water level is relatively flat compared with the wells in Fillmore and Piru. The simulated water levels in Santa Paula basin from wells in Systems A, B, and C are generally in agreement with the water level measurements (Figure 4-11).

In addition to the selection of wells presented, Figures 4-12 through 4-18 show the locations of additional wells within the Piru, Fillmore, and Santa Paula basins as well as several areas within the Oxnard basin. Hydrographs for these additional wells are provided in Appendix A. For the Oxnard basin, the simulated water level is essentially the same as the simulated water level in the Coastal Plain Model. Therefore, the calibration holds for Oxnard, Pleasant Valley, West Las Posas, and Mound basin following the Regional Model expansion.

4.1.3 SIMULATED WATER LEVEL CONTOURS

Simulated groundwater elevations were also contoured for each of the model layers in the Regional Model for the same three dates that simulated water level contours were presented in the Coastal Plain Model documentation (UWCD, 2018). These dates included two key historical times—October 1991 (near the end of previous major drought in the region) and October 2006 (a year of high groundwater elevations following record-setting rainfall in 2005 and associated recharge in 2005 and 2006), as well as for December 2015, which is the most recent month in the model-calibration period and falls in another major drought period. These groundwater-elevation contours are shown on Figures 4-19 through 4-57, with layers 11 through 13 not present in the model expansion basins along the SCR as there is no active layer below Layer 10.

From inspection of these figures, simulated water levels in all applicable layers (1 through 10) of the Piru, Fillmore, and Santa Paula basins reasonably simulate the westerly groundwater flow down the SCR Valley, following the elevation change along the valley as well as the gradients down the hillslopes and tributaries discharging into SCR from the north. The model does capture the variation in water levels between the dry and wet periods, most notably along the valley floor and elevations near the basin boundaries, where rising water typically occurs.

4.1.4 SCATTER PLOTS AND RESIDUAL MAPS

Scatter plots pair the simulated water level with the water level measurement on X-Y plots for inspecting any bias that is not easily identified from residual statistics or well hydrographs. Figure 4-58 shows the scatter plot with all water level measurements throughout the Regional Model. Figures 4-59 through 4-66 show the scatter plots for each basin. Residual plots put the residual means (RM) based on well location in a figure for identifying any regional bias. Figures 4-1 through 4-8 show the RMs for river basins and coastal plain basins. For Aquifer System A shown on Figure 4-1, there is a positive bias (about 10 ft) in Fillmore basin and a slight negative bias (about 10 ft) in Santa Paula basin. These biases are relatively small, much less than 10% of water level data range. For Aquifer System B shown in Figure 4-3, there are significant biases along the foothill area north to the SCR valley floor influenced by the local fault lines. Overall, these biases do not present as a significant regional bias given that the water level data ranges around 500 feet.

4.1.5 SUMMARY ON THE CALIBRATION OF GROUNDWATER COMPONENT

Three criteria are generally used to evaluate the calibration of a groundwater model. They are residual statistics (in Section 4.1.1), well hydrographs (in Section 4.1.2), and residual bias globally or spatially (in Section 4.1.3). From the results shown in Sections 4.1.1 to 4.1.3, it is summarized in the following,

- Residual statistics: The RMs are close to zero and the ARMs are less than 10% of the data range. The residual statistics meet the requirement of the model calibration.
- Hydrographs: The simulated transient water levels from most wells were able to mimic the 1985-2015 water level measurements. Given the fact that the Regional Model simulates a large, complex system with the interaction of a highly flashy streamflow (SCR) with groundwater, the hydrographs are considered well calibrated.
- Residual bias: The scatter plots from Figures 4-58 through 4-66 show no systematic bias and the residual plots show only locally isolated high residuals.

The model calibration for the Piru, Fillmore, Santa Paula basins is summarized below:

- Piru basin: The simulated water level is well calibrated to the observed water level measurements. It is noted that the simulated water levels during a number of droughts are slightly higher than the data.
- Fillmore basin: The simulated water level is well calibrated to the observed water level measurements. There are a number of wells in System B with simulated water level consistently lower than the water level data by less than 10 to 20 feet (less than 10% of the water level range in Fillmore basin, 44.9 ft).
- Santa Paula basin: The simulated water level is well calibrated to the observed water level measurements. There are a number of wells in System B with simulated water level consistently higher than the water level data by less than 10 to 20 feet (less than 10% of the water level range in Santa Paula basin, 25.8 ft).

Based on the above summary, the Regional Model is considered to be a well calibrated regional model that simulates a complex groundwater system covering seven basins from Piru, Fillmore, Santa Paula, Mound, Oxnard, Pleasant Valley, and West Las Posas.

4.2 STREAMFLOW CALIBRATION

Streamflow in the SCR exhibits high spatial and temporal variability. Streamflow is significantly influenced by rainfall and rises rapidly throughout the watershed during rain events. On the other hand, large parts of the watershed are dry during most of the year. In the SCR mainstem, perennial flows are only observed in areas of rising groundwater in the Piru and Fillmore basins, and across the Santa Paula basin (Figure 2-9). Significant efforts were spent during the Regional Model development to capture these complex and dynamic surface flow patterns as accurately as possible. The streamflow calibration analysis was focused on streamflow upstream of the Freeman Diversion Facility, i.e. across the Piru, Fillmore and Santa Paula basins (Figure 2-5). The streamflow calibration includes recharge and surface flow calibration for both Piru and Fillmore basins, as these basins are where most of the recharge percolates. For Santa Paula basin, streamflow calibration is focused on streamflow at the Freeman Diversion facility, as much less streamflow percolation occurs in this basin.

The surface water hydrology calibration for the Regional Model includes a detailed assessment of how well historic spatial and temporal patterns of streamflow, stream channel recharge and rising groundwater were simulated for the 1985-2015 calibration period. While model runs were performed using daily time steps, calibration results were generally shown using averaged (monthly or seasonal) data. The analysis was largely based on assessing the correlation between simulated and observed data, but also by visualization of flow patterns using “heat maps” and comparing to known spatiotemporal flow trends.

4.2.1 BASIN RESPONSE DURING RAINY SEASON

Direct observations of stream channel recharge during the rainy season are very limited due to (1) the difficulty of accurately and safely performing manual discharge measurements during high flows for calculating recharge rates, and (2) a lack of appropriate locations for automated gaging stations at the downstream end of Piru and Fillmore basins (because of the high degree and variability of sediment scour and deposition in the sandy river channel associated with large storm events). Therefore, groundwater basin responses to recharge during the rainy season were assessed by comparing simulated and observed groundwater elevations increases between January 1 and May 1 for Piru and Fillmore basin key wells (see Section 2.7). Groundwater elevation increases were calculated by subtracting January 1 elevations from May 1 elevations, resulting in one data point each for observed and simulated groundwater elevation increases annually. For Piru basin, simulated basin responses ranged from - 10 ft to 53 ft, and correlated well with observed basin responses, ranging from – 19 ft to 57 ft (Figure 4-67). For Fillmore basin, simulated basin responses ranged from - 3 ft to 8 ft, and also correlated well with observed basin responses, ranging from- 4 ft to 13 ft (Figure 4-68). However, one outlier year was observed (1991), when water level increases were under predicted by approximately 9 ft (4 ft simulated versus 13 ft observed).

4.2.2 SURFACE FLOWS AND BASIN RESPONSE DURING CONSERVATION RELEASES

United monitors streamflow at multiple locations in the watershed during conservation releases, in order to monitor the progress of the release and allow calculation of recharge benefits to each of the groundwater basins upstream of the Freeman Diversion Facility. Measurements used for the Regional Model streamflow calibration were available for all fourteen releases performed between 1999 and 2012.

4.2.2.1 PIRU BASIN

Monthly simulated and observed streamflow at the downstream end of Piru basin (upstream of the rising groundwater) generally correlated well, except for one month (September 2003) where the streamflow was significantly over predicted (Figure 4-69). Simulated and observed recharge to Piru basin also correlated well, except for the year 2003 for which recharge to Piru basin was significantly under predicted (Figure 4-70). Generally, the recharge to Piru basin during conservation releases was somewhat over predicted. On the other hand, the over prediction of streamflow for September 2003 observed in Figure 4-69 was clearly associated with the under prediction of recharge in the reach just upstream. The 2003 release was exceptional in that it had the highest volume of recharge to Piru basin among all releases, even though the total release volume was slightly below average. It is not well understood what conditions led to this high recharge, and it is acceptable and expected that the Regional Model was not able to simulate recharge very accurately for this outlier year.

The response of Piru basin to recharge during the conservation releases was assessed by comparing simulated and observed groundwater elevations increases due to releases for the Piru basin key well. Groundwater elevation increases were calculated by subtracting elevations just before release from elevations just after release, resulting in one data point each for observed and simulated groundwater elevation increases annually. The increase in groundwater elevations in the Piru basin key well (04N18W29M02S) due to conservation releases was reasonably well simulated by the Regional Model (Figure 4-71 A). Simulated groundwater level changes generally varied between - 9 and 9 ft, while observed groundwater level changes varied between - 3 and 14 ft. Again, 2003 was an outlier year where the recharge and therefore also the water level increase due to the conservation release was under predicted. When excluding the year 2003, the best-fit linear trend line matches the 1:1 line better. For the remaining years, groundwater level responses to conservation releases were somewhat under predicted for many years, especially for observed water level increases exceeding 7 ft. This observation could not be explained by the simulated recharge during conservation releases, which was generally somewhat over predicted (Figure 4-70). Excluding year 2003, the under prediction of groundwater level increases never exceeds 8 ft, which is acceptable given the range of groundwater elevations observed (Figure 4-71 B). It should be noted that the hydrograph for this key well (04N18W29M02S) generally shows a very good calibration (Figure 4-71 B).

4.2.2.2 FILLMORE BASIN

Monthly simulated and observed streamflow at the downstream end of Fillmore basin (upstream of the rising groundwater) generally correlated well, even though there were a few months where the streamflow was significantly over predicted (Figure 4-72). Simulated and observed recharge to Fillmore basin also correlated reasonably well for most years, but the correlation was not as good as for Piru basin. For Fillmore basin, simulated recharge was significantly different (more than 3,000 AF) from observed recharge for four out of fourteen years (Figure 4-73).

The response of Fillmore basin to recharge during the conservation releases was assessed by comparing simulated and observed groundwater elevation increases due to releases for the Fillmore basin key well. Groundwater elevation increases were calculated by subtracting elevations just before release from elevations just after release, resulting in one data point each for observed and simulated groundwater elevation increases annually. The increase in groundwater elevations in the Fillmore basin key well (03N20W02A01S) due to conservation releases was well simulated by the Regional Model (Figure 4-74 A). Overall, groundwater elevations changed little in response to conservation releases, with observed changes varying between 0 and 5 ft, and simulated changes between 1 and 3 ft. The hydrograph for this key well (03N20W02A01S) shows very good calibration (Figure 4-74 B)

The simulation discrepancies shown for some years in Figure 4-73 do not have a big impact on calibration of groundwater elevations for the Fillmore basin, since groundwater elevations for the Fillmore basin key well are relatively insensitive to stream channel recharge during conservation releases (Figure 4-74 A).

4.2.3 SURFACE FLOW PATTERNS

4.2.3.1 PIRU BASIN

A heat map for flows in Piru basin shows spatial and temporal trends in simulated monthly flows, compared to observed losing and gaining reaches (Figure 4-75). The heat map rows indicate monthly time steps, from the oldest on top to the most recent at the bottom (in this case January 2011 to March 2013). The heat map columns indicate location along the SCR stream channel (each column is one model grid cell along the stream channel, or "stream cell"), in this case from Ventura/Los Angeles County line to Fillmore Fish Hatchery. Flow direction is from left to right, corresponding to the general flow direction from east to west. The value in each cell is the simulated monthly streamflow (cfs). Each row essentially provides a monthly snapshot of the streamflow from upstream (left) to downstream (right). Blue colors indicate high flows, yellow colors intermediate flows and red colors low flows. Watershed features are listed for reference in the top row above the heat map, and colors in the top row indicate known losing reaches (red), gaining reaches (green) or stable reaches (yellow). The Piru losing reach (also known as "dry gap") starts downstream of the gage USGS 11109000. Accordingly, simulated streamflows rapidly decreased to zero in this area for example years 2011-2013, except during the wettest months when surface flows persisted across the basin (Figure 4-75 A). During a conservation release, simulated flow inputs from Piru creek decreased due to channel percolation, but surface flows persisted across the basin, matching field observations (Figure 4-75 B). Simulated flows in the area of rising groundwater consistently increased and accurately showed transition from a dry to a wetted stream channel, even during dry periods (Figure 4-75 C).

4.2.3.2 FILLMORE BASIN

A heat map for flows in Fillmore basin shows spatial and temporal trends in simulated monthly flows, compared to observed losing and gaining reaches (Figure 4-76). The Fillmore losing reach starts downstream of the Fillmore Fish Hatchery. During conservation releases, simulated flows decreased in this reach as expected (Figure 4-76 A). During drier periods, however, simulated surface flows persisted across the basin, which does not quite match field observations (Figure 4-76 B). Field observations have shown that low flows from Piru basin (or rising groundwater from Piru-Fillmore basin boundary) generally all percolate to groundwater in Fillmore basin. Recharge of low flows in Fillmore basin are a small part of the basin water balance, and simulated groundwater elevations are therefore not very sensitive to this component. Simulated flows in the area of rising groundwater consistently increased and accurately showed transition from a dry to a wetted stream channel, even during dry periods (Figure 4-76 C).

4.2.4 RISING GROUNDWATER IN PIRU AND FILLMORE BASINS

Measurements of rising groundwater at the Piru-Fillmore and Fillmore-Santa Paula basin boundaries are available for the period 2011-2019, which includes periods with high and low groundwater elevations. Observations were available for dry months only, as it is difficult to measure rising groundwater when streamflow is high and dynamic. For both basins, observed rising groundwater correlates well with groundwater elevations at selected wells (see observed data in Figure 4-77 and Figure 4-78).

Simulated rising groundwater in Piru basin was approximately 50% lower compared to observed rising groundwater, at the same groundwater elevation (Figure 4-77). Still, overall the rising groundwater characteristics in Piru basin (location, quantity and correlation to groundwater elevations) were reasonably well predicted by the Regional Model.

Simulated rising groundwater in Fillmore basin varied between 0 and 7 cfs, and was often almost tenfold lower compared to observed rising groundwater flows, which varied between 0 and 27 cfs. While the location of rising groundwater was accurately predicted for Fillmore basin, the rising groundwater flow rate could be improved in the future. A large portion of the rising groundwater from Fillmore basin reaches the Freeman Diversion, and makes up an important part of diversions during the dry season.

4.2.5 STREAMFLOW AND DIVERSION AT FREEMAN DIVERSION FACILITY

In the Santa Paula basin, simulated and observed daily streamflow just upstream of the Freeman Diversion correlated well (Figure 4-79). However, there was significant scatter in the lower flow ranges, which are most relevant to operations of the Freeman Diversion (up to about 3,000 cfs), and the simulated values underpredicted higher flows (Figure 4-80).

To better understand the impact of streamflow simulation discrepancy on simulated diversions, the Hydrological Operations Simulation System (HOSS) was used to calculate simulated diversions based on observed and simulated streamflow at the Freeman Diversion. For the purpose of this comparison, the HOSS calculated diversions based on bypass flow operations proposed in United's Freeman Diversion Multiple Species Habitat Conservation Plan, without any infrastructure improvements. A more detailed description of the HOSS and modeling scenarios is available in the Regional Model documentation report for future simulations (UWCD, 2021).

Simulated diversions based on observed and simulated streamflow correlate well (Figure 4-81). However, simulated diversions based on simulated streamflow are biased low for most years. On average, simulated diversions are 65,060 AFY based on observed streamflow, and 57,297 AFY based on streamflow simulated by the Regional Model (Table 4-3). Accurate prediction of the annual diversions is important for the purpose of GSP development for basins downstream of the Freeman Diversion Facility. Therefore, United opted to use its Upper Basins Surface Water Hydrology Model to simulate streamflow at the Freeman Diversion, instead of the Regional Model. Predicted streamflow and diversions based on the surface water hydrology model were much closer to observed (Table 4-3). A more detailed description of United's Upper Basins Surface Water Hydrology Model and its integration with the Regional Model is described in the Regional Model documentation report for future simulations (UWCD, 2021).

4.2.6 SUMMARY ON THE CALIBRATION OF STREAMFLOW COMPONENT

Three criteria were used to evaluate the calibration of the streamflow across the Piru, Fillmore and Santa Paula basins. They are stream channel recharge (in Section 4.2.1), rising groundwater (in Section 4.2.4), and streamflow (in Sections 4.2.2, 4.2.3, and 4.2.5). From the results shown in Sections 4.2.1 to 4.2.5, it is summarized in the following,

- Stream channel recharge: The simulated recharge in Piru and Fillmore basins is well correlated to the observed recharge during conservation releases. The location and seasonal occurrence of the dry gap in Piru basin was also accurately simulated. Outside the conservation release periods, recharge of natural baseflows in Fillmore basin was slightly under-estimated, however the calibration of groundwater elevations in the basin was not affected. Stream channel recharge was not assessed for Santa Paula basin as recharge is relatively low there.
- Rising groundwater: The location of the simulated rising groundwater is in general agreement with observed locations, i.e. at Piru-Filmore and Fillmore-Santa Paula basin boundaries. The volume of rising groundwater is under-estimated by the model, especially for the Fillmore basin. The simulated groundwater elevations in the areas of rising groundwater are well calibrated, but heads have a tendency to be under predicted in Fillmore basin, which may cause the under estimation of rising groundwater. Because the simulated rising groundwater is sensitive to water levels changes of less than one foot to a few feet, it may be too sensitive for the numerical model to simulate the rising groundwater adequately. The model may simulate rising groundwater as shallow underflow, in which case groundwater level calibrations are not affected.
- Streamflow: The streamflow patterns and magnitudes across the Piru and Fillmore basins were adequately simulated. The numerical groundwater model has limited surface routing capabilities, and was not expected to capture the highly flashy streamflow conditions in the SCR on a daily basis. However, a consistent under prediction of flow magnitude at the Freeman Diversion Facility led to a significant under prediction of annual average diversions. Therefore, United opted to use an alternative surface water spreadsheet model to simulate streamflow at the Freeman Diversions.

Based on the above summary, the Regional Model is well calibrated for simulating the basin recharges from the streamflow, which is the main goal of the groundwater model. Daily streamflow patterns and magnitudes were adequately captured, but as expected the numerical groundwater model was inherently limited for the purpose of streamflow simulations.

4.3 FLOW BUDGET

Tables 4-4 through 4-10 detail the annual average flow budget for the seven basins covered by the Regional Model, with the river basins (Piru, Fillmore, and Santa Paula basins) discussed in detail in the following sections. Additionally, monthly flow budgets are provided in Appendix B for the seven basins covered in the Regional Model. Overall, the Regional Model annual average values for major water budget components fall within the previously reported ranges reported by previous studies (Table 2-16). In all basins it is noted that ET rates were not detailed separately in previous investigations, but rather were combined together at a total outflow component of consumptive use, in which applied water and precipitation on a given basin (including phreatophytes). When annual average ET and pumping from wells is combined from the Regional Model, the values for Piru and Santa Paula fall within the range of consumptive use previously estimated, and the value for Fillmore basin larger in the Regional Model domain. Several differences between the values reported in previous investigations and the Regional Model simulated results include varying periods of estimation, varying reporting periods (calendar year in this report, and previous reporting varying between calendar years and water years),

4.3.1 PIRU BASIN

The most significant inflow to Piru basin is the stream percolation (73,000 AFY), related to the UWCD conservation releases and streamflows from Los Angeles County. The second most significant inflow is the areal recharge (10,000 AFY) from the areal recharge from agricultural and domestic uses. The combination of the SCR underflow and mountain front recharge yields 10,000 AFY of inflow. The most significant outflow is the flux to Fillmore basin at 47,000 AFY. The second most significant outflow is through the extraction (pumping) wells at 13,000 AFY. The significant flow from Piru to Fillmore indicates the important connection between the two basins. Comparing the annual average water budget component terms with values estimated in previous investigations, most of the components fall within the previously reported ranges. The Regional Model annual average percolation and mountain front recharge rates were simulated slightly higher than the upper limit of previously reported values.

4.3.2 FILLMORE BASIN

The first three most significant inflows, in descending order, are the subsurface inflow from Piru basin (47,000 AFY), areal recharge (21,000 AFY), and stream percolation (14,000 AFY). The first three most significant outflows, in descending order, are the extraction wells (47,000 AFY), the outflow to Santa Paula basin (18,000 AFY), and the rising groundwater to streamflow at 10,000 AFY.

Comparing the annual average water budget component terms with values estimated in previous investigations, most all of the components fall within the previously reported ranges. Similar to Piru basin, the Regional Model annual average mountain front recharge rates were simulated slightly higher than the upper limit of previously reported values. Comparing with the inter-basin flow reported in Section, 2.8.2, the simulated flow from Piru to Fillmore, 47,000 AFY, is within the range of the inter-basin flow from Piru to Fillmore from 12,750 – 111,210 AFY.

4.3.3 SANTA PAULA BASIN

There are two significant inflows for Santa Paula basin: the subsurface inflow from Fillmore (18,000 AFY) and the areal recharge (16,000 AFY). The three most significant outflows include the extraction by pumping wells (25,000 AFY), the rising groundwater to streamflow (6,000 AFY), and the subsurface outflow to Mound basin (6,000 AFY). The subsurface outflow to Oxnard basin is approximately 2,000 AFY. The relatively low outflow from Santa Paula to Oxnard and Mound basins suggests that the three river basins are relatively isolated from the coastal plain basins in terms of the hydrogeological system. It should be emphasized that the surface water system is completely different as the SCR brought an average of 210,000 AFY of surface streamflow to the Oxnard Plain from 1985 to 2019. UWCD diverted an average of 63,000 AFY and the remaining average streamflow of 147,000 AFY continues past Freeman Diversion.

Comparing the annual average water budget component terms with values estimated in previous investigations, most all of the components fall within the previously reported ranges. Comparing with the inter-basin flow reported in Section 2.8.3, the simulated flow from Fillmore to Santa Paula, 18,000 AFY, is within the range of the reported inter-basin flow from Fillmore to Santa Paula from 3,900 – 30,910 AFY. The simulated outflows from Santa Paula to Oxnard and Mound, 2,000 and 6,000 AFY, are on the high side of the reported flow from 1,800 to 7,350 AFY.

4.3.4 COASTAL BASINS

The flow budget of the other four coastal plain basins (Oxnard, Pleasant Valley, West Las Posas, and Mound basins) are relatively unchanged from the Coastal Plain Model. The readers are referred to the Coastal Plain Model report (UWCD, 2018) for further detail.

5 MODEL SENSITIVITY

On the Regional Model, a sensitivity analysis was performed to evaluate the uncertainty of input parameters on the model calibration and inter-basin flows. The Coastal Plain Model has documented the sensitivity analysis of the input parameters in the coastal plain basins. In this report, the sensitivity analysis is focused on the input parameters in the three river basins: Santa Paula, Fillmore, and Piru basins.

Each input parameter was decreased and increased by a percentage, typically ranging between 10% (0.1) and 1000% (10.0), systematically and individually. The Regional Model was run with individually adjusted parameter. The calibration residuals, inter-basin flows, and streamflow percolation within the three river basins were calculated for analysis. The sensitivity analysis was applied to the following parameters:

- SCR underflow from LA County
- Evapotranspiration (ET) rate
- ET extinction depth
- Conductance of faults in the river basins
- Surface recharge from precipitation
- Surface recharge from applied water
- Surface recharge from pumped water
- Stream flow conductance in the three river basins
- Horizonal hydraulic conductivity by zones in each of 10 model layers in the three river basins.
- Ratio of horizonal hydraulic conductivity to vertical hydraulic conductivity by zones in each of 10 model layers in the three river basins.
- Storage coefficient (dimensionless) by zones in each of 10 model layers in the three river basins.
- Specific yield by zones in each of 10 model layers in the three river basins

The calibration residual statistics for each river basin including RM, ARM, RMS, and Std. Dev. as well as the inter-basin flow in the three Aquifer Systems (A, B, and C) and the stream percolation in the three river basins were generated for analysis.

The differences in the residual statistics by individually adjusted parameters are listed in Table 5-1 in terms of the statistical difference and the percentage in statistical difference from the residual statistics from the calibrated model. The sum of the absolute difference percentages is calculated for evaluation. In this report, an ad hoc approach was used to categorize the residual sensitivity in 3 levels: Low, Medium, and High. If the sum is less than 25%, it is assigned "Low" sensitivity.

If the sum is between 25% and 50%, it is assigned “Medium”. If the sum is larger than 50%, it is assigned “High”. It is noted from Table 5-1 that:

- SCR underflow is highly sensitive
- ET rates are highly sensitive while the EVT extinct depth is not
- County Club Fault (HFB #9) is highly sensitive while other faults in the river basins are not sensitive
- Areal recharge rates from precipitation and pumped water are as highly sensitive in Fillmore and Piru basins
- The conductance in Piru Creek and Sespe Creek is highly sensitive as the Piru Creek and Sespe Creek constitute a significant streamflow
- The SCR conductance in Piru basin is highly sensitive as the SCR percolation in Piru basin is typically more significant than percolation in Fillmore and Santa Paula basins
- The horizontal hydraulic conductivity in the aquifers (Layers 3, 5, 7, 9, and 10) and in the Layer 8 aquitard are highly sensitive along the valley floor of river basins (Zones 26, 32, 33, 34, and 35)
- The vertical hydraulic conductivity in Layer 2 in Fillmore basin is sensitive. The vertical hydraulic conductivity in Layer 8 from Fillmore to Santa Paula basin is also sensitive
- The storage coefficient is not sensitive throughout the Piru, Fillmore and Santa Paula basins
- The specific yield is sensitive in Layer 3 in Piru basin reflecting the important role of surface water streamflow percolation

The difference in the inter-basin flows and stream percolation for each basin is listed in Table 5-2. The sum of the absolute difference in inter-basin flows is calculated for each adjusted parameter for evaluation. The percentage in sum of absolute differences relative to the sum of the absolute inter-basin flows is also calculated. An ad hoc approach was used to categorize the inter-basin flow sensitivity in 3 levels: Low, Medium, and High. If the percentage in difference is less than 5%, it is assigned “Low” sensitivity. If the sum is between 5% and 10%, it is assigned “Medium”. If the sum is larger than 10%, it is assigned “High”. It is noted in Table 5-2 that:

- ET rate is highly sensitive while the EVT extinct depth is not
- County Club Fault (HFB #9) is sensitive while other faults in the river basins are not sensitive
- The stream conductance in Piru basin for Piru Creek and SCR are sensitive
- The horizontal conductivity in the aquifers (Layers 3, 5, and 7) are highly sensitive along the river basins’ valley floor (Zones 32, 33, 34, and 35)
- The vertical hydraulic conductivity, storage coefficient, and specific yield are not sensitive throughout the river basins

For an overall evaluation, the sensitivity levels from the calibration residual statistics and the inter-basin flows are tabulated in Table 5-3. It is noted that

- ET rate is sensitive to the model calibration and the inter-basin flows
- County Club Fault (HFB #9) is sensitive to the model calibration and the inter-basin flow as the Country Club Fault controls the flux from Santa Paula basin to Mound basin
- The Piru Creek and SCR conductance in Piru basin are sensitive in the stream percolation in Piru basin as the Piru basin plays a dominant role in the stream percolation
- The conductivity in the aquifers (layers 3, 5, and 7) along the river basins' valley floor (Zones 32, 33, 34, and 35) are highly sensitive

Finally, it is noteworthy to point out that there is no parameter in the river basins that is not sensitive to the model calibration and is sensitive to the inter-basin flow. This suggests that the input parameters in the three river basins are relatively well defined and less uncertain in the inter-basin flow while there are input parameters in the coastal plain basins that are not sensitive to model calibration and are more sensitive in the inter-basin flow in the coastal plain (UWCD, 2018).

6 MODEL REVIEW

To ensure the quality of the groundwater model, UWCD formed an Expert Panel comprised of three experienced and well-known experts in groundwater flow model development and application to advise and review United's model development since 2016. The experts on the panel are:

- Dr. Sorab Panday:
    - Co-author of the two most recent versions of MODFLOW: MODFLOW-NWT and MODFLOW-USG
    - Member of the National Academy of Engineering (NAE)
    - Principal of GSI Environmental, Inc
- Jim Rumbaugh:
    - President of Environmental Simulations Inc.
    - Developer of the widely used MODFLOW pre- and post-processor, Groundwater Vistas
- John Porcello:
    - Consultant with extensive experience in groundwater modeling in general, and specific experience with hydrogeologic conditions in Ventura County
    - Principal Groundwater Hydrologist of GSI Water Solutions, Inc.
    - Licensed Geologist and Hydrogeologist in Oregon and Washington

The Expert Panel thoroughly reviewed the Coastal Plain Model and released a model review report in 2018 (GSI Water Solutions and others, 2018) and concluded that the Coastal Plain Model was well built and well calibrated.

In the current model expansion from 2019, The Expert Panel has continued to review the model expansion effort since 2019. Several rounds of in-depth review were performed by the experts. The Expert Panel will provide a Final memo regarding both (1) the Regional Model expansion to include the Piru, Fillmore, and Santa Paula basins as well as (2) the Regional Model update to include 2016-2019 data. The Regional Model update document is yet to be reviewed by the Expert Panel, however, interim feedback from the Expert Panel included the assessment of the Regional Model expansion described in this report that:

- The model calibration to both heads and streamflows is very good, especially considering the size of the model grid cells compared to stream dimension in these three basins that have been added to the model.
- The three experts believe that the model replicates the historically observed conditions quite well during the calibration period.
- Accordingly, the United Water District should feel proud of the current model.

7 CONCLUSIONS AND MODEL LIMITATIONS

The Regional Model is found to be well calibrated based on the residual analysis on the groundwater level measurements and the streamflow analysis on the streamflow measurements. The Regional Model is suitable for regional groundwater management simulations and can provide meaningful interpretation of the inter-basin flow budget covering the seven basins within Ventura County. The Regional Model also simulates well the streamflow interaction with groundwater for the basin scale analysis. It is noted that the simulated daily streamflow may be further improved in the future, particularly for calculating streamflow at the Freeman Diversion. The various components of the SCR corridor may be analyzed with a refined model grid for potential improvement, including potential spatial variability of riparian vegetation evapotranspiration parameters and streambed parameters, such as stream bed elevations

All numerical models have limitations inherent in the assumptions made in developing the conceptual model and the numerical model. The Regional Model is no exception. The assumptions listed in Sections 2 and 3 form the limitations of the Regional Model. The limitations of the Regional Model are as follows:

- The uncertainty in the cross sections interpreted from the e-logs
- The simplification of the groundwater systems and the interaction of the streamflow and groundwater
- The numerical resolution based on the grid size and temporal scale
- The calibration errors and uncertainties from the numerical model including but not limited to water levels in droughts, stream flow interaction with aquifers, the SCR underflow from LA County, areal recharge, and fault lines.
- The measurements error from water level, streamflow, and groundwater extraction records, plus from other hydrologic data
- The data gap in the underflows from Arroyo Las Posas from the Las Posas Valley basin, and the streamflow records along Arroyo Las Posas and Conejo Creek

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TABLES

Tables 3-7, 3-8, and 3-10 are embedded in Section 3 of the report, and noted in the List of Tables.

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Table 2-1. Piru, Fillmore, and Santa Paula Population Center Trends, Based on United States Census Bureau Data.

Population	*Piru*	*Fillmore*	*Santa Paula*
1980[1]	1,284	9,602	20,658
1990[1]	1,157	11,992	25,062
2000 [2]	1,196	13,643	28,598
2010[2]	2,063	15,002	29,321
2019 estimate[3]	1,805*4	15,644*5	32,900*6
areal extent[2] (mi²)	2.8	3.4	4.6

[1]https://docs.vcrma.org/images/pdf/planning/demographics/Census_Pop_Ventura_Co_1850-2000.pdf

[2]https://data.census.gov/cedsci/

[3] 2019 American Community Survey 5-Year Estimates

*4 https://data.census.gov/cedsci/profile?g=1600000US0657372

*5 https://data.census.gov/cedsci/table?q=Fillmore%20city,%20California&tid=ACSDT5Y2019.B01003

*6https://data.census.gov/cedsci/table?q=Santa%20Paula%20CCD,%20Ventura%20County,%20California&tid=ACSDT5Y2019.B01003

Table 2-2. Long-Term Annual Precipitation Records for Piru, Fillmore, and Santa Paula Basins.

				Annual Precipitation (inches)			
Basin	***Station***	***Elevation (ft)***	***Period (Water Years)***	***Average***	***Median***	***Minimum***	***Maximum***
Piru	25	825	1928 - 2015	17.1	14.4	5.4	44.5
Fillmore	171	465	1957 - 2015	18.3	16.1	5.3	43.2
Santa Paula	245a*	300	1850 - 2015	16.8	15.0	5.0	44.8

*Full record period created considering that site moved overtime from nearby locations

Table 2-3. Annual Average Streamflow (CFS) in Piru, Fillmore, and Santa Paula Basins.

Streamgage	Santa Clara River LA County Line USGS 11108500 Near Piru, CA USGS 11109000	Piru Creek* USGS 11109800	Hopper Creek USGS 11110500	Pole Creek VCWPD 713	Sespe Creek USGS 11113000	Santa Paula Creek USGS 11113500
1985	33.79	29.65	0.97	0.85	14.86	4.71
1986	66.33	28.02	10.26	3.54	138.40	27.88
1987	36.19	44.66	0.79	0.70	12.99	3.93
1988	50.43	33.62	2.04	0.81	65.13	10.19
1989	34.25	14.37	0.36	0.55	15.80	3.54
1990	32.42	6.88	0.62	0.29	6.21	3.34
1991	48.21	52.80	6.03	1.07	110.24	21.56
1992	94.46	107.61	10.76	3.19	290.64	47.69
1993	211.04	186.82	22.79	6.45	630.70	98.86
1994	44.25	62.72	5.63	6.85	35.92	10.68
1995	113.83	134.40	28.81	17.67	461.05	87.81
1996	67.58	30.58	3.93	2.50	91.46	17.41
1997	50.80	53.35	6.02	1.83	74.54	20.66
1998	283.35	170.97	44.38	9.11	523.87	111.30
1999	53.80	35.49	1.55	1.17	24.62	5.91
2000	60.49	72.08	4.22	1.41	61.25	11.93
2001	47.85	88.57	9.53	3.89	203.51	34.45
2002	34.66	35.32	0.87	0.67	11.90	3.21
2003	49.92	45.11	2.82	1.11	71.17	11.56
2004	68.70	22.25	6.57	2.05	104.21	16.45
2005	362.27	256.03	62.03	17.35	686.71	139.73
2006	90.94	66.13	6.89	2.54	208.95	30.97
2007	38.77	61.75	0.83	0.64	12.75	3.93
2008	80.28	65.97	12.95	1.92	192.30	38.67
2009	57.71	41.43	1.92	0.66	46.27	9.03
2010	82.32	50.84	3.89	1.07	137.00	24.54
2011	85.98	50.22	7.46	1.24	172.27	41.34
2012	41.08	55.25	0.85	1.27	18.46	4.86
2013	31.63	7.88	0.13	0.17	5.59	1.24
2014	33.34	8.98	2.96	0.15	30.34	2.78
2015	26.11	9.03	0.07	0.23	6.87	1.03
1985 - 2015 Average	**77.83**	**62.22**	**8.68**	**3.00**	**144.06**	**27.46**

*Data from USGS and VCWPD, as described in Section 2.3; Units: CFS; *United Santa Felicia Dam spills added to USGS gage data*

Table 2-4. Total Annual Spills from Lake Piru from 1985 – 2005.

Year	SFD Spills (AFY)
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	2,224
1993	56,176
1994	0
1995	7,749
1996	0
1997	0
1998	47,795
1999	0
2000	0
2001	790
2002	0
2003	0
2004	0
2005	107,062

Data from UWCD records

Table 2-5. Benefits of the SFD Conservation Releases, 1999-2015.

Calendar Year	Total Conservation Released from SFD	Direct Deliveries in AF of SFD Release to:			
		Piru Basin	Fillmore Basin	Lower Basins*	Surface water
	AF	(groundwater recharge)	(groundwater recharge)	(groundwater recharge)	Ag Deliveries via Pipelines
1999	22,800	5,700	3,500	11,200	2,400
2000	47,200	13,800	6,100	24,150	3,150
2001	47,400	14,000	2,900	28,300	2,200
2002	20,200	8,000	5,100	6,530	570
2003	29,000	21,000	3,500	3,600	900
2004	12,200	8,000	2,150	1,600	550
2005	9,100	3,500**	1,100**	4,500***	0
2005	23,400	4,550**	1,500**	17,200***	150
2006	30,900	9,200**	2,900**	17,200***	1,600
2007	40,700	15,900	6,300	12,200	6,400
2008	44,400	15,400	5,700	17,400	5,800
2009	26,700	13,200	4,700	5,200	3,000
2010	33,000	14,500	4,800	10,700	3,200
2011	31,700	12,400	3,300	14,100	1,600
2012	35,200	13,600	8,600	9,300	3,700
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	0	0	0	0	0
Average	**25,217**	**9,597**	**3,453**	**10,177**	**1,957**
Total (over all 18 releases)	**453,900**	**172,750**	**62,150**	**183,180**	**35,220**

Notes:*Direct Deliveries to Santa Paula basin are not able to be estimated due to inability to adequately measure the percolation losses within the total basin, as discussed above in Section 2.3.1.1.2 It is noted here that most of the remaining flows after Fillmore basin arrive to United's Freeman diversion after some losses to Santa Paula basin due to percolation and evapotranspiration.
2005 had two conservation releases. Portion of the release includes spill water when the lake was full.
*2005 had two conservation releases. 2005 and 2006 were not measurable due to high flow rates in the Santa Clara River. Direct Deliveries for Piru and Fillmore Basins are estimated.
*** measured at the Freeman Diversion
Table modified from United Water's 2013 Groundwater and Surface Water Condition Report (UWCD, 2014) and updated to include calendar years 2014 and 2015. Table from United's 2014 and 2015 Piru and Fillmore Basin's Biennial Groundwater Conditions Report (United, 2016).

Table 2-6. Sespe Streamflow Daily Record Data Source Overview.

Start Date	End Date	Description
1/1/1985	9/30/1985	USGS_11113000_SESPE_C_NR_FILLMORE
10/1/1985	9/29/1988	USGS_11113001_SESPE_C_+_FILLMORE_IRR_CO_CN_NR_FILLMORE_CA note: subtracted estimated diversions based on rainfall from this record
9/30/1988	9/30/1989	Correlation with Santa Paula Creek for wet years
10/1/1989	9/30/1990	USGS_11113001_SESPE_C_+_FILLMORE_IRR_CO_CN_NR_FILLMORE_CA note: subtracted estimated diversions based on rainfall from this record
10/1/1990	1/14/1993	USGS_11113000_SESPE_C_NR_FILLMORE
1/15/1993	9/30/1993	Correlation with Santa Paula Creek for dry years
10/1/1993	12/31/2015	USGS_11113000_SESPE_C_NR_FILLMORE

Table 2-7. Average Annual Streamflow Diversions (AFY) in Piru, Fillmore, and Santa Paula Basins.

Diversion	Isola	Camulos	Rancho Temescal 1	Rancho Temescal 2	Piru Mutual	United (Piru)	Fillmore Irr. Co.	Beans Ranch	Limoneira	Canyon Irr. Co.	Farmers Irr. Co.	Zaragosa	Hyde-Turner Ditch	Southfork	United (Freeman)
Approximate Area (ac)	209.9	770.2	241.6	314.3	546.4	47.0	1104.7	82.2	126.3	783.7	3177.6	1.8	345.8	158.9	416.0
							Total Diversions (AFY)								
Year															
1985	568.0	1092.0	0.0	0.0	1273.0	249.9	2535.9	53.5	0.0	348.0	0.0	0.0	499.1	230.0	42765.6
1986	568.0	1092.0	0.0	0.0	1273.0	2346.4	2649.9	53.5	0.0	975.0	0.0	0.0	499.1	230.0	69834.1
1987	568.0	1092.0	0.0	0.0	1273.0	4542.1	2478.5	53.5	0.0	693.0	0.0	0.0	499.1	230.0	37684.0
1988	568.0	1092.0	0.0	0.0	1277.0	4903.1	2673.7	53.5	0.0	922.0	0.0	0.0	499.1	230.0	49144.3
1989	632.0	1092.0	0.0	0.0	1273.0	0.0	2242.4	53.5	0.0	697.0	0.0	0.0	499.1	230.0	24413.4
1990	601.0	0.0	0.0	0.0	1273.0	1319.0	1567.2	53.5	0.0	454.0	0.0	0.0	499.1	230.0	7805.0
1991	601.0	0.0	0.0	0.0	1273.0	299.5	2722.2	53.5	0.0	1108.0	0.0	0.0	499.1	230.0	45232.3
1992	601.0	514.0	0.0	0.0	1274.0	22375.5	2853.6	53.5	0.0	1071.0	0.0	0.0	499.1	230.0	118713.5
1993	273.0	780.0	0.0	0.0	1273.0	15875.1	2546.8	53.5	156.9	1011.0	0.0	0.0	499.1	230.0	117966.9
1994	216.0	410.0	0.0	0.0	921.0	4994.2	2649.9	52.0	27.2	962.0	0.0	0.0	499.1	270.0	71250.5
1995	67.0	460.0	0.0	0.0	927.0	8519.0	2538.8	55.0	0.0	1020.0	0.0	0.0	499.1	289.2	120914.8
1996	465.0	0.0	0.0	0.0	1392.0	776.1	2586.4	53.5	67.0	489.0	0.0	0.0	499.1	308.4	69129.9
1997	500.0	0.0	0.0	0.0	1258.0	1574.9	2634.0	53.5	0.0	1143.0	0.0	0.0	499.1	327.6	72063.5
1998	317.0	446.0	0.0	0.0	1298.0	9062.5	2443.6	53.5	0.0	866.0	0.0	0.0	499.1	346.8	146729.3
1999	526.0	1809.0	0.0	0.0	1163.0	782.5	2578.5	53.5	0.0	283.8	0.0	0.0	499.1	366.0	57455.2
2000	705.0	2195.0	0.0	0.0	1957.0	55.5	2578.5	53.5	0.0	899.3	0.0	0.0	499.1	385.2	76437.0
2001	588.0	2586.0	0.0	0.0	1722.0	2768.9	3248.3	53.5	36.0	694.5	289.1	0.0	499.1	404.4	107393.1
2002	590.0	3008.0	486.6	11.0	1722.0	708.1	2721.3	60.0	0.0	317.1	129.0	0.0	499.1	423.6	29768.8
2003	436.0	1785.0	601.1	6.5	1722.0	95.0	2642.0	50.0	1.0	490.0	278.1	0.0	499.1	442.8	46581.8
2004	477.0	1785.0	282.6	93.0	1727.0	95.4	2657.8	57.0	0.0	479.6	213.3	0.0	499.1	462.0	33602.0

Table 2-7 continued, below

Table 2-7. Average Annual Streamflow Diversions (AFY) in Piru, Fillmore, and Santa Paula Basins

Diversion	Isola	Camulos	Rancho Temescal 1	Rancho Temescal 2	Piru Mutual	United (Piru)	Fillmore Irr. Co.	Beans Ranch	Limoneira	Canyon Irr. Co.	Farmers Irr. Co.	Zaragosa	Hyde-Turner Ditch	Southfork	United (Freeman)
Approximate Area (ac)	209.9	770.2	241.6	314.3	546.4	47.0	1104.7	82.2	126.3	783.7	3177.6	1.8	345.8	158.9	416.0
							Total Diversions (AFY)								
Year															
2005	0.0	1785.0	320.1	139.8	1722.0	2653.1	50.0	40.0	0.0	299.7	11.3	0.0	499.1	481.2	138050.2
2006	0.0	1475.6	597.6	80.1	1471.4	2266.7	174.0	55.0	1.0	118.1	25.4	0.0	499.1	500.4	101178.2
2007	0.0	1333.2	1004.8	181.9	1325.7	75.0	0.0	60.0	0.5	23.0	13.4	0.0	499.1	519.6	44725.9
2008	0.0	1487.4	979.8	55.6	1231.2	228.5	0.0	51.0	0.0	254.4	113.6	0.0	499.1	520.0	73428.5
2009	0.0	1310.0	984.1	44.9	1217.4	0.0	0.0	99.0	0.0	225.0	75.3	0.0	362.0	520.0	41149.1
2010	0.0	3540.0	863.9	13.0	1124.1	0.0	0.0	104.4	34.4	263.7	328.2	0.0	306.7	520.0	64113.4
2011	0.0	2510.0	976.9	147.6	2400.0	0.0	0.0	116.0	69.3	589.1	214.9	0.4	310.1	520.0	93958.5
2012	0.0	3853.0	1124.0	168.8	2400.0	0.0	0.0	74.8	0.0	161.3	0.0	0.4	290.4	520.0	39165.9
2013	0.0	4402.0	1262.8	247.0	2400.0	0.0	0.0	146.4	0.0	104.8	0.0	0.4	699.0	527.8	8767.6
2014	0.0	784.5	1294.8	226.4	1261.3	0.0	0.0	135.7	0.0	80.7	0.0	0.4	696.6	527.8	4543.6
2015	0.0	862.4	1163.9	220.5	1321.9	0.0	0.0	84.4	0.0	38.0	33.0	0.4	629.5	450.0	2539.9
1985 - 2015 Average	**318.3**	**1438.1**	**385.3**	**52.8**	**1456.3**	**2792.5**	**1670.1**	**65.9**	**12.7**	**551.0**	**55.6**	**0.1**	**492.7**	**377.5**	**63113.1**

Data from State Water Board, CH2M Hill/HGL (2008) and United Records, as described in Section 2.3.8

Units: AFY

Table 2-8. Fillmore Irrigation Company Sespe Creek Diversion Data Source Overview.

Start Date	End Date	Description
1/1/1985	9/29/1988	USGS_11113001_SESPE_C_+_FILLMORE_IRR_CO_CN_NR_FILLMORE_CA note: estimated diversions based on rainfall for data gaps
9/30/1988	9/30/1989	Filled data gaps with estimated diversions based on rainfall
10/1/1989	9/30/1990	USGS_11113001_SESPE_C_+_FILLMORE_IRR_CO_CN_NR_FILLMORE_CA note: estimated diversions based on rainfall for data gaps
10/1/1990	1/12/1993	USGS_11112500_FILLMORE_IRR_CO_CN_NR_FILLMORE_CA
1/13/1993	12/31/2000	Filled data gaps with estimated diversions based on rainfall
1/1/2001	12/31/2001	Reported monthly data distributed evenly across month
1/1/2002	12/31/2004	Filled data gaps with estimated diversions based on rainfall
1/1/2005	12/31/2006	Reported monthly data distributed evenly across month
1/1/2007	12/31/2015	No diversions

Table 2-9. Annual Average Wastewater Discharge (AFY) in Piru, Fillmore, and Santa Paula Basins.

Wastewater Plant	Piru WWTP	Fillmore			Santa Paula WRF	Todd Rd. Co. Jail WWTP
		Percolation Ponds	Santa Clara River	Total		
1985	137.65	1118.87	0.00	1118.87	2291.03	0.00
1986	137.65	1118.87	0.00	1118.87	2291.03	0.00
1987	137.65	1118.87	0.00	1118.87	2291.03	0.00
1988	138.03	1121.93	0.00	1121.93	2352.68	0.00
1989	137.65	1118.87	0.00	1118.87	2234.77	0.00
1990	122.81	1118.87	0.00	1118.87	2141.50	0.00
1991	119.12	1118.87	0.00	1118.87	2057.74	0.00
1992	137.53	1121.93	0.00	1121.93	2275.82	0.00
1993	134.12	1118.87	0.00	1118.87	2279.70	0.00
1994	134.13	1118.87	0.00	1118.87	2188.33	0.00
1995	172.16	1118.87	0.00	1118.87	1978.56	43.11
1996	171.93	1121.93	0.00	1121.93	1911.65	43.22
1997	140.15	1118.87	0.00	1118.87	2011.26	43.11
1998	117.68	1156.42	705.77	1862.19	2439.31	43.11
1999	127.65	974.60	1127.40	2102.00	2299.74	43.11
2000	176.49	1017.72	0.00	1017.72	2355.85	43.22
2001	184.70	1040.28	915.93	1956.20	2424.38	43.11
2002	254.39	986.36	1138.29	2124.65	2381.05	43.11
2003	254.10	1174.34	759.89	1934.23	2395.51	43.11
2004	252.88	1128.81	380.89	1509.70	2473.14	43.22
2005	225.64	1295.52	0.00	1295.52	2629.74	43.11
2006	230.06	1299.74	0.00	1299.74	2572.39	43.11
2007	242.66	1118.87	673.47	1792.34	2488.50	43.11
2008	225.17	1121.93	0.00	1121.93	2665.72	43.22
2009	212.27	1058.29	0.00	1058.29	2666.91	43.11
2010	169.23	1210.38	0.00	1210.38	2173.39	43.11
2011	212.96	1124.43	0.00	1124.43	2263.80	35.48
2012	202.44	993.18	0.00	993.18	2136.68	39.09
2013	164.42	998.22	0.00	998.22	2086.66	44.19
2014	137.73	981.00	0.00	981.00	1976.03	46.88
2015	133.49	984.68	0.00	984.68	1904.09	40.28
1985 - 2015 Average	172.40	1103.85	183.92	1287.77	2278.64	28.91

Data from data submitted to State Water Resources Control Board , as described in Section 2.8; Units: AFY

Table 2-10. Revised Model Layering in Piru, Fillmore, and Santa Paula Basins.

Aquifer or Aquitard	Hydrostratigraphic Unit Description	Model Layer
Surficial Deposits and Colluvium	Interbedded, poorly sorted surficial deposits including colluvium, landslide deposits, and alluvial fan material. Generally absent in vicinity of Santa Clara River channel. Thickness ranges from 0 to over 400 ft.	1
Aquitard		2
Recent (younger) Alluvium	Stream-deposited sands and gravels, with some finer-grained interbeds; primarily permeable sands and gravels. Thickness ranges from 0 to 190 ft.	3
Aquitard		4
Older Alluvium	Stream-deposited sands and gravels with finer grained interbeds; similar to younger alluvium deposits, with greater variation in grain size. Thickness ranges from 0 to 340 ft.	5
Aquitard		6
Upper Saugus/ San Pedro	Semi-consolidated lenticular deposits of sands, gravels, and some clays of the Upper Saugus Formation. Underlies alluvial aquifers throughout the upper basins.	7
Aquitard		8
Lower Saugus/San Pedro	Semi-consolidated lenticular deposits of sands, gravels, and some clays of the Lower Saugus Formation.	9
Undifferentiated Sedimentary Deposits	Undifferentiated, semi-consolidated sediments of the San Pedro Formation.	10

Table 2-11. Layering of Coastal Basins (Oxnard, Pleasant Valley, and West Las Posas Basins).

Aquifer or Aquitard	Hydrostratigraphic Unit Description	Model Layer
Semi-perched Aquifer	Stream and coastal-deposited sands and gravels with minor silt and clay interbeds	1
“Clay Cap” Aquitard	Silt and clay with interbedded sands	2
Oxnard Aquifer	Marine and non-marine sands, gravels, and cobbles with some clay and silt interbeds	3
Oxnard-Mugu Aquitard	Interbedded clay, sand, and gravel	4
Mugu Aquifer	Marine and non-marine sand and gravel with silt and clay interbeds	5
Mugu-Hueneme Aquitard	Interbedded clay, silt, sand, and gravel of the Upper San Pedro Formation. This bed, where present, marks the top of the lower aquifer system (LAS).	6
Hueneme Aquifer	Marine and non-marine interbedded sand, silt, clay, and minor gravel of the Upper San Pedro Formation.	7
Hueneme-Fox Canyon Aquitard	Marine and non-marine silt and clay with interbedded sand and gravel.	8
Fox Canyon Aquifer - upper	Marine interbedded sand with some gravel, silt, clay, and sandy clay of the San Pedro Formation.	9
Fox Canyon Aquitard	Marine and non-marine silt and clay, with interbedded sand and gravel of the basal San Pedro Formation	10
Fox Canyon Aquifer - basal	Marine interbedded sand with some gravel, silt, clay, and sandy clay (similar composition as the Fox Canyon Aquifer – upper)	11
Santa Barbara and/or other Formation	Silt and clay with interbedded sand and gravel of the basal San Pedro Formation and Upper Santa Barbara Formation.	12
Grimes Canyon Aquifer	Sands and gravels of the Upper Santa Barbara Formation. Localized and not continuous or present in some basins	13
Older sedimentary rocks and Conejo Volcanics	Sedimentary and igneous rock of low permeability or containing saline groundwater.	Boundary

Table 2-12. Estimated Hydraulic Conductivity Estimates and Aquifer System Statistics for Piru Basin

Basin	Well	Estimated Hydraulic Conductivity (ft/d)	Aquifer System	Estimated Hydraulic Conductivity System Statistics (ft/d)					
Piru	04N19W33C03S	343.89	AB						
Piru	04N18W26E01S	205.66	AB						
Piru	04N18W27H03S	100.26	AB	Mean (Geometric)	Mean (Arithmetic)	Median	Minimum	Maximum	n
Piru	04N18W27H02S	138.60	AB	177.06	197.10	172.13	100.26	343.89	4
Piru	04N19W27R03S	220.33	B						
Piru	04N19W33C02S	286.46	B						
Piru	04N18W20R01S	247.15	B						
Piru	04N19W34D01S	139.25	B						
Piru	04N19W33F01S	213.89	B	Mean (Geometric)	Mean (Arithmetic)	Median	Minimum	Maximum	n
Piru	04N18W30E01S	311.15	B	229.09	236.37	233.74	139.25	311.15	6
Piru	04N18W19P03S	91.40	BC						
Piru	04N18W28C02S	44.00	BC	Mean (Geometric)	Mean (Arithmetic)	Median	Minimum	Maximum	n
Piru	04N18W29K01S	126.76	BC	79.89	87.39	91.40	44.00	126.76	3

Table 2-13. Estimated Hydraulic Conductivity Estimates and Aquifer System Statistics for Fillmore Basin

Basin	Well	Estimated Hydraulic Conductivity (ft/d)	Aquifer System	Estimated Hydraulic Conductivity System Statistics (ft/d)					
Fillmore	03N20W01P04S	30.08	A						
Fillmore	03N21W01P03S	546.25	A						
Fillmore	03N21W12H03S	13.37	A	Mean (Geometric)	Mean (Arithmetic)	Median	Minimum	Maximum	n
Fillmore	03N20W02R09S	5.57	A	33.26	148.82	21.72	5.57	546.25	4
Fillmore	04N20W25B01S	62.77	AB						
Fillmore	04N19W30P05S	155.96	AB						
Fillmore	04N19W31D04S	73.13	AB						
Fillmore	04N20W34N05S	285.74	AB						
Fillmore	03N20W02F05S	14.24	AB						
Fillmore	03N20W01P05S	0.86	AB						
Fillmore	03N20W02K05S	114.58	AB						
Fillmore	03N20W04R02S	197.18	AB						
Fillmore	04N20W36J05S	286.46	AB	Mean (Geometric)	Mean (Arithmetic)	Median	Minimum	Maximum	n
Fillmore	03N20W03H03S	150.39	AB	68.95	134.13	132.49	0.86	286.46	10
Fillmore	04N20W31J01S	1.54	ABC	Mean (Geometric)	Mean (Arithmetic)	Median	Minimum	Maximum	n
Fillmore	03N20W06D03S	4.72	ABC	2.70	3.13	3.13	1.54	4.72	2
Fillmore	04N20W23N02S	16.51	B						
Fillmore	04N19W29R05S	114.06	B						
Fillmore	04N19W33D06S	121.32	B						
Fillmore	04N19W33D05S	206.54	B						
Fillmore	03N20W03D05S	61.89	B						
Fillmore	03N20W05C04S	4.27	B						
Fillmore	03N20W01H03S	55.96	B						
Fillmore	03N20W06N02S	227.87	B						
Fillmore	04N20W13N01S	1.00	B						
Fillmore	04N19W33D04S	132.72	B						
Fillmore	04N20W33C03S	8.72	B	Mean (Geometric)	Mean (Arithmetic)	Median	Minimum	Maximum	n
Fillmore	04N20W31H02S	0.84	B	27.06	79.31	58.92	0.84	227.87	12
Fillmore	04N20W24R02S	7.12	C	Mean (Geometric)	Mean (Arithmetic)	Median	Minimum	Maximum	n
Fillmore	03N20W06A03S	3.82	C	5.22	5.47	5.47	3.82	7.12	2

Table 2-14. Estimated Hydraulic Conductivity Estimates and Aquifer System Statistics for Santa Paula Basin

Basin	Well	Estimated Hydraulic Conductivity (ft/d)	Aquifer System	Estimated Hydraulic Conductivity System Statistics (ft/d)					
Santa Paula	03N21W29C02S	116.97	A						
Santa Paula	03N21W29K01S	253.99	A						
Santa Paula	03N21W29K02S	233.94	A	Mean (Geometric)	Mean (Arithmetic)	Median	Minimum	Maximum	n
Santa Paula	03N21W16P01S	4.81	A	76.05	152.43	175.46	4.81	253.99	4
Santa Paula	03N21W29G02S	33.15	AB						
Santa Paula	03N21W20A01S	39.84	AB						
Santa Paula	03N21W21B03S	29.14	AB						
Santa Paula	03N21W20J04S	222.31	AB						
Santa Paula	02N22W02K06S	121.38	AB						
Santa Paula	02N22W10A02S	12.30	AB	Mean (Geometric)	Mean (Arithmetic)	Median	Minimum	Maximum	n
Santa Paula	03N21W11E03S	48.39	AB	48.35	72.36	39.84	12.30	222.31	7
Santa Paula	03N21W02P01S	86.49	B						
Santa Paula	03N21W12E07S	60.16	B						
Santa Paula	03N22W36K04S	151.06	B						
Santa Paula	03N22W36R01S	177.80	B						
Santa Paula	03N21W17P02S	69.65	B						
Santa Paula	03N21W19G02S	43.45	B						
Santa Paula	03N21W19G03S	26.74	B						
Santa Paula	03N21W11F03S	75.00	B						
Santa Paula	03N21W09R04S	92.51	B						
Santa Paula	03N21W15C06S	79.81	B						
Santa Paula	03N21W16A02S	178.20	B						
Santa Paula	03N21W11D02S	1.47	B						
Santa Paula	03N21W30F01S	184.08	B						
Santa Paula	03N21W30H07S	26.20	B						
Santa Paula	03N22W36H01S	168.97	B						
Santa Paula	03N22W35Q02S	21.12	B						
Santa Paula	03N21W16G01S	260.68	B						
Santa Paula	03N21W16K03S	88.10	B						
Santa Paula	03N21W19G04S	96.12	B	Mean (Geometric)	Mean (Arithmetic)	Median	Minimum	Maximum	n
Santa Paula	02N22W10C02S	118.58	B	69.73	100.31	87.29	1.47	260.68	20

Table 2-15. Chronology of Previous Investigations Related to Piru, Fillmore, and Santa Paula Basins Water Budget Components.

Entity	Year Published	Reference	Budget Components Provided?	Representative Years
California Department of Public Works, Division of Water Resource	1933	DWR, 1933	All, various	1927 - 1932
California State Water Resources Board	1956	DWR, 1956	All, various	1936 - 1951
John F. Mann and Associates	1959	Mann, 1959	All, various	1936 - 1957
California Department of Water Resources	1974, 1975	DWR, 1974 1975	Piru, subsurface inflow	1956 - 1967
Law/Crandall Inc.	1993	Law/Crandall, 1993	Fillmore, subsurface outflow	1956 - 1990
United States Geological Survey	2003	Reichard and others, 2003	Fillmore, subsurface outflow	1984 – 1993
CH2M HILL	2004	CH2M HILL, 2004	Piru, subsurface inflow	1980 - 1999
CH2M HILL	2005	CH2M HILL, 2005	Piru, subsurface inflow	1980 - 2005
CH2M HILL/ HydroGeoLogic Inc; HydroMetrics (United-sponsored analysis)	2008	CH2M HILL/ HGL, 2008	Piru and Fillmore, subsurface inflow	1975 - 2005
HydroMetrics (United-sponsored updates)	2015	LWA and others, 2015	All, various	1996 - 2012
Steve Bachman	2015	Bachman, 2015	Fillmore, subsurface outflow	1947 - 2014
Daniel B. Stephens and Associates, Inc/ Richard C. Slade and Associates LLC	2017	DBS&A and RCS, 2017	Fillmore and Santa Paula, various	1999 - 2012

Table 2-16. Range of Water Budget components from Previous Investigations Related to Water Budget Components for the Piru, Fillmore, and Santa Paula Basins Listed in Table E-1.

	Piru		***Fillmore***		***Santa Paula***	
Budget Components (AFY)	*Lower*	*Upper*	*Lower*	*Upper*	*Lower*	*Upper*
Inflows						
Subsurface underflow	240	18,800	12,570	111,210	3,900	30,910
Stream Percolation	6,400	61,850	1,790	49,130	4,210	24,440
Precipitation Recharge	190	20,200	470	54,200	40	25,590
Mountain Front Recharge	2,620	2,620	3,530	3,530	3,600	3,600
Managed Recharge	0	11,800	--	--	--	--
Local Wastewater Treatment Percolation Ponds	210	210	1,040	1,040	2,230	2,230
Imported	0	5,840	4,900	11,770	4,220	8,570
Outflows						
Subsurface underflow	12,570	111,210	3,900	30,910	1,800	7,350
Rising groundwater	0	37,800	6,030	48,200	2,040	17,340
Consumptive use*	6,450	15,000	20,590	36,200	15,420	33,730
Exported	2,200	6,450	0	5,160	310	2,100
Change in Groundwater Storage*	***-19,600***	***44,600***	***-20,170***	***49,300***	***-10,900***	***21,680***

*Of applied water and precipitation on basin (including phreatophytes)

**Reported changes in annual storage (not calculated from inflows and outflows presented here)

Notes:

Majority of values extracted from DWR (1956) or Mann (1959), with other references being CH2M HILL (2004, 2005), CH2M HILL/HGL (2008), LWA and others (2015) and DBS&A and RCS (2017).

Values rounded to nearest 10 AF.

Table 3-1. Parameters by Layer and Zone, Horizontal Hydraulic Conductivity

	Horizontal Hydraulic Conductivity in Each Zone (ft/day)																	
Layer	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**18**	**19**	**20**
1	200	200	200	200	300	200	200	300	200	200	200	200	50	50	200	300	200	200
2	0.01	0.01	0.01	0.01	0.01	0.01	1.00E-03	0.01	0.01	0.01	100	100	50	50	200	300	200	0.01
3	100	100	100	0.01	300	100	100	200	100	100	100	50	10	10	200	250	200	100
4	1	1	0.1	0.01	1	1	1	200	1	20	100	20	1	1	200	250	200	1
5	100	50	50	100	200	50	50	200	100	20	100	20	1	1	200	200	100	100
6	1.00E-03	1.00E-03	1.00E-03	0.01	3.00E-03	0.01	1.00E-03	1.00E-03	5.00E-04	1.00E-02	50	0.01	0.01	0.01	1.00E-03	1.00E-04	0.1	1.00E-03
7	20	20	20	20	20	20	20	0.5	20	20	10	10	10	1	20	1.00E-04	20	20
8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.1	0.1	1.00E-03	0.1	0.1	0.1	0.1	1.00E-04	0.1	0.1
9	10	10	10	10	10	10	10	0.5	10	20	5	1	1	1	10	1.00E-04	10	10
10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.1	0.1	0.01	0.1	0.1	0.1	0.1	1.00E-04	0.1	0.1
11	5	5	5	10	5	5	5	0.5	5	5	5	1	1	1	10	1.00E-04	5	5
12	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.00E-04	0.1	0.1
13	1	1	1	1	1	1	1	0.1	1	1	5	1	0.5	0.5	1	1.00E-04	1	1

	Horizontal Hydraulic Conductivity in Each Zone (ft/day)																	
Layer	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**
1	200	100	100	50	800	1	200	200	200	1200	1200	600	200	200	200	200	200	10
2	1.00E-04	100	100	50	0.1	0.01	200	100	100	0.1	0.1	0.1	0.1	0.1	0.1	100	0.1	10
3	100	50	80	10	600	1	200	100	100	1200	1200	400	100	100	100	100	100	10
4	1	20	50	1	400	0.01	200	100	100	1000	1000	200	100	1	1	100	1	10
5	50	20	50	1	400	1	200	100	100	1000	1000	200	100	100	100	100	100	10
6	1.00E-03	0.1	1	5.00E-03	1	1.00E-03	0.01	0.1	0.1	1	1	1	1	1	0.1	1	0	0.1
7	20	10	20	1	100	0.1	20	20	10	200	200	100	100	50	50	5	20	5
8	0.1	0.1	0.1	0.1	0.01	0.01	15	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0	0.01
9	10	5	10	1	100	0.1	10	10	5	100	100	100	100	50	50	5	20	5
10	0.1	0.1	0.1	0.1	100	0.01	0.01	0.01	0.01	100	100	100	100	50	50	1	20	1
11	10	1	5	1	1.00E-12	0.1	5	5	2	1.00E-12	1.00E-12	1.00E-12	1.00E-12	1.00E-12	1.00E-12	1.00E-12	10	1.00E-12
12	10	0.1	0.01	0.01	1.00E-12	0.01	0.1	0.1	0.5	1.00E-12	1.00E-12	1.00E-12	1.00E-12	1.00E-12	1.00E-12	1.00E-12	0.1	1.00E-12
13	1	1	1	0.01	1.00E-12	0.1	5	5	2	1.00E-12	1.00E-12	1.00E-12	1.00E-12	1.00E-12	1.00E-12	1.00E-12	1	1.00E-12

Table 3-2. Parameters by Layer and Zone, Vertical Anisotropy Ratio

Vertical Anisotropy Ratio in Each Zone (unitless)																																				
Layer	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**18**	**19**	**20**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**
1	10	10	10	10	10	10	10	10	10	10	100	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
2	10	10	10	10	10	10	10	10	10	10	100	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
3	10	10	10	10	10	10	10	10	10	10	100	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
4	10	10	10	10	10	10	10	10	10	10	100	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
5	10	10	10	10	10	10	10	10	10	10	100	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
6	10	10	10	10	10	10	10	10	10	10	100	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
7	10	10	10	10	10	10	10	10	10	10	100	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
8	10	10	10	10	10	10	10	10	10	10	100	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
11	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
12	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
13	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

Table 3-3. Fault Name, Layer Location, Parameterization, and Reference Numbering

Fault Name	Layers	Hydraulic Characteristic (1/d)*	Fault Reference Number**
Round Mountain and Long Canyon	3 to 13	0.04	1
Sycamore Canyon	5 to 13	0.06	2
Bailey in UAS	3 to 6	0.0001, 0.005	3a
Bailey in LAS	7 to 13	1.0e04, 1.0e-6	3b
Springville	1 to 13	1.1E-04	4
Santa Rosa	3 to 13	1.0E-06	5
Camarillo	3 to 13	1.0E-06	51
Santa Rosa Valley	3 to 13	1.0E-06	52
Las Posas and Santa Rosa	3 to 13	1.0E-06	53
Hueneme Canyon	6 to 13	0.03	6
Montalvo	7 to 13	1.0	7
Oak Ridge in Mound and OP	7 to 13	1.0	8
Country Club***	3 to 13	0.001	9
Oak Ridge in Forebay***	3 to 13	1.04E-02 to 1.04E-06	10
North Mugu Lagoon	7 to 13	1.0E-04	11
Connecting Country Club and Oak Ridge Faults***	3 to 13	1.0E-06	19
Split WLP and PV basins, Extension of Springville Fault	6 to 13	4.0E-04	22
Spur off Springville Fault	3 to 13	5.0E-04	41
No name in Santa Paula basin***	3 to 13	1.0E-03	71
No name in Fillmore basin***	1 to 13	1.07E-07	73
La Loma and Fox Canyon	7 to 13	1.10E-04	75
No name in North WLP	7 to 13	1.08E-04	76
Foothill-North***	7 to 13	1.10E-04	98
Foothill***	7 to 13	1.10E-05	99
Foothill extension to Ventura Fault in Mound basin***	7 to 13	1.10E-05	100

*Hydraulic Characteristic (1/d) = Hydraulic Conductivity (ft/d)/Thickness (ft).
Thickness is numerically represented as 1 foot.

**Fault Reference Number represented in Boundary Condition Figures, 3-14 to 3-26

***Faults added in 2020 Regional Model Expansion

Table 3-4. Parameters by Layer and Zone, Specific Yield

	Specific Yield in Each Zone (unitless)																	
Layer	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**18**	**19**	**20**
1	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.10	0.10	0.15	0.15	0.15	0.15
2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.15	0.05	0.05	0.05	0.05	0.05	0.05	0.05
3	0.15	0.15	0.15	0.05	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.10	0.10	0.15	0.15	0.15	0.15
4	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.15	0.05	0.05	0.05	0.05	0.05	0.05	0.05
5	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.10	0.10	0.15	0.15	0.15	0.15
6	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
7	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
8	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
9	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
11	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
12	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
13	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

	Specific Yield in Each Zone (unitless)																	
Layer	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**
1	0.15	0.15	0.10	0.10	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.05	0.15
3	0.15	0.15	0.10	0.10	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
4	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.15	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
5	0.15	0.15	0.10	0.10	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
6	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
7	0.10	0.10	0.10	0.10	0.10	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
8	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
9	0.10	0.10	0.10	0.10	0.10	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.05	0.10
11	0.10	0.10	0.10	0.10	0.10	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
12	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
13	0.10	0.10	0.10	0.10	0.10	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

Table 3-5. Parameters by Layer and Zone, Storage Coefficient

	Storage Coefficient in Each Zone (unitless)																	
Layer	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**18**	**19**	**20**
1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
2	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
3	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
4	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
5	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
6	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
7	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
8	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
9	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
10	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
11	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
12	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
13	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001

	Storage Coefficient in Each Zone (unitless)																	
Layer	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**
1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
2	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
3	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
4	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
5	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
6	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
7	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
8	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
9	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
10	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
11	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
12	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
13	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Table 3-6. Stream (STR) Segment Numbering

Name	STR Segment Number	Type	Name	STR Segment Number	Type
Piru Creek	1	Stream	SCR Main Stem	27	Stream
Rancho Temescal Pump No 1	2	Diversion	SCR Main Stem	28	Stream
Piru Creek	3	Stream	SCR Main Stem	29	Stream
Rancho Temescal Pump No 2	4	Diversion	SCR Main Stem	30	Stream
Piru Creek	5	Stream	SCR Main Stem	31	Stream
Piru Mutual Diversion	6	Diversion	SCR Main Stem	32	Stream
Piru Creek	7	Stream	SCR Main Stem	33	Stream
UWCD Piru Diversion	8	Diversion	SCR Main Stem	34	Stream
Piru Creek	9	Stream	Hyde Turner Diversion	35	Diversion
Hopper Canyon Creek	10	Stream	SCR Main Stem	36	Stream
Pole Creek	11	Stream	South Fork Diversion	37	Diversion
Sespe Creek	12	Stream	SCR Main Stem	38	Stream
Boulder Creek	13	Stream	SCR Main Stem	39	Stream
Timber Canyon Creek	14	Stream	SCR Main Stem	40	Stream
Santa Paula Creek	15	Stream	Freeman Diversion	41	Diversion
Canyon Irrigation Company Diversion	16	Diversion	SCR Main Stem	42	Stream
Santa Paula Creek	17	Stream	SCR Main Stem	43	Stream
Adams Barranca	18	Stream	SCR Main Stem	44	Stream
Todd Barranca	19	Stream	Arroyo Las Posas	45	Stream
Ellsworth Barranca	20	Stream	Conejo Creek	46	Stream
Harmon Barranca	21	Stream	Camrosa Diversion	47	Diversion
Balcom Canyon Creek	22	Stream	Conejo Creek	48	Stream
SCR Main Stem	23	Stream	Camarillo Sanitation District	49	Discharge
Camulos Diversion	24	Diversion	Conejo Creek	50	Stream
SCR Main Stem	25	Stream	Calleguas Creek	51	Stream
Isola Diversion	26	Diversion	Calleguas Creek	52	Stream

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
04N18W03K01S	40	--	70	--	PIRU	OUTSIDE	80	1	71	1	1979	2	2019	2
04N18W03Q02S	--	--	--	--	PIRU	OUTSIDE	81	40	3,211	250	1979	2	2019	2
04N18W20M02S	160	--	369	--	PIRU	PIRU	78	79.2	6,180	234	1981	1	2019	2
04N18W20M01S	220	--	420	--	PIRU	PIRU	81	87	7,038	323	1979	2	2019	2
04N18W19Q01S	422	--	622	--	PIRU	PIRU	81	74	5,982	243	1979	2	2019	2
04N18W20R01S	190	--	319	--	PIRU	PIRU	82	204	16,732	990	1979	1	2019	2
04N18W20N01S	220	--	441	--	PIRU	PIRU	80	5.0	401	14	1979	2	2019	2
04N18W19R01S	220	--	401	--	PIRU	PIRU	17	12.7	215	58	1979	2	1997	2
04N18W19P02S	415	--	630	--	PIRU	PIRU	80	126.3	10,102.9	720.5	1979	2	2019	2
04N18W19N01S	--	--	--	--	PIRU	PIRU	81	98	7,899	184	1979	2	2019	2
04N18W29C01S	356	--	500	--	PIRU	PIRU	81	147.1	11,917.0	325.5	1979	2	2019	2
04N18W28C02S	390	--	750	--	PIRU	PIRU	82	348.6	28,588	1,176	1979	1	2019	2
04N18W27B01S	156	--	280	--	PIRU	PIRU	82	20.9	1,717	197.7	1979	1	2019	2
04N18W27B02S	140	--	255	--	PIRU	PIRU	67	13.9	931.7	237.1	1979	2	2019	2
04N19W25A02S	267	--	460	--	PIRU	PIRU	63	74.5	4,691	140	1988	2	2019	2
04N19W25C02S	265	--	504	--	PIRU	PIRU	77	25	1,946	46	1979	2	2019	2
04N18W30D01S	120	--	285	--	PIRU	PIRU	80	47	3,779	131	1979	2	2019	2
04N18W29D01S	--	--	--	--	PIRU	PIRU	81	59.9	4,851.8	138.0	1979	2	2019	2
04N18W29E01S	--	--	--	--	PIRU	PIRU	81	67	5,460	174	1979	2	2019	2
04N19W26H01S	568	--	612	--	PIRU	PIRU	81	174.5	14,137	416.5	1979	2	2019	2
04N18W30F02S	200	--	280	--	PIRU	PIRU	81	41.7	3,379.2	130.8	1979	2	2019	2
04N18W30G01S	282	--	392	--	PIRU	PIRU	81	65.2	5,285	134	1979	2	2019	2
04N18W29F01S	110	--	275	--	PIRU	PIRU	75	42.0	3,149	158	1980	1	2019	2
04N18W30L01S	200	--	430	--	PIRU	PIRU	81	137	11,119	247	1979	2	2019	2
04N18W29M01S	120	--	230	--	PIRU	PIRU	69	32.3	2,227	71	1985	1	2019	2
04N18W30J01S	116	--	246	--	PIRU	PIRU	80	107	8,580	301	1979	2	2019	2
04N18W30J02S	116	--	246	--	PIRU	PIRU	58	1	60	2	1991	1	2019	2
04N18W30G03S	--	--	--	--	PIRU	PIRU	81	36	2,948	77	1979	2	2019	2
04N18W30G02S	--	--	--	--	PIRU	PIRU	81	16.6	1,344	83	1979	2	2019	2
04N19W25J04S	300	--	500	--	PIRU	PIRU	81	162	13,140	1,009	1979	2	2019	2
04N19W25K02S	120	--	290	--	PIRU	PIRU	40	82	3,270	161	1979	2	1999	2
04N18W30K01S	--	--	--	--	PIRU	PIRU	81	2.8	226	5.3	1979	2	2019	2
04N18W29K01S	465	--	745	--	PIRU	PIRU	82	142.4	11,678	464	1979	1	2019	2
04N18W30J03S	125	--	225	--	PIRU	PIRU	81	0.7	54.7	1.4	1979	2	2019	2
04N19W26J02S	--	--	--	--	PIRU	PIRU	81	42	3,417	88	1979	2	2019	2
04N18W30M03S	280	--	460	--	PIRU	PIRU	81	69	5,550	135	1979	2	2019	2
04N19W26J03S	400	--	650	--	PIRU	PIRU	82	257.9	21,149	728	1979	1	2019	2
04N19W25M01S	--	--	--	--	PIRU	PIRU	81	0.2	18	2	1979	2	2019	2
04N19W25K01S	--	--	--	--	PIRU	PIRU	81	80.1	6,491	174.7	1979	2	2019	2
04N19W25M02S	526	--	626	--	PIRU	PIRU	81	86.7	7,027	296.4	1979	2	2019	2
04N19W26Q03S	--	--	--	--	PIRU	PIRU	81	42	3,389	60	1979	2	2019	2
04N19W27Q02S	271	--	350	--	PIRU	PIRU	81	22.1	1,789.2	61.7	1979	2	2019	2
04N19W27Q01S	272	--	335	--	PIRU	PIRU	55	0.5	27.5	0.5	1992	2	2019	2
04N19W25L04S	385	--	485	--	PIRU	PIRU	81	90	7,288	194	1979	2	2019	2
04N19W26P01S	222	--	282	--	PIRU	PIRU	82	166	13,639	428	1979	1	2019	2
04N19W28Q01S	--	--	--	--	PIRU	PIRU	81	49.2	3,981.6	180.0	1979	2	2019	2
04N19W27R01S	--	--	--	--	PIRU	PIRU	79	64	5,074	157	1979	2	2019	2
04N19W26P02S	--	--	--	--	PIRU	PIRU	82	32.9	2,697	411	1979	1	2019	2
04N19W27R03S	240	--	402	--	PIRU	PIRU	81	53.2	4,306	69	1979	2	2019	2
04N18W29P01S	--	--	232	--	PIRU	PIRU	81	1	64	2	1979	2	2019	2
04N19W27P02S	210	--	290	--	PIRU	PIRU	81	51.4	4,160	105	1979	2	2019	2
04N19W34B01S	--	--	--	--	PIRU	PIRU	59	60.0	3,537	105.4	1990	2	2019	2
04N19W33B01S	206	--	306	--	PIRU	PIRU	81	8.5	692	41.0	1979	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
04N18W31D01S	224	--	374	--	PIRU	PIRU	81	88.7	7,183	150	1979	2	2019	2
04N19W33C01S	165	--	400	--	PIRU	PIRU	34	175	5,951	348	2003	1	2019	2
04N18W31D02S	220	--	500	--	PIRU	PIRU	81	111.7	9,051	177	1979	2	2019	2
04N19W35C01S	--	--	--	--	PIRU	PIRU	82	82.7	6,779	742	1979	1	2019	2
04N19W34D01S	160	--	304	--	PIRU	PIRU	81	39.0	3,163	127	1979	2	2019	2
04N19W33A02S	283	--	355	--	PIRU	PIRU	81	30.0	2,431	45	1979	2	2019	2
04N19W33C02S	205	--	345	--	PIRU	PIRU	81	188.6	15,280	634.2	1979	2	2019	2
04N19W34C02S	--	--	--	--	PIRU	PIRU	52	107.6	5,594	191.5	1979	2	2006	1
04N19W34C03S	219	--	291	--	PIRU	PIRU	30	114.8	3,444	262.6	2005	1	2019	2
04N19W34D05S	--	--	--	--	PIRU	PIRU	59	26.5	1,565	72	1990	2	2019	2
04N19W34D04S	283	--	355	--	PIRU	PIRU	70	39.6	2,773	92.1	1985	1	2019	2
04N18W31C01S	--	--	--	--	PIRU	PIRU	31	25.9	802	35	2004	2	2019	2
04N19W33G01S	--	--	--	--	PIRU	PIRU	76	6.8	518	123	1982	1	2019	2
04N19W33F01S	300	--	600	--	PIRU	PIRU	76	69.9	5,310	819	1982	1	2019	2
04N19W33H01S	237	--	362	--	PIRU	PIRU	81	93.7	7,590	342	1979	2	2019	2
04N19W34G01S	70	--	220	--	PIRU	PIRU	81	83	6,735	345	1979	2	2019	2
04N19W35L05S	80	--	302	--	PIRU	PIRU	72	91.2	6,567	472.8	1984	1	2019	2
04N19W34J01S	72	--	120	--	PIRU	PIRU	81	48.9	3,960	143.8	1979	2	2019	2
04N19W34K01S	5	--	120	--	PIRU	PIRU	11	1.3	15	2	2014	2	2019	2
04N19W35L01S	40	--	130	--	PIRU	PIRU	81	6.4	522	96.2	1979	2	2019	2
04N19W35K01S	40	--	400	--	PIRU	PIRU	77	1.2	89	4.0	1981	2	2019	2
04N19W35K02S	--	--	--	--	PIRU	PIRU	81	73.1	5,924	215	1979	2	2019	2
04N19W34M02S	--	--	--	--	PIRU	PIRU	81	65	5,272	240	1979	2	2019	2
04N19W33K07S	57	--	93	--	PIRU	PIRU	81	22.2	1,797	136	1979	2	2019	2
04N19W33K04S	--	--	--	--	PIRU	PIRU	14	2.6	37	10	2013	1	2019	2
04N19W33J01S	--	--	--	--	PIRU	PIRU	80	0.5	38.6	1.8	1979	2	2019	2
04N19W23R02S	150	--	200	--	PIRU	OUTSIDE	56	4.5	252.7	13.3	1991	1	2019	2
04N19W26Q04S	115	--	156	--	PIRU	PIRU	63	1.9	117.2	4.0	1988	2	2019	2
04N19W34J03S	50	--	95	--	PIRU	PIRU	67	20.3	1361.3	22.4	1986	2	2019	2
04N18W20P01S	795	--	995	--	PIRU	PIRU	40	28.2	1129.0	170.6	1979	2	1999	2
04N18W30J05S	52	--	207	--	PIRU	PIRU	21	2.2	46.4	12.0	2009	2	2019	2
04N18W30G05S	157	--	237	--	PIRU	PIRU	41	2.0	80.2	3.7	1999	2	2019	2
04N18W30F04S	--	--	--	--	PIRU	PIRU	26	0.7	19.3	1.0	2007	1	2019	2
04N18W20K02S	120	--	200	--	PIRU	PIRU	46	10.6	486.4	15.0	1997	1	2019	2
04N19W25K04S	220	--	370	--	PIRU	PIRU	43	16.0	688.9	24.0	1998	1	2019	2
04N19W26J05S	200	--	250	--	PIRU	PIRU	46	1.5	70.0	3.0	1997	1	2019	2
04N19W25M03S	210	--	250	--	PIRU	PIRU	18	1.0	18.0	1.0	2011	1	2019	2
04N19W28Q03S	407	--	707	--	PIRU	PIRU	35	38.6	1352.2	176.0	2002	2	2019	2
04N19W28P02S	310	--	800	--	PIRU	PIRU	18	30.5	549.4	53.5	2011	1	2019	2
04N18W27K01S	50	--	130	--	PIRU	PIRU	30	37.0	1110.6	150.2	2005	1	2019	2
04N18W30L02S	125	--	245	--	PIRU	PIRU	20	2.2	44.3	8.5	2010	1	2019	2
04N19W34L01S	90	--	430	--	PIRU	PIRU	35	126.5	4427.1	453.8	2002	2	2019	2
04N18W20M03S	160	--	450	--	PIRU	PIRU	32	284.0	9087.3	495.0	2004	1	2019	2
04N19W25J05S	180	--	380	--	PIRU	PIRU	29	12.4	359.4	25.8	2005	2	2019	2
04N18W31H01S	360	--	520	--	PIRU	OUTSIDE	30	1.0	29.5	6.9	2005	1	2019	2
04N18W19J02S	187	--	447	--	PIRU	PIRU	26	32.1	834.3	54.9	2006	2	2019	2
04N19W25J06S	120	--	400	--	PIRU	PIRU	28	174.3	4881.2	482.3	2005	2	2019	2
04N18W27G03S	40	--	120	--	PIRU	PIRU	24	131.0	3144.7	247.3	2008	1	2019	2
04N18W27H01S	40	--	120	--	PIRU	PIRU	24	88.3	2119.3	184.7	2008	1	2019	2
04N18W30A03S	90	--	190	--	PIRU	PIRU	18	3.2	57.1	6.6	2011	1	2019	2
04N18W30J04S	79	--	250	--	PIRU	PIRU	21	0.5	9.6	1.2	2009	2	2019	2
04N19W25G01S	200	--	400	--	PIRU	PIRU	23	46.3	1065.2	318.2	2008	2	2019	2
04N19W34A01S	110	--	200	--	PIRU	PIRU	79	0.9	70.1	2.0	1980	1	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
04N19W34J04S	60	--	160	--	PIRU	PIRU	20	38.3	765.3	82.4	2010	1	2019	2
04N19W25L07S	40	--	140	--	PIRU	PIRU	17	0.0	0.8	0.8	2010	1	2019	2
04N19W23R03S	120	--	207	--	PIRU	OUTSIDE	19	2.1	39.6	12.0	2009	2	2019	2
04N18W30B01S	280	--	430	--	PIRU	PIRU	18	156.9	2823.3	320.0	2011	1	2019	2
04N18W30L03S	120	--	240	--	PIRU	PIRU	23	12.3	281.8	21.6	2008	1	2019	2
04N18W30L04S	120	--	240	--	PIRU	PIRU	24	16.5	396.8	27.8	2008	1	2019	2
04N19W25H01S	120	--	240	--	PIRU	PIRU	24	5.5	131.5	17.6	2008	1	2019	2
04N18W30J06S	--	--	--	--	PIRU	PIRU	21	9.9	207.4	12.3	2009	2	2019	2
04N18W30F03S	143	--	243	--	PIRU	PIRU	63	2.7	171.5	12.1	1988	2	2019	2
04N18W30E01S	300	--	590	--	PIRU	PIRU	14	167.3	2342.6	373.0	2013	1	2019	2
04N18W03Q03S	27	--	70	--	PIRU	OUTSIDE	12	12.1	145.8	70.1	2014	1	2019	2
04N18W26E01S	21	--	60	--	PIRU	PIRU	14	12.5	175.5	98.9	2013	1	2019	2
04N18W27H03S	26	--	66	--	PIRU	PIRU	14	11.2	156.8	94.6	2013	1	2019	2
04N18W27H02S	30	--	98	--	PIRU	PIRU	14	0.9	13.2	12.4	2013	1	2019	2
04N20W12G02S	80	--	100	--	FILLMORE	OUTSIDE	58	1.9	112	14	1991	1	2019	2
04N20W13P02S	--	--	--	--	FILLMORE	FILLMORE	81	47.6	3,859	172	1979	2	2019	2
04N20W13P01S	--	--	--	--	FILLMORE	FILLMORE	20	6	118	118	1979	2	1997	2
04N20W13N01S	203	--	403	--	FILLMORE	FILLMORE	81	26.2	2,122	65.3	1979	2	2019	2
04N20W24C01S	564	--	704	--	FILLMORE	FILLMORE	81	216.2	17,515	472	1979	2	2019	2
04N20W24D01S	190	--	308	--	FILLMORE	FILLMORE	81	38.6	3,127.2	116.1	1979	2	2019	2
04N20W23F01S	--	--	--	--	FILLMORE	FILLMORE	81	26.1	2,114.5	80.0	1979	2	2019	2
04N20W23G01S	--	--	--	--	FILLMORE	FILLMORE	82	6.7	553	58	1979	1	2019	2
04N20W24J03S	135	--	308	--	FILLMORE	FILLMORE	81	0.7	54	6	1979	2	2019	2
04N20W24J01S	245	--	535	--	FILLMORE	FILLMORE	82	308.9	25,330.6	520.8	1979	1	2019	2
04N20W23J02S	216	--	505	--	FILLMORE	FILLMORE	81	75	6,055	151	1979	2	2019	2
04N20W23L01S	270	--	400	--	FILLMORE	FILLMORE	77	20	1,578	186	1981	2	2019	2
04N20W24R02S	730	--	1,820	--	FILLMORE	FILLMORE	81	168	13,568	540	1979	2	2019	2
04N20W23Q02S	327	--	567	--	FILLMORE	FILLMORE	81	66.0	5,345	120.5	1979	2	2019	2
04N20W24N01S	--	--	--	--	FILLMORE	FILLMORE	81	46	3,711	54	1979	2	2019	2
04N20W23Q01S	134	--	224	--	FILLMORE	FILLMORE	67	29	1,936	64	1986	1	2019	2
04N20W23N01S	219	--	388	--	FILLMORE	FILLMORE	29	0.6	16	10	2000	1	2019	2
04N20W23N02S	220	--	390	--	FILLMORE	FILLMORE	81	104.4	8,453.2	295.6	1979	2	2019	2
04N20W25D01S	67	--	187	--	FILLMORE	FILLMORE	81	127.0	10,284	731	1979	2	2019	2
04N20W25B01S	50	--	280	--	FILLMORE	FILLMORE	81	568	46,032	999	1979	2	2019	2
04N20W26C02S	155	--	255	--	FILLMORE	FILLMORE	81	2.6	209	11	1979	2	2019	2
04N20W26A02S	40	--	254	--	FILLMORE	FILLMORE	81	339.0	27,459	669	1979	2	2019	2
04N19W30D01S	60	--	380	--	FILLMORE	FILLMORE	81	84.5	6,848	167	1979	2	2019	2
04N20W25D02S	80	--	100	--	FILLMORE	FILLMORE	82	0	41	1	1979	1	2019	2
04N20W25C01S	103	--	311	--	FILLMORE	FILLMORE	49	10	501	55	1979	2	2003	2
04N20W26D01S	180	--	500	--	FILLMORE	FILLMORE	81	247.5	20,045.5	467.6	1979	2	2019	2
04N20W26C03S	120	--	270	--	FILLMORE	FILLMORE	81	7.3	590	13	1979	2	2019	2
04N20W26H02S	76	--	113	--	FILLMORE	FILLMORE	81	101.7	8,239	404.8	1979	2	2019	2
04N20W26F01S	124	--	442	--	FILLMORE	FILLMORE	81	310.6	25,158	771.3	1979	2	2019	2
04N20W26E01S	--	--	--	--	FILLMORE	FILLMORE	81	444.5	36,006.3	841.8	1979	2	2019	2
04N19W30H01S	140	--	500	--	FILLMORE	FILLMORE	81	48.6	3,937.6	251.7	1979	2	2019	2
04N20W25K03S	--	--	--	--	FILLMORE	FILLMORE	18	8	137	13	1979	2	1997	2
04N20W28M02S	270	--	555	--	FILLMORE	FILLMORE	54	15	827	19	1993	1	2019	2
04N20W25M01S	120	--	200	--	FILLMORE	FILLMORE	59	1	54	1	1990	2	2019	2
04N19W29K01S	--	--	--	--	FILLMORE	FILLMORE	19	0.9	17	1	1979	2	1997	2
04N19W29L02S	40	--	90	--	FILLMORE	FILLMORE	65	3.9	255	27	1985	2	2019	2
04N19W30K01S	160	--	479	--	FILLMORE	FILLMORE	54	0	1	1	1979	2	2006	1
04N19W29R02S	--	--	--	--	FILLMORE	FILLMORE	82	0.6	48.8	2.0	1979	1	2019	2
04N19W29R06S	174	--	204	--	FILLMORE	FILLMORE	69	1	47	1	1985	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
04N19W30R01S	173	--	300	--	FILLMORE	FILLMORE	57	18	1,006	36	1979	2	2008	1
04N19W30Q02S	310	--	510	--	FILLMORE	FILLMORE	34	43	1,473	48	1989	2	2006	1
04N19W30P02S	102	--	232	--	FILLMORE	FILLMORE	81	17	1,397	78	1979	2	2019	2
04N19W29R04S	80	--	180	--	FILLMORE	FILLMORE	81	142	11,506	589	1979	2	2019	2
04N20W27Q01S	236	--	483	--	FILLMORE	FILLMORE	81	108.6	8,794.1	516.2	1979	2	2019	2
04N19W29Q03S	--	--	--	--	FILLMORE	FILLMORE	39	122.4	4,772	497	1984	2	2003	2
04N19W30P03S	--	--	--	--	FILLMORE	FILLMORE	13	10.9	141	94	1979	2	1997	2
04N20W26Q01S	--	--	--	--	FILLMORE	FILLMORE	73	108.6	7,931	332	1979	2	2015	2
04N20W29Q01S	100	--	480	--	FILLMORE	FILLMORE	11	1	13	3	2014	2	2019	2
04N19W29R05S	100	--	209	--	FILLMORE	FILLMORE	80	364	29,110	1,350	1979	2	2019	2
04N20W25N02S	--	--	--	--	FILLMORE	FILLMORE	81	70.2	5,685.8	220.0	1979	2	2019	2
04N20W33C01S	416	--	897	--	FILLMORE	FILLMORE	81	45.6	3,690	101	1979	2	2019	2
04N19W33D06S	200	--	600	--	FILLMORE	PIRU	81	1,319	106,804	4,712	1979	2	2019	2
04N20W36D01S	46	--	266	--	FILLMORE	FILLMORE	81	2.8	230	13	1979	2	2019	2
04N19W33D05S	200	--	600	--	FILLMORE	PIRU	81	2,270.7	183,924	5,085	1979	2	2019	2
04N20W36B01S	--	--	--	--	FILLMORE	FILLMORE	33	5.1	169	12.5	1990	2	2006	2
04N20W33B01S	195	--	297	--	FILLMORE	FILLMORE	81	33	2,692	108	1979	2	2019	2
04N19W31D04S	80	--	250	--	FILLMORE	FILLMORE	81	175.8	14,238.3	747.7	1979	2	2019	2
04N19W33D03S	140	--	506	--	FILLMORE	PIRU	80	743.6	59,492	1,905.9	1980	1	2019	2
04N20W36C02S	--	--	--	--	FILLMORE	FILLMORE	57	12	692	14	1979	2	2007	2
04N20W36D02S	--	--	--	--	FILLMORE	FILLMORE	69	0.7	50	1.0	1979	2	2015	2
04N19W33D04S	140	--	486	--	FILLMORE	PIRU	82	454.4	37,261	1,559.0	1979	1	2019	2
04N19W32A02S	--	--	--	--	FILLMORE	FILLMORE	81	204.7	16,578	3,077.5	1979	2	2019	2
04N20W36C03S	--	--	--	--	FILLMORE	FILLMORE	77	0.5	40.1	0.8	1980	2	2019	2
04N20W36D06S	--	--	--	--	FILLMORE	FILLMORE	81	1.0	78.6	2.1	1979	2	2019	2
04N20W36D04S	34	--	68	--	FILLMORE	FILLMORE	79	52.1	4,115	162	1979	2	2019	2
04N20W33C03S	470	--	700	--	FILLMORE	FILLMORE	81	60.8	4,921	165	1979	2	2019	2
04N20W35H01S	--	--	--	--	FILLMORE	FILLMORE	58	15	851	123	1991	1	2019	2
04N19W31F01S	60	--	100	--	FILLMORE	FILLMORE	60	0.9	56	4	1989	2	2019	2
04N20W32H01S	325	--	380	--	FILLMORE	FILLMORE	81	42.5	3,441	92	1979	2	2019	2
04N19W31H01S	55	--	395	--	FILLMORE	FILLMORE	80	18.2	1,456	83.2	1979	2	2019	2
04N19W31E01S	--	--	--	--	FILLMORE	FILLMORE	81	53.8	4,354.3	157.7	1979	2	2019	2
04N19W32F03S	165	--	345	--	FILLMORE	FILLMORE	55	104.7	5,758	232	1979	1	2006	1
04N19W32G01S	136	--	409	--	FILLMORE	FILLMORE	81	188.6	15,275	738	1979	2	2019	2
04N19W32F02S	81	--	245	--	FILLMORE	FILLMORE	81	6.7	539	41.2	1979	2	2019	2
04N20W31H01S	345	--	390	--	FILLMORE	FILLMORE	81	13.1	1,061	55.2	1979	2	2019	2
04N20W31H02S	370	--	610	--	FILLMORE	FILLMORE	81	29	2,374	63	1979	2	2019	2
04N19W33M04S	55	--	278	--	FILLMORE	PIRU	81	42	3,384	137	1979	2	2019	2
04N20W34J01S	260	--	480	--	FILLMORE	FILLMORE	80	3.0	239	50	1979	1	2019	2
04N19W32J05S	40	--	130	--	FILLMORE	FILLMORE	81	0.5	40	1	1979	2	2019	2
04N19W33M02S	--	--	--	--	FILLMORE	FILLMORE	76	208.9	15,876	411	1982	1	2019	2
04N20W34K04S	54	--	101	--	FILLMORE	FILLMORE	27	2.1	56	3	2006	2	2019	2
04N19W32J06S	50	--	150	--	FILLMORE	FILLMORE	81	138	11,175	686	1979	2	2019	2
04N19W31L01S	--	--	--	--	FILLMORE	FILLMORE	81	113.8	9,215.6	304.6	1979	2	2019	2
04N19W33M03S	--	--	--	--	FILLMORE	FILLMORE	81	429.8	34,810.1	2,880.0	1979	2	2019	2
04N19W33M05S	37	--	107	--	FILLMORE	FILLMORE	82	58.2	4,773	151	1979	1	2019	2
04N20W34K01S	--	--	--	--	FILLMORE	FILLMORE	81	40.8	3,303	78.8	1979	2	2019	2
04N20W31L01S	633	--	1,100	--	FILLMORE	FILLMORE	81	6.4	518	18	1979	2	2019	2
04N19W32L01S	50	--	160	--	FILLMORE	FILLMORE	81	55.5	4,499	210	1979	2	2019	2
04N20W36J02S	--	--	--	--	FILLMORE	FILLMORE	81	25.4	2,058	105	1979	2	2019	2
04N20W36R02S	80	--	160	--	FILLMORE	FILLMORE	81	17	1,356	38	1979	2	2019	2
04N20W36R06S	--	--	--	--	FILLMORE	FILLMORE	81	13.1	1,057.6	23.8	1979	2	2019	2
04N20W36K02S	--	--	--	--	FILLMORE	FILLMORE	81	102.4	8,295.2	216.0	1979	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
04N19W32J01S	--	--	--	--	FILLMORE	FILLMORE	81	89.7	7,264.0	280.5	1979	2	2019	2
04N20W36R05S	--	--	--	--	FILLMORE	FILLMORE	60	0.6	36	1	1990	1	2019	2
04N20W34R01S	--	--	--	--	FILLMORE	FILLMORE	82	64.8	5,310	112	1979	1	2019	2
04N19W31R01S	60	--	137	--	FILLMORE	FILLMORE	81	156	12,628	345	1979	2	2019	2
04N20W34P01S	--	--	--	--	FILLMORE	FILLMORE	81	69	5,586	479	1979	2	2019	2
04N20W31Q01S	300	--	485	--	FILLMORE	FILLMORE	81	233	18,870	849	1979	2	2019	2
04N19W31P01S	--	--	--	--	FILLMORE	FILLMORE	81	1	42	1	1979	2	2019	2
04N20W32P01S	260	--	384	--	FILLMORE	FILLMORE	81	32	2,568	77	1979	2	2019	2
04N20W36Q03S	75	--	185	--	FILLMORE	FILLMORE	81	208.8	16,910	526	1979	2	2019	2
04N20W31P01S	230	--	450	--	FILLMORE	FILLMORE	81	173	14,001	748	1979	2	2019	2
04N19W31N03S	105	--	169	--	FILLMORE	FILLMORE	70	73.2	5,122.1	191.6	1985	1	2019	2
04N20W36R07S	80	--	260	--	FILLMORE	FILLMORE	59	0.6	36.5	1.8	1990	2	2019	2
04N20W32Q01S	--	--	--	--	FILLMORE	FILLMORE	59	0.6	37.3	1.0	1990	2	2019	2
04N20W35R01S	56	--	156	--	FILLMORE	FILLMORE	56	12	694	25	1992	1	2019	2
04N20W36Q04S	--	--	--	--	FILLMORE	FILLMORE	81	0.6	52.2	1.0	1979	2	2019	2
04N20W36N03S	60	--	100	--	FILLMORE	FILLMORE	81	0.6	51.0	1.5	1979	2	2019	2
04N20W34N05S	80	--	200	--	FILLMORE	FILLMORE	20	56	1,128	88	2010	1	2019	2
04N20W32R01S	105	--	240	--	FILLMORE	FILLMORE	75	41.9	3,143	145	1982	2	2019	2
04N19W32N02S	--	--	--	--	FILLMORE	FILLMORE	60	0.5	31	1	1990	1	2019	2
04N20W36P02S	60	--	150	--	FILLMORE	FILLMORE	81	34.8	2,823	88	1979	2	2019	2
04N20W32P02S	241	--	324	--	FILLMORE	FILLMORE	81	52	4,210	209	1979	2	2019	2
03N19W06D02S	216	--	405	--	FILLMORE	FILLMORE	81	120.9	9,793	345	1979	2	2019	2
03N20W01C04S	49	--	218	--	FILLMORE	FILLMORE	81	119	9,661	409	1979	2	2019	2
03N19W06D03S	184	--	400	--	FILLMORE	FILLMORE	81	183	14,787	455	1979	2	2019	2
03N20W01A03S	385	--	545	--	FILLMORE	FILLMORE	81	140.6	11,390.9	468.5	1979	2	2019	2
03N20W01D03S	--	--	--	--	FILLMORE	FILLMORE	81	0.6	47	1.0	1979	2	2019	2
03N20W02B03S	362	--	522	--	FILLMORE	FILLMORE	81	65.8	5,328	137	1979	2	2019	2
03N20W06A01S	--	--	--	--	FILLMORE	FILLMORE	81	169	13,682	1,238	1979	2	2019	2
03N20W06A03S	520	--	940	--	FILLMORE	FILLMORE	68	186	12,639	301	1986	1	2019	2
03N20W05D03S	200	--	385	--	FILLMORE	FILLMORE	81	57.4	4,648	214	1979	2	2019	2
03N20W03D07S	224	--	484	--	FILLMORE	FILLMORE	80	5	411	143	1979	2	2019	2
03N20W03D05S	274	--	436	--	FILLMORE	FILLMORE	81	183.4	14,858	1,269	1979	2	2019	2
03N20W03D03S	102	--	397	--	FILLMORE	FILLMORE	80	598	47,856	1,272	1979	2	2019	2
03N20W06D03S	160	--	500	--	FILLMORE	FILLMORE	74	46.5	3,438	152	1983	1	2019	2
03N20W05C01S	125	--	405	--	FILLMORE	FILLMORE	38	50	1,887	286	2001	1	2019	2
03N20W05C02S	135	--	402	--	FILLMORE	FILLMORE	49	244.8	11,995	554	1979	2	2003	2
03N20W01A02S	--	--	--	--	FILLMORE	FILLMORE	17	0.1	2	0.5	2011	1	2019	2
03N20W02B02S	--	--	--	--	FILLMORE	FILLMORE	81	69.6	5,637	143	1979	2	2019	2
03N20W06B01S	320	--	640	--	FILLMORE	FILLMORE	81	37	2,993	116	1979	2	2019	2
03N20W05C03S	221	--	362	--	FILLMORE	FILLMORE	81	3.2	256	6	1979	2	2019	2
03N20W02A04S	80	--	100	--	FILLMORE	FILLMORE	68	0.9	61.7	1.9	1979	2	2019	2
03N20W02A01S	--	--	--	--	FILLMORE	FILLMORE	81	3.0	242.0	12.2	1979	2	2019	2
03N20W01H03S	200	--	243	--	FILLMORE	FILLMORE	71	0.5	39	1	1984	2	2019	2
03N20W01B01S	--	--	--	--	FILLMORE	FILLMORE	81	0.6	46	1	1979	2	2019	2
03N21W01C01S	112	--	138	--	FILLMORE	FILLMORE	77	0.6	47	1.9	1981	1	2019	2
03N20W04C01S	160	--	332	--	FILLMORE	FILLMORE	81	412.9	33,445	1,024	1979	2	2019	2
03N20W01G02S	150	--	220	--	FILLMORE	FILLMORE	59	1	30	1	1990	2	2019	2
03N20W02F05S	96	--	265	--	FILLMORE	FILLMORE	81	8	662	11	1979	2	2019	2
03N21W01B01S	--	--	--	--	FILLMORE	FILLMORE	81	1	70	2	1979	2	2019	2
03N20W05D02S	--	--	--	--	FILLMORE	FILLMORE	12	57	687	224	1979	2	1997	2
03N20W06G01S	158	--	230	--	FILLMORE	FILLMORE	81	21	1,733	27	1979	2	2019	2
03N20W02E01S	--	--	--	--	FILLMORE	FILLMORE	81	36	2,912	60	1979	2	2019	2
03N20W05H01S	139	--	370	--	FILLMORE	FILLMORE	65	21	1,382	289	1979	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
03N20W01F02S	--	--	--	--	FILLMORE	FILLMORE	81	1	67	1	1979	2	2019	2
03N21W01F01S	110	--	160	--	FILLMORE	FILLMORE	81	1	47	1	1979	2	2019	2
03N20W02H05S	238	--	310	--	FILLMORE	FILLMORE	60	33.1	1,984.9	290.1	1990	1	2019	2
03N20W03H01S	--	--	--	--	FILLMORE	FILLMORE	81	36.5	2,955	90.5	1979	2	2019	2
03N20W03H02S	100	--	397	--	FILLMORE	FILLMORE	82	32.2	2,637.2	98.3	1979	1	2019	2
03N20W06G02S	--	--	--	--	FILLMORE	FILLMORE	63	116.4	7,334.7	688.1	1979	2	2010	2
03N21W01F03S	80	--	180	--	FILLMORE	FILLMORE	81	0.6	46	1.2	1979	2	2019	2
03N20W02E02S	133	--	205	--	FILLMORE	FILLMORE	81	23.2	1,879.7	40.0	1979	2	2019	2
03N20W05F01S	80	--	492	--	FILLMORE	FILLMORE	81	248.0	20,087.5	605.1	1979	2	2019	2
03N20W02F01S	--	--	--	--	FILLMORE	FILLMORE	81	2.8	230.5	12.9	1979	2	2019	2
03N20W01E01S	--	--	--	--	FILLMORE	FILLMORE	43	0.7	31	1.0	1990	2	2011	2
03N20W02G02S	--	--	--	--	FILLMORE	FILLMORE	61	4.0	246.2	16.1	1989	2	2019	2
03N20W02G03S	120	--	200	--	FILLMORE	FILLMORE	59	0.7	44	1.0	1990	2	2019	2
03N20W02F04S	60	--	108	--	FILLMORE	FILLMORE	81	0.8	65	9	1979	2	2019	2
03N20W02F02S	--	--	--	--	FILLMORE	FILLMORE	81	15	1,214	48	1979	2	2019	2
03N20W02L06S	48	--	80	--	FILLMORE	FILLMORE	80	0.6	46	1.2	1980	1	2019	2
03N20W02M01S	161	--	--	--	FILLMORE	FILLMORE	81	28	2,273	60	1979	2	2019	2
03N20W01J01S	--	--	--	--	FILLMORE	FILLMORE	81	28	2,232	637	1979	2	2019	2
03N20W03J01S	--	--	--	--	FILLMORE	FILLMORE	81	106.3	8,612	299.4	1979	2	2019	2
03N20W06J03S	--	--	--	--	FILLMORE	FILLMORE	59	56.7	3,346.4	83.3	1990	2	2019	2
03N20W06J02S	95	--	288	--	FILLMORE	FILLMORE	81	127.8	10,351	513	1979	2	2019	2
03N20W06L01S	--	--	--	--	FILLMORE	FILLMORE	81	42.4	3,435	75	1979	2	2019	2
03N20W06J01S	--	--	--	--	FILLMORE	FILLMORE	81	68.8	5,570	157	1979	2	2019	2
03N20W03J02S	70	--	210	--	FILLMORE	FILLMORE	81	406.7	32,940	784	1979	2	2019	2
03N20W06K01S	--	--	--	--	FILLMORE	FILLMORE	59	0.6	38	1	1990	2	2019	2
03N20W02L05S	--	--	--	--	FILLMORE	FILLMORE	80	1.1	91	13.0	1979	2	2019	2
03N20W02J01S	108	--	123	--	FILLMORE	FILLMORE	80	0.7	53	1	1980	1	2019	2
03N20W03N01S	120	--	172	--	FILLMORE	FILLMORE	59	94.5	5,576	136.9	1990	2	2019	2
03N20W01P03S	--	--	--	--	FILLMORE	FILLMORE	81	1	83	13	1979	2	2019	2
03N20W03P02S	192	--	300	--	FILLMORE	FILLMORE	81	227	18,404	774	1979	2	2019	2
03N21W01P05S	180	--	380	--	FILLMORE	FILLMORE	82	279	22,904	617	1979	1	2019	2
03N20W02N03S	--	--	--	--	FILLMORE	FILLMORE	49	18.7	918	37	1979	2	2003	2
03N20W02R04S	90	--	125	--	FILLMORE	FILLMORE	73	0.5	37	5.0	1979	2	2015	2
03N20W02R05S	93	--	133	--	FILLMORE	FILLMORE	81	0.5	43	1	1979	2	2019	2
03N21W01P06S	200	--	240	--	FILLMORE	FILLMORE	81	4.0	328	5.8	1979	2	2019	2
03N20W04N03S	186	--	266	--	FILLMORE	FILLMORE	81	85.3	6,910.2	250.0	1979	2	2019	2
03N20W02P02S	--	--	--	--	FILLMORE	FILLMORE	58	28.7	1,664	41	1979	2	2008	1
03N20W04N04S	60	--	155	--	FILLMORE	FILLMORE	81	54.2	4,392	105	1979	2	2019	2
03N21W01P01S	--	--	--	--	FILLMORE	FILLMORE	58	10.4	605.1	17.8	1991	1	2019	2
03N20W01P05S	71	--	305	--	FILLMORE	FILLMORE	58	0.1	4.3	1.0	1991	1	2019	2
03N20W02Q02S	--	--	--	--	FILLMORE	FILLMORE	80	1.2	95	2	1979	2	2019	2
03N21W01P03S	75	--	104	--	FILLMORE	FILLMORE	81	17.8	1,443	58	1979	2	2019	2
03N20W04R02S	95	--	215	--	FILLMORE	FILLMORE	81	249.2	20,182	605	1979	2	2019	2
03N20W04Q02S	--	--	--	--	FILLMORE	FILLMORE	81	97.5	7,894.8	213.9	1979	2	2019	2
03N20W04Q03S	--	--	--	--	FILLMORE	FILLMORE	81	52.9	4,286	125	1979	2	2019	2
03N20W02N01S	--	--	--	--	FILLMORE	FILLMORE	32	34	1,093	55	2004	1	2019	2
03N21W01P07S	220	--	260	--	FILLMORE	FILLMORE	81	1	89	2	1979	2	2019	2
03N20W04R01S	--	--	--	--	FILLMORE	FILLMORE	81	74.5	6,032.7	116.2	1979	2	2019	2
03N20W04Q01S	--	--	--	--	FILLMORE	FILLMORE	81	60	4,881	75	1979	2	2019	2
03N20W06P01S	50	--	100	--	FILLMORE	FILLMORE	52	17.2	897	44	1994	1	2019	2
03N20W04P02S	--	--	--	--	FILLMORE	FILLMORE	81	117.0	9,474	313	1979	1	2019	2
03N20W06P02S	110	--	245	--	FILLMORE	FILLMORE	55	429.2	23,606	806	1979	2	2006	2
03N20W04P01S	--	--	--	--	FILLMORE	FILLMORE	81	54.0	4,373	158	1979	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
03N20W04N01S	136	--	--	--	FILLMORE	FILLMORE	36	35.9	1,293	81	2002	1	2019	2
03N20W02P01S	--	--	--	--	FILLMORE	FILLMORE	81	1	61	1	1979	2	2019	2
03N21W01R01S	--	--	--	--	FILLMORE	FILLMORE	81	0.5	44	1	1979	2	2019	2
03N20W06N01S	125	--	328	--	FILLMORE	FILLMORE	82	172.6	14,152	420	1979	1	2019	2
03N20W06N02S	240	--	350	--	FILLMORE	FILLMORE	81	42.9	3,477	251	1979	2	2019	2
03N21W01P02S	75	--	104	--	FILLMORE	FILLMORE	81	0.6	50	1.3	1979	2	2019	2
03N20W11C01S	--	--	--	--	FILLMORE	FILLMORE	81	12	991	44	1979	2	2019	2
03N20W12D01S	--	--	--	--	FILLMORE	FILLMORE	81	1	69	1	1979	2	2019	2
03N20W09D01S	210	--	310	--	FILLMORE	FILLMORE	81	240.7	19,497	469	1979	2	2019	2
03N20W10D02S	50	--	135	--	FILLMORE	FILLMORE	77	67.1	5,170	124	1979	2	2019	2
03N21W12C01S	--	--	--	--	FILLMORE	FILLMORE	59	0.8	49	1	1990	2	2019	2
03N21W12D01S	--	--	--	--	FILLMORE	FILLMORE	59	0.8	45	1.2	1990	2	2019	2
03N20W08B02S	202	--	307	--	FILLMORE	FILLMORE	81	182.7	14,800	413	1979	2	2019	2
03N21W12A01S	--	--	--	--	FILLMORE	FILLMORE	81	55.9	4,529	66	1979	2	2019	2
03N20W11C02S	--	--	--	--	FILLMORE	FILLMORE	81	0.5	39	1.0	1979	2	2019	2
03N20W11D05S	--	--	--	--	FILLMORE	FILLMORE	23	1.1	25	1	2008	2	2019	2
03N21W12D02S	91	--	122	--	FILLMORE	FILLMORE	59	10.6	626	14.1	1990	2	2019	2
03N20W11A01S	127	--	150	--	FILLMORE	FILLMORE	81	26.7	2,161	54.0	1979	2	2019	2
03N20W12D05S	39	--	150	--	FILLMORE	FILLMORE	81	0.6	45	1.0	1979	2	2019	2
03N20W08C01S	70	--	352	--	FILLMORE	FILLMORE	35	78.9	2,761	154.8	2002	2	2019	2
03N21W12B03S	105	--	150	--	FILLMORE	FILLMORE	81	44.7	3,623	90.6	1979	2	2019	2
03N21W12B01S	--	--	--	--	FILLMORE	FILLMORE	81	1.1	92	2.1	1979	2	2019	2
03N21W12A02S	50	--	90	--	FILLMORE	FILLMORE	76	0.5	38	4.2	1979	2	2019	2
03N20W11C03S	--	--	--	--	FILLMORE	FILLMORE	81	21.3	1,728.7	51.3	1979	2	2019	2
03N21W12A05S	60	--	100	--	FILLMORE	FILLMORE	81	1.7	134.3	2.3	1979	2	2019	2
03N21W12H02S	38	--	80	--	FILLMORE	FILLMORE	78	0	39	1	1979	1	2019	2
03N21W12A04S	60	--	120	--	FILLMORE	FILLMORE	81	0.8	62	1	1979	2	2019	2
03N20W08A01S	--	--	--	--	FILLMORE	FILLMORE	81	27.7	2,247	379	1979	2	2019	2
03N21W12H01S	74	--	150	--	FILLMORE	FILLMORE	81	65.2	5,284.7	194.8	1979	2	2019	2
03N20W07H01S	56	--	155	--	FILLMORE	FILLMORE	81	5.7	458	27.4	1979	2	2019	2
03N20W10H01S	130	--	190	--	FILLMORE	FILLMORE	59	10.7	633.8	27.3	1990	2	2019	2
03N20W09F01S	--	--	--	--	FILLMORE	FILLMORE	78	0.6	46	2	1979	2	2019	2
03N20W08E01S	150	--	200	--	FILLMORE	FILLMORE	59	22.1	1,305	61.0	1990	2	2019	2
03N20W08F04S	28	--	116	--	FILLMORE	FILLMORE	81	66.5	5,386	149.0	1979	2	2019	2
03N20W08F02S	--	--	--	--	FILLMORE	FILLMORE	81	0.8	61	1	1979	2	2019	2
03N20W08F01S	100	--	152	--	FILLMORE	FILLMORE	82	23.9	1,961.7	77.6	1979	1	2019	2
03N21W01N02S	200	--	400	--	FILLMORE	FILLMORE	65	160.7	10444.1	464.2	1987	2	2019	2
03N20W02G05S	122	--	262	--	FILLMORE	FILLMORE	59	9.4	552.9	12.3	1990	2	2019	2
03N20W02G06S	131	--	251	--	FILLMORE	FILLMORE	56	2.5	138.8	7.5	1992	1	2019	2
03N20W02J02S	142	--	258	--	FILLMORE	FILLMORE	57	11.5	655.7	20.2	1991	2	2019	2
03N20W02M02S	122	--	162	--	FILLMORE	FILLMORE	59	0.6	34.6	16.1	1990	2	2019	2
03N20W03J03S	50	--	250	--	FILLMORE	FILLMORE	58	27.4	1591.7	33.9	1991	1	2019	2
03N20W04N05S	100	--	250	--	FILLMORE	FILLMORE	56	25.4	1421.0	65.9	1992	1	2019	2
03N20W06N03S	50	--	100	--	FILLMORE	FILLMORE	52	11.0	573.3	40.0	1994	1	2019	2
03N20W09H01S	60	--	140	--	FILLMORE	FILLMORE	54	0.5	29.2	1.0	1991	2	2019	2
04N19W29R01S	--	--	--	--	FILLMORE	FILLMORE	81	31.0	2508.4	40.0	1979	2	2019	2
04N19W31Q01S	100	--	250	--	FILLMORE	FILLMORE	55	247.7	13621.6	550.5	1992	2	2019	2
04N20W24D02S	360	--	660	--	FILLMORE	FILLMORE	60	167.6	10058.6	197.0	1990	1	2019	2
04N20W34M01S	220	--	480	--	FILLMORE	FILLMORE	58	15.5	901.4	53.0	1991	1	2019	2
04N20W36N04S	225	--	285	--	FILLMORE	FILLMORE	48	12.0	574.1	48.8	1996	1	2019	2
04N19W32N03S	54	--	114	--	FILLMORE	FILLMORE	39	21.5	839.8	81.4	1992	2	2011	2
04N19W32L02S	140	--	400	--	FILLMORE	FILLMORE	56	240.0	13441.7	479.9	1992	1	2019	2
04N19W33M08S	200	--	460	--	FILLMORE	FILLMORE	49	101.0	4950.2	827.4	1995	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
04N20W24Q04S	90	--	300	--	FILLMORE	FILLMORE	43	516.5	22210.2	1116.2	1998	2	2019	2
04N20W27Q03S	--	--	--	--	FILLMORE	FILLMORE	81	629.7	51004.0	1003.7	1979	2	2019	2
04N20W36D07S	120	--	280	--	FILLMORE	FILLMORE	81	110.2	8927.3	260.2	1979	2	2019	2
03N19W06D04S	--	--	--	--	FILLMORE	FILLMORE	55	20.9	1151.4	38.8	1992	2	2019	2
03N20W01K01S	--	--	--	--	FILLMORE	FILLMORE	16	0.1	1.3	0.5	2012	1	2019	2
03N20W01L04S	--	--	--	--	FILLMORE	FILLMORE	24	0.5	13.0	0.8	2008	1	2019	2
03N20W02B05S	131	--	251	--	FILLMORE	FILLMORE	41	7.1	290.5	18.9	1999	2	2019	2
04N20W25B02S	130	--	450	--	FILLMORE	FILLMORE	17	53.5	910.3	332.9	1993	2	2001	2
04N20W32L01S	500	--	920	--	FILLMORE	FILLMORE	45	39.3	1766.4	96.6	1997	2	2019	2
04N20W35H03S	120	--	280	--	FILLMORE	FILLMORE	57	10.0	569.3	60.0	1991	2	2019	2
04N20W26B03S	120	--	240	--	FILLMORE	FILLMORE	18	8.6	154.7	22.7	2011	1	2019	2
04N20W34E01S	100	--	212	--	FILLMORE	FILLMORE	18	2.2	40.0	6.0	2011	1	2019	2
04N20W34G01S	26	--	86	--	FILLMORE	FILLMORE	18	0.8	14.4	0.8	2011	1	2019	2
04N20W34L01S	28	--	88	--	FILLMORE	FILLMORE	18	2.0	36.0	2.4	2011	1	2019	2
03N20W06P04S	190	--	330	--	FILLMORE	FILLMORE	26	453.9	11800.5	618.0	2007	1	2019	2
03N20W02N04S	70	--	120	--	FILLMORE	FILLMORE	34	1.0	33.9	1.6	2003	1	2019	2
03N21W01P09S	120	--	365	--	FILLMORE	FILLMORE	24	104.6	2511.3	228.3	2008	1	2019	2
03N20W01N01S	118	--	198	--	FILLMORE	FILLMORE	16	0.4	6.6	1.1	2011	1	2019	2
04N20W24G01S	100	--	260	--	FILLMORE	FILLMORE	37	251.7	9311.6	500.8	2001	2	2019	2
04N20W24E01S	80	--	500	--	FILLMORE	FILLMORE	36	523.2	18836.4	924.3	2002	1	2019	2
04N20W34K05S	29	--	89	--	FILLMORE	FILLMORE	18	1.5	27.2	1.6	2011	1	2019	2
04N20W34M02S	380	--	480	--	FILLMORE	FILLMORE	18	4.0	72.1	8.3	2011	1	2019	2
03N20W01D05S	150	--	250	--	FILLMORE	FILLMORE	18	3.6	64.1	5.0	2011	1	2019	2
03N20W02P03S	160	--	260	--	FILLMORE	FILLMORE	18	9.1	162.9	18.3	2011	1	2019	2
03N20W02R06S	105	--	255	--	FILLMORE	FILLMORE	20	6.3	125.7	9.6	2010	1	2019	2
04N20W32R02S	220	--	300	--	FILLMORE	FILLMORE	35	27.4	959.2	59.7	2002	2	2019	2
03N20W05B03S	520	--	680	--	FILLMORE	FILLMORE	35	248.4	8694.6	404.5	2002	2	2019	2
03N20W06J04S	140	--	300	--	FILLMORE	FILLMORE	18	0.5	9.5	1.0	2011	1	2019	2
03N20W08B03S	55	--	135	--	FILLMORE	FILLMORE	30	0.2	6.3	0.6	2005	1	2019	2
03N20W08L01S	30	--	90	--	FILLMORE	FILLMORE	18	0.4	7.5	0.5	2010	1	2019	2
04N20W34P07S	120	--	280	--	FILLMORE	FILLMORE	18	0.9	17.0	3.2	2011	1	2019	2
03N20W06C01S	350	--	760	--	FILLMORE	FILLMORE	30	100.9	3026.7	166.0	2005	1	2019	2
03N20W04R03S	--	--	--	--	FILLMORE	FILLMORE	17	59.5	1012.0	116.2	2011	2	2019	2
04N20W26G04S	--	--	--	--	FILLMORE	FILLMORE	36	17.9	643.8	25.9	2002	1	2019	2
04N20W22Q03S	--	--	--	--	FILLMORE	FILLMORE	17	12.1	204.9	32.2	2011	2	2019	2
03N20W01E03S	100	--	160	--	FILLMORE	FILLMORE	24	0.6	14.1	1.0	2008	1	2019	2
03N20W01L05S	60	--	160	--	FILLMORE	FILLMORE	24	1.0	24.9	1.4	2008	1	2019	2
03N20W06H02S	108	--	268	--	FILLMORE	FILLMORE	20	14.7	294.1	75.7	2010	1	2019	2
03N20W09F02S	60	--	157	--	FILLMORE	FILLMORE	24	2.3	54.4	6.2	2008	1	2019	2
03N20W09B03S	80	--	140	--	FILLMORE	FILLMORE	24	1.1	26.4	2.0	2008	1	2019	2
03N20W01F07S	140	--	240	--	FILLMORE	FILLMORE	24	25.9	621.3	33.7	2008	1	2019	2
03N20W01M04S	60	--	180	--	FILLMORE	FILLMORE	22	6.2	135.9	25.6	2008	1	2019	2
03N20W11B02S	150	--	250	--	FILLMORE	FILLMORE	24	1.7	40.9	5.0	2008	1	2019	2
03N20W02A08S	80	--	140	--	FILLMORE	FILLMORE	27	0.4	12.0	0.6	2006	2	2019	2
03N20W02H06S	120	--	240	--	FILLMORE	FILLMORE	27	0.6	15.9	1.5	2006	2	2019	2
03N21W01N03S	350	--	650	--	FILLMORE	FILLMORE	30	148.2	4445.7	281.4	2005	1	2019	2
04N20W36R08S	125	--	265	--	FILLMORE	FILLMORE	29	132.4	3840.3	348.6	2005	2	2019	2
04N20W27N02S	430	--	600	--	FILLMORE	FILLMORE	27	21.6	583.8	142.9	2006	2	2019	2
03N20W01C05S	100	--	240	--	FILLMORE	FILLMORE	20	9.0	180.5	12.5	2010	1	2019	2
03N20W02A06S	60	--	100	--	FILLMORE	FILLMORE	28	0.5	13.5	0.5	2006	1	2019	2
03N20W12D08S	90	--	240	--	FILLMORE	FILLMORE	18	1.1	20.2	11.4	2010	1	2019	2
03N20W12D09S	65	--	275	--	FILLMORE	FILLMORE	18	5.9	106.3	11.4	2010	1	2019	2
04N20W33L01S	100	--	202	--	FILLMORE	FILLMORE	17	0.5	8.0	0.5	2011	1	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
04N20W34B01S	137	--	317	--	FILLMORE	FILLMORE	18	14.0	252.9	232.0	2011	1	2019	2
04N20W36N05S	37	--	277	--	FILLMORE	FILLMORE	21	35.2	739.2	35.2	2009	2	2019	2
03N20W02A07S	80	--	120	--	FILLMORE	FILLMORE	20	0.6	11.0	1.0	2010	1	2019	2
03N20W02R07S	100	--	200	--	FILLMORE	FILLMORE	20	3.9	77.1	8.6	2010	1	2019	2
03N20W02H07S	40	--	200	--	FILLMORE	FILLMORE	20	8.1	161.7	21.8	2010	1	2019	2
03N20W01F06S	40	--	240	--	FILLMORE	FILLMORE	17	7.1	121.2	22.4	2010	1	2019	2
04N20W22N01S	200	--	400	--	FILLMORE	FILLMORE	20	16.7	334.0	50.0	2009	2	2019	2
04N20W22N02S	200	--	400	--	FILLMORE	FILLMORE	20	7.9	158.5	50.0	2009	2	2019	2
03N20W01K02S	100	--	180	--	FILLMORE	FILLMORE	21	2.9	60.3	6.0	2009	2	2019	2
03N20W01L06S	96	--	256	--	FILLMORE	FILLMORE	21	2.9	61.2	8.8	2009	2	2019	2
04N20W34D02S	120	--	320	--	FILLMORE	FILLMORE	19	0.4	8.0	0.5	2010	1	2019	2
04N20W36M01S	290	--	390	--	FILLMORE	FILLMORE	21	128.2	2693.0	265.1	2009	2	2019	2
04N20W25Q03S	80	--	160	--	FILLMORE	FILLMORE	19	0.6	10.5	0.9	2010	2	2019	2
03N20W06B02S	100	--	600	--	FILLMORE	FILLMORE	18	77.3	1391.0	270.9	2011	1	2019	2
03N20W02R08S	60	--	200	--	FILLMORE	FILLMORE	18	1.1	19.4	7.0	2011	1	2019	2
03N21W01C02S	100	--	630	--	FILLMORE	FILLMORE	18	38.9	699.6	112.4	2011	1	2019	2
04N20W31H04S	280	--	640	--	FILLMORE	FILLMORE	19	16.7	317.8	26.5	2010	2	2019	2
03N19W06C03S	100	--	180	--	FILLMORE	FILLMORE	18	5.2	94.0	14.6	2011	1	2019	2
03N20W01A04S	120	--	260	--	FILLMORE	FILLMORE	18	34.2	615.1	93.7	2011	1	2019	2
03N20W07D02S	200	--	420	--	FILLMORE	FILLMORE	18	19.0	342.1	41.6	2011	1	2019	2
04N20W36R09S	100	100	200	--	FILLMORE	FILLMORE	17	6.7	113.2	18.3	2011	1	2019	2
04N20W36N06S	60	--	200	--	FILLMORE	FILLMORE	18	2.1	38.0	5.6	2011	1	2019	2
04N19W32L03S	50	--	100	--	FILLMORE	FILLMORE	22	98.9	2175.7	173.4	2009	1	2019	2
03N20W02L07S	155	--	295	--	FILLMORE	FILLMORE	18	4.5	81.7	10.2	2011	1	2019	2
03N20W10L01S	180	--	260	--	FILLMORE	OUTSIDE	18	4.0	72.6	22.9	2011	1	2019	2
04N19W31N06S	140	--	220	--	FILLMORE	FILLMORE	24	0.6	15.0	0.8	2008	1	2019	2
03N21W12F07S	120	--	400	--	FILLMORE	FILLMORE	15	1838.2	27573.7	2818.4	2012	2	2019	2
03N20W03D08S	450	--	600	--	FILLMORE	FILLMORE	15	296.0	4439.6	828.5	2012	1	2019	2
03N20W01B03S	100	--	300	--	FILLMORE	FILLMORE	16	20.7	331.2	34.1	2012	1	2019	2
04N20W32R03S	260	--	640	--	FILLMORE	FILLMORE	16	73.3	1172.5	116.8	2012	1	2019	2
03N20W01F08S	130	--	250	--	FILLMORE	FILLMORE	15	54.5	817.0	183.1	2012	2	2019	2
03N20W01C06S	120	--	300	--	FILLMORE	FILLMORE	16	12.3	196.5	19.7	2012	1	2019	2
03N20W02H03S	--	--	--	--	FILLMORE	FILLMORE	16	0.6	9.5	0.8	2012	1	2019	2
03N20W01M05S	120	--	254	--	FILLMORE	FILLMORE	15	27.3	409.4	70.3	2012	2	2019	2
04N20W34N02S	--	--	--	--	FILLMORE	FILLMORE	20	23.8	475.8	60.1	2010	1	2019	2
04N20W23J04S	300	--	680	--	FILLMORE	FILLMORE	14	100.5	1406.6	155.9	2013	1	2019	2
03N20W01D04S	--	--	--	--	FILLMORE	FILLMORE	15	5.3	79.0	16.1	2012	2	2019	2
03N20W02H02S	--	--	--	--	FILLMORE	FILLMORE	14	0.5	7.5	0.8	2013	1	2019	2
04N20W36R10S	60	--	200	--	FILLMORE	FILLMORE	12	3.0	36.6	11.4	2014	1	2019	2
03N20W01M06S	110	--	250	--	FILLMORE	FILLMORE	12	3.9	47.1	9.4	2014	1	2019	2
04N19W29E02S	70	--	650	--	FILLMORE	FILLMORE	59	9.5	562.3	98.0	1990	2	2019	2
03N20W01B04S	60	--	200	--	FILLMORE	FILLMORE	12	10.4	124.2	15.1	2014	1	2019	2
03N20W11D06S	60	--	160	--	FILLMORE	FILLMORE	11	19.0	208.5	28.9	2014	2	2019	2
03N20W02K05S	60	--	200	--	FILLMORE	FILLMORE	10	17.7	177.2	25.7	2015	1	2019	2
04N20W26C04S	300	--	420	--	FILLMORE	FILLMORE	9	5.8	52.2	9.2	2015	2	2019	2
04N20W22N03S	450	--	1580	--	FILLMORE	FILLMORE	9	22.0	198.4	38.0	2015	2	2019	2
03N20W02R09S	85	--	157	--	FILLMORE	FILLMORE	9	0.3	2.5	0.6	2015	2	2019	2
03N20W03H03S	50	--	150	--	FILLMORE	FILLMORE	9	41.7	375.7	114.2	2015	2	2019	2
04N21W16F01S	28	--	80	--	SANTA PAULA	OUTSIDE	75	29.7	2,230	59	1979	2	2016	2
03N21W02R02S	202	--	360	--	SANTA PAULA	SANTA PAULA	81	218.7	17,714	421	1979	2	2019	2
03N21W02P01S	220	--	466	--	SANTA PAULA	SANTA PAULA	20	30.0	600.8	56.1	1979	2	1997	2
03N21W03R02S	238	--	524	--	SANTA PAULA	SANTA PAULA	54	35.1	1,895	298.2	1979	2	2006	1
03N21W02Q01S	--	--	--	--	SANTA PAULA	SANTA PAULA	18	301.6	5,430	534	1979	2	1997	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
03N21W11A01S	210	--	454	--	SANTA PAULA	SANTA PAULA	79	59	4,698	157	1979	2	2018	2
03N21W10A02S	150	--	580	--	SANTA PAULA	SANTA PAULA	24	32.6	782	221	1984	2	1997	2
03N21W10A01S	--	--	--	--	SANTA PAULA	SANTA PAULA	13	126.2	1,640.6	246.9	1979	2	1997	2
03N21W11D02S	232	--	543	--	SANTA PAULA	SANTA PAULA	32	101.9	3,259	320	1979	2	1997	2
03N21W11E03S	100	--	453	--	SANTA PAULA	SANTA PAULA	81	222.5	18,023	744.9	1979	2	2019	2
03N21W11H03S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	15	1,184	83	1979	2	2019	2
03N21W11H01S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	15.8	1,277	64	1979	2	2019	2
03N21W10E01S	207	--	388	--	SANTA PAULA	OUTSIDE	81	5.5	447.1	33.0	1979	2	2019	2
03N21W11F03S	153	--	518	--	SANTA PAULA	SANTA PAULA	81	101.0	8,181.7	733.3	1979	2	2019	2
03N21W09J01S	--	--	--	--	SANTA PAULA	SANTA PAULA	80	22.7	1,816.3	36.6	1980	1	2019	2
03N21W09K03S	296	--	324	--	SANTA PAULA	SANTA PAULA	52	0.1	4	1	1994	1	2019	2
03N21W09K02S	233	--	338	--	SANTA PAULA	SANTA PAULA	81	54.6	4,426	77.0	1979	2	2019	2
03N21W09R04S	360	--	756	--	SANTA PAULA	SANTA PAULA	81	296	23,987	712	1979	2	2019	2
03N21W15C02S	176	--	322	--	SANTA PAULA	SANTA PAULA	81	153.1	12,399	683	1979	2	2019	2
03N21W15C06S	452	--	653	--	SANTA PAULA	SANTA PAULA	81	488.6	39,573	1,029	1979	2	2019	2
03N21W15C04S	112	--	253	--	SANTA PAULA	SANTA PAULA	81	308.6	24,995	584	1979	2	2019	2
03N21W16A02S	430	--	580	--	SANTA PAULA	SANTA PAULA	81	344	27,860	952	1979	2	2019	2
03N21W17D03S	120	--	380	--	SANTA PAULA	OUTSIDE	78	0	37	2	1981	1	2019	2
03N21W16E01S	222	--	258	--	SANTA PAULA	SANTA PAULA	81	17	1,379	56	1979	2	2019	2
03N21W16E02S	180	--	320	--	SANTA PAULA	SANTA PAULA	81	67	5,424	170	1979	2	2019	2
03N21W16G01S	175	--	350	--	SANTA PAULA	SANTA PAULA	54	231.0	12,473.2	757.8	1979	2	2006	1
03N21W16K01S	119	--	214	--	SANTA PAULA	SANTA PAULA	81	243	19,672	637	1979	2	2019	2
03N21W16K03S	672	--	760	--	SANTA PAULA	SANTA PAULA	81	273	22,101	774	1979	2	2019	2
03N21W16K02S	92	--	243	--	SANTA PAULA	SANTA PAULA	81	234.1	18,965	806	1979	2	2019	2
03N21W17Q01S	183	--	243	--	SANTA PAULA	SANTA PAULA	81	70	5,709	140	1979	2	2019	2
03N21W16Q02S	--	--	--	--	SANTA PAULA	SANTA PAULA	19	26	485	40	1979	2	1988	2
03N21W16P01S	119	--	168	--	SANTA PAULA	SANTA PAULA	79	38	2,997	196	1980	1	2019	2
03N21W16P02S	110	--	184	--	SANTA PAULA	SANTA PAULA	56	50	2,821	987	1992	1	2019	2
03N21W17R01S	180	--	285	--	SANTA PAULA	SANTA PAULA	81	175	14,183	429	1979	2	2019	2
03N21W17P02S	511	--	771	--	SANTA PAULA	SANTA PAULA	81	30	2,404	62	1979	2	2019	2
03N21W20A01S	115	--	215	--	SANTA PAULA	SANTA PAULA	41	14.9	611.3	19.4	1986	2	2006	2
03N21W21B01S	--	--	--	--	SANTA PAULA	SANTA PAULA	50	0.3	17	1.0	1980	1	2004	2
03N21W21B03S	80	--	280	--	SANTA PAULA	SANTA PAULA	59	36	2,131	95	1979	2	2008	2
03N21W21D01S	26	--	84	--	SANTA PAULA	SANTA PAULA	28	1	33	4	1979	2	1997	2
03N21W19A02S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	9	765	21	1979	1	2019	2
03N21W21D02S	115	--	212	--	SANTA PAULA	SANTA PAULA	62	5	331	13	1989	1	2019	2
03N21W21E03S	60	--	100	--	SANTA PAULA	SANTA PAULA	80	1.0	83	2	1979	2	2019	2
03N21W21E02S	80	--	100	--	SANTA PAULA	SANTA PAULA	59	4	237	5	1990	2	2019	2
03N21W21G01S	66	--	86	--	SANTA PAULA	SANTA PAULA	81	1.5	123	4	1979	2	2019	2
03N21W19G04S	450	--	720	--	SANTA PAULA	SANTA PAULA	76	802	60,963	1,384	1982	1	2019	2
03N21W21E04S	69	--	86	--	SANTA PAULA	SANTA PAULA	81	1.1	91	1.5	1979	2	2019	2
03N21W19G02S	550	--	630	--	SANTA PAULA	SANTA PAULA	81	171	13,831	365	1979	2	2019	2
03N21W19H06S	459	--	694	--	SANTA PAULA	SANTA PAULA	12	223.3	2,680	853	1979	2	1997	2
03N21W20F01S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	28	2,268	63	1979	2	2019	2
03N21W21F01S	200	--	212	--	SANTA PAULA	SANTA PAULA	82	1	44	3	1979	1	2019	2
03N21W19G03S	350	--	510	--	SANTA PAULA	SANTA PAULA	76	11	853	83	1982	1	2019	2
03N21W21G03S	80	--	120	--	SANTA PAULA	SANTA PAULA	67	14	946	20	1986	2	2019	2
03N21W21F03S	72	--	176	--	SANTA PAULA	SANTA PAULA	45	14	614	40	1979	2	2001	2
03N21W21E06S	40	--	105	--	SANTA PAULA	SANTA PAULA	80	2	144	18	1980	1	2019	2
03N22W23F02S	1,015	--	1,410	--	SANTA PAULA	OUTSIDE	81	49.5	4,010	141	1979	2	2019	2
03N21W21E01S	117	--	157	--	SANTA PAULA	SANTA PAULA	81	32	2,556	76	1979	2	2019	2
03N21W21E05S	60	--	200	--	SANTA PAULA	SANTA PAULA	63	32	2,003	55	1988	2	2019	2
03N22W23G01S	1,015	--	1,410	--	SANTA PAULA	SANTA PAULA	80	9	699	27	1980	1	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
03N21W19L01S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	64	5,168	145	1979	2	2019	2
03N21W20M01S	130	--	220	--	SANTA PAULA	SANTA PAULA	81	141.5	11,462	291	1979	2	2019	2
03N21W20J04S	60	--	180	--	SANTA PAULA	SANTA PAULA	81	62	5,045	138	1979	2	2019	2
03N21W20K01S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	1	59	3	1979	2	2019	2
03N21W21M01S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	1	61	1	1979	2	2019	2
03N21W20J03S	489	--	717	--	SANTA PAULA	SANTA PAULA	81	78	6,331	186	1979	2	2019	2
03N21W20J02S	70	--	155	--	SANTA PAULA	SANTA PAULA	60	1	69	2	1990	1	2019	2
03N21W19M01S	--	--	--	--	SANTA PAULA	SANTA PAULA	74	82	6,036	250	1979	2	2016	1
03N22W23Q01S	345	--	445	--	SANTA PAULA	SANTA PAULA	75	1	39	3	1982	2	2019	2
03N21W19R01S	160	--	205	--	SANTA PAULA	SANTA PAULA	81	106	8,573	320	1979	2	2019	2
03N21W19Q01S	190	--	480	--	SANTA PAULA	SANTA PAULA	73	30	2,212	138	1983	2	2019	2
03N21W20P01S	100	--	158	--	SANTA PAULA	SANTA PAULA	81	53	4,278	108	1979	2	2019	2
03N21W20R02S	60	--	100	--	SANTA PAULA	SANTA PAULA	56	1.2	67	3	1983	2	2011	1
03N22W24R01S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	92	7,418	143	1979	2	2019	2
03N21W29B01S	25	--	99	--	SANTA PAULA	SANTA PAULA	27	0	1	1	1990	2	2003	2
03N21W29C02S	51	--	123	--	SANTA PAULA	SANTA PAULA	33	9	290	21	1990	2	2006	2
03N21W29B02S	60	--	100	--	SANTA PAULA	SANTA PAULA	81	3	241	9	1979	2	2019	2
03N22W26B01S	260	--	448	--	SANTA PAULA	SANTA PAULA	59	11.0	652	24	1990	2	2019	2
03N21W30E01S	160	--	240	--	SANTA PAULA	SANTA PAULA	78	10.5	820	29	1981	1	2019	2
03N21W30H06S	148	--	228	--	SANTA PAULA	SANTA PAULA	81	1.0	84	63	1979	2	2019	2
03N21W30H05S	285	--	485	--	SANTA PAULA	SANTA PAULA	78	45	3,547	181	1979	2	2019	2
03N21W29F03S	--	--	--	--	SANTA PAULA	SANTA PAULA	38	0	12	1	1982	1	2000	2
03N21W29G02S	100	--	300	--	SANTA PAULA	SANTA PAULA	63	144.8	9,124	721	1988	2	2019	2
03N21W29F01S	60	--	125	--	SANTA PAULA	SANTA PAULA	55	61	3,373	230	1979	2	2006	2
03N21W30F01S	260	--	424	--	SANTA PAULA	SANTA PAULA	81	264.4	21,419	744	1979	2	2019	2
03N21W30H02S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	23	1,824	208	1979	2	2019	2
03N21W30H07S	195	--	695	--	SANTA PAULA	SANTA PAULA	39	72	2,809	190	1982	2	2001	2
03N21W30H04S	100	--	400	--	SANTA PAULA	SANTA PAULA	81	208.1	16,852.7	1,439.8	1979	2	2019	2
03N21W29K03S	50	--	120	--	SANTA PAULA	SANTA PAULA	42	3	126	8	1980	1	2001	1
03N21W29K01S	28	--	58	--	SANTA PAULA	SANTA PAULA	40	41.0	1,640	159	1979	2	2003	2
03N21W29K02S	30	--	60	--	SANTA PAULA	SANTA PAULA	48	4.1	199	42	1979	2	2019	2
03N22W26P01S	225	--	385	--	SANTA PAULA	SANTA PAULA	59	0.7	40	4	1990	2	2019	2
03N22W33A02S	520	--	720	--	SANTA PAULA	OUTSIDE	48	3.4	162	16	1979	2	2003	1
03N21W31B01S	--	--	--	--	SANTA PAULA	SANTA PAULA	31	0.3	10.8	4.7	1989	2	2004	2
03N21W31E03S	162	--	232	--	SANTA PAULA	SANTA PAULA	81	15.6	1,260	98	1979	2	2019	2
03N22W36H01S	226	--	442	--	SANTA PAULA	SANTA PAULA	82	7.8	638	29	1979	1	2019	2
03N22W36K04S	699	--	867	--	SANTA PAULA	SANTA PAULA	81	18	1,470	77	1979	2	2019	2
03N22W36J01S	180	--	207	--	SANTA PAULA	SANTA PAULA	81	38.6	3,129	142	1979	2	2019	2
03N22W36K05S	175	--	265	--	SANTA PAULA	SANTA PAULA	50	9.0	449	55.6	1995	1	2019	2
03N22W36K02S	170	--	270	--	SANTA PAULA	SANTA PAULA	81	124.4	10,076	667	1979	2	2019	2
03N22W36R01S	100	--	250	--	SANTA PAULA	SANTA PAULA	51	117	5,984	409	1979	2	2004	2
03N22W35Q02S	222	--	366	--	SANTA PAULA	SANTA PAULA	82	38	3,118	144	1979	1	2019	2
03N22W34Q02S	--	--	--	--	SANTA PAULA	SANTA PAULA	80	79	6,351	290	1979	2	2019	2
03N22W34R01S	300	--	343	--	SANTA PAULA	SANTA PAULA	74	27.1	2,006	92.8	1979	2	2016	1
03N22W35N01S	278	--	308	--	SANTA PAULA	SANTA PAULA	80	21	1,679	63	1979	2	2019	2
02N22W03B01S	208	--	268	--	SANTA PAULA	SANTA PAULA	65	34.1	2,219	48	1979	2	2011	2
02N22W03F02S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	50.2	4,067.6	80.9	1979	2	2019	2
02N22W03E01S	266	--	723	--	SANTA PAULA	SANTA PAULA	81	165.2	13,383.5	262.1	1979	2	2019	2
02N22W02E03S	185	--	210	--	SANTA PAULA	SANTA PAULA	7	4.0	28	14	1979	2	1997	2
02N22W01M04S	--	--	--	--	SANTA PAULA	SANTA PAULA	51	44.9	2,289.6	48.0	1979	2	2004	2
02N22W02G01S	72	--	121	--	SANTA PAULA	SANTA PAULA	81	57.3	4,642	195	1979	2	2019	2
02N22W02K09S	300	--	400	--	SANTA PAULA	SANTA PAULA	63	487.3	30,697.5	1,488.7	1988	2	2019	2
02N22W02K06S	110	--	290	--	SANTA PAULA	SANTA PAULA	19	110.3	2,095	751	1979	2	1997	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N22W02J03S	280	--	302	--	SANTA PAULA	SANTA PAULA	10	14.5	145.4	39.8	2011	1	2015	2
02N22W01M02S	83	--	109	--	SANTA PAULA	SANTA PAULA	34	5.8	197	41	2003	1	2019	2
02N22W01M01S	70	--	107	--	SANTA PAULA	SANTA PAULA	21	36	748	41	1993	1	2003	1
02N22W03M03S	354	--	568	--	SANTA PAULA	SANTA PAULA	20	18.5	370	29	1979	2	1989	1
02N22W02K07S	168	--	698	--	SANTA PAULA	SANTA PAULA	69	420.3	29,002	2,494	1979	2	2013	2
02N22W02K08S	24	--	108	--	SANTA PAULA	SANTA PAULA	49	68.6	3,363	141	1979	2	2003	2
02N22W02K02S	92	--	113	--	SANTA PAULA	SANTA PAULA	49	39	1,900	161	1979	2	2003	2
02N22W02J04S	94	--	154	--	SANTA PAULA	SANTA PAULA	71	6	451	42	1979	2	2019	2
02N22W03K02S	--	115	164	--	SANTA PAULA	SANTA PAULA	81	34.2	2,771	117.9	1979	2	2019	2
02N22W02Q01S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	1	41	1	1979	2	2019	2
02N22W03R02S	--	145	--	205	SANTA PAULA	SANTA PAULA	17	77.2	1,312	172.6	1979	2	1987	2
02N22W03Q01S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	12.1	983	15	1979	2	2019	2
02N22W02N04S	--	--	--	--	SANTA PAULA	SANTA PAULA	80	0.4	36	1	1979	2	2019	2
02N22W03Q02S	230	--	248	--	SANTA PAULA	SANTA PAULA	40	14.0	559	51	1979	2	1999	2
02N22W02N01S	--	--	--	--	SANTA PAULA	SANTA PAULA	39	3	127	10	1979	2	1998	2
02N22W11D02S	--	--	208	--	SANTA PAULA	SANTA PAULA	12	11.7	140	20.0	1979	2	1997	2
03N21W12E08S	120	--	285	--	SANTA PAULA	SANTA PAULA	81	614.2	49752.9	1858.0	1979	2	2019	2
03N21W12E04S	120	--	284	--	SANTA PAULA	SANTA PAULA	81	545.0	44141.5	1306.3	1979	2	2019	2
03N21W12F03S	120	--	284	--	SANTA PAULA	SANTA PAULA	81	547.2	44325.0	1511.3	1979	2	2019	2
03N21W11J02S	260	--	700	--	SANTA PAULA	SANTA PAULA	56	895.5	50150.6	1185.2	1992	1	2019	2
03N21W29B03S	120	--	400	--	SANTA PAULA	SANTA PAULA	31	51.7	1601.5	85.8	1991	2	2006	2
02N22W03L01S	175	--	400	--	SANTA PAULA	SANTA PAULA	62	18.3	1133.2	67.0	1989	1	2019	2
02N22W03K03S	160	--	420	--	SANTA PAULA	SANTA PAULA	51	1.5	78.6	2.8	1994	1	2019	1
03N21W21L01S	55	--	95	--	SANTA PAULA	SANTA PAULA	58	1.3	74.1	1.8	1991	1	2019	2
03N21W21K01S	--	--	--	--	SANTA PAULA	SANTA PAULA	54	0.4	23.1	1.0	1991	1	2019	2
03N21W16P03S	194	--	264	--	SANTA PAULA	SANTA PAULA	81	161.9	13112.9	536.2	1979	2	2019	2
03N21W09K04S	260	--	402	--	SANTA PAULA	OUTSIDE	81	56.5	4574.7	105.9	1979	2	2019	2
03N21W10M01S	--	--	--	--	SANTA PAULA	SANTA PAULA	81	151.1	12236.8	193.8	1979	2	2019	2
03N21W21E07S	110	--	210	--	SANTA PAULA	SANTA PAULA	57	2.0	116.6	3.7	1991	2	2019	2
03N22W36H02S	702	--	812	--	SANTA PAULA	SANTA PAULA	49	16.1	787.6	38.0	1995	2	2019	2
03N21W30E02S	120	--	260	--	SANTA PAULA	SANTA PAULA	54	28.8	1554.2	81.2	1993	1	2019	2
03N21W10E02S	160	--	400	--	SANTA PAULA	OUTSIDE	46	5.5	254.4	6.3	1997	1	2019	2
03N21W30H08S	265	--	525	--	SANTA PAULA	SANTA PAULA	46	93.4	4295.0	170.3	1997	1	2019	2
03N21W09R05S	320	--	670	--	SANTA PAULA	SANTA PAULA	46	246.6	11342.0	816.6	1997	1	2019	2
03N21W16A03S	370	--	800	--	SANTA PAULA	SANTA PAULA	43	756.7	32536.4	1493.2	1998	2	2019	2
03N21W20E01S	121	--	252	--	SANTA PAULA	SANTA PAULA	56	18.0	1009.5	31.0	1992	1	2019	2
03N21W21E08S	135	--	215	--	SANTA PAULA	SANTA PAULA	54	5.1	273.6	7.5	1993	1	2019	2
03N22W36K06S	703	--	863	--	SANTA PAULA	SANTA PAULA	50	32.1	1602.9	56.2	1995	1	2019	2
04N21W16F03S	30	--	50	--	SANTA PAULA	OUTSIDE	37	10.1	373.5	55.5	2001	2	2019	2
03N21W12F06S	120	--	395	--	SANTA PAULA	SANTA PAULA	37	700.8	25928.3	1789.3	2001	2	2019	2
03N22W26B02S	239	--	410	--	SANTA PAULA	SANTA PAULA	34	1.7	56.1	18.7	2002	2	2019	2
03N21W30H09S	253	--	493	--	SANTA PAULA	SANTA PAULA	18	8.4	151.3	76.8	2011	1	2019	2
03N21W21E10S	110	--	210	--	SANTA PAULA	SANTA PAULA	30	0.9	27.7	1.2	2005	1	2019	2
03N21W31L02S	100	--	250	--	SANTA PAULA	SANTA PAULA	39	1.3	52.4	9.3	2000	2	2019	2
03N21W29E01S	270	--	420	--	SANTA PAULA	SANTA PAULA	30	119.8	3593.8	204.6	2005	1	2019	2
03N21W20H01S	80	--	300	--	SANTA PAULA	SANTA PAULA	30	24.7	741.2	40.1	2005	1	2019	2
03N22W36Q01S	587	--	827	--	SANTA PAULA	SANTA PAULA	30	320.7	9620.4	634.7	2005	1	2019	2
03N22W36K07S	840	--	1040	--	SANTA PAULA	SANTA PAULA	32	224.2	7173.4	318.6	2004	1	2019	2
03N21W19K01S	170	260	--	--	SANTA PAULA	SANTA PAULA	14	31.9	447.2	79.3	2013	1	2019	2
03N22W34E01S	528	--	618	--	SANTA PAULA	SANTA PAULA	24	0.5	13.0	3.5	2008	1	2019	2
03N21W29C03S	90	--	170	--	SANTA PAULA	SANTA PAULA	24	3.4	80.5	20.0	2008	1	2019	2
03N21W20F04S	134	--	219	--	SANTA PAULA	SANTA PAULA	25	7.6	191.0	14.5	2007	2	2019	2
03N22W26B03S	60	--	280	--	SANTA PAULA	SANTA PAULA	24	12.1	290.9	67.1	2007	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
03N21W21E11S	370	--	490	--	SANTA PAULA	SANTA PAULA	24	199.5	4787.6	398.7	2008	1	2019	2
03N21W20A02S	105	--	260	--	SANTA PAULA	SANTA PAULA	25	9.7	243.4	19.4	2007	2	2019	2
03N21W14D01S	60	--	160	--	SANTA PAULA	SANTA PAULA	25	3.2	80.0	7.5	2007	2	2019	2
02N22W01P01S	310	--	480	--	SANTA PAULA	OXNARD FOREBAY	20	9.8	196.9	101.8	2010	1	2019	2
03N21W11F04S	570	--	850	--	SANTA PAULA	SANTA PAULA	30	276.8	8303.8	772.1	2005	1	2019	2
03N21W29B04S	400	--	500	--	SANTA PAULA	SANTA PAULA	25	97.1	2427.1	194.4	2007	2	2019	2
02N22W03B02S	320	--	360	--	SANTA PAULA	SANTA PAULA	21	35.3	740.8	66.5	2009	2	2019	2
03N22W12J02S	300	--	1500	--	SANTA PAULA	OUTSIDE	15	0.8	12.0	4.3	2011	1	2019	2
02N22W03K04S	120	--	297	--	SANTA PAULA	SANTA PAULA	18	0.6	11.2	11.2	2011	1	2019	2
03N21W20R03S	160	--	200	--	SANTA PAULA	SANTA PAULA	18	1.2	21.6	3.1	2011	1	2019	2
03N22W36J03S	162	162	174	174	SANTA PAULA	SANTA PAULA	24	0.8	20.1	3.0	2008	1	2019	2
03N22W26L01S	220	--	420	--	SANTA PAULA	SANTA PAULA	15	0.7	10.8	2.0	2012	1	2019	2
03N22W12K01S	300	--	1070	--	SANTA PAULA	OUTSIDE	14	2.6	36.5	10.0	2013	1	2019	2
02N22W02H02S	312	--	652	--	SANTA PAULA	SANTA PAULA	11	1175.1	12925.7	1689.3	2014	2	2019	2
02N22W02K10S	125	--	700	--	SANTA PAULA	SANTA PAULA	12	443.9	5326.9	798.8	2014	1	2019	2
03N22W34Q03S	280	--	470	--	SANTA PAULA	SANTA PAULA	14	78.0	1091.6	123.3	2013	1	2019	2
03N21W21L02S	40	--	200	--	SANTA PAULA	SANTA PAULA	11	15.2	167.0	23.9	2014	2	2019	2
03N21W09K05S	250	--	490	--	SANTA PAULA	SANTA PAULA	9	45.8	412.3	94.8	2015	2	2019	2
04N21W16B01S	--	--	--	--	SANTA PAULA	OUTSIDE	9	0.3	2.6	0.7	2015	2	2019	2
03N19W19J01S	858	--	1,050	--	LAS POSAS	EAST LAS POSAS	25	1.6	39	4	1984	1	2013	2
03N19W19P02S	865	--	1,095	--	LAS POSAS	EAST LAS POSAS	60	31	1,882	159	1987	1	2019	2
03N19W19N03S	680	--	950	--	LAS POSAS	EAST LAS POSAS	41	11	444	65	1987	1	2013	2
03N20W27G05S	580	--	980	--	LAS POSAS	EAST LAS POSAS	34	35	1,194	140	1987	1	2017	1
03N20W27H02S	523	--	722	--	LAS POSAS	EAST LAS POSAS	28	12	334	20	2006	1	2019	2
03N20W27H01S	730	--	1,060	--	LAS POSAS	EAST LAS POSAS	63	68	4,257	277	1987	1	2019	2
03N20W27G04S	225	--	820	--	LAS POSAS	EAST LAS POSAS	57	8.3	472	33	1983	2	2013	2
03N19W30E03S	700	--	915	--	LAS POSAS	EAST LAS POSAS	27	79.7	2,151	375.2	1983	2	2013	2
03N20W27G01S	312	--	332	--	LAS POSAS	EAST LAS POSAS	59	1	72	3	1983	2	2019	2
03N20W27G03S	155	--	355	--	LAS POSAS	EAST LAS POSAS	21	1	26	4	2009	1	2019	2
03N20W27E01S	250	--	350	--	LAS POSAS	EAST LAS POSAS	25	0	1	1	2003	2	2019	2
03N19W29E03S	284	--	608	--	LAS POSAS	EAST LAS POSAS	73	48.7	3,554	90	1983	2	2019	2
03N19W29F07S	--	--	--	--	LAS POSAS	EAST LAS POSAS	68	13.6	923	31	1985	1	2019	2
03N20W25H01S	--	--	--	--	LAS POSAS	EAST LAS POSAS	69	7	462	28	1983	2	2019	2
03N19W29K04S	744	--	1,212	--	LAS POSAS	EAST LAS POSAS	73	207	15,094	590	1983	2	2019	2
03N19W29M02S	--	--	--	--	LAS POSAS	EAST LAS POSAS	15	12	180	88	2012	2	2019	2
03N19W29K06S	296	--	620	--	LAS POSAS	EAST LAS POSAS	73	184	13,424	494	1983	2	2019	2
03N19W29L02S	177	--	281	--	LAS POSAS	EAST LAS POSAS	13	4	53	53	2006	1	2012	1
03N19W29L01S	--	--	--	--	LAS POSAS	EAST LAS POSAS	23	41.6	956	165	2006	1	2019	2
03N19W29K07S	800	--	1,280	--	LAS POSAS	EAST LAS POSAS	67	310	20,801	592	1986	2	2019	2
03N20W27L01S	125	--	210	--	LAS POSAS	EAST LAS POSAS	35	0.5	18	0.5	1983	2	2000	2
03N20W27M01S	120	--	180	--	LAS POSAS	EAST LAS POSAS	64	0.6	42	2.2	1983	2	2019	2
03N19W29L03S	258	--	450	--	LAS POSAS	EAST LAS POSAS	13	110	1,432	383	2006	1	2012	1
03N20W25J04S	830	--	1,150	--	LAS POSAS	EAST LAS POSAS	63	105.2	6,625	205	1988	1	2019	2
03N20W28J02S	134	--	200	--	LAS POSAS	EAST LAS POSAS	22	0.4	9	1	2008	1	2019	2
03N19W29M03S	300	--	600	--	LAS POSAS	EAST LAS POSAS	71	201	14,302	490	1983	2	2019	2
03N19W30M02S	318	--	610	--	LAS POSAS	EAST LAS POSAS	73	47	3,417	85	1983	2	2019	2
03N19W29N02S	--	--	--	--	LAS POSAS	EAST LAS POSAS	61	1.1	69	1	1983	2	2013	2
03N19W29N03S	184	--	294	--	LAS POSAS	EAST LAS POSAS	73	23	1,712	48	1983	2	2019	2
03N20W26J01S	86	--	148	--	LAS POSAS	EAST LAS POSAS	67	23	1,550	179	1983	2	2019	2
03N19W30Q01S	280	--	460	--	LAS POSAS	EAST LAS POSAS	71	136.8	9,711.9	350.3	1983	2	2019	2
03N20W27N01S	148	--	375	--	LAS POSAS	EAST LAS POSAS	73	8.2	595	13	1983	2	2019	2
03N20W28Q01S	550	--	1,110	--	LAS POSAS	EAST LAS POSAS	72	5.1	364	10	1983	2	2019	2
03N20W27N02S	--	--	--	--	LAS POSAS	EAST LAS POSAS	35	10	351	58	1983	2	2013	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
03N20W28P01S	--	--	--	--	LAS POSAS	EAST LAS POSAS	30	1.0	31	4.6	2005	1	2019	2
03N20W26R03S	803	--	1,180	--	LAS POSAS	EAST LAS POSAS	39	56.0	2,184	179	1983	2	2019	2
03N20W33B01S	844	--	1,141	--	LAS POSAS	EAST LAS POSAS	68	28.5	1,941	61.9	1983	2	2019	2
03N20W33C01S	--	--	--	--	LAS POSAS	EAST LAS POSAS	70	1	58	2	1985	1	2019	2
03N19W32D01S	690	--	940	--	LAS POSAS	EAST LAS POSAS	47	129	6,080	541	1983	2	2013	2
03N20W32G02S	1,295	--	1,540	--	LAS POSAS	WEST LAS POSAS	40	27.9	1,116	114.2	1988	2	2010	1
03N20W32F02S	1,010	--	1,510	--	LAS POSAS	WEST LAS POSAS	49	74	3,643	466	1984	1	2010	1
03N20W36G01S	--	--	--	--	LAS POSAS	EAST LAS POSAS	73	172	12,574	494	1983	2	2019	2
03N20W35H01S	460	--	1,130	--	LAS POSAS	EAST LAS POSAS	36	17.1	617	67.3	1996	1	2013	2
03N20W34G01S	580	--	1,011	--	LAS POSAS	EAST LAS POSAS	70	60	4,195	159	1983	2	2019	2
03N20W32H02S	762	--	1,090	--	LAS POSAS	WEST LAS POSAS	12	28	331	109	2000	1	2013	2
03N20W35G01S	1,160	--	1,440	--	LAS POSAS	EAST LAS POSAS	73	345.1	25,190	700	1983	2	2019	2
03N20W34F01S	479	--	941	--	LAS POSAS	EAST LAS POSAS	53	80.4	4,259	596	1983	2	2013	2
03N20W34L01S	485	--	895	--	LAS POSAS	EAST LAS POSAS	69	158.6	10,945	341.9	1983	2	2019	2
03N20W34J01S	750	--	1,120	--	LAS POSAS	EAST LAS POSAS	62	246.3	15,272	713	1983	2	2014	1
03N20W35J01S	700	--	1,120	--	LAS POSAS	EAST LAS POSAS	59	160	9,438	660	1983	2	2013	2
03N20W34K01S	756	--	1,274	--	LAS POSAS	EAST LAS POSAS	73	113.4	8,276	342	1983	2	2019	2
03N19W31N01S	564	--	924	--	LAS POSAS	EAST LAS POSAS	48	16.5	790	140.2	1989	1	2013	2
03N19W33P03S	290	--	365	--	LAS POSAS	SOUTH LAS POSAS	48	56.8	2,726	217	1983	2	2013	2
03N20W35R01S	670	--	980	--	LAS POSAS	EAST LAS POSAS	65	207.8	13,508.8	543.8	1983	2	2015	2
03N21W35P01S	807	--	1,879	--	LAS POSAS	OUTSIDE	19	104.6	1,988	150	1979	2	1997	2
03N21W35P02S	790	--	1,760	--	LAS POSAS	WEST LAS POSAS	64	97	6,215	276	1988	1	2019	2
03N21W35R01S	800	--	1,720	--	LAS POSAS	WEST LAS POSAS	72	67.6	4,867	617	1983	2	2019	1
02N20W06D01S	560	--	1,000	--	LAS POSAS	WEST LAS POSAS	58	20.0	1,162	87	1983	2	2013	2
02N20W02D02S	878	--	1,238	--	LAS POSAS	EAST LAS POSAS	64	69	4,402	230	1983	2	2019	2
03N21W36Q01S	860	--	1,700	--	LAS POSAS	WEST LAS POSAS	71	105	7,453	224	1983	2	2019	2
03N21W36Q02S	804	--	1,684	--	LAS POSAS	WEST LAS POSAS	71	117.5	8,345	285	1983	2	2019	2
02N20W03B01S	1,016	--	1,448	--	LAS POSAS	EAST LAS POSAS	73	187	13,640	511	1983	2	2019	2
02N20W04F01S	672	--	1,008	--	LAS POSAS	EAST LAS POSAS	70	210.6	14,744	763	1983	2	2019	2
02N19W06F01S	320	--	520	--	LAS POSAS	SOUTH LAS POSAS	72	102	7,336	389	1983	2	2019	2
02N21W03L01S	726	--	1,185	--	LAS POSAS	WEST LAS POSAS	10	137	1,370	172	1979	2	1997	2
02N20W01M01S	533	--	629	--	LAS POSAS	EAST LAS POSAS	65	78.1	5,075	160	1983	2	2018	2
02N20W05J01S	700	--	1,040	--	LAS POSAS	EAST LAS POSAS	72	185	13,288	341	1983	2	2019	2
02N21W01L01S	590	--	1,030	--	LAS POSAS	WEST LAS POSAS	67	232.7	15,594	590	1986	2	2019	2
02N20W02N03S	848	--	1,208	--	LAS POSAS	EAST LAS POSAS	73	206.6	15,079	341	1983	2	2019	2
02N20W03K02S	--	--	--	--	LAS POSAS	EAST LAS POSAS	49	66	3,218	453	1983	2	2013	2
02N20W06J01S	973	--	1,373	--	LAS POSAS	WEST LAS POSAS	73	240	17,545	648	1983	2	2019	2
02N20W06N01S	1,269	--	1,579	--	LAS POSAS	WEST LAS POSAS	45	86	3,870	222	1983	2	2007	2
02N20W01Q01S	129	--	157	--	LAS POSAS	EAST LAS POSAS	64	52	3,352	171	1983	2	2019	2
02N19W06N03S	101	--	121	--	LAS POSAS	SOUTH LAS POSAS	49	15.5	757	128	1983	2	2013	2
02N20W01Q02S	560	--	700	--	LAS POSAS	EAST LAS POSAS	64	102.0	6,531	264.0	1984	2	2019	2
02N21W04Q01S	300	--	1,089	--	LAS POSAS	WEST LAS POSAS	59	42.7	2,521	214.6	1990	1	2019	2
02N20W06R01S	1,090	--	1,512	--	LAS POSAS	WEST LAS POSAS	72	378.6	27,260	895	1983	2	2019	2
02N19W06Q01S	--	--	--	--	LAS POSAS	SOUTH LAS POSAS	44	37	1,624	71	1983	2	2005	2
02N19W07B01S	--	--	--	--	LAS POSAS	SOUTH LAS POSAS	57	37.7	2,148.4	104.0	1983	2	2013	2
02N19W07D02S	98	--	170	--	LAS POSAS	SOUTH LAS POSAS	68	67.5	4,593	475	1984	1	2019	2
02N19W07C01S	104	--	176	--	LAS POSAS	SOUTH LAS POSAS	66	72.5	4,785	152	1985	1	2019	2
02N20W10D02S	873	--	1,097	--	LAS POSAS	EAST LAS POSAS	72	19.8	1,429	45.7	1983	2	2019	2
02N21W11A02S	407	--	740	--	LAS POSAS	WEST LAS POSAS	73	238.4	17,401.5	720.0	1983	2	2019	2
02N20W11D01S	360	--	943	--	LAS POSAS	EAST LAS POSAS	62	120.6	7,477	542.0	1983	2	2016	2
02N20W08B01S	1,050	--	1,300	--	LAS POSAS	WEST LAS POSAS	70	313	21,933	1,110	1983	2	2019	2
02N21W09D01S	430	--	1,016	--	LAS POSAS	WEST LAS POSAS	17	84.5	1,437	245	1981	2	1997	2
02N20W10C01S	615	--	810	--	LAS POSAS	EAST LAS POSAS	25	3.5	88	8	1983	2	2013	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N20W10G01S	635	--	890	--	LAS POSAS	EAST LAS POSAS	70	80.3	5,621	231.3	1983	2	2019	2
02N20W12H01S	--	--	--	--	LAS POSAS	SOUTH LAS POSAS	65	76.2	4,950	674.5	1984	1	2019	2
02N20W12H02S	--	--	--	--	LAS POSAS	SOUTH LAS POSAS	66	49.5	3,269	653	1983	2	2019	2
02N20W09H01S	436	--	730	--	LAS POSAS	EAST LAS POSAS	43	14	609	129	1995	1	2019	2
02N20W08H01S	870	--	1,300	--	LAS POSAS	EAST LAS POSAS	33	68.1	2,248	449	1983	2	2013	2
02N20W08E01S	1,041	--	1,481	--	LAS POSAS	WEST LAS POSAS	67	355	23,772	928	1986	2	2019	2
02N21W10F01S	--	--	--	--	LAS POSAS	WEST LAS POSAS	27	15	393	75	1988	2	2001	2
02N21W12H01S	928	--	1,765	--	LAS POSAS	WEST LAS POSAS	69	103.5	7,142	172.7	1985	1	2019	1
02N20W07F01S	1,240	--	1,600	--	LAS POSAS	WEST LAS POSAS	39	230.6	8,994.2	526.2	1983	2	2003	1
02N21W08G02S	540	--	1,027	--	LAS POSAS	WEST LAS POSAS	49	214.0	10,484.4	447.8	1979	2	2003	2
02N21W10G03S	1,080	--	1,560	--	LAS POSAS	WEST LAS POSAS	36	26	948	60	2002	1	2019	2
02N20W08F01S	752	--	1,406	--	LAS POSAS	WEST LAS POSAS	73	303	22,144	655	1983	2	2019	2
02N19W08G01S	121	--	211	--	LAS POSAS	SOUTH LAS POSAS	71	57.6	4,087	170.0	1983	2	2019	2
02N21W12G01S	--	--	--	--	LAS POSAS	WEST LAS POSAS	60	66	3,951	119	1990	1	2019	2
02N21W11H02S	352	--	460	--	LAS POSAS	WEST LAS POSAS	72	49.2	3,544	130.8	1983	2	2019	2
02N20W09F01S	906	--	1,290	--	LAS POSAS	EAST LAS POSAS	60	222.6	13,357.8	550.0	1983	2	2019	2
02N21W11J02S	375	--	1,150	--	LAS POSAS	WEST LAS POSAS	18	78.5	1,414	138.1	1983	2	1992	1
02N19W07K01S	--	--	--	--	LAS POSAS	SOUTH LAS POSAS	68	96	6,516	383	1983	2	2019	2
02N21W08L01S	650	--	1,015	--	LAS POSAS	WEST LAS POSAS	81	47	3,776	204	1979	2	2019	2
02N20W08Q01S	657	--	1,053	--	LAS POSAS	EAST LAS POSAS	60	99.1	5,943.2	382.2	1983	2	2019	2
02N20W11R02S	200	--	500	--	LAS POSAS	OUTSIDE	56	2	99	9	1985	1	2013	2
02N20W09Q01S	--	--	--	--	LAS POSAS	EAST LAS POSAS	60	131	7,852	550	1983	2	2013	2
02N20W09R01S	456	--	724	--	LAS POSAS	EAST LAS POSAS	73	218.3	15,932.9	714.4	1983	2	2019	2
02N20W09Q05S	469	--	885	--	LAS POSAS	EAST LAS POSAS	73	208.1	15,192	459.6	1983	2	2019	2
02N20W09Q06S	480	--	880	--	LAS POSAS	EAST LAS POSAS	37	327.8	12,129.4	961.2	1983	2	2013	2
02N21W10Q03S	960	--	1,660	--	LAS POSAS	WEST LAS POSAS	81	74.6	6,046	309	1979	2	2019	2
02N20W09Q04S	--	--	--	--	LAS POSAS	EAST LAS POSAS	53	88.8	4,709	391	1983	2	2013	2
02N21W16A01S	--	--	--	--	LAS POSAS	WEST LAS POSAS	57	0.9	50	1	1991	2	2019	2
02N20W16C01S	325	--	698	--	LAS POSAS	EAST LAS POSAS	31	19.5	604	176	1983	2	2013	2
02N20W18A01S	782	--	1,192	--	LAS POSAS	WEST LAS POSAS	67	188.9	12,657	462.6	1983	2	2019	1
02N21W17D03S	100	--	215	--	LAS POSAS	OXNARD PLAIN	43	0	2	1	1979	2	2019	2
02N21W18A01S	98	--	138	--	LAS POSAS	OXNARD PLAIN	81	35	2,850	167	1979	2	2019	2
02N20W16B03S	320	--	600	--	LAS POSAS	EAST LAS POSAS	66	183	12,088	460	1986	2	2019	2
02N21W18H11S	762	--	1,302	--	LAS POSAS	OXNARD PLAIN	81	98.9	8,009	300.8	1979	2	2019	2
02N21W18H07S	120	--	300	--	LAS POSAS	OXNARD PLAIN	81	5.2	420	37	1979	2	2019	2
02N21W18H10S	606	--	1,310	--	LAS POSAS	OXNARD PLAIN	78	70.4	5,492	745.0	1981	1	2019	2
02N21W18H03S	90	--	170	--	LAS POSAS	OXNARD PLAIN	81	369.7	29,948	1,361	1979	2	2019	2
02N21W18H06S	90	--	150	--	LAS POSAS	OXNARD PLAIN	74	41.3	3,057.3	201.3	1979	1	2015	2
02N21W17F05S	525	--	1,105	--	LAS POSAS	OXNARD PLAIN	65	88	5,715	212	1987	2	2019	2
02N20W17F01S	318	--	1,113	--	LAS POSAS	EAST LAS POSAS	54	209.5	11,310	576	1983	2	2016	1
02N21W18H05S	80	--	122	--	LAS POSAS	OXNARD PLAIN	69	256	17,650	748	1981	2	2015	2
02N21W17F04S	156	--	174	--	LAS POSAS	OXNARD PLAIN	81	1.0	81	1.6	1979	2	2019	2
02N20W17J01S	260	--	540	--	LAS POSAS	EAST LAS POSAS	53	125.3	6,639	508.6	1983	2	2013	2
02N21W16J01S	182	--	295	--	LAS POSAS	WEST LAS POSAS	4	0	1	0	1979	2	1997	2
02N21W15M04S	524	--	1,044	--	LAS POSAS	WEST LAS POSAS	69	223.7	15,437.0	628.8	1983	2	2019	2
02N21W15M03S	406	--	1,030	--	LAS POSAS	WEST LAS POSAS	31	86.2	2,672	583.0	1983	2	2013	2
02N21W15M05S	550	--	900	--	LAS POSAS	WEST LAS POSAS	72	104	7,485	165	1984	1	2019	2
02N21W16K01S	370	--	900	--	LAS POSAS	WEST LAS POSAS	29	25.2	731	220.3	1979	2	1997	2
02N21W17M02S	95	--	330	--	LAS POSAS	OXNARD PLAIN	49	74	3,643	159	1979	2	2003	2
02N21W17N01S	85	--	182	--	LAS POSAS	OXNARD PLAIN	51	35	1,761	156	1979	2	2004	2
02N21W16N01S	--	--	--	--	LAS POSAS	WEST LAS POSAS	50	59	2,960	206	1979	1	2003	2
02N21W17R01S	520	--	960	--	LAS POSAS	WEST LAS POSAS	81	19.9	1,609	86	1979	2	2019	2
02N21W22G01S	603	--	903	--	LAS POSAS	OUTSIDE	67	195	13,085	397	1986	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N21W22E01S	1,000	--	1,370	--	LAS POSAS	OUTSIDE	40	138.9	5,556.9	450.5	1983	2	2013	2
02N21W20J02S	640	--	920	--	LAS POSAS	WEST LAS POSAS	81	100.4	8,133	380.0	1979	2	2019	2
02N21W29Q01S	689	--	776	--	LAS POSAS	OUTSIDE	45	0.7	32.0	1.0	1979	2	2001	2
02N21W18H12S	600	--	1300	--	LAS POSAS	OXNARD PLAIN	60	271.4	16286.5	1142.5	1990	1	2019	2
02N21W08L02S	641	--	1041	--	LAS POSAS	WEST LAS POSAS	59	131.6	7763.4	221.0	1990	2	2019	2
02N20W07L01S	1246	--	1567	--	LAS POSAS	WEST LAS POSAS	21	99.7	2093.7	194.2	2009	1	2019	2
02N21W16J03S	560	--	1120	--	LAS POSAS	WEST LAS POSAS	58	145.4	8436.0	315.1	1991	1	2019	2
02N20W01E01S	567	--	907	--	LAS POSAS	EAST LAS POSAS	42	131.1	5505.5	249.7	1992	1	2013	1
02N20W03H01S	900	--	1260	--	LAS POSAS	EAST LAS POSAS	53	283.7	15033.6	562.0	1993	2	2019	2
02N20W04F02S	680	--	1000	--	LAS POSAS	EAST LAS POSAS	52	291.4	15151.3	889.1	1988	1	2014	2
02N20W16D02S	520	--	800	--	LAS POSAS	EAST LAS POSAS	49	22.3	1092.9	117.0	1992	1	2019	2
03N19W30J01S	1017	--	1540	--	LAS POSAS	EAST LAS POSAS	43	206.6	8884.2	516.0	1997	2	2019	2
03N19W31B01S	880	--	1420	--	LAS POSAS	EAST LAS POSAS	42	245.0	10289.6	708.1	1997	2	2019	2
03N20W36L01S	720	--	1180	--	LAS POSAS	EAST LAS POSAS	51	83.5	4257.5	144.5	1992	1	2019	1
03N20W36A03S	720	--	880	--	LAS POSAS	EAST LAS POSAS	57	28.9	1645.2	48.7	1991	2	2019	2
03N20W36A02S	860	--	1400	--	LAS POSAS	EAST LAS POSAS	57	141.6	8072.9	706.8	1990	1	2019	2
03N20W33B03S	800	--	1120	--	LAS POSAS	EAST LAS POSAS	61	31.8	1937.2	77.4	1989	2	2019	2
03N20W33B04S	1058	--	1300	--	LAS POSAS	EAST LAS POSAS	53	12.9	682.3	32.0	1992	1	2019	2
03N20W27L04S	870	--	1190	--	LAS POSAS	EAST LAS POSAS	16	6.2	98.6	24.0	1990	2	2000	2
03N20W25R03S	895	--	1355	--	LAS POSAS	EAST LAS POSAS	35	55.0	1926.5	153.2	1992	1	2013	1
03N20W24P01S	760	--	1180	--	LAS POSAS	EAST LAS POSAS	52	47.6	2475.9	99.0	1993	1	2018	2
02N20W01F01S	622	--	910	--	LAS POSAS	EAST LAS POSAS	48	12.3	591.4	295.7	1993	1	2019	1
02N20W01B01S	550	--	829	--	LAS POSAS	EAST LAS POSAS	47	13.4	629.0	394.6	1993	1	2019	1
02N20W01B02S	532	--	765	--	LAS POSAS	EAST LAS POSAS	45	17.8	801.1	342.9	1993	1	2019	2
02N20W01B03S	510	--	708	--	LAS POSAS	EAST LAS POSAS	43	8.8	376.7	188.4	1993	1	2014	1
03N19W31N02S	537	--	815	--	LAS POSAS	EAST LAS POSAS	54	44.3	2393.7	781.6	1993	1	2019	2
03N19W31E02S	596	--	940	--	LAS POSAS	EAST LAS POSAS	53	34.6	1831.5	520.1	1993	1	2019	1
03N19W31M04S	621	--	890	--	LAS POSAS	EAST LAS POSAS	53	18.2	963.7	399.5	1993	1	2019	1
03N19W31M03S	530	--	864	--	LAS POSAS	EAST LAS POSAS	54	21.8	1177.6	306.3	1993	1	2019	2
03N19W31D03S	790	--	1220	--	LAS POSAS	EAST LAS POSAS	51	65.0	3313.4	1110.0	1993	1	2019	1
03N19W31E03S	640	--	890	--	LAS POSAS	EAST LAS POSAS	54	42.9	2315.4	604.2	1993	1	2019	2
03N19W31D06S	938	--	1509	--	LAS POSAS	EAST LAS POSAS	54	76.8	4148.4	883.0	1993	1	2019	2
03N19W31D05S	750	--	1285	--	LAS POSAS	EAST LAS POSAS	53	51.1	2706.6	872.1	1993	1	2019	2
03N19W31D02S	800	--	1219	--	LAS POSAS	EAST LAS POSAS	54	11.1	596.9	250.7	1993	1	2019	2
03N19W31C02S	748	--	1052	--	LAS POSAS	EAST LAS POSAS	53	34.4	1824.9	685.8	1993	1	2019	2
03N19W31D04S	863	--	1420	--	LAS POSAS	EAST LAS POSAS	54	30.6	1654.1	472.2	1993	1	2019	2
03N19W31C01S	882	--	1431	--	LAS POSAS	EAST LAS POSAS	52	33.3	1731.3	664.8	1993	1	2019	2
02N21W22A01S	780	--	1400	--	LAS POSAS	OUTSIDE	39	91.5	3567.7	261.7	1995	1	2014	2
03N19W28N03S	598	--	900	--	LAS POSAS	SOUTH LAS POSAS	42	16.7	699.9	260.8	1993	1	2013	2
03N19W30E06S	924	--	1204	--	LAS POSAS	EAST LAS POSAS	56	184.6	10335.9	363.3	1991	2	2019	2
03N20W28J03S	--	--	--	--	LAS POSAS	EAST LAS POSAS	48	0.6	31.0	1.2	1983	2	2018	2
03N20W28P03S	--	--	--	--	LAS POSAS	EAST LAS POSAS	19	0.7	13.1	3.6	2010	1	2019	2
03N20W27J01S	--	--	--	--	LAS POSAS	EAST LAS POSAS	19	0.1	2.7	1.2	2005	1	2014	1
02N19W08H02S	60	--	240	--	LAS POSAS	SOUTH LAS POSAS	33	8.2	271.7	23.8	2003	1	2019	2
02N20W06R03S	1041	--	1381	--	LAS POSAS	WEST LAS POSAS	57	100.2	5708.7	419.4	1991	2	2019	2
02N20W08M01S	1040	--	1400	--	LAS POSAS	WEST LAS POSAS	55	255.3	14041.8	676.8	1992	1	2019	2
02N20W11P01S	403	--	483	--	LAS POSAS	OUTSIDE	23	1.2	27.0	27.0	1991	2	2013	2
02N20W17J05S	300	--	480	--	LAS POSAS	EAST LAS POSAS	26	0.2	6.1	1.1	1992	1	2019	2
02N21W28D01S	513	--	867	--	LAS POSAS	OUTSIDE	58	67.2	3897.0	340.0	1983	2	2013	2
02N21W17M03S	120	--	360	--	LAS POSAS	OXNARD PLAIN	42	134.1	5632.5	337.7	1999	1	2019	2
02N21W08G04S	666	--	1066	--	LAS POSAS	WEST LAS POSAS	40	166.7	6666.5	416.9	2000	1	2019	2
02N21W04Q02S	689	--	1054	--	LAS POSAS	WEST LAS POSAS	39	113.4	4423.8	240.6	2000	2	2019	2
02N20W01E02S	686	--	1006	--	LAS POSAS	EAST LAS POSAS	48	56.6	2714.9	575.1	1993	1	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N20W01C02S	630	--	909	--	LAS POSAS	EAST LAS POSAS	46	38.6	1774.0	453.9	1993	1	2019	1
02N21W21E01S	540	--	800	--	LAS POSAS	WEST LAS POSAS	40	188.2	7528.1	328.6	1999	2	2019	2
02N21W10Q04S	1290	--	1610	--	LAS POSAS	WEST LAS POSAS	36	162.9	5865.0	253.9	2002	1	2019	2
02N21W17R02S	520	--	860	--	LAS POSAS	WEST LAS POSAS	32	59.5	1902.6	162.0	2004	1	2019	2
02N21W17N03S	190	--	410	--	LAS POSAS	OXNARD PLAIN	38	60.5	2299.8	228.5	2001	1	2019	2
02N21W21D04S	590	--	830	--	LAS POSAS	WEST LAS POSAS	36	61.8	2223.9	167.5	2002	1	2019	2
02N20W01D01S	620	--	780	--	LAS POSAS	EAST LAS POSAS	52	15.5	805.5	29.5	1994	1	2019	2
02N20W02J01S	600	--	900	--	LAS POSAS	EAST LAS POSAS	51	56.8	2898.9	110.5	1994	2	2019	2
02N20W07R02S	960	--	1360	--	LAS POSAS	WEST LAS POSAS	45	278.5	12531.4	751.2	1993	2	2015	2
03N19W30F01S	1020	--	1260	--	LAS POSAS	EAST LAS POSAS	55	58.2	3200.8	98.5	1992	2	2019	2
03N20W27N03S	160	--	604	--	LAS POSAS	EAST LAS POSAS	54	41.6	2247.1	65.7	1991	2	2019	2
02N20W14C01S	340	--	500	--	LAS POSAS	OUTSIDE	48	22.3	1070.6	31.9	1995	1	2019	2
02N20W14C02S	340	--	360	--	LAS POSAS	OUTSIDE	42	23.6	990.4	37.0	1998	2	2019	2
03N19W20P01S	870	--	1230	--	LAS POSAS	EAST LAS POSAS	38	29.2	1111.2	58.7	1996	2	2015	1
02N20W02J02S	--	--	--	--	LAS POSAS	EAST LAS POSAS	43	36.3	1561.8	137.8	1998	2	2019	2
03N20W36G02S	--	--	--	--	LAS POSAS	EAST LAS POSAS	51	78.8	4018.8	180.4	1992	1	2019	2
02N20W09Q07S	480	--	880	--	LAS POSAS	EAST LAS POSAS	44	748.8	32948.9	1396.7	1998	1	2019	2
03N20W34L02S	600	--	1060	--	LAS POSAS	EAST LAS POSAS	39	258.3	10073.5	517.9	1999	2	2019	2
03N20W36M01S	660	--	900	--	LAS POSAS	EAST LAS POSAS	41	17.5	717.2	29.4	1999	1	2019	2
03N20W28P02S	140	--	400	--	LAS POSAS	EAST LAS POSAS	42	0.6	26.7	3.5	1999	1	2019	2
02N21W28C01S	700	--	1160	--	LAS POSAS	OUTSIDE	33	100.4	3313.7	216.1	2003	1	2019	1
03N20W36K01S	--	--	--	--	LAS POSAS	EAST LAS POSAS	39	15.0	585.1	36.1	2000	2	2019	2
02N20W09C01S	850	--	1250	--	LAS POSAS	EAST LAS POSAS	34	208.2	7079.6	402.5	2001	1	2019	2
03N20W35H02S	770	--	970	--	LAS POSAS	EAST LAS POSAS	36	9.6	345.4	41.9	2001	2	2019	1
02N21W20A01S	520	--	800	--	LAS POSAS	WEST LAS POSAS	28	15.9	444.8	59.2	2005	1	2018	2
02N21W16N03S	610	--	830	--	LAS POSAS	WEST LAS POSAS	30	103.9	3115.6	186.8	2005	1	2019	2
02N21W09D02S	650	--	800	--	LAS POSAS	WEST LAS POSAS	61	132.9	8107.0	376.4	1989	2	2019	2
03N20W32H03S	900	--	1100	--	LAS POSAS	WEST LAS POSAS	18	40.7	731.8	139.2	2010	2	2019	2
02N20W10N01S	310	--	363	--	LAS POSAS	EAST LAS POSAS	27	197.7	5337.1	320.0	2004	2	2019	2
03N20W35H03S	687	--	1200	--	LAS POSAS	EAST LAS POSAS	31	363.9	11279.5	708.0	2004	2	2019	2
03N20W34J02S	610	--	940	--	LAS POSAS	EAST LAS POSAS	33	28.0	923.6	63.6	2003	2	2019	2
03N19W31H01S	613	--	803	--	LAS POSAS	EAST LAS POSAS	31	214.3	6644.0	715.3	2004	2	2019	2
03N20W32K01S	870	--	1160	--	LAS POSAS	WEST LAS POSAS	31	58.0	1798.8	234.3	2003	1	2018	1
02N20W17L01S	280	--	580	--	LAS POSAS	EAST LAS POSAS	22	521.9	11482.6	1364.3	2009	1	2019	2
02N20W14F01S	--	--	--	--	LAS POSAS	OUTSIDE	11	1.4	15.4	10.0	2009	1	2018	1
02N20W12K01S	50	--	295	--	LAS POSAS	SOUTH LAS POSAS	53	18.0	952.4	37.3	1993	2	2019	2
02N20W04R02S	910	--	1270	--	LAS POSAS	EAST LAS POSAS	28	129.1	3615.5	240.6	2006	1	2019	2
02N20W12N01S	100	--	140	--	LAS POSAS	OUTSIDE	52	1.0	51.1	5.1	1993	1	2019	2
03N21W35L02S	1300	--	1770	--	LAS POSAS	OUTSIDE	27	7.0	189.7	171.6	2006	2	2019	2
02N21W28A02S	550	--	800	--	LAS POSAS	OUTSIDE	27	203.0	5481.8	348.5	2006	2	2019	2
03N21W36R02S	1215	--	1990	--	LAS POSAS	WEST LAS POSAS	18	17.3	311.2	72.6	2005	1	2013	2
02N21W18H14S	1105	--	1275	--	LAS POSAS	OXNARD PLAIN	21	336.9	7074.4	563.7	2009	2	2019	2
03N20W27H03S	900	--	1100	--	LAS POSAS	EAST LAS POSAS	27	36.3	979.6	158.1	2003	2	2019	1
03N21W35L03S	1100	--	1530	--	LAS POSAS	OUTSIDE	19	45.4	863.2	96.3	2010	2	2019	2
02N19W07B02S	457	--	577	--	LAS POSAS	SOUTH LAS POSAS	25	146.7	3667.9	227.5	2005	2	2019	2
02N20W03J01S	900	--	1060	--	LAS POSAS	EAST LAS POSAS	22	263.9	5805.9	695.1	2009	1	2019	2
02N20W16B06S	230	--	430	--	LAS POSAS	EAST LAS POSAS	26	139.1	3616.6	275.1	2006	2	2019	2
03N19W29K08S	900	--	1310	--	LAS POSAS	EAST LAS POSAS	23	267.4	6150.3	645.5	2008	2	2019	2
03N19W30D02S	970	--	1250	--	LAS POSAS	EAST LAS POSAS	26	131.7	3425.5	251.3	2006	2	2019	2
03N20W27G06S	420	--	900	--	LAS POSAS	EAST LAS POSAS	16	15.4	246.9	25.1	2008	1	2019	2
03N20W28Q02S	110	--	510	--	LAS POSAS	EAST LAS POSAS	27	14.1	381.8	29.9	2006	2	2019	2
03N20W33F01S	720	--	980	--	LAS POSAS	EAST LAS POSAS	24	57.6	1381.8	130.6	2008	1	2019	2
02N20W17E01S	448	--	748	--	LAS POSAS	OUTSIDE	32	50.8	1624.9	177.8	2002	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N21W11A03S	880	--	1630	--	LAS POSAS	WEST LAS POSAS	21	165.9	3483.1	328.8	2009	2	2019	2
03N19W30N03S	720	1200	--	--	LAS POSAS	EAST LAS POSAS	8	8.8	70.0	18.7	2013	1	2016	2
03N20W26C02S	--	--	--	--	LAS POSAS	EAST LAS POSAS	13	15.5	201.5	22.7	2013	2	2019	2
03N20W27K02S	280	--	560	--	LAS POSAS	EAST LAS POSAS	39	0.3	10.5	0.7	2000	1	2019	1
03N20W28J04S	240	--	620	--	LAS POSAS	EAST LAS POSAS	31	26.5	820.1	56.0	2004	2	2019	2
03N20W36A04S	910	--	1270	--	LAS POSAS	EAST LAS POSAS	13	75.6	983.3	125.2	2013	1	2019	2
02N21W13A01S	1290	--	1590	--	LAS POSAS	WEST LAS POSAS	22	115.8	2547.9	223.5	2009	1	2019	2
02N19W07D01S	--	--	--	--	LAS POSAS	SOUTH LAS POSAS	15	63.5	952.7	195.0	2004	2	2013	2
02N20W03K03S	882	--	1042	--	LAS POSAS	EAST LAS POSAS	20	209.7	4193.8	338.9	2009	2	2019	1
02N20W14C03S	--	--	--	--	LAS POSAS	OUTSIDE	35	19.2	670.2	42.2	2002	1	2019	2
03N20W26C01S	240	--	360	--	LAS POSAS	EAST LAS POSAS	70	0.6	44.3	1.5	1985	1	2019	2
03N20W26D01S	--	--	--	--	LAS POSAS	EAST LAS POSAS	66	1.0	65.1	1.5	1985	1	2018	1
03N20W26H01S	680	--	1100	--	LAS POSAS	EAST LAS POSAS	31	52.7	1634.6	81.0	2004	2	2019	2
03N20W27G07S	--	--	--	--	LAS POSAS	EAST LAS POSAS	20	3.8	76.5	7.6	2010	1	2019	2
03N20W27H04S	--	--	--	--	LAS POSAS	EAST LAS POSAS	20	126.2	2523.7	244.6	2010	1	2019	2
03N20W34J03S	--	--	--	--	LAS POSAS	EAST LAS POSAS	19	189.4	3598.4	314.4	2010	2	2019	2
03N20W35D01S	1435	--	1665	--	LAS POSAS	EAST LAS POSAS	29	39.2	1136.2	143.1	2005	1	2019	2
03N21W36R03S	966	--	1476	--	LAS POSAS	WEST LAS POSAS	20	97.1	1941.6	183.3	2010	1	2019	2
02N21W08L03S	625	--	1030	--	LAS POSAS	WEST LAS POSAS	12	166.4	1996.5	206.6	2014	1	2019	2
02N21W08H03S	635	--	1340	--	LAS POSAS	WEST LAS POSAS	10	313.4	3134.0	451.9	2015	1	2019	2
02N20W01A01S	500	--	720	--	LAS POSAS	EAST LAS POSAS	10	47.8	477.9	65.1	2015	1	2019	2
03N20W25R04S	950	--	1500	--	LAS POSAS	EAST LAS POSAS	10	98.6	985.9	174.3	2015	1	2019	2
02N20W04B01S	710	--	990	--	LAS POSAS	EAST LAS POSAS	9	228.0	2052.2	303.7	2015	2	2019	2
02N20W09B01S	420	--	700	--	LAS POSAS	EAST LAS POSAS	10	20.0	200.0	36.6	2015	1	2019	2
03N19W32L01S	605	--	860	--	LAS POSAS	WEST LAS POSAS	9	37.6	338.0	48.7	2015	2	2019	2
02N20W01E03S	700	--	1000	--	LAS POSAS	EAST LAS POSAS	12	48.4	580.7	91.2	2013	2	2019	2
02N20W11Q01S	280	--	875	--	LAS POSAS	OUTSIDE	13	32.1	417.7	54.7	2013	2	2019	2
02N20W16R01S	300	--	605	--	LAS POSAS	OUTSIDE	8	0.2	1.7	1.7	2015	2	2019	1
03N20W27N05S	--	--	--	--	LAS POSAS	EAST LAS POSAS	18	0.2	3.1	1.7	2010	1	2019	2
03N20W28J05S	240	--	360	--	LAS POSAS	EAST LAS POSAS	14	0.5	7.5	0.8	2013	1	2019	2
03N20W36P01S	630	--	890	--	LAS POSAS	EAST LAS POSAS	13	20.0	259.6	25.6	2013	2	2019	2
02N22W11C03S	180	--	470	--	MOUND	OXNARD FOREBAY	22	4.3	95	12.0	1979	2	1997	2
02N22W11M01S	100	--	410	--	MOUND	OXNARD FOREBAY	45	37	1,676	56	1979	2	2001	2
02N22W09K03S	424	--	545	--	MOUND	MOUND	52	85.1	4,423	200	1979	2	2005	1
02N22W08L01S	460	--	1,405	--	MOUND	MOUND	81	509.6	41,276.9	2,390.9	1979	2	2019	2
02N22W09K05S	625	--	1,455	--	MOUND	MOUND	82	72.7	5,961	399	1979	1	2019	2
02N22W09K01S	236	--	336	--	MOUND	MOUND	81	50.6	4,098	133	1979	2	2019	2
02N22W10N01S	200	--	300	--	MOUND	MOUND	49	73.0	3,579	151.0	1979	2	2003	2
02N22W08P01S	160	--	321	--	MOUND	MOUND	15	4.9	73	23.8	1979	2	1997	2
02N22W08N01S	554	--	720	--	MOUND	MOUND	49	78.9	3,865	130	1979	2	2003	2
02N22W10N02S	200	--	354	--	MOUND	MOUND	81	89.4	7,242	267.2	1979	2	2019	2
02N22W15D02S	227	--	379	--	MOUND	MOUND	81	45.0	3,646	72	1979	2	2019	2
02N23W14B01S	223	--	733	--	MOUND	MOUND	11	59.4	653.6	123.0	1979	2	1997	2
02N23W13E01S	523	--	1,123	--	MOUND	MOUND	73	212	15,500	733	1983	2	2019	2
02N22W16H01S	--	--	--	--	MOUND	MOUND	81	60.0	4,863	220	1979	2	2019	2
02N22W16K01S	292	--	345	--	MOUND	MOUND	81	11.9	960	64.2	1979	2	2019	2
02N23W13K03S	800	--	1,200	--	MOUND	MOUND	81	294.0	23,811	757	1979	2	2019	2
02N23W13K04S	800	--	1,200	--	MOUND	MOUND	73	128.4	9,372.6	293.7	1983	2	2019	2
02N23W14K01S	501	--	920	--	MOUND	MOUND	9	134.4	1,209	252.7	1979	2	1997	2
02N23W13K01S	623	--	1,230	--	MOUND	MOUND	11	33.5	368	102.3	1979	2	1997	2
02N22W18N01S	660	--	1,200	--	MOUND	MOUND	81	113.5	9,194	332	1979	2	2019	2
02N22W17Q05S	360	--	478	--	MOUND	MOUND	72	35	2,551	213	1982	1	2019	2
02N22W20B02S	180	--	320	--	MOUND	MOUND	8	106.0	848	224	1979	2	1997	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N23W24F01S	--	--	--	--	MOUND	MOUND	81	115	9,280	521	1979	2	2019	2
02N23W24G01S	742	--	927	--	MOUND	MOUND	81	2	200	70	1979	2	2019	2
02N22W19K02S	200	--	230	--	MOUND	MOUND	76	0	22	1	1979	2	2019	2
02N22W19M03S	350	--	625	--	MOUND	MOUND	30	42	1,255	106	1990	1	2004	2
02N22W17M01S	440	--	600	--	MOUND	MOUND	20	39.4	787.1	65.4	1992	1	2001	2
02N22W20E01S	462	--	818	--	MOUND	MOUND	57	34.6	1974.5	162.8	1991	2	2019	2
02N23W13F02S	521	--	982	--	MOUND	MOUND	82	205.7	16870.8	810.7	1979	1	2019	2
02N22W08F01S	580	--	1180	--	MOUND	MOUND	43	1105.0	47513.8	2331.2	1998	2	2019	2
02N22W19L02S	--	--	--	--	MOUND	MOUND	60	50.3	3020.7	160.0	1988	1	2019	2
02N22W17M02S	550	--	850	--	MOUND	MOUND	36	53.6	1928.0	83.7	2002	1	2019	2
02N22W09K06S	420	--	560	--	MOUND	MOUND	1	12.7	12.7	12.7	2003	2	2003	2
02N22W07P01S	460	--	580	--	MOUND	MOUND	38	35.9	1365.0	501.1	2001	1	2019	2
02N22W08G01S	580	--	650	--	MOUND	MOUND	34	636.4	21637.7	1530.3	2003	1	2019	2
02N22W10N03S	200	--	280	--	MOUND	MOUND	31	50.4	1562.2	92.5	2004	2	2019	2
02N22W09K07S	640	--	1440	--	MOUND	MOUND	31	127.5	3953.4	216.9	2004	2	2019	2
02N22W19M04S	343	--	493	--	MOUND	MOUND	30	109.4	3280.6	247.4	2005	1	2019	2
02N22W19K03S	450	--	600	--	MOUND	MOUND	22	115.5	2540.3	265.6	2009	1	2019	2
02N22W09K08S	224	--	465	--	MOUND	MOUND	19	59.2	1124.0	102.7	2010	2	2019	2
02N23W13G01S	360	--	860	--	MOUND	MOUND	19	295.9	5622.5	472.6	2010	2	2019	2
02N22W15E02S	120	--	320	--	MOUND	MOUND	10	3.9	38.7	12.0	2015	1	2019	2
05N18W33R01S	159	--	279	--	OUTSIDE	OUTSIDE	38	2.9	112	41	2001	1	2019	2
04N20W11L01S	150	--	400	--	OUTSIDE	OUTSIDE	59	0.9	54	2	1990	2	2019	2
04N21W15N01S	45	--	90	--	OUTSIDE	OUTSIDE	9	6.3	57	24	2015	2	2019	2
04N19W21L01S	--	--	--	--	OUTSIDE	OUTSIDE	5	4	22	11	1979	2	1997	2
03N19W07D01S	160	--	200	--	OUTSIDE	OUTSIDE	58	0.2	12	2.0	1989	1	2019	2
03N20W12L02S	--	--	--	--	OUTSIDE	OUTSIDE	58	0.0	1	0	1991	1	2019	2
03N20W12L01S	70	--	1,093	--	OUTSIDE	OUTSIDE	58	0.1	3.4	1.0	1991	1	2019	2
03N20W12L03S	50	--	270	--	OUTSIDE	OUTSIDE	58	0	3	1	1991	1	2019	2
03N19W15E01S	268	--	452	--	OUTSIDE	OUTSIDE	50	4.6	232.0	19.6	1988	1	2019	1
03N19W17P01S	685	--	750	--	OUTSIDE	OUTSIDE	18	2	34	7	2011	1	2019	2
03N19W17Q01S	1,100	--	1,340	--	OUTSIDE	EAST LAS POSAS	51	14	707	50	1987	2	2019	2
03N19W19K02S	1,167	--	1,487	--	OUTSIDE	EAST LAS POSAS	67	37.5	2,515	120	1983	2	2019	2
03N20W23L01S	1,167	--	1,475	--	OUTSIDE	OUTSIDE	39	3	134	15	1987	1	2013	1
03N20W24J01S	810	--	1,010	--	OUTSIDE	EAST LAS POSAS	59	121	7,118	277	1983	2	2013	2
04N21W15L01S	100	--	200	--	OUTSIDE	OUTSIDE	57	20.3	1154.6	25.0	1991	2	2019	2
04N21W16R01S	300	--	380	--	OUTSIDE	OUTSIDE	55	21.3	1170.5	40.1	1992	2	2019	2
04N19W19K01S	--	--	--	--	OUTSIDE	OUTSIDE	46	2.9	133.6	133.6	1997	1	2019	2
04N19W29R02SB	--	--	--	--	OUTSIDE	FILLMORE	44	0.5	21.7	1.0	1979	2	2001	2
03N19W10Q01S	--	--	--	--	OUTSIDE	OUTSIDE	36	0.3	11.6	0.5	1994	2	2019	1
03N19W20G01S	995	--	1195	--	OUTSIDE	EAST LAS POSAS	29	24.8	718.5	57.8	2002	1	2019	2
04N18W05G01S	460	--	560	--	OUTSIDE	OUTSIDE	28	0.5	13.2	1.2	2005	2	2019	2
04N20W16N01S	--	--	--	--	OUTSIDE	OUTSIDE	20	3.1	62.7	50.0	2009	2	2019	2
03N21W14N01S	180	--	300	--	OUTSIDE	OUTSIDE	18	0.3	5.2	0.7	2011	1	2019	2
04N19W28B01S	240	--	320	--	OUTSIDE	OUTSIDE	24	0.3	7.9	0.5	2008	1	2019	2
02N22W02R04S	106	--	501	--	OXNARD BASIN	OXNARD FOREBAY	15	715.3	10,730.1	2,494.2	1979	2	1997	2
02N22W12A02S	40	--	121	--	OXNARD BASIN	OXNARD FOREBAY	80	4.1	327.7	12.7	1979	2	2019	2
02N22W11A01S	75	--	155	--	OXNARD BASIN	OXNARD FOREBAY	28	24.4	684.0	94.2	2006	1	2019	2
02N22W12G03S	80	--	141	--	OXNARD BASIN	OXNARD FOREBAY	81	5	400	20	1979	2	2019	2
02N22W12E02S	205	--	355	--	OXNARD BASIN	OXNARD FOREBAY	23	512.2	11,781	665	1979	2	1997	2
02N22W12E04S	140	--	464	--	OXNARD BASIN	OXNARD FOREBAY	46	206	9,491	659	1990	1	2012	2
02N21W07K01S	78	--	150	--	OXNARD BASIN	OXNARD FOREBAY	43	136.7	5,878	486.5	1979	2	2000	2
02N21W07K02S	250	--	750	--	OXNARD BASIN	OXNARD PLAIN	14	26.6	373	64.0	1982	2	1997	2
02N22W12L04S	60	--	317	--	OXNARD BASIN	OXNARD FOREBAY	34	42.5	1,446	77	1979	2	1997	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N22W12K02S	90	--	172	--	OXNARD BASIN	OXNARD FOREBAY	34	39	1,331	122	1979	2	1997	2
02N22W12M02S	204	--	348	--	OXNARD BASIN	OXNARD FOREBAY	81	5.7	460	36	1979	2	2019	2
02N22W12K05S	68	--	233	--	OXNARD BASIN	OXNARD FOREBAY	81	57.7	4,674.9	422.6	1979	2	2019	2
02N22W12L02S	140	--	260	--	OXNARD BASIN	OXNARD FOREBAY	13	23.3	303	69	1990	1	1997	2
02N21W07M03S	360	--	720	--	OXNARD BASIN	OXNARD FOREBAY	45	148.3	6,675	868	1979	2	2001	2
02N21W07P04S	420	--	820	--	OXNARD BASIN	OXNARD FOREBAY	62	100.4	6,225	429	1989	1	2019	2
02N21W07P02S	192	--	856	--	OXNARD BASIN	OXNARD FOREBAY	10	180.3	1,803	337.0	1979	2	1997	2
02N21W07R01S	520	--	1,244	--	OXNARD BASIN	OXNARD PLAIN	75	41.8	3,133	379.4	1979	2	2016	2
02N21W07P03S	550	--	1,000	--	OXNARD BASIN	OXNARD FOREBAY	72	121	8,683	402	1984	1	2019	2
02N22W12N04S	192	--	336	--	OXNARD BASIN	OXNARD FOREBAY	81	38	3,044.8	182.9	1979	2	2019	2
02N22W12Q05S	243	--	703	--	OXNARD BASIN	OXNARD FOREBAY	81	56.3	4,560	244.2	1979	2	2019	2
02N22W12Q04S	120	--	148	--	OXNARD BASIN	OXNARD FOREBAY	81	5.8	466	73.8	1979	2	2019	2
02N22W12N03S	276	--	456	--	OXNARD BASIN	OXNARD FOREBAY	81	33.5	2,712.7	119.7	1979	2	2019	2
02N22W11R02S	284	--	404	--	OXNARD BASIN	OXNARD FOREBAY	11	0	1	1	1979	2	1997	2
02N22W12N07S	50	--	110	--	OXNARD BASIN	OXNARD FOREBAY	33	1	26	5	1984	2	2000	2
02N22W11R03S	290	--	410	--	OXNARD BASIN	OXNARD FOREBAY	79	37.9	2,994	166.3	1979	2	2019	2
02N21W07Q01S	740	--	1,260	--	OXNARD BASIN	OXNARD PLAIN	81	57.1	4,626	167.4	1979	2	2019	2
02N22W14A02S	120	--	152	--	OXNARD BASIN	OXNARD FOREBAY	81	0.7	56.2	5.0	1979	2	2019	2
02N22W13D01S	340	--	540	--	OXNARD BASIN	OXNARD FOREBAY	81	48.5	3,932	206.6	1979	2	2019	2
02N21W18B01S	70	--	160	--	OXNARD BASIN	OXNARD PLAIN	81	95.4	7,724	254.0	1979	2	2019	2
02N21W18B02S	552	--	1,101	--	OXNARD BASIN	OXNARD PLAIN	67	66.5	4,455	196	1986	2	2019	2
02N22W14A05S	119	--	179	--	OXNARD BASIN	OXNARD FOREBAY	81	20.2	1,635	231	1979	2	2019	2
02N22W14A03S	--	--	--	--	OXNARD BASIN	OXNARD FOREBAY	72	0.8	61	2	1984	1	2019	2
02N21W18A02S	824	--	1,424	--	OXNARD BASIN	OXNARD PLAIN	7	58	408	74	1983	2	1997	2
02N22W14A08S	120	--	180	--	OXNARD BASIN	OXNARD FOREBAY	81	1.2	99	3	1979	2	2019	2
02N22W14A04S	100	--	185	--	OXNARD BASIN	OXNARD FOREBAY	80	8	608	31	1979	2	2019	2
02N22W14B01S	414	--	762	--	OXNARD BASIN	OXNARD FOREBAY	81	34.0	2,750	243.7	1979	2	2019	2
02N22W13A04S	274	--	694	--	OXNARD BASIN	OXNARD FOREBAY	48	84.7	4,067	250	1979	2	2003	1
02N22W14H03S	128	--	178	--	OXNARD BASIN	OXNARD FOREBAY	81	72	5,840	135	1979	2	2019	2
02N22W14H02S	98	--	170	--	OXNARD BASIN	OXNARD FOREBAY	18	1.8	31.6	31.6	2009	2	2018	2
02N22W13G02S	80	--	190	--	OXNARD BASIN	OXNARD FOREBAY	45	66.6	2,996.1	631.0	1979	2	2001	2
02N22W13K02S	95	--	308	--	OXNARD BASIN	OXNARD FOREBAY	81	76.4	6,192	418.2	1979	2	2019	2
02N22W13L03S	100	--	175	--	OXNARD BASIN	OXNARD FOREBAY	81	11.1	901.2	38.5	1979	2	2019	2
02N22W14L02S	100	--	200	--	OXNARD BASIN	OXNARD FOREBAY	81	8.8	714	21.1	1979	2	2019	2
02N22W14L04S	250	--	268	--	OXNARD BASIN	OXNARD FOREBAY	17	19	318	52	1979	2	1997	2
02N22W14L06S	--	--	--	--	OXNARD BASIN	OXNARD FOREBAY	37	2	83	5	2001	2	2019	2
02N22W14J02S	145	--	410	--	OXNARD BASIN	OXNARD FOREBAY	81	129.2	10,464	294	1979	2	2019	2
02N22W14J01S	84	--	190	--	OXNARD BASIN	OXNARD FOREBAY	26	2	64	4	1979	2	1997	2
02N22W13M01S	--	--	178	--	OXNARD BASIN	OXNARD FOREBAY	42	40.3	1,691	152.4	1979	2	2000	1
02N22W13L04S	120	--	244	--	OXNARD BASIN	OXNARD FOREBAY	20	54.8	1,097	120	1983	1	1997	2
02N22W14L05S	164	--	404	--	OXNARD BASIN	OXNARD FOREBAY	81	31.6	2,557	85	1979	2	2019	2
02N22W13L01S	95	--	215	--	OXNARD BASIN	OXNARD FOREBAY	81	95.3	7,718	263	1979	2	2019	2
02N22W13L05S	120	--	210	--	OXNARD BASIN	OXNARD FOREBAY	81	119.2	9,656	299	1979	2	2019	2
02N22W14P03S	162	--	306	--	OXNARD BASIN	OXNARD FOREBAY	75	18	1,328	48	1982	2	2019	2
02N22W16Q01S	136	--	578	--	OXNARD BASIN	OXNARD PLAIN	81	62.2	5,039.6	139.1	1979	2	2019	2
02N22W15Q03S	206	--	314	--	OXNARD BASIN	OXNARD FOREBAY	42	155	6,528	295	1979	2	2000	1
02N22W14Q01S	60	--	260	--	OXNARD BASIN	OXNARD FOREBAY	71	0.3	24	2	1979	2	2014	2
02N22W14Q02S	60	--	260	--	OXNARD BASIN	OXNARD FOREBAY	82	53	4,374	166	1979	1	2019	2
02N22W15R01S	130	--	242	--	OXNARD BASIN	OXNARD FOREBAY	44	12.7	559	70	1979	2	2001	1
02N21W18P01S	100	--	200	--	OXNARD BASIN	OXNARD PLAIN	21	44	917	64	2009	2	2019	2
02N21W18R01S	98	--	310	--	OXNARD BASIN	OXNARD PLAIN	15	85.8	1,288	161	1979	2	1997	2
02N22W14P02S	149	--	277	--	OXNARD BASIN	OXNARD FOREBAY	81	613	49,689	2,011	1979	2	2019	2
02N21W18Q02S	445	--	1,003	--	OXNARD BASIN	OXNARD PLAIN	24	183	4,394	410	1980	1	1997	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N22W16Q03S	180	--	350	--	OXNARD BASIN	OXNARD PLAIN	81	81	6,590	207	1979	2	2019	2
02N22W13N02S	752	--	1,092	--	OXNARD BASIN	OXNARD FOREBAY	70	60.4	4,231	865	1985	1	2019	2
02N22W15Q01S	78	--	150	--	OXNARD BASIN	OXNARD FOREBAY	55	278.5	15,316	691	1979	2	2006	2
02N22W23C01S	100	--	300	--	OXNARD BASIN	OXNARD FOREBAY	72	767.9	55,288	2,153.3	1979	2	2015	1
02N22W23B02S	163	--	277	--	OXNARD BASIN	OXNARD FOREBAY	81	520	42,152	2,003	1979	2	2019	2
02N21W19A01S	95	--	147	--	OXNARD BASIN	OXNARD PLAIN	81	80.2	6,493	344	1979	2	2019	2
02N22W21D03S	193	--	313	--	OXNARD BASIN	OXNARD PLAIN	54	17.6	951	24	1979	2	2006	1
02N22W24D01S	130	--	258	--	OXNARD BASIN	OXNARD FOREBAY	81	92	7,492	159	1979	2	2019	2
02N21W19A03S	528	--	1,007	--	OXNARD BASIN	OXNARD PLAIN	81	56.2	4,554	255.6	1979	2	2019	2
02N22W23D04S	76	--	180	--	OXNARD BASIN	OXNARD FOREBAY	43	63.5	2,729	154	1979	2	2000	2
02N22W23D05S	80	--	227	--	OXNARD BASIN	OXNARD FOREBAY	81	5.4	434.5	31.3	1979	1	2019	2
02N22W23B01S	100	--	277	--	OXNARD BASIN	OXNARD FOREBAY	81	485.7	39,345	2,128.9	1979	2	2019	2
02N21W19A02S	100	--	212	--	OXNARD BASIN	OXNARD PLAIN	48	89.6	4,303	244.7	1979	2	2003	1
02N22W24A01S	120	--	320	--	OXNARD BASIN	OXNARD PLAIN	81	170.4	13,806	444.9	1979	2	2019	2
02N22W23C03S	556	--	1,092	--	OXNARD BASIN	OXNARD FOREBAY	42	1	50	10	1979	2	2000	1
02N22W23C02S	139	--	290	--	OXNARD BASIN	OXNARD FOREBAY	81	888	71,954	2,250	1979	2	2019	2
02N22W23G02S	100	--	277	--	OXNARD BASIN	OXNARD FOREBAY	59	689	40,674	1,713	1979	2	2008	2
02N21W19B02S	99	--	137	--	OXNARD BASIN	OXNARD PLAIN	80	19.2	1,532.1	64.5	1979	2	2019	2
02N22W23H04S	850	--	1,390	--	OXNARD BASIN	OXNARD FOREBAY	70	32	2,236	415	1985	1	2019	2
02N21W19G01S	64	--	220	--	OXNARD BASIN	OXNARD PLAIN	81	65	5,226	542	1979	2	2019	2
02N22W23F06S	80	--	250	--	OXNARD BASIN	OXNARD FOREBAY	62	52.9	3,277	161	1980	2	2019	2
02N22W23F01S	100	--	300	--	OXNARD BASIN	OXNARD FOREBAY	32	6.5	207	8.0	2004	1	2019	2
02N22W23H03S	120	--	182	--	OXNARD BASIN	OXNARD FOREBAY	81	115.2	9,333	242	1979	2	2019	2
02N22W23F04S	124	--	250	--	OXNARD BASIN	OXNARD FOREBAY	49	5.7	280	8.0	1979	2	2003	2
02N21W19G02S	120	--	147	--	OXNARD BASIN	OXNARD PLAIN	80	90.8	7,268	294.5	1979	2	2019	2
02N22W22H01S	96	--	208	--	OXNARD BASIN	OXNARD FOREBAY	56	9	512	38	1979	1	2006	2
02N22W23G03S	100	--	300	--	OXNARD BASIN	OXNARD FOREBAY	81	879.2	71,218	2,130	1979	2	2019	2
02N22W21H01S	--	--	--	210	OXNARD BASIN	OXNARD FOREBAY	55	144	7,893	421	1979	2	2006	2
02N21W20E02S	550	--	900	--	OXNARD BASIN	OXNARD PLAIN	81	51	4,150	163	1979	2	2019	2
02N22W19J02S	160	--	500	--	OXNARD BASIN	OXNARD PLAIN	81	198.4	16,073	632	1979	2	2019	2
02N22W20M06S	319	--	600	--	OXNARD BASIN	OXNARD PLAIN	78	28	2,157	131	1979	2	2019	2
02N22W22G01S	120	--	200	--	OXNARD BASIN	OXNARD FOREBAY	51	99.6	5,079	335	1979	2	2004	2
02N22W20M02S	365	--	927	--	OXNARD BASIN	OXNARD PLAIN	78	2.8	217.4	130.7	1979	2	2019	2
02N22W20M07S	352	--	552	--	OXNARD BASIN	OXNARD PLAIN	79	35.1	2,774	151.3	1979	2	2019	2
02N22W20L03S	403	--	853	--	OXNARD BASIN	OXNARD PLAIN	62	652.9	40,479.8	1,656.3	1989	1	2019	2
02N22W20L02S	354	--	830	--	OXNARD BASIN	OXNARD PLAIN	73	426.9	31,165	1,627.3	1979	2	2015	2
02N22W23F05S	300	--	412	--	OXNARD BASIN	OXNARD FOREBAY	81	130	10,525	168	1979	2	2019	2
02N22W23K01S	124	--	250	--	OXNARD BASIN	OXNARD FOREBAY	48	177.7	8,528	1,213	1979	2	2003	1
02N22W23K04S	710	--	1,777	--	OXNARD BASIN	OXNARD FOREBAY	48	3.4	164	77.0	1979	2	2003	1
02N22W23J01S	116	--	206	--	OXNARD BASIN	OXNARD FOREBAY	81	90	7,291	169	1979	2	2019	2
02N22W23K02S	133	--	232	--	OXNARD BASIN	OXNARD FOREBAY	80	97.6	7,811	221.9	1979	1	2019	2
02N22W20K01S	403	--	853	--	OXNARD BASIN	OXNARD PLAIN	62	1,008	62,490	1,749	1989	1	2019	2
02N21W19L01S	--	--	--	212	OXNARD BASIN	OXNARD PLAIN	70	37	2,609	248	1979	2	2015	2
02N22W20J01S	310	--	910	--	OXNARD BASIN	OXNARD PLAIN	20	1,262.3	25,246	1,726	1979	2	1989	1
02N22W21J03S	200	--	308	--	OXNARD BASIN	OXNARD FOREBAY	19	61	1,153	204	1979	2	1997	2
02N21W20M02S	100	--	160	--	OXNARD BASIN	OXNARD PLAIN	61	1.1	64	2	1989	2	2019	2
02N22W22J02S	124	--	200	--	OXNARD BASIN	OXNARD FOREBAY	55	79.8	4,389	172.3	1979	2	2006	2
02N22W24K01S	80	--	150	--	OXNARD BASIN	OXNARD PLAIN	81	55.8	4,518	245	1979	2	2019	2
02N22W23K05S	144	--	336	--	OXNARD BASIN	OXNARD FOREBAY	80	839	67,140	3,090	1980	1	2019	2
02N22W22M04S	86	--	246	--	OXNARD BASIN	OXNARD FOREBAY	4	0.8	3	1	1979	2	1997	2
02N21W20M03S	116	--	196	--	OXNARD BASIN	OXNARD PLAIN	81	13.1	1,063	77.4	1979	2	2019	2
02N22W21M01S	160	--	300	--	OXNARD BASIN	OXNARD PLAIN	70	58.5	4,097.0	183.0	1985	1	2019	2
02N22W21Q01S	143	--	178	--	OXNARD BASIN	OXNARD PLAIN	27	78	2,096	203	1979	2	1997	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N22W22R04S	120	--	290	--	OXNARD BASIN	OXNARD FOREBAY	81	149	12,043	257	1979	2	2019	2
02N22W24P02S	300	--	1,210	--	OXNARD BASIN	OXNARD PLAIN	76	156.9	11,921	327.0	1982	1	2019	2
02N21W19L02S	103	--	175	--	OXNARD BASIN	OXNARD PLAIN	80	92	7,322	264	1979	2	2019	2
02N22W22Q01S	100	--	142	--	OXNARD BASIN	OXNARD FOREBAY	48	4.9	233	16	1979	2	2003	1
02N22W23Q01S	98	--	162	--	OXNARD BASIN	OXNARD FOREBAY	81	84.3	6,825	281	1979	2	2019	2
02N22W24P01S	290	--	480	--	OXNARD BASIN	OXNARD PLAIN	81	131.9	10,681	320.8	1979	2	2019	2
02N22W20Q01S	187	--	664	--	OXNARD BASIN	OXNARD PLAIN	81	9.8	795	140.0	1979	2	2019	2
02N22W24Q02S	183	--	195	--	OXNARD BASIN	OXNARD PLAIN	81	1	60	1	1979	2	2019	2
02N22W24R02S	100	--	160	--	OXNARD BASIN	OXNARD PLAIN	74	0.4	26	1.0	1983	1	2019	2
02N22W22Q02S	140	--	182	--	OXNARD BASIN	OXNARD FOREBAY	24	6.0	145	19	1979	2	1997	2
02N22W22Q03S	110	--	268	--	OXNARD BASIN	OXNARD FOREBAY	24	12.7	304	26.8	1979	2	1997	2
02N21W20Q04S	600	--	1,055	--	OXNARD BASIN	WEST LAS POSAS	58	54.5	3,159	221	1979	2	2008	1
02N22W26C01S	90	--	180	--	OXNARD BASIN	OXNARD FOREBAY	81	23.5	1,906	142.8	1979	2	2019	2
02N22W24R01S	100	--	200	--	OXNARD BASIN	OXNARD PLAIN	81	8.2	666	26	1979	2	2019	2
02N22W27B01S	145	--	230	--	OXNARD BASIN	OXNARD FOREBAY	65	8	534	29	1979	2	2011	2
02N22W26C05S	200	--	324	--	OXNARD BASIN	OXNARD FOREBAY	81	43.6	3,532	254	1979	2	2019	2
02N22W26B03S	575	--	1,475	--	OXNARD BASIN	OXNARD FOREBAY	70	231.7	16,219	2,174	1985	1	2019	2
02N22W27A03S	140	--	230	--	OXNARD BASIN	OXNARD FOREBAY	81	97.8	7,918.7	147.0	1979	2	2019	2
02N22W25A02S	--	124	--	174	OXNARD BASIN	OXNARD PLAIN	80	14	1,133	54	1979	2	2019	2
02N22W28C06S	170	--	430	--	OXNARD BASIN	OXNARD PLAIN	81	191.2	15,490	421.8	1979	2	2019	2
02N22W30C06S	22	--	52	--	OXNARD BASIN	OXNARD PLAIN	61	1	40	9	1989	2	2019	2
02N22W30C05S	22	--	52	--	OXNARD BASIN	OXNARD PLAIN	61	2.3	141	26.5	1989	2	2019	2
02N22W25A03S	112	--	205	--	OXNARD BASIN	OXNARD PLAIN	81	147.0	11,904	333.6	1979	2	2019	2
02N22W26C03S	98	--	220	--	OXNARD BASIN	OXNARD FOREBAY	81	26	2,125	53	1979	2	2019	2
02N21W29C01S	150	--	266	--	OXNARD BASIN	OXNARD PLAIN	48	77	3,717	184	1979	2	2003	1
02N22W29D04S	22	--	52	--	OXNARD BASIN	OXNARD PLAIN	61	1.9	117	30.0	1989	2	2019	2
02N22W28H02S	125	--	280	--	OXNARD BASIN	OXNARD PLAIN	81	13.9	1,129	31.2	1979	2	2019	2
02N22W26H02S	440	--	680	--	OXNARD BASIN	OXNARD PLAIN	81	82.6	6,691	211.4	1979	2	2019	2
02N22W29G01S	190	--	254	--	OXNARD BASIN	OXNARD PLAIN	11	82	905	161	1979	2	1997	2
02N22W26F02S	150	--	324	--	OXNARD BASIN	OXNARD FOREBAY	81	41	3,289	121	1979	2	2019	2
02N22W30F03S	452	--	653	--	OXNARD BASIN	OXNARD PLAIN	67	160	10,731	393	1986	2	2019	2
02N22W26E01S	150	--	292	--	OXNARD BASIN	OXNARD FOREBAY	81	11	919	30	1979	2	2019	2
02N22W26H01S	120	--	266	--	OXNARD BASIN	OXNARD PLAIN	16	108	1,732	340	1979	2	1997	2
02N23W25H01S	130	--	238	--	OXNARD BASIN	OXNARD PLAIN	81	220.1	17,830	478	1979	2	2019	2
02N21W30G01S	103	--	155	--	OXNARD BASIN	OXNARD PLAIN	81	213	17,250	643	1979	2	2019	2
02N22W25E01S	108	--	184	--	OXNARD BASIN	OXNARD PLAIN	32	79.8	2,553	190.1	2004	1	2019	2
02N22W25F01S	130	--	190	--	OXNARD BASIN	OXNARD PLAIN	81	0.4	32	2.0	1979	2	2019	2
02N22W27K01S	130	--	246	--	OXNARD BASIN	OXNARD FOREBAY	81	74.3	6,016	198	1979	2	2019	2
02N22W28L01S	186	--	286	--	OXNARD BASIN	OXNARD PLAIN	27	58	1,579	206	1979	2	1997	2
02N22W27L01S	107	--	242	--	OXNARD BASIN	OXNARD FOREBAY	81	33	2,705	155	1979	2	2019	2
02N22W26M01S	150	--	180	--	OXNARD BASIN	OXNARD FOREBAY	31	22	668	39	1979	2	1997	2
02N21W29L04S	641	--	1,161	--	OXNARD BASIN	OXNARD PLAIN	76	91.6	6,959	276	1982	1	2019	2
02N21W29L01S	85	--	150	--	OXNARD BASIN	OXNARD PLAIN	81	0.6	53	2	1979	2	2019	2
02N21W29G01S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	58	0.1	5	5	1991	1	2019	2
02N22W27M01S	102	--	288	--	OXNARD BASIN	OXNARD PLAIN	4	29.3	117	86	1979	2	1997	2
02N21W29K02S	597	--	679	--	OXNARD BASIN	OXNARD PLAIN	45	35.9	1,616	191	1979	2	2001	2
02N21W29K01S	100	--	150	--	OXNARD BASIN	OXNARD PLAIN	36	1	23	1	2002	1	2019	2
02N22W30J01S	230	--	280	--	OXNARD BASIN	OXNARD PLAIN	81	2.8	226.4	12.4	1979	2	2019	2
02N23W25M01S	130	--	230	--	OXNARD BASIN	OXNARD PLAIN	81	258.3	20,924	695.3	1979	2	2019	2
02N22W30L02S	35	--	75	--	OXNARD BASIN	OXNARD PLAIN	77	5.3	410	60	1981	2	2019	2
02N22W30K01S	190	--	250	--	OXNARD BASIN	OXNARD PLAIN	77	7.7	589	88	1981	2	2019	2
02N22W29M01S	200	--	280	--	OXNARD BASIN	OXNARD PLAIN	52	154.7	8,047	395	1979	1	2004	2
02N22W27M02S	180	--	212	--	OXNARD BASIN	OXNARD PLAIN	73	2.7	198	6	1979	2	2015	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N22W30P02S	202	--	401	--	OXNARD BASIN	OXNARD PLAIN	82	308	25,230	585	1979	1	2019	2
02N22W25M01S	122	--	225	--	OXNARD BASIN	OXNARD PLAIN	24	8.7	209	13	1979	2	1997	2
02N22W25L03S	110	--	172	--	OXNARD BASIN	OXNARD PLAIN	81	2.8	225	30.0	1979	2	2019	2
02N22W25L02S	106	--	172	--	OXNARD BASIN	OXNARD PLAIN	49	52.9	2,591	130	1979	2	2003	2
02N22W25N03S	120	--	202	--	OXNARD BASIN	OXNARD PLAIN	20	5.6	112	17	1979	2	1997	2
02N23W25R02S	162	--	182	--	OXNARD BASIN	OXNARD PLAIN	14	142.1	1,989	286	1979	2	1997	2
02N22W26Q01S	127	--	193	--	OXNARD BASIN	OXNARD PLAIN	45	33.1	1,490	142	1979	2	2001	2
02N22W25Q01S	100	--	180	--	OXNARD BASIN	OXNARD PLAIN	42	30	1,268	76	1979	2	2000	2
02N22W30P03S	370	--	490	--	OXNARD BASIN	OXNARD PLAIN	81	30.6	2,478	97.9	1979	2	2019	2
02N22W30Q01S	390	--	510	--	OXNARD BASIN	OXNARD PLAIN	70	19	1,314	52	1985	1	2019	2
02N22W29R01S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	9	68	609	140	1980	2	1997	2
02N22W25Q04S	100	--	180	--	OXNARD BASIN	OXNARD PLAIN	16	6	97	17	1979	2	1997	2
02N22W30P01S	100	--	200	--	OXNARD BASIN	OXNARD PLAIN	9	113	1,016	223	1986	2	1997	2
02N22W26R01S	140	--	190	--	OXNARD BASIN	OXNARD PLAIN	15	53.9	808	88	1979	2	1997	2
02N22W25P04S	115	--	210	--	OXNARD BASIN	OXNARD PLAIN	74	144	10,636	400	1983	1	2019	2
02N22W26R02S	145	--	175	--	OXNARD BASIN	OXNARD PLAIN	24	1	20	1	1979	2	1997	2
02N22W25P01S	120	--	434	--	OXNARD BASIN	OXNARD PLAIN	61	114	6,939	418	1979	2	2009	2
02N23W25Q01S	190	--	220	--	OXNARD BASIN	OXNARD PLAIN	80	2	171	12	1979	2	2019	2
02N22W26R05S	140	--	185	--	OXNARD BASIN	OXNARD PLAIN	44	57.3	2,521	197	1979	1	2000	2
02N22W25R02S	104	--	162	--	OXNARD BASIN	OXNARD PLAIN	81	74	6,002	318	1979	2	2019	2
02N22W30Q02S	390	--	510	--	OXNARD BASIN	OXNARD PLAIN	81	36.4	2,946	64.7	1979	2	2019	2
02N22W29Q03S	97	--	238	--	OXNARD BASIN	OXNARD PLAIN	35	55	1,908	376	1984	2	2001	2
02N22W29R02S	202	--	310	--	OXNARD BASIN	OXNARD PLAIN	11	100	1,096	266	1979	2	1997	2
02N21W30P02S	102	--	162	--	OXNARD BASIN	OXNARD PLAIN	41	46	1,903	188	1979	2	1999	2
02N21W30R03S	110	--	146	--	OXNARD BASIN	OXNARD PLAIN	79	30.3	2,394	239	1979	2	2019	2
02N21W30R01S	115	--	146	--	OXNARD BASIN	OXNARD PLAIN	81	18	1,474	178	1979	2	2019	2
02N21W29P03S	102	--	166	--	OXNARD BASIN	OXNARD PLAIN	20	62	1,244	152	1979	2	1997	2
02N21W29N03S	100	--	150	--	OXNARD BASIN	OXNARD PLAIN	81	40.5	3,281	479	1979	2	2019	2
02N22W31B01S	100	--	300	--	OXNARD BASIN	OXNARD PLAIN	82	102	8,388	494	1979	1	2019	2
02N23W36C04S	210	--	260	--	OXNARD BASIN	OXNARD PLAIN	81	2	153	13	1979	2	2019	2
02N22W34B01S	75	--	213	--	OXNARD BASIN	OXNARD FOREBAY	45	29.4	1,324	138.4	1979	2	2001	2
02N22W31A02S	114	--	254	--	OXNARD BASIN	OXNARD PLAIN	49	49	2,423	90	1979	2	2003	2
02N22W31D01S	130	--	430	--	OXNARD BASIN	OXNARD PLAIN	28	154.9	4,337	322.7	1979	2	1997	2
02N23W36A04S	200	--	400	--	OXNARD BASIN	OXNARD PLAIN	42	172	7,210	505	1999	1	2019	2
02N23W36A01S	232	--	366	--	OXNARD BASIN	OXNARD PLAIN	81	107	8,690	390	1979	2	2019	2
02N22W31A03S	200	--	500	--	OXNARD BASIN	OXNARD PLAIN	81	139	11,289	306	1979	1	2019	2
02N22W32C01S	100	--	250	--	OXNARD BASIN	OXNARD PLAIN	82	111	9,087	468	1979	1	2019	2
02N22W34B03S	80	--	200	--	OXNARD BASIN	OXNARD PLAIN	40	10.3	411	23.0	1979	2	1999	2
02N22W35C02S	415	--	540	--	OXNARD BASIN	OXNARD PLAIN	30	192	5,757	486	1979	2	1997	2
02N22W31C02S	186	--	292	--	OXNARD BASIN	OXNARD PLAIN	82	106.3	8,720.4	212.8	1979	1	2019	2
02N22W32A02S	120	--	308	--	OXNARD BASIN	OXNARD PLAIN	20	223.2	4,463.3	526.7	1979	2	1997	2
02N22W34A03S	200	--	218	--	OXNARD BASIN	OXNARD PLAIN	43	101.0	4,345.1	243.1	1979	2	2000	2
02N22W34A02S	62	--	198	--	OXNARD BASIN	OXNARD PLAIN	38	92.6	3,520	155.3	1981	1	1999	2
02N22W35C01S	96	--	192	--	OXNARD BASIN	OXNARD PLAIN	45	1.2	56	1	1979	2	2001	2
02N23W36A02S	240	--	368	--	OXNARD BASIN	OXNARD PLAIN	45	190	8,530	862	1979	2	2001	2
02N22W35B02S	128	--	198	--	OXNARD BASIN	OXNARD PLAIN	58	21.8	1,267	125	1979	2	2008	2
02N22W35A01S	135	--	185	--	OXNARD BASIN	OXNARD PLAIN	23	70.9	1,630	141	1979	2	1997	2
02N21W32E01S	716	--	1,266	--	OXNARD BASIN	OXNARD PLAIN	70	266.3	18,641	925	1985	1	2019	2
02N22W36F02S	170	--	366	--	OXNARD BASIN	OXNARD PLAIN	81	132.4	10,727	351.0	1979	2	2019	2
02N23W36H02S	181	--	381	--	OXNARD BASIN	OXNARD PLAIN	64	307.1	19,657	578	1988	1	2019	2
02N22W34H01S	150	--	242	--	OXNARD BASIN	OXNARD PLAIN	51	51.8	2,642	145.4	1979	2	2004	2
02N22W33L03S	138	--	198	--	OXNARD BASIN	OXNARD PLAIN	58	1	32	2	1979	2	2008	1
02N23W36L01S	110	--	250	--	OXNARD BASIN	OXNARD PLAIN	81	4	293	21	1979	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N22W35M01S	384	--	534	--	OXNARD BASIN	OXNARD PLAIN	70	71	4,978	208	1980	2	2015	1
02N22W35K02S	460	--	700	--	OXNARD BASIN	OXNARD PLAIN	44	179.5	7,897	391.3	1984	2	2006	2
02N22W35K01S	134	--	293	--	OXNARD BASIN	OXNARD PLAIN	61	149.1	9,094	561	1979	2	2009	2
02N22W33M02S	164	--	218	--	OXNARD BASIN	OXNARD PLAIN	24	6.9	165	27	1979	2	1997	2
02N22W36M03S	112	--	292	--	OXNARD BASIN	OXNARD PLAIN	22	44.3	975	94.1	1979	2	1997	2
02N22W32M01S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	54	54.4	2934.9	122.1	1979	2	2019	2
02N22W32M03S	218	--	318	--	OXNARD BASIN	OXNARD PLAIN	34	72.1	2451.2	173.4	2003	1	2019	2
02N22W34K02S	171	--	251	--	OXNARD BASIN	OXNARD PLAIN	59	87.9	5186.8	228.7	1979	2	2008	2
02N22W36L01S	128	--	426	--	OXNARD BASIN	OXNARD PLAIN	81	70.3	5692.0	249.9	1979	2	2019	2
02N22W31K01S	125	--	235	--	OXNARD BASIN	OXNARD PLAIN	81	60.0	4856.4	232.1	1979	2	2019	2
02N22W34J01S	80	--	200	--	OXNARD BASIN	OXNARD PLAIN	73	0.2	17.7	1.0	1979	1	2015	1
02N22W31Q01S	120	--	240	--	OXNARD BASIN	OXNARD PLAIN	78	35.3	2756.4	77.0	1981	1	2019	2
02N22W33M03S	168	--	302	--	OXNARD BASIN	OXNARD PLAIN	19	49.9	947.2	198.3	1979	2	1997	2
02N21W32J01S	640	--	1270	--	OXNARD BASIN	PLEASANT VALLEY	70	196.4	13751.4	458.2	1985	1	2019	2
02N21W31L01S	700	--	1200	--	OXNARD BASIN	OXNARD PLAIN	70	36.8	2579.3	381.5	1985	1	2019	2
02N22W32Q03S	180	--	280	--	OXNARD BASIN	OXNARD PLAIN	65	46.2	3004.4	156.0	1987	2	2019	2
02N22W32Q01S	160	--	296	--	OXNARD BASIN	OXNARD PLAIN	17	80.1	1361.4	177.4	1979	2	1997	2
02N21W31R01S	118	--	174	--	OXNARD BASIN	OXNARD PLAIN	81	17.2	1395.4	246.9	1979	2	2019	2
02N22W31R04S	168	--	240	--	OXNARD BASIN	OXNARD PLAIN	59	5.9	346.3	36.8	1990	2	2019	2
02N22W31N01S	168	--	342	--	OXNARD BASIN	OXNARD PLAIN	81	323.7	26216.9	906.2	1979	2	2019	2
02N21W31P03S	713	--	967	--	OXNARD BASIN	OXNARD PLAIN	13	125.7	1633.7	262.0	1979	2	1985	2
02N22W33N04S	181	--	293	--	OXNARD BASIN	OXNARD PLAIN	51	86.2	4394.7	189.4	1979	2	2004	2
02N22W33N05S	175	--	295	--	OXNARD BASIN	OXNARD PLAIN	73	48.9	3567.7	193.3	1982	2	2019	2
02N21W31P06S	743	--	943	--	OXNARD BASIN	OXNARD PLAIN	81	181.8	14727.8	370.0	1979	1	2019	2
01N22W02A02S	--	218	386	--	OXNARD BASIN	OXNARD PLAIN	12	52.5	629.8	95.8	1979	2	1997	2
01N22W01D01S	110	--	220	--	OXNARD BASIN	OXNARD PLAIN	20	288.3	5766.0	505.3	1979	2	1997	2
01N22W05B01S	146	--	207	--	OXNARD BASIN	OXNARD PLAIN	81	140.5	11379.2	299.8	1979	2	2019	2
01N22W04D01S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	81	3.6	293.9	12.5	1979	2	2019	2
01N22W06A06S	280	--	420	--	OXNARD BASIN	OXNARD PLAIN	74	48.9	3614.9	110.4	1983	1	2019	2
01N22W06A05S	280	--	420	--	OXNARD BASIN	OXNARD PLAIN	74	22.7	1680.4	53.5	1983	1	2019	2
01N21W05A02S	120	--	208	--	OXNARD BASIN	OXNARD PLAIN	68	0.2	15.9	1.0	1979	2	2015	1
01N22W05C02S	164	--	208	--	OXNARD BASIN	OXNARD PLAIN	81	107.5	8705.5	204.1	1979	2	2019	2
01N22W06A04S	160	--	300	--	OXNARD BASIN	OXNARD PLAIN	82	52.6	4312.3	109.5	1979	1	2019	2
01N22W05B04S	200	--	292	--	OXNARD BASIN	OXNARD PLAIN	81	21.7	1754.0	76.6	1979	2	2019	2
01N22W06B01S	154	--	234	--	OXNARD BASIN	OXNARD PLAIN	81	58.1	4706.2	93.5	1979	2	2019	2
01N22W06A02S	170	--	270	--	OXNARD BASIN	OXNARD PLAIN	72	48.4	3484.2	219.6	1979	1	2014	2
01N22W05D01S	166	--	198	--	OXNARD BASIN	OXNARD PLAIN	81	24.3	1972.2	65.6	1979	2	2019	2
01N22W04D08S	105	--	145	--	OXNARD BASIN	OXNARD PLAIN	80	1.4	115.6	5.0	1979	2	2019	2
01N22W04D07S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	80	1.3	107.6	5.2	1979	2	2019	2
01N22W04D03S	187	--	214	--	OXNARD BASIN	OXNARD PLAIN	15	0.7	11.0	1.0	1979	2	1997	2
01N22W04D09S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	81	1.2	100.5	2.0	1979	2	2019	2
01N22W04D11S	173	--	203	--	OXNARD BASIN	OXNARD PLAIN	81	0.8	63.9	3.1	1979	2	2019	2
01N22W04D10S	122	--	148	--	OXNARD BASIN	OXNARD PLAIN	80	1.1	84.4	1.5	1979	2	2019	2
01N22W04C01S	128	--	200	--	OXNARD BASIN	OXNARD PLAIN	17	3.8	64.0	6.1	1979	2	1997	2
01N21W04D03S	100	--	175	--	OXNARD BASIN	OXNARD PLAIN	80	0.6	50.0	1.0	1979	1	2019	2
01N22W01A01S	112	--	174	--	OXNARD BASIN	OXNARD PLAIN	60	44.8	2686.7	281.4	1979	1	2008	2
01N21W04D04S	571	--	1321	--	OXNARD BASIN	OXNARD PLAIN	77	289.0	22256.6	965.6	1981	2	2019	2
01N21W06H01S	110	--	200	--	OXNARD BASIN	OXNARD PLAIN	81	14.8	1197.7	129.1	1979	2	2019	2
01N22W03F01S	125	--	235	--	OXNARD BASIN	OXNARD PLAIN	66	23.0	1515.8	252.7	1979	1	2011	2
01N22W03F06S	528	--	1108	--	OXNARD BASIN	OXNARD PLAIN	63	227.6	14340.7	1838.3	1987	2	2019	2
01N21W05F01S	120	--	200	--	OXNARD BASIN	OXNARD PLAIN	79	8.7	683.8	139.9	1979	2	2019	2
01N22W03F05S	526	--	1106	--	OXNARD BASIN	OXNARD PLAIN	67	439.0	29412.9	2265.9	1984	2	2019	2
01N22W03F02S	120	--	220	--	OXNARD BASIN	OXNARD PLAIN	66	25.9	1709.8	285.1	1979	1	2011	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
01N22W03F04S	141	--	232	--	OXNARD BASIN	OXNARD PLAIN	71	18.6	1317.2	272.7	1979	1	2014	1
01N22W03F03S	130	--	230	--	OXNARD BASIN	OXNARD PLAIN	25	5.7	142.8	31.4	1979	2	1991	2
01N22W04F02S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	69	4.9	335.4	16.9	1979	2	2013	2
01N22W04F04S	507	--	1179	--	OXNARD BASIN	OXNARD PLAIN	23	3.0	70.0	30.9	1979	2	1990	2
01N22W01F01S	110	--	192	--	OXNARD BASIN	OXNARD PLAIN	49	58.1	2846.8	230.4	1979	2	2003	2
01N21W06G01S	980	--	1030	--	OXNARD BASIN	OXNARD PLAIN	68	1.3	87.3	10.2	1984	1	2019	2
01N22W02G01S	130	--	190	--	OXNARD BASIN	OXNARD PLAIN	16	62.1	994.4	154.1	1979	2	1997	2
01N22W05H01S	117	--	223	--	OXNARD BASIN	OXNARD PLAIN	13	0.8	11.0	1.0	1979	2	1997	2
01N21W05G01S	106	--	170	--	OXNARD BASIN	OXNARD PLAIN	81	40.9	3316.8	135.8	1979	2	2019	2
01N21W04M02S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	35	0.6	20.8	0.8	2002	2	2019	2
01N22W05H02S	110	--	230	--	OXNARD BASIN	OXNARD PLAIN	72	25.1	1807.1	128.2	1979	2	2015	2
01N22W05M01S	189	--	227	--	OXNARD BASIN	OXNARD PLAIN	49	70.8	3470.9	173.8	1979	2	2003	2
01N22W04K01S	105	--	220	--	OXNARD BASIN	OXNARD PLAIN	20	32.7	653.9	65.2	1979	2	1997	2
01N21W05K01S	102	--	178	--	OXNARD BASIN	OXNARD PLAIN	57	4.2	237.0	68.8	1991	2	2019	2
01N22W06J04S	240	--	380	--	OXNARD BASIN	OXNARD PLAIN	81	138.3	11199.6	484.0	1979	2	2019	2
01N22W02K01S	150	--	180	--	OXNARD BASIN	OXNARD PLAIN	80	111.1	8886.6	271.1	1980	1	2019	2
01N22W02K03S	140	--	400	--	OXNARD BASIN	OXNARD PLAIN	49	47.5	2325.8	230.9	1979	2	2003	2
01N22W01M02S	272	--	397	--	OXNARD BASIN	OXNARD PLAIN	81	31.3	2531.9	168.0	1979	2	2019	2
01N22W01M01S	105	--	180	--	OXNARD BASIN	OXNARD PLAIN	81	137.8	11160.6	386.5	1979	2	2019	2
01N22W04M01S	184	--	219	--	OXNARD BASIN	OXNARD PLAIN	32	43.3	1384.6	119.6	1979	2	1997	2
01N21W06L05S	624	--	964	--	OXNARD BASIN	OXNARD PLAIN	81	101.4	8210.4	312.0	1979	2	2019	2
01N21W04M01S	522	--	1290	--	OXNARD BASIN	OXNARD PLAIN	81	25.6	2071.2	343.6	1979	1	2019	2
01N22W05K01S	77	--	212	--	OXNARD BASIN	OXNARD PLAIN	20	57.4	1148.4	112.3	1979	2	1997	2
01N21W06L02S	150	--	173	--	OXNARD BASIN	OXNARD PLAIN	10	0.1	1.0	1.0	1979	2	1984	2
01N21W06L04S	110	--	182	--	OXNARD BASIN	OXNARD PLAIN	81	26.0	2109.1	330.0	1979	2	2019	2
01N21W06J02S	106	--	192	--	OXNARD BASIN	OXNARD PLAIN	81	90.2	7305.4	545.3	1979	2	2019	2
01N21W06J05S	750	--	1290	--	OXNARD BASIN	OXNARD PLAIN	70	167.7	11737.5	625.0	1985	1	2019	2
01N22W03J02S	--	126	--	237	OXNARD BASIN	OXNARD PLAIN	19	121.8	2313.4	585.5	1979	2	1997	2
01N22W02K04S	158	--	178	--	OXNARD BASIN	OXNARD PLAIN	71	0.7	53.2	2.0	1984	2	2019	2
01N22W01M03S	730	--	1480	--	OXNARD BASIN	OXNARD PLAIN	70	410.2	28715.0	1449.4	1985	1	2019	2
01N22W06R02S	240	--	380	--	OXNARD BASIN	OXNARD PLAIN	81	159.2	12892.5	484.0	1979	2	2019	2
01N22W03R01S	489	--	944	--	OXNARD BASIN	OXNARD PLAIN	75	265.3	19893.8	929.1	1982	2	2019	2
01N22W02N03S	145	--	218	--	OXNARD BASIN	OXNARD PLAIN	43	1.8	78.6	4.4	1998	1	2019	2
01N21W06R04S	130	--	423	--	OXNARD BASIN	OXNARD PLAIN	80	103.1	8249.4	316.3	1979	2	2019	2
01N21W06R03S	138	--	158	--	OXNARD BASIN	OXNARD PLAIN	81	0.5	37.9	1.0	1979	2	2019	2
01N22W10A03S	134	--	242	--	OXNARD BASIN	OXNARD PLAIN	64	2.2	140.4	11.7	1987	1	2019	2
01N22W11B01S	160	--	205	--	OXNARD BASIN	OXNARD PLAIN	72	0.8	55.3	2.4	1984	1	2019	2
01N22W10B02S	635	--	1430	--	OXNARD BASIN	OXNARD PLAIN	66	1.2	76.4	71.1	1979	1	2011	2
01N22W08B07S	146	--	206	--	OXNARD BASIN	OXNARD PLAIN	12	8.3	99.6	14.9	1979	2	1997	2
01N22W10B03S	182	--	562	--	OXNARD BASIN	OXNARD PLAIN	66	8.2	538.9	332.5	1979	1	2011	2
01N21W09C03S	700	--	1120	--	OXNARD BASIN	PLEASANT VALLEY	24	130.8	3139.7	446.0	1979	2	1997	2
01N22W07A03S	240	--	370	--	OXNARD BASIN	OXNARD PLAIN	57	118.8	6773.3	391.4	1979	2	2008	1
01N22W11D01S	148	--	230	--	OXNARD BASIN	OXNARD PLAIN	17	84.5	1436.8	221.4	1979	2	1997	2
01N22W11B03S	129	--	204	--	OXNARD BASIN	OXNARD PLAIN	81	15.3	1236.0	87.3	1979	2	2019	2
01N22W11A01S	140	--	197	--	OXNARD BASIN	OXNARD PLAIN	81	55.8	4521.9	372.5	1979	2	2019	2
01N21W08D02S	268	--	716	--	OXNARD BASIN	OXNARD PLAIN	70	1.1	75.1	6.0	1984	2	2019	2
01N21W07A01S	125	--	150	--	OXNARD BASIN	OXNARD PLAIN	82	0.5	38.8	1.4	1979	1	2019	2
01N21W08A02S	670	--	1190	--	OXNARD BASIN	OXNARD PLAIN	55	88.5	4865.6	303.2	1979	2	2006	2
01N21W08A01S	700	--	1300	--	OXNARD BASIN	OXNARD PLAIN	81	0.8	66.5	3.5	1979	2	2019	2
01N22W11C02S	164	--	204	--	OXNARD BASIN	OXNARD PLAIN	77	39.6	3051.9	507.5	1979	2	2019	2
01N21W09D02S	131	--	251	--	OXNARD BASIN	OXNARD PLAIN	42	6.2	261.7	10.4	1979	2	2000	1
01N22W12C02S	318	--	450	--	OXNARD BASIN	OXNARD PLAIN	52	50.9	2644.2	124.7	1979	2	2019	2
01N22W12F01S	310	--	460	--	OXNARD BASIN	OXNARD PLAIN	82	39.0	3201.6	282.4	1979	1	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
01N22W12C03S	318	--	450	--	OXNARD BASIN	OXNARD PLAIN	66	141.8	9359.4	323.9	1979	2	2012	1
01N22W12H02S	596	--	988	--	OXNARD BASIN	OXNARD PLAIN	60	84.4	5065.4	291.7	1979	2	2009	1
01N21W07H01S	125	--	176	--	OXNARD BASIN	OXNARD PLAIN	81	37.2	3009.7	323.0	1979	2	2019	2
01N22W10H01S	131	--	253	--	OXNARD BASIN	OXNARD PLAIN	15	86.1	1291.0	191.8	1979	2	1997	2
01N22W11E01S	188	--	228	--	OXNARD BASIN	OXNARD PLAIN	15	59.0	885.2	120.0	1979	2	1997	2
01N21W07H04S	122	--	170	--	OXNARD BASIN	OXNARD PLAIN	81	26.0	2109.9	65.0	1979	2	2019	2
01N22W07H02S	260	--	380	--	OXNARD BASIN	OXNARD PLAIN	57	65.9	3754.6	268.3	1979	2	2008	1
01N21W08F02S	663	--	1163	--	OXNARD BASIN	OXNARD PLAIN	48	174.1	8355.8	587.6	1979	2	2003	1
01N21W09M03S	160	--	300	--	OXNARD BASIN	OXNARD PLAIN	82	1.4	118.7	3.0	1979	1	2019	2
01N21W09M04S	766	--	1270	--	OXNARD BASIN	OXNARD PLAIN	54	74.8	4038.5	283.4	1979	2	2006	1
01N22W12M01S	120	--	249	--	OXNARD BASIN	OXNARD PLAIN	82	69.5	5697.3	352.5	1979	1	2019	2
01N22W12J01S	152	--	183	--	OXNARD BASIN	OXNARD PLAIN	50	84.2	4208.3	568.1	1979	2	2004	2
01N21W07J01S	136	--	198	--	OXNARD BASIN	OXNARD PLAIN	15	32.6	489.0	84.0	1979	2	1997	2
01N22W12J03S	120	--	406	--	OXNARD BASIN	OXNARD PLAIN	54	69.6	3760.9	395.1	1979	2	2006	1
01N21W07J02S	590	--	1280	--	OXNARD BASIN	OXNARD PLAIN	70	190.5	13333.9	820.5	1985	1	2019	2
01N22W12P01S	169	--	210	--	OXNARD BASIN	OXNARD PLAIN	81	25.4	2056.7	238.5	1979	2	2019	2
01N22W10N03S	500	--	600	--	OXNARD BASIN	OXNARD PLAIN	81	4.7	383.5	8.9	1979	2	2019	2
01N22W12Q01S	145	--	385	--	OXNARD BASIN	OXNARD PLAIN	55	87.8	4827.9	236.8	1979	2	2006	2
01N22W12N03S	602	--	1122	--	OXNARD BASIN	OXNARD PLAIN	65	117.3	7625.7	304.8	1987	2	2019	2
01N21W07R02S	120	--	202	--	OXNARD BASIN	OXNARD PLAIN	81	1.2	99.8	9.0	1979	2	2019	2
01N22W08N01S	124	--	220	--	OXNARD BASIN	OXNARD PLAIN	45	19.6	880.6	102.5	1979	2	2001	2
01N22W12P02S	146	--	193	--	OXNARD BASIN	OXNARD PLAIN	81	31.8	2576.0	137.8	1979	2	2019	2
01N21W07P01S	80	--	154	--	OXNARD BASIN	OXNARD PLAIN	81	4.2	342.9	7.2	1979	2	2019	2
01N21W08R01S	603	--	1363	--	OXNARD BASIN	OXNARD PLAIN	77	315.1	24261.3	1038.4	1981	2	2019	2
01N21W18A04S	130	--	400	--	OXNARD BASIN	OXNARD PLAIN	81	58.0	4701.9	219.8	1979	2	2019	2
01N22W16D04S	520	--	940	--	OXNARD BASIN	OXNARD PLAIN	81	0.3	23.3	5.3	1979	2	2019	2
01N21W18A03S	114	--	186	--	OXNARD BASIN	OXNARD PLAIN	81	17.3	1402.6	134.0	1979	2	2019	2
01N22W13D02S	175	--	210	--	OXNARD BASIN	OXNARD PLAIN	16	85.3	1364.9	198.8	1979	2	1987	1
01N21W16B03S	640	--	900	--	OXNARD BASIN	PLEASANT VALLEY	81	60.6	4906.5	341.4	1979	2	2019	2
01N21W16B02S	257	--	377	--	OXNARD BASIN	PLEASANT VALLEY	54	1.6	86.2	2.2	1979	1	2006	1
01N21W16A04S	434	--	916	--	OXNARD BASIN	PLEASANT VALLEY	82	91.5	7503.8	433.2	1979	1	2019	2
01N22W13D03S	600	--	1200	--	OXNARD BASIN	OXNARD PLAIN	70	285.4	19975.8	1127.5	1985	1	2019	2
01N21W17C01S	128	--	470	--	OXNARD BASIN	OXNARD PLAIN	41	1.3	53.3	3.0	1999	2	2019	2
01N21W17B01S	175	--	450	--	OXNARD BASIN	OXNARD PLAIN	81	17.3	1404.8	124.0	1979	2	2019	2
01N21W17D02S	114	--	186	--	OXNARD BASIN	OXNARD PLAIN	81	15.4	1249.2	72.5	1979	2	2019	2
01N22W14D03S	150	--	220	--	OXNARD BASIN	OXNARD PLAIN	43	15.1	649.5	55.0	1979	2	2000	2
01N22W17C03S	520	--	1100	--	OXNARD BASIN	OXNARD PLAIN	73	199.4	14559.4	545.5	1983	2	2019	2
01N21W18D01S	380	--	660	--	OXNARD BASIN	OXNARD PLAIN	64	46.5	2978.7	99.8	1988	1	2019	2
01N22W15C01S	131	--	250	--	OXNARD BASIN	OXNARD PLAIN	68	0.2	12.3	8.0	1986	1	2019	2
01N22W14C02S	164	--	208	--	OXNARD BASIN	OXNARD PLAIN	18	19.7	354.0	78.0	1981	1	1997	2
01N21W17C02S	128	--	200	--	OXNARD BASIN	OXNARD PLAIN	81	8.7	704.8	42.8	1979	2	2019	2
01N22W13E04S	297	--	377	--	OXNARD BASIN	OXNARD PLAIN	81	1.1	90.6	8.2	1979	2	2019	2
01N21W18G02S	50	--	274	--	OXNARD BASIN	OXNARD PLAIN	81	85.9	6958.2	186.5	1979	2	2019	2
01N22W13H01S	124	--	199	--	OXNARD BASIN	OXNARD PLAIN	81	19.1	1544.0	86.9	1979	2	2019	2
01N22W13E03S	156	--	404	--	OXNARD BASIN	OXNARD PLAIN	81	43.3	3508.5	540.1	1979	2	2019	2
01N22W13H03S	155	--	335	--	OXNARD BASIN	OXNARD PLAIN	28	53.8	1505.4	153.8	1979	2	2019	2
01N22W13F01S	148	--	209	--	OXNARD BASIN	OXNARD PLAIN	81	64.9	5258.1	108.7	1979	2	2019	2
01N21W16E03S	314	--	602	--	OXNARD BASIN	OXNARD PLAIN	74	65.0	4807.6	225.5	1979	1	2015	2
01N21W17G02S	176	--	488	--	OXNARD BASIN	OXNARD PLAIN	81	34.2	2770.7	196.0	1979	2	2019	2
01N21W18J01S	132	--	180	--	OXNARD BASIN	OXNARD PLAIN	47	62.0	2912.8	404.2	1979	2	2019	2
01N21W17G03S	554	--	1104	--	OXNARD BASIN	OXNARD PLAIN	72	212.9	15329.7	583.7	1984	1	2019	2
01N21W15L02S	354	--	904	--	OXNARD BASIN	PLEASANT VALLEY	82	110.4	9048.8	573.9	1979	1	2019	2
01N21W18L04S	136	--	200	--	OXNARD BASIN	OXNARD PLAIN	53	47.7	2530.2	173.4	1979	2	2005	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
01N21W17E01S	119	--	335	--	OXNARD BASIN	OXNARD PLAIN	71	8.4	592.9	109.0	1979	2	2014	2
01N21W16M01S	240	--	1194	--	OXNARD BASIN	OXNARD PLAIN	81	80.3	6507.1	674.7	1979	2	2019	2
01N21W18L05S	383	--	923	--	OXNARD BASIN	OXNARD PLAIN	78	58.3	4545.4	170.0	1981	1	2019	2
01N22W13K01S	187	--	347	--	OXNARD BASIN	OXNARD PLAIN	81	2.5	204.6	5.0	1979	2	2019	2
01N22W13L01S	162	--	205	--	OXNARD BASIN	OXNARD PLAIN	17	34.6	588.6	60.0	1979	2	1997	2
01N22W13K02S	313	--	433	--	OXNARD BASIN	OXNARD PLAIN	81	23.0	1865.6	106.0	1979	2	2019	2
01N22W18L02S	496	--	781	--	OXNARD BASIN	OXNARD PLAIN	81	78.3	6346.2	307.7	1979	2	2019	2
01N21W18L03S	130	--	170	--	OXNARD BASIN	OXNARD PLAIN	81	3.8	310.9	7.8	1979	2	2019	2
01N22W13J04S	120	--	196	--	OXNARD BASIN	OXNARD PLAIN	81	44.6	3615.2	253.7	1979	2	2019	2
01N22W13J01S	91	--	200	--	OXNARD BASIN	OXNARD PLAIN	15	24.5	367.3	119.4	1979	2	1997	2
01N22W13K04S	310	--	430	--	OXNARD BASIN	OXNARD PLAIN	82	19.5	1600.2	91.2	1979	1	2019	2
01N22W13N02S	160	--	202	--	OXNARD BASIN	OXNARD PLAIN	70	15.3	1068.4	25.6	1985	1	2019	2
01N21W15P02S	520	--	1015	--	OXNARD BASIN	PLEASANT VALLEY	82	137.0	11230.4	398.4	1979	1	2019	2
01N21W18Q02S	150	--	190	--	OXNARD BASIN	OXNARD PLAIN	81	1.8	148.7	21.4	1979	2	2019	2
01N22W14R03S	155	--	220	--	OXNARD BASIN	OXNARD PLAIN	71	4.2	299.3	11.6	1979	2	2014	2
01N22W14R04S	185	--	235	--	OXNARD BASIN	OXNARD PLAIN	71	3.8	271.1	15.8	1979	2	2014	2
01N22W13Q02S	280	--	402	--	OXNARD BASIN	OXNARD PLAIN	80	8.1	650.8	18.6	1979	2	2019	2
01N22W13Q01S	100	--	215	--	OXNARD BASIN	OXNARD PLAIN	18	9.8	175.6	40.1	1979	2	1997	2
01N21W16P04S	600	--	1000	--	OXNARD BASIN	PLEASANT VALLEY	65	147.9	9615.2	538.2	1987	2	2019	2
01N21W16P03S	750	--	1050	--	OXNARD BASIN	PLEASANT VALLEY	82	53.3	4372.2	525.3	1979	1	2019	2
01N22W24C01S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	55	1.1	60.7	3.6	1979	2	2006	2
01N22W24C03S	330	--	450	--	OXNARD BASIN	OXNARD PLAIN	81	129.8	10509.8	375.8	1979	2	2019	2
01N22W24B03S	154	--	204	--	OXNARD BASIN	OXNARD PLAIN	14	2.3	32.2	3.8	1998	2	2019	2
01N22W24A01S	170	--	197	--	OXNARD BASIN	OXNARD PLAIN	81	6.9	562.7	57.2	1979	2	2019	2
01N21W19B01S	128	--	466	--	OXNARD BASIN	OXNARD PLAIN	81	96.4	7810.0	304.5	1979	2	2019	2
01N21W21D02S	150	--	400	--	OXNARD BASIN	OXNARD PLAIN	61	13.4	816.4	711.0	1979	1	2009	2
01N21W21D03S	312	--	400	--	OXNARD BASIN	OXNARD PLAIN	81	6.1	494.2	14.0	1979	2	2019	2
01N22W23A02S	156	--	201	--	OXNARD BASIN	OXNARD PLAIN	72	0.3	20.6	10.3	1979	2	2015	1
01N22W24D03S	315	--	450	--	OXNARD BASIN	OXNARD PLAIN	76	51.2	3894.0	144.0	1979	2	2017	1
01N22W24C02S	160	--	320	--	OXNARD BASIN	OXNARD PLAIN	25	0.3	6.9	3.3	2007	2	2019	2
01N21W22B02S	332	--	860	--	OXNARD BASIN	PLEASANT VALLEY	81	22.5	1825.7	235.9	1979	2	2019	2
01N22W21B03S	535	--	950	--	OXNARD BASIN	OXNARD PLAIN	63	0.8	50.2	46.6	1980	1	2019	2
01N21W19B03S	160	--	240	--	OXNARD BASIN	OXNARD PLAIN	76	2.2	168.7	5.3	1982	1	2019	2
01N21W20C05S	235	--	255	--	OXNARD BASIN	OXNARD PLAIN	81	81.0	6560.6	782.3	1979	2	2019	2
01N21W19C02S	440	--	800	--	OXNARD BASIN	OXNARD PLAIN	78	27.4	2139.4	153.8	1981	1	2019	2
01N21W19C01S	200	--	218	--	OXNARD BASIN	OXNARD PLAIN	38	7.8	298.0	83.4	1979	2	2015	2
01N22W24B02S	126	--	358	--	OXNARD BASIN	OXNARD PLAIN	5	97.5	487.4	125.8	1979	2	1997	2
01N22W24A03S	410	--	550	--	OXNARD BASIN	OXNARD PLAIN	64	24.9	1594.6	83.0	1987	1	2019	2
01N21W20D02S	112	--	435	--	OXNARD BASIN	OXNARD PLAIN	71	51.4	3646.2	234.0	1979	2	2014	2
01N22W19A01S	610	--	738	--	OXNARD BASIN	OXNARD PLAIN	81	79.0	6397.7	381.6	1979	2	2019	2
01N22W24B04S	444	--	1022	--	OXNARD BASIN	OXNARD PLAIN	77	91.1	7011.6	273.1	1981	2	2019	2
01N21W22C01S	443	--	1003	--	OXNARD BASIN	PLEASANT VALLEY	77	383.5	29532.8	1198.4	1981	2	2019	2
01N21W22A01S	115	--	391	--	OXNARD BASIN	PLEASANT VALLEY	81	115.7	9373.3	435.5	1979	2	2019	2
01N22W21B06S	720	--	1180	--	OXNARD BASIN	OXNARD PLAIN	81	1.7	136.8	14.8	1979	2	2019	2
01N22W23A05S	333	--	483	--	OXNARD BASIN	OXNARD PLAIN	81	74.5	6035.3	132.5	1979	2	2019	2
01N22W20E02S	940	--	974	--	OXNARD BASIN	OXNARD PLAIN	49	79.3	3886.4	184.2	1979	2	2003	2
01N21W23E02S	86	--	348	--	OXNARD BASIN	PLEASANT VALLEY	45	0.6	25.1	1.0	1979	2	2001	2
01N21W23G02S	220	--	625	--	OXNARD BASIN	PLEASANT VALLEY	75	0.8	62.1	37.8	1979	2	2019	2
01N21W23G01S	230	--	650	--	OXNARD BASIN	PLEASANT VALLEY	12	15.8	189.8	109.4	1979	2	1997	2
01N21W21H01S	138	--	622	--	OXNARD BASIN	PLEASANT VALLEY	82	2.6	217.0	53.8	1979	1	2019	2
01N22W24H01S	136	--	188	--	OXNARD BASIN	OXNARD PLAIN	81	1.7	140.7	8.2	1979	2	2019	2
01N21W21H02S	503	--	863	--	OXNARD BASIN	PLEASANT VALLEY	77	361.5	27834.8	1106.4	1981	2	2019	2
01N22W23J01S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	8	1.2	9.5	8.4	1979	2	1997	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
01N21W19L08S	400	--	540	--	OXNARD BASIN	OXNARD PLAIN	81	1.5	117.6	3.2	1979	2	2019	2
01N21W20K02S	600	--	840	--	OXNARD BASIN	OXNARD PLAIN	75	63.3	4744.5	147.1	1982	2	2019	2
01N21W19L07S	212	--	502	--	OXNARD BASIN	OXNARD PLAIN	68	33.7	2290.4	253.6	1979	2	2015	1
01N21W19K10S	140	--	228	--	OXNARD BASIN	OXNARD PLAIN	81	0.7	56.9	1.5	1979	2	2019	2
01N21W22L01S	505	--	996	--	OXNARD BASIN	PLEASANT VALLEY	19	20.4	388.0	103.4	1979	2	1997	2
01N22W24M03S	330	--	470	--	OXNARD BASIN	OXNARD PLAIN	82	164.6	13493.7	455.7	1979	1	2019	2
01N21W19K09S	120	--	172	--	OXNARD BASIN	OXNARD PLAIN	81	2.2	175.3	7.3	1979	2	2019	2
01N21W19K03S	141	--	180	--	OXNARD BASIN	OXNARD PLAIN	77	1.5	116.7	8.8	1979	2	2019	2
01N21W19K08S	174	--	200	--	OXNARD BASIN	OXNARD PLAIN	77	4.9	374.2	16.8	1979	2	2019	2
01N21W20L02S	123	--	214	--	OXNARD BASIN	OXNARD PLAIN	81	11.1	896.9	82.6	1979	2	2019	2
01N21W19J04S	115	--	275	--	OXNARD BASIN	OXNARD PLAIN	18	0.9	15.5	1.5	1979	2	1997	2
01N21W21K03S	265	--	624	--	OXNARD BASIN	OXNARD PLAIN	81	102.4	8295.2	324.9	1979	2	2019	2
01N21W21K01S	146	--	620	--	OXNARD BASIN	OXNARD PLAIN	81	1.3	106.8	2.0	1979	2	2019	2
01N21W21P01S	355	--	610	--	OXNARD BASIN	OXNARD PLAIN	45	83.0	3737.1	165.0	1979	2	2001	2
01N21W22P01S	400	--	872	--	OXNARD BASIN	PLEASANT VALLEY	60	116.2	6971.7	440.8	1979	2	2009	1
01N21W20P03S	--	--	--	416	OXNARD BASIN	OXNARD PLAIN	81	48.1	3895.5	358.5	1979	2	2019	2
01N21W20R01S	195	--	415	--	OXNARD BASIN	OXNARD PLAIN	42	43.6	1830.5	276.0	1979	2	2002	2
01N21W20N07S	120	--	190	--	OXNARD BASIN	OXNARD PLAIN	76	0.5	36.8	1.7	1981	2	2019	2
01N22W23N02S	120	--	240	--	OXNARD BASIN	OXNARD PLAIN	7	6.9	48.0	18.0	1979	2	1997	2
01N22W24P03S	458	--	618	--	OXNARD BASIN	OXNARD PLAIN	81	93.8	7596.1	340.7	1979	2	2019	2
01N21W20P02S	150	--	400	--	OXNARD BASIN	OXNARD PLAIN	12	41.3	496.1	98.9	2014	1	2019	2
01N21W29C02S	229	--	301	--	OXNARD BASIN	OXNARD PLAIN	27	5.0	135.0	22.4	1979	2	2019	1
01N21W28D02S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	75	0.2	15.2	1.0	1979	2	2019	2
01N22W25A03S	413	--	753	--	OXNARD BASIN	OXNARD PLAIN	76	114.7	8717.9	294.9	1982	1	2019	2
01N22W25A02S	196	--	493	--	OXNARD BASIN	OXNARD PLAIN	6	91.3	547.5	114.4	1979	2	1997	2
01N21W29B03S	190	--	415	--	OXNARD BASIN	OXNARD PLAIN	81	70.6	5717.2	207.5	1979	2	2019	2
01N21W30A02S	370	--	574	--	OXNARD BASIN	OXNARD PLAIN	81	124.8	10105.8	304.2	1979	2	2019	2
01N21W29B06S	480	--	740	--	OXNARD BASIN	OXNARD PLAIN	82	147.6	12099.3	439.5	1979	1	2019	2
01N21W30C03S	260	--	600	--	OXNARD BASIN	OXNARD PLAIN	81	53.3	4314.2	351.3	1979	2	2019	2
01N21W28D01S	463	--	923	--	OXNARD BASIN	OXNARD PLAIN	77	464.5	35769.3	1239.2	1981	2	2019	2
01N21W29D03S	210	--	552	--	OXNARD BASIN	OXNARD PLAIN	27	96.6	2607.6	210.0	1979	2	2019	2
01N21W28C01S	125	--	750	--	OXNARD BASIN	OXNARD PLAIN	55	53.3	2934.1	473.1	1979	2	2006	2
01N21W29C01S	128	--	343	--	OXNARD BASIN	OXNARD PLAIN	21	4.3	91.0	6.9	1979	2	1997	2
01N21W29C03S	131	--	242	--	OXNARD BASIN	OXNARD PLAIN	21	0.2	5.0	1.9	1979	2	1997	2
01N22W26H02S	471	--	591	--	OXNARD BASIN	OXNARD PLAIN	81	72.2	5848.7	139.0	1979	2	2019	2
01N21W28G03S	464	--	680	--	OXNARD BASIN	OXNARD PLAIN	81	54.4	4407.1	315.5	1979	2	2019	2
01N21W27E01S	250	--	752	--	OXNARD BASIN	PLEASANT VALLEY	81	90.5	7328.2	459.2	1979	2	2019	2
01N21W28G04S	450	--	810	--	OXNARD BASIN	OXNARD PLAIN	65	121.5	7894.6	531.2	1987	2	2019	2
01N21W28G01S	115	--	371	--	OXNARD BASIN	OXNARD PLAIN	81	48.6	3934.3	224.2	1979	1	2019	2
01N21W27F02S	270	--	736	--	OXNARD BASIN	PLEASANT VALLEY	54	54.4	2935.6	487.6	1979	2	2006	1
01N21W30F02S	170	--	478	--	OXNARD BASIN	OXNARD PLAIN	81	62.1	5026.6	115.3	1979	2	2019	2
01N21W28F02S	162	--	334	--	OXNARD BASIN	OXNARD PLAIN	21	0.2	4.8	1.6	1979	2	1997	2
01N21W29G01S	93	--	280	--	OXNARD BASIN	OXNARD PLAIN	78	0.8	60.4	2.0	1979	2	2019	2
01N21W26G01S	--	--	--	--	OXNARD BASIN	PLEASANT VALLEY	81	44.5	3601.3	217.2	1979	2	2019	2
01N21W28H02S	420	--	820	--	OXNARD BASIN	OXNARD PLAIN	66	138.5	9140.9	681.8	1987	1	2019	2
01N22W26K04S	560	--	650	--	OXNARD BASIN	OXNARD PLAIN	81	104.9	8495.0	344.7	1979	2	2019	2
01N21W28E01S	309	--	600	--	OXNARD BASIN	OXNARD PLAIN	20	0.1	1.4	1.4	1979	2	1997	2
01N21W25M01S	--	--	--	--	OXNARD BASIN	OUTSIDE	45	3.9	177.2	42.4	1979	2	2001	2
01N22W27H02S	470	--	630	--	OXNARD BASIN	OXNARD PLAIN	71	101.8	7229.6	235.8	1984	2	2019	2
01N22W26M03S	432	--	480	--	OXNARD BASIN	OXNARD PLAIN	81	188.7	15287.4	390.9	1979	2	2019	2
01N22W26K03S	524	--	620	--	OXNARD BASIN	OXNARD PLAIN	81	227.7	18446.6	452.9	1979	2	2019	2
01N22W25K01S	186	--	270	--	OXNARD BASIN	OXNARD PLAIN	32	0.7	23.0	1.0	2004	1	2019	2
01N22W25K02S	446	--	606	--	OXNARD BASIN	OXNARD PLAIN	81	201.9	16351.9	393.4	1979	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
01N22W25J02S	380	--	540	--	OXNARD BASIN	OXNARD PLAIN	70	189.5	13261.7	296.1	1985	1	2019	2
01N21W30K01S	160	--	459	--	OXNARD BASIN	OXNARD PLAIN	81	142.3	11525.9	330.2	1979	2	2019	2
01N22W25L02S	--	--	--	--	OXNARD BASIN	OXNARD PLAIN	49	0.9	43.6	1.0	1979	2	2003	2
01N21W29K02S	160	--	230	--	OXNARD BASIN	OXNARD PLAIN	81	1.1	91.9	2.2	1979	2	2019	2
01N21W28M01S	400	--	810	--	OXNARD BASIN	OXNARD PLAIN	81	198.5	16079.2	476.5	1979	2	2019	2
01N22W26Q01S	310	--	476	--	OXNARD BASIN	OXNARD PLAIN	81	98.7	7994.3	409.8	1979	2	2019	2
01N22W26P02S	523	--	652	--	OXNARD BASIN	OXNARD PLAIN	81	218.2	17676.8	434.3	1979	2	2019	2
01N22W35C01S	180	--	230	--	OXNARD BASIN	OXNARD PLAIN	66	0.2	11.0	1.0	1984	1	2019	2
01N22W36B02S	593	--	680	--	OXNARD BASIN	OXNARD PLAIN	81	189.1	15320.5	454.3	1979	2	2019	2
01N22W36B01S	600	--	700	--	OXNARD BASIN	OXNARD PLAIN	81	105.2	8517.2	462.0	1979	2	2019	2
01N21W32C01S	469	--	721	--	OXNARD BASIN	OXNARD PLAIN	69	37.7	2603.9	171.7	1983	2	2019	2
01N21W32A01S	650	--	750	--	OXNARD BASIN	OXNARD PLAIN	52	2.0	104.8	30.7	1994	1	2019	2
01N21W31A01S	190	--	230	--	OXNARD BASIN	OXNARD PLAIN	81	117.8	9542.6	1100.0	1979	2	2019	2
01N22W36H01S	437	--	572	--	OXNARD BASIN	OXNARD PLAIN	59	197.9	11678.4	638.6	1990	2	2019	2
01N22W35G01S	192	--	220	--	OXNARD BASIN	OXNARD PLAIN	11	10.6	117.0	20.2	1979	2	1997	2
01N22W36J03S	421	--	521	--	OXNARD BASIN	OXNARD PLAIN	81	158.3	12824.7	612.3	1979	2	2019	2
01N22W36L01S	126	--	208	--	OXNARD BASIN	OXNARD PLAIN	40	31.2	1248.6	196.8	1979	2	1999	2
01N21W31L01S	350	--	972	--	OXNARD BASIN	OXNARD PLAIN	52	0.1	3.0	3.0	1994	1	2019	2
01N22W36K04S	407	--	719	--	OXNARD BASIN	OXNARD PLAIN	72	226.2	16288.8	952.2	1980	1	2015	2
01N22W36K03S	155	--	210	--	OXNARD BASIN	OXNARD PLAIN	39	55.5	2163.5	354.2	1991	2	2010	2
02N21W30A01S	600	--	1240	--	OXNARD BASIN	OXNARD PLAIN	81	40.3	3263.8	196.8	1979	2	2019	2
02N22W14Q03S	200	--	400	--	OXNARD BASIN	OXNARD FOREBAY	82	180.0	14762.5	391.7	1979	1	2019	2
02N22W15B01S	352	--	442	--	OXNARD BASIN	OXNARD FOREBAY	26	99.7	2591.2	179.3	2006	1	2019	2
01N22W12R01S	430	--	1220	--	OXNARD BASIN	OXNARD PLAIN	59	165.2	9745.6	425.7	1990	2	2019	2
01N22W03F07S	120	--	220	--	OXNARD BASIN	OXNARD PLAIN	58	521.8	30264.1	2408.2	1991	1	2019	2
01N22W03F08S	120	--	220	--	OXNARD BASIN	OXNARD PLAIN	57	379.2	21615.8	2182.2	1991	2	2019	2
02N22W25J01S	400	--	820	--	OXNARD BASIN	OXNARD PLAIN	52	67.6	3516.2	108.9	1993	2	2019	2
02N22W14J03S	600	--	760	--	OXNARD BASIN	OXNARD FOREBAY	26	3.9	100.3	22.4	1991	1	2003	2
02N22W13L06S	120	--	520	--	OXNARD BASIN	OXNARD FOREBAY	57	13.1	746.5	23.8	1991	2	2019	2
02N22W12N08S	160	--	560	--	OXNARD BASIN	OXNARD FOREBAY	58	10.9	632.6	27.2	1991	1	2019	2
02N22W12R03S	320	--	680	--	OXNARD BASIN	OXNARD FOREBAY	79	18.1	1433.3	66.1	1979	2	2019	2
02N22W12B07S	130	--	350	--	OXNARD BASIN	OXNARD FOREBAY	35	14.1	495.0	16.8	1986	2	2003	2
01N22W05K03S	100	--	215	--	OXNARD BASIN	OXNARD PLAIN	26	55.8	1451.5	237.6	1991	1	2003	2
01N22W11A03S	150	--	197	--	OXNARD BASIN	OXNARD PLAIN	57	0.6	34.7	1.0	1991	2	2019	2
02N21W07F01S	80	--	400	--	OXNARD BASIN	OXNARD FOREBAY	58	90.3	5234.9	220.0	1991	1	2019	2
02N21W07N02S	565	--	965	--	OXNARD BASIN	OXNARD FOREBAY	60	101.3	6078.7	608.8	1990	1	2019	2
02N21W18Q03S	400	--	1000	--	OXNARD BASIN	OXNARD PLAIN	57	227.9	12990.9	424.7	1991	1	2019	2
02N22W13L07S	160	--	640	--	OXNARD BASIN	OXNARD FOREBAY	56	101.1	5661.0	197.6	1992	1	2019	2
02N22W15M01S	160	--	400	--	OXNARD BASIN	OXNARD FOREBAY	54	98.5	5318.3	175.8	1993	1	2019	2
02N22W19P01S	160	--	300	--	OXNARD BASIN	OXNARD PLAIN	47	77.8	3657.2	185.4	1996	2	2019	2
02N22W23D06S	130	--	370	--	OXNARD BASIN	OXNARD FOREBAY	57	34.1	1941.0	242.2	1991	2	2019	2
02N22W29D05S	185	--	255	--	OXNARD BASIN	OXNARD PLAIN	57	21.5	1223.6	198.3	1991	2	2019	2
02N22W31D02S	220	--	400	--	OXNARD BASIN	OXNARD PLAIN	55	157.6	8665.3	298.4	1992	2	2019	2
02N22W31R05S	320	--	440	--	OXNARD BASIN	OXNARD PLAIN	81	78.4	6352.1	175.2	1979	1	2019	2
02N22W32C04S	220	--	310	--	OXNARD BASIN	OXNARD PLAIN	59	107.0	6315.7	220.0	1990	2	2019	2
02N22W35C04S	441	--	741	--	OXNARD BASIN	OXNARD PLAIN	37	21.8	807.2	87.3	1993	2	2011	2
01N21W08D05S	700	--	1200	--	OXNARD BASIN	OXNARD PLAIN	55	97.7	5371.0	373.7	1979	2	2006	2
01N21W09C04S	720	--	1120	--	OXNARD BASIN	PLEASANT VALLEY	57	59.2	3374.8	209.2	1991	2	2019	2
01N21W15M01S	492	--	892	--	OXNARD BASIN	PLEASANT VALLEY	64	154.0	9855.7	332.5	1988	1	2019	2
01N21W19F01S	380	--	490	--	OXNARD BASIN	OXNARD PLAIN	58	4.9	282.0	16.0	1991	1	2019	2
01N21W19J05S	600	--	800	--	OXNARD BASIN	OXNARD PLAIN	81	14.1	1139.8	70.9	1979	2	2019	2
01N21W19J06S	520	--	820	--	OXNARD BASIN	OXNARD PLAIN	60	104.2	6250.4	225.2	1990	1	2019	2
01N21W30L01S	400	--	520	--	OXNARD BASIN	OXNARD PLAIN	51	62.0	3163.5	241.7	1994	2	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
01N22W23R02S	460	--	660	--	OXNARD BASIN	OXNARD PLAIN	57	60.5	3448.5	117.5	1991	2	2019	2
01N22W24Q01S	420	--	600	--	OXNARD BASIN	OXNARD PLAIN	59	46.1	2718.3	125.6	1990	2	2019	2
01N22W25B04S	441	--	661	--	OXNARD BASIN	OXNARD PLAIN	55	120.5	6625.3	220.6	1992	2	2019	2
01N22W26Q03S	420	--	560	--	OXNARD BASIN	OXNARD PLAIN	57	165.8	9449.3	400.2	1991	2	2019	2
02N21W20M04S	760	--	1100	--	OXNARD BASIN	OXNARD PLAIN	57	89.6	5105.6	398.3	1991	2	2019	2
01N21W19P03S	750	--	900	--	OXNARD BASIN	OXNARD PLAIN	53	47.6	2525.0	102.4	1993	2	2019	2
01N21W19N02S	400	--	1020	--	OXNARD BASIN	OXNARD PLAIN	19	85.0	1615.2	156.8	1993	2	2002	2
02N22W02R05S	106	--	520	--	OXNARD BASIN	OXNARD FOREBAY	71	629.6	44704.5	1449.8	1984	2	2019	2
02N22W22Q05S	460	--	640	--	OXNARD BASIN	OXNARD FOREBAY	18	3.8	67.9	14.7	2011	1	2019	2
02N22W12B08S	115	--	355	--	OXNARD BASIN	OXNARD FOREBAY	40	0.8	31.0	4.6	1999	2	2019	2
01N21W16M03S	620	--	1100	--	OXNARD BASIN	OXNARD PLAIN	32	138.5	4433.3	324.6	2004	1	2019	2
01N21W16N01S	418	--	893	--	OXNARD BASIN	OXNARD PLAIN	43	261.5	11243.9	499.1	1998	2	2019	2
02N22W13H02S	100	--	500	--	OXNARD BASIN	OXNARD FOREBAY	46	327.2	15049.7	602.4	1997	1	2019	2
02N22W19J03S	410	--	690	--	OXNARD BASIN	OXNARD PLAIN	46	167.4	7698.2	504.8	1997	1	2019	2
02N22W25L05S	400	--	820	--	OXNARD BASIN	OXNARD PLAIN	46	96.4	4435.9	138.5	1997	1	2019	2
02N21W32C01S	84	--	200	--	OXNARD BASIN	OXNARD PLAIN	46	32.0	1474.0	181.0	1997	1	2019	2
02N22W23C05S	140	--	310	--	OXNARD BASIN	OXNARD FOREBAY	38	1481.7	56305.5	3123.0	2001	1	2019	2
02N22W13N04S	350	--	620	--	OXNARD BASIN	OXNARD FOREBAY	39	25.2	982.8	272.6	2000	2	2019	2
02N22W13K04S	100	--	500	--	OXNARD BASIN	OXNARD FOREBAY	39	118.3	4613.8	255.1	2000	2	2019	2
01N21W17B02S	600	--	1100	--	OXNARD BASIN	OXNARD PLAIN	18	192.7	3468.9	394.4	2011	1	2019	2
01N21W21N02S	120	--	400	--	OXNARD BASIN	OXNARD PLAIN	34	65.6	2230.3	121.3	2003	1	2019	2
01N22W12C04S	134	--	214	--	OXNARD BASIN	OXNARD PLAIN	18	2.8	50.1	4.2	2011	1	2019	2
02N22W23Q04S	301	--	501	--	OXNARD BASIN	OXNARD FOREBAY	32	172.6	5523.7	320.9	2004	1	2019	2
01N21W20B01S	540	--	930	--	OXNARD BASIN	OXNARD PLAIN	21	273.2	5736.3	397.5	2009	2	2019	2
02N21W20Q05S	600	--	950	--	OXNARD BASIN	WEST LAS POSAS	37	118.3	4378.9	230.4	2000	1	2019	2
01N21W09D03S	120	--	260	--	OXNARD BASIN	OXNARD PLAIN	39	9.0	349.6	134.6	2000	2	2019	2
01N21W23E03S	140	--	370	--	OXNARD BASIN	PLEASANT VALLEY	36	1.1	40.6	1.2	2002	1	2019	2
02N22W29D08S	200	--	290	--	OXNARD BASIN	OXNARD PLAIN	20	32.6	651.1	49.8	2010	1	2019	2
02N22W32D01S	210	--	480	--	OXNARD BASIN	OXNARD PLAIN	33	74.6	2463.2	139.5	2003	2	2019	2
02N22W35K03S	361	--	711	--	OXNARD BASIN	OXNARD PLAIN	20	112.8	2256.6	155.4	2010	1	2019	2
02N21W19P01S	641	--	1201	--	OXNARD BASIN	OXNARD PLAIN	32	110.6	3540.4	320.6	2004	1	2019	2
02N21W29E03S	640	--	1200	--	OXNARD BASIN	OXNARD PLAIN	33	113.0	3728.0	260.6	2003	2	2019	2
02N21W29E02S	640	--	1080	--	OXNARD BASIN	OXNARD PLAIN	25	64.9	1623.7	161.9	2007	2	2019	2
02N21W32J03S	570	--	990	--	OXNARD BASIN	PLEASANT VALLEY	32	7.9	253.1	60.0	2004	1	2019	2
01N21W22K02S	403	--	883	--	OXNARD BASIN	PLEASANT VALLEY	36	84.4	3039.9	247.0	2002	1	2019	2
01N21W19K11S	280	--	400	--	OXNARD BASIN	OXNARD PLAIN	16	0.5	8.8	2.3	2011	1	2019	2
01N21W08F03S	700	--	1170	--	OXNARD BASIN	OXNARD PLAIN	32	44.8	1433.6	189.5	2003	2	2019	2
01N21W20P04S	160	--	300	--	OXNARD BASIN	OXNARD PLAIN	30	40.1	1201.6	59.8	2005	1	2019	2
01N21W30C04S	130	--	390	--	OXNARD BASIN	OXNARD PLAIN	30	88.4	2651.6	145.8	2005	1	2019	2
02N22W28A03S	100	--	180	--	OXNARD BASIN	OXNARD PLAIN	34	2.9	99.6	19.4	2003	1	2019	2
01N22W26D05S	480	--	680	--	OXNARD BASIN	OXNARD PLAIN	32	363.5	11630.9	693.3	2004	1	2019	2
01N21W33A01S	227	--	567	--	OXNARD BASIN	OXNARD PLAIN	23	213.7	4915.4	564.4	2008	2	2019	2
01N21W19Q01S	170	--	390	--	OXNARD BASIN	OXNARD PLAIN	31	69.8	2163.5	108.6	2004	2	2019	2
01N21W28H03S	305	--	805	--	OXNARD BASIN	OXNARD PLAIN	32	176.1	5634.0	341.2	2004	1	2019	2
02N23W36C05S	200	--	445	--	OXNARD BASIN	OXNARD PLAIN	30	6.0	180.5	13.5	2005	1	2019	2
01N22W13E05S	600	--	1060	--	OXNARD BASIN	OXNARD PLAIN	80	60.1	4807.2	172.3	1980	1	2019	2
02N22W30J07S	295	--	485	--	OXNARD BASIN	OXNARD PLAIN	31	131.7	4082.3	430.3	2004	2	2019	2
02N22W36E02S	475	--	580	--	OXNARD BASIN	OXNARD PLAIN	27	489.4	13213.3	1470.7	2006	2	2019	2
02N22W36E03S	360	--	420	--	OXNARD BASIN	OXNARD PLAIN	27	479.0	12934.3	1879.4	2006	2	2019	2
02N22W36E04S	195	--	285	--	OXNARD BASIN	OXNARD PLAIN	27	106.7	2880.9	800.2	2006	2	2019	2
02N22W36E05S	130	--	170	--	OXNARD BASIN	OXNARD PLAIN	27	63.5	1713.7	650.9	2006	2	2019	2
02N22W01J01S	40	--	100	--	OXNARD BASIN	OXNARD FOREBAY	30	3.7	110.3	4.8	2005	1	2019	2
02N22W01J02S	60	--	160	--	OXNARD BASIN	OXNARD FOREBAY	30	2.2	64.6	4.8	2005	1	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N21W20M05S	820	--	1160	--	OXNARD BASIN	OXNARD PLAIN	30	194.7	5841.6	558.1	2005	1	2019	2
02N21W07L07S	70	--	250	--	OXNARD BASIN	OXNARD FOREBAY	26	100.1	2602.0	660.0	2007	1	2019	2
02N21W07M04S	100	--	350	--	OXNARD BASIN	OXNARD FOREBAY	26	127.0	3302.3	682.2	2007	1	2019	2
02N22W12J04S	100	--	320	--	OXNARD BASIN	OXNARD FOREBAY	26	133.7	3476.2	708.2	2007	1	2019	2
02N22W12H01S	100	--	365	--	OXNARD BASIN	OXNARD FOREBAY	26	106.6	2771.8	531.1	2007	1	2019	2
01N21W17K01S	540	--	940	--	OXNARD BASIN	OXNARD PLAIN	12	166.5	1997.5	202.5	2014	1	2019	2
01N21W19P05S	303	--	693	--	OXNARD BASIN	OXNARD PLAIN	34	76.3	2593.5	504.3	2003	1	2019	2
02N21W20M06S	625	--	825	--	OXNARD BASIN	OXNARD PLAIN	24	89.0	2135.7	267.3	2008	1	2019	2
01N22W12Q02S	155	--	395	--	OXNARD BASIN	OXNARD PLAIN	13	58.6	761.9	98.4	2007	2	2013	2
01N21W21H03S	540	--	620	--	OXNARD BASIN	PLEASANT VALLEY	24	11.5	275.6	21.5	2008	1	2019	2
01N21W16A05S	620	--	770	--	OXNARD BASIN	PLEASANT VALLEY	27	208.8	5636.8	361.5	2006	2	2019	2
02N21W30F02S	630	--	1200	--	OXNARD BASIN	OXNARD PLAIN	30	109.3	3279.3	206.7	2005	1	2019	2
02N21W18H13S	510	--	590	--	OXNARD BASIN	OXNARD PLAIN	20	0.9	17.4	2.4	2010	1	2019	2
02N21W29N05S	115	--	146	--	OXNARD BASIN	OXNARD PLAIN	79	0.6	44.2	2.7	1979	2	2019	2
02N21W30R04S	120	--	140	--	OXNARD BASIN	OXNARD PLAIN	79	0.5	41.4	2.1	1979	2	2019	2
01N22W12A02S	712	--	962	--	OXNARD BASIN	OXNARD PLAIN	22	150.4	3309.4	369.8	2009	1	2019	2
02N22W23G04S	115	--	340	--	OXNARD BASIN	OXNARD FOREBAY	21	571.1	11993.9	1671.8	2009	2	2019	2
02N22W13B01S	420	--	790	--	OXNARD BASIN	OXNARD FOREBAY	21	149.5	3139.5	281.9	2009	2	2019	2
01N22W03F14S	135	--	235	--	OXNARD BASIN	OXNARD PLAIN	23	301.6	6935.7	1428.7	2008	2	2019	2
01N22W03F13S	120	--	230	--	OXNARD BASIN	OXNARD PLAIN	21	495.5	10406.4	1604.5	2009	2	2019	2
01N22W03F12S	120	--	230	--	OXNARD BASIN	OXNARD PLAIN	23	751.3	17280.7	1765.7	2008	2	2019	2
02N22W12E05S	160	--	480	--	OXNARD BASIN	OXNARD FOREBAY	14	10.4	146.1	22.6	2013	1	2019	2
02N22W25Q05S	220	--	390	--	OXNARD BASIN	OXNARD PLAIN	20	197.2	3944.8	310.4	2010	1	2019	2
01N21W20K03S	600	--	880	--	OXNARD BASIN	OXNARD PLAIN	57	125.7	7162.1	334.4	1991	2	2019	2
02N22W24A02S	100	--	240	--	OXNARD BASIN	OXNARD PLAIN	20	158.1	3162.7	259.0	2010	1	2019	2
02N22W12M03S	40	--	300	--	OXNARD BASIN	OXNARD FOREBAY	18	37.2	670.4	66.1	2011	1	2019	2
01N21W28H04S	250	--	740	--	OXNARD BASIN	PLEASANT VALLEY	17	237.6	4038.6	482.2	2011	2	2019	2
01N22W12C05S	770	--	1015	--	OXNARD BASIN	OXNARD PLAIN	15	181.0	2715.5	276.2	2012	2	2019	2
01N22W12Q03S	150	--	360	--	OXNARD BASIN	OXNARD PLAIN	14	283.1	3962.9	450.0	2013	1	2019	2
02N21W07G01S	182	--	452	--	OXNARD BASIN	OXNARD FOREBAY	12	93.0	1116.0	174.9	2014	1	2019	2
01N22W11D03S	130	--	270	--	OXNARD BASIN	OXNARD PLAIN	9	11.0	99.0	28.9	2015	2	2019	2
02N22W12R05S	340	--	715	--	OXNARD BASIN	OXNARD FOREBAY	10	17.7	177.0	33.2	2015	1	2019	2
02N22W23C06S	150	--	290	--	OXNARD BASIN	OXNARD FOREBAY	10	662.8	6627.7	855.8	2015	1	2019	2
01N21W26M01S	140	--	380	--	OXNARD BASIN	PLEASANT VALLEY	9	5.1	46.0	12.7	2015	2	2019	2
01N22W01M04S	125	--	300	--	OXNARD BASIN	OXNARD PLAIN	9	38.9	349.9	149.2	2015	2	2019	2
01N22W11A05S	130	--	350	--	OXNARD BASIN	OXNARD PLAIN	9	23.9	215.4	50.0	2015	2	2019	2
01N21W18Q03S	100	--	200	--	OXNARD BASIN	OXNARD PLAIN	11	40.4	444.8	58.8	2014	2	2019	2
02N21W29M02S	630	--	1130	--	OXNARD BASIN	OXNARD PLAIN	9	207.4	1866.6	304.1	2015	2	2019	2
02N21W07K03S	377	--	842	--	OXNARD BASIN	OXNARD FOREBAY	12	163.6	1963.4	446.2	2014	1	2019	2
02N21W29N06S	105	--	300	--	OXNARD BASIN	OXNARD PLAIN	9	4.7	42.1	22.2	2015	2	2019	2
01N21W09M05S	860	--	1160	--	OXNARD BASIN	OXNARD PLAIN	9	138.8	1249.5	239.4	2015	2	2019	2
02N21W19G03S	575	--	785	--	OXNARD BASIN	OXNARD PLAIN	11	190.9	2100.4	362.2	2014	2	2019	2
01N22W11C03S	125	--	250	--	OXNARD BASIN	OXNARD PLAIN	10	66.2	661.7	120.7	2015	1	2019	2
01N21W06C02S	105	--	130	--	OXNARD BASIN	OXNARD PLAIN	74	62.7	4639.1	193.0	1979	2	2019	2
02N20W19F04S	459	--	759	--	PLEASANT VALLEY	PLEASANT VALLEY	73	706	51,542	1,383	1983	2	2019	2
02N20W20E02S	479	--	875	--	PLEASANT VALLEY	PLEASANT VALLEY	48	43.2	2,075	335	1983	2	2013	2
02N20W19E01S	564	--	864	--	PLEASANT VALLEY	PLEASANT VALLEY	72	196.7	14,164	410	1983	2	2019	2
02N20W19L05S	467	--	830	--	PLEASANT VALLEY	PLEASANT VALLEY	73	263	19,197	1,068	1983	2	2019	2
02N20W22K01S	162	--	450	--	PLEASANT VALLEY	SANTA ROSA	37	19.6	724	71.6	1994	1	2013	2
02N20W19M05S	654	--	990	--	PLEASANT VALLEY	PLEASANT VALLEY	55	120.8	6,643	487	1983	2	2018	2
02N20W19J02S	604	--	876	--	PLEASANT VALLEY	PLEASANT VALLEY	27	250.0	6,751	506.4	1983	2	1997	2
02N21W28P02S	--	--	--	--	PLEASANT VALLEY	PLEASANT VALLEY	9	40	360	96	1983	2	2013	2
02N21W34C01S	700	--	890	--	PLEASANT VALLEY	PLEASANT VALLEY	68	832	56,551	1,246	1986	1	2019	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
02N21W34D02S	712	--	900	--	PLEASANT VALLEY	PLEASANT VALLEY	43	6.3	272	35.0	1979	2	2000	2
02N21W35D02S	644	--	810	--	PLEASANT VALLEY	PLEASANT VALLEY	14	56.2	787	134.1	1979	2	1997	2
02N20W31F03S	451	--	970	--	PLEASANT VALLEY	PLEASANT VALLEY	16	92.9	1,487.0	254.4	1993	1	2004	2
02N21W36G03S	610	--	1,060	--	PLEASANT VALLEY	PLEASANT VALLEY	30	151	4,539	367	1987	2	2003	2
02N21W34H02S	160	--	861	--	PLEASANT VALLEY	PLEASANT VALLEY	49	6	316	80	1979	2	2004	1
02N21W36G02S	--	--	--	--	PLEASANT VALLEY	PLEASANT VALLEY	37	41.6	1,538	217	1983	2	2002	2
02N21W34G01S	403	--	1,463	--	PLEASANT VALLEY	PLEASANT VALLEY	77	455.6	35,079.4	1,589.5	1981	2	2019	2
02N21W35J01S	169	--	980	--	PLEASANT VALLEY	PLEASANT VALLEY	72	0.4	32.0	1.0	1979	2	2015	1
02N21W35M01S	717	--	1113	--	PLEASANT VALLEY	PLEASANT VALLEY	43	33.0	1420.4	288.6	1979	2	2000	2
02N21W36L02S	618	--	1242	--	PLEASANT VALLEY	PLEASANT VALLEY	81	3.8	309.8	70.9	1979	2	2019	2
02N21W34L02S	252	--	1000	--	PLEASANT VALLEY	PLEASANT VALLEY	37	36.5	1350.9	80.9	1990	1	2008	1
02N21W34J02S	532	--	892	--	PLEASANT VALLEY	PLEASANT VALLEY	76	19.4	1476.4	158.8	1982	1	2019	2
02N21W33P02S	801	--	1149	--	PLEASANT VALLEY	PLEASANT VALLEY	13	134.6	1749.2	458.4	1982	2	1997	2
02N21W33R02S	801	--	1051	--	PLEASANT VALLEY	PLEASANT VALLEY	60	71.3	4277.1	770.4	1990	1	2019	2
02N21W36N01S	280	--	437	--	PLEASANT VALLEY	PLEASANT VALLEY	34	11.5	390.6	96.6	2003	1	2019	2
01N21W03D01S	336	--	1300	--	PLEASANT VALLEY	PLEASANT VALLEY	81	69.4	5622.8	449.4	1979	2	2019	2
01N21W03C01S	956	--	1216	--	PLEASANT VALLEY	PLEASANT VALLEY	19	43.2	820.8	113.5	1979	2	1989	2
01N21W01D05S	313	--	440	--	PLEASANT VALLEY	PLEASANT VALLEY	49	42.0	2059.5	205.3	1979	2	2003	2
01N21W01C02S	224	--	504	--	PLEASANT VALLEY	PLEASANT VALLEY	81	136.8	11080.5	639.5	1979	2	2019	2
01N21W01B04S	820	--	1150	--	PLEASANT VALLEY	PLEASANT VALLEY	48	59.7	2865.2	377.0	1983	2	2013	2
01N21W01B01S	--	--	--	--	PLEASANT VALLEY	PLEASANT VALLEY	59	207.4	12236.2	1499.1	1984	1	2014	2
01N21W01D02S	107	--	437	--	PLEASANT VALLEY	PLEASANT VALLEY	5	93.9	469.3	122.6	1979	2	1997	2
01N21W01D01S	350	--	371	--	PLEASANT VALLEY	PLEASANT VALLEY	81	1.1	92.2	5.0	1979	2	2019	2
01N21W01B03S	--	--	--	--	PLEASANT VALLEY	PLEASANT VALLEY	14	71.9	1006.8	201.7	1979	2	1997	2
01N21W04C01S	613	--	1003	--	PLEASANT VALLEY	PLEASANT VALLEY	19	26.9	511.9	135.5	1979	2	2019	2
01N20W06E01S	240	--	550	--	PLEASANT VALLEY	PLEASANT VALLEY	27	96.5	2604.2	708.7	2000	1	2013	2
01N21W02J01S	--	--	--	--	PLEASANT VALLEY	PLEASANT VALLEY	81	0.6	48.6	1.0	1979	2	2019	2
01N21W02J02S	178	--	373	--	PLEASANT VALLEY	PLEASANT VALLEY	81	51.6	4178.4	348.9	1979	2	2019	2
01N21W01F02S	325	--	374	--	PLEASANT VALLEY	PLEASANT VALLEY	60	60.4	3622.0	458.6	1986	1	2015	2
01N21W01J01S	240	--	550	--	PLEASANT VALLEY	PLEASANT VALLEY	18	55.5	999.5	152.5	2004	1	2019	2
01N21W03K01S	403	--	1433	--	PLEASANT VALLEY	PLEASANT VALLEY	77	568.5	43774.0	1428.3	1981	2	2019	2
01N21W04K01S	400	--	1220	--	PLEASANT VALLEY	PLEASANT VALLEY	77	192.1	14790.6	870.8	1981	2	2019	2
01N21W03J01S	658	--	1090	--	PLEASANT VALLEY	PLEASANT VALLEY	67	124.9	8370.7	584.1	1979	2	2019	2
01N21W02J03S	304	--	707	--	PLEASANT VALLEY	PLEASANT VALLEY	81	54.4	4403.7	133.7	1979	2	2019	2
01N21W03N02S	688	--	883	--	PLEASANT VALLEY	PLEASANT VALLEY	19	10.5	199.3	47.4	1980	1	1997	2
01N21W01N02S	267	--	435	--	PLEASANT VALLEY	PLEASANT VALLEY	7	19.0	132.7	62.5	1979	2	1997	2
01N21W03N01S	712	--	1036	--	PLEASANT VALLEY	PLEASANT VALLEY	74	110.0	8142.0	310.3	1979	2	2016	1
01N21W03P02S	430	--	980	--	PLEASANT VALLEY	PLEASANT VALLEY	81	133.1	10784.8	499.3	1979	2	2019	2
01N21W03R01S	443	--	1013	--	PLEASANT VALLEY	PLEASANT VALLEY	77	456.3	35134.6	1001.5	1981	2	2019	2
01N21W12C04S	250	--	400	--	PLEASANT VALLEY	PLEASANT VALLEY	16	6.9	110.3	32.3	1979	2	1997	2
01N21W10A02S	240	--	320	--	PLEASANT VALLEY	PLEASANT VALLEY	80	0.5	42.5	1.4	1980	1	2019	2
01N21W11D02S	284	--	1000	--	PLEASANT VALLEY	PLEASANT VALLEY	81	34.6	2799.3	241.4	1979	2	2019	2
01N21W12D01S	253	--	414	--	PLEASANT VALLEY	PLEASANT VALLEY	81	124.6	10089.8	404.5	1979	2	2019	2
01N21W11G04S	270	--	730	--	PLEASANT VALLEY	PLEASANT VALLEY	41	118.6	4861.4	383.7	1979	2	1999	2
01N21W12F01S	--	--	--	--	PLEASANT VALLEY	PLEASANT VALLEY	14	0.5	7.4	4.2	1980	1	1997	2
01N21W09J01S	474	--	954	--	PLEASANT VALLEY	PLEASANT VALLEY	45	148.6	6684.9	432.0	1979	2	2001	2
01N21W10G01S	420	--	1000	--	PLEASANT VALLEY	PLEASANT VALLEY	77	501.9	38648.0	1191.3	1981	2	2019	2
01N21W12E02S	--	--	--	--	PLEASANT VALLEY	PLEASANT VALLEY	14	0.9	12.5	2.0	2013	1	2019	2
01N21W11P01S	403	--	843	--	PLEASANT VALLEY	PLEASANT VALLEY	80	80.4	6432.7	383.1	1980	1	2019	2
01N21W15D02S	383	--	1083	--	PLEASANT VALLEY	PLEASANT VALLEY	77	347.9	26785.6	1072.2	1981	2	2019	2
01N21W15B01S	336	--	852	--	PLEASANT VALLEY	PLEASANT VALLEY	45	58.6	2635.6	263.6	1979	2	2001	2
01N21W14C01S	270	--	880	--	PLEASANT VALLEY	PLEASANT VALLEY	25	138.9	3471.9	368.7	1979	2	1991	2
01N21W15C02S	--	--	--	--	PLEASANT VALLEY	PLEASANT VALLEY	22	0.4	8.8	3.6	1979	2	1997	2

Table 3-9. Well Information

Well ID	Reported Depth to Top of Screen (ft bgs)	Estimated Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Estimated Depth to Bottom of Screen (ft bgs)	DWR (2019) Basin ID	Traditional Basin	Number of Semi-Annual Pumping Records	Average Semi-Annual Reported Pumping (acre-ft)	Total Pumping Volume (acre-ft)	Maximum Semi-Annual Reported Pumping (acre-ft)	First Year of Well Records	First Semi-Annual Period of Well Records	Last Year of Well Records	Last Semi-Annual Period of Well Records
01N21W15H01S	120	--	200	--	PLEASANT VALLEY	PLEASANT VALLEY	71	0.5	38.5	1.0	1984	2	2019	2
01N21W15J04S	377	--	857	--	PLEASANT VALLEY	PLEASANT VALLEY	72	97.3	7002.1	581.3	1982	1	2019	2
01N21W23A02S	38	--	108	--	PLEASANT VALLEY	PLEASANT VALLEY	69	0.3	22.8	1.0	1979	2	2015	2
01N21W23H01S	--	--	--	--	PLEASANT VALLEY	PLEASANT VALLEY	69	17.8	1228.9	176.5	1979	2	2015	2
01N21W04A02S	800	--	1160	--	PLEASANT VALLEY	PLEASANT VALLEY	50	45.4	2270.6	287.0	1991	1	2015	2
01N21W15B02S	340	--	880	--	PLEASANT VALLEY	PLEASANT VALLEY	56	82.3	4606.7	247.0	1992	1	2019	2
02N21W35P01S	285	--	325	--	PLEASANT VALLEY	PLEASANT VALLEY	57	0.5	30.2	1.0	1991	2	2019	2
02N21W35M02S	700	--	1100	--	PLEASANT VALLEY	PLEASANT VALLEY	44	6.3	277.4	123.0	1998	1	2019	2
02N20W19M06S	540	--	800	--	PLEASANT VALLEY	PLEASANT VALLEY	48	192.8	9253.5	344.4	1993	2	2019	1
02N20W29B02S	395	--	740	--	PLEASANT VALLEY	PLEASANT VALLEY	47	373.0	17531.4	701.7	1996	1	2019	2
02N21W26R02S	157	--	491	--	PLEASANT VALLEY	PLEASANT VALLEY	72	19.9	1435.3	58.6	1983	2	2019	2
02N21W28Q04S	510	--	1140	--	PLEASANT VALLEY	PLEASANT VALLEY	43	62.0	2666.4	164.1	1991	2	2013	2
01N21W11B03S	--	--	--	--	PLEASANT VALLEY	PLEASANT VALLEY	46	118.7	5460.8	242.4	1997	1	2019	2
01N21W09J03S	480	--	960	--	PLEASANT VALLEY	PLEASANT VALLEY	47	388.4	18253.6	657.0	1996	2	2019	2
01N21W02J04S	310	--	450	--	PLEASANT VALLEY	PLEASANT VALLEY	14	0.5	7.4	1.0	2013	1	2019	2
01N21W03L03S	674	--	990	--	PLEASANT VALLEY	PLEASANT VALLEY	31	120.2	3727.6	273.8	2004	2	2019	2
01N21W01A03S	260	--	390	--	PLEASANT VALLEY	PLEASANT VALLEY	59	101.6	5994.1	217.0	1983	2	2019	2
02N20W19H01S	500	--	880	--	PLEASANT VALLEY	PLEASANT VALLEY	29	111.9	3244.5	393.3	1994	2	2013	2
02N20W20M05S	480	--	680	--	PLEASANT VALLEY	PLEASANT VALLEY	53	83.0	4401.6	148.3	1993	1	2019	2
02N21W36G04S	600	--	1060	--	PLEASANT VALLEY	PLEASANT VALLEY	23	98.7	2270.9	225.9	1995	2	2013	2
01N21W03H02S	615	--	895	--	PLEASANT VALLEY	PLEASANT VALLEY	30	120.9	3628.4	310.2	2005	1	2019	2
02N20W19A01S	555	--	855	--	PLEASANT VALLEY	PLEASANT VALLEY	24	213.3	5118.7	427.0	2001	2	2013	2
01N21W02H04S	240	--	540	--	PLEASANT VALLEY	PLEASANT VALLEY	30	80.3	2409.1	292.2	2005	1	2019	2
02N21W28P07S	520	--	1000	--	PLEASANT VALLEY	PLEASANT VALLEY	23	116.5	2678.4	213.9	2003	2	2015	1
01N21W02H05S	95	--	155	--	PLEASANT VALLEY	PLEASANT VALLEY	20	0.3	7.0	1.0	2010	1	2019	2
01N21W12C06S	240	--	390	--	PLEASANT VALLEY	PLEASANT VALLEY	20	18.2	364.8	19.2	2010	1	2019	2
01N21W01B05S	585	--	910	--	PLEASANT VALLEY	PLEASANT VALLEY	29	136.5	3958.8	247.1	2004	1	2019	2
02N20W19B01S	400	--	650	--	PLEASANT VALLEY	PLEASANT VALLEY	24	101.1	2426.5	224.7	2008	1	2019	2
02N20W22K04S	320	--	440	--	PLEASANT VALLEY	SANTA ROSA	12	27.6	331.2	67.9	2011	2	2019	2
01N21W10L01S	900	--	1050	--	PLEASANT VALLEY	PLEASANT VALLEY	12	100.8	1209.8	210.8	2014	1	2019	2
01N21W01M02S	1070	--	1200	--	PLEASANT VALLEY	PLEASANT VALLEY	12	252.8	3034.2	549.1	2014	1	2019	2
02N20W19B02S	400	--	650	--	PLEASANT VALLEY	PLEASANT VALLEY	10	98.2	982.0	165.3	2014	1	2018	2
02N20W24E01S	290	--	830	--	SANTA ROSA	SANTA ROSA	71	102	7,208	226	1983	2	2019	2
02N20W23G02S	350	--	550	--	SANTA ROSA	SANTA ROSA	32	37.1	1,189	99	1983	2	2013	2
02N20W23G03S	800	--	900	--	SANTA ROSA	SANTA ROSA	56	77	4,300	108	1992	1	2019	2
02N20W23H02S	757	--	910	--	SANTA ROSA	SANTA ROSA	36	66.4	2,389	160	1983	2	2013	2
02N20W23L02S	--	--	--	--	SANTA ROSA	SANTA ROSA	53	45.3	2,402	236.0	1983	2	2013	2
02N20W22K02S	306	--	484	--	SANTA ROSA	SANTA ROSA	62	25.7	1,593.4	52.2	1983	2	2015	1
02N20W23K01S	350	--	800	--	SANTA ROSA	SANTA ROSA	73	31.9	2,327	68.8	1983	2	2019	2
02N20W22J01S	720	--	860	--	SANTA ROSA	SANTA ROSA	55	144.4	7943.2	286.6	1992	2	2019	2
02N20W23J01S	420	--	895	--	SANTA ROSA	SANTA ROSA	56	139.1	7787.7	251.3	1992	1	2019	2
02N20W23M01S	350	--	540	--	SANTA ROSA	SANTA ROSA	43	90.6	3895.0	186.1	1992	2	2019	2
02N20W23L04S	380	--	720	--	SANTA ROSA	SANTA ROSA	38	86.6	3290.5	175.7	2000	2	2019	2
02N20W23H03S	--	--	--	--	SANTA ROSA	SANTA ROSA	9	58.5	526.6	117.6	2009	2	2013	2

Table 4-1. Residual Statistics with All Water Level Data Included

Basin	Data No.	RM	ARM	ARM %	RMS	RMS %	Std Dev	Std Dev %	WL Range	WL Min	WL Max
All Basins	90502	0.95	13.3	1.11%	22.3	1.85%	22.3	1.85%	1203.5	-367.5	836.0
Piru	5481	-1.65	9.1	3.66%	12.2	4.89%	12.1	4.85%	249.5	449.4	698.9
Fillmore	4827	3.01	11.7	2.49%	16.5	3.49%	16.2	3.44%	470.8	220.7	691.5
Santa Paula	16684	-9.54	11.8	4.58%	18.1	7.03%	15.4	5.98%	258.0	28.0	286.0
Forebay	18428	4.23	9.9	3.07%	15.3	4.75%	14.7	4.57%	321.6	-183.1	138.5
Mound	4035	9.25	16.4	7.98%	25.8	12.56%	24.1	11.72%	205.5	-55.4	150.1
Oxnard Plain	29656	2.68	11.1	2.52%	16.3	3.72%	16.1	3.67%	438.4	-324.5	113.9
Pleasant Valley	7355	-0.15	19.5	5.66%	25.7	7.46%	25.7	7.46%	344.9	-200.8	144.1
West Las Posas	3315	16.88	48.7	7.48%	69.4	10.65%	67.3	10.33%	651.3	-367.5	283.8

Notes: Data No. = Number of data points; RM = Residual Mean; ARM = Absolute Residual Mean; ARM % = Absolute Residual Mean percentage of the range of measurements; RMS = Root Mean Square; RMS % = Root Mean Square percentage of the range of measurements; Std Dev = Standard Deviation; Std Dev % = Standard Deviation percentage of the range of measurements; WL Range = range of (water level) measurements; WL Min = Minimum value of (water level) measurements; WL Max = Maximum value of (water level) measurements;

Table 4-2. Residual Statistics Excluding Outlier Wells and Wells with less than 10 Water Level Records

Basin	Data No.	RM	ARM	ARM %	RMS	RMS %	Std Dev	Std Dev %	WL Range	WL Min	WL Max
All Basins	88754	0.04	12.3	1.16%	19.1	1.79%	19.1	1.79%	1063.4	-367.5	695.9
Piru	5451	- 1.64	9.1	3.67%	12.0	4.89%	11.9	4.84%	246.5	449.4	695.9
Fillmore	4737	3.10	11.5	4.72%	15.9	6.51%	15.6	6.39%	244.2	220.7	464.9
Santa Paula	16622	- 9.49	11.8	4.87%	18.0	7.44%	15.3	6.32%	241.8	44.2	286.0
Forebay	18345	4.18	9.8	3.06%	15.2	4.73%	14.6	4.55%	321.6	-183.1	138.5
Mound	3322	0.36	9.0	6.80%	11.8	8.91%	11.8	8.90%	132.0	-55.4	76.6
Oxnard Plain	29483	2.69	11.0	2.93%	16.1	4.27%	15.9	4.21%	376.5	-262.6	113.9
Pleasant Valley	7326	0.00	19.5	5.64%	25.6	7.42%	25.6	7.42%	344.9	-200.8	144.1
West Las Posas	2781	2.17	34.7	5.33%	48.6	7.46%	48.5	7.45%	651.3	-367.5	283.8

Notes: Data No. = Number of data points; RM = Residual Mean; ARM = Absolute Residual Mean; ARM % = Absolute Residual Mean percentage of the range of measurements; RMS = Root Mean Square; RMS % = Root Mean Square percentage of the range of measurements; Std Dev = Standard Deviation; Std Dev % = Standard Deviation percentage of the range of measurements; WL Range = range of (water level) measurements; WL Min = Minimum value of (water level) measurements; WL Max = Maximum value of (water level) measurements;

Table 4-3. Average Annual Streamflow at the Freeman Diversion (AF) and Simulated Diversions Based on Streamflow at the Freeman Diversion (AF) for Streamflow Based on Historic Observations, Regional Model Outputs, and Upper Basins Surface Water Model outputs (1985-2015).

Source for streamflow data	Annual streamflow at Freeman Diversion (AF)	Simulated annual diversions (AF)
Observed	210,186	65,060
UWCD Model	185,750	57,297
Upper Basins Surface Water Model	208,545	65,705

Note:
Simulations of diversions were performed using the HOSS model, assuming bypass flow operations proposed in United's Freeman Diversion Multiple Species Habitat Conservation Plan, without any infrastructure improvements.

Table 4-4. Summary of Simulated Annual-Average (AFY) Flows in Piru Basin

Aquifer System A	Storage	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Eastern Basin (LA County)	Internal Flow from Aquifer Above	Internal Flow to Aquifer Below (B)	Underflow to Fillmore Basin (A)	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	1,204	938	-3,802	10,358	-1,827	14	5,000	--	-40,362	-12,115	72,991	-32,394	40,598	90,505	-90,500

Aquifer System B	Storage	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Eastern Basin (LA County)	Internal Flow from Aquifer Above (A)	Internal Flow to Aquifer Below (C)	Underflow to Fillmore Basin (B)	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	854	4,535	--	--	-10,570	--	--	40,362	-6,879	-28,302	--	--	--	45,751	-45,751

Aquifer System C	Storage	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Eastern Basin (LA County)	Internal Flow from Aquifer Above (B)	Internal Flow to Aquifer Below	Underflow to Fillmore Basin (C)	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	61	--	--	--	-233	--	--	6,879	--	-6,707	--	--	--	6,940	-6,940

Sum	Storage	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Eastern Basin (LA County)	Internal Flow from Aquifer Above	Internal Flow to Aquifer Below	Underflow to Fillmore Basin	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	2,119	5,473	-3,802	10,358	-12,630	14	5,000	47,241	-47,241	-47,124	72,991	-32,394	40,598	143,196	-143,191

Notes: Units are in acre-feet per year (AFY); Positive values indicate inflows, negative values indicate outflows; Rounded to nearest whole number;
ET = Evapotranspiration

Table 4-5. Summary of Simulated Annual-Average (AFY) Flows in Fillmore Basin

Aquifer System A	Storage	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Piru Basin (A)	--	Internal Flow to Aquifer Below (B)	Underflow to Santa Paula Basin (A)	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	1,621	1,124	-4,406	19,925	-5,488	-65	12,115	--	-11,611	-3,192	13,689	-23,710	-10,021	48,473	-48,472

Aquifer System B	Storage	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Piru Basin (B)	Internal Flow from Aquifer Above (A)	Internal Flow to Aquifer Below (C)	Underflow to Santa Paula Basin (B)	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	879	3,344	--	791	-36,958	732	28,302	11,611	2,585	-10,369	0	-919	-919	48,245	-48,246

Aquifer System C	STORAGE	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Piru Basin (C)	Internal Flow from Aquifer Above (B)	--	Underflow to Santa Paula Basin (C)	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	1,834	2,256	--	80	-4,583	1,191	6,707	-2,585	--	-4,404	51	-549	-498	12,118	-12,121

Sum	Storage	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Piru Basin	Internal Flow from Aquifer Above	Internal Flow to Aquifer Below	Underflow to Santa Paula Basin	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	4,334	6,723	-4,406	20,796	-47,028	1,858	47,124	9,026	-9,026	-17,965	13,740	-25,178	-11,438	103,601	-103,603

Notes: Units are in acre-feet per year (AFY); Positive values indicate inflows, negative values indicate outflows; Rounded to nearest whole number;
ET = Evapotranspiration

Table 4-6. Summary of Simulated Annual-Average (AFY) Flows in Santa Paula Basin

Aquifer System A	Storage	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Fillmore Basin (A)	--	Internal Flow to Aquifer Below (B)	Underflow to Mound Basin (Shallow)	Underflow to Mound Basin (UAS)	Underflow to Mound Basin (LAS)	Underflow to Oxnard Basin (UAS)	Underflow to Oxnard Basin (LAS)	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	832	--	-2,291	12,396	-2,386	-267	3,192	--	-5,285	1	-27	--	-2,277	--	1,760	-5,647	-4,233	18,181	-18,180

Aquifer System B	Storage	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Fillmore Basin (B)	Internal Flow to Aquifer Above (A)	Internal Flow to Aquifer Below (C)	Underflow to Mound Basin (Shallow)	Underflow to Mound Basin (UAS)	Underflow to Mound Basin (LAS)	Underflow to Oxnard Basin (UAS)	Underflow to Oxnard Basin (LAS)	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	925	1,389	--	3,000	-20,777	1,083	10,369	5,285	1,657	--	-359	-2,509	-1	-6	405	-462	--	24,113	-24,115

Aquifer System C	Storage	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Fillmore Basin (C)	Internal Flow to Aquifer Above (B)	--	Underflow to Mound Basin (Shallow)	Underflow to Mound Basin (UAS)	Underflow to Mound Basin (LAS)	Underflow to Oxnard Basin (UAS)	Underflow to Oxnard Basin (LAS)	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	1,729	5	--	400	-1,398	-67	4,404	-1,657	--	--	--	-3,112	--	-16	0	-289	--	6,538	-6,538

Sum	Storage	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Outside of Basin, within Model Domain	Underflow from Fillmore Basin	Internal Flow to Aquifer Above	Internal Flow to Aquifer Below	Underflow to Mound Basin (Shallow)	Underflow to Mound Basin (UAS)	Underflow to Mound Basin (LAS)	Underflow to Oxnard Basin (UAS)	Underflow to Oxnard Basin (LAS)	Stream Percolation	Rising Groundwater	Net Stream Percolation	Total Inflows	Total Outflows
	3,487	1,394	-2,291	15,796	-24,561	750	17,965	3,628	-3,628	1	-387	-5,621	-2,278	-22	2,165	-6,399	-4,233	45,186	-45,187

Notes: Units are in acre-feet per year (AFY); Positive values indicate inflows, negative values indicate outflows; Rounded to nearest whole number;
ET = Evapotranspiration

Table 4-7. Summary of Simulated Annual-Average (AFY) Flows in Mound Basin

Shallow Aquifer System	Storage	Tile Drains	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Underflow from Santa Paula Basin (A)	Underflow from Santa Paula Basin (B)	Underflow from Santa Paula Basin (C)	Internal Flow to Aquifer Above	Internal Flow to Aquifer Below (UAS)	Underflow with Oxnard Basin (Shallow)	Coastal Flux	Net Stream Percolation	Total Inflows	Total Outflows
	51	-129	--	-665	2,941		-1	--	--	--	-1,480	1,271	-450	-1,541	4,263	-4,265
Upper Aquifer System	**Storage**	**Tile Drains**	**Mountain Front Recharge**	**ET**	**Areal Recharge**	**Pumping from Wells**	**Underflow from Santa Paula Basin (A)**	**Underflow from Santa Paula Basin (B)**	**Underflow from Santa Paula Basin (C)**	**Internal Flow to Aquifer Above (Shallow)**	**Internal Flow to Aquifer Below (LAS)**	**Underflow with Oxnard Basin (UAS)**	**Coastal Flux**	**Net Stream Percolation**	**Total Inflows**	**Total Outflows**
	29	--	--	--	201	-1,911	27	359	--	1,480	-687	452	14	--	2,563	-2,597
Lower Aquifer System	**Storage**	**Tile Drains**	**Mountain Front Recharge**	**ET**	**Areal Recharge**	**Pumping from Wells**	**Underflow from Santa Paula Basin (A)**	**Underflow from Santa Paula Basin (B)**	**Underflow from Santa Paula Basin (C)**	**Internal Flow to Aquifer Above (UAS)**	**Internal Flow to Aquifer Below**	**Underflow with Oxnard Basin (LAS)**	**Coastal Flux**	**Net Stream Percolation**	**Total Inflows**	**Total Outflows**
	1,012	--	2,485	--	576	-5,461	--	2,509	3,112	687	--	-4,959	65	--	10,446	-10,420
Sum	**Storage**	**Tile Drains**	**Mountain Front Recharge**	**ET**	**Areal Recharge**	**Pumping from Wells**	**Underflow from Santa Paula Basin (A)**	**Underflow from Santa Paula Basin (B)**	**Underflow from Santa Paula Basin (C)**	**Internal Flow to Aquifer Above**	**Internal Flow to Aquifer Below**	**Underflow with Oxnard Basin**	**Coastal Flux**	**Net Stream Percolation**	**Total Inflows**	**Total Outflows**
	1,092	-129	2,485	-665	3,719	-7,371	27	2,869	3,112	2,166	-2,166	-3,236	-371	-1,541	15,469	-15,479

Notes: Units are in acre-feet per year; Positive values indicate inflows, negative values indicate outflows; Rounded to nearest whole number;
ET = Evapotranspiration; UAS = Upper Aquifer System; LAS = Lower Aquifer System
Net Streamflow percolation in shallow aquifer represents all aquifer systems;
Totals represent net streamflow percolation and not total inflow or outflow

Table 4-8. Summary of Simulated Annual-Average (AFY) Flows in Oxnard Basin

Semi-Perched Aquifer System	Storage	Tile Drains	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Underflow with Santa Paula Basin	Underflow with Mound Basin	Underflow with Pleasant Valley Basin	Underflow with Las Posas Basin (West)	Internal Flow to Aquifer Above	Internal Flow to Aquifer Below (UAS)	Coastal Flux	Net Stream Percolation (SCR)	Net Stream Percolation (Calleguas Creek)	Total Inflows	Total Outflows
	740	-9,915	--	-8,740	23,312	-31	--	-1,271	3,371	-115	--	-10,609	-1,006	1,220	3,046	31,689	-31,689

Upper Aquifer System	Storage	Tile Drains	Mountain Front Recharge (Volcanic Outcrop)	ET	Areal Recharge	Pumping from Wells	Underflow with Santa Paula Basin	Underflow with Mound Basin	Underflow with Pleasant Valley Basin	Underflow with Las Posas Basin (West)	Internal Flow to Aquifer Above (Semi-Perched)	Internal Flow to Aquifer Below (LAS)	Coastal Flux	Net Stream Percolation (SCR)	Net Stream Percolation (Calleguas Creek)	Total Inflows	Total Outflows
	3,209	-311	11	-56	51,001	-51,967	2,278	-452	1,215	-1,601	10,609	-19,630	3,801	1,884	--	74,009	-74,017

Lower Aquifer System	Storage	Tile Drains	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Underflow with Santa Paula Basin	Underflow with Mound Basin	Underflow with Pleasant Valley Basin	Underflow with Las Posas Basin (West)	Internal Flow to Aquifer Above (UAS)	Internal Flow to Aquifer Below	Coastal Flux	Net Stream Percolation (SCR)	Net Stream Percolation (Calleguas Creek)	Total Inflows	Total Outflows
	468	--	--	--	21	-32,325	22	4,959	519	495	19,630	--	6,206	--	--	32,320	-32,325

Sum	Storage	Tile Drains	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Underflow with Santa Paula Basin	Underflow with Mound Basin	Underflow with Pleasant Valley Basin	Underflow with Las Posas Basin (West)	Internal Flow to Aquifer Above	Internal Flow to Aquifer Below	Coastal Flux	Net Stream Percolation (SCR)	Net Stream Percolation (Calleguas Creek)	Total Inflows	Total Outflows
	4,417	-10,225	11	-8,797	74,334	-84,324	2,300	3,236	5,105	-1,222	30,239	-30,239	9,001	3,104	3,046	134,794	-134,806

Notes:

Units are in acre-feet per year; Positive values indicate inflows, negative values indicate outflows; Rounded to nearest whole number;

ET = Evapotranspiration; SCR = Santa Clara River; UAS = Upper Aquifer System; LAS = Lower Aquifer System;

Totals represent net streamflow percolation and not total inflow or outflow

Oxnard Basin include Forebay that have major United spreading activities that add to the areal recharge.

Table 4-9. Summary of Simulated Annual-Average (AFY) Flows in Pleasant Valley Basin

Semi-Perched Aquifer System	Storage	Tile Drains	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Underflow to Oxnard Basin	Underflow from Las Posas Basin (East)	Underflow with Las Posas Basin (West)	Internal Flow to Aquifer Above	Internal Flow to Aquifer Below (UAS)	Net Stream Percolation (Arroyo Las Posas)	Net Stream Percolation (Conejo Creek)	Net Stream Percolation (Calleguas Creek)	Total Inflows	Total Outflows
	-193	-894	--	-160	5630	-216	-3371	--	--	--	-10857	562	4937	4561	15,691	-15,691

Upper Aquifer System	Storage	Tile Drains	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Underflow to Oxnard Basin	Underflow from Las Posas Basin (East)	Underflow with Las Posas Basin (West)	Internal Flow to Aquifer Above (Semi-Perched)	Internal Flow to Aquifer Below (LAS)	Net Stream Percolation (Arroyo Las Posas)	Net Stream Percolation (Conejo Creek)	Net Stream Percolation (Calleguas Creek)	Total Inflows	Total Outflows
	-1066	--	1421	-1704	745	-7436	-1215	1646	-500	10857	-8807	3697	2363	--	20,729	-20,729

Lower Aquifer System	Storage	Tile Drains	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Underflow to Oxnard Basin	Underflow from Las Posas Basin (East)	Underflow with Las Posas Basin (West)	Internal Flow to Aquifer Above (UAS)	Internal Flow to Aquifer Below	Net Stream Percolation (Arroyo Las Posas)	Net Stream Percolation (Conejo Creek)	Net Stream Percolation (Calleguas Creek)	Total Inflows	Total Outflows
	-253	--	--	--	278	-8019	-519	--	-295	8807	--	--	--	--	9,085	-9,086

Sum	Storage	Tile Drains	Mountain Front Recharge	ET	Areal Recharge	Pumping from Wells	Underflow to Oxnard Basin	Underflow from Las Posas Basin (East)	Underflow with Las Posas Basin (West)	Internal Flow with Aquifer Above	Internal Flow with Aquifer Below	Net Stream Percolation (Arroyo Las Posas)	Net Stream Percolation (Conejo Creek)	Net Stream Percolation (Calleguas Creek)	Total Inflows	Total Outflows
	-1513	-894	1421	-1865	6653	-15671	-5105	1646	-795	19664	-19664	4260	7300	4561	45,505	-45,506

Notes:

Units are in acre-feet per year; Positive values indicate inflows, negative values indicate outflows; Rounded to nearest whole number;

ET = Evapotranspiration; SCR = Santa Clara River; UAS = Upper Aquifer System; LAS = Lower Aquifer System;

Totals represent net streamflow percolation and not total inflow or outflow

Table 4-10. Summary of Simulated Annual-Average Flows in Las Posas Basin (West)

	Storage	Mountain Front Recharge	Areal Recharge	Pumping from Wells	Underflow with Oxnard Basin	Underflow with Pleasant Valley Basin	Internal Flow to Aquifer Above	Internal Flow to Aquifer Below (LAS)	Outside of Basin, within Model Domain	Total Inflows	Total Outflows
Semi-Perched and UAS	242	--	5371	-343	1717	500	--	-7487	--	7,830	-7,830

	Storage	Mountain Front Recharge	Areal Recharge	Pumping from Wells	Underflow with Oxnard Basin	Underflow with Pleasant Valley Basin	Internal Flow to Aquifer Above (UAS)	Internal Flow to Aquifer Below	Outside of Basin, within Model Domain	Total Inflows	Total Outflows
Lower Aquifer System	1873	1710	2006	-13024	-495	295	7487	--	149	13,519	-13,519

	Storage	Mountain Front Recharge	Areal Recharge	Pumping from Wells	Underflow with Oxnard Basin	Underflow with Pleasant Valley Basin	Internal Flow to Aquifer Above	Internal Flow to Aquifer Below	Outside of Basin, within Model Domain	Total Inflows	Total Outflows
Sum	2115	1710	7377	-13367	1222	795	7487	-7487	149	20,854	-20,854

Notes:

Units are in acre-feet per year; Positive values indicate inflows, negative values indicate outflows;

Rounded to nearest whole number;

ET = Evapotranspiration; SCR = Santa Clara River; UAS = Upper Aquifer System; LAS = Lower Aquifer System;

Table 5-1. Sensitivity Analysis -- Residual Statistics
units: Feet

Parameters		Multiplier	Sensitivity	absolute diff. sum	Piru basin								Fillmore basin								Santa Paula basin							
					RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)
					Default = -3.09		9.618		Default = 12.405		Default = 12.015		Default = 2.572		Default = 11.458		Default = 15.775		Default = 15.566		Default = -9.985		Default = 12.104		Default = 18.239		Default = 15.264	
SCR Underflow (5000 AFY)		0.5X (2500 AFY)	High	126%	-0.26	-92%	8.69	-10%	11.907	-4%	11.905	-1%	2.97	15%	11.626	1%	15.974	1%	15.697	1%	-9.936	0%	12.079	0%	18.21	0%	15.261	0%
		0.8X (4000 AFY)	High	51%	-1.977	-36%	9.173	-5%	12.111	-2%	11.949	-1%	2.727	6%	11.522	1%	15.85	0%	15.615	0%	-9.966	0%	12.094	0%	18.228	0%	15.263	0%
		1.2X (6000 AFY)	High	52%	-4.171	35%	10.122	5%	12.806	3%	12.108	1%	2.423	-6%	11.399	-1%	15.707	0%	15.521	0%	-10.003	0%	12.114	0%	18.251	0%	15.265	0%
		1.5X (7500 AFY)	High	129%	-5.741	86%	10.944	14%	13.569	9%	12.295	2%	2.209	-14%	11.318	-1%	15.615	-1%	15.46	-1%	-10.03	0%	12.127	0%	18.267	0%	15.267	0%
		2X (10000 AFY)	High	257%	-8.22	166%	12.47	30%	15.138	22%	12.713	6%	1.879	-27%	11.206	-2%	15.488	-2%	15.375	-1%	-10.072	1%	12.149	0%	18.292	0%	15.27	0%
EVT Rate		0.1X	High	186%	-5.882	90%	10.983	14%	13.573	9%	12.233	2%	1.525	-41%	11.374	-1%	15.617	-1%	15.544	0%	-11.418	14%	13.114	8%	19.047	4%	15.245	0%
		10X	High	1415%	19.791	-740%	20.403	112%	24.125	94%	13.799	15%	10.316	301%	14.695	28%	19.604	24%	16.672	7%	-4.143	-59%	9.691	-20%	16.223	-11%	15.685	3%
EVT Extinct Depth (5 ft)		2.5 ft	Low	18%	-3.231	5%	9.68	1%	12.449	0%	12.023	0%	2.473	-4%	11.457	0%	15.778	0%	15.585	0%	-10.427	4%	12.412	3%	18.476	1%	15.254	0%
		10 ft	Medium	41%	-2.728	-12%	9.464	-2%	12.297	-1%	11.991	0%	2.786	8%	11.467	0%	15.776	0%	15.529	0%	-9.028	-10%	11.483	-5%	17.759	-3%	15.294	0%
HFB #9 (0.001)		0.1X (0.0001)	High	166%	-3.16	2%	9.623	0%	12.395	0%	11.986	0%	1.949	-24%	11.669	2%	16.303	3%	16.188	4%	-14.665	47%	16.007	32%	23.612	29%	18.507	21%
		10X (0.01)	High	119%	-3.022	-2%	9.614	0%	12.416	0%	12.043	0%	3.167	23%	11.281	-2%	15.353	-3%	15.024	-3%	-5.266	-47%	10.359	-14%	15.178	-17%	14.235	-7%
HFB #10 and HFB #19 (1.0E-6 to 1.0E-2)		0.1X	Low	9%	-3.091	0%	9.618	0%	12.404	0%	12.014	0%	2.552	-1%	11.461	0%	15.784	0%	15.578	0%	-10.408	4%	12.427	3%	18.454	1%	15.239	0%
		10X	Low	25%	-3.084	0%	9.618	0%	12.406	0%	12.018	0%	2.639	3%	11.445	0%	15.741	0%	15.52	0%	-8.844	-11%	11.331	-6%	17.66	-3%	15.287	0%
HFB #73 (1.0E-7)		0.1X (1.0E-8)	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.986	0%	12.104	0%	18.24	0%	15.264	0%
		10X (1.0E-6)	Low	0%	-3.091	0%	9.618	0%	12.405	0%	12.014	0%	2.571	0%	11.456	0%	15.772	0%	15.563	0%	-9.977	0%	12.101	0%	18.236	0%	15.265	0%
HFB #98 (1.1E-4)		0.1X (1.1E-5)	Low	3%	-3.087	0%	9.618	0%	12.406	0%	12.016	0%	2.603	1%	11.45	0%	15.759	0%	15.544	0%	-9.914	-1%	12.076	0%	18.278	0%	15.357	1%
		10X (1.1E-3)	Low	2%	-3.092	0%	9.618	0%	12.404	0%	12.014	0%	2.553	-1%	11.462	0%	15.78	0%	15.573	0%	-9.98	0%	12.083	0%	18.167	0%	15.18	-1%
HFB #98 (1.1E-5)		0.1X (1.1E-6)	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.103	0%	18.235	0%	15.259	0%
		10X (1.1E-4)	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.569	0%	11.459	0%	15.777	0%	15.568	0%	-9.991	0%	12.11	0%	18.274	0%	15.302	0%
Surface Recharge from Appiled Water	Fillmore basin only	0.5X	Low	12%	-3.046	-1%	9.617	0%	12.415	0%	12.037	0%	2.777	8%	11.533	1%	15.856	1%	15.613	0%	-9.952	0%	12.088	0%	18.223	0%	15.266	0%
		1.5X	Low	12%	-3.133	1%	9.619	0%	12.395	0%	11.994	0%	2.369	-8%	11.387	-1%	15.699	0%	15.521	0%	-10.018	0%	12.12	0%	18.256	0%	15.263	0%
	Piru basin only	0.5X	Low	14%	-2.793	-10%	9.498	-1%	12.323	-1%	12.004	0%	2.618	2%	11.476	0%	15.796	0%	15.58	0%	-9.979	0%	12.101	0%	18.236	0%	15.264	0%
		1.5X	Low	14%	-3.383	9%	9.743	1%	12.494	1%	12.028	0%	2.527	-2%	11.44	0%	15.755	0%	15.553	0%	-9.99	0%	12.107	0%	18.243	0%	15.264	0%
	Santa Paula basin only	0.5X	Medium	47%	-3.078	0%	9.618	0%	12.407	0%	12.02	0%	2.74	7%	11.426	0%	15.706	0%	15.467	-1%	-7.88	-21%	10.715	-11%	17.168	-6%	15.253	0%
		1.5X	Medium	41%	-3.099	0%	9.619	0%	12.403	0%	12.011	0%	2.434	-5%	11.491	0%	15.84	0%	15.653	1%	-11.722	17%	13.419	11%	19.298	6%	15.331	0%
Surface Recharge from Precipitation	Fillmore basin only	0.5X	High	59%	-2.921	-5%	9.609	0%	12.434	0%	12.087	1%	3.601	40%	11.693	2%	16.052	2%	15.645	1%	-9.508	-5%	11.889	-2%	18	-1%	15.285	0%
		1.5X	High	55%	-3.251	5%	9.629	0%	12.38	0%	11.947	-1%	1.58	-39%	11.305	-1%	15.592	-1%	15.514	0%	-10.449	5%	12.326	2%	18.483	1%	15.246	0%
	Piru basin only	0.5X	High	66%	-1.671	-46%	9.185	-5%	12.182	-2%	12.068	0%	2.827	10%	11.566	1%	15.903	1%	15.651	1%	-9.95	0%	12.086	0%	18.218	0%	15.262	0%
		1.5X	High	63%	-4.412	43%	10.154	6%	12.812	3%	12.03	0%	2.337	-9%	11.363	-1%	15.666	-1%	15.492	0%	-10.017	0%	12.121	0%	18.259	0%	15.266	0%
	Santa Paula basin only	0.5X	High	62%	-3.065	-1%	9.616	0%	12.407	0%	12.024	0%	2.86	11%	11.381	-1%	15.609	-1%	15.347	-1%	-7.371	-26%	10.59	-13%	16.896	-7%	15.204	0%
		1.5X	High	57%	-3.11	1%	9.62	0%	12.403	0%	12.008	0%	2.325	-10%	11.536	1%	15.931	1%	15.763	1%	-12.198	22%	13.729	13%	19.635	8%	15.387	1%
Surface Recharge from Pumped Water	Fillmore basin only	0.5X	High	112%	-2.282	-26%	9.639	0%	12.673	2%	12.467	4%	4.184	63%	12.009	5%	16.457	4%	15.918	2%	-9.623	-4%	11.941	-1%	18.063	-1%	15.287	0%
		1.5X	High	96%	-3.766	22%	9.644	0%	12.27	-1%	11.679	-3%	1.104	-57%	11.149	-3%	15.375	-3%	15.337	-1%	-10.322	3%	12.263	1%	18.41	1%	15.244	0%
	Piru basin only	0.5X	High	68%	-1.626	-47%	9.166	-5%	12.213	-2%	12.105	1%	2.852	11%	11.575	1%	15.913	1%	15.657	1%	-9.951	0%	12.087	0%	18.219	0%	15.262	0%
		1.5X	High	68%	-4.506	46%	10.202	6%	12.807	3%	11.99	0%	2.307	-10%	11.355	-1%	15.657	-1%	15.488	-1%	-10.017	0%	12.121	0%	18.259	0%	15.266	0%
	Santa Paula basin only	0.5X	Medium	26%	-3.082	0%	9.618	0%	12.406	0%	12.018	0%	2.688	5%	11.436	0%	15.731	0%	15.502	0%	-8.868	-11%	11.381	-6%	17.665	-3%	15.279	0%
		1.5X	Low	25%	-3.097	0%	9.618	0%	12.403	0%	12.012	0%	2.462	-4%	11.482	0%	15.82	0%	15.629	0%	-11.013	10%	12.822	6%	18.82	3%	15.262	0%
STR Conductance for Piru Creek		0.1X	High	312%	4.911	-259%	8.934	-7%	12.592	2%	11.596	-3%	3.419	33%	11.81	3%	16.166	2%	15.802	2%	-9.924	-1%	12.077	0%	18.198	0%	15.254	0%
		10X	High	619%	-15.017	386%	18.004	87%	21.076	70%	14.789	23%	1.425	-45%	11.078	-3%	15.374	-3%	15.31	-2%	-10.001	0%	12.103	0%	18.265	0%	15.284	0%
STR Conductance for Sespe Creek		0.1X	High	120%	-2.694	-13%	9.601	0%	12.487	1%	12.194	1%	4.637	80%	12.55	10%	16.963	8%	16.319	5%	-9.815	-2%	12.024	-1%	18.137	-1%	15.253	0%
		10X	High	215%	-3.923	27%	9.689	1%	12.324	-1%	11.684	-3%	-1.855	-172%	11.096	-3%	15.539	-1%	15.43	-1%	-10.331	3%	12.286	2%	18.462	1%	15.301	0%
STR Conductance for Santa Paula Creek		0.1X	Low	4%	-3.093	0%	9.618	0%	12.404	0%	12.014	0%	2.541	-1%	11.469	0%	15.799	0%	15.595	0%	-10.075	1%	12.161	0%	18.307	0%	15.286	0%
		10X	Low	19%	-3.098	0%	9.619	0%	12.404	0%	12.012	0%	2.426	-6%	11.499	0%	15.838	0%	15.653	1%	-10.665	7%	12.487	3%	18.599	2%	15.238	0%
STR Conductance for Santa Clara River	Piru basin only	0.1X	High	4181%	69.362	-2345%	69.586	623%	72.397	484%	20.744	73%	14.877	478%	19.646	71%	24.975	58%	20.063	29%	-8.799	-12%	11.591	-4%	17.605	-3%	15.249	0%
		10X	High	633%	-15.7	408%	19.201	100%	22.618	82%	16.283	36%	2.486	-3%	11.386	-1%	15.637	-1%	15.44	-1%	-9.892	-1%	12.049	0%	18.204	0%	15.282	0%
	Fillmore basin only	0.1X	Low	24%	-3.153	2%	9.665	0%	12.46	0%	12.055	0%	2.758	7%	11.858	3%	16.152	2%	15.916	2%	-10.284	3%	12.243	1%	18.383	1%	15.238	0%
		10X	High	130%	-3.457	12%	9.562	-1%	12.247	-1%	11.75	-2%	0.334	-87%	10.353	-10%	14.681	-7%	14.679	-6%	-9.689	-3%	11.963	-1%	18.111	-1%	15.302	0%
	Santa Paula basin only	0.1X	Low	22%	-3.083	0%	9.617	0%	12.405	0%	12.017	0%	2.728	6%	11.431	0%	15.736	0%	15.5	0%	-9.128	-9%	11.743	-3%	17.924	-2%	15.426	1%
		10X	High	75%	-3.118	1%	9.619	0%	12.399	0%	12.002	0%	1.994	-22%	11.616	1%	15.982	1%	15.859	2%	-12.384	24%	13.67	13%	19.795	9%	15.443	1%
	Oxnard and Mound basins only	0.1X	Low	2%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.577	0%	11.457	0%	15.772	0%	15.562	0%	-9.919	-1%	12.062	0%	18.195	0%	15.254	0%
		10X	Low	3%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.563	0%	11.461	0%	15.782	0%	15.574	0%	-10.123	1%	12.197	1%	18.329	0%	15.28	0%
Model Layer 1	Zone 31 (1200 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 32 (1200 Ft/day)	0.1X	Medium	36%	-3.956	28%	9.954	3%	12.639	2%	12.005	0%	2.531	-2%	11.432	0%	15.757	0%	15.554	0%	-9.995	0%	12.109	0%	18.246	0%	15.265	0%
		10X	Low	17%	-2.646	-14%	9.464	-2%	12.305	-1%	12.018	0%	2.565	0%	11.469	0%	15.781	0%	15.572	0%	-9.983	0%	12.103	0%	18.238	0%	15.264	0%
	Zone 33 (600 ft/day)	0.1X	Medium	46%	-4.02	30%	9.958	4%	12.628	2%	11.972	0%	2.417	-6%	11.245	-2%	15.625	-1%	15.439	-1%	-9.925	-1%	12.079	0%	18.215	0%	15.274	0%
		10X	Medium	36%	-2.483	-20%	9.451	-2%	12.336	-1%	12.085	1%	2.707	5%	11.788	3%	15.995	1%	15.766	1%	-10.121	1%	12.165	1%	18.301	0%	15.248	0%
	Zone 34 (200 Ft/day)	0.1X	Low	12%	-3.112	1%	9.619	0%	12.4	0%	12.004	0%	2.339	-9%	11.492	0%	15.767	0%	15.594	0%	-10.041	1%	12.139	0%	18.28	0%	15.276	0%
		10X	Medium	34%	-3.027	-2%	9.616	0%	12.419	0%	12.045	0%	3.216	25%	11.379	-1%	15.787	0%	15.458	-1%	-9.714	-3%	11.975	-1%	18.091	-1%	15.262	0%
	Zone 35 (200 ft/day)	0.1X	Low	5%	-3.087	0%	9.618	0%	12.406	0%	12.017	0%	2.625	2%	11.457	0%	15.766	0%	15.548	0%	-9.843	-1%	12.039	-1%	18.18	0%	15.285	0%
		10X	Low	2%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.557	-1%	11.456	0%	15.777	0%	15.57	0%	-10.035	1%	12.17	1%	18.283	0%	15.283	0%
	Zone 36 (200 ft/day)	0.1X	Low	6%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.567	0%	11.459	0%	15.777	0%	15.568	0%	-9.555	-4%	12.108	0%	18.233	0%	15.529	2%
		10X	Low	6%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.775	0%	15.565	0%	-10.319	3%	12.303	2%	18.36	1%	15.186	-1%
	Zone 37 (200 ft/day)	0.1X	Low	5%	-3.098	0%	9.619	0%	12.404	0%	12.012	0%	2.577	0%	11.399	-1%	15.704	0%	15.492	0%	-9.829	-2%	12.034	-1%	18.173	0%	15.286	0%
		10X	Low	7%	-3.07	-1%	9.619	0%	12.412	0%	12.027	0%	2.605	1%	11.586	1%	15.908	1%	15.695	1%	-10.103	1%	12.157	0%	18.29	0%	15.247	0%
	Zone 39 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
Model Layer 2	Zone 31 (0.1 ft/day)	0.1X	Low	0%	-3.082	0%	9.614	0%	12.402	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.093	0%	9.62	0%	12.406	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 32 (0.1 ft/day)	0.1X	Low	11%	-3.255	5%	9.771	2%	12.565	1%	12.137	1%	2.54	-1%	11.445	0%	15.779	0%	15.575	0%	-9.998	0%	12.11	0%	18.246	0%	15.263	0%
		10X	Low	19%	-2.653	-14%	9.472	-2%	12.299	-1%	12.011	0%	2.63	2%	11.485	0%	15.796	0%	15.577	0%	-9.978	0%	12.101	0%	18.235	0%	15.263	0%
	Zone 33 (0.1 ft/day)	0.1X	High	118%	-1.661	-46%	9.605	0%	12.755	3%	12.647	5%	3.863	50%	12.005	5%	16.386	4%	15.926	2%	-9.863	-1%	12.046	0%	18.167	0%	15.257	0%
		10X	Medium	48%	-3.655	18%	9.614	0%	12.314	-1%	11.76	-2%	1.98	-23%	11.33	-1%	15.582	-1%	15.457	-1%	-10.047	1%	12.134	0%	18.277	0%	15.268	0%
	Zone 34 (0.1 ft/day)	0.1X	Medium	46%	-3.147	2%	9.621	0%	12.395	0%	11.99	0%	1.884	-27%	11.632	2%	15.933	1%	15.823	2%	-10.761	8%	12.469	3%	18.623	2%	15.2	0%
		10X	Medium	49%	-3.027	-2%	9.615	0%	12.416	0%	12.043	0%	3.321	29%	11.316	-1%	15.666	-1%	15.312	-2%	-9.123	-9%	11.743	-3%	17.857	-2%	15.351	1%
	Zone 35 (0.1 ft/day)	0.1X	Low	5%	-3.086	0%	9.618	0%	12.406	0%	12.017	0%	2.637	3%	11.453	0%	15.762	0%	15.541	0%	-9.858	-1%	12.076	0%	18.19	0%	15.288	0%
		10X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.556	-1%	11.46	0%	15.779	0%	15.573	0%	-10.015	0%	12.111	0%	18.251	0%	15.258	0%
	Zone 36 (0.1 ft/day)	0.1X	Low	4%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.559	-1%	11.462	0%	15.783	0%	15.576	0%	-10.16	2%	12.246	1%	18.34	1%	15.269	0%
		10X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.575	0%	11.457	0%	15.774	0%	15.564	0%	-9.939	0%	12.068	0%	18.215	0%	15.264	0%
	Zone 37 (100ft/day)	0.1X	Low	0%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.575	0%	11.456	0%	15.774	0%	15.564	0%	-9.969	0%	12.097	0%	18.233	0%	15.267	0%
		10X	Low	2%	-3.085	0%	9.617	0%	12.405	0%	12.017	0%	2.568	0%	11.472	0%	15.787	0%	15.579	0%	-10.047	1%	12.131	0%	18.263	0%	15.251	0%
	Zone 39 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 26 (600 ft/day)	0.1X	High	116%	-3.695	20%	9.665	0%	12.329	-1%	11.763	-2%	0.66	-74%	10.472	-9%	14.989	-5%	14.976	-4%	-9.914	-1%	12.078	0%	18.223	0%	15.291	0%
		10X	High	281%	-1.757	-43%	9.604	0%	12.745	3%	12.625	5%	6.599	157%	15.391	34%	19.05	21%	17.873	15%	-10.169	2%	12.18	1%	18.293	0%	15.206	0%
	Zone 31 (1200 ft/day)	0.1X	High	174%	0.483	-116%	9.263	-4%	13.799	11%	13.792	15%	3.156	23%	11.705	2%	16.059	2%	15.748	1%	-9.912	-1%	12.067	0%	18.195	0%	15.259	0%
		10X	High	97%	-4.236	37%	11.405	19%	14.096	14%	13.446	12%	2.256	-12%	11.344	-1%	15.65	-1%	15.488	-1%	-10.032	0%	12.13	0%	18.267	0%	15.266	0%
	Zone 32 (1200 ft/day)	0.1X	High	609%	-14.395	366%	18.511	92%	21.646	74%	16.167	35%	3.443	34%	11.828	3%	16.105	2%	15.735	1%	-9.893	-1%	12.054	0%	18.187	0%	15.262	0%

Table 5-1. Sensitivity Analysis -- Residual Statistics
units: Feet

Parameters			Multiplier	Sensitivity	absolute diff. sum	Piru basin								Fillmore basin								Santa Paula basin							
						RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)
						Default = -3.09		9.618		Default = 12.405		Default = 12.015		Default = 2.572		Default = 11.458		Default = 15.775		Default = 15.566		Default = -9.985		Default = 12.104		Default = 18.239		Default = 15.264	
Horizontal Hydraulic Conductivity	Model Layer 3	Zone 32 (1200 ft/day)	10X	High	1325%	26.771	-966%	27.806	189%	30.208	144%	13.995	16%	2.361	-8%	11.505	0%	15.803	0%	15.628	0%	-10.002	0%	12.119	0%	18.25	0%	15.265	0%
		Zone 33 (400 ft/day)	0.1X	High	137%	-6.011	95%	10.555	10%	12.993	5%	11.52	-4%	2.178	-15%	11.214	-2%	15.545	-1%	15.394	-1%	-9.73	-3%	12	-1%	18.143	-1%	15.314	0%
			10X	High	1047%	13.46	-536%	16.215	69%	21.103	70%	16.254	35%	8.485	230%	16.545	44%	20.906	33%	19.108	23%	-10.453	5%	12.298	2%	18.371	1%	15.108	-1%
		Zone 34 (100 ft/day)	0.1X	Medium	37%	-3.103	0%	9.617	0%	12.399	0%	12.006	0%	2.818	10%	11.579	1%	15.721	0%	15.468	-1%	-8.416	-16%	11.565	-4%	17.75	-3%	15.628	2%
			10X	High	140%	-3.09	0%	9.627	0%	12.42	0%	12.031	0%	1.609	-37%	12.349	8%	17.017	8%	16.943	9%	-14.145	42%	14.675	21%	20.508	12%	14.85	-3%
		Zone 35 (100 ft/day)	0.1X	Medium	43%	-3.111	1%	9.619	0%	12.401	0%	12.005	0%	2.301	-11%	11.57	1%	15.873	1%	15.707	1%	-8.36	-16%	11.267	-7%	17.917	-2%	15.847	4%
			10X	High	127%	-2.975	-4%	9.613	0%	12.427	0%	12.067	0%	4.734	84%	11.764	3%	15.869	1%	15.148	-3%	-10.069	1%	14.163	17%	19.37	6%	16.547	8%
		Zone 36 (100 ft/day)	0.1X	Low	18%	-3.093	0%	9.618	0%	12.404	0%	12.013	0%	2.522	-2%	11.469	0%	15.798	0%	15.597	0%	-10.806	8%	12.732	5%	18.689	2%	15.249	0%
			10X	High	60%	-3.078	0%	9.618	0%	12.407	0%	12.02	0%	2.752	7%	11.426	0%	15.708	0%	15.466	-1%	-7.074	-29%	10.35	-14%	16.977	-7%	15.434	1%
		Zone 37 (100 ft/day)	0.1X	Low	2%	-3.092	0%	9.618	0%	12.404	0%	12.013	0%	2.598	1%	11.464	0%	15.786	0%	15.572	0%	-9.921	-1%	12.082	0%	18.229	0%	15.293	0%
			10X	Low	6%	-3.074	-1%	9.618	0%	12.408	0%	12.022	0%	2.507	-3%	11.465	0%	15.774	0%	15.575	0%	-10.141	2%	12.169	1%	18.294	0%	15.226	0%
		Zone 38 (100 ft/day)	0.1X	Low	21%	-3.092	0%	9.618	0%	12.404	0%	12.014	0%	2.53	-2%	11.467	0%	15.794	0%	15.591	0%	-10.96	10%	12.864	6%	18.752	3%	15.216	0%
			10X	Low	16%	-3.087	0%	9.618	0%	12.405	0%	12.016	0%	2.608	1%	11.451	0%	15.76	0%	15.545	0%	-9.23	-8%	11.564	-4%	17.887	-2%	15.322	0%
		Zone 39 (10 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.566	0%	-9.978	0%	12.099	0%	18.232	0%	15.26	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.459	0%	15.775	0%	15.566	0%	-9.995	0%	12.113	0%	18.253	0%	15.273	0%
	Model Layer 4	Zone 26 (400 ft/day)	0.1X	Low	1%	-3.093	0%	9.618	0%	12.404	0%	12.013	0%	2.56	0%	11.45	0%	15.769	0%	15.561	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	6%	-3.061	-1%	9.617	0%	12.41	0%	12.028	0%	2.661	3%	11.526	1%	15.828	0%	15.604	0%	-9.989	0%	12.106	0%	18.24	0%	15.263	0%
		Zone 31 (1000 ft/day)	0.1X	Low	1%	-3.066	-1%	9.615	0%	12.415	0%	12.031	0%	2.577	0%	11.46	0%	15.777	0%	15.567	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	9%	-3.265	6%	9.658	0%	12.351	0%	11.913	-1%	2.529	-2%	11.443	0%	15.76	0%	15.558	0%	-9.991	0%	12.107	0%	18.243	0%	15.264	0%
		Zone 32 (1000 ft/day)	0.1X	Low	6%	-3.228	4%	9.699	1%	12.474	1%	12.05	0%	2.579	0%	11.46	0%	15.778	0%	15.567	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	High	59%	-1.782	-42%	8.911	-7%	11.845	-5%	11.711	-3%	2.526	-2%	11.444	0%	15.762	0%	15.56	0%	-9.99	0%	12.107	0%	18.243	0%	15.264	0%
		Zone 33 (200 ft/day)	0.1X	Low	8%	-3.197	3%	9.633	0%	12.397	0%	11.979	0%	2.657	3%	11.484	0%	15.8	0%	15.577	0%	-9.98	0%	12.102	0%	18.237	0%	15.265	0%
			10X	High	61%	-2.209	-29%	9.539	-1%	12.528	1%	12.333	3%	1.943	-24%	11.317	-1%	15.627	-1%	15.508	0%	-10.024	0%	12.122	0%	18.258	0%	15.26	0%
		Zone 34 (100 ft/day)	0.1X	Low	2%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.59	1%	11.459	0%	15.77	0%	15.558	0%	-9.902	-1%	12.073	0%	18.209	0%	15.282	0%
			10X	Low	19%	-3.088	0%	9.619	0%	12.406	0%	12.017	0%	2.414	-6%	11.487	0%	15.856	1%	15.673	1%	-10.643	7%	12.378	2%	18.508	1%	15.143	-1%
		Zone 35 (1 ft/day)	0.1X	High	59%	-3.073	-1%	9.617	0%	12.408	0%	12.022	0%	2.777	8%	11.385	-1%	15.662	-1%	15.415	-1%	-7.604	-24%	10.138	-16%	16.951	-7%	15.151	-1%
			10X	Low	10%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.465	0%	15.79	0%	15.58	0%	-10.312	3%	12.486	3%	18.551	2%	15.422	1%
		Zone 36 (1 ft/day)	0.1X	Low	4%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.565	0%	11.461	0%	15.779	0%	15.571	0%	-10.148	2%	12.251	1%	18.335	1%	15.272	0%
			10X	Low	9%	-3.088	0%	9.618	0%	12.405	0%	12.016	0%	2.593	1%	11.453	0%	15.766	0%	15.553	0%	-9.57	-4%	11.811	-2%	18.033	-1%	15.284	0%
		Zone 37 (100 ft/day)	0.1X	Low	0%	-3.093	0%	9.618	0%	12.405	0%	12.014	0%	2.565	0%	11.455	0%	15.774	0%	15.566	0%	-9.98	0%	12.102	0%	18.238	0%	15.266	0%
			10X	Low	2%	-3.084	0%	9.618	0%	12.406	0%	12.017	0%	2.566	0%	11.468	0%	15.782	0%	15.573	0%	-10.042	1%	12.128	0%	18.26	0%	15.251	0%
		Zone 38 (1 ft/day)	0.1X	Low	5%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.555	-1%	11.461	0%	15.782	0%	15.576	0%	-9.984	0%	12.338	2%	18.394	1%	15.448	1%
			10X	Low	3%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.775	0%	15.565	0%	-10.152	2%	12.176	1%	18.286	0%	15.209	0%
		Zone 39 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.99	0%	12.108	0%	18.244	0%	15.267	0%
	Model Layer 5	Zone 26 (400 ft/day)	0.1X	High	100%	-3.618	17%	9.653	0%	12.326	-1%	11.785	-2%	0.974	-62%	10.484	-9%	15.006	-5%	14.976	-4%	-9.918	-1%	12.079	0%	18.223	0%	15.288	0%
			10X	High	281%	-1.745	-44%	9.61	0%	12.759	3%	12.64	5%	6.578	156%	15.379	34%	19.074	21%	17.905	15%	-10.165	2%	12.178	1%	18.29	0%	15.206	0%
		Zone 31 (1000 ft/day)	0.1X	Medium	27%	-2.573	-17%	9.539	-1%	12.58	1%	12.315	2%	2.68	4%	11.499	0%	15.82	0%	15.593	0%	-9.97	0%	12.096	0%	18.231	0%	15.263	0%
			10X	Low	11%	-3.257	5%	9.702	1%	12.373	0%	11.937	-1%	2.502	-3%	11.435	0%	15.752	0%	15.554	0%	-9.997	0%	12.111	0%	18.246	0%	15.264	0%
		Zone 32 (1000 ft/day)	0.1X	High	716%	-16.002	418%	20.175	110%	23.488	89%	17.196	43%	3.729	45%	11.945	4%	16.236	3%	15.804	2%	-9.868	-1%	12.043	-1%	18.171	0%	15.259	0%
			10X	High	2034%	39.748	-1386%	40.548	322%	43.882	254%	18.596	55%	2.161	-16%	11.428	0%	15.699	0%	15.551	0%	-10.016	0%	12.127	0%	18.259	0%	15.267	0%
		Zone 33 (200 ft/day)	0.1X	High	116%	-5.107	65%	10.04	4%	12.536	1%	11.449	-5%	1.876	-27%	10.999	-4%	15.313	-3%	15.199	-2%	-9.717	-3%	11.998	-1%	18.143	-1%	15.322	0%
			10X	High	1080%	14.614	-573%	17.549	82%	23.191	87%	18.008	50%	7.267	183%	16.089	40%	20.643	31%	19.324	24%	-10.563	6%	12.349	2%	18.423	1%	15.094	-1%
		Zone 34 (100 ft/day)	0.1X	High	52%	-3.107	1%	9.616	0%	12.397	0%	12.002	0%	2.878	12%	11.452	0%	15.594	-1%	15.328	-2%	-7.664	-23%	11.326	-6%	17.554	-4%	15.793	3%
			10X	High	155%	-3.066	-1%	9.628	0%	12.429	0%	12.046	0%	1.665	-35%	12.566	10%	17.297	10%	17.218	11%	-14.618	46%	15.112	25%	20.85	14%	14.868	-3%
		Zone 35 (100 ft/day)	0.1X	High	79%	-3.128	1%	9.62	0%	12.397	0%	11.998	0%	2.018	-22%	11.606	1%	15.938	1%	15.812	2%	-7.179	-28%	10.163	-16%	16.957	-7%	15.363	1%
			10X	High	234%	-2.911	-6%	9.612	0%	12.442	0%	12.097	1%	5.817	126%	12.109	6%	16.232	3%	15.155	-3%	-11.176	12%	16.841	39%	21.54	18%	18.415	21%
		Zone 36 (100 ft/day)	0.1X	High	56%	-3.105	0%	9.619	0%	12.402	0%	12.008	0%	2.363	-8%	11.511	0%	15.88	1%	15.705	1%	-12.017	20%	13.781	14%	19.778	8%	15.71	3%
			10X	High	88%	-3.067	-1%	9.617	0%	12.409	0%	12.025	0%	2.933	14%	11.401	0%	15.651	-1%	15.375	-1%	-5.788	-42%	9.899	-18%	16.534	-9%	15.488	1%
		Zone 37 (100 ft/day)	0.1X	Low	23%	-3.036	-2%	9.614	0%	12.412	0%	12.036	0%	2.953	15%	11.628	1%	15.94	1%	15.666	1%	-9.838	-1%	12.037	-1%	18.18	0%	15.288	0%
			10X	Low	16%	-3.077	0%	9.619	0%	12.409	0%	12.023	0%	2.318	-10%	11.386	-1%	15.69	-1%	15.52	0%	-10.211	2%	12.206	1%	18.326	0%	15.219	0%
		Zone 38 (100 ft/day)	0.1X	Medium	28%	-3.094	0%	9.618	0%	12.404	0%	12.013	0%	2.514	-2%	11.471	0%	15.801	0%	15.602	0%	-11.249	13%	13.113	8%	18.919	4%	15.213	0%
			10X	Low	18%	-3.087	0%	9.618	0%	12.405	0%	12.016	0%	2.612	2%	11.45	0%	15.759	0%	15.542	0%	-9.148	-8%	11.547	-5%	17.872	-2%	15.354	1%
		Zone 39 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.103	0%	18.238	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.991	0%	12.109	0%	18.245	0%	15.267	0%
	Model Layer 6	Zone 31 (1 ft/day)	0.1X	Low	11%	-2.874	-7%	9.505	-1%	12.289	-1%	11.949	-1%	2.591	1%	11.464	0%	15.782	0%	15.569	0%	-9.981	0%	12.102	0%	18.237	0%	15.264	0%
			10X	Low	2%	-3.127	1%	9.637	0%	12.429	0%	12.031	0%	2.568	0%	11.457	0%	15.774	0%	15.565	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
		Zone 32 (1 ft/day)	0.1X	Low	25%	-2.974	-4%	9.854	2%	12.683	2%	12.33	3%	2.859	11%	11.561	1%	15.871	1%	15.613	0%	-9.949	0%	12.086	0%	18.217	0%	15.26	0%
			10X	Low	14%	-3.063	-1%	9.422	-2%	12.206	-2%	11.817	-2%	2.405	-6%	11.399	-1%	15.722	0%	15.539	0%	-10.005	0%	12.114	0%	18.253	0%	15.267	0%
		Zone 33 (1 ft/day)	0.1X	Low	24%	-2.685	-13%	9.855	2%	12.841	4%	12.558	5%	2.564	0%	11.477	0%	15.794	0%	15.587	0%	-9.985	0%	12.104	0%	18.238	0%	15.263	0%
			10X	Medium	27%	-3.506	13%	9.439	-2%	12.131	-2%	11.615	-3%	2.434	-5%	11.453	0%	15.776	0%	15.588	0%	-10.005	0%	12.114	0%	18.253	0%	15.267	0%
		Zone 34 (1 ft/day)	0.1X	Low	14%	-3.116	1%	9.62	0%	12.401	0%	12.004	0%	2.355	-8%	11.555	1%	15.902	1%	15.728	1%	-10.037	1%	12.163	0%	18.317	0%	15.322	0%
			10X	Low	4%	-3.08	0%	9.618	0%	12.406	0%	12.019	0%	2.633	2%	11.421	0%	15.728	0%	15.507	0%	-10.018	0%	12.098	0%	18.227	0%	15.227	0%
		Zone 35 (1 ft/day)	0.1X	Low	5%	-3.091	0%	9.618	0%	12.404	0%	12.014	0%	2.584	0%	11.459	0%	15.779	0%	15.567	0%	-9.75	-2%	11.933	-1%	18.154	0%	15.314	0%
			10X	Low	6%	-3.084	0%	9.618	0%	12.406	0%	12.017	0%	2.631	2%	11.428	0%	15.734	0%	15.514	0%	-10.1	1%	12.182	1%	18.303	0%	15.264	0%
		Zone 36 (0.1 ft/day)	0.1X	Medium	31%	-3.105	0%	9.619	0%	12.402	0%	12.009	0%	2.419	-6%	11.505	0%	15.882	1%	15.698	1%	-10.969	10%	12.815	6%	19.076	5%	15.607	2%
			10X	Low	13%	-3.085	0%	9.618	0%	12.405	0%	12.017	0%	2.623	2%	11.446	0%	15.748	0%	15.53	0%	-9.405	-6%	11.722	-3%	17.918	-2%	15.251	0%
		Zone 37 (1 ft/day)	0.1X	Low	4%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.656	3%	11.472	0%	15.772	0%	15.549	0%	-9.952	0%	12.093	0%	18.232	0%	15.277	0%
			10X	Low	1%	-3.086	0%	9.618	0%	12.405	0%	12.016	0%	2.587	1%	11.458	0%	15.77	0%	15.558	0%	-10.002	0%	12.11	0%	18.242	0%	15.256	0%
		Zone 38 (0.01 ft/day)	0.1X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.457	0%	15.774	0%	15.564	0%	-10.025	0%	12.129	0%	18.239	0%	15.237	0%
			10X	Low	4%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.575	0%	11.458	0%	15.776	0%	15.566	0%	-9.779	-2%	11.983	-1%	18.206	0%	15.358	1%
		Zone 39 (0.1 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.99	0%	12.107	0%	18.243	0%	15.265	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
	Model Layer 7	Zone 31 (200 ft/day)	0.1X	Medium	32%	-2.452	-21%	9.435	-2%	12.481	1%	12.239	2%	2.716	6%	11.508	0%	15.826	0%	15.593	0%	-9.97	0%	12.096	0%	18.23	0%	15.263	0%
			10X	Medium	28%	-2.617	-15%	9.224	-4%	11.949	-4%	11.66	-3%	2.532	-2%	11.444	0%	15.761	0%	15.558	0%	-9.991	0%	12.107	0%	18.243	0%	15.264	0%
		Zone 32 (200 ft/day)	0.1X	High	871%	-15.289	395%	21.503	124%	25.305	104%	20.166	68%	6.204	141%	13.309	16%	17.58	11%	16.45	6%	-9.641	-3%	11.935	-1%	18.032	-1%	15.238	0%
			10X	High	2042%	38.068	-1332%	39.12	307%	43.128	248%	20.272	69%	0.636	-75%	11.034	-4%	15.314	-3%	15.302	-2%	-10.167	2%	12.202	1%	18.357	1%	15.285	0%
		Zone 33 (100 ft/day)	0.1X	High	371%	-8.598	178%	13.057	36%	15.725	27%	13.167	10%	5.108	99%	12.049	5%	16.447	4%	15.636	0%	-9.232	-8%	11.797	-3%	17.925	-2%	15.366	1%
			10X	High	2342%	33.215	-1175%	34.287	256%	40.612	227%	23.37	95%	11.971	365%	21.641	89%	26.481	68%	23.624	52%	-10.84	9%	12.463	3%	18.47	1%	14.955	-2%
		Zone 34 (100 ft/day)	0.1X	High	110%	-3.106	1%	9.612	0%	12.39	0%	11.995	0%	3.442	34%	11.567	1%	15.427	-2%	15.04	-3%	-5.476	-45%	10.736	-11%	17.155	-6%	16.258	7%
			10X	High	169%	-3.06	-1%	9.632	0%	12.439	0%	12.058	0%	1.754	-32%	12.912	13%	18.025	14%	17.942	15%	-14.869	49%	15.355	27%	21.135	16%	15.021	-2%
		Zone 35 (50 ft/day)	0.1X	High	133%	-3.174	3%	9.622	0%	12.389	0%	11.977	0%	1.217	-53%	12.032	5%	16.441	4%	16.397	5%	-6.172	-38%	10.504	-13%	17.511	-4%	16.387	7%
			10X	High	339%	-2.805	-9%	9.609	0%	12.466	0%	12.147	1%	7.157	178%	12.532	9%	16.71	6%	15.101	-3%	-11.662	17%	18.758	55%	23.255	28%	20.12	32%
		Zone 36 (50 ft/day)	0.1X	Medium	37%	-3.106	1%	9.619	0%	12.402	0%	12.008	0%	2.35	-9%	11.514	0%	15.886	1%	15.713	1%	-9.791	-2%	13.224	9%	19.299	6%	16.631	9%
			10X	Medium	35%	-3.076	0%	9.617	0%	12.407	0%	12.021	0%	2.791	9%	11.418	0%	15.693	-1%	15.445	-1%	-8.557	-14%	11.388	-6%	17.727	-3%	15.525	2%
		Zone 37 (5 ft/day)	0.1X	Low	20%	-3.163	2%	9.629	0%	12.404	0%	11.995	0%	2.547	-1%	11.493	0%	15.879	1%	15.675	1%	-9.194	-8%	11.73	-3%	18.286	0%	15.808	4%
			10X	Medium	48%	-2.859	-7%	9.606	0%	12.447	0%	12.115	1%	2.982	16%	11.777	3%	15.893	1%	15.613	0%	-11.011	10%	12.723	5%	18.541	2%	14.917	-2%

Table 5-1. Sensitivity Analysis -- Residual Statistics
units: Feet

Parameters		Multiplier	Sensitivity	absolute diff. sum	Piru basin								Fillmore basin								Santa Paula basin							
					RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)
					Default = -3.09		9.618		Default = 12.405		Default = 12.015		Default = 2.572		Default = 11.458		Default = 15.775		Default = 15.566		Default = -9.985		Default = 12.104		Default = 18.239		Default = 15.264	
	Zone 38 (20 ft/day)	0.1X	Low	14%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.548	-1%	11.46	0%	15.776	0%	15.571	0%	-10.614	6%	12.689	5%	18.501	1%	15.154	-1%
		10X	Low	9%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.591	1%	11.457	0%	15.775	0%	15.562	0%	-9.621	-4%	11.952	-1%	18.409	1%	15.696	3%
	Zone 39 (5 ft/day)	0.1X	Low	1%	-3.094	0%	9.619	0%	12.405	0%	12.014	0%	2.562	0%	11.449	0%	15.773	0%	15.565	0%	-9.945	0%	12.08	0%	18.219	0%	15.267	0%
		10X	Low	1%	-3.088	0%	9.618	0%	12.405	0%	12.016	0%	2.577	0%	11.463	0%	15.776	0%	15.566	0%	-10.004	0%	12.119	0%	18.255	0%	15.27	0%
Model Layer 8	Zone 31 (0.01 ft/day)	0.1X	Low	8%	-3.128	1%	9.862	3%	12.646	2%	12.254	2%	2.583	0%	11.46	0%	15.777	0%	15.565	0%	-9.981	0%	12.102	0%	18.237	0%	15.264	0%
		10X	Low	22%	-3.168	3%	8.941	-7%	11.81	-5%	11.379	-5%	2.519	-2%	11.446	0%	15.767	0%	15.566	0%	-9.999	0%	12.111	0%	18.249	0%	15.266	0%
	Zone 32 (0.01 ft/day)	0.1X	High	137%	-2.407	-22%	12.261	27%	16.637	34%	16.464	37%	2.888	12%	11.459	0%	15.73	0%	15.464	-1%	-9.85	-1%	12.034	-1%	18.146	-1%	15.241	0%
		10X	Medium	35%	-3.058	-1%	8.841	-8%	11.766	-5%	11.363	-5%	2.258	-12%	11.415	0%	15.775	0%	15.614	0%	-10.096	1%	12.162	0%	18.316	0%	15.282	0%
	Zone 33 (0.01 ft/day)	0.1X	Low	21%	-3.24	5%	9.615	0%	12.331	-1%	11.898	-1%	2.33	-9%	11.273	-2%	15.598	-1%	15.425	-1%	-9.893	-1%	12.065	0%	18.198	0%	15.274	0%
		10X	High	100%	-2.268	-27%	9.619	0%	12.68	2%	12.476	4%	3.876	51%	11.94	4%	15.931	1%	15.453	-1%	-9.465	-5%	11.815	-2%	17.82	-2%	15.099	-1%
	Zone 34 (0.01 ft/day)	0.1X	High	105%	-3.453	12%	9.652	0%	12.371	0%	11.88	-1%	1.112	-57%	11.716	2%	17.412	10%	17.378	12%	-9.972	0%	12.315	2%	18.85	3%	15.997	5%
		10X	High	106%	-2.607	-16%	9.585	0%	12.471	1%	12.196	2%	4.106	60%	11.161	-3%	14.803	-6%	14.224	-9%	-9.998	0%	11.872	-2%	17.547	-4%	14.421	-6%
	Zone 35 (0.01 ft/day)	0.1X	High	62%	-3.192	3%	9.626	0%	12.392	0%	11.975	0%	2.093	-19%	11.697	2%	16.581	5%	16.45	6%	-8.775	-12%	11.481	-5%	18.608	2%	16.409	8%
		10X	High	136%	-2.841	-8%	9.603	0%	12.443	0%	12.115	1%	3.792	47%	10.923	-5%	14.562	-8%	14.061	-10%	-12.498	25%	13.844	14%	17.945	-2%	12.878	-16%
	Zone 36 (0.01 ft/day)	0.1X	Low	19%	-3.115	1%	9.62	0%	12.401	0%	12.005	0%	2.377	-8%	11.527	1%	15.95	1%	15.773	1%	-10.043	1%	12.111	0%	18.795	3%	15.888	4%
		10X	High	83%	-2.973	-4%	9.611	0%	12.423	0%	12.063	0%	3.447	34%	11.158	-3%	15.087	-4%	14.689	-6%	-10.164	2%	12.402	2%	16.284	-11%	12.723	-17%
	Zone 37 (0.01 ft/day)	0.1X	Low	6%	-3.06	-1%	9.611	0%	12.4	0%	12.018	0%	2.545	-1%	11.383	-1%	15.805	0%	15.6	0%	-9.867	-1%	12.139	0%	18.113	-1%	15.19	0%
		10X	Medium	32%	-2.966	-4%	9.608	0%	12.419	0%	12.06	0%	2.699	5%	11.322	-1%	15.247	-3%	15.008	-4%	-10.731	7%	12.539	4%	18.407	1%	14.956	-2%
	Zone 38 (0.01 ft/day)	0.1X	Low	9%	-3.097	0%	9.618	0%	12.404	0%	12.012	0%	2.517	-2%	11.477	0%	15.823	0%	15.623	0%	-9.812	-2%	12.014	-1%	18.448	1%	15.623	2%
		10X	Medium	50%	-3.037	-2%	9.615	0%	12.413	0%	12.037	0%	2.987	16%	11.317	-1%	15.436	-2%	15.146	-3%	-10.56	6%	12.645	4%	17.304	-5%	13.708	-10%
	Zone 39 (0.01 ft/day)	0.1X	Low	2%	-3.085	0%	9.618	0%	12.405	0%	12.016	0%	2.567	0%	11.458	0%	15.752	0%	15.543	0%	-10.041	1%	12.122	0%	18.235	0%	15.222	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.457	0%	15.777	0%	15.568	0%	-9.976	0%	12.101	0%	18.24	0%	15.27	0%
Model Layer 9	Zone 31 (100 ft/day)	0.1X	Low	3%	-3.064	-1%	9.693	1%	12.477	1%	12.096	1%	2.584	0%	11.461	0%	15.778	0%	15.567	0%	-9.983	0%	12.103	0%	18.238	0%	15.264	0%
		10X	Low	2%	-3.123	1%	9.588	0%	12.378	0%	11.979	0%	2.562	0%	11.455	0%	15.773	0%	15.566	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
	Zone 32 (100 ft/day)	0.1X	High	101%	-5.355	73%	10.422	8%	13.161	6%	12.023	0%	2.845	11%	11.506	0%	15.801	0%	15.544	0%	-9.908	-1%	12.064	0%	18.187	0%	15.252	0%
		10X	High	198%	1.342	-143%	9.414	-2%	13.621	10%	13.556	13%	1.928	-25%	11.324	-1%	15.71	0%	15.593	0%	-10.157	2%	12.195	1%	18.359	1%	15.293	0%
	Zone 33 (100 ft/day)	0.1X	High	112%	-4.269	38%	9.777	2%	12.386	0%	11.628	-3%	2.25	-13%	10.311	-10%	14.129	-10%	13.951	-10%	-8.603	-14%	11.426	-6%	17.333	-5%	15.047	-1%
		10X	High	200%	-0.426	-86%	9.543	-1%	12.918	4%	12.912	7%	1.94	-25%	12.864	12%	18.193	15%	18.091	16%	-11.645	17%	13.043	8%	19.474	7%	15.61	2%
	Zone 34 (100 ft/day)	0.1X	High	130%	-3.705	20%	9.679	1%	12.352	0%	11.785	-2%	2.041	-21%	9.925	-13%	13.322	-16%	13.166	-15%	-7.858	-21%	11.01	-9%	16.674	-9%	14.706	-4%
		10X	High	94%	-2.62	-15%	9.587	0%	12.474	1%	12.197	2%	2.686	4%	12.61	10%	18.253	16%	18.056	16%	-11.401	14%	12.94	7%	19.424	6%	15.727	3%
	Zone 35 (50 ft/day)	0.1X	High	112%	-3.251	5%	9.631	0%	12.385	0%	11.951	-1%	1.554	-40%	11.736	2%	16.595	5%	16.523	6%	-8.74	-12%	10.974	-9%	15.561	-15%	12.875	-16%
		10X	High	101%	-2.945	-5%	9.608	0%	12.426	0%	12.073	0%	3.457	34%	11.182	-2%	15.128	-4%	14.729	-5%	-11.081	11%	13.156	9%	20.808	14%	17.613	15%
	Zone 36 (50 ft/day)	0.1X	Low	19%	-3.107	1%	9.619	0%	12.403	0%	12.008	0%	2.428	-6%	11.51	0%	15.906	1%	15.721	1%	-9.899	-1%	11.986	-1%	17.548	-4%	14.49	-5%
		10X	Low	11%	-3.08	0%	9.617	0%	12.406	0%	12.019	0%	2.656	3%	11.427	0%	15.7	0%	15.475	-1%	-10.023	0%	12.167	1%	18.658	2%	15.738	3%
	Zone 37 (5 ft/day)	0.1X	High	51%	-2.808	-9%	9.605	0%	12.45	0%	12.131	1%	3.093	20%	11.254	-2%	15.311	-3%	14.997	-4%	-9.879	-1%	11.935	-1%	17.497	-4%	14.442	-5%
		10X	High	55%	-3.254	5%	9.647	0%	12.415	0%	11.983	0%	2.22	-14%	11.868	4%	16.68	6%	16.533	6%	-10.403	4%	12.505	3%	19.277	6%	16.23	6%
	Zone 38 (20 ft/day)	0.1X	Low	20%	-3.11	1%	9.619	0%	12.402	0%	12.007	0%	2.404	-7%	11.516	1%	15.918	1%	15.737	1%	-10.324	3%	12.336	2%	18.685	2%	15.574	2%
		10X	Low	9%	-3.078	0%	9.617	0%	12.407	0%	12.02	0%	2.671	4%	11.425	0%	15.695	-1%	15.467	-1%	-9.825	-2%	12.004	-1%	18.138	-1%	15.247	0%
	Zone 39 (5 ft/day)	0.1X	Low	14%	-3.071	-1%	9.618	0%	12.409	0%	12.024	0%	2.716	6%	11.417	0%	15.678	-1%	15.443	-1%	-9.751	-2%	11.957	-1%	18.013	-1%	15.146	-1%
		10X	Low	11%	-3.102	0%	9.618	0%	12.402	0%	12.008	0%	2.488	-3%	11.484	0%	15.843	0%	15.648	1%	-10.21	2%	12.266	1%	18.477	1%	15.4	1%
Model Layer 10	Zone 32 (100 ft/day)	0.1X	High	147%	-6.003	94%	10.663	11%	13.268	7%	11.833	-2%	3.273	27%	11.513	0%	15.759	0%	15.417	-1%	-9.723	-3%	11.97	-1%	18.063	-1%	15.223	0%
		10X	High	230%	1.595	-152%	9.702	1%	14.156	14%	14.067	17%	1.574	-39%	11.247	-2%	15.704	0%	15.626	0%	-10.254	3%	12.245	1%	18.426	1%	15.31	0%
	Zone 33 (100 ft/day)	0.1X	High	153%	-5.406	75%	10.157	6%	12.705	2%	11.498	-4%	3.534	37%	11.07	-3%	15.178	-4%	14.762	-5%	-9.112	-9%	11.669	-4%	17.662	-3%	15.13	-1%
		10X	High	259%	0.501	-116%	9.595	0%	13.173	6%	13.164	10%	1.153	-55%	12.511	9%	17.955	14%	17.92	15%	-11.639	17%	13.038	8%	19.466	7%	15.604	2%
	Zone 34 (100 ft/day)	0.1X	Low	14%	-3.154	2%	9.623	0%	12.397	0%	11.99	0%	2.549	-1%	11.292	-1%	15.45	-2%	15.24	-2%	-9.746	-2%	11.968	-1%	18.042	-1%	15.184	-1%
		10X	Medium	46%	-2.859	-7%	9.601	0%	12.436	0%	12.103	1%	2.594	1%	12.054	5%	17.054	8%	16.858	8%	-10.709	7%	12.516	3%	18.824	3%	15.482	1%
	Zone 35 (50 ft/day)	0.1X	Low	11%	-3.107	1%	9.619	0%	12.402	0%	12.008	0%	2.477	-4%	11.481	0%	15.841	0%	15.648	1%	-9.836	-1%	11.975	-1%	17.944	-2%	15.008	-2%
		10X	Medium	49%	-3.022	-2%	9.613	0%	12.414	0%	12.042	0%	3.007	17%	11.313	-1%	15.416	-2%	15.121	-3%	-10.504	5%	12.603	4%	19.473	7%	16.397	7%
	Zone 36 (50 ft/day)	0.1X	Low	5%	-3.093	0%	9.618	0%	12.404	0%	12.014	0%	2.539	-1%	11.471	0%	15.808	0%	15.605	0%	-9.935	-1%	12.053	0%	18.047	-1%	15.067	-1%
		10X	Low	9%	-3.082	0%	9.618	0%	12.406	0%	12.018	0%	2.637	3%	11.433	0%	15.715	0%	15.494	0%	-10.009	0%	12.149	0%	18.559	2%	15.629	2%
	Zone 37 (1 ft/day)	0.1X	Low	22%	-3.023	-2%	9.617	0%	12.419	0%	12.046	0%	2.812	9%	11.438	0%	15.685	-1%	15.432	-1%	-9.723	-3%	11.929	-1%	17.796	-2%	14.905	-2%
		10X	Medium	34%	-3.244	5%	9.637	0%	12.403	0%	11.972	0%	2.211	-14%	11.548	1%	16.008	1%	15.857	2%	-10.233	2%	12.297	2%	18.813	3%	15.787	3%
	Zone 38 (20 ft/day)	0.1X	Low	17%	-3.107	1%	9.619	0%	12.402	0%	12.008	0%	2.423	-6%	11.509	0%	15.902	1%	15.718	1%	-10.284	3%	12.306	2%	18.583	2%	15.478	1%
		10X	Low	10%	-3.077	0%	9.617	0%	12.407	0%	12.02	0%	2.675	4%	11.424	0%	15.692	-1%	15.464	-1%	-9.805	-2%	11.99	-1%	18.12	-1%	15.238	0%
	Zone 39 (1 ft/day)	0.1X	Low	6%	-3.084	0%	9.618	0%	12.406	0%	12.018	0%	2.638	3%	11.442	0%	15.742	0%	15.521	0%	-9.849	-1%	12.03	-1%	18.146	-1%	15.241	0%
		10X	Low	7%	-3.097	0%	9.618	0%	12.402	0%	12.011	0%	2.506	-3%	11.477	0%	15.811	0%	15.612	0%	-10.166	2%	12.22	1%	18.382	1%	15.316	0%
Model Layer 1	Zone 31 (120 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 32 (120 Ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.1	0%	9.622	0%	12.407	0%	12.015	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 33 (60 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.455	0%	15.776	0%	15.566	0%	-9.983	0%	12.103	0%	18.239	0%	15.264	0%
	Zone 34 (20 Ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.775	0%	15.566	0%	-9.983	0%	12.103	0%	18.239	0%	15.264	0%
		10X	Low	1%	-3.091	0%	9.618	0%	12.405	0%	12.014	0%	2.556	-1%	11.46	0%	15.777	0%	15.57	0%	-9.999	0%	12.11	0%	18.246	0%	15.263	0%
	Zone 35 (20 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 36 (20 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.988	0%	12.107	0%	18.241	0%	15.264	0%
	Zone 37 (20 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.567	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.456	0%	15.771	0%	15.561	0%	-9.979	0%	12.102	0%	18.237	0%	15.265	0%
	Zone 39 (1 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
Model Layer 2	Zone 31 (0.01 ft/day)	0.1X	Low	0%	-3.093	0%	9.62	0%	12.406	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.082	0%	9.614	0%	12.402	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 32 (0.01 ft/day)	0.1X	Low	19%	-2.653	-14%	9.472	-2%	12.299	-1%	12.011	0%	2.63	2%	11.485	0%	15.796	0%	15.577	0%	-9.978	0%	12.101	0%	18.235	0%	15.263	0%
		10X	Low	11%	-3.255	5%	9.771	2%	12.565	1%	12.137	1%	2.54	-1%	11.445	0%	15.779	0%	15.575	0%	-9.998	0%	12.11	0%	18.246	0%	15.263	0%
	Zone 33 (0.01 ft/day)	0.1X	Medium	49%	-3.658	18%	9.614	0%	12.314	-1%	11.759	-2%	1.978	-23%	11.327	-1%	15.58	-1%	15.456	-1%	-10.047	1%	12.134	0%	18.277	0%	15.268	0%
		10X	High	117%	-1.665	-46%	9.604	0%	12.752	3%	12.644	5%	3.855	50%	12	5%	16.38	4%	15.922	2%	-9.864	-1%	12.046	0%	18.167	0%	15.257	0%
	Zone 34 (0.01 ft/day)	0.1X	Medium	49%	-3.027	-2%	9.615	0%	12.416	0%	12.043	0%	3.322	29%	11.316	-1%	15.666	-1%	15.311	-2%	-9.121	-9%	11.742	-3%	17.856	-2%	15.351	1%
		10X	Medium	46%	-3.147	2%	9.621	0%	12.395	0%	11.99	0%	1.884	-27%	11.632	2%	15.934	1%	15.823	2%	-10.762	8%	12.47	3%	18.623	2%	15.2	0%
	Zone 35 (0.01 ft/day)	0.1X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.556	-1%	11.46	0%	15.779	0%	15.573	0%	-10.014	0%	12.111	0%	18.25	0%	15.258	0%
		10X	Low	5%	-3.086	0%	9.618	0%	12.406	0%	12.017	0%	2.637	3%	11.453	0%	15.762	0%	15.541	0%	-9.858	-1%	12.076	0%	18.19	0%	15.288	0%
	Zone 36 (0.01 ft/day)	0.1X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.575	0%	11.457	0%	15.774	0%	15.564	0%	-9.939	0%	12.068	0%	18.215	0%	15.265	0%
		10X	Low	4%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.559	-1%	11.462	0%	15.783	0%	15.576	0%	-10.16	2%	12.246	1%	18.34	1%	15.269	0%
	Zone 37 (10ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.457	0%	15.775	0%	15.566	0%	-9.983	0%	12.103	0%	18.239	0%	15.264	0%
	Zone 39 (1 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%

Table 5-1. Sensitivity Analysis -- Residual Statistics
units: Feet

Parameters			Multiplier	Sensitivity	absolute diff. sum	Piru basin RM (Default = -3.09)	Diff. (%)	ARM (9.618)	Diff. (%)	RMS (Default = 12.405)	Diff. (%)	Std. Dev. (Default = 12.015)	Diff. (%)	Fillmore basin RM (Default = 2.572)	Diff. (%)	ARM (Default = 11.458)	Diff. (%)	RMS (Default = 15.775)	Diff. (%)	Std. Dev. (Default = 15.566)	Diff. (%)	Santa Paula basin RM (Default = -9.985)	Diff. (%)	ARM (Default = 12.104)	Diff. (%)	RMS (Default = 18.239)	Diff. (%)	Std. Dev. (Default = 15.264)	Diff. (%)
Vertical Hydraulic Conductivity		Zone 39 (1 ft/day)	10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Model Layer 3	Zone 26 (60 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.459	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	1%	-3.093	0%	9.618	0%	12.405	0%	12.014	0%	2.552	-1%	11.452	0%	15.768	0%	15.562	0%	-9.987	0%	12.105	0%	18.24	0%	15.264	0%
		Zone 31 (120 ft/day)	0.1X	Low	0%	-3.095	0%	9.621	0%	12.407	0%	12.015	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	3%	-3.034	-2%	9.594	0%	12.388	0%	12.012	0%	2.579	0%	11.46	0%	15.778	0%	15.567	0%	-9.984	0%	12.103	0%	18.239	0%	15.264	0%
		Zone 32 (120 ft/day)	0.1X	Low	1%	-3.078	0%	9.613	0%	12.401	0%	12.014	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	4%	-3.189	3%	9.666	0%	12.443	0%	12.028	0%	2.565	0%	11.455	0%	15.773	0%	15.565	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
		Zone 33 (40 ft/day)	0.1X	Low	0%	-3.092	0%	9.618	0%	12.404	0%	12.013	0%	2.578	0%	11.455	0%	15.774	0%	15.564	0%	-9.982	0%	12.103	0%	18.238	0%	15.264	0%
			10X	Low	4%	-3.062	-1%	9.622	0%	12.415	0%	12.033	0%	2.523	-2%	11.489	0%	15.787	0%	15.586	0%	-10.008	0%	12.114	0%	18.25	0%	15.262	0%
		Zone 34 (10 ft/day)	0.1X	Low	1%	-3.088	0%	9.618	0%	12.405	0%	12.016	0%	2.586	1%	11.455	0%	15.772	0%	15.561	0%	-9.969	0%	12.097	0%	18.232	0%	15.265	0%
			10X	Low	7%	-3.099	0%	9.619	0%	12.403	0%	12.011	0%	2.461	-4%	11.486	0%	15.802	0%	15.611	0%	-10.107	1%	12.16	0%	18.299	0%	15.255	0%
		Zone 35 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.567	0%	-9.988	0%	12.108	0%	18.243	0%	15.266	0%
			10X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.576	0%	11.454	0%	15.771	0%	15.561	0%	-9.951	0%	12.062	0%	18.207	0%	15.248	0%
		Zone 36 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.977	0%	12.099	0%	18.235	0%	15.264	0%
			10X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.568	0%	11.459	0%	15.777	0%	15.569	0%	-10.049	1%	12.148	0%	18.273	0%	15.263	0%
		Zone 37 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.457	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 38 (10 ft/day)	0.1X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.775	0%	15.565	0%	-9.937	0%	12.07	0%	18.216	0%	15.268	0%
			10X	Low	8%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.557	-1%	11.461	0%	15.782	0%	15.576	0%	-10.352	4%	12.373	2%	18.423	1%	15.24	0%
		Zone 39 (1 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Model Layer 4	Zone 26 (40 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 31 (100 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.087	0%	9.617	0%	12.404	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 32 (100 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.092	0%	9.619	0%	12.406	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 33 (20 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.089	0%	9.619	0%	12.406	0%	12.016	0%	2.571	0%	11.459	0%	15.776	0%	15.566	0%	-9.986	0%	12.104	0%	18.24	0%	15.264	0%
		Zone 34 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.569	0%	11.46	0%	15.777	0%	15.568	0%	-9.99	0%	12.106	0%	18.242	0%	15.264	0%
		Zone 35 (0.1 ft/day)	0.1X	Low	10%	-3.092	0%	9.618	0%	12.404	0%	12.014	0%	2.549	-1%	11.471	0%	15.797	0%	15.591	0%	-10.285	3%	12.455	3%	18.537	2%	15.423	1%
			10X	High	59%	-3.073	-1%	9.617	0%	12.408	0%	12.022	0%	2.779	8%	11.385	-1%	15.661	-1%	15.414	-1%	-7.625	-24%	10.15	-16%	16.958	-7%	15.148	-1%
		Zone 36 (0.1 ft/day)	0.1X	Low	8%	-3.088	0%	9.618	0%	12.405	0%	12.016	0%	2.588	1%	11.454	0%	15.768	0%	15.556	0%	-9.626	-4%	11.855	-2%	18.067	-1%	15.289	0%
			10X	Low	4%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.565	0%	11.46	0%	15.779	0%	15.571	0%	-10.145	2%	12.246	1%	18.332	1%	15.269	0%
		Zone 37 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 38 (0.1 ft/day)	0.1X	Low	3%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.775	0%	15.565	0%	-10.157	2%	12.18	1%	18.289	0%	15.209	0%
			10X	Low	5%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.555	-1%	11.461	0%	15.782	0%	15.576	0%	-9.992	0%	12.337	2%	18.392	1%	15.442	1%
		Zone 39 (1 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Model Layer 5	Zone 26 (40 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.576	0%	11.459	0%	15.777	0%	15.567	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	2%	-3.096	0%	9.619	0%	12.404	0%	12.013	0%	2.54	-1%	11.448	0%	15.764	0%	15.56	0%	-9.987	0%	12.105	0%	18.241	0%	15.264	0%
		Zone 31 (100 ft/day)	0.1X	Low	0%	-3.099	0%	9.622	0%	12.408	0%	12.016	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	4%	-3	-3%	9.579	0%	12.375	0%	12.007	0%	2.583	0%	11.461	0%	15.779	0%	15.568	0%	-9.983	0%	12.103	0%	18.238	0%	15.264	0%
		Zone 32 (100 ft/day)	0.1X	Low	1%	-3.077	0%	9.611	0%	12.4	0%	12.013	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	5%	-3.199	4%	9.676	1%	12.45	0%	12.033	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 33 (20 ft/day)	0.1X	Low	1%	-3.092	0%	9.615	0%	12.4	0%	12.01	0%	2.594	1%	11.453	0%	15.776	0%	15.563	0%	-9.977	0%	12.101	0%	18.236	0%	15.265	0%
			10X	Low	9%	-3.064	-1%	9.649	0%	12.449	0%	12.067	0%	2.42	-6%	11.492	0%	15.771	0%	15.585	0%	-10.033	0%	12.126	0%	18.263	0%	15.26	0%
		Zone 34 (10 ft/day)	0.1X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.582	0%	11.455	0%	15.772	0%	15.561	0%	-9.976	0%	12.1	0%	18.234	0%	15.264	0%
			10X	Low	5%	-3.098	0%	9.619	0%	12.403	0%	12.011	0%	2.495	-3%	11.481	0%	15.804	0%	15.607	0%	-10.052	1%	12.139	0%	18.279	0%	15.267	0%
		Zone 35 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.106	0%	18.241	0%	15.265	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.57	0%	11.459	0%	15.777	0%	15.568	0%	-9.977	0%	12.088	0%	18.226	0%	15.253	0%
		Zone 36 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.565	0%	-9.967	0%	12.091	0%	18.229	0%	15.264	0%
			10X	Low	3%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.563	0%	11.46	0%	15.78	0%	15.572	0%	-10.129	1%	12.207	1%	18.321	0%	15.266	0%
		Zone 37 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 38 (10 ft/day)	0.1X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.775	0%	15.565	0%	-9.95	0%	12.078	0%	18.222	0%	15.266	0%
			10X	Low	6%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.559	-1%	11.461	0%	15.781	0%	15.574	0%	-10.261	3%	12.315	2%	18.384	1%	15.254	0%
		Zone 39 (1 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Model Layer 6	Zone 31 (0.1 ft/day)	0.1X	Low	2%	-3.127	1%	9.637	0%	12.429	0%	12.031	0%	2.568	0%	11.457	0%	15.774	0%	15.565	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
			10X	Low	11%	-2.874	-7%	9.505	-1%	12.288	-1%	11.949	-1%	2.591	1%	11.464	0%	15.782	0%	15.569	0%	-9.981	0%	12.102	0%	18.237	0%	15.264	0%
		Zone 32 (0.1 ft/day)	0.1X	Low	13%	-3.074	-1%	9.429	-2%	12.213	-2%	11.821	-2%	2.406	-6%	11.399	-1%	15.723	0%	15.539	0%	-10.005	0%	12.114	0%	18.253	0%	15.267	0%
			10X	Low	25%	-2.972	-4%	9.853	2%	12.681	2%	12.329	3%	2.858	11%	11.561	1%	15.871	1%	15.613	0%	-9.95	0%	12.086	0%	18.217	0%	15.26	0%
		Zone 33 (0.1 ft/day)	0.1X	Medium	28%	-3.559	15%	9.445	-2%	12.129	-2%	11.596	-3%	2.456	-5%	11.458	0%	15.78	0%	15.59	0%	-10.003	0%	12.113	0%	18.252	0%	15.267	0%
			10X	Low	24%	-2.682	-13%	9.852	2%	12.838	3%	12.556	5%	2.562	0%	11.476	0%	15.794	0%	15.586	0%	-9.985	0%	12.104	0%	18.238	0%	15.263	0%
		Zone 34 (0.1 ft/day)	0.1X	Low	5%	-3.08	0%	9.618	0%	12.406	0%	12.019	0%	2.636	2%	11.419	0%	15.725	0%	15.504	0%	-10.003	0%	12.092	0%	18.22	0%	15.23	0%
			10X	Low	14%	-3.116	1%	9.62	0%	12.401	0%	12.004	0%	2.355	-8%	11.555	1%	15.902	1%	15.728	1%	-10.04	1%	12.164	0%	18.318	0%	15.322	0%
		Zone 35 (0.1 ft/day)	0.1X	Low	3%	-3.086	0%	9.618	0%	12.406	0%	12.017	0%	2.606	1%	11.434	0%	15.741	0%	15.526	0%	-10.058	1%	12.129	0%	18.27	0%	15.252	0%
			10X	Low	5%	-3.09	0%	9.618	0%	12.404	0%	12.014	0%	2.587	1%	11.458	0%	15.778	0%	15.566	0%	-9.756	-2%	11.939	-1%	18.157	0%	15.314	0%
		Zone 36 (0.01 ft/day)	0.1X	Low	13%	-3.085	0%	9.618	0%	12.405	0%	12.017	0%	2.622	2%	11.446	0%	15.749	0%	15.53	0%	-9.406	-6%	11.723	-3%	17.919	-2%	15.252	0%
			10X	Medium	31%	-3.105	0%	9.619	0%	12.402	0%	12.009	0%	2.419	-6%	11.505	0%	15.881	1%	15.698	1%	-10.969	10%	12.816	6%	19.076	5%	15.607	2%
		Zone 37 (0.1 ft/day)	0.1X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.553	-1%	11.445	0%	15.764	0%	15.558	0%	-9.991	0%	12.104	0%	18.237	0%	15.257	0%
			10X	Low	4%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.659	3%	11.474	0%	15.773	0%	15.549	0%	-9.953	0%	12.093	0%	18.232	0%	15.275	0%
		Zone 38 (0.001 ft/day)	0.1X	Low	4%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.575	0%	11.458	0%	15.776	0%	15.566	0%	-9.776	-2%	11.983	-1%	18.205	0%	15.359	1%
			10X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.457	0%	15.774	0%	15.564	0%	-10.024	0%	12.128	0%	18.238	0%	15.237	0%
		Zone 39 (0.01 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.99	0%	12.107	0%	18.243	0%	15.265	0%
		Zone 31 (20 ft/day)	0.1X	Low	2%	-3.125	1%	9.638	0%	12.427	0%	12.029	0%	2.569	0%	11.457	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
			10X	Low	10%	-2.89	-6%	9.511	-1%	12.292	-1%	11.949	-1%	2.588	1%	11.463	0%	15.78	0%	15.568	0%	-9.982	0%	12.103	0%	18.238	0%	15.264	0%
		Zone 32 (20 ft/day)	0.1X	Low	2%	-3.073	-1%	9.587	0%	12.376	0%	11.99	0%	2.552	-1%	11.451	0%	15.769	0%	15.563	0%	-9.988	0%	12.105	0%	18.241	0%	15.264	0%
			10X	Low	11%	-3.075	0%	9.764	2%	12.551	1%	12.169	1%	2.709	5%	11.504	0%	15.817	0%	15.585	0%	-9.966	0%	12.094	0%	18.227	0%	15.262	0%
		Zone 33 (10 ft/day)	0.1X	Low	1%	-3.08	0%	9.623	0%	12.414	0%	12.027	0%	2.581	0%	11.461	0%	15.78	0%	15.569	0%	-9.982	0%	12.103	0%	18.238	0%	15.264	0%
			10X	Low	6%	-3.14	2%	9.58	0%	12.346	0%	11.941	-1%	2.521	-2%	11.428	0%	15.737	0%	15.536	0%	-9.993	0%	12.107	0%	18.242	0%	15.262	0%
		Zone 34 (10 ft/day)	0.1X	Low	1%	-3.088	0%	9.618	0%	12.405	0%	12.016	0%	2.583	0%	11.454	0%	15.769	0%	15.557	0%	-9.981	0%	12.101	0%	18.235	0%	15.261	0%
			10X	Low	6%	-3.105	0%	9.619	0%	12.403	0%	12.009	0%	2.477	-4%	11.491	0%	15.84	0%	15.647	1%	-10.013	0%	12.129	0%	18.278	0%	15.292	0%

Table 5-1. Sensitivity Analysis -- Residual Statistics
units: Feet

Parameters		Multiplier	Sensitivity	absolute diff. sum	Piru basin								Fillmore basin								Santa Paula basin							
					RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)
					Default = -3.09		9.618		Default = 12.405		Default = 12.015		Default = 2.572		Default = 11.458		Default = 15.775		Default = 15.566		Default = -9.985		Default = 12.104		Default = 18.239		Default = 15.264	
Model Layer 7	Zone 35 (5 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.456	0%	15.773	0%	15.563	0%	-9.991	0%	12.107	0%	18.241	0%	15.263	0%
		10X	Low	2%	-3.092	0%	9.618	0%	12.404	0%	12.014	0%	2.561	0%	11.47	0%	15.798	0%	15.591	0%	-9.924	-1%	12.07	0%	18.219	0%	15.28	0%
	Zone 36 (5 ft/day)	0.1X	Low	3%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.581	0%	11.456	0%	15.771	0%	15.56	0%	-9.846	-1%	12.006	-1%	18.157	0%	15.257	0%
		10X	Low	11%	-3.092	0%	9.618	0%	12.404	0%	12.014	0%	2.538	-1%	11.466	0%	15.792	0%	15.589	0%	-10.448	5%	12.441	3%	18.53	2%	15.304	0%
	Zone 37 (0.5 ft/day)	0.1X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.582	0%	11.46	0%	15.79	0%	15.579	0%	-9.998	0%	12.109	0%	18.242	0%	15.259	0%
		10X	Low	2%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.565	0%	11.456	0%	15.747	0%	15.538	0%	-9.918	-1%	12.077	0%	18.223	0%	15.288	0%
	Zone 38 (2 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.567	0%	-9.985	0%	12.104	0%	18.242	0%	15.267	0%
	Zone 39 (0.5 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.263	0%
Model Layer 8	Zone 31 (0.001 ft/day)	0.1X	Low	22%	-3.166	2%	8.941	-7%	11.81	-5%	11.379	-5%	2.519	-2%	11.446	0%	15.767	0%	15.566	0%	-9.999	0%	12.111	0%	18.249	0%	15.266	0%
		10X	Low	8%	-3.129	1%	9.863	3%	12.647	2%	12.254	2%	2.583	0%	11.46	0%	15.777	0%	15.565	0%	-9.981	0%	12.102	0%	18.237	0%	15.264	0%
	Zone 32 (0.001 ft/day)	0.1X	Medium	35%	-3.058	-1%	8.841	-8%	11.767	-5%	11.363	-5%	2.258	-12%	11.415	0%	15.775	0%	15.614	0%	-10.096	1%	12.162	0%	18.316	0%	15.282	0%
		10X	High	137%	-2.401	-22%	12.26	27%	16.639	34%	16.466	37%	2.889	12%	11.459	0%	15.73	0%	15.464	-1%	-9.85	-1%	12.034	-1%	18.146	-1%	15.241	0%
	Zone 33 (0.001 ft/day)	0.1X	High	100%	-2.269	-27%	9.619	0%	12.68	2%	12.476	4%	3.876	51%	11.939	4%	15.93	1%	15.453	-1%	-9.465	-5%	11.815	-2%	17.82	-2%	15.099	-1%
		10X	Low	21%	-3.24	5%	9.615	0%	12.331	-1%	11.898	-1%	2.337	-9%	11.28	-2%	15.609	-1%	15.435	-1%	-9.893	-1%	12.065	0%	18.198	0%	15.274	0%
	Zone 34 (0.001 ft/day)	0.1X	High	106%	-2.607	-16%	9.585	0%	12.471	1%	12.196	2%	4.106	60%	11.161	-3%	14.803	-6%	14.224	-9%	-9.998	0%	11.872	-2%	17.547	-4%	14.421	-6%
		10X	High	105%	-3.453	12%	9.652	0%	12.371	0%	11.88	-1%	1.112	-57%	11.716	2%	17.412	10%	17.378	12%	-9.972	0%	12.315	2%	18.85	3%	15.997	5%
	Zone 35 (0.001 ft/day)	0.1X	High	136%	-2.841	-8%	9.603	0%	12.443	0%	12.115	1%	3.791	47%	10.923	-5%	14.562	-8%	14.061	-10%	-12.497	25%	13.843	14%	17.945	-2%	12.878	-16%
		10X	High	62%	-3.192	3%	9.626	0%	12.392	0%	11.975	0%	2.093	-19%	11.697	2%	16.581	5%	16.45	6%	-8.775	-12%	11.48	-5%	18.607	2%	16.408	7%
	Zone 36 (0.001 ft/day)	0.1X	High	83%	-2.973	-4%	9.611	0%	12.423	0%	12.063	0%	3.447	34%	11.158	-3%	15.087	-4%	14.69	-6%	-10.163	2%	12.402	2%	16.284	-11%	12.723	-17%
		10X	Low	19%	-3.115	1%	9.62	0%	12.401	0%	12.004	0%	2.377	-8%	11.527	1%	15.95	1%	15.773	1%	-10.044	1%	12.112	0%	18.797	3%	15.888	4%
	Zone 37 (0.001 ft/day)	0.1X	Medium	32%	-2.966	-4%	9.608	0%	12.419	0%	12.06	0%	2.7	5%	11.323	-1%	15.249	-3%	15.009	-4%	-10.73	7%	12.538	4%	18.407	1%	14.957	-2%
		10X	Low	6%	-3.06	-1%	9.611	0%	12.4	0%	12.018	0%	2.544	-1%	11.382	-1%	15.804	0%	15.599	0%	-9.87	-1%	12.141	0%	18.116	-1%	15.191	0%
	Zone 38 (0.001 ft/day)	0.1X	Medium	50%	-3.037	-2%	9.615	0%	12.413	0%	12.036	0%	2.983	16%	11.318	-1%	15.438	-2%	15.149	-3%	-10.584	6%	12.664	5%	17.33	-5%	13.722	-10%
		10X	Low	9%	-3.097	0%	9.618	0%	12.404	0%	12.012	0%	2.518	-2%	11.476	0%	15.822	0%	15.622	0%	-9.807	-2%	12.011	-1%	18.442	1%	15.619	2%
	Zone 39 (0.001 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.457	0%	15.777	0%	15.568	0%	-9.976	0%	12.101	0%	18.24	0%	15.27	0%
		10X	Low	2%	-3.085	0%	9.618	0%	12.405	0%	12.016	0%	2.567	0%	11.458	0%	15.752	0%	15.543	0%	-10.041	1%	12.122	0%	18.235	0%	15.222	0%
Model Layer 9	Zone 31 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.619	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 32 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.616	0%	12.403	0%	12.013	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	1%	-3.089	0%	9.64	0%	12.424	0%	12.035	0%	2.575	0%	11.458	0%	15.776	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 33 (10 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
		10X	Low	0%	-3.097	0%	9.619	0%	12.405	0%	12.013	0%	2.574	0%	11.456	0%	15.776	0%	15.566	0%	-9.98	0%	12.101	0%	18.236	0%	15.263	0%
	Zone 34 (10 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.575	0%	11.457	0%	15.772	0%	15.562	0%	-9.985	0%	12.104	0%	18.238	0%	15.263	0%
		10X	Low	2%	-3.096	0%	9.619	0%	12.404	0%	12.013	0%	2.544	-1%	11.468	0%	15.812	0%	15.608	0%	-9.981	0%	12.107	0%	18.25	0%	15.279	0%
	Zone 35 (5 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.457	0%	15.772	0%	15.563	0%	-9.986	0%	12.105	0%	18.239	0%	15.263	0%
		10X	Low	1%	-3.092	0%	9.618	0%	12.405	0%	12.014	0%	2.558	-1%	11.468	0%	15.803	0%	15.596	0%	-9.969	0%	12.098	0%	18.242	0%	15.278	0%
	Zone 36 (5 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.984	0%	12.104	0%	18.24	0%	15.265	0%
	Zone 37 (0.5 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.457	0%	15.773	0%	15.563	0%	-9.987	0%	12.105	0%	18.239	0%	15.262	0%
		10X	Low	1%	-3.094	0%	9.618	0%	12.404	0%	12.013	0%	2.57	0%	11.462	0%	15.795	0%	15.586	0%	-9.96	0%	12.095	0%	18.24	0%	15.281	0%
	Zone 38 (2 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.774	0%	15.565	0%	-9.982	0%	12.102	0%	18.235	0%	15.26	0%
		10X	Low	1%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.562	0%	11.462	0%	15.784	0%	15.577	0%	-10.009	0%	12.121	0%	18.279	0%	15.296	0%
	Zone 39 (0.5 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.566	0%	-9.988	0%	12.105	0%	18.24	0%	15.263	0%
Model Layer 10	Zone 32 (10 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.095	0%	9.619	0%	12.405	0%	12.014	0%	2.576	0%	11.458	0%	15.775	0%	15.565	0%	-9.983	0%	12.103	0%	18.238	0%	15.264	0%
	Zone 33 (10 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
		10X	Low	0%	-3.097	0%	9.62	0%	12.406	0%	12.015	0%	2.573	0%	11.456	0%	15.774	0%	15.564	0%	-9.981	0%	12.102	0%	18.237	0%	15.263	0%
	Zone 34 (10 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.57	0%	11.459	0%	15.779	0%	15.57	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
	Zone 35 (5 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.57	0%	11.46	0%	15.78	0%	15.57	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 36 (5 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.24	0%	15.265	0%
	Zone 37 (0.1 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.57	0%	11.458	0%	15.777	0%	15.568	0%	-9.984	0%	12.104	0%	18.243	0%	15.268	0%
		10X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.576	0%	11.455	0%	15.768	0%	15.558	0%	-9.989	0%	12.107	0%	18.225	0%	15.244	0%
	Zone 38 (2 ft/day)	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.565	0%	-9.982	0%	12.102	0%	18.235	0%	15.261	0%
		10X	Low	1%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.563	0%	11.461	0%	15.783	0%	15.575	0%	-10.008	0%	12.12	0%	18.279	0%	15.296	0%
	Zone 39 (0.1 ft/day)	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
Model Layer 1 (storage coefficient = 0.001)	Zone 31	0.1X	Low	0%	-3.091	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.092	0%	9.62	0%	12.406	0%	12.016	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 32	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.404	0%	12.014	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 33	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.088	0%	9.617	0%	12.404	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 34	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 35	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
	Zone 36	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
	Zone 37	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 39	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
Model Layer 2 (storage coefficient = 0.001)	Zone 31	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.093	0%	9.62	0%	12.407	0%	12.016	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 32	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.093	0%	9.618	0%	12.403	0%	12.012	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 33	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.091	0%	9.617	0%	12.403	0%	12.013	0%	2.564	0%	11.455	0%	15.773	0%	15.565	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
	Zone 34	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.105	0%	18.24	0%	15.264	0%
	Zone 35	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.566	0%	-9.99	0%	12.108	0%	18.243	0%	15.265	0%

Table 5-1. Sensitivity Analysis -- Residual Statistics
units: Feet

Parameters			Multiplier	Sensitivity	absolute diff. sum	Piru basin								Fillmore basin								Santa Paula basin							
						RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)
						Default = -3.09		9.618		Default = 12.405		Default = 12.015		Default = 2.572		Default = 11.458		Default = 15.775		Default = 15.566		Default = -9.985		Default = 12.104		Default = 18.239		Default = 15.264	
Storage Coefficient		Zone 36	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.988	0%	12.108	0%	18.242	0%	15.265	0%
		Zone 37	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.569	0%	11.458	0%	15.775	0%	15.566	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
		Zone 39	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Model Layer 3 (storage coefficient = 0.001)	Zone 26	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.091	0%	9.618	0%	12.404	0%	12.014	0%	2.565	0%	11.458	0%	15.775	0%	15.567	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
		Zone 31	0.1X	Low	0%	-3.084	0%	9.616	0%	12.403	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	3%	-3.154	2%	9.646	0%	12.424	0%	12.018	0%	2.565	0%	11.455	0%	15.773	0%	15.565	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
		Zone 32	0.1X	Low	1%	-3.078	0%	9.612	0%	12.401	0%	12.015	0%	2.574	0%	11.459	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	6%	-3.208	4%	9.678	1%	12.44	0%	12.021	0%	2.552	-1%	11.452	0%	15.769	0%	15.563	0%	-9.987	0%	12.105	0%	18.241	0%	15.264	0%
		Zone 33	0.1X	Low	0%	-3.088	0%	9.618	0%	12.405	0%	12.016	0%	2.575	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	2%	-3.101	0%	9.616	0%	12.398	0%	12.005	0%	2.547	-1%	11.453	0%	15.772	0%	15.567	0%	-9.987	0%	12.105	0%	18.24	0%	15.264	0%
		Zone 34	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.459	0%	15.776	0%	15.567	0%	-9.985	0%	12.106	0%	18.24	0%	15.265	0%
		Zone 35	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.982	0%	12.102	0%	18.237	0%	15.264	0%
			10X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.567	0%	11.459	0%	15.776	0%	15.568	0%	-10.016	0%	12.125	0%	18.259	0%	15.267	0%
		Zone 36	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.103	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.991	0%	12.11	0%	18.244	0%	15.266	0%
		Zone 37	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.091	0%	9.618	0%	12.404	0%	12.014	0%	2.565	0%	11.456	0%	15.774	0%	15.566	0%	-9.987	0%	12.105	0%	18.24	0%	15.264	0%
		Zone 38	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.987	0%	12.106	0%	18.241	0%	15.264	0%
		Zone 39	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
	Model Layer 4 (storage coefficient = 0.001)	Zone 26	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.092	0%	9.618	0%	12.404	0%	12.013	0%	2.563	0%	11.457	0%	15.775	0%	15.567	0%	-9.986	0%	12.104	0%	18.24	0%	15.264	0%
		Zone 31	0.1X	Low	0%	-3.082	0%	9.615	0%	12.403	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	4%	-3.175	3%	9.655	0%	12.428	0%	12.017	0%	2.562	0%	11.455	0%	15.772	0%	15.564	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
		Zone 32	0.1X	Low	1%	-3.064	-1%	9.605	0%	12.398	0%	12.014	0%	2.576	0%	11.459	0%	15.777	0%	15.567	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	12%	-3.345	8%	9.747	1%	12.482	1%	12.027	0%	2.529	-2%	11.444	0%	15.761	0%	15.559	0%	-9.989	0%	12.106	0%	18.242	0%	15.264	0%
		Zone 33	0.1X	Low	0%	-3.088	0%	9.618	0%	12.406	0%	12.017	0%	2.576	0%	11.459	0%	15.776	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	3%	-3.107	1%	9.615	0%	12.395	0%	12	0%	2.532	-2%	11.451	0%	15.771	0%	15.569	0%	-9.988	0%	12.106	0%	18.241	0%	15.264	0%
		Zone 34	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.459	0%	15.776	0%	15.567	0%	-9.985	0%	12.106	0%	18.24	0%	15.265	0%
		Zone 35	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.566	0%	-9.98	0%	12.101	0%	18.236	0%	15.263	0%
			10X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.565	0%	11.46	0%	15.777	0%	15.569	0%	-10.028	0%	12.137	0%	18.271	0%	15.274	0%
		Zone 36	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.103	0%	18.238	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.566	0%	-9.996	0%	12.116	0%	18.249	0%	15.268	0%
		Zone 37	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.092	0%	9.618	0%	12.404	0%	12.014	0%	2.564	0%	11.456	0%	15.774	0%	15.566	0%	-9.988	0%	12.105	0%	18.241	0%	15.264	0%
		Zone 38	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.988	0%	12.107	0%	18.242	0%	15.265	0%
		Zone 39	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
	Model Layer 5 (storage coefficient = 0.001)	Zone 26	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.092	0%	9.618	0%	12.404	0%	12.013	0%	2.563	0%	11.457	0%	15.775	0%	15.567	0%	-9.986	0%	12.104	0%	18.24	0%	15.264	0%
		Zone 31	0.1X	Low	0%	-3.083	0%	9.615	0%	12.403	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	3%	-3.163	2%	9.65	0%	12.425	0%	12.016	0%	2.563	0%	11.455	0%	15.772	0%	15.564	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
		Zone 32	0.1X	Low	1%	-3.06	-1%	9.604	0%	12.397	0%	12.015	0%	2.577	0%	11.46	0%	15.777	0%	15.567	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	14%	-3.381	9%	9.763	2%	12.49	1%	12.025	0%	2.523	-2%	11.442	0%	15.758	0%	15.557	0%	-9.99	0%	12.106	0%	18.242	0%	15.264	0%
		Zone 33	0.1X	Low	0%	-3.088	0%	9.618	0%	12.406	0%	12.017	0%	2.576	0%	11.459	0%	15.776	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	3%	-3.108	1%	9.615	0%	12.394	0%	11.999	0%	2.53	-2%	11.45	0%	15.771	0%	15.569	0%	-9.988	0%	12.106	0%	18.241	0%	15.264	0%
		Zone 34	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.459	0%	15.776	0%	15.567	0%	-9.985	0%	12.106	0%	18.24	0%	15.265	0%
		Zone 35	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.566	0%	-9.981	0%	12.101	0%	18.236	0%	15.263	0%
			10X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.565	0%	11.46	0%	15.777	0%	15.569	0%	-10.024	0%	12.139	0%	18.274	0%	15.28	0%
		Zone 36	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.983	0%	12.102	0%	18.238	0%	15.263	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.567	0%	-9.999	0%	12.12	0%	18.253	0%	15.27	0%
		Zone 37	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	1%	-3.093	0%	9.618	0%	12.404	0%	12.013	0%	2.561	0%	11.455	0%	15.774	0%	15.566	0%	-9.988	0%	12.106	0%	18.241	0%	15.264	0%
		Zone 38	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.989	0%	12.109	0%	18.243	0%	15.265	0%
		Zone 39	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
	Model Layer 6 (storage coefficient = 0.0005)	Zone 31	0.1X	Low	0%	-3.086	0%	9.616	0%	12.404	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	2%	-3.13	1%	9.636	0%	12.416	0%	12.016	0%	2.567	0%	11.456	0%	15.774	0%	15.565	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
		Zone 32	0.1X	Low	1%	-3.074	-1%	9.611	0%	12.401	0%	12.015	0%	2.575	0%	11.459	0%	15.776	0%	15.567	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	7%	-3.247	5%	9.694	1%	12.448	0%	12.018	0%	2.545	-1%	11.449	0%	15.766	0%	15.561	0%	-9.987	0%	12.105	0%	18.241	0%	15.264	0%
		Zone 33	0.1X	Low	0%	-3.088	0%	9.618	0%	12.405	0%	12.016	0%	2.575	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	2%	-3.101	0%	9.616	0%	12.398	0%	12.005	0%	2.546	-1%	11.454	0%	15.773	0%	15.568	0%	-9.987	0%	12.105	0%	18.241	0%	15.264	0%
		Zone 34	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.105	0%	18.24	0%	15.265	0%
		Zone 35	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.983	0%	12.102	0%	18.238	0%	15.263	0%
			10X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.569	0%	11.459	0%	15.776	0%	15.568	0%	-10.003	0%	12.12	0%	18.256	0%	15.272	0%
		Zone 36	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.103	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.566	0%	-9.99	0%	12.111	0%	18.246	0%	15.268	0%
		Zone 37	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.091	0%	9.618	0%	12.404	0%	12.014	0%	2.564	0%	11.457	0%	15.775	0%	15.567	0%	-9.987	0%	12.105	0%	18.24	0%	15.264	0%
		Zone 38	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.986	0%	12.104	0%	18.24	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.981	0%	12.103	0%	18.238	0%	15.266	0%
		Zone 39	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
		Zone 31	0.1X	Low	0%	-3.085	0%	9.616	0%	12.403	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	2%	-3.144	2%	9.644	0%	12.421	0%	12.018	0%	2.565	0%	11.456	0%	15.773	0%	15.565	0%	-9.986	0%	12.104	0%	18.24	0%	15.264	0%
		Zone 32	0.1X	Low	1%	-3.072	-1%	9.61	0%	12.4	0%	12.015	0%	2.575	0%	11.459	0%	15.777	0%	15.567	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			10X	Low	8%	-3.258	5%	9.7	1%	12.452	0%	12.019	0%	2.543	-1%	11.448	0%	15.765	0%	15.56	0%	-9.988	0%	12.105	0%	18.241	0%	15.264	0%

Table 5-1. Sensitivity Analysis -- Residual Statistics
units: Feet

Parameters		Multiplier	Sensitivity	absolute diff. sum	Piru basin								Fillmore basin								Santa Paula basin							
					RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)
					Default = -3.09		9.618		Default = 12.405		Default = 12.015		Default = 2.572		Default = 11.458		Default = 15.775		Default = 15.566		Default = -9.985		Default = 12.104		Default = 18.239		Default = 15.264	
Model Layer 7 (storage coefficient = 0.0005)	Zone 33	0.1X	Low	0%	-3.088	0%	9.618	0%	12.405	0%	12.016	0%	2.575	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	2%	-3.102	0%	9.616	0%	12.399	0%	12.006	0%	2.545	-1%	11.454	0%	15.774	0%	15.569	0%	-9.987	0%	12.105	0%	18.241	0%	15.264	0%
	Zone 34	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.105	0%	18.24	0%	15.265	0%
	Zone 35	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.983	0%	12.103	0%	18.238	0%	15.263	0%
		10X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.569	0%	11.459	0%	15.776	0%	15.568	0%	-10.001	0%	12.12	0%	18.256	0%	15.273	0%
	Zone 36	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.103	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.567	0%	-9.99	0%	12.112	0%	18.247	0%	15.27	0%
	Zone 37	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.576	0%	11.459	0%	15.776	0%	15.566	0%	-9.983	0%	12.103	0%	18.238	0%	15.264	0%
		10X	Low	2%	-3.097	0%	9.618	0%	12.402	0%	12.01	0%	2.535	-1%	11.45	0%	15.767	0%	15.564	0%	-10.006	0%	12.117	0%	18.254	0%	15.268	0%
	Zone 38	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.972	0%	12.1	0%	18.236	0%	15.268	0%
	Zone 39	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.567	0%	-9.987	0%	12.105	0%	18.241	0%	15.264	0%
Model Layer 8 (storage coefficient = 0.0005)	Zone 31	0.1X	Low	0%	-3.08	0%	9.613	0%	12.402	0%	12.014	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	4%	-3.18	3%	9.671	1%	12.459	0%	12.047	0%	2.566	0%	11.456	0%	15.773	0%	15.565	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
	Zone 32	0.1X	Low	1%	-3.073	-1%	9.613	0%	12.401	0%	12.015	0%	2.575	0%	11.459	0%	15.776	0%	15.567	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	9%	-3.279	6%	9.675	1%	12.443	0%	12.004	0%	2.542	-1%	11.448	0%	15.765	0%	15.56	0%	-9.987	0%	12.105	0%	18.241	0%	15.264	0%
	Zone 33	0.1X	Low	0%	-3.088	0%	9.618	0%	12.405	0%	12.016	0%	2.577	0%	11.456	0%	15.774	0%	15.563	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	3%	-3.107	1%	9.617	0%	12.398	0%	12.004	0%	2.515	-2%	11.467	0%	15.79	0%	15.59	0%	-9.99	0%	12.107	0%	18.242	0%	15.264	0%
	Zone 34	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.57	0%	11.459	0%	15.777	0%	15.568	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
	Zone 35	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.566	0%	-9.982	0%	12.102	0%	18.238	0%	15.264	0%
		10X	Low	1%	-3.091	0%	9.618	0%	12.404	0%	12.014	0%	2.562	0%	11.46	0%	15.78	0%	15.572	0%	-10.012	0%	12.122	0%	18.258	0%	15.268	0%
	Zone 36	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.566	0%	-9.983	0%	12.102	0%	18.238	0%	15.264	0%
		10X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.566	0%	11.459	0%	15.779	0%	15.571	0%	-10.009	0%	12.122	0%	18.261	0%	15.274	0%
	Zone 37	0.1X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.016	0%	2.577	0%	11.459	0%	15.776	0%	15.566	0%	-9.98	0%	12.101	0%	18.236	0%	15.263	0%
		10X	Low	4%	-3.1	0%	9.617	0%	12.401	0%	12.008	0%	2.517	-2%	11.449	0%	15.77	0%	15.569	0%	-10.03	0%	12.133	0%	18.275	0%	15.276	0%
	Zone 38	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.57	0%	11.458	0%	15.777	0%	15.567	0%	-9.991	0%	12.109	0%	18.245	0%	15.267	0%
	Zone 39	0.1X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		10X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.567	0%	-9.988	0%	12.106	0%	18.242	0%	15.265	0%
Model Layer 9 (storage coefficient = 0.0005)	Zone 31	0.1X	Low	7%	-3.067	-1%	9.619	0%	12.411	0%	12.027	0%	2.681	4%	11.497	0%	15.819	0%	15.592	0%	-9.945	0%	12.08	0%	18.21	0%	15.255	0%
		10X	Low	6%	-3.094	0%	9.626	0%	12.418	0%	12.028	0%	2.678	4%	11.496	0%	15.818	0%	15.591	0%	-9.945	0%	12.081	0%	18.21	0%	15.255	0%
	Zone 32	0.1X	Low	7%	-3.053	-1%	9.616	0%	12.409	0%	12.029	0%	2.684	4%	11.498	0%	15.82	0%	15.592	0%	-9.944	0%	12.08	0%	18.21	0%	15.255	0%
		10X	Low	10%	-3.23	5%	9.647	0%	12.444	0%	12.018	0%	2.653	3%	11.488	0%	15.81	0%	15.587	0%	-9.947	0%	12.082	0%	18.211	0%	15.255	0%
	Zone 33	0.1X	Low	7%	-3.066	-1%	9.619	0%	12.413	0%	12.029	0%	2.685	4%	11.495	0%	15.817	0%	15.589	0%	-9.944	0%	12.08	0%	18.209	0%	15.255	0%
		10X	Low	4%	-3.096	0%	9.618	0%	12.404	0%	12.013	0%	2.631	2%	11.502	0%	15.831	0%	15.613	0%	-9.955	0%	12.087	0%	18.215	0%	15.255	0%
	Zone 34	0.1X	Low	7%	-3.069	-1%	9.619	0%	12.412	0%	12.028	0%	2.681	4%	11.497	0%	15.819	0%	15.592	0%	-9.944	0%	12.08	0%	18.21	0%	15.255	0%
		10X	Low	6%	-3.071	-1%	9.619	0%	12.411	0%	12.026	0%	2.677	4%	11.499	0%	15.822	0%	15.595	0%	-9.947	0%	12.082	0%	18.211	0%	15.255	0%
	Zone 35	0.1X	Low	7%	-3.069	-1%	9.619	0%	12.412	0%	12.028	0%	2.683	4%	11.497	0%	15.818	0%	15.591	0%	-9.942	0%	12.079	0%	18.208	0%	15.255	0%
		10X	Low	6%	-3.072	-1%	9.619	0%	12.411	0%	12.026	0%	2.664	4%	11.502	0%	15.829	0%	15.605	0%	-9.972	0%	12.099	0%	18.231	0%	15.263	0%
	Zone 36	0.1X	Low	7%	-3.069	-1%	9.619	0%	12.412	0%	12.028	0%	2.682	4%	11.497	0%	15.818	0%	15.591	0%	-9.942	0%	12.078	0%	18.208	0%	15.254	0%
		10X	Low	6%	-3.071	-1%	9.619	0%	12.411	0%	12.026	0%	2.667	4%	11.5	0%	15.827	0%	15.603	0%	-9.976	0%	12.102	0%	18.239	0%	15.269	0%
	Zone 37	0.1X	Low	7%	-3.067	-1%	9.619	0%	12.412	0%	12.028	0%	2.688	5%	11.498	0%	15.819	0%	15.591	0%	-9.939	0%	12.077	0%	18.205	0%	15.253	0%
		10X	Low	3%	-3.086	0%	9.619	0%	12.407	0%	12.018	0%	2.609	1%	11.49	0%	15.819	0%	15.604	0%	-10.003	0%	12.116	0%	18.257	0%	15.274	0%
	Zone 38	0.1X	Low	7%	-3.069	-1%	9.619	0%	12.412	0%	12.028	0%	2.682	4%	11.497	0%	15.819	0%	15.592	0%	-9.944	0%	12.08	0%	18.21	0%	15.256	0%
		10X	Low	6%	-3.07	-1%	9.619	0%	12.412	0%	12.027	0%	2.676	4%	11.498	0%	15.822	0%	15.596	0%	-9.954	0%	12.087	0%	18.213	0%	15.252	0%
	Zone 39	0.1X	Low	7%	-3.069	-1%	9.619	0%	12.412	0%	12.028	0%	2.681	4%	11.497	0%	15.819	0%	15.592	0%	-9.944	0%	12.08	0%	18.209	0%	15.255	0%
		10X	Low	6%	-3.069	-1%	9.619	0%	12.412	0%	12.027	0%	2.677	4%	11.498	0%	15.821	0%	15.595	0%	-9.954	0%	12.086	0%	18.216	0%	15.256	0%
Model Layer 10 (storage coefficient = 0.0005)	Zone 32	0.1X	Low	10%	-3.054	-1%	9.618	0%	12.413	0%	12.032	0%	2.741	7%	11.49	0%	15.802	0%	15.564	0%	-9.87	-1%	12.046	0%	18.169	0%	15.254	0%
		10X	Low	10%	-3.14	2%	9.63	0%	12.425	0%	12.023	0%	2.724	6%	11.485	0%	15.797	0%	15.562	0%	-9.872	-1%	12.047	0%	18.169	0%	15.254	0%
	Zone 33	0.1X	Low	10%	-3.059	-1%	9.619	0%	12.415	0%	12.033	0%	2.743	7%	11.488	0%	15.8	0%	15.561	0%	-9.869	-1%	12.046	0%	18.168	0%	15.254	0%
		10X	Low	7%	-3.088	0%	9.618	0%	12.406	0%	12.016	0%	2.689	5%	11.495	0%	15.814	0%	15.585	0%	-9.881	-1%	12.053	0%	18.174	0%	15.254	0%
	Zone 34	0.1X	Low	10%	-3.062	-1%	9.619	0%	12.414	0%	12.032	0%	2.74	7%	11.49	0%	15.802	0%	15.564	0%	-9.87	-1%	12.046	0%	18.168	0%	15.254	0%
		10X	Low	10%	-3.063	-1%	9.619	0%	12.413	0%	12.03	0%	2.735	6%	11.492	0%	15.804	0%	15.568	0%	-9.873	-1%	12.048	0%	18.17	0%	15.254	0%
	Zone 35	0.1X	Low	10%	-3.061	-1%	9.619	0%	12.414	0%	12.032	0%	2.741	7%	11.489	0%	15.801	0%	15.563	0%	-9.868	-1%	12.045	0%	18.167	0%	15.254	0%
		10X	Low	9%	-3.065	-1%	9.619	0%	12.413	0%	12.03	0%	2.722	6%	11.494	0%	15.811	0%	15.577	0%	-9.898	-1%	12.065	0%	18.19	0%	15.262	0%
	Zone 36	0.1X	Low	10%	-3.061	-1%	9.619	0%	12.414	0%	12.032	0%	2.741	7%	11.49	0%	15.801	0%	15.563	0%	-9.867	-1%	12.044	0%	18.166	0%	15.253	0%
		10X	Low	9%	-3.064	-1%	9.619	0%	12.413	0%	12.03	0%	2.724	6%	11.493	0%	15.811	0%	15.576	0%	-9.905	-1%	12.07	0%	18.201	0%	15.27	0%
	Zone 37	0.1X	Low	11%	-3.06	-1%	9.619	0%	12.414	0%	12.033	0%	2.748	7%	11.491	0%	15.802	0%	15.563	0%	-9.863	-1%	12.042	-1%	18.162	0%	15.251	0%
		10X	Low	5%	-3.081	0%	9.618	0%	12.408	0%	12.02	0%	2.655	3%	11.481	0%	15.801	0%	15.578	0%	-9.943	0%	12.091	0%	18.231	0%	15.281	0%
	Zone 38	0.1X	Low	10%	-3.062	-1%	9.619	0%	12.414	0%	12.032	0%	2.74	7%	11.49	0%	15.802	0%	15.564	0%	-9.869	-1%	12.046	0%	18.168	0%	15.255	0%
		10X	Low	10%	-3.062	-1%	9.619	0%	12.414	0%	12.031	0%	2.734	6%	11.491	0%	15.805	0%	15.569	0%	-9.883	-1%	12.055	0%	18.175	0%	15.253	0%
	Zone 39	0.1X	Low	10%	-3.062	-1%	9.619	0%	12.414	0%	12.032	0%	2.741	7%	11.49	0%	15.801	0%	15.563	0%	-9.868	-1%	12.045	0%	18.167	0%	15.254	0%
		10X	Low	9%	-3.063	-1%	9.619	0%	12.414	0%	12.031	0%	2.725	6%	11.493	0%	15.809	0%	15.574	0%	-9.9	-1%	12.062	0%	18.188	0%	15.258	0%
Model Layer 1 (S.Y. = 0.15)	Zone 31	0.5X	Low	0%	-3.085	0%	9.616	0%	12.404	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	1%	-3.101	0%	9.624	0%	12.409	0%	12.017	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 32	0.5X	Low	2%	-3.057	-1%	9.618	0%	12.416	0%	12.035	0%	2.583	0%	11.462	0%	15.78	0%	15.569	0%	-9.983	0%	12.103	0%	18.238	0%	15.264	0%
		2X	Low	4%	-3.152	2%	9.617	0%	12.383	0%	11.976	0%	2.551	-1%	11.45	0%	15.766	0%	15.56	0%	-9.988	0%	12.106	0%	18.241	0%	15.264	0%
	Zone 33	0.5X	Low	1%	-3.089	0%	9.623	0%	12.412	0%	12.023	0%	2.595	1%	11.46	0%	15.776	0%	15.563	0%	-9.981	0%	12.102	0%	18.238	0%	15.264	0%
		2X	Low	2%	-3.09	0%	9.609	0%	12.39	0%	12	0%	2.527	-2%	11.452	0%	15.772	0%	15.57	0%	-9.991	0%	12.107	0%	18.243	0%	15.264	0%
	Zone 34	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.775	0%	15.565	0%	-9.985	0%	12.103	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.404	0%	12.014	0%	2.57	0%	11.459	0%	15.777	0%	15.568	0%	-9.983	0%	12.104	0%	18.239	0%	15.265	0%
	Zone 35	0.5X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.577	0%	11.458	0%	15.775	0%	15.564	0%	-9.941	0%	12.071	0%	18.209	0%	15.257	0%
		2X	Low	2%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.563	0%	11.458	0%	15.777	0%	15.569	0%	-10.065	1%	12.164	0%	18.291	0%	15.273	0%
	Zone 36	0.5X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.775	0%	15.565	0%	-9.951	0%	12.069	0%	18.213	0%	15.255	0%
		2X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.57	0%	11.458	0%	15.776	0%	15.567	0%	-10.036	1%	12.15	0%	18.275	0%	15.273	0%
	Zone 37	0.5X	Low	1%	-3.087	0%	9.619	0%	12.406	0%	12.017	0%	2.591	1%	11.46	0%	15.775	0%	15.563	0%	-9.975	0%	12.1	0%	18.236	0%	15.266	0%
		2X	Low	2%	-3.094	0%	9.617	0%	12.402	0%	12.011	0%	2.536	-1%	11.453	0%	15.775	0%	15.571	0%	-10.001	0%	12.11	0%	18.245	0%	15.259	0%
	Zone 39	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.566	0%	-9.983	0%	12.103	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.567	0%	-9.988	0%	12.105	0%	18.241	0%	15.264	0%
	Zone 31	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.091	0%	9.619	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 32	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.091	0%	9.619	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 33	0.5X	Low	5%	-3.071	-1%	9.621	0%	12.416	0%	12.031	0%	2.649	3%	11.5	0%	15.809	0%	15.587	0%	-9.983	0%	12.103	0%	18.238	0%	15.264	0%
		2X	Low	5%	-3.109	1%	9.613	0%	12.391	0%	11.996	0%	2.485	-3%	11.425	0%	15.74	0%	15.545	0%	-9.987	0%	12.105	0%	18.241	0%	15.265	0%

Table 5-1. Sensitivity Analysis -- Residual Statistics
units: Feet

Parameters			Multiplier	Sensitivity	absolute diff. sum	Piru basin RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	Fillmore basin RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	Santa Paula basin RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)
						Default = -3.09		9.618		Default = 12.405		Default = 12.015		Default = 2.572		Default = 11.458		Default = 15.775		Default = 15.566		Default = -9.985		Default = 12.104		Default = 18.239		Default = 15.264	
Specific Yield	Model Layer 2 (S.Y. = 0.15)	Zone 34	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.575	0%	11.458	0%	15.775	0%	15.565	0%	-9.981	0%	12.103	0%	18.238	0%	15.265	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.568	0%	11.458	0%	15.775	0%	15.567	0%	-9.989	0%	12.106	0%	18.241	0%	15.263	0%
		Zone 35	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.983	0%	12.103	0%	18.238	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.988	0%	12.106	0%	18.241	0%	15.264	0%
		Zone 36	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.103	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.987	0%	12.106	0%	18.241	0%	15.264	0%
		Zone 37	0.5X	Low	1%	-3.079	0%	9.619	0%	12.408	0%	12.021	0%	2.593	1%	11.463	0%	15.78	0%	15.567	0%	-9.977	0%	12.099	0%	18.235	0%	15.263	0%
			2X	Low	3%	-3.107	1%	9.616	0%	12.397	0%	12.003	0%	2.529	-2%	11.445	0%	15.764	0%	15.561	0%	-10	0%	12.113	0%	18.247	0%	15.264	0%
		Zone 39	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Model Layer 3 (S.Y. = 0.15)	Zone 26	0.5X	Low	4%	-3.073	-1%	9.621	0%	12.415	0%	12.03	0%	2.647	3%	11.463	0%	15.783	0%	15.561	0%	-9.977	0%	12.101	0%	18.235	0%	15.264	0%
			2X	Low	7%	-3.117	1%	9.613	0%	12.388	0%	11.99	0%	2.446	-5%	11.454	0%	15.766	0%	15.577	0%	-9.997	0%	12.11	0%	18.246	0%	15.264	0%
		Zone 31	0.5X	Medium	34%	-2.307	-25%	9.355	-3%	12.288	-1%	12.071	0%	2.668	4%	11.494	0%	15.812	0%	15.587	0%	-9.973	0%	12.098	0%	18.232	0%	15.263	0%
			2X	High	61%	-4.392	42%	10.264	7%	12.913	4%	12.144	1%	2.418	-6%	11.407	0%	15.724	0%	15.539	0%	-10.002	0%	12.113	0%	18.25	0%	15.265	0%
		Zone 32	0.5X	High	106%	-0.687	-78%	9.048	-6%	12.405	0%	12.387	3%	2.972	16%	11.596	1%	15.921	1%	15.643	0%	-9.941	0%	12.082	0%	18.214	0%	15.263	0%
			2X	High	174%	-6.291	104%	11.771	22%	14.407	16%	12.962	8%	2.042	-21%	11.304	-1%	15.614	-1%	15.481	-1%	-10.033	0%	12.127	0%	18.268	0%	15.266	0%
		Zone 33	0.5X	Low	17%	-2.978	-4%	9.638	0%	12.471	1%	12.111	1%	2.849	11%	11.51	0%	15.812	0%	15.555	0%	-9.961	0%	12.092	0%	18.226	0%	15.264	0%
			2X	Medium	26%	-3.262	6%	9.589	0%	12.312	-1%	11.873	-1%	2.132	-17%	11.412	0%	15.748	0%	15.604	0%	-10.016	0%	12.119	0%	18.257	0%	15.265	0%
		Zone 34	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.775	0%	15.565	0%	-9.985	0%	12.103	0%	18.239	0%	15.263	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.404	0%	12.014	0%	2.571	0%	11.459	0%	15.777	0%	15.568	0%	-9.986	0%	12.106	0%	18.241	0%	15.265	0%
		Zone 35	0.5X	Low	11%	-3.085	0%	9.618	0%	12.407	0%	12.018	0%	2.642	3%	11.449	0%	15.764	0%	15.543	0%	-9.537	-4%	11.834	-2%	17.995	-1%	15.261	0%
			2X	Low	14%	-3.095	0%	9.618	0%	12.403	0%	12.011	0%	2.48	-4%	11.473	0%	15.795	0%	15.601	0%	-10.503	5%	12.445	3%	18.562	2%	15.305	0%
		Zone 36	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.566	0%	-9.966	0%	12.086	0%	18.225	0%	15.259	0%
			2X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.569	0%	11.458	0%	15.776	0%	15.567	0%	-10.026	0%	12.143	0%	18.269	0%	15.273	0%
		Zone 37	0.5X	Low	1%	-3.085	0%	9.618	0%	12.406	0%	12.017	0%	2.596	1%	11.459	0%	15.775	0%	15.562	0%	-9.977	0%	12.1	0%	18.235	0%	15.264	0%
			2X	Low	2%	-3.098	0%	9.618	0%	12.403	0%	12.011	0%	2.53	-2%	11.453	0%	15.773	0%	15.571	0%	-9.998	0%	12.111	0%	18.247	0%	15.264	0%
		Zone 38	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.962	0%	12.081	0%	18.226	0%	15.263	0%
			2X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-10.008	0%	12.127	0%	18.255	0%	15.268	0%
		Zone 39	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.774	0%	15.565	0%	-9.978	0%	12.1	0%	18.234	0%	15.263	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.569	0%	11.459	0%	15.778	0%	15.569	0%	-9.998	0%	12.112	0%	18.249	0%	15.267	0%
	Model Layer 4 (S.Y. = 0.05)	Zone 26	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 31	0.5X	Low	0%	-3.088	0%	9.617	0%	12.404	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.094	0%	9.62	0%	12.406	0%	12.015	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 32	0.5X	Low	0%	-3.084	0%	9.616	0%	12.404	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	1%	-3.101	0%	9.623	0%	12.407	0%	12.014	0%	2.57	0%	11.457	0%	15.775	0%	15.565	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 33	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.404	0%	12.014	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 34	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 35	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.775	0%	15.565	0%	-9.969	0%	12.091	0%	18.227	0%	15.259	0%
			2X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.568	0%	11.458	0%	15.776	0%	15.567	0%	-10.019	0%	12.131	0%	18.266	0%	15.273	0%
		Zone 36	0.5X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.775	0%	15.565	0%	-9.96	0%	12.08	0%	18.218	0%	15.255	0%
			2X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.568	0%	11.458	0%	15.777	0%	15.568	0%	-10.035	1%	12.15	0%	18.278	0%	15.277	0%
		Zone 37	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 38	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.983	0%	12.1	0%	18.236	0%	15.262	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.99	0%	12.113	0%	18.246	0%	15.269	0%
		Zone 39	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
	Model Layer 5 (S.Y. = 0.15)	Zone 26	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 31	0.5X	Low	5%	-2.978	-4%	9.565	-1%	12.376	0%	12.014	0%	2.588	1%	11.464	0%	15.782	0%	15.57	0%	-9.983	0%	12.103	0%	18.238	0%	15.264	0%
			2X	Low	10%	-3.298	7%	9.722	1%	12.467	0%	12.024	0%	2.542	-1%	11.447	0%	15.763	0%	15.559	0%	-9.988	0%	12.106	0%	18.241	0%	15.264	0%
		Zone 32	0.5X	Low	23%	-2.583	-16%	9.484	-1%	12.398	0%	12.127	1%	2.664	4%	11.493	0%	15.818	0%	15.593	0%	-9.978	0%	12.101	0%	18.235	0%	15.263	0%
			2X	Medium	37%	-3.832	24%	9.972	4%	12.649	2%	12.055	0%	2.434	-5%	11.409	0%	15.717	0%	15.529	0%	-9.995	0%	12.109	0%	18.246	0%	15.265	0%
		Zone 33	0.5X	Low	2%	-3.074	-1%	9.621	0%	12.414	0%	12.029	0%	2.602	1%	11.464	0%	15.78	0%	15.565	0%	-9.982	0%	12.103	0%	18.238	0%	15.264	0%
			2X	Low	4%	-3.12	1%	9.612	0%	12.387	0%	11.989	0%	2.514	-2%	11.446	0%	15.766	0%	15.566	0%	-9.99	0%	12.107	0%	18.242	0%	15.264	0%
		Zone 34	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 35	0.5X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.575	0%	11.458	0%	15.775	0%	15.565	0%	-9.969	0%	12.092	0%	18.227	0%	15.26	0%
			2X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.567	0%	11.458	0%	15.776	0%	15.568	0%	-10.018	0%	12.13	0%	18.265	0%	15.273	0%
		Zone 36	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.566	0%	-9.977	0%	12.097	0%	18.234	0%	15.262	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.567	0%	-10	0%	12.118	0%	18.25	0%	15.267	0%
		Zone 37	0.5X	Low	2%	-3.078	0%	9.619	0%	12.409	0%	12.022	0%	2.614	2%	11.47	0%	15.783	0%	15.566	0%	-9.981	0%	12.102	0%	18.237	0%	15.264	0%
			2X	Low	4%	-3.108	1%	9.616	0%	12.397	0%	12.002	0%	2.496	-3%	11.435	0%	15.758	0%	15.561	0%	-9.99	0%	12.107	0%	18.243	0%	15.264	0%
		Zone 38	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.98	0%	12.095	0%	18.23	0%	15.257	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.567	0%	-9.996	0%	12.117	0%	18.252	0%	15.271	0%
		Zone 39	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
	Model Layer 6 (S.Y. = 0.05)	Zone 31	0.5X	Low	0%	-3.079	0%	9.613	0%	12.401	0%	12.014	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	1%	-3.111	1%	9.629	0%	12.412	0%	12.017	0%	2.57	0%	11.457	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 32	0.5X	Low	0%	-3.084	0%	9.616	0%	12.404	0%	12.016	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.1	0%	9.622	0%	12.406	0%	12.014	0%	2.57	0%	11.457	0%	15.774	0%	15.565	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 33	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 34	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 35	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		Zone 36	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
		Zone 37	0.5X	Low	1%	-3.088	0%	9.618	0%	12.406	0%	12.016	0%	2.588	1%	11.453	0%	15.77	0%	15.558	0%	-9.978	0%	12.1	0%	18.235	0%	15.263	0%
			2X	Low	2%	-3.093	0%	9.618	0%	12.403	0%	12.013	0%	2.541	-1%	11.464	0%	15.782	0%	15.578	0%	-9.998	0%	12.112	0%	18.248	0%	15.266	0%
		Zone 38	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.983	0%	12.103	0%	18.239	0%	15.264	0%
		Zone 39	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.983	0%	12.103	0%	18.238	0%	15.264	0%
			2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.571	0%	11.458	0%	15.776	0%	15.567	0%	-9.989	0%	12.106	0%	18.242	0%	15.265	0%

Table 5-1. Sensitivity Analysis -- Residual Statistics
units: Feet

Parameters		Multiplier	Sensitivity	absolute diff. sum	Piru basin RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	Fillmore basin RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)	Santa Paula basin RM	Diff. (%)	ARM	Diff. (%)	RMS	Diff. (%)	Std. Dev.	Diff. (%)
					Default = -3.09		9.618		Default = 12.405		Default = 12.015		Default = 2.572		Default = 11.458		Default = 15.775		Default = 15.566		Default = -9.985		Default = 12.104		Default = 18.239		Default = 15.264	
Model Layer 7 (S.Y. = 0.1)	Zone 31	0.5X	Low	12%	-2.839	-8%	9.473	-2%	12.309	-1%	11.978	0%	2.605	1%	11.468	0%	15.786	0%	15.572	0%	-9.981	0%	12.102	0%	18.237	0%	15.264	0%
		2X	Low	23%	-3.562	15%	9.885	3%	12.612	2%	12.099	1%	2.511	-2%	11.438	0%	15.754	0%	15.554	0%	-9.991	0%	12.107	0%	18.243	0%	15.264	0%
	Zone 32	0.5X	Low	9%	-2.896	-6%	9.535	-1%	12.363	0%	12.02	0%	2.606	1%	11.47	0%	15.788	0%	15.573	0%	-9.981	0%	12.102	0%	18.237	0%	15.264	0%
		2X	Low	17%	-3.452	12%	9.789	2%	12.511	1%	12.027	0%	2.508	-2%	11.436	0%	15.752	0%	15.553	0%	-9.991	0%	12.107	0%	18.243	0%	15.264	0%
	Zone 33	0.5X	Low	0%	-3.087	0%	9.618	0%	12.406	0%	12.017	0%	2.58	0%	11.458	0%	15.774	0%	15.563	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	1%	-3.095	0%	9.618	0%	12.403	0%	12.012	0%	2.555	-1%	11.455	0%	15.776	0%	15.569	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
	Zone 34	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 35	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.775	0%	15.565	0%	-9.976	0%	12.097	0%	18.233	0%	15.262	0%
		2X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.569	0%	11.458	0%	15.776	0%	15.567	0%	-10.004	0%	12.119	0%	18.253	0%	15.268	0%
	Zone 36	0.5X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.577	0%	11.457	0%	15.772	0%	15.562	0%	-9.961	0%	12.085	0%	18.213	0%	15.249	0%
		2X	Low	2%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.563	0%	11.461	0%	15.782	0%	15.574	0%	-10.033	0%	12.142	0%	18.287	0%	15.29	0%
	Zone 37	0.5X	Low	12%	-3.068	-1%	9.619	0%	12.412	0%	12.028	0%	2.703	5%	11.442	0%	15.742	0%	15.51	0%	-9.722	-3%	11.931	-1%	18.039	-1%	15.196	0%
		2X	Low	20%	-3.123	1%	9.616	0%	12.392	0%	11.993	0%	2.359	-8%	11.484	0%	15.827	0%	15.652	1%	-10.444	5%	12.406	2%	18.569	2%	15.354	1%
	Zone 38	0.5X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.576	0%	11.457	0%	15.772	0%	15.562	0%	-9.967	0%	12.091	0%	18.218	0%	15.251	0%
		2X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.565	0%	11.46	0%	15.781	0%	15.572	0%	-10.019	0%	12.128	0%	18.277	0%	15.286	0%
	Zone 39	0.5X	Low	2%	-3.088	0%	9.618	0%	12.405	0%	12.016	0%	2.589	1%	11.454	0%	15.767	0%	15.555	0%	-9.953	0%	12.086	0%	18.217	0%	15.258	0%
		2X	Low	3%	-3.092	0%	9.618	0%	12.404	0%	12.014	0%	2.539	-1%	11.466	0%	15.792	0%	15.589	0%	-10.052	1%	12.141	0%	18.284	0%	15.274	0%
Model Layer 8 (S.Y. = 0.05)	Zone 31	0.5X	Low	0%	-3.089	0%	9.618	0%	12.404	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.085	0%	9.616	0%	12.403	0%	12.015	0%	2.573	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 32	0.5X	Low	0%	-3.091	0%	9.618	0%	12.404	0%	12.014	0%	2.571	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 33	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 34	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 35	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 36	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.575	0%	11.457	0%	15.774	0%	15.564	0%	-9.977	0%	12.099	0%	18.231	0%	15.259	0%
		2X	Low	1%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.567	0%	11.46	0%	15.78	0%	15.572	0%	-10.002	0%	12.116	0%	18.265	0%	15.284	0%
	Zone 37	0.5X	Low	3%	-3.086	0%	9.618	0%	12.406	0%	12.017	0%	2.598	1%	11.457	0%	15.769	0%	15.555	0%	-9.932	-1%	12.068	0%	18.185	0%	15.233	0%
		2X	Low	5%	-3.097	0%	9.618	0%	12.403	0%	12.012	0%	2.524	-2%	11.461	0%	15.791	0%	15.59	0%	-10.085	1%	12.172	1%	18.347	1%	15.326	0%
	Zone 38	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.776	0%	15.566	0%	-9.989	0%	12.107	0%	18.242	0%	15.265	0%
		2X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.573	0%	11.458	0%	15.775	0%	15.565	0%	-9.977	0%	12.099	0%	18.234	0%	15.263	0%
	Zone 39	0.5X	Low	0%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.574	0%	11.458	0%	15.775	0%	15.565	0%	-9.982	0%	12.102	0%	18.237	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.569	0%	11.459	0%	15.777	0%	15.568	0%	-9.991	0%	12.107	0%	18.243	0%	15.265	0%
Model Layer 9 (S.Y. = 0.1)	Zone 31	0.5X	Low	1%	-3.064	-1%	9.614	0%	12.403	0%	12.02	0%	2.576	0%	11.459	0%	15.777	0%	15.567	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	2%	-3.142	2%	9.625	0%	12.41	0%	12.007	0%	2.564	0%	11.455	0%	15.773	0%	15.565	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
	Zone 32	0.5X	Low	2%	-3.043	-2%	9.608	0%	12.396	0%	12.017	0%	2.58	0%	11.46	0%	15.778	0%	15.567	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	4%	-3.176	3%	9.631	0%	12.419	0%	12.007	0%	2.557	-1%	11.453	0%	15.771	0%	15.564	0%	-9.986	0%	12.105	0%	18.24	0%	15.264	0%
	Zone 33	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 34	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 35	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 36	0.5X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.016	0%	2.579	0%	11.456	0%	15.771	0%	15.561	0%	-9.965	0%	12.09	0%	18.217	0%	15.25	0%
		2X	Low	2%	-3.091	0%	9.618	0%	12.404	0%	12.014	0%	2.559	-1%	11.461	0%	15.785	0%	15.578	0%	-10.026	0%	12.132	0%	18.288	0%	15.295	0%
	Zone 37	0.5X	Low	13%	-3.048	-1%	9.62	0%	12.42	0%	12.041	0%	2.754	7%	11.485	0%	15.784	0%	15.543	0%	-9.835	-2%	12.01	-1%	18.095	-1%	15.19	0%
		2X	Low	22%	-3.156	2%	9.615	0%	12.383	0%	11.975	0%	2.26	-12%	11.422	0%	15.782	0%	15.621	0%	-10.27	3%	12.285	1%	18.522	2%	15.415	1%
	Zone 38	0.5X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.576	0%	11.457	0%	15.773	0%	15.563	0%	-9.972	0%	12.095	0%	18.224	0%	15.255	0%
		2X	Low	1%	-3.09	0%	9.618	0%	12.404	0%	12.014	0%	2.564	0%	11.46	0%	15.781	0%	15.573	0%	-10.012	0%	12.122	0%	18.271	0%	15.285	0%
	Zone 39	0.5X	Low	4%	-3.085	0%	9.618	0%	12.406	0%	12.018	0%	2.623	2%	11.445	0%	15.75	0%	15.532	0%	-9.891	-1%	12.053	0%	18.178	0%	15.252	0%
		2X	Low	8%	-3.098	0%	9.618	0%	12.403	0%	12.011	0%	2.477	-4%	11.484	0%	15.826	0%	15.633	0%	-10.158	2%	12.197	1%	18.35	1%	15.283	0%
Model Layer 10 (S.Y. = 0.1 except Zone 38)	Zone 32	0.5X	Low	1%	-3.077	0%	9.616	0%	12.404	0%	12.018	0%	2.575	0%	11.459	0%	15.777	0%	15.567	0%	-9.984	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	1%	-3.111	1%	9.619	0%	12.404	0%	12.009	0%	2.567	0%	11.456	0%	15.773	0%	15.564	0%	-9.985	0%	12.104	0%	18.24	0%	15.264	0%
	Zone 33	0.5X	Low	1%	-3.083	0%	9.618	0%	12.407	0%	12.019	0%	2.578	0%	11.459	0%	15.775	0%	15.565	0%	-9.984	0%	12.103	0%	18.239	0%	15.264	0%
		2X	Low	1%	-3.103	0%	9.618	0%	12.401	0%	12.008	0%	2.557	-1%	11.453	0%	15.773	0%	15.566	0%	-9.987	0%	12.105	0%	18.241	0%	15.264	0%
	Zone 34	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 35	0.5X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
		2X	Low	0%	-3.09	0%	9.618	0%	12.405	0%	12.015	0%	2.572	0%	11.458	0%	15.775	0%	15.566	0%	-9.985	0%	12.104	0%	18.239	0%	15.264	0%
	Zone 36	0.5X	Low	1%	-3.088	0%	9.618	0%	12.405	0%	12.016	0%	2.583	0%	11.455	0%	15.768	0%	15.557	0%	-9.954	0%	12.083	0%	18.204	0%	15.242	0%
		2X	Low	3%	-3.092	0%	9.618	0%	12.404	0%	12.014	0%	2.553	-1%	11.463	0%	15.79	0%	15.584	0%	-10.046	1%	12.146	0%	18.312	0%	15.311	0%
	Zone 37	0.5X	Low	8%	-3.067	-1%	9.619	0%	12.412	0%	12.029	0%	2.66	3%	11.467	0%	15.771	0%	15.547	0%	-9.852	-1%	12.014	-1%	18.103	-1%	15.189	0%
		2X	Low	13%	-3.127	1%	9.617	0%	12.394	0%	11.994	0%	2.425	-6%	11.445	0%	15.786	0%	15.601	0%	-10.207	2%	12.256	1%	18.463	1%	15.385	1%
	Zone 38 (S.Y.=0.05)	0.5X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.016	0%	2.579	0%	11.456	0%	15.77	0%	15.56	0%	-9.964	0%	12.09	0%	18.215	0%	15.249	0%
		2X	Low	2%	-3.091	0%	9.618	0%	12.404	0%	12.014	0%	2.56	0%	11.461	0%	15.784	0%	15.577	0%	-10.024	0%	12.131	0%	18.286	0%	15.294	0%
	Zone 39	0.5X	Low	1%	-3.089	0%	9.618	0%	12.405	0%	12.015	0%	2.586	1%	11.454	0%	15.768	0%	15.556	0%	-9.958	0%	12.09	0%	18.224	0%	15.263	0%
		2X	Low	2%	-3.092	0%	9.618	0%	12.405	0%	12.014	0%	2.547	-1%	11.466	0%	15.79	0%	15.585	0%	-10.031	0%	12.128	0%	18.265	0%	15.265	0%

Table 5-2. Sensitivity Analysis -- Inter-basin Flows and Stream Percolation

units: Acre-feet per year

Parameters		Multiplier	Sensitivity	diff (%)	Sum of absolute fluxes Default = 129641.846	Piru to Fillmore in System Default = 12018.990		Piru to Fillmore in System Default = 28271.821		Piru to Fillmore in System Default = 6703.143		Fillmore to Santa Paula in Default = -3213.897		Fillmore to Santa Paula in Default = -10473.213		Fillmore to Santa Paula Default = -4414.391		Santa Paula to Default = -25.615		Santa Paula to Mound ib Default = -2855.593		Santa Paula to Mound ib Default = -3108.92		Santa Paula to Oxnard in Default = -2263.948		Santa Paula to Default = -6.86		Santa Paula to Default = -16.337		STR Percolation in Piru Default = 40597.518		STR Percolation in Fillmore Default = -11438.262		STR Percolation in Santa Default = -4233.34	
					Sum of absolute diff	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.
SCR Underflow (5000 AFY)		0.5X (2500 AFY)	Low	2%	2761.00	11683.81	-335.18	28008.68	-263.14	6636.22	-66.93	-3190.18	23.71	-10364.33	108.88	-4392.03	22.36	-26.68	-1.07	-2868.41	-12.81	-3110.25	-1.33	-2276.84	-12.90	-6.90	-0.04	-16.35	-0.01	41882.82	1285.30	-10813.06	625.21	-4235.48	-2.14
		0.8X (4000 AFY)	Low	1%	1123.94	11943.68	-75.30	28187.54	-84.28	6679.00	-24.15	-3191.38	22.52	-10367.32	105.89	-4399.26	15.13	-26.70	-1.08	-2868.58	-12.98	-3111.27	-2.34	-2277.01	-13.07	-6.90	-0.04	-16.36	-0.02	41116.43	518.91	-11190.96	247.30	-4234.26	-0.92
		1.2X (6000 AFY)	Low	1%	1366.59	12284.17	265.18	28412.64	140.82	6733.08	29.93	-3192.84	21.06	-10370.94	102.28	-4408.33	6.06	-26.71	-1.10	-2868.79	-13.20	-3112.54	-3.62	-2277.23	-13.28	-6.90	-0.04	-16.36	-0.03	40070.68	-526.84	-11680.37	-242.11	-4232.29	1.05
		1.5X (7500 AFY)	Low	2%	2962.55	12531.52	512.53	28571.54	299.72	6771.41	68.27	-3193.82	20.08	-10373.34	99.87	-4414.73	-0.34	-26.73	-1.11	-2868.95	-13.36	-3113.44	-4.52	-2277.39	-13.44	-6.90	-0.04	-16.37	-0.03	39263.93	-1333.59	-12031.07	-592.80	-4230.48	2.86
		2X (10000 AFY)	Low	4%	5611.85	12922.89	903.90	28819.78	547.96	6832.00	128.85	-3195.25	18.65	-10376.83	96.38	-4424.63	-10.24	-26.74	-1.13	-2869.20	-13.60	-3114.83	-5.91	-2277.63	-13.68	-6.90	-0.04	-16.38	-0.04	37877.00	-2720.52	-12582.71	-1144.45	-4226.86	6.48
EVT Rate		0.1X	Medium	8%	10165.77	12810.28	791.29	28524.23	252.41	6755.66	52.52	-3181.84	32.06	-10283.47	189.74	-4411.88	2.51	-28.72	-3.11	-2891.77	-36.18	-3119.08	-10.16	-2321.03	-57.08	-6.96	-0.10	-16.40	-0.07	38353.88	-2243.64	-16244.56	-4806.29	-5921.95	-1688.61
		10X	High	33%	42678.32	8269.18	-3749.81	26249.07	-2022.76	6254.58	-448.56	-3111.93	101.96	-10365.82	107.39	-4268.57	145.83	-15.70	9.92	-2737.99	117.60	-3074.17	34.75	-1923.95	340.00	-6.55	0.31	-16.18	0.16	50590.89	9993.37	10381.69	21819.95	-447.38	3785.96
EVT Extinct Depth (5 ft)		2.5 ft	Low	1%	1455.93	12160.63	141.64	28315.22	43.40	6707.55	4.40	-3184.92	28.98	-10327.23	145.98	-4399.08	15.31	-27.26	-1.64	-2875.56	-19.97	-3113.31	-4.39	-2284.80	-20.85	-6.92	-0.06	-16.37	-0.03	40427.25	-170.27	-11914.04	-475.78	-4616.57	-383.23
		10 ft	Low	1%	1927.97	12018.99	0.00	28271.82	0.00	6703.14	0.00	-3213.90	0.00	-10473.21	0.00	-4414.39	0.00	-25.62	0.00	-2855.59	0.00	-3108.92	0.00	-2263.95	0.00	-6.86	0.00	-16.34	0.00	40982.95	385.43	-10589.67	848.60	-3539.40	693.94
HFB #9 (0.001)		0.1X (0.0001)	Medium	7%	9345.22	12128.47	109.48	28268.18	-3.64	6653.40	-49.74	-3171.27	42.63	-10259.53	213.68	-3438.73	975.67	11.95	37.57	-537.91	2317.68	-664.72	2444.20	-2388.60	-124.65	-7.79	-0.93	-19.10	-2.77	40540.67	-56.85	-12310.23	-871.97	-6327.12	-2093.78
		10X (0.01)	Medium	6%	7935.65	12101.90	82.91	28335.22	63.40	6757.16	54.02	-3219.15	-5.26	-10506.22	-33.01	-5304.25	-889.86	-43.16	-17.54	-4814.55	-1958.96	-5337.13	-2228.21	-2156.91	107.04	-6.05	0.81	-13.72	2.61	40652.08	54.56	-10589.65	848.61	-2644.49	1588.85
HFB #10 and HFB #19 (1.0E-6 to 1.0E-2)		0.1X	Low	3%	3807.20	12115.22	96.23	28301.68	29.85	6705.53	2.39	-3186.85	27.05	-10346.63	126.58	-4392.36	22.03	-28.59	-2.97	-2902.90	-47.31	-3121.01	-12.09	-351.51	1912.43	-0.77	6.09	-1.75	14.59	40596.44	-1.07	-11468.72	-30.46	-5709.39	-1476.05
		10X	Low	4%	5817.34	12113.93	94.94	28305.25	33.42	6710.75	7.61	-3205.60	8.30	-10427.95	45.26	-4463.04	-48.65	-23.57	2.04	-2805.60	49.99	-3088.85	20.07	-5298.06	-3034.12	-54.04	-47.18	-129.18	-112.85	40601.95	4.43	-11337.13	101.13	-2025.99	2207.35
HFB #73 (1.0E-7)		0.1X (1.0E-8)	Low	0%	297.39	12114.93	95.94	28302.45	30.63	6706.66	3.52	-3192.20	21.70	-10369.43	103.79	-4403.95	10.45	-26.70	-1.09	-2868.69	-13.10	-3111.93	-3.01	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.63	0.11	-11437.58	0.68	-4233.48	-0.14
		10X (1.0E-6)	Low	0%	307.85	12115.29	96.30	28301.85	30.03	6705.49	2.35	-3191.52	22.37	-10366.95	106.27	-4403.19	11.20	-26.70	-1.09	-2868.65	-13.06	-3111.81	-2.89	-2277.09	-13.15	-6.90	-0.04	-16.36	-0.02	40596.43	-1.08	-11444.95	-6.69	-4232.01	1.33
HFB #98 (1.1E-4)		0.1X (1.1E-5)	Low	0%	372.22	12114.21	95.23	28304.09	32.27	6709.00	5.86	-3198.31	15.59	-10396.07	77.14	-4439.30	-24.91	-26.77	-1.16	-2869.37	-13.77	-3113.18	-4.26	-2277.55	-13.60	-6.90	-0.04	-16.36	-0.02	40600.42	2.91	-11380.65	57.61	-4205.49	27.85
		10X (1.1E-3)	Low	0%	439.61	12115.64	96.66	28301.29	29.47	6704.97	1.83	-3184.97	28.92	-10338.31	134.90	-4386.13	28.27	-26.56	-0.95	-2867.58	-11.98	-3107.82	1.10	-2276.33	-12.38	-6.89	-0.03	-16.34	-0.01	40595.66	-1.86	-11486.62	-48.35	-4276.25	-42.91
HFB #98 (1.1E-5)		0.1X (1.1E-6)	Low	0%	297.64	12114.95	95.96	28302.43	30.61	6706.61	3.46	-3192.10	21.79	-10369.11	104.10	-4404.92	9.47	-26.72	-1.11	-2868.60	-13.01	-3112.38	-3.46	-2277.10	-13.15	-6.90	-0.04	-16.35	-0.02	40597.58	0.06	-11437.47	0.80	-4232.72	0.62
		10X (1.1E-4)	Low	0%	312.95	12115.12	96.13	28302.15	30.33	6706.15	3.01	-3192.36	21.54	-10369.86	103.35	-4396.17	18.22	-26.55	-0.93	-2869.42	-13.82	-3107.88	1.04	-2277.33	-13.38	-6.90	-0.04	-16.41	-0.08	40597.07	-0.45	-11444.15	-5.89	-4238.09	-4.75
Surface Recharge from Appiled Water	Fillmore basin only	0.5X	Low	1%	863.51	12112.26	93.27	28350.53	78.71	6712.60	9.46	-3188.73	25.17	-10362.66	110.56	-4400.32	14.07	-26.69	-1.08	-2868.51	-12.92	-3111.26	-2.34	-2276.97	-13.02	-6.90	-0.04	-16.36	-0.02	40638.65	41.13	-10979.17	459.09	-4230.71	2.64
		1.5X	Low	1%	776.42	12117.67	98.69	28254.65	-17.17	6700.57	-2.58	-3195.53	18.37	-10375.68	97.54	-4407.40	6.99	-26.72	-1.10	-2868.86	-13.26	-3112.56	-3.64	-2277.28	-13.33	-6.90	-0.04	-16.36	-0.03	40556.73	-40.79	-11898.59	-460.33	-4235.90	-2.56
	Piru basin only	0.5X	Low	0%	450.11	12062.88	43.89	28268.42	-3.40	6698.85	-4.29	-3191.92	21.97	-10368.68	104.53	-4402.55	11.84	-26.70	-1.09	-2868.65	-13.06	-3111.73	-2.81	-2277.09	-13.14	-6.90	-0.04	-16.36	-0.02	40752.50	154.99	-11363.58	74.68	-4233.69	-0.35
		1.5X	Low	0%	618.18	12166.85	147.86	28335.99	64.17	6714.16	11.02	-3192.34	21.56	-10369.70	103.52	-4405.20	9.19	-26.71	-1.09	-2868.72	-13.13	-3112.10	-3.18	-2277.16	-13.21	-6.90	-0.04	-16.36	-0.02	40441.95	-155.56	-11512.49	-74.23	-4232.94	0.40
	Santa Paula basin only	0.5X	Low	1%	1633.56	12113.02	94.03	28308.13	36.31	6714.54	11.40	-3243.04	-29.14	-10573.12	-99.90	-4482.53	-68.14	-22.07	3.54	-2815.32	40.27	-3085.45	23.47	-2248.45	15.50	-6.76	0.10	-16.23	0.11	40606.10	8.58	-11174.83	263.43	-3293.72	939.62
		1.5X	Low	2%	1964.86	12116.62	97.64	28297.58	25.76	6699.82	-3.32	-3149.96	63.93	-10203.76	269.46	-4335.22	79.17	-30.91	-5.29	-2915.78	-60.19	-3135.15	-26.23	-2298.80	-34.85	-7.02	-0.16	-16.47	-0.14	40590.22	-7.30	-11657.32	-219.06	-5305.71	-1072.37
Surface Recharge from Precipitation	Fillmore basin only	0.5X	Low	3%	3782.82	12109.81	90.82	28474.57	202.75	6764.82	61.68	-3144.00	69.90	-10265.65	207.57	-4330.50	83.89	-26.53	-0.91	-2866.48	-10.89	-3100.67	8.25	-2275.00	-11.05	-6.89	-0.03	-16.29	0.04	40781.44	183.92	-8662.53	2775.73	-4157.94	75.40
		1.5X	Low	3%	3489.08	12120.29	101.31	28136.10	-135.72	6650.21	-52.93	-3245.95	-32.06	-10474.66	-1.44	-4470.97	-56.58	-26.87	-1.25	-2870.81	-15.22	-3122.41	-13.49	-2279.13	-15.18	-6.91	-0.05	-16.42	-0.08	40419.92	-177.60	-14247.07	-2808.80	-4310.71	-77.37
	Piru basin only	0.5X	Low	2%	2458.65	11791.23	-227.76	28113.23	-158.59	6659.56	-43.58	-3191.05	22.84	-10366.59	106.63	-4396.22	18.17	-26.69	-1.07	-2868.48	-12.89	-3110.78	-1.86	-2276.93	-12.98	-6.90	-0.04	-16.35	-0.02	41970.41	1372.89	-10961.60	476.66	-4236.01	-2.67
		1.5X	Low	2%	2692.67	12426.58	407.60	28475.19	203.37	6750.05	46.90	-3193.08	20.81	-10371.47	101.74	-4410.94	3.45	-26.72	-1.10	-2868.87	-13.28	-3112.96	-4.04	-2277.31	-13.36	-6.90	-0.04	-16.37	-0.03	39176.11	-1421.41	-11890.94	-452.68	-4230.48	2.86
	Santa Paula basin only	0.5X	Low	2%	2593.83	12110.89	91.90	28314.39	42.56	6724.13	20.99	-3255.31	-41.41	-10605.34	-132.13	-4652.04	-237.65	-20.90	4.72	-2791.36	64.24	-3043.93	64.99	-2240.11	23.84	-6.69	0.17	-16.03	0.30	40616.84	19.33	-10995.49	442.77	-2826.51	1406.83
		1.5X	Low	2%	2923.21	12118.51	99.52	28292.09	20.27	6691.47	-11.68	-3136.15	77.74	-10164.02	309.19	-4191.46	222.93	-32.15	-6.54	-2939.73	-84.14	-3170.78	-61.86	-2307.85	-43.90	-7.08	-0.22	-16.64	-0.31	40580.78	-16.74	-11822.01	-383.75	-5817.77	-1584.43
Surface Recharge from Pumped Water	Fillmore basin only	0.5X	Low	5%	6340.66	12666.14	647.15	28743.36	471.54	6726.27	23.12	-3148.55	65.35	-10302.72	170.50	-4363.16	51.23	-26.56	-0.95	-2866.79	-11.20	-3104.92	4.00	-2275.43	-11.48	-6.89	-0.03	-16.32	0.02	41383.02	785.50	-7368.36	4069.91	-4204.66	28.68
		1.5X	Low	5%	5865.95	11744.93	-274.06	27809.04	-462.78	6680.66	-22.49	-3234.29	-20.39	-10431.37	41.84	-4440.83	-26.44	-26.83	-1.22	-2870.43	-14.84	-3118.29	-9.37	-2278.68	-14.74	-6.91	-0.04	-16.40	-0.06	39899.58	-697.93	-15693.21	-4254.95	-4258.15	-24.81
	Piru basin only	0.5X	Low	1%	1788.25	11783.59	-235.40	28104.95	-166.87	6663.42	-39.73	-3190.79	23.11	-10365.86	107.36	-4395.71	18.68	-26.69	-1.07	-2868.49	-12.90	-3110.77	-1.85	-2276.93	-12.98	-6.90	-0.04	-16.35	-0.02	41314.51	716.99	-10988.70	449.56	-4235.05	-1.71
		1.5X	Low	2%	2018.07	12446.30	427.31	28489.61	217.79	6747.71	44.57	-3193.36	20.54	-10372.22	100.99	-4411.65	2.74	-26.72	-1.10	-2868.87	-13.28	-3113.00	-4.08	-2277.31	-13.36	-6.90	-0.04	-16.37	-0.03	39868.08	-729.44	-11878.96	-440.69	-4231.24	2.10
	Santa Paula basin only	0.5X	Low	1%	955.34	12113.69	94.70	28306.17	34.35	6711.70	8.56	-3236.67	-22.78	-10513.66	-40.45	-4447.24	-32.85	-23.92	1.70	-2839.68	15.91	-3102.36	6.56	-2262.17	1.78	-6.82	0.04	-16.30	0.04	40603.13	5.61	-11253.63	184.64	-3727.93	505.41
		1.5X	Low	1%	1270.58	12116.18	97.19	28298.85	27.03	6701.71	-1.44	-3149.37	64.53	-10233.94	239.27	-4362.79	51.60	-29.46	-3.84	-2895.79	-40.20	-3121.15	-12.23	-2290.17	-26.23	-6.97	-0.11	-16.42	-0.08	40592.28	-5.24	-11612.38	-174.12	-4760.84	-527.50
STR Conductance for Piru Creek		0.1X	Medium	5%	6920.18	10965.09	-1053.90	27559.39	-712.44	6512.19	-190.95	-3185.22	28.68	-10349.57	123.65	-4376.46	37.93	-26.68	-1.06	-2868.52	-12.92	-3108.34	0.58	-2276.82	-12.87	-6.90	-0.04	-16.34	0.00	37667.43	-2930.09	-9651.71	1786.55	-4204.81	28.53
		10X	Medium	8%	10530.36	13915.77	1896.79	29346.65	1074.83	6988.19	285.04	-3205.25	8.65	-10407.59	65.62	-4442.65	-28.26	-26.71	-1.09	-2868.43	-12.84	-3116.56	-7.63	-2277.19	-13.24	-6.90	-0.04	-16.39	-0.05	44990.42	4392.91	-14106.82	-2668.56	-4308.16	-74.82
STR Conductance for Sespe Creek		0.1X	Low	2%	2378.13	12090.97	71.98	28741.97	470.14	6814.53	111.38	-3180.81	33.08	-10338.25	134.97	-4357.18	57.21	-26.64	-1.02	-2867.97	-12.38	-3105.42	3.50	-2276.32	-12.37	-6.89	-0.03	-16.32	0.02	41016.25	418.73	-12460.94	-1022.67	-4204.70	28.64
		10X	Low	3%	4466.87	12169.80	150.81	27293.27	-978.55	6467.80	-235.35	-3207.15	6.75	-10410.24	62.98	-4499.78	-85.39	-26.84	-1.23	-2870.33	-14.74	-3125.49	-16.57	-2278.93	-14.98	-6.91	-0.05	-16.44	-0.10	39595.99	-1001.53	-9567.18	1871.09	-4260.11	-26.77
STR Conductance for Santa Paula Creek		0.1X	Low	0%	630.37	12115.52	96.53	28300.84	29.02	6704.17	1.02	-3192.62	21.28	-10357.05	116.16	-4361.70	52.69	-26.74	-1.12	-2869.02	-13.43	-3115.91	-6.99	-2277.56	-13.61	-6.90	-0.04	-16.38	-0.05	40594.95	-2.57	-11481.20	-42.93	-4000.43	232.91
		10X	Low	1%	1357.63	12116.42	97.43	28297.97	26.15	6700.65	-2.50	-3134.80	79.10	-10168.66	304.55	-4364.80	49.60	-26.94	-1.33	-2872.21	-16.62	-3118.27	-9.34	-2279.86	-15.91	-6.91	-0.05	-16.40	-0.06	40590.90	-6.62	-11680.92	-242.65	-3727.61	505.73
STR Conductance for Santa Clara River	Piru basin only	0.1X	High	48%	61960.11	2872.62	-9146.37	19311.79	-8960.03	4795.40	-1907.74	-3105.06	108.84	-10135.62	337.59	-4047.01	367.39	-26.20	-0.59	-2864.15	-8.56	-3064.70	44.22	-2271.03	-7.08	-6.87	-0.01	-16.08	0.26	16104.60	-24492.92	4915.62	16353.89	-4008.69	224.65
		10X	Medium	5%	6614.28	10923.20	-1095.79	28663.36	391.54	6947.53	244.39	-3200.05	13.85	-10393.42	79.79	-4415.15	-0.76	-26.66	-1.05	-2868.01	-12.41	-3112.72	-3.80	-2276.64	-12.69	-6.90	-0.04	-16.36	-0.03	36667.46	-3930.06	-10670.10	768.16	-4293.27	-59.93
	Fillmore basin only	0.1X	Low	1%	1455.43	11772.57	-246.41	28302.48	30.66	6711.38	8.23	-3226.12	-12.22	-10458.90	14.31	-4422.35	-7.96	-26.80	-1.19	-2870.19	-14.60	-3116.10	-7.18	-2278.34	-14.39	-6.90	-0.04	-16.38	-0.05	40293.60	-303.91	-10696.21	742.06	-4285.56	-52.22
		10X	Low	2%	2081.90	12851.40	832.41	27585.64	-686.18	6633.99	-69.15	-3189.65	24.25	-10288.14	185.07	-4407.78	6.61	-26.60	-0.98	-2866.88	-11.29	-3110.40	-1.48	-2275.87	-11.92	-6.89	-0.03	-16.35	-0.01	40555.51	-42.01	-11646.33	-208.07	-4235.78	-2.44
	Santa Paula basin only	0.1X	Low	1%	1236.97	12114.03	95.05	28306.03	34.21	6710.68	7.54	-3301.34	-87.44	-10665.29	-192.07	-4371.26	43.13	-27.86	-2.25	-2878.78	-23.19	-3116.85	-7.92	-2353.14	-89.19	-6.93	-0.07	-16.39	-0.05	40602.60	5.08	-11130.01	308.25	-4574.87	-341.53
		10X	Low	4%	4790.54	12119.57	100.58	28287.41	15.59	6688.25	-14.89	-2797.23	416.66	-9398.77	1074.45	-4422.23	-7.84	-20.74	4.88	-2813.55	42.05	-3122.20	-13.28	-1910.60	353.35	-6.75	0.11	-16.45	-0.11	40576.65	-20.87	-12516.76	-1078.50	-2585.95	1647.39
	Oxnard and Mound basins only	0.1X	Low	0%	468.11	12114.88	95.89	28302.64	30.82	6706.92	3.77	-3192.56	21.33	-10371.15	102.06	-4410.07	4.32	-27.06	-1.44	-2894.53	-38.93	-3124.90	-15.98	-2341.56	-77.61	-7.08	-0.22	-16.56	-0.22	40597.91	0.39	-11431.52	6.74	-4164.96	68.38
		10X	Low	1%	775.88	12115.14	96.15	28301.97	30.15	6705.89	2.75	-3191.06	22.84	-10364.42	108.80	-4392.85	21.54	-26.15	-0.54	-2825.93	29.66	-3090.30	18.62	-2046.19	217.76	-6.44	0.42	-15.85	0.49	40596.61	-0.90	-11451.49	-13.23	-4445.38	-212.04
Model Layer 1	Zone 31 (1200 ft/day)	0.1X	Low	0%	296.91	12115.05	96.06	28302.39	30.57	6706.55	3.41	-3192.14	21.76	-10369.20	104.01	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.64	0.12	-11438.33	-0.07	-4233.35	-0.01
		10X	Low	0%	296.99	12114.87	95.88	28302.30	30.48	6706.53	3.39	-3192.13	21.76	-10369.20	104.01	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.20	-0.32	-11438.03	0.23	-4233.35	-0.01
	Zone 32 (1200 Ft/day)	0.1X	Low	3%	3623.59	10610.23	-1408.76	29035.92	764.10	6768.38	65.23	-3192.84	21.05	-10371.23	101.99	-4408.05	6.34	-26.71	-1.09	-2868.73	-13.13	-3112.46	-3.54	-2277.18	-13.23	-6.90	-0.04	-16.36	-0.02	40016.33	-581.19	-10796.92	641.35	-4235.87	-2.53
		10X	Low	2%	2628.37	13112.68	1093.69	27854.39	-417.43	6670.07	-33.07	-3191.82	22.08	-10368.27	104.94	-4402.25	12.14	-26.70	-1.09	-2868.68	-13.09	-3111.72	-2.80	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	41019.31	421.79	-11929.76	-491.49	-4231.81	1.53
	Zone 33 (600 ft/day)	0.1X	Low	4%	5075.74	10069.76	-1949.23	29148.47	876.65	6769.35	66.21	-3184.76	29.14	-10351.06	122.16	-4403.21	11.19	-26.68	-1.07	-2868.40	-12.80	-3111.45	-2.53	-2276.89	-12.94	-6.90	-0.04	-16.36	-0.02	39629.95	-967.57	-10423.86	1014.41	-4223.55	9.80
		10X	Low	4%	4925.80	13983.35	1964.36	27739.92	-531.90	6660.46	-42.68	-3207.31	6.59	-10406.81	66.40	-4412.42	1.97	-26.75	-1.14	-2869.34	-13.75	-3113.79	-4.86	-2277.69	-13.74	-6.90	-0.04	-16.37	-0.03	41687.74	1090.22	-12605.07	-1166.81	-4254.63	-21.29
	Zone 34 (200 Ft/day)	0.1X	Low	0%	357.14	12117.85	98.86	28284.12	12.30	6697.05	-6.10	-3163.98	49.92	-10406.71	66.50	-4418.45	-4.06	-26.72	-1.11	-2868.96	-13.36	-3114.12	-5.20	-2277.38	-13.43	-6.90	-0.04	-16.37	-0.04	40577.94	-19.58	-11489.63	-51.36	-4248.62	-15.28
		10X	Low	1%	873.35	12106.68	87.70	28350.07	78.25	6734.84	31.70	-3220.00	-6.11	-10257.04	216.17	-4357.94	56.45	-26.61	-0.99	-2867.43	-11.84	-3104.62	4.30	-2275.94	-11.99	-6.89	-0.03	-16.32	0.02	40650.06	52.54	-11694.56	-256.29	-4174.37	58.97
	Zone 35 (200 ft/day)	0.1X	Low	0%	525.86	12114.49	95.50	28303.87	32.05	6708.38	5.23	-3138.24	75.66	-10346.54	126.68	-4401.92	12.47	-26.63	-1.02	-2867.54	-11.95	-3110.79	-1.87	-2276.29	-12.34	-6.89	-0.03	-16.35	-0.01	40599.47	1.95	-11546.71	-108.45	-4192.69	40.65
		10X	Low	0%	414.05	12115.12	96.13	28301.90	30.08	6705.97	2.83	-3225.42	-11.52	-10400.23	72.98	-4403.42	10.97	-26.80	-1.19	-2870.68	-15.08	-3112.46	-3.54	-2278.34	-14.39	-6.90	-0.04	-16.36	-0.03	40596.88	-0.64	-11352.97	85.30	-4302.66	-69.32
	Zone 36 (200 ft/day)	0.1X	Low	0%	385.77	12115.02	96.03	28302.20	30.38	6706.36	3.21	-3189.89	24.01	-10359.94	113.27	-4403.64	10.75	-6.62	19.00	-2820.67	34.92	-3116.42	-7.50	-2280.81	-16.86	-6.74	0.12	-16.34	0.00	40597.24	-0.27	-11447.80	-9.54	-4253.24	-19.90
		10X	Low	0%	401.25	12114.95	95.96	28302.41	30.59	6706.60	3.45	-3193.32	20.57	-10374.09	99.13	-4403.08	11.31	-39.44	-13.83	-2900.44	-44.85	-3109.23	-0.31	-2277.09	-13.15	-6.99	-0.13	-16.37	-0.03	40597.55	0.04	-11433.80	4.46	-4296.79	-63.45
	Zone 37 (200 ft/day)	0.1X	Low	0%	434.35	12115.58	96.59	28294.63	22.80	6703.90	0.76	-3156.48	57.42	-10300.95	172.27	-4421.53	-7.14	-26.65	-1.03	-2867.59	-12.00	-3112.32	-3.40	-2276.44	-12.49	-6.89	-0.03	-16.36	-0.02	40589.89	-7.63	-11440.75	-2.48	-4195.05	38.29
		10X	Low	0%	328.59	12114.52	95.54	28327.97	56.15	6705.47	2.32	-3216.88	-2.99	-10409.29	63.92	-4403.39	11.00	-26.74	-1.13	-2869.29	-13.70	-3112.71	-3.79	-2277.60	-13.66	-6.90	-0.04	-16.36	-0.03	40615.87	18.35	-11416.33	21.93	-4257.39	-24.05
	Zone 39 (10 ft/day)	0.1X	Low	0%	296.75	12114.96	95.98	28302.36	30.54	6706.54	3.40	-3192.10	21.80	-10369.19	104.02	-4404.00	10.40	-26.70	-1.09	-2868.68	-13.09	-3111.93	-3.01	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.45	-0.06	-11438.13	0.14	-4233.35	-0.01
		10X	Low	0%	296.74	12114.98	95.99	28302.36	30.54	6706.55	3.40	-3192.19	21.71	-10369.20	104.02	-4403.80	10.59	-26.70	-1.09	-2868.69	-13.10	-3111.91	-2.99	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.48	-0.04	-11438.24	0.02	-4233.31	0.03
Model Layer 2	Zone 31 (0.1 ft/day)	0.1X	Low	0%	299.02	12114.06	95.07	28301.95	30.13	6706.40	3.26	-3192.13	21.76	-10369.20	104.02	-4403.87	10.52	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40594.90	-2.62	-11437.07	1.20	-4233.38	-0.04
		10X	Low	0%	299.18	12115.36	96.37	28302.60	30.78	6706.62	3.48	-3192.13	21.77	-10369.19	104.03	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40598.80	1.29	-11438.80	-0.54	-4233.31	0.03
	Zone 32 (0.1 ft/day)	0.1X	Low	3%	4269.21	10461.55	-1557.44	29075.03	803.21	6750.62	47.48	-3192.35	21.55	-10369.75	103.46	-4407.02	7.37	-26.71	-1.10	-2868.75	-13.16	-3112.33	-3.41	-2277.20	-13.25	-6.90	-0.04	-16.36	-0.02	39661.57	-935.95	-10678.22	760.05	-4231.60	1.74
		10X	Low	1%	1691.83	12748.24	729.25	27909.37	-362.45	6676.34	-26.80	-3191.53	22.37	-10367.48	105.74	-4400.96	13.43	-26.70	-1.09	-2868.67	-13.07	-3111.54	-2.62	-2277.09	-13.14	-6.90	-0.04	-16.36	-0.02	40789.90	192.38	-11645.45	-207.19	-4231.10	2.24
	Zone 33 (0.1 ft/day)	0.1X	Low	3%	3995.65	12013.36	-5.63	29769.92	1498.10	6687.89	-15.25	-3182.28	31.61	-10343.01	130.20	-4371.01	43.38	-26.66	-1.04	-2868.16	-12.56	-3107.28	1.64	-2276.52	-12.57	-6.89	-0.03	-16.33	0.01	41721.49	1123.97	-12532.93	-1094.67	-4208.36	24.98
		10X	Low	3%	4281.24	12582.51	563.52	26718.85	-1552.97	6682.10	-21.04	-3197.57	16.32	-10383.72	89.50	-4421.31	-6.92	-26.73	-1.11	-2868.94	-13.35	-3114.35	-5.43	-2277.43	-13.48	-6.90	-0.04	-16.37	-0.04	39551.37	-1046.15	-10501.89	936.37	-4248.35	-15.01
	Zone 34 (0.1 ft/day)	0.1X	Low	1%	948.65	12124.03	105.04	28263.11	-8.72	6674.22	-28.93	-3302.08	-88.18	-10611.16	-137.95	-4460.15	-45.76	-26.95	-1.34	-2872.38	-16.78	-3123.82	-14.90	-2280.16	-16.22	-6.91	-0.05	-16.43	-0.09	40547.89	-49.63	-11175.20	263.06	-4405.34	-172.00
		10X	Low	1%	1300.94	12105.26	86.27	28346.38	74.56	6741.14	38.00	-3088.21	125.69	-10115.53	357.68	-4344.97	69.42	-26.42	-0.81	-2864.41	-8.82	-3099.09	9.84	-2273.67	-9.72	-6.88	-0.02	-16.28	0.05	40652.20	54.69	-11723.90	-285.64	-4053.59	179.75
	Zone 35 (0.1 ft/day)	0.1X	Low	0%	414.58	12114.39	95.41	28304.23	32.41	6708.75	5.61	-3133.30	80.60	-10344.38	128.83	-4400.79	13.60	-26.64	-1.03	-2867.87	-12.28	-3110.67	-1.74	-2276.43	-12.48	-6.89	-0.03	-16.35	-0.01	40599.96	2.44	-11447.04	-8.78	-4214.01	19.33
		10X	Low	0%	285.49	12115.10	96.11	28301.96	30.13	6706.02	2.88	-3207.84	6.06	-10375.77	97.44	-4404.67	9.72	-26.72	-1.10	-2868.86	-13.27	-3112.22	-3.30	-2277.28	-13.33	-6.90	-0.04	-16.36	-0.02	40596.92	-0.60	-11430.37	7.90	-4236.93	-3.59
	Zone 36 (0.1 ft/day)	0.1X	Low	0%	458.25	12115.17	96.19	28301.84	30.02	6705.74	2.60	-3189.66	24.24	-10358.85	114.37	-4392.26	22.13	-26.07	-0.45	-2872.61	-17.02	-3114.79	-5.87	-2282.02	-18.07	-6.91	-0.05	-16.38	-0.04	40596.60	-0.92	-11458.25	-19.98	-4127.03	106.31
		10X	Low	0%	320.48	12114.92	95.94	28302.51	30.69	6706.71	3.57	-3192.83	21.07	-10372.08	101.14	-4405.85	8.54	-26.82	-1.21	-2867.58	-11.98	-3111.46	-2.54	-2275.72	-11.78	-6.89	-0.03	-16.36	-0.02	40597.70	0.18	-11433.72	4.54	-4260.60	-27.26
	Zone 37 (100ft/day)	0.1X	Low	0%	313.79	12115.26	96.28	28302.99	31.17	6706.27	3.12	-3188.52	25.37	-10364.84	108.37	-4405.10	9.29	-26.70	-1.08	-2868.60	-13.01	-3111.95	-3.03	-2277.07	-13.12	-6.90	-0.04	-16.36	-0.02	40598.27	0.76	-11444.31	-6.05	-4230.25	3.09
		10X	Low	0%	306.45	12114.20	95.21	28305.00	33.18	6709.21	6.07	-3208.70	5.19	-10387.77	85.45	-4397.91	16.48	-26.72	-1.11	-2869.03	-13.43	-3111.66	-2.74	-2277.34	-13.40	-6.90	-0.04	-16.36	-0.02	40601.05	3.53	-11420.39	17.87	-4246.07	-12.73
	Zone 39 (10 ft/day)	0.1X	Low	0%	296.66	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.91	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.01	-4233.34	0.00
		10X	Low	0%	296.78	12114.97	95.98	28302.40	30.58	6706.56	3.41	-3192.17	21.73	-10369.19	104.02	-4403.81	10.58	-26.70	-1.09	-2868.69	-13.10	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.32	-0.05	-4233.32	0.02
Model Layer 3	Zone 26 (600 ft/day)	0.1X	Low	2%	2452.38	12142.68	123.69	27625.04	-646.78	6649.97	-53.17	-3180.41	33.49	-10342.03	131.19	-4420.43	-6.04	-26.68	-1.07	-2868.27	-12.68	-3113.38	-4.46	-2276.89	-12.94	-6.90	-0.04	-16.37	-0.03	40034.14	-563.38	-10579.33	858.93	-4228.84	4.50
		10X	Low	4%	4743.31	12053.89	34.90	29713.81	1441.99	6824.44	121.29	-3217.15	-3.25	-10426.54	46.67	-4369.20	45.19	-26.76	-1.15	-2869.77	-14.18	-3109.10	-0.17	-2277.81	-13.86	-6.90	-0.04	-16.34	-0.01	41754.16	1156.64	-13299.56	-1861.29	-4236.01	-2.67
	Zone 31 (1200 ft/day)	0.1X	Low	2%	2887.58	11430.85	-588.13	27854.96	-416.86	6595.47	-107.67	-3189.34	24.56	-10362.18	111.03	-4386.27	28.12	-26.67	-1.06	-2868.28	-12.69	-3109.43	-0.51	-2276.71	-12.76	-6.90	-0.04	-16.34	-0.01	40036.69	-560.83	-10417.64	1020.62	-4236.04	-2.70
		10X	Low	2%	2143.08	12526.00	507.01	28544.87	273.05	6769.13	65.99	-3193.07	20.83	-10371.18	102.03	-4413.32	1.07	-26.73	-1.11	-2868.98	-13.39	-3113.32	-4.40	-2277.40	-13.45	-6.90	-0.04	-16.37	-0.03	40069.79	-527.73	-12043.68	-605.42	-4225.80	7.54
	Zone 32 (1200 ft/day)	0.1X	Medium	8%	9874.04	8353.04	-3665.94	28905.23	633.41	6922.87	219.73	-3190.40	23.49	-10365.39	107.82	-4390.17	24.22	-26.67	-1.05	-2868.20	-12.61	-3109.66	-0.74	-2276.66	-12.71	-6.90	-0.03	-16.35	-0.01	38217.24	-2380.28	-8655.01	2783.25	-4242.08	-8.74
		10X	Medium	7%	8735.82	15605.90	3586.92	27848.07	-423.75	6165.82	-537.33	-3189.06	24.84	-10360.01	113.20	-4395.17	19.22	-26.70	-1.09	-2868.88	-13.28	-3111.38	-2.46	-2277.17	-13.23	-6.90	-0.04	-16.36	-0.02	41859.96	1262.45	-14156.37	-2718.10	-4213.43	19.91
	Zone 33 (400 ft/day)	0.1X	High	12%	15828.88	6279.72	-5739.27	29389.01	1117.19	6873.22	170.08	-3159.23	54.66	-10290.18	183.04	-4406.19	8.21	-26.61	-1.00	-2867.41	-11.82	-3110.59	-1.67	-2276.07	-12.12	-6.89	-0.03	-16.35	-0.01	36799.96	-3797.55	-6740.60	4697.67	-4198.78	34.56
		10X	High	35%	45233.13	28696.60	16677.61	24848.51	-3423.31	6087.91	-615.24	-3269.45	-55.55	-10548.26	-75.04	-4289.06	125.33	-26.82	-1.21	-2871.14	-15.55	-3101.69	7.23	-2278.45	-14.50	-6.90	-0.04	-16.30	0.04	50922.81	10325.30	-25281.82	-13843.56	-4286.97	-53.63
	Zone 34 (100 ft/day)	0.1X	Low	2%	2135.37	12115.29	96.30	28284.38	12.56	6707.96	4.82	-2399.79	814.11	-10453.61	19.60	-4417.63	-3.23	-26.17	-0.56	-2860.78	-5.19	-3104.35	4.58	-2271.09	-7.14	-6.87	-0.01	-16.31	0.03	40584.76	-12.76	-12320.49	-882.22	-3961.08	272.27
		10X	Low	5%	6390.11	12123.30	104.31	28342.68	70.86	6667.15	-35.99	-4498.19	-1284.30	-11421.33	-948.12	-4484.48	-70.09	-27.95	-2.34	-2886.99	-31.40	-3147.16	-38.24	-2291.30	-27.35	-6.97	-0.11	-16.58	-0.24	40602.32	4.80	-8616.06	2822.20	-5183.10	-949.76
	Zone 35 (100 ft/day)	0.1X	Low	5%	6087.60	12118.91	99.92	28289.44	17.62	6692.92	-10.23	-425.16	2788.74	-11643.49	-1170.28	-4478.43	-64.04	-24.71	0.91	-2838.80	16.79	-3113.58	-4.66	-2252.90	11.05	-6.81	0.06	-16.35	-0.01	40579.54	-17.98	-12651.15	-1212.89	-3560.90	672.44
		10X	High	15%	19423.09	12094.71	75.72	28368.48	96.66	6781.32	78.18	-11097.85	-7883.95	-8555.23	1917.98	-4168.73	245.67	-30.82	-5.20	-2937.28	-81.68	-3086.93	21.99	-2323.16	-59.21	-7.10	-0.24	-16.26	0.08	40690.96	93.44	-6641.71	4796.55	-8299.87	-4066.53
	Zone 36 (100 ft/day)	0.1X	Low	1%	979.31	12115.60	96.62	28300.60	28.78	6704.05	0.91	-3177.65	36.25	-10308.84	164.38	-4377.99	36.40	-28.61	-2.99	-2897.17	-41.58	-3118.96	-10.03	-2202.87	61.08	-7.00	-0.14	-16.45	-0.12	40594.76	-2.75	-11518.97	-80.71	-3816.77	416.57
		10X	Low	2%	2218.11	12113.00	94.01	28308.28	36.46	6714.55	11.41	-3249.89	-35.99	-10610.77	-137.56	-4469.50	-55.11	-23.37	2.25	-2800.59	55.01	-3094.99	13.93	-2329.90	-65.95	-6.66	0.20	-16.18	0.16	40606.25	8.73	-11147.46	290.80	-5643.89	-1410.55
	Zone 37 (100 ft/day)	0.1X	Low	0%	378.93	12115.24	96.26	28302.26	30.44	6707.05	3.91	-3137.00	76.89	-10387.89	85.33	-4405.93	8.46	-26.68	-1.07	-2868.29	-12.69	-3112.07	-3.15	-2276.86	-12.91	-6.90	-0.04	-16.36	-0.02	40598.78	1.27	-11470.20	-31.94	-4218.78	14.56
		10X	Low	0%	407.38	12113.39	94.40	28310.88	39.06	6707.80	4.65	-3256.65	-42.76	-10384.14	89.08	-4396.22	18.17	-26.75	-1.14	-2869.50	-13.91	-3111.93	-3.01	-2277.70	-13.75	-6.90	-0.04	-16.36	-0.02	40602.46	4.95	-11385.13	53.13	-4262.65	-29.31
	Zone 38 (100 ft/day)	0.1X	Low	1%	1482.76	12115.47	96.48	28300.93	29.11	6704.51	1.36	-3179.71	34.18	-10317.12	156.10	-4383.41	30.99	-1.41	24.21	-2948.27	-92.68	-3118.88	-9.96	-1427.72	836.22	-7.32	-0.46	-16.68	-0.34	40595.32	-2.20	-11505.32	-67.06	-4334.74	-101.40
		10X	Low	1%	1013.21	12114.55	95.56	28303.63	31.81	6708.27	5.13	-3202.86	11.04	-10414.20	59.01	-4420.64	-6.25	-76.30	-50.68	-2791.49	64.10	-3107.39	1.53	-2363.81	-99.87	-6.76	0.10	-16.28	0.05	40599.39	1.87	-11381.10	57.17	-4762.38	-529.04
	Zone 39 (10 ft/day)	0.1X	Low	0%	301.47	12114.92	95.93	28302.47	30.64	6706.62	3.48	-3192.61	21.28	-10372.07	101.14	-4404.13	10.26	-26.70	-1.09	-2868.63	-13.03	-3111.85	-2.93	-2277.09	-13.14	-6.90	-0.04	-16.36	-0.02	40597.60	0.08	-11435.19	3.07	-4238.68	-5.34
		10X	Low	0%	318.33	12115.05	96.06	28302.32	30.50	6706.46	3.31	-3191.29	22.61	-10364.07	109.14	-4403.71	10.68	-26.71	-1.09	-2868.79	-13.19	-3111.99	-3.07	-2277.18	-13.24	-6.90	-0.04	-16.36	-0.02	40597.43	-0.09	-11443.56	-5.30	-4223.34	10.00
Model Layer 4	Zone 26 (400 ft/day)	0.1X	Low	0%	301.26	12115.15	96.16	28298.16	26.34	6706.20	3.06	-3192.07	21.83	-10369.04	104.17	-4404.00	10.39	-26.70	-1.09	-2868.68	-13.09	-3111.93	-3.01	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40594.04	-3.48	-11432.86	5.40	-4233.33	0.01
		10X	Low	0%	393.83	12113.65	94.66	28334.10	62.28	6709.14	6.00	-3192.71	21.19	-10370.53	102.68	-4403.17	11.22	-26.71	-1.09	-2868.71	-13.12	-3111.86	-2.94	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40623.62	26.10	-11477.39	-39.13	-4233.52	-0.18
	Zone 31 (1000 ft/day)	0.1X	Low	0%	300.12	12107.95	88.96	28298.41	26.59	6705.52	2.37	-3192.11	21.78	-10369.15	104.07	-4403.74	10.65	-26.70	-1.09	-2868.68	-13.09	-3111.89	-2.97	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40592.46	-5.06	-11428.09	10.17	-4233.42	-0.08
		10X	Low	0%	521.45	12171.57	152.58	28334.70	62.88	6715.05	11.90	-3192.28	21.62	-10369.53	103.68	-4405.13	9.26	-26.71	-1.09	-2868.72	-13.13	-3112.10	-3.18	-2277.16	-13.21	-6.90	-0.04	-16.36	-0.02	40642.84	45.32	-11521.05	-82.78	-4232.59	0.76
	Zone 32 (1000 ft/day)	0.1X	Low	0%	313.99	12108.07	89.08	28279.63	7.81	6709.23	6.08	-3192.12	21.77	-10369.18	104.03	-4403.80	10.59	-26.70	-1.09	-2868.68	-13.09	-3111.90	-2.98	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40579.10	-18.41	-11412.55	25.71	-4233.46	-0.12
		10X	Low	1%	814.62	12295.16	276.17	28329.25	57.43	6686.01	-17.13	-3192.13	21.76	-10369.11	104.10	-4404.46	9.93	-26.71	-1.09	-2868.72	-13.13	-3112.03	-3.11	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40713.40	115.89	-11618.67	-180.41	-4232.14	1.20
	Zone 33 (200 ft/day)	0.1X	Low	0%	564.25	12059.50	40.51	28197.27	-74.55	6715.88	12.74	-3191.61	22.29	-10367.87	105.34	-4403.38	11.01	-26.70	-1.09	-2868.66	-13.07	-3111.83	-2.91	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40477.30	-120.22	-11291.76	146.51	-4232.54	0.80
		10X	Low	3%	3814.34	12487.47	468.48	29218.09	946.27	6634.33	-68.81	-3196.49	17.41	-10380.04	93.17	-4407.48	6.91	-26.72	-1.10	-2868.87	-13.27	-3112.58	-3.66	-2277.30	-13.35	-6.90	-0.04	-16.36	-0.03	41571.13	973.61	-12640.26	-1202.00	-4239.56	-6.22
	Zone 34 (100 ft/day)	0.1X	Low	0%	388.37	12115.02	96.03	28301.63	29.81	6706.48	3.34	-3170.54	43.36	-10352.48	120.74	-4404.88	9.51	-26.68	-1.06	-2868.29	-12.70	-3111.54	-2.62	-2276.82	-12.88	-6.90	-0.04	-16.36	-0.02	40596.91	-0.61	-11479.43	-41.17	-4218.84	14.50
		10X	Low	1%	834.26	12115.33	96.34	28306.42	34.60	6704.49	1.34	-3327.25	-113.35	-10546.24	-73.02	-4403.27	11.12	-26.91	-1.30	-2871.80	-16.21	-3115.89	-6.97	-2279.52	-15.57	-6.91	-0.05	-16.38	-0.05	40599.16	1.64	-11097.69	340.57	-4355.48	-122.14
	Zone 35 (1 ft/day)	0.1X	Low	1%	1393.72	12112.12	93.13	28310.57	38.75	6717.44	14.29	-3089.80	124.09	-10905.69	-432.48	-4464.99	-50.60	-24.50	1.11	-2831.88	23.71	-3097.28	11.65	-2252.87	11.08	-6.78	0.08	-16.25	0.09	40609.61	12.09	-11027.55	410.72	-4403.19	-169.85
		10X	Low	0%	338.05	12115.09	96.10	28302.09	30.27	6705.94	2.80	-3124.22	89.68	-10440.48	32.74	-4389.78	24.61	-27.15	-1.53	-2875.91	-20.31	-3114.00	-5.08	-2281.62	-17.68	-6.92	-0.06	-16.38	-0.04	40597.01	-0.51	-11440.88	-2.62	-4247.37	-14.03

Table 5-2. Sensitivity Analysis -- Inter-basin Flows and Stream Percolation

units: Acre-feet per year

Parameters			Multiplier	Sensitivity	diff (%)	Sum of absolute fluxes Default = 129641.846	Piru to Fillmore in System Default = 12018.990		Piru to Fillmore in System Default = 28271.821		Piru to Fillmore in System Default = 6703.143		Fillmore to Santa Paula in Default = -3213.897		Fillmore to Santa Paula in Default = -10473.213		Fillmore to Santa Paula Default = -4414.391		Santa Paula to Default = -25.615		Santa Paula to Mound ib Default = -2855.593		Santa Paula to Mound ib Default = -3108.92		Santa Paula to Oxnard in Default = -2263.948		Santa Paula to Default = -6.86		Santa Paula to Default = -16.337		STR Percolation in Piru Default = 40597.518		STR Percolation in Fillmore Default = -11438.262		STR Percolation in Santa Default = -4233.34	
						Sum of absolute diff	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.
Horizontal Hydraulic Conductivity		Zone 36 (1 ft/day)	0.1X	Low	0%	469.31	12115.06	96.07	28302.12	30.30	6706.16	3.02	-3190.11	23.79	-10361.05	112.16	-4399.44	14.95	-22.76	2.86	-2871.68	-16.09	-3113.50	-4.58	-2281.21	-17.26	-6.90	-0.04	-16.37	-0.03	40597.09	-0.43	-11450.56	-12.30	-4097.91	135.44
			10X	Low	0%	551.80	12114.69	95.70	28303.17	31.35	6707.62	4.47	-3198.55	15.35	-10395.78	77.43	-4414.46	-0.07	-27.40	-1.78	-2850.54	5.05	-3109.56	-0.64	-2260.94	3.01	-6.84	0.02	-16.33	0.01	40598.73	1.21	-11402.88	35.38	-4513.66	-280.32
		Zone 37 (100 ft/day)	0.1X	Low	0%	304.35	12115.40	96.41	28300.55	28.72	6705.00	1.86	-3190.53	23.37	-10367.63	105.59	-4405.22	9.17	-26.70	-1.09	-2868.66	-13.07	-3112.03	-3.11	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40595.24	-2.28	-11432.65	5.61	-4232.50	0.85
			10X	Low	0%	299.27	12114.05	95.06	28305.67	33.85	6710.24	7.10	-3207.00	6.90	-10386.62	86.59	-4397.76	16.63	-26.72	-1.11	-2868.99	-13.40	-3111.61	-2.69	-2277.33	-13.38	-6.90	-0.04	-16.36	-0.02	40602.10	4.58	-11431.28	6.99	-4244.28	-10.94
		Zone 38 (1 ft/day)	0.1X	Low	0%	575.57	12115.15	96.17	28301.85	30.03	6705.80	2.66	-3186.84	27.06	-10347.11	126.11	-4397.39	17.00	-38.32	-12.71	-2826.12	29.47	-3116.65	-7.73	-2261.67	2.28	-6.83	0.03	-16.38	-0.04	40596.68	-0.84	-11465.14	-26.88	-4036.74	196.60
			10X	Low	0%	382.77	12114.95	95.96	28302.46	30.63	6706.63	3.48	-3192.95	20.94	-10372.61	100.60	-4404.06	10.34	-3.08	22.53	-2921.28	-65.69	-3110.36	-1.44	-2278.00	-14.05	-6.95	-0.09	-16.36	-0.03	40597.60	0.08	-11434.78	3.48	-4246.76	-13.42
		Zone 39 (10 ft/day)	0.1X	Low	0%	297.11	12114.96	95.97	28302.41	30.58	6706.56	3.42	-3192.17	21.72	-10369.46	103.75	-4403.94	10.46	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11437.96	0.30	-4233.85	-0.51
			10X	Low	0%	305.59	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.46	-0.06	-11440.53	-2.27	-4229.43	3.91
	Model Layer 5	Zone 26 (400 ft/day)	0.1X	Low	2%	2114.47	12139.66	120.67	27714.66	-557.16	6658.76	-44.39	-3181.51	32.38	-10344.52	128.69	-4417.52	-3.13	-26.68	-1.07	-2868.29	-12.70	-3113.07	-4.15	-2276.89	-12.94	-6.90	-0.04	-16.37	-0.03	40113.72	-483.80	-10728.80	709.46	-4229.47	3.87
			10X	Low	4%	4766.25	12052.40	33.41	29724.38	1452.56	6824.44	121.30	-3216.82	-2.92	-10425.73	47.48	-4368.91	45.48	-26.76	-1.15	-2869.76	-14.17	-3109.03	-0.11	-2277.79	-13.85	-6.90	-0.04	-16.34	-0.01	41758.36	1160.84	-13309.33	-1871.07	-4235.21	-1.87
		Zone 31 (1000 ft/day)	0.1X	Low	0%	549.74	11979.40	-39.59	28220.62	-51.20	6687.64	-15.51	-3191.74	22.16	-10368.28	104.94	-4400.76	13.63	-26.70	-1.08	-2868.60	-13.00	-3111.46	-2.54	-2277.04	-13.09	-6.90	-0.04	-16.36	-0.02	40526.09	-71.43	-11238.49	199.77	-4235.09	-1.75
			10X	Low	0%	614.73	12214.37	195.38	28357.06	85.24	6720.04	16.89	-3192.25	21.65	-10369.38	103.83	-4405.91	8.48	-26.71	-1.09	-2868.76	-13.17	-3112.23	-3.31	-2277.19	-13.25	-6.90	-0.04	-16.36	-0.02	40600.73	3.21	-11584.95	-146.69	-4230.87	2.47
		Zone 32 (1000 ft/day)	0.1X	Medium	7%	9553.93	9810.54	-2208.45	27010.66	-1261.16	6884.80	181.66	-3188.13	25.77	-10359.30	113.92	-4380.46	33.93	-26.66	-1.04	-2868.09	-12.49	-3108.47	0.45	-2276.51	-12.57	-6.89	-0.03	-16.34	0.00	37959.58	-2637.94	-8377.93	3060.33	-4237.53	-4.19
			10X	Medium	7%	8718.26	15272.81	3253.82	28719.17	447.34	6032.75	-670.39	-3189.42	24.47	-10360.51	112.71	-4396.91	17.48	-26.71	-1.09	-2868.99	-13.40	-3111.64	-2.72	-2277.26	-13.31	-6.90	-0.04	-16.36	-0.02	41715.35	1117.83	-14457.26	-3019.00	-4208.69	24.65
		Zone 33 (200 ft/day)	0.1X	Medium	8%	10170.68	12853.75	834.76	24618.89	-3652.93	6753.66	50.52	-3155.42	58.48	-10281.13	192.08	-4413.94	0.45	-26.61	-1.00	-2867.33	-11.74	-3111.39	-2.47	-2276.09	-12.14	-6.89	-0.03	-16.36	-0.02	38249.95	-2347.57	-8471.05	2967.22	-4194.07	39.27
			10X	High	37%	48137.39	7081.55	-4937.44	46669.23	18397.41	5920.75	-782.40	-3282.87	-68.97	-10581.25	-108.03	-4298.72	115.67	-26.87	-1.25	-2871.72	-16.13	-3103.51	5.41	-2278.97	-15.02	-6.90	-0.04	-16.31	0.03	50701.31	10103.79	-24956.74	-13518.48	-4300.65	-67.31
		Zone 34 (100 ft/day)	0.1X	Low	2%	2800.71	12115.03	96.04	28276.79	4.97	6710.15	7.01	-3058.73	155.17	-9493.79	979.42	-4422.78	-8.39	-25.91	-0.29	-2856.83	-1.24	-3100.00	8.92	-2268.00	-4.06	-6.86	0.00	-16.28	0.05	40580.66	-16.86	-12562.01	-1123.75	-3838.79	394.55
			10X	Medium	5%	7101.89	12121.92	102.93	28369.00	97.17	6669.68	-33.47	-3989.50	-775.60	-12250.59	-1777.38	-4483.21	-68.82	-28.10	-2.48	-2888.99	-33.40	-3150.47	-41.55	-2292.77	-28.82	-6.97	-0.11	-16.60	-0.26	40622.53	25.01	-8409.77	3028.50	-5319.72	-1086.38
		Zone 35 (100 ft/day)	0.1X	Medium	6%	7740.63	12121.67	102.68	28279.85	8.03	6682.42	-20.73	-4018.26	-804.36	-7105.75	3367.47	-4552.29	-137.89	-22.74	2.88	-2807.20	48.39	-3112.92	-4.00	-2231.82	32.13	-6.71	0.15	-16.33	0.01	40566.57	-30.95	-13405.40	-1967.14	-3019.51	1213.83
			10X	High	19%	24919.72	12083.72	64.73	28405.25	133.43	6822.41	119.26	-1892.13	1321.77	-20325.37	-9852.16	-3985.08	429.32	-33.64	-8.02	-3029.47	-173.87	-3079.36	29.56	-2371.08	-107.13	-7.37	-0.51	-16.28	0.06	40741.42	143.91	-4682.26	6756.00	-10013.33	-5779.99
		Zone 36 (100 ft/day)	0.1X	Low	2%	2444.59	12117.82	98.83	28294.49	22.67	6695.40	-7.74	-3135.00	78.90	-10131.47	341.74	-4277.41	136.99	-21.11	4.50	-2883.36	-27.77	-3160.06	-51.14	-2073.99	189.96	-7.08	-0.22	-16.71	-0.38	40585.20	-12.31	-11776.54	-338.27	-3100.19	1133.15
			10X	Low	3%	3393.83	12111.03	92.04	28314.15	42.33	6722.33	19.18	-3313.08	-99.18	-10876.98	-403.77	-4520.74	-106.35	-32.60	-6.99	-2867.97	-12.38	-3071.77	37.15	-2454.21	-190.26	-6.82	0.04	-16.08	0.26	40615.11	17.59	-10838.10	600.16	-5999.50	-1766.16
		Zone 37 (100 ft/day)	0.1X	Low	0%	630.72	12114.31	95.32	28372.16	100.33	6705.31	2.16	-3197.28	16.61	-10294.89	178.32	-4410.58	3.81	-26.66	-1.04	-2867.94	-12.35	-3111.67	-2.75	-2276.59	-12.64	-6.90	-0.03	-16.36	-0.02	40653.65	56.13	-11562.94	-124.67	-4208.83	24.51
			10X	Low	0%	314.68	12107.03	88.04	28269.52	-2.30	6731.12	27.98	-3219.36	-5.47	-10455.20	18.01	-4384.93	29.46	-26.77	-1.16	-2869.83	-14.23	-3111.28	-2.36	-2277.89	-13.95	-6.90	-0.04	-16.36	-0.02	40578.92	-18.60	-11382.46	55.80	-4270.61	-37.26
		Zone 38 (100 ft/day)	0.1X	Low	1%	1137.85	12115.68	96.69	28300.35	28.53	6703.70	0.55	-3175.40	38.50	-10299.20	174.01	-4374.49	39.90	-15.12	10.49	-2779.98	75.61	-3119.88	-10.96	-2207.41	56.53	-7.21	-0.35	-16.50	-0.16	40594.41	-3.10	-11530.45	-92.19	-3723.08	510.26
			10X	Low	1%	905.71	12114.49	95.50	28303.78	31.96	6708.49	5.35	-3203.72	10.18	-10417.83	55.39	-4423.40	-9.01	-12.41	13.21	-2893.42	-37.83	-3108.51	0.41	-2261.04	2.91	-6.72	0.14	-16.30	0.04	40599.62	2.10	-11375.28	62.99	-4812.06	-578.72
		Zone 39 (10 ft/day)	0.1X	Low	0%	297.30	12114.96	95.97	28302.41	30.59	6706.56	3.42	-3192.19	21.71	-10369.55	103.66	-4403.96	10.43	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11437.85	0.42	-4234.05	-0.71
			10X	Low	0%	307.61	12115.01	96.02	28302.34	30.52	6706.49	3.35	-3191.79	22.11	-10366.88	106.33	-4403.32	11.07	-26.71	-1.09	-2868.74	-13.14	-3111.98	-3.06	-2277.16	-13.21	-6.90	-0.04	-16.36	-0.02	40597.45	-0.07	-11441.04	-2.77	-4228.53	4.81
	Model Layer 6	Zone 31 (1 ft/day)	0.1X	Low	0%	333.35	12089.64	70.65	28288.36	16.53	6700.75	-2.39	-3192.09	21.81	-10369.10	104.11	-4403.29	11.10	-26.70	-1.09	-2868.67	-13.07	-3111.83	-2.91	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40560.22	-37.30	-11399.66	38.60	-4233.91	-0.57
			10X	Low	0%	321.55	12120.27	101.28	28305.40	33.58	6707.75	4.61	-3192.14	21.76	-10369.21	104.00	-4404.02	10.37	-26.70	-1.09	-2868.69	-13.10	-3111.94	-3.01	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40604.92	7.41	-11446.24	-7.98	-4233.21	0.13
		Zone 32 (1 ft/day)	0.1X	Low	2%	3137.51	12999.03	980.04	27149.10	-1122.72	6563.42	-139.72	-3189.72	24.18	-10362.50	110.71	-4391.34	23.05	-26.69	-1.07	-2868.54	-12.95	-3110.22	-1.30	-2276.93	-12.99	-6.90	-0.04	-16.35	-0.01	40255.35	-342.17	-11079.86	358.40	-4225.18	8.16
			10X	Low	2%	2137.30	11349.59	-669.40	29196.32	924.50	6769.45	66.31	-3193.53	20.37	-10373.06	100.15	-4411.16	3.23	-26.71	-1.10	-2868.77	-13.18	-3112.90	-3.98	-2277.24	-13.29	-6.90	-0.04	-16.37	-0.03	40748.27	150.76	-11604.58	-166.31	-4238.01	-4.67
		Zone 33 (1 ft/day)	0.1X	Low	1%	1830.67	11297.71	-721.28	29038.83	767.01	6714.73	11.59	-3192.52	21.37	-10369.95	103.27	-4401.40	12.99	-26.70	-1.09	-2868.69	-13.10	-3111.65	-2.73	-2277.10	-13.16	-6.90	-0.04	-16.36	-0.02	40537.76	-59.76	-11335.44	102.82	-4233.81	-0.47
			10X	Low	2%	1993.19	12921.43	902.44	27643.68	-628.14	6715.25	12.11	-3193.52	20.38	-10373.09	100.12	-4411.70	2.69	-26.71	-1.10	-2868.77	-13.18	-3112.95	-4.03	-2277.24	-13.29	-6.90	-0.04	-16.37	-0.03	40724.83	127.31	-11601.91	-163.65	-4238.04	-4.70
		Zone 34 (1 ft/day)	0.1X	Low	0%	427.45	12120.08	101.09	28287.65	15.83	6688.01	-15.13	-3074.01	139.89	-10481.51	-8.30	-4456.31	-41.92	-26.73	-1.12	-2868.88	-13.28	-3118.86	-9.94	-2277.57	-13.63	-6.90	-0.04	-16.40	-0.06	40574.83	-22.69	-11415.84	22.43	-4255.45	-22.11
			10X	Low	0%	433.78	12113.17	94.18	28307.80	35.98	6713.05	9.90	-3269.73	-55.83	-10318.62	154.59	-4382.51	31.88	-26.71	-1.09	-2868.86	-13.26	-3109.36	-0.44	-2277.13	-13.18	-6.90	-0.04	-16.34	-0.01	40605.60	8.08	-11423.72	14.54	-4234.10	-0.76
		Zone 35 (1 ft/day)	0.1X	Low	0%	397.05	12115.40	96.41	28301.59	29.77	6705.45	2.31	-3088.84	125.06	-10473.92	-0.71	-4458.13	-43.74	-26.16	-0.55	-2859.31	-3.72	-3108.44	0.48	-2271.30	-7.35	-6.87	-0.01	-16.33	0.00	40596.20	-1.32	-11411.18	27.08	-4174.80	58.54
			10X	Low	0%	434.30	12113.88	94.89	28305.29	33.47	6710.43	7.28	-3244.33	-30.44	-10422.30	50.91	-4378.92	35.47	-26.90	-1.29	-2872.05	-16.46	-3110.65	-1.73	-2279.22	-15.28	-6.91	-0.05	-16.35	-0.02	40602.05	4.53	-11353.27	84.99	-4290.84	-57.50
		Zone 36 (0.1 ft/day)	0.1X	Low	1%	1522.02	12118.05	99.06	28294.58	22.76	6694.78	-8.36	-3173.22	40.68	-10286.83	186.38	-4212.11	202.28	-20.56	5.06	-2939.45	-83.86	-3165.60	-56.68	-2236.33	27.62	-7.24	-0.38	-16.75	-0.41	40584.54	-12.98	-11675.87	-237.61	-3695.44	537.90
			10X	Low	0%	624.15	12114.07	95.08	28304.75	32.92	6709.91	6.76	-3203.38	10.52	-10416.73	56.48	-4448.85	-34.46	-26.84	-1.22	-2849.62	5.97	-3100.18	8.74	-2305.17	-41.22	-6.76	0.10	-16.25	0.08	40601.59	4.07	-11352.14	86.12	-4473.74	-240.40
		Zone 37 (1 ft/day)	0.1X	Low	0%	333.95	12114.36	95.37	28298.13	26.31	6710.09	6.94	-3189.24	24.65	-10358.61	114.61	-4400.04	14.35	-26.69	-1.08	-2868.50	-12.91	-3111.02	-2.10	-2276.95	-13.00	-6.90	-0.04	-16.35	-0.02	40596.28	-1.24	-11455.04	-16.78	-4228.78	4.56
			10X	Low	0%	302.43	12114.68	95.69	28305.37	33.55	6707.37	4.23	-3201.96	11.94	-10369.36	103.86	-4401.04	13.35	-26.71	-1.09	-2868.81	-13.22	-3111.45	-2.53	-2277.18	-13.23	-6.90	-0.04	-16.36	-0.02	40600.28	2.76	-11442.05	-3.78	-4236.48	-3.14
		Zone 38 (0.01 ft/day)	0.1X	Low	0%	316.71	12114.92	95.94	28302.52	30.70	6706.75	3.60	-3191.84	22.06	-10368.08	105.13	-4407.94	6.45	-25.77	-0.16	-2839.78	15.81	-3115.08	-6.15	-2276.02	-12.07	-6.88	-0.02	-16.35	-0.01	40597.70	0.18	-11436.22	2.04	-4249.72	-16.38
			10X	Low	0%	381.61	12114.97	95.98	28302.38	30.56	6706.49	3.35	-3194.28	19.62	-10377.93	95.28	-4399.73	14.66	-32.85	-7.23	-2922.78	-67.19	-3104.05	4.87	-2287.54	-23.59	-6.84	0.02	-16.36	-0.02	40597.53	0.02	-11432.84	5.42	-4247.15	-13.81
		Zone 39 (0.1 ft/day)	0.1X	Low	0%	304.19	12114.97	95.98	28302.39	30.57	6706.55	3.41	-3191.88	22.02	-10367.42	105.80	-4404.22	10.17	-26.71	-1.09	-2868.72	-13.12	-3111.89	-2.97	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40597.47	-0.05	-11439.80	-1.54	-4229.10	4.24
			10X	Low	0%	297.06	12114.97	95.98	28302.40	30.57	6706.55	3.40	-3192.10	21.79	-10369.06	104.16	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.10	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.42	-0.16	-4233.29	0.05
	Model Layer 7	Zone 31 (200 ft/day)	0.1X	Low	1%	1077.79	11893.60	-125.39	28174.89	-96.94	6688.34	-14.80	-3191.37	22.53	-10367.16	106.05	-4399.74	14.65	-26.70	-1.08	-2868.61	-13.02	-3111.34	-2.42	-2277.04	-13.10	-6.90	-0.04	-16.36	-0.02	40248.28	-349.23	-11120.64	317.63	-4232.43	0.91
			10X	Low	0%	541.75	12184.48	165.49	28340.16	68.33	6706.05	2.91	-3192.16	21.73	-10369.18	104.03	-4404.86	9.53	-26.71	-1.09	-2868.73	-13.13	-3112.08	-3.15	-2277.16	-13.21	-6.90	-0.04	-16.36	-0.02	40635.82	38.30	-11537.53	-99.27	-4231.84	1.50
		Zone 32 (200 ft/day)	0.1X	High	21%	26807.84	14879.49	2860.50	17726.83	-10545.00	6957.92	254.78	-3171.36	42.54	-10313.31	159.90	-4306.81	107.58	-26.57	-0.95	-2867.18	-11.59	-3098.43	10.49	-2275.35	-11.40	-6.89	-0.03	-16.28	0.06	34581.58	-6015.94	-4701.52	6736.74	-4183.00	50.34
			10X	High	13%	16295.34	11599.36	-419.63	34805.87	6534.05	6215.65	-487.49	-3200.85	13.05	-10392.17	81.05	-4450.36	-35.97	-26.77	-1.15	-2869.56	-13.97	-3118.82	-9.90	-2278.03	-14.09	-6.90	-0.04	-16.40	-0.06	44024.29	3426.77	-16679.87	-5241.61	-4249.85	-16.51
		Zone 33 (100 ft/day)	0.1X	High	31%	39623.27	17256.02	5237.04	12448.23	-15823.59	7722.46	1019.32	-3103.78	110.11	-10151.20	322.01	-4354.06	60.33	-26.44	-0.82	-2865.09	-9.49	-3101.44	7.48	-2273.94	-10.00	-6.88	-0.02	-16.30	0.04	32565.30	-8032.22	-2571.92	8866.34	-4108.89	124.45
			10X	High	50%	65141.84	3032.80	-8986.19	54188.25	25916.43	4719.19	-1983.95	-3344.91	-131.02	-10722.07	-248.85	-4168.85	245.54	-26.93	-1.31	-2873.46	-17.87	-3090.23	18.69	-2279.51	-15.56	-6.91	-0.04	-16.24	0.10	51999.53	11402.01	-27523.95	-16085.69	-4321.93	-88.59
		Zone 34 (100 ft/day)	0.1X	Low	4%	4983.97	12110.24	91.25	28255.51	-16.31	6732.78	29.64	-3040.53	173.37	-8729.56	1743.66	-4367.19	47.20	-25.04	0.58	-2844.84	10.75	-3078.34	30.58	-2257.88	6.07	-6.81	0.05	-16.15	0.19	40578.76	-18.76	-13516.07	-2077.81	-3495.58	737.76
			10X	Medium	6%	7526.55	12126.82	107.83	28397.58	125.76	6646.81	-56.33	-3698.02	-484.12	-12625.05	-2151.84	-4593.36	-178.97	-28.23	-2.61	-2889.89	-34.30	-3166.77	-57.85	-2294.13	-30.18	-6.98	-0.12	-16.69	-0.36	40628.54	31.02	-8340.79	3097.47	-5401.14	-1167.80
		Zone 35 (50 ft/day)	0.1X	Medium	9%	11098.14	12130.15	111.16	28254.80	-17.02	6650.57	-52.58	-3474.05	-260.16	-6079.41	4393.81	-4651.82	-237.43	-16.64	8.98	-2673.68	181.91	-3127.41	-18.49	-2138.76	125.19	-6.30	0.57	-16.32	0.01	40529.54	-67.98	-14674.06	-3235.80	-1846.28	2387.06
			10X	High	26%	33118.31	12064.70	45.71	28465.54	193.72	6893.01	189.87	-2299.74	914.16	-23191.58	-12718.37	-3709.33	705.06	-34.33	-8.72	-3129.80	-274.21	-3057.51	51.41	-2417.63	-153.68	-7.68	-0.82	-16.22	0.12	40827.42	229.91	-2161.07	9277.19	-12588.72	-8355.38
		Zone 36 (50 ft/day)	0.1X	Low	2%	2322.21	12117.96	98.97	28294.11	22.28	6694.82	-8.32	-3131.80	82.09	-10117.99	355.22	-4271.06	143.34	-23.69	1.93	-2355.10	500.49	-3204.64	-95.72	-2193.10	70.84	-5.82	1.04	-16.39	-0.05	40584.63	-12.89	-11793.98	-355.72	-3660.04	573.31
			10X	Low	2%	1980.47	12112.43	93.44	28309.79	37.97	6716.55	13.41	-3263.03	-49.13	-10665.68	-192.47	-4486.33	-71.94	-26.11	-0.50	-3133.16	-277.57	-3060.82	48.11	-2333.92	-69.97	-7.46	-0.60	-16.32	0.02	40608.90	11.39	-11074.85	363.41	-4983.89	-750.55
		Zone 37 (5 ft/day)	0.1X	Low	1%	1361.51	12131.24	112.25	28291.70	19.88	6638.26	-64.88	-3265.78	-51.88	-10305.78	167.43	-4281.21	133.18	-26.02	-0.41	-2852.11	3.48	-3156.20	-47.28	-2269.65	-5.71	-6.86	0.00	-16.60	-0.27	40551.67	-45.85	-10993.08	445.18	-3969.52	263.83
			10X	Low	2%	2077.99	12085.42	66.43	28463.23	191.41	6811.14	108.00	-3160.98	52.92	-11055.73	-582.52	-4382.34	32.05	-27.33	-1.72	-2886.00	-30.40	-3071.34	37.58	-2284.99	-21.04	-6.94	-0.07	-16.14	0.20	40776.48	178.96	-11779.28	-341.02	-4666.99	-433.65
		Zone 38 (20 ft/day)	0.1X	Low	2%	2833.81	12114.99	96.00	28302.14	30.32	6706.43	3.28	-3177.60	36.29	-10309.44	163.78	-4422.18	-7.79	-23.11	2.51	-1392.85	1462.75	-3198.97	-90.05	-2320.71	-56.76	-7.36	-0.50	-16.37	-0.04	40597.21	-0.31	-11482.65	-44.38	-5072.39	-839.05
			10X	Low	1%	1874.74	12114.94	95.96	28302.64	30.82	6706.70	3.56	-3203.21	10.69	-10414.89	58.32	-4390.78	23.61	-18.47	7.15	-3851.38	-995.79	-3039.70	69.22	-2246.19	17.76	-6.48	0.38	-16.34	0.00	40597.77	0.25	-11403.63	34.63	-3706.74	526.60
		Zone 39 (5 ft/day)	0.1X	Low	0%	304.11	12115.40	96.41	28300.02	28.20	6704.13	0.99	-3189.67	24.23	-10368.10	105.12	-4401.51	12.88	-26.69	-1.08	-2868.37	-12.78	-3112.60	-3.68	-2276.97	-13.02	-6.90	-0.04	-16.36	-0.03	40594.31	-3.21	-11436.27	1.99	-4232.87	0.47
			10X	Low	0%	306.00	12114.81	95.82	28303.46	31.64	6707.70	4.55	-3193.06	20.84	-10367.91	105.30	-4405.61	8.78	-26.71	-1.10	-2868.87	-13.28	-3111.81	-2.89	-2277.23	-13.28	-6.90	-0.04	-16.36	-0.02	40599.06	1.54	-11441.02	-2.76	-4229.17	4.17
	Model Layer 8	Zone 31 (0.01 ft/day)	0.1X	Low	0%	375.91	12118.80	99.82	28308.01	36.19	6672.76	-30.38	-3191.98	21.92	-10368.74	104.47	-4402.74	11.65	-26.70	-1.09	-2868.67	-13.08	-3111.76	-2.84	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40577.45	-20.06	-11417.64	20.62	-4232.77	0.57
			10X	Low	0%	597.63	12112.37	93.39	28287.02	15.20	6840.46	137.32	-3192.82	21.07	-10371.16	102.05	-4408.71	5.68	-26.71	-1.09	-2868.74	-13.15	-3112.58	-3.65	-2277.20	-13.25	-6.90	-0.04	-16.36	-0.03	40686.33	88.82	-11538.74	-100.48	-4235.75	-2.41
		Zone 32 (0.01 ft/day)	0.1X	Low	3%	4285.42	12496.62	477.63	28980.41	708.59	5054.89	-1648.25	-3184.51	29.39	-10347.10	126.12	-4351.57	62.82	-26.65	-1.04	-2868.17	-12.58	-3104.90	4.03	-2276.42	-12.47	-6.89	-0.03	-16.32	0.02	39906.95	-690.57	-10959.75	478.52	-4199.98	33.36
			10X	Low	2%	3226.33	11833.89	-185.10	27612.67	-659.15	8144.19	1441.04	-3198.31	15.59	-10387.06	86.15	-4446.94	-32.54	-26.75	-1.13	-2869.12	-13.52	-3117.68	-8.76	-2277.71	-13.77	-6.90	-0.04	-16.39	-0.06	40969.75	372.23	-11809.83	-371.56	-4259.02	-25.68
		Zone 33 (0.01 ft/day)	0.1X	Low	2%	2403.89	11913.39	-105.60	27507.06	-764.76	7295.17	592.03	-3186.16	27.73	-10352.66	120.55	-4385.51	28.88	-26.66	-1.04	-2868.39	-12.80	-3109.60	-0.68	-2276.72	-12.77	-6.90	-0.04	-16.35	-0.01	40258.81	-338.71	-11049.63	388.64	-4223.68	9.66
			10X	Low	4%	5678.42	12228.65	209.66	29859.05	1587.23	6246.83	-456.32	-3174.38	39.52	-10308.19	165.02	-4125.48	288.91	-26.50	-0.89	-2866.71	-11.12	-3075.15	33.77	-2274.05	-10.11	-6.88	-0.02	-16.14	0.19	41580.35	982.83	-13175.25	-1736.98	-4077.49	155.85
		Zone 34 (0.01 ft/day)	0.1X	Low	3%	3292.77	12195.19	176.21	28137.57	-134.25	6405.70	-297.44	-3061.21	152.69	-9984.80	488.42	-5239.15	-824.76	-26.82	-1.20	-2866.43	-10.84	-3210.01	-101.09	-2280.34	-16.39	-6.92	-0.06	-16.93	-0.59	40286.31	-311.21	-10795.19	643.08	-4367.87	-134.53
			10X	Low	3%	3735.81	12011.12	-7.87	28512.70	240.88	7099.41	396.27	-3344.18	-130.28	-10845.09	-371.88	-3391.78	1022.61	-26.55	-0.93	-2871.33	-15.73	-2992.88	116.04	-2273.13	-9.18	-6.87	0.00	-15.67	0.67	40999.77	402.25	-12298.80	-860.54	-4072.67	160.67
		Zone 35 (0.01 ft/day)	0.1X	Low	2%	1985.26	12136.52	117.54	28255.15	-16.67	6625.92	-77.22	-3270.98	-57.08	-10571.14	-97.93	-3685.85	728.54	-25.90	-0.28	-2846.68	8.91	-3280.13	-171.21	-2270.69	-6.74	-6.89	-0.02	-17.32	-0.99	40513.21	-84.31	-11763.36	-325.09	-3940.63	292.71
			10X	Medium	5%	6914.03	12062.89	43.91	28417.47	145.65	6899.85	196.70	-2986.76	227.14	-9710.96	762.25	-6816.37	-2401.98	-28.95	-3.34	-2931.55	-75.96	-2628.45	480.47	-2294.26	-30.31	-6.93	-0.07	-13.56	2.78	40801.74	204.22	-10233.60	1204.66	-5367.94	-1134.60
		Zone 36 (0.01 ft/day)	0.1X	Low	1%	1393.11	12120.16	101.17	28290.19	18.36	6687.21	-15.94	-3200.90	13.00	-10395.87	77.34	-4031.39	383.00	-26.20	-0.59	-2843.62	11.98	-3205.43	-96.51	-2269.23	-5.28	-6.86	0.00	-17.00	-0.66	40576.82	-20.69	-11709.49	-271.22	-3855.97	377.37
			10X	Low	5%	5920.15	12091.19	72.20	28358.72	86.90	6795.46	92.31	-3146.09	67.81	-10222.22	250.99	-6116.46	-1702.07	-31.35	-5.74	-3023.49	-167.90	-2579.94	528.98	-2323.61	-59.66	-7.17	-0.31	-13.37	2.97	40693.45	95.93	-10214.93	1223.33	-5796.40	-1563.06
		Zone 37 (0.01 ft/day)	0.1X	Low	1%	1026.54	12105.67	86.68	28293.32	21.49	6756.44	53.30	-3150.91	62.99	-10251.49	221.73	-4670.96	-256.57	-27.14	-1.52	-2877.72	-22.12	-3081.23	27.69	-2280.85	-16.90	-6.92	-0.06	-16.22	0.12	40623.50	25.98	-11289.83	148.44	-4314.28	-80.94
			10X	Low	1%	1043.12	12091.69	72.70	28373.50	101.68	6787.95	84.81	-3216.11	-2.21	-10238.04	235.17	-4595.33	-180.94	-26.67	-1.06	-2871.18	-15.59	-3047.90	61.03	-2276.25	-12.30	-6.88	-0.02	-15.97	0.37	40700.25	102.74	-11574.25	-135.99	-4269.87	-36.52
		Zone 38 (0.01 ft/day)	0.1X	Low	0%	626.45	12116.48	97.50	28298.90	27.08	6701.02	-2.12	-3194.50	19.40	-10376.13	97.09	-4297.73	116.66	-29.14	-3.52	-2884.60	-29.01	-3145.24	-36.32	-2272.11	-8.17	-6.79	0.07	-15.30	1.04	40591.60	-5.91	-11516.06	-77.80	-4128.56	104.78
			10X	Low	2%	2518.68	12104.37	85.38	28328.06	56.24	6746.86	43.72	-3180.26	33.64	-10339.36	133.85	-5169.13	-754.74	-12.94	12.68	-3045.49	-189.89	-3157.27	-48.35	-2297.04	-33.09	-7.41	-0.55	-14.27	2.07	40641.11	43.60	-10856.17	582.09	-4732.14	-498.80
		Zone 39 (0.01 ft/day)	0.1X	Low	0%	384.46	12114.03	95.04	28304.41	32.59	6710.26	7.12	-3202.64	11.26	-10444.87	28.35	-4300.19	114.21	-26.72	-1.10	-2869.08	-13.49	-3107.79	1.14	-2277.18	-13.23	-6.90	-0.04	-16.34	0.00	40601.57	4.05	-11462.11	-23.85	-4194.33	39.01
			10X	Low	0%	308.57	12115.11	96.12	28302.11	30.28	6706.00	2.85	-3190.22	23.67	-10362.06	111.15	-4416.26	-1.87	-26.70	-1.09	-2868.63	-13.03	-3112.54	-3.62	-2277.11	-13.17	-6.90	-0.04	-16.36	-0.02	40596.91	-0.60	-11434.25	4.02	-4240.38	-7.04
	Model Layer 9	Zone 31 (100 ft/day)	0.1X	Low	0%	323.80	12109.12	90.13	28300.33	28.51	6690.70	-12.45	-3192.02	21.88	-10368.88	104.33	-4403.19	11.20	-26.70	-1.09	-2868.68	-13.08	-3111.82	-2.90	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40592.56	-4.96	-11418.54	19.72	-4233.02	0.32
			10X	Low	0%	351.59	12122.78	103.79	28306.28	34.46	6716.03	12.89	-3192.22	21.67	-10369.44	103.77	-4404.39	10.00	-26.70	-1.09	-2868.69	-13.10	-3111.98	-3.06	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40614.37	16.85	-11455.66	-17.39	-4233.61	-0.27
		Zone 32 (100 ft/day)	0.1X	Low	2%	2252.32	12182.74	163.75	28437.06	165.24	5922.91	-780.24	-3188.02	25.88	-10357.46	115.76	-4376.10	38.29	-26.67	-1.06	-2868.38	-12.78	-3108.15	0.77	-2276.72	-12.77	-6.90	-0.03	-16.34	0.00	40173.78	-423.74	-10942.02	496.24	-4217.55	15.79
			10X	Low	4%	4719.85	11761.30	-257.69	27864.86	-406.97	8671.32	1968.18	-3201.60	12.30	-10396.40	76.81	-4468.07	-53.68	-26.77	-1.16	-2869.37	-13.77	-3120.60	-11.68	-2278.03	-14.08	-6.90	-0.04	-16.41	-0.07	41454.78	857.26	-12446.19	-1007.93	-4271.58	-38.24
		Zone 33 (100 ft/day)	0.1X	Low	3%	4507.52	12395.68	376.69	28035.46	-236.37	5506.25	-1196.89	-3121.15	92.74	-10162.88	310.34	-3847.67	566.72	-26.12	-0.51	-2863.11	-7.52	-3038.14	70.78	-2269.40	-5.45	-6.86	0.00	-15.93	0.41	39662.78	-934.74	-11057.96	380.30	-3905.29	328.05
			10X	Medium	7%	8470.89	11404.69	-614.30	28308.70	36.88	9805.24	3102.10	-3290.39	-76.50	-10657.88	-184.67	-5113.44	-699.05	-27.35	-1.73	-2874.61	-19.02	-3205.36	-96.44	-2285.85	-21.90	-6.95	-0.09	-16.91	-0.57	42473.73	1876.21	-12749.03	-1310.77	-4664.01	-430.67
		Zone 34 (100 ft/day)	0.1X	Low	3%	4384.10	12241.81	222.82	28025.41	-246.41	6216.85	-486.29	-3137.54	76.35	-10182.08	291.14	-3253.04	1161.35	-25.70	-0.08	-2860.68	-5.08	-2964.98	143.94	-2263.71	0.24	-6.82	0.04	-15.50	0.84	40094.92	-502.59	-12147.73	-709.47	-3695.88	537.46
			10X	Low	2%	2920.34	12019.89	0.91	28508.28	236.46	7071.71	368.57	-3237.80	-23.90	-10531.59	-58.38	-5219.11	-804.72	-27.30	-1.69	-2873.24	-17.65	-3215.55	-106.63	-2285.42	-21.47	-6.95	-0.09	-16.96	-0.63	40971.21	373.69	-10933.24	505.02	-4633.88	-400.54
		Zone 35 (50 ft/day)	0.1X	Low	4%	5465.34	12146.67	127.68	28225.00	-46.82	6582.65	-120.49	-3274.44	-60.55	-10639.90	-166.69	-2208.63	2205.76	-25.61	0.00	-2873.06	-17.46	-2688.82	420.11	-2258.36	5.59	-6.77	0.09	-13.87	2.47	40465.25	-132.27	-12909.32	-1471.06	-3545.03	688.31
			10X	Low	4%	5226.81	12086.15	67.16	28371.60	99.78	6817.25	114.10	-3117.47	96.43	-10084.58	388.63	-6391.88	-1977.49	-27.75	-2.14	-2865.26	-9.66	-3468.36	-359.44	-2291.87	-27.92	-7.00	-0.14	-18.45	-2.11	40716.21	118.69	-10133.03	1305.24	-4891.21	-657.87
		Zone 36 (50 ft/day)	0.1X	Low	1%	1074.26	12118.22	99.23	28293.86	22.04	6693.21	-9.93	-3194.73	19.17	-10373.93	99.28	-4150.56	263.84	-27.43	-1.82	-2888.83	-33.24	-2856.00	252.92	-2276.99	-13.04	-6.87	-0.01	-14.94	1.40	40583.18	-14.34	-11634.04	-195.78	-4185.10	48.24
			10X	Low	1%	714.85	12113.21	94.23	28307.27	35.45	6714.08	10.94	-3190.91	22.99	-10367.34	105.88	-4546.34	-131.95	-26.19	-0.58	-2856.39	-0.79	-3264.24	-155.32	-2276.99	-13.04	-6.91	-0.05	-17.22	-0.89	40605.68	8.16	-11328.06	110.20	-4257.74	-24.40
		Zone 37 (5 ft/day)	0.1X	Low	2%	1972.00	12034.67	15.69	28381.99	110.17	6986.27	283.13	-3207.08	6.82	-10352.48	120.74	-4376.52	37.87	-26.71	-1.09	-2873.18	-17.58	-2968.68	140.24	-2273.32	-9.37	-6.86	0.00	-15.55	0.79	40829.67	232.15	-10536.50	901.77	-4138.76	94.58
			10X	Low	2%	2313.15	12180.55	161.57	28283.70	11.88	6465.29	-237.85	-3186.66	27.24	-10267.92	205.30	-5075.43	-661.04	-26.77	-1.16	-2866.69	-11.10	-3274.21	-165.29	-2282.95	-19.00	-6.94	-0.08	-17.28	-0.94	40424.10	-173.41	-11764.58	-326.32	-4544.31	-310.97
		Zone 38 (20 ft/day)	0.1X	Low	1%	1767.95	12118.89	99.90	28292.64	20.82	6691.30	-11.85	-3191.69	22.21	-10360.25	112.97	-4119.95	294.44	-27.80	-2.18	-2956.16	-100.57	-2409.04	699.88	-2286.07	-22.12	-6.92	-0.06	-16.96	-0.62	40581.19	-16.33	-11672.43	-234.17	-4363.19	-129.85
			10X	Low	1%	1046.24	12112.59	93.60	28308.21	36.39	6715.64	12.50	-3192.19	21.70	-10373.75	99.47	-4572.93	-158.54	-26.04	-0.43	-2829.28	26.32	-3484.27	-375.35	-2272.66	-8.71	-6.89	-0.03	-15.82	0.51	40607.27	9.75	-11299.57	138.69	-4169.09	64.25
		Zone 39 (5 ft/day)	0.1X	Low	0%	631.36	12110.28	91.29	28312.62	40.80	6722.03	18.89	-3186.29	27.60	-10372.92	100.30	-4442.10	-27.71	-26.60	-0.99	-2867.59	-12.00	-3092.17	16.75	-2275.52	-11.58	-6.89	-0.03	-16.24	0.09	40615.50	17.98	-11186.75	251.51	-4247.19	-13.85
			10X	Low	1%	717.06	12118.67	99.68	28295.84	24.02	6695.97	-7.17	-3182.19	31.70	-10307.14	166.07	-4378.32	36.07	-26.78	-1.17	-2869.77	-14.18	-3130.67	-21.75	-2278.60	-14.65	-6.91	-0.05	-16.47	-0.13	40585.72	-11.80	-11600.56	-162.30	-4107.04	126.31
	Model Layer 10	Zone 32 (100 ft/day)	0.1X	Medium	5%	6973.55	12662.16	643.17	29208.17	936.35	3882.77	-2820.38	-3177.91	35.98	-10328.41	144.81	-4307.18	107.22	-26.59	-0.98	-2867.48	-11.89	-3098.66	10.26	-2275.65	-11.70	-6.89	-0.03	-16.28	0.06	39544.54	-1052.98	-10304.04	1134.22	-4169.80	63.54
			10X	Medium	6%	7378.64	11484.64	-534.35	27439.74	-832.08	9836.01	3132.87	-3207.64	6.26	-10414.01	59.21	-4509.01	-94.62	-26.80	-1.18	-2869.55	-13.96	-3125.79	-16.87	-2278.46	-14.51	-6.91	-0.04	-16.44	-0.10	41825.19	1227.67	-12823.87	-1385.60	-4292.65	-59.31
		Zone 33 (100 ft/day)	0.1X	Medium	7%	9232.87	12693.35	674.37	29133.16	861.34	3164.14	-3539.00	-3145.67	68.22	-10234.80	238.41	-4065.21	349.18	-26.34	-0.72	-2865.04	-9.45	-3066.55	42.37	-2272.27	-8.32	-6.87	-0.01	-16.09	0.24	38896.28	-1701.24	-9906.78	1531.48	-4024.84	208.50
			10X	Medium	9%	11835.07	11189.35	-829.64	27759.65	-512.18	11272.05	4568.91	-3290.50	-76.61	-10657.70	-184.49	-5105.88	-691.49	-27.34	-1.72	-2874.41	-18.82	-3204.29	-95.37	-2285.71	-21.76	-6.95	-0.09	-16.90	-0.56	43034.99	2437.47	-13411.43	-1973.16	-4656.17	-422.83
		Zone 34 (100 ft/day)	0.1X	Low	1%	712.42	12128.25	109.27	28273.36	1.54	6655.54	-47.61	-3187.70	26.20	-10350.66	122.55	-4262.34	152.06	-26.59	-0.97	-2867.71	-12.12	-3093.72	15.20	-2275.55	-11.61	-6.89	-0.03	-16.25	0.09	40545.05	-52.47	-11530.72	-92.46	-4165.08	68.27
			10X	Low	1%	1509.11	12068.01	49.02	28404.40	132.58	6886.65	183.51	-3215.98	-2.08	-10455.43	17.78	-4807.09	-392.70	-27.00	-1.39	-2870.96	-15.36	-3163.08	-54.16	-2281.32	-17.37	-6.92	-0.06	-16.66	-0.32	40782.49	184.97	-11176.10	262.16	-4428.99	-195.65
		Zone 35 (50 ft/day)	0.1X	Low	1%	766.23	12118.46	99.47	28293.98	22.16	6693.00	-10.14	-3201.26	12.64	-10401.21	72.00	-4173.56	240.84	-26.59	-0.98	-2868.93	-13.33	-3070.02	38.90	-2275.21	-11.26	-6.88	-0.02	-16.11	0.22	40583.11	-14.41	-11590.08	-151.82	-4155.32	78.03
			10X	Low	2%	2648.31	12101.58	82.59	28334.68	62.85	6758.06	54.92	-3156.37	57.53	-10229.13	244.09	-5361.31	-946.91	-27.10	-1.48	-2866.27	-10.67	-3287.74	-178.82	-2284.25	-20.30	-6.95	-0.09	-17.39	-1.05	40652.79	55.27	-10810.32	627.95	-4537.13	-303.79
		Zone 36 (50 ft/day)	0.1X	Low	0%	487.38	12115.51	96.52	28300.60	28.78	6703.74	0.59	-3193.26	20.63	-10372.77	100.44	-4348.65	65.74	-26.86	-1.25	-2872.42	-16.83	-3046.59	62.34	-2276.41	-12.47	-6.89	-0.02	-15.97	0.37	40594.59	-2.92	-11476.79	-38.53	-4193.41	39.93
			10X	Low	0%	606.22	12113.68	94.69	28306.08	34.26	6712.21	9.07	-3191.34	22.55	-10368.22	104.99	-4510.87	-96.48	-26.27	-0.66	-2859.08	-3.49	-3229.85	-120.93	-2276.93	-12.98	-6.91	-0.05	-17.05	-0.72	40603.63	6.11	-11355.70	82.57	-4250.01	-16.67
		Zone 37 (1 ft/day)	0.1X	Low	0%	1119.05	12096.14	77.15	28327.85	56.03	6762.72	59.57	-3188.29	25.61	-10363.34	109.87	-4617.53	-203.14	-26.74	-1.13	-2871.30	-15.71	-3044.05	64.87	-2275.65	-11.70	-6.88	-0.02	-16.01	0.33	40649.75	52.23	-11098.37	339.89	-4131.54	101.80
			10X	Low	1%	1473.86	12161.09	142.10	28254.11	-17.71	6542.06	-161.09	-3199.53	14.37	-10380.40	92.81	-4233.56	180.84	-26.47	-0.86	-2864.18	-8.59	-3216.03	-107.11	-2278.78	-14.83	-6.92	-0.06	-16.89	-0.55	40454.82	-142.70	-11869.31	-431.05	-4392.56	-159.22
		Zone 38 (1 ft/day)	0.1X	Low	1%	1598.59	12118.33	99.35	28293.90	22.08	6693.23	-9.91	-3191.69	22.21	-10361.11	112.10	-4155.29	259.10	-27.69	-2.08	-2930.71	-75.12	-2465.00	643.92	-2285.25	-21.30	-6.92	-0.05	-16.89	-0.56	40583.48	-14.04	-11641.50	-203.23	-4346.89	-113.55
			10X	Low	1%	1080.83	12112.54	93.55	28308.29	36.47	6715.79	12.65	-3192.41	21.48	-10374.78	98.43	-4575.62	-161.23	-26.02	-0.40	-2832.04	23.55	-3509.56	-400.64	-2272.21	-8.27	-6.89	-0.03	-15.83	0.51	40607.27	9.75	-11297.51	140.75	-4160.23	73.11
		Zone 39 (1 ft/day)	0.1X	Low	0%	545.90	12113.65	94.66	28306.04	34.22	6711.46	8.31	-3183.41	30.48	-10351.58	121.64	-4408.17	6.22	-26.65	-1.03	-2867.85	-12.26	-3106.81	2.11	-2276.41	-12.46	-6.89	-0.03	-16.33	0.01	40603.78	6.26	-11314.14	124.12	-4141.27	92.07

Table 5-2. Sensitivity Analysis -- Inter-basin Flows and Stream Percolation

units: Acre-feet per year

Parameters			Multiplier	Sensitivity	diff (%)	Sum of absolute fluxes Default = 129641.846	Piru to Fillmore in System Default = 12018.990		Piru to Fillmore in System Default = 28271.821		Piru to Fillmore in System Default = 6703.143		Fillmore to Santa Paula in Default = -3213.897		Fillmore to Santa Paula in Default = -10473.213		Fillmore to Santa Paula Default = -4414.391		Santa Paula to Default = -25.615		Santa Paula to Mound ib Default = -2855.593		Santa Paula to Mound ib Default = -3108.92		Santa Paula to Oxnard in Default = -2263.948		Santa Paula to Default = -6.86		Santa Paula to Default = -16.337		STR Percolation in Piru Default = 40597.518		STR Percolation in Fillmore Default = -11438.262		STR Percolation in Santa Default = -4233.34	
						Sum of absolute diff	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.
Vertical Hydraulic Conductivity		Zone 39 (1 ft/day)	10X	Low	0%	558.51	12116.88	97.89	28298.55	26.73	6701.18	-1.96	-3194.61	19.28	-10340.48	132.74	-4346.12	68.27	-26.77	-1.16	-2869.55	-13.96	-3119.95	-11.03	-2278.10	-14.15	-6.90	-0.04	-16.41	-0.07	40591.55	-5.96	-11583.88	-145.61	-4213.68	19.66
	Model Layer 1	Zone 31 (120 ft/day)	0.1X	Low	0%	296.67	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
			10X	Low	0%	296.67	12114.96	95.97	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	0.00	-11438.26	0.01	-4233.34	0.00
		Zone 32 (120 ft/day)	0.1X	Low	0%	298.96	12116.80	97.81	28301.47	29.65	6706.48	3.33	-3192.13	21.77	-10369.19	104.03	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40598.19	0.67	-11439.04	-0.78	-4233.34	0.00
			10X	Low	0%	302.68	12096.87	77.88	28311.55	39.73	6707.31	4.16	-3192.14	21.76	-10369.22	103.99	-4403.95	10.44	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40590.90	-6.61	-11430.61	7.65	-4233.38	-0.04
		Zone 33 (60 ft/day)	0.1X	Low	0%	296.89	12114.95	95.97	28302.25	30.43	6706.55	3.40	-3192.15	21.75	-10369.23	103.99	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.33	-0.18	-11438.01	0.25	-4233.36	-0.02
			10X	Low	0%	303.36	12115.06	96.08	28303.90	32.08	6706.62	3.48	-3192.00	21.90	-10368.85	104.36	-4403.78	10.61	-26.70	-1.09	-2868.68	-13.09	-3111.90	-2.97	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40599.33	1.81	-11440.77	-2.51	-4233.17	0.17
		Zone 34 (20 Ft/day)	0.1X	Low	0%	298.43	12114.94	95.96	28302.50	30.68	6706.62	3.48	-3191.95	21.95	-10368.74	104.47	-4403.78	10.61	-26.70	-1.09	-2868.68	-13.09	-3111.89	-2.97	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.64	0.12	-11438.74	-0.48	-4233.03	0.31
			10X	Low	0%	297.30	12115.16	96.17	28301.40	29.58	6705.89	2.74	-3193.92	19.97	-10373.59	99.62	-4404.93	9.46	-26.71	-1.09	-2868.75	-13.16	-3112.14	-3.22	-2277.18	-13.23	-6.90	-0.04	-16.36	-0.02	40596.36	-1.16	-11433.52	4.75	-4236.41	-3.07
		Zone 35 (20 ft/day)	0.1X	Low	0%	296.61	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.21	21.69	-10369.23	103.99	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	0.00	-11438.23	0.03	-4233.37	-0.03
			10X	Low	0%	298.44	12114.96	95.97	28302.42	30.60	6706.58	3.44	-3191.36	22.54	-10368.85	104.37	-4403.85	10.54	-26.70	-1.09	-2868.68	-13.08	-3111.90	-2.98	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.55	0.03	-11438.58	-0.32	-4233.07	0.27
		Zone 36 (20 ft/day)	0.1X	Low	0%	296.76	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.14	21.76	-10369.21	104.00	-4403.91	10.48	-26.71	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.23	0.04	-4233.45	-0.11
			10X	Low	0%	298.75	12114.97	95.98	28302.39	30.57	6706.54	3.40	-3192.07	21.82	-10368.96	104.26	-4403.75	10.64	-26.66	-1.05	-2868.71	-13.12	-3111.96	-3.03	-2277.26	-13.31	-6.90	-0.04	-16.36	-0.02	40597.50	-0.02	-11438.62	-0.36	-4232.21	1.13
		Zone 37 (20 ft/day)	0.1X	Low	0%	296.72	12114.96	95.97	28302.41	30.58	6706.56	3.42	-3192.22	21.68	-10369.39	103.82	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.10	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11438.06	0.20	-4233.44	-0.10
			10X	Low	0%	302.02	12114.98	95.99	28302.34	30.52	6706.51	3.37	-3191.35	22.55	-10367.27	105.94	-4404.03	10.36	-26.70	-1.09	-2868.66	-13.07	-3111.89	-2.97	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40597.43	-0.09	-11440.15	-1.89	-4232.36	0.98
		Zone 39 (1 ft/day)	0.1X	Low	0%	296.66	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
			10X	Low	0%	296.69	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.76	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.27	-0.01	-4233.34	0.00
	Model Layer 2	Zone 31 (0.01 ft/day)	0.1X	Low	0%	299.18	12115.36	96.37	28302.60	30.78	6706.62	3.48	-3192.13	21.77	-10369.19	104.03	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40598.80	1.29	-11438.80	-0.54	-4233.31	0.03
			10X	Low	0%	299.02	12114.06	95.07	28301.95	30.13	6706.40	3.26	-3192.13	21.76	-10369.20	104.02	-4403.87	10.52	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40594.90	-2.62	-11437.07	1.20	-4233.38	-0.04
		Zone 32 (0.01 ft/day)	0.1X	Low	1%	1691.80	12748.22	729.24	27909.38	-362.44	6676.34	-26.80	-3191.53	22.37	-10367.48	105.74	-4400.96	13.43	-26.70	-1.09	-2868.67	-13.07	-3111.54	-2.62	-2277.09	-13.14	-6.90	-0.04	-16.36	-0.02	40789.90	192.39	-11645.44	-207.18	-4231.10	2.24
			10X	Low	3%	4269.20	10461.55	-1557.44	29075.02	803.20	6750.62	47.48	-3192.35	21.55	-10369.75	103.46	-4407.02	7.37	-26.71	-1.10	-2868.75	-13.16	-3112.33	-3.41	-2277.20	-13.25	-6.90	-0.04	-16.36	-0.02	39661.57	-935.95	-10678.22	760.04	-4231.60	1.74
		Zone 33 (0.01 ft/day)	0.1X	Low	3%	4291.04	12582.18	563.19	26715.65	-1556.17	6682.23	-20.92	-3197.56	16.34	-10383.68	89.53	-4421.31	-6.91	-26.73	-1.11	-2868.94	-13.35	-3114.35	-5.43	-2277.43	-13.48	-6.90	-0.04	-16.37	-0.04	39548.64	-1048.87	-10497.59	940.67	-4248.33	-14.99
			10X	Low	3%	3997.06	12013.81	-5.17	29767.16	1495.33	6687.67	-15.47	-3182.33	31.56	-10343.15	130.07	-4371.18	43.21	-26.66	-1.04	-2868.16	-12.57	-3107.30	1.62	-2276.52	-12.58	-6.89	-0.03	-16.33	0.00	41719.97	1122.45	-12539.31	-1101.04	-4208.44	24.90
		Zone 34 (0.01 ft/day)	0.1X	Low	1%	1302.78	12105.26	86.27	28346.36	74.54	6741.15	38.00	-3087.81	126.08	-10115.14	358.07	-4344.97	69.42	-26.42	-0.80	-2864.40	-8.81	-3099.07	9.85	-2273.66	-9.71	-6.88	-0.02	-16.28	0.06	40652.20	54.68	-11724.67	-286.41	-4053.28	180.06
			10X	Low	1%	948.85	12124.03	105.04	28263.10	-8.73	6674.20	-28.94	-3302.25	-88.35	-10611.30	-138.08	-4460.17	-45.78	-26.95	-1.34	-2872.38	-16.79	-3123.83	-14.90	-2280.17	-16.22	-6.91	-0.05	-16.43	-0.09	40547.88	-49.64	-11175.49	262.78	-4405.46	-172.12
		Zone 35 (0.01 ft/day)	0.1X	Low	0%	285.39	12115.11	96.12	28301.95	30.13	6706.02	2.87	-3207.36	6.54	-10375.99	97.23	-4404.70	9.69	-26.72	-1.10	-2868.86	-13.26	-3112.22	-3.30	-2277.28	-13.33	-6.90	-0.04	-16.36	-0.02	40596.91	-0.61	-11430.59	7.67	-4236.82	-3.48
			10X	Low	0%	414.50	12114.39	95.41	28304.24	32.41	6708.75	5.61	-3133.37	80.52	-10344.34	128.87	-4400.79	13.60	-26.64	-1.03	-2867.87	-12.28	-3110.67	-1.74	-2276.43	-12.48	-6.89	-0.03	-16.35	-0.01	40599.96	2.44	-11447.01	-8.75	-4214.03	19.31
		Zone 36 (0.01 ft/day)	0.1X	Low	0%	320.47	12114.92	95.94	28302.51	30.69	6706.71	3.57	-3192.83	21.07	-10372.08	101.14	-4405.85	8.54	-26.82	-1.20	-2867.57	-11.98	-3111.46	-2.54	-2275.73	-11.78	-6.89	-0.03	-16.36	-0.02	40597.70	0.18	-11433.72	4.54	-4260.60	-27.26
			10X	Low	0%	458.25	12115.17	96.19	28301.84	30.02	6705.74	2.60	-3189.66	24.24	-10358.85	114.37	-4392.26	22.13	-26.07	-0.45	-2872.61	-17.02	-3114.79	-5.87	-2282.02	-18.07	-6.91	-0.05	-16.38	-0.04	40596.60	-0.92	-11458.25	-19.98	-4127.03	106.31
		Zone 37 (10ft/day)	0.1X	Low	0%	296.68	12114.96	95.97	28302.37	30.55	6706.55	3.41	-3192.15	21.75	-10369.24	103.97	-4403.89	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.46	-0.06	-11438.22	0.04	-4233.37	-0.03
			10X	Low	0%	298.53	12115.04	96.05	28302.70	30.88	6706.55	3.41	-3191.96	21.94	-10368.65	104.56	-4403.97	10.42	-26.70	-1.09	-2868.68	-13.09	-3111.92	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.93	0.41	-11438.46	-0.19	-4233.08	0.26
		Zone 39 (1 ft/day)	0.1X	Low	0%	296.66	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
			10X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.76	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
	Model Layer 3	Zone 26 (60 ft/day)	0.1X	Low	0%	300.52	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.91	0.39	-11438.99	-0.73	-4233.30	0.04
			10X	Low	0%	309.23	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40594.27	-3.24	-11431.96	6.30	-4233.67	-0.32
		Zone 31 (120 ft/day)	0.1X	Low	0%	302.24	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40598.87	1.35	-11439.77	-1.50	-4233.32	0.02
			10X	Low	0%	326.50	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40585.03	-12.48	-11423.82	14.45	-4233.55	-0.21
		Zone 32 (120 ft/day)	0.1X	Low	0%	301.60	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40596.33	-1.19	-11437.26	1.00	-4233.29	0.05
			10X	Low	0%	317.19	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40607.06	9.54	-11446.16	-7.90	-4233.73	-0.39
		Zone 33 (40 ft/day)	0.1X	Low	0%	303.72	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40595.71	-1.81	-11440.24	-1.98	-4232.76	0.58
			10X	Low	0%	336.08	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40616.48	18.96	-11425.29	12.97	-4238.13	-4.79
		Zone 34 (10 ft/day)	0.1X	Low	0%	309.02	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40598.58	1.06	-11443.52	-5.26	-4230.01	3.34
			10X	Low	0%	372.26	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40589.09	-8.43	-11400.23	38.03	-4259.78	-26.44
		Zone 35 (10 ft/day)	0.1X	Low	0%	299.83	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.48	-0.04	-11438.55	-0.28	-4233.19	0.15
			10X	Low	0%	304.35	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.87	0.35	-11435.04	3.22	-4234.76	-1.41
		Zone 36 (10 ft/day)	0.1X	Low	0%	303.75	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.54	0.03	-11437.57	0.70	-4237.01	-3.67
			10X	Low	0%	336.51	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.28	-0.24	-11444.31	-6.05	-4202.48	30.86
		Zone 37 (10 ft/day)	0.1X	Low	0%	299.42	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.51	0.00	-11438.22	0.05	-4233.35	-0.01
			10X	Low	0%	299.92	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11438.72	-0.46	-4233.25	0.09
		Zone 38 (10 ft/day)	0.1X	Low	0%	329.74	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.63	0.11	-11435.09	3.17	-4260.44	-27.10
			10X	Low	0%	524.02	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40596.68	-0.84	-11462.62	-24.36	-4033.87	199.47
		Zone 39 (1 ft/day)	0.1X	Low	0%	299.39	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.01	-4233.36	-0.02
			10X	Low	0%	299.62	12115.00	96.01	28302.35	30.53	6706.50	3.36	-3191.85	22.05	-10367.26	105.95	-4403.47	10.92	-26.71	-1.09	-2868.73	-13.14	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.33	-0.07	-4233.15	0.19
	Model Layer 4	Zone 26 (40 ft/day)	0.1X	Low	0%	296.72	12114.96	95.98	28302.41	30.59	6706.56	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11438.29	-0.02	-4233.34	0.00
			10X	Low	0%	296.86	12114.97	95.99	28302.26	30.44	6706.53	3.39	-3192.14	21.76	-10369.20	104.01	-4403.91	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.39	-0.13	-11438.03	0.24	-4233.35	-0.01
		Zone 31 (100 ft/day)	0.1X	Low	0%	296.84	12115.00	96.01	28302.42	30.60	6706.56	3.42	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.57	0.05	-11438.32	-0.06	-4233.34	0.00
			10X	Low	0%	297.07	12114.60	95.61	28302.20	30.38	6706.50	3.35	-3192.13	21.77	-10369.19	104.02	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.05	-0.47	-11437.71	0.55	-4233.35	-0.01
		Zone 32 (100 ft/day)	0.1X	Low	0%	296.68	12114.97	95.99	28302.37	30.55	6706.55	3.40	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.49	-0.03	-11438.24	0.02	-4233.34	0.00
			10X	Low	0%	297.49	12114.86	95.87	28302.72	30.89	6706.61	3.47	-3192.13	21.76	-10369.20	104.02	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.85	0.33	-11438.49	-0.23	-4233.35	-0.01
		Zone 33 (20 ft/day)	0.1X	Low	0%	297.05	12116.76	97.77	28300.71	28.89	6706.55	3.40	-3192.12	21.78	-10369.17	104.05	-4403.89	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.57	0.05	-11438.44	-0.18	-4233.32	0.02
			10X	Low	0%	297.71	12097.16	78.17	28319.28	47.46	6706.62	3.47	-3192.23	21.66	-10369.45	103.77	-4403.95	10.44	-26.70	-1.09	-2868.69	-13.10	-3111.93	-3.01	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.22	-0.30	-11436.44	1.82	-4233.52	-0.18
		Zone 34 (10 ft/day)	0.1X	Low	0%	297.29	12114.96	95.97	28302.42	30.60	6706.58	3.44	-3192.48	21.42	-10368.65	104.56	-4403.83	10.56	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.55	0.03	-11438.46	-0.20	-4233.23	0.11
			10X	Low	0%	297.29	12115.04	96.05	28302.17	30.35	6706.30	3.15	-3188.87	25.03	-10374.33	98.88	-4404.51	9.88	-26.71	-1.09	-2868.71	-13.12	-3112.03	-3.11	-2277.14	-13.20	-6.90	-0.04	-16.36	-0.02	40597.17	-0.34	-11436.34	1.93	-4234.45	-1.11
		Zone 35 (0.1 ft/day)	0.1X	Low	0%	484.35	12115.34	96.35	28301.28	29.46	6705.05	1.90	-3131.77	82.13	-10356.78	116.44	-4393.23	21.16	-27.04	-1.43	-2874.06	-18.47	-3114.21	-5.29	-2280.37	-16.42	-6.91	-0.05	-16.38	-0.04	40595.89	-1.63	-11502.71	-64.45	-4204.20	29.14
			10X	Low	1%	1410.72	12112.09	93.11	28310.64	38.82	6717.51	14.36	-3088.90	125.00	-10913.52	-440.30	-4464.44	-50.05	-24.52	1.09	-2832.24	23.35	-3097.29	11.63	-2253.14	10.81	-6.78	0.08	-16.25	0.09	40609.71	12.19	-11021.98	416.28	-4406.90	-173.56
		Zone 36 (0.1 ft/day)	0.1X	Low	0%	517.34	12114.75	95.76	28303.00	31.18	6707.38	4.24	-3196.91	16.99	-10388.96	84.26	-4412.50	1.89	-27.10	-1.48	-2850.79	4.81	-3110.26	-1.34	-2259.76	4.19	-6.84	0.02	-16.34	0.00	40598.47	0.96	-11411.24	27.02	-4476.55	-243.21
			10X	Low	0%	463.10	12115.05	96.07	28302.14	30.32	6706.19	3.04	-3190.28	23.62	-10361.77	111.44	-4399.62	14.77	-23.08	2.54	-2872.14	-16.55	-3113.37	-4.45	-2281.55	-17.60	-6.90	-0.04	-16.37	-0.03	40597.11	-0.41	-11449.72	-11.46	-4102.59	130.76
		Zone 37 (10 ft/day)	0.1X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.12	21.77	-10369.21	104.00	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.25	0.01	-4233.34	0.00
			10X	Low	0%	296.86	12114.96	95.98	28302.41	30.59	6706.56	3.42	-3192.22	21.68	-10369.01	104.20	-4403.92	10.47	-26.70	-1.09	-2868.69	-13.10	-3111.90	-2.98	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11438.37	-0.11	-4233.35	-0.01
		Zone 38 (0.1 ft/day)	0.1X	Low	0%	378.63	12114.95	95.96	28302.45	30.63	6706.61	3.47	-3192.87	21.03	-10372.25	100.96	-4403.93	10.46	-3.24	22.37	-2912.17	-56.57	-3110.47	-1.55	-2278.28	-14.33	-6.94	-0.08	-16.36	-0.03	40597.59	0.07	-11435.23	3.03	-4251.43	-18.09
			10X	Low	0%	572.05	12115.15	96.17	28301.85	30.03	6705.81	2.66	-3186.90	27.00	-10347.34	125.87	-4397.43	16.96	-38.20	-12.59	-2833.17	22.43	-3116.53	-7.61	-2261.50	2.45	-6.87	-0.01	-16.38	-0.04	40596.69	-0.83	-11464.88	-26.62	-4032.55	200.79
		Zone 39 (1 ft/day)	0.1X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.35	-0.01
			10X	Low	0%	296.76	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.18	104.03	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.28	-0.02	-4233.29	0.06
	Model Layer 5	Zone 26 (40 ft/day)	0.1X	Low	0%	300.06	12114.92	95.93	28303.27	31.44	6706.68	3.54	-3192.11	21.79	-10369.12	104.09	-4403.82	10.57	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40598.30	0.78	-11439.72	-1.45	-4233.28	0.06
			10X	Low	0%	305.65	12115.33	96.35	28295.98	24.16	6705.61	2.47	-3192.31	21.59	-10369.66	103.56	-4404.41	9.98	-26.70	-1.09	-2868.70	-13.10	-3111.99	-3.07	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40591.80	-5.72	-11427.36	10.91	-4233.76	-0.42
		Zone 31 (100 ft/day)	0.1X	Low	0%	303.89	12116.57	97.58	28303.27	31.45	6706.81	3.67	-3192.13	21.76	-10369.19	104.02	-4403.93	10.46	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40599.62	2.10	-11440.64	-2.38	-4233.30	0.04
			10X	Low	0%	313.49	12099.94	80.95	28294.22	22.40	6704.09	0.95	-3192.11	21.79	-10369.15	104.07	-4403.57	10.82	-26.70	-1.09	-2868.68	-13.08	-3111.87	-2.95	-2277.11	-13.17	-6.90	-0.04	-16.36	-0.02	40578.00	-19.51	-11415.93	22.34	-4233.66	-0.32
		Zone 32 (100 ft/day)	0.1X	Low	0%	297.36	12114.73	95.75	28302.35	30.53	6706.42	3.28	-3192.13	21.77	-10369.18	104.04	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40596.78	-0.74	-11437.96	0.31	-4233.30	0.04
			10X	Low	0%	306.78	12116.95	97.97	28302.01	30.19	6707.50	4.36	-3192.17	21.73	-10369.30	103.92	-4403.95	10.44	-26.70	-1.09	-2868.68	-13.09	-3111.92	-3.00	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40603.28	5.77	-11439.97	-1.71	-4233.63	-0.29
		Zone 33 (20 ft/day)	0.1X	Low	0%	321.08	12137.95	118.97	28282.58	10.76	6707.21	4.07	-3191.27	22.63	-10367.04	106.17	-4403.15	11.24	-26.70	-1.09	-2868.65	-13.06	-3111.78	-2.86	-2277.09	-13.15	-6.90	-0.04	-16.36	-0.02	40600.36	2.84	-11450.90	-12.64	-4231.77	1.57
			10X	Low	0%	582.57	11910.90	-108.09	28482.77	210.95	6702.11	-1.03	-3197.79	16.11	-10383.33	89.88	-4408.70	5.69	-26.72	-1.11	-2868.91	-13.32	-3112.80	-3.88	-2277.32	-13.37	-6.90	-0.04	-16.36	-0.03	40576.85	-20.66	-11350.27	87.99	-4243.76	-10.42
		Zone 34 (10 ft/day)	0.1X	Low	0%	308.37	12114.78	95.80	28303.03	31.21	6707.22	4.08	-3193.60	20.30	-10364.49	108.73	-4402.39	12.00	-26.70	-1.09	-2868.64	-13.05	-3111.67	-2.75	-2277.08	-13.14	-6.90	-0.04	-16.36	-0.02	40598.41	0.90	-11441.50	-3.24	-4231.29	2.05
			10X	Low	0%	310.08	12116.50	97.51	28297.29	25.47	6701.01	-2.13	-3177.70	36.20	-10408.05	65.16	-4416.59	-2.20	-26.73	-1.11	-2869.00	-13.41	-3113.93	-5.01	-2277.43	-13.48	-6.90	-0.04	-16.37	-0.03	40590.23	-7.29	-11413.34	24.93	-4249.44	-16.10
		Zone 35 (10 ft/day)	0.1X	Low	0%	297.32	12114.96	95.97	28302.42	30.60	6706.58	3.44	-3192.01	21.89	-10369.19	104.03	-4403.57	10.82	-26.71	-1.09	-2868.73	-13.14	-3111.92	-2.99	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.55	0.03	-11438.30	-0.04	-4233.36	-0.02
			10X	Low	0%	292.34	12115.04	96.05	28302.23	30.41	6706.32	3.17	-3192.56	21.34	-10370.28	102.94	-4406.94	7.45	-26.67	-1.06	-2868.22	-12.63	-3111.90	-2.98	-2276.83	-12.88	-6.90	-0.04	-16.36	-0.02	40597.22	-0.29	-11437.41	0.85	-4233.11	0.23
		Zone 36 (10 ft/day)	0.1X	Low	0%	304.24	12114.95	95.96	28302.44	30.62	6706.61	3.47	-3192.44	21.46	-10370.46	102.75	-4404.51	9.88	-26.75	-1.13	-2867.38	-11.79	-3111.81	-2.89	-2277.45	-13.50	-6.89	-0.03	-16.36	-0.02	40597.57	0.06	-11436.49	1.77	-4242.25	-8.91
			10X	Low	0%	406.88	12115.08	96.09	28302.07	30.25	6706.09	2.95	-3189.66	24.24	-10358.92	114.30	-4398.84	15.55	-26.30	-0.69	-2879.18	-23.59	-3112.81	-3.89	-2274.35	-10.40	-6.94	-0.08	-16.38	-0.04	40597.01	-0.51	-11452.69	-14.42	-4163.46	69.88
		Zone 37 (10 ft/day)	0.1X	Low	0%	296.75	12114.97	95.99	28302.39	30.57	6706.51	3.37	-3192.14	21.75	-10369.21	104.01	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.48	-0.04	-11438.15	0.12	-4233.35	-0.01
			10X	Low	0%	299.12	12114.89	95.90	28302.53	30.70	6706.96	3.82	-3192.02	21.88	-10369.02	104.19	-4403.82	10.57	-26.70	-1.09	-2868.68	-13.09	-3111.90	-2.98	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.86	0.35	-11439.48	-1.22	-4233.24	0.10
		Zone 38 (10 ft/day)	0.1X	Low	0%	316.82	12114.95	95.96	28302.46	30.63	6706.63	3.49	-3192.59	21.31	-10371.11	102.10	-4404.72	9.67	-26.33	-0.72	-2867.02	-11.43	-3111.75	-2.83	-2277.96	-14.01	-6.89	-0.03	-16.36	-0.02	40597.60	0.08	-11435.72	2.54	-4255.34	-22.00
			10X	Low	0%	520.09	12115.12	96.13	28301.95	30.13	6705.92	2.77	-3188.47	25.43	-10353.84	119.37	-4397.24	17.15	-29.90	-4.29	-2881.47	-25.88	-3113.33	-4.41	-2268.01	-4.06	-6.96	-0.10	-16.39	-0.05	40596.82	-0.69	-11458.58	-20.32	-4064.04	169.30
		Zone 39 (1 ft/day)	0.1X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.35	-0.01
			10X	Low	0%	296.77	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.18	104.03	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.28	-0.02	-4233.29	0.06
	Model Layer 6	Zone 31 (0.1 ft/day)	0.1X	Low	0%	321.46	12120.25	101.26	28305.39	33.57	6707.75	4.61	-3192.14	21.76	-10369.21	104.00	-4404.02	10.37	-26.70	-1.09	-2868.69	-13.10	-3111.94	-3.01	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40604.93	7.41	-11446.19	-7.93	-4233.21	0.13
			10X	Low	0%	333.37	12089.64	70.66	28288.36	16.54	6700.75	-2.39	-3192.09	21.81	-10369.10	104.11	-4403.29	11.10	-26.70	-1.09	-2868.67	-13.07	-3111.83	-2.91	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40560.21	-37.31	-11399.67	38.60	-4233.91	-0.57
		Zone 32 (0.1 ft/day)	0.1X	Low	2%	2129.96	11349.75	-669.24	29193.25	921.43	6769.66	66.52	-3193.53	20.37	-10373.05	100.16	-4411.14	3.25	-26.71	-1.10	-2868.77	-13.18	-3112.90	-3.98	-2277.23	-13.29	-6.90	-0.04	-16.37	-0.03	40746.41	148.89	-11602.09	-163.83	-4238.01	-4.67
			10X	Low	2%	3132.49	12997.94	978.95	27151.36	-1120.46	6563.32	-139.83	-3189.72	24.18	-10362.51	110.71	-4391.35	23.04	-26.69	-1.07	-2868.54	-12.95	-3110.23	-1.30	-2276.93	-12.99	-6.90	-0.04	-16.35	-0.01	40256.17	-341.35	-11080.81	357.45	-4225.18	8.16
		Zone 33 (0.1 ft/day)	0.1X	Low	2%	2000.64	12949.35	930.36	27540.59	-731.24	6718.80	15.65	-3193.28	20.62	-10372.50	100.71	-4411.74	2.65	-26.71	-1.10	-2868.76	-13.17	-3112.95	-4.03	-2277.23	-13.28	-6.90	-0.04	-16.37	-0.03	40667.23	69.72	-11531.86	-93.59	-4237.80	-4.46
			10X	Low	1%	1837.75	11291.21	-727.78	29053.39	781.57	6714.25	11.10	-3192.56	21.34	-10370.04	103.18	-4401.42	12.97	-26.70	-1.09	-2868.69	-13.10	-3111.65	-2.73	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40543.90	-53.62	-11342.71	95.55	-4233.86	-0.52
		Zone 34 (0.1 ft/day)	0.1X	Low	0%	430.91	12113.16	94.18	28307.61	35.79	6713.11	9.97	-3268.12	-54.22	-10313.20	160.01	-4382.41	31.98	-26.70	-1.09	-2868.78	-13.19	-3109.26	-0.34	-2277.07	-13.12	-6.90	-0.04	-16.34	-0.01	40605.50	7.99	-11431.31	6.95	-4231.28	2.06
			10X	Low	0%	430.83	12120.08	101.09	28287.69	15.87	6688.01	-15.13	-3073.98	139.91	-10482.94	-9.73	-4456.28	-41.88	-26.73	-1.12	-2868.89	-13.30	-3118.88	-9.95	-2277.59	-13.64	-6.90	-0.04	-16.40	-0.06	40574.87	-22.65	-11414.45	23.81	-4255.99	-22.65
		Zone 35 (0.1 ft/day)	0.1X	Low	0%	428.03	12114.10	95.11	28304.60	32.78	6709.62	6.48	-3255.68	-41.79	-10347.41	125.80	-4382.42	31.97	-26.83	-1.21	-2870.65	-15.06	-3110.85	-1.93	-2278.33	-14.38	-6.90	-0.04	-16.35	-0.02	40601.07	3.55	-11403.05	35.21	-4256.06	-22.72
			10X	Low	0%	410.04	12115.37	96.38	28301.68	29.86	6705.56	2.42	-3087.19	126.71	-10483.06	-9.85	-4457.81	-43.42	-26.17	-0.56	-2859.48	-3.88	-3108.41	0.51	-2271.41	-7.46	-6.87	-0.01	-16.33	0.00	40596.32	-1.19	-11405.03	33.23	-4178.77	54.57
		Zone 36 (0.01 ft/day)	0.1X	Low	0%	623.14	12114.07	95.08	28304.74	32.92	6709.89	6.75	-3203.28	10.61	-10416.33	56.89	-4448.74	-34.35	-26.83	-1.21	-2849.25	6.34	-3100.24	8.68	-2305.03	-41.08	-6.76	0.10	-16.25	0.08	40601.58	4.06	-11352.63	85.64	-4472.69	-239.35
			10X	Low	1%	1521.29	12118.05	99.06	28294.59	22.77	6694.79	-8.35	-3173.22	40.67	-10286.86	186.36	-4212.38	202.01	-20.56	5.05	-2939.62	-84.03	-3165.49	-56.57	-2236.36	27.59	-7.24	-0.38	-16.75	-0.41	40584.55	-12.96	-11675.64	-237.37	-3695.64	537.70
		Zone 37 (0.1 ft/day)	0.1X	Low	0%	299.58	12115.02	96.03	28302.76	30.94	6706.19	3.05	-3198.23	15.67	-10367.09	106.12	-4403.45	10.94	-26.71	-1.09	-2868.74	-13.14	-3111.87	-2.95	-2277.16	-13.21	-6.90	-0.04	-16.36	-0.02	40597.64	0.12	-11433.32	4.94	-4234.66	-1.31
			10X	Low	0%	333.88	12114.32	95.33	28298.34	26.52	6710.24	7.10	-3189.06	24.83	-10359.39	113.82	-4400.04	14.35	-26.69	-1.08	-2868.52	-12.92	-3110.97	-2.05	-2276.96	-13.01	-6.90	-0.04	-16.35	-0.02	40596.52	-1.00	-11455.85	-17.59	-4229.11	4.23
		Zone 38 (0.001 ft/day)	0.1X	Low	0%	380.23	12114.97	95.98	28302.38	30.56	6706.49	3.35	-3194.25	19.65	-10377.81	95.40	-4399.76	14.64	-32.92	-7.30	-2919.79	-64.20	-3104.21	4.71	-2287.65	-23.70	-6.84	0.02	-16.36	-0.02	40597.53	0.01	-11432.95	5.32	-4248.71	-15.37
			10X	Low	0%	314.73	12114.92	95.94	28302.52	30.70	6706.75	3.60	-3191.84	22.05	-10368.10	105.11	-4407.93	6.46	-25.79	-0.17	-2841.20	14.39	-3115.01	-6.09	-2275.98	-12.03	-6.90	-0.04	-16.35	-0.01	40597.70	0.18	-11436.20	2.07	-4249.22	-15.88
		Zone 39 (0.01 ft/day)	0.1X	Low	0%	297.24	12114.97	95.98	28302.40	30.58	6706.56	3.41	-3192.16	21.73	-10369.39	103.82	-4403.91	10.48	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.52	0.01	-11438.06	0.21	-4233.96	-0.62
			10X	Low	0%	304.33	12114.97	95.98	28302.39	30.57	6706.55	3.41	-3191.87	22.03	-10367.38	105.84	-4404.23	10.16	-26.71	-1.09	-2868.72	-13.12	-3111.88	-2.96	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40597.47	-0.05	-11439.83	-1.57	-4229.04	4.30
		Zone 31 (20 ft/day)	0.1X	Low	0%	315.28	12119.00	100.01	28304.60	32.78	6707.48	4.33	-3192.14	21.76	-10369.20	104.01	-4403.99	10.40	-26.70	-1.09	-2868.69	-13.10	-3111.93	-3.01	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40602.86	5.35	-11444.37	-6.11	-4233.24	0.10
			10X	Low	0%	325.30	12093.16	74.17	28290.41	18.59	6701.39	-1.75	-3192.09	21.81	-10369.11	104.11	-4403.37	11.02	-26.70	-1.09	-2868.67	-13.08	-3111.84	-2.92	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40567.57	-29.94	-11405.12	33.14	-4233.81	-0.47
		Zone 32 (20 ft/day)	0.1X	Low	0%	370.56	12057.40	38.41	28374.91	103.09	6719.75	16.61	-3192.31	21.59	-10369.68	103.54	-4404.87	9.52	-26.71	-1.09	-2868.70	-13.11	-3112.05	-3.13	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40619.77	22.25	-11462.67	-24.41	-4233.92	-0.57
			10X	Low	1%	1520.03	12486.55	467.56	27828.60	-443.22	6609.46	-93.69	-3190.91	22.99	-10365.79	107.42	-4397.16	17.23	-26.70	-1.08	-2868.61	-13.01	-3111.01	-2.09	-2277.02	-13.07	-6.90	-0.04	-16.35	-0.02	40436.18	-161.34	-11265.16	173.10	-4229.16	4.18

Table 5-2. Sensitivity Analysis -- Inter-basin Flows and Stream Percolation

units: Acre-feet per year

Parameters		Multiplier	Sensitivity	diff (%)	Sum of absolute fluxes Default = 129641.846	Piru to Fillmore in System Default = 12018.990		Piru to Fillmore in System Default = 28271.821		Piru to Fillmore in System Default = 6703.143		Fillmore to Santa Paula in Default = -3213.897		Fillmore to Santa Paula in Default = -10473.213		Fillmore to Santa Paula Default = -4414.391		Santa Paula to Default = -25.615		Santa Paula to Mound ib Default = -2855.593		Santa Paula to Mound ib Default = -3108.92		Santa Paula to Oxnard in Default = -2263.948		Santa Paula to Default = -6.86		Santa Paula to Default = -16.337		STR Percolation in Piru Default = 40597.518		STR Percolation in Fillmore Default = -11438.262		STR Percolation in Santa Default = -4233.34	
					Sum of absolute diff	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.
Model Layer 7	Zone 33 (10 ft/day)	0.1X	Low	0%	340.77	12131.32	112.33	28301.30	29.48	6705.21	2.06	-3191.79	22.11	-10368.35	104.86	-4403.85	10.54	-26.70	-1.09	-2868.67	-13.08	-3111.89	-2.97	-2277.11	-13.17	-6.90	-0.04	-16.36	-0.02	40608.59	11.07	-11455.67	-17.41	-4232.80	0.54
		10X	Low	0%	408.89	12001.38	-17.60	28323.07	51.25	6721.78	18.64	-3193.48	20.42	-10372.33	100.88	-4402.28	12.11	-26.71	-1.09	-2868.73	-13.14	-3111.80	-2.88	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40535.25	-62.27	-11344.50	93.76	-4234.93	-1.59
	Zone 34 (10 ft/day)	0.1X	Low	0%	306.68	12114.63	95.64	28303.26	31.44	6707.80	4.65	-3194.60	19.29	-10367.22	105.99	-4400.29	14.10	-26.70	-1.09	-2868.68	-13.08	-3111.46	-2.54	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40598.94	1.43	-11441.11	-2.85	-4231.98	1.36
		10X	Low	0%	370.10	12118.04	99.06	28294.71	22.89	6695.18	-7.96	-3169.83	44.07	-10384.75	88.47	-4437.09	-22.70	-26.72	-1.10	-2868.75	-13.16	-3116.09	-7.17	-2277.37	-13.42	-6.90	-0.04	-16.38	-0.05	40584.69	-12.82	-11412.65	25.61	-4244.93	-11.59
	Zone 35 (5 ft/day)	0.1X	Low	0%	299.25	12114.90	95.91	28302.55	30.73	6706.80	3.66	-3194.50	19.40	-10368.20	105.02	-4402.08	12.31	-26.72	-1.10	-2868.85	-13.26	-3111.75	-2.83	-2277.24	-13.29	-6.90	-0.04	-16.36	-0.02	40597.80	0.28	-11437.98	0.28	-4234.47	-1.13
		10X	Low	0%	307.42	12115.56	96.57	28301.14	29.32	6704.46	1.32	-3173.90	39.99	-10380.43	92.78	-4419.67	-5.28	-26.58	-0.96	-2866.82	-11.23	-3113.30	-4.38	-2276.00	-12.05	-6.89	-0.03	-16.37	-0.03	40595.29	-2.23	-11435.66	2.60	-4224.68	8.66
	Zone 36 (5 ft/day)	0.1X	Low	0%	354.20	12114.83	95.85	28302.76	30.94	6707.06	3.92	-3194.74	19.16	-10380.07	93.14	-4409.64	4.76	-27.26	-1.64	-2856.96	-1.36	-3110.92	-2.00	-2281.64	-17.70	-6.85	0.01	-16.34	0.00	40598.10	0.58	-11422.67	15.60	-4300.88	-67.54
		10X	Low	1%	663.05	12115.47	96.48	28301.04	29.22	6704.63	1.49	-3183.18	30.72	-10331.81	141.40	-4380.99	33.40	-24.83	0.79	-2908.92	-53.33	-3116.46	-7.54	-2259.10	4.84	-7.07	-0.21	-16.44	-0.10	40595.36	-2.16	-11494.46	-56.20	-4028.16	205.18
	Zone 37 (0.5 ft/day)	0.1X	Low	0%	297.25	12115.01	96.03	28303.32	31.50	6705.66	2.52	-3197.09	16.80	-10370.31	102.90	-4403.25	11.14	-26.71	-1.09	-2868.76	-13.17	-3111.76	-2.84	-2277.17	-13.22	-6.90	-0.04	-16.36	-0.02	40597.65	0.13	-11434.48	3.78	-4235.41	-2.07
		10X	Low	0%	350.02	12114.34	95.35	28298.69	26.87	6712.09	8.95	-3183.23	30.67	-10349.29	123.92	-4406.70	7.69	-26.68	-1.07	-2868.30	-12.71	-3113.12	-4.20	-2276.91	-12.96	-6.90	-0.04	-16.37	-0.03	40598.36	0.84	-11453.78	-15.51	-4224.12	9.22
	Zone 38 (2 ft/day)	0.1X	Low	0%	296.79	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.13	21.76	-10369.19	104.02	-4403.99	10.40	-26.71	-1.09	-2868.67	-13.08	-3111.94	-3.02	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40597.52	0.01	-11438.18	0.08	-4233.45	-0.11
		10X	Low	0%	299.28	12114.98	95.99	28302.37	30.55	6706.50	3.36	-3192.13	21.77	-10369.16	104.06	-4402.93	11.46	-26.66	-1.05	-2868.82	-13.22	-3111.71	-2.78	-2276.99	-13.04	-6.90	-0.04	-16.37	-0.03	40597.45	-0.07	-11439.07	-0.81	-4232.28	1.06
	Zone 39 (0.5 ft/day)	0.1X	Low	0%	296.70	12114.97	95.98	28302.39	30.57	6706.54	3.40	-3192.10	21.79	-10369.04	104.17	-4404.09	10.30	-26.70	-1.09	-2868.69	-13.09	-3111.93	-3.01	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.24	0.03	-4233.36	-0.02
		10X	Low	0%	297.46	12114.94	95.95	28302.45	30.63	6706.65	3.51	-3192.41	21.48	-10370.66	102.55	-4401.94	12.46	-26.70	-1.09	-2868.69	-13.10	-3111.80	-2.88	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.62	0.10	-11438.55	-0.29	-4233.14	0.20
Model Layer 8	Zone 31 (0.001 ft/day)	0.1X	Low	0%	596.20	12112.11	93.12	28286.85	15.02	6840.40	137.26	-3192.82	21.07	-10371.16	102.05	-4408.70	5.69	-26.71	-1.09	-2868.74	-13.15	-3112.57	-3.65	-2277.20	-13.25	-6.90	-0.04	-16.36	-0.03	40685.82	88.30	-11538.32	-100.06	-4235.75	-2.41
		10X	Low	0%	376.03	12118.87	99.88	28308.06	36.24	6672.78	-30.36	-3191.98	21.92	-10368.74	104.47	-4402.74	11.65	-26.70	-1.09	-2868.67	-13.08	-3111.76	-2.84	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40577.34	-20.18	-11417.73	20.53	-4232.77	0.57
	Zone 32 (0.001 ft/day)	0.1X	Low	2%	3226.23	11833.87	-185.12	27612.64	-659.18	8144.16	1441.01	-3198.31	15.59	-10387.06	86.15	-4446.93	-32.54	-26.75	-1.13	-2869.12	-13.52	-3117.68	-8.76	-2277.71	-13.77	-6.90	-0.04	-16.39	-0.06	40969.71	372.19	-11809.75	-371.49	-4259.02	-25.68
		10X	Low	3%	4283.24	12495.58	476.59	28979.81	707.99	5054.39	-1648.76	-3184.50	29.40	-10347.08	126.13	-4351.53	62.86	-26.65	-1.04	-2868.17	-12.58	-3104.89	4.03	-2276.42	-12.47	-6.89	-0.03	-16.32	0.02	39909.74	-687.78	-10958.06	480.21	-4199.98	33.36
	Zone 33 (0.001 ft/day)	0.1X	Low	4%	5678.08	12228.67	209.69	29858.90	1587.08	6246.75	-456.40	-3174.37	39.53	-10308.17	165.04	-4125.46	288.93	-26.50	-0.89	-2866.71	-11.11	-3075.14	33.78	-2274.05	-10.11	-6.88	-0.02	-16.14	0.19	41580.18	982.67	-13175.05	-1736.79	-4077.47	155.87
		10X	Low	2%	2403.87	11913.39	-105.60	27507.06	-764.76	7295.19	592.05	-3186.17	27.73	-10352.66	120.55	-4385.51	28.89	-26.66	-1.04	-2868.39	-12.80	-3109.60	-0.68	-2276.72	-12.77	-6.90	-0.04	-16.35	-0.01	40258.83	-338.69	-11049.66	388.61	-4223.68	9.66
	Zone 34 (0.001 ft/day)	0.1X	Low	3%	3735.80	12011.12	-7.86	28512.70	240.87	7099.40	396.26	-3344.17	-130.27	-10845.06	-371.85	-3391.77	1022.62	-26.55	-0.93	-2871.33	-15.73	-2992.88	116.05	-2273.13	-9.18	-6.87	0.00	-15.67	0.67	40999.76	402.24	-12298.83	-860.57	-4072.66	160.68
		10X	Low	3%	3292.56	12195.19	176.20	28137.59	-134.23	6405.73	-297.42	-3061.21	152.69	-9984.81	488.41	-5239.12	-824.73	-26.82	-1.20	-2866.43	-10.84	-3210.01	-101.09	-2280.34	-16.39	-6.92	-0.06	-16.93	-0.59	40286.33	-311.19	-10795.25	643.01	-4367.86	-134.52
	Zone 35 (0.001 ft/day)	0.1X	Medium	5%	6912.56	12062.90	43.91	28417.46	145.63	6899.83	196.69	-2986.77	227.12	-9710.96	762.25	-6815.89	-2401.50	-28.95	-3.34	-2931.54	-75.95	-2628.44	480.48	-2294.25	-30.30	-6.93	-0.07	-13.56	2.78	40801.72	204.20	-10233.97	1204.29	-5367.39	-1134.05
		10X	Low	2%	1984.75	12136.52	117.54	28255.15	-16.67	6625.93	-77.22	-3270.93	-57.04	-10570.96	-97.74	-3686.02	728.37	-25.90	-0.28	-2846.68	8.91	-3280.10	-171.18	-2270.69	-6.75	-6.89	-0.02	-17.32	-0.99	40513.21	-84.30	-11763.43	-325.17	-3940.77	292.57
	Zone 36 (0.001 ft/day)	0.1X	Low	5%	5917.80	12091.19	72.20	28358.70	86.88	6795.43	92.29	-3146.10	67.80	-10222.25	250.97	-6116.03	-1701.63	-31.35	-5.74	-3023.28	-167.69	-2580.25	528.67	-2323.58	-59.63	-7.17	-0.31	-13.37	2.97	40693.43	95.91	-10215.24	1223.02	-5795.43	-1562.09
		10X	Low	1%	1393.06	12120.16	101.17	28290.17	18.35	6687.19	-15.95	-3200.89	13.01	-10395.81	77.40	-4031.10	383.29	-26.20	-0.59	-2843.70	11.90	-3205.55	-96.63	-2269.25	-5.30	-6.86	0.00	-17.00	-0.66	40576.80	-20.72	-11709.81	-271.55	-3856.82	376.52
	Zone 37 (0.001 ft/day)	0.1X	Low	1%	1039.60	12091.68	72.69	28373.52	101.70	6787.91	84.77	-3216.25	-2.35	-10238.58	234.63	-4594.89	-180.50	-26.67	-1.06	-2871.15	-15.56	-3048.01	60.91	-2276.23	-12.29	-6.88	-0.02	-15.97	0.37	40700.26	102.75	-11572.73	-134.47	-4268.89	-35.55
		10X	Low	1%	1024.90	12105.70	86.71	28293.23	21.41	6756.37	53.22	-3150.88	63.02	-10251.32	221.90	-4670.06	-255.67	-27.14	-1.53	-2877.76	-22.17	-3081.42	27.50	-2280.89	-16.94	-6.92	-0.06	-16.22	0.12	40623.38	25.86	-11292.07	146.19	-4315.95	-82.60
	Zone 38 (0.001 ft/day)	0.1X	Low	2%	2492.48	12104.46	85.47	28327.85	56.03	6746.53	43.39	-3180.11	33.78	-10338.60	134.61	-5163.21	-748.82	-12.86	12.76	-3054.03	-198.44	-3121.47	-12.55	-2297.67	-33.72	-7.41	-0.55	-14.02	2.32	40640.76	43.24	-10861.60	576.67	-4743.47	-510.13
		10X	Low	0%	629.24	12116.46	97.47	28298.96	27.14	6701.11	-2.03	-3194.53	19.37	-10376.29	96.92	-4299.38	115.01	-29.14	-3.53	-2882.82	-27.22	-3152.01	-43.09	-2271.86	-7.91	-6.79	0.07	-16.69	-0.35	40591.70	-5.82	-11514.59	-76.33	-4126.37	106.97
	Zone 39 (0.001 ft/day)	0.1X	Low	0%	308.59	12115.11	96.12	28302.10	30.28	6706.00	2.85	-3190.23	23.67	-10362.06	111.15	-4416.26	-1.87	-26.70	-1.09	-2868.63	-13.03	-3112.54	-3.62	-2277.11	-13.17	-6.90	-0.04	-16.36	-0.02	40596.91	-0.60	-11434.24	4.02	-4240.39	-7.05
		10X	Low	0%	384.48	12114.03	95.04	28304.41	32.59	6710.26	7.12	-3202.64	11.26	-10444.87	28.35	-4300.18	114.21	-26.72	-1.10	-2869.08	-13.49	-3107.79	1.14	-2277.18	-13.23	-6.90	-0.04	-16.34	0.00	40601.57	4.05	-11462.12	-23.86	-4194.33	39.01
Model Layer 9	Zone 31 (10 ft/day)	0.1X	Low	0%	296.68	12114.97	95.98	28302.40	30.58	6706.56	3.42	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.01	-11438.27	0.00	-4233.34	0.00
		10X	Low	0%	296.86	12115.03	96.04	28302.45	30.63	6706.50	3.35	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.60	0.08	-11438.32	-0.06	-4233.34	0.00
	Zone 32 (10 ft/day)	0.1X	Low	0%	298.00	12114.85	95.86	28302.16	30.34	6707.44	4.29	-3192.14	21.76	-10369.20	104.01	-4403.92	10.47	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.91	0.39	-11438.70	-0.44	-4233.36	-0.02
		10X	Low	0%	310.60	12116.14	97.16	28304.74	32.92	6697.98	-5.16	-3192.09	21.81	-10369.07	104.15	-4403.60	10.79	-26.70	-1.09	-2868.68	-13.09	-3111.88	-2.96	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40593.67	-3.85	-11434.02	4.24	-4233.17	0.17
	Zone 33 (10 ft/day)	0.1X	Low	0%	298.51	12114.78	95.79	28302.33	30.50	6707.69	4.55	-3192.17	21.73	-10369.30	103.91	-4404.16	10.23	-26.70	-1.09	-2868.69	-13.10	-3111.95	-3.03	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40598.21	0.69	-11438.75	-0.49	-4233.50	-0.16
		10X	Low	0%	316.22	12116.49	97.50	28303.42	31.60	6696.77	-6.38	-3191.85	22.05	-10368.38	104.83	-4401.93	12.46	-26.70	-1.09	-2868.67	-13.08	-3111.66	-2.74	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40591.83	-5.68	-11433.83	4.43	-4232.16	1.18
	Zone 34 (10 ft/day)	0.1X	Low	0%	299.37	12114.83	95.84	28302.69	30.87	6707.08	3.93	-3192.42	21.47	-10370.13	103.09	-4402.19	12.20	-26.70	-1.09	-2868.69	-13.10	-3111.72	-2.80	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40598.06	0.54	-11439.28	-1.01	-4233.14	0.20
		10X	Low	0%	319.92	12116.32	97.34	28299.60	27.78	6701.48	-1.67	-3189.30	24.60	-10360.13	113.08	-4420.43	-6.04	-26.71	-1.09	-2868.62	-13.03	-3113.84	-4.92	-2277.18	-13.23	-6.90	-0.04	-16.37	-0.03	40592.30	-5.22	-11428.34	9.92	-4235.29	-1.94
	Zone 35 (5 ft/day)	0.1X	Low	0%	297.03	12114.92	95.93	28302.50	30.68	6706.74	3.59	-3192.11	21.79	-10369.86	103.35	-4403.69	10.70	-26.70	-1.09	-2868.70	-13.11	-3111.74	-2.82	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.71	0.19	-11437.97	0.29	-4233.58	-0.24
		10X	Low	0%	306.53	12115.43	96.45	28301.42	29.59	6704.83	1.69	-3192.34	21.56	-10362.94	110.27	-4405.92	8.47	-26.70	-1.08	-2868.51	-12.92	-3113.68	-4.76	-2277.09	-13.14	-6.90	-0.04	-16.37	-0.03	40595.74	-1.78	-11440.79	-2.53	-4231.12	2.22
	Zone 36 (5 ft/day)	0.1X	Low	0%	296.75	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.13	21.77	-10369.18	104.03	-4403.95	10.44	-26.70	-1.09	-2868.69	-13.10	-3111.91	-2.99	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.23	0.04	-4233.43	-0.09
		10X	Low	0%	298.29	12114.97	95.98	28302.38	30.56	6706.53	3.38	-3192.15	21.74	-10369.28	103.94	-4403.37	11.02	-26.70	-1.09	-2868.62	-13.03	-3112.12	-3.19	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40597.48	-0.04	-11438.58	-0.32	-4232.56	0.78
	Zone 37 (0.5 ft/day)	0.1X	Low	0%	299.41	12114.67	95.68	28302.37	30.55	6707.52	4.38	-3192.46	21.44	-10369.52	103.69	-4402.99	11.40	-26.70	-1.09	-2868.70	-13.11	-3111.65	-2.73	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40598.05	0.53	-11439.80	-1.54	-4233.38	-0.04
		10X	Low	0%	311.49	12116.49	97.51	28301.72	29.90	6701.91	-1.23	-3189.15	24.75	-10365.63	107.58	-4410.60	3.79	-26.70	-1.09	-2868.55	-12.96	-3114.07	-5.14	-2277.14	-13.19	-6.90	-0.04	-16.37	-0.04	40594.41	-3.11	-11428.31	9.95	-4232.12	1.22
	Zone 38 (2 ft/day)	0.1X	Low	0%	302.03	12114.94	95.95	28302.47	30.65	6706.66	3.52	-3192.14	21.76	-10369.26	103.95	-4405.90	8.49	-26.70	-1.08	-2867.96	-12.37	-3117.25	-8.33	-2277.06	-13.11	-6.90	-0.04	-16.36	-0.02	40597.64	0.12	-11436.59	1.67	-4232.35	0.99
		10X	Low	0%	384.26	12115.20	96.21	28301.80	29.98	6705.62	2.48	-3192.08	21.82	-10368.56	104.66	-4386.55	27.85	-26.77	-1.15	-2874.82	-19.23	-3065.80	43.12	-2277.70	-13.76	-6.90	-0.04	-16.39	-0.06	40596.51	-1.00	-11452.63	-14.37	-4241.89	-8.55
	Zone 39 (0.5 ft/day)	0.1X	Low	0%	296.97	12114.97	95.98	28302.40	30.58	6706.55	3.40	-3192.11	21.79	-10369.08	104.13	-4404.18	10.21	-26.70	-1.09	-2868.68	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.15	0.12	-4233.69	-0.35
		10X	Low	0%	302.91	12114.94	95.95	28302.42	30.60	6706.61	3.47	-3192.34	21.56	-10370.28	102.94	-4401.02	13.37	-26.70	-1.09	-2868.70	-13.11	-3111.88	-2.96	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.56	0.05	-11439.41	-1.15	-4229.91	3.44
Model Layer 10	Zone 32 (10 ft/day)	0.1X	Low	0%	298.42	12114.44	95.45	28301.45	29.63	6708.72	5.57	-3192.14	21.76	-10369.22	103.99	-4403.96	10.43	-26.70	-1.09	-2868.69	-13.09	-3111.93	-3.01	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40598.08	0.56	-11438.81	-0.55	-4233.38	-0.04
		10X	Low	0%	337.17	12120.03	101.04	28311.56	39.74	6685.56	-17.59	-3192.04	21.86	-10368.92	104.30	-4403.24	11.15	-26.70	-1.09	-2868.68	-13.09	-3111.83	-2.91	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40592.11	-5.41	-11432.87	5.39	-4232.94	0.40
	Zone 33 (10 ft/day)	0.1X	Low	0%	298.96	12115.29	96.30	28301.20	29.38	6708.42	5.28	-3192.16	21.74	-10369.27	103.94	-4404.09	10.30	-26.70	-1.09	-2868.69	-13.09	-3111.94	-3.02	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40598.31	0.79	-11438.93	-0.67	-4233.46	-0.12
		10X	Low	0%	326.80	12111.48	92.49	28312.10	40.28	6691.77	-11.37	-3191.92	21.98	-10368.57	104.64	-4402.35	12.04	-26.70	-1.09	-2868.67	-13.08	-3111.71	-2.79	-2277.10	-13.16	-6.90	-0.04	-16.36	-0.02	40590.60	-6.92	-11432.28	5.99	-4232.42	0.92
	Zone 34 (10 ft/day)	0.1X	Low	0%	296.73	12114.96	95.97	28302.40	30.58	6706.56	3.42	-3192.14	21.76	-10369.20	104.01	-4403.86	10.53	-26.70	-1.09	-2868.69	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11438.29	-0.03	-4233.33	0.01
		10X	Low	0%	296.85	12114.99	96.00	28302.35	30.53	6706.47	3.32	-3192.08	21.81	-10369.07	104.14	-4404.22	10.17	-26.70	-1.09	-2868.68	-13.09	-3111.96	-3.03	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.42	-0.10	-11438.02	0.24	-4233.41	-0.07
	Zone 35 (5 ft/day)	0.1X	Low	0%	296.68	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.13	21.77	-10369.21	104.01	-4403.91	10.48	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.24	0.02	-4233.35	-0.01
		10X	Low	0%	297.20	12114.98	95.99	28302.38	30.55	6706.51	3.37	-3192.14	21.76	-10369.06	104.16	-4403.75	10.64	-26.70	-1.09	-2868.69	-13.09	-3111.86	-2.94	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.46	-0.06	-11438.47	-0.21	-4233.23	0.11
	Zone 36 (5 ft/day)	0.1X	Low	0%	296.75	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.03	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.10	-3111.87	-2.95	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.28	-0.01	-4233.44	-0.10
		10X	Low	0%	297.54	12114.96	95.97	28302.40	30.58	6706.56	3.41	-3192.14	21.76	-10369.22	103.99	-4403.96	10.43	-26.70	-1.09	-2868.65	-13.06	-3112.19	-3.26	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.16	0.10	-4232.69	0.65
	Zone 37 (0.1 ft/day)	0.1X	Low	0%	301.73	12115.01	96.03	28302.20	30.38	6706.42	3.27	-3192.20	21.70	-10369.40	103.82	-4401.51	12.89	-26.70	-1.08	-2868.56	-12.96	-3112.67	-3.75	-2277.08	-13.13	-6.90	-0.04	-16.36	-0.02	40597.29	-0.23	-11440.07	-1.81	-4232.70	0.64
		10X	Low	0%	295.31	12114.98	96.00	28302.96	31.14	6706.46	3.32	-3191.82	22.07	-10368.20	105.01	-4414.85	-0.46	-26.74	-1.12	-2869.22	-13.63	-3108.71	0.21	-2277.31	-13.37	-6.90	-0.04	-16.34	-0.01	40597.80	0.29	-11431.86	6.41	-4235.59	-2.25
	Zone 38 (2 ft/day)	0.1X	Low	0%	302.05	12114.94	95.95	28302.47	30.65	6706.66	3.51	-3192.14	21.76	-10369.26	103.95	-4405.82	8.57	-26.70	-1.08	-2868.40	-12.81	-3116.80	-7.88	-2277.06	-13.11	-6.90	-0.04	-16.35	-0.02	40597.63	0.11	-11436.67	1.60	-4232.31	1.03
		10X	Low	0%	369.02	12115.18	96.19	28301.87	30.05	6705.72	2.58	-3192.09	21.81	-10368.61	104.60	-4388.41	25.98	-26.76	-1.15	-2870.31	-14.71	-3072.92	36.00	-2277.67	-13.72	-6.90	-0.04	-16.40	-0.06	40596.63	-0.89	-11451.03	-12.77	-4241.82	-8.48
	Zone 39 (0.1 ft/day)	0.1X	Low	0%	296.71	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.14	21.76	-10369.19	104.02	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.29	-0.02	-4233.38	-0.04
		10X	Low	0%	297.51	12114.96	95.97	28302.40	30.58	6706.55	3.41	-3192.08	21.82	-10369.16	104.05	-4403.77	10.63	-26.70	-1.09	-2868.68	-13.09	-3111.93	-3.01	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.05	0.22	-4232.93	0.41
Model Layer 1 (storage coefficient = 0.001)	Zone 31	0.1X	Low	0%	297.13	12115.11	96.12	28302.50	30.68	6706.58	3.43	-3192.13	21.76	-10369.19	104.02	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.43	-0.08	-11438.38	-0.12	-4233.34	0.00
		10X	Low	0%	301.42	12115.15	96.16	28302.48	30.65	6706.58	3.44	-3192.13	21.77	-10369.18	104.03	-4403.90	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40601.86	4.34	-11438.34	-0.08	-4233.30	0.04
	Zone 32	0.1X	Low	0%	296.79	12115.03	96.04	28302.36	30.54	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11438.35	-0.08	-4233.35	-0.01
		10X	Low	0%	297.61	12114.33	95.35	28302.82	31.00	6706.57	3.43	-3192.13	21.77	-10369.18	104.03	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.28	-0.24	-11437.43	0.83	-4233.29	0.06
	Zone 33	0.1X	Low	0%	296.92	12115.10	96.11	28302.34	30.52	6706.56	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.63	0.11	-11438.32	-0.06	-4233.35	-0.01
		10X	Low	0%	297.75	12113.61	94.63	28302.98	31.16	6706.53	3.38	-3192.13	21.76	-10369.19	104.03	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40596.34	-1.18	-11437.64	0.63	-4233.27	0.07
	Zone 34	0.1X	Low	0%	296.86	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.14	21.76	-10369.21	104.00	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.06	0.20	-4233.37	-0.03
		10X	Low	0%	299.27	12114.96	95.97	28302.42	30.60	6706.57	3.43	-3192.05	21.85	-10369.01	104.21	-4403.86	10.53	-26.70	-1.09	-2868.69	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.55	0.04	-11440.24	-1.97	-4233.08	0.26
	Zone 35	0.1X	Low	0%	296.68	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.14	21.76	-10369.21	104.00	-4403.89	10.50	-26.70	-1.09	-2868.68	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.24	0.02	-4233.32	0.02
		10X	Low	0%	297.32	12114.97	95.98	28302.40	30.57	6706.55	3.40	-3192.10	21.80	-10369.02	104.20	-4403.88	10.51	-26.70	-1.09	-2868.70	-13.10	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.49	-0.23	-4233.52	-0.18
	Zone 36	0.1X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.76	-10369.20	104.02	-4403.89	10.50	-26.70	-1.09	-2868.68	-13.09	-3111.92	-3.00	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.01	-4233.32	0.02
		10X	Low	0%	297.21	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.12	21.78	-10369.13	104.08	-4403.87	10.52	-26.72	-1.11	-2868.76	-13.17	-3111.92	-2.99	-2277.17	-13.23	-6.90	-0.04	-16.36	-0.02	40597.51	0.00	-11438.34	-0.07	-4233.57	-0.23
	Zone 37	0.1X	Low	0%	296.71	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.76	-10369.19	104.03	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.22	0.04	-4233.34	0.00
		10X	Low	0%	297.02	12114.98	95.99	28302.36	30.54	6706.54	3.40	-3192.12	21.78	-10369.22	104.00	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.49	-0.03	-11438.63	-0.37	-4233.33	0.01
	Zone 39	0.1X	Low	0%	296.68	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.03	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.01	-4233.34	0.00
		10X	Low	0%	296.72	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.14	21.76	-10369.21	104.00	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.33	-0.07	-4233.36	-0.02
Model Layer 2 (storage coefficient = 0.001)	Zone 31	0.1X	Low	0%	297.14	12115.10	96.11	28302.50	30.68	6706.57	3.43	-3192.13	21.76	-10369.19	104.02	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.40	-0.12	-11438.37	-0.11	-4233.34	0.00
		10X	Low	0%	302.30	12115.26	96.28	28302.53	30.71	6706.60	3.46	-3192.13	21.77	-10369.18	104.03	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40602.39	4.87	-11438.50	-0.24	-4233.30	0.04
	Zone 32	0.1X	Low	0%	297.00	12115.03	96.04	28302.30	30.48	6706.54	3.40	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.76	0.24	-11438.40	-0.13	-4233.35	-0.01
		10X	Low	0%	301.01	12114.36	95.37	28303.43	31.61	6706.65	3.50	-3192.13	21.76	-10369.19	104.02	-4403.92	10.47	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40595.11	-2.40	-11436.92	1.34	-4233.24	0.10
	Zone 33	0.1X	Low	0%	297.20	12115.02	96.03	28302.48	30.66	6706.56	3.42	-3192.13	21.77	-10369.18	104.03	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.70	0.18	-11438.08	0.18	-4233.35	-0.01
		10X	Low	0%	298.67	12114.45	95.46	28301.61	29.78	6706.45	3.31	-3192.17	21.73	-10369.28	103.93	-4404.00	10.39	-26.70	-1.09	-2868.69	-13.10	-3111.93	-3.01	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40595.75	-1.77	-11440.07	-1.81	-4233.29	0.05
	Zone 34	0.1X	Low	0%	297.14	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.76	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11437.83	0.43	-4233.37	-0.03
		10X	Low	0%	301.31	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.12	21.78	-10369.18	104.04	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.10	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11442.53	-4.27	-4233.01	0.33
	Zone 35	0.1X	Low	0%	296.73	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.14	21.76	-10369.26	103.96	-4403.90	10.49	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.18	0.08	-4233.27	0.07
		10X	Low	0%	299.10	12114.97	95.98	28302.38	30.56	6706.53	3.39	-3192.02	21.87	-10368.52	104.69	-4403.84	10.55	-26.71	-1.09	-2868.73	-13.13	-3111.94	-3.01	-2277.16	-13.21	-6.90	-0.04	-16.36	-0.02	40597.50	-0.02	-11439.10	-0.83	-4234.02	-0.68
	Zone 36	0.1X	Low	0%	296.74	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.14	21.76	-10369.21	104.00	-4403.90	10.49	-26.70	-1.09	-2868.66	-13.07	-3111.92	-3.00	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.24	0.03	-4233.21	0.13
		10X	Low	0%	298.99	12114.97	95.98	28302.39	30.57	6706.54	3.40	-3192.08	21.82	-10368.97	104.25	-4403.81	10.59	-26.74	-1.13	-2868.91	-13.32	-3111.92	-3.00	-2277.27	-13.32	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.53	-0.27	-4234.62	-1.28
	Zone 37	0.1X	Low	0%	296.96	12114.96	95.97	28302.43	30.61	6706.56	3.42	-3192.14	21.76	-10369.17	104.04	-4403.88	10.51	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.02	0.24	-4233.34	0.00
		10X	Low	0%	298.78	12115.04	96.05	28302.12	30.30	6706.50	3.35	-3192.10	21.80	-10369.40	103.81	-4403.95	10.44	-26.70	-1.09	-2868.69	-13.10	-3111.93	-3.01	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.41	-0.11	-11440.70	-2.44	-4233.38	-0.04
	Zone 39	0.1X	Low	0%	296.70	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.03	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.24	0.02	-4233.34	0.00
		10X	Low	0%	296.80	12114.97	95.98	28302.39	30.57	6706.55	3.40	-3192.15	21.75	-10369.24	103.98	-4403.92	10.47	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.45	-0.18	-4233.39	-0.05
Model Layer 3 (storage coefficient = 0.001)	Zone 26	0.1X	Low	0%	297.39	12114.94	95.95	28302.48	30.66	6706.57	3.42	-3192.13	21.77	-10369.18	104.03	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.55	0.03	-11437.68	0.58	-4233.35	-0.01
		10X	Low	0%	301.82	12115.17	96.19	28301.55	29.73	6706.41	3.27	-3192.18	21.72	-10369.30	103.91	-4404.02	10.37	-26.70	-1.09	-2868.69	-13.10	-3111.93	-3.01	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.24	-0.28	-11444.05	-5.78	-4233.21	0.13
	Zone 31	0.1X	Low	0%	299.01	12114.11	95.13	28301.90	30.08	6706.42	3.28	-3192.13	21.77	-10369.18	104.03	-4403.87	10.52	-26.70	-1.09	-2868.69	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40595.02	-2.50	-11436.96	1.30	-4233.35	-0.01
		10X	Low	0%	352.76	12124.35	105.36	28308.04	36.22	6708.00	4.85	-3192.16	21.74	-10369.27	103.95	-4404.11	10.28	-26.70	-1.09	-2868.69	-13.10	-3111.95	-3.03	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40624.11	26.59	-11451.49	-13.23	-4233.24	0.10
	Zone 32	0.1X	Low	0%	297.56	12113.44	94.45	28301.08	29.26	6706.29	3.15	-3192.12	21.78	-10369.17	104.05	-4403.84	10.55	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40595.30	-2.22	-11436.58	1.68	-4233.36	-0.02
		10X	Low	0%	365.16	12129.99	111.00	28315.45	43.63	6709.15	6.01	-3192.23	21.67	-10369.43	103.79	-4404.42	9.97	-26.71	-1.09	-2868.70	-13.11	-3111.98	-3.06	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40619.27	21.75	-11454.84	-16.58	-4233.07	0.27
	Zone 33	0.1X	Low	0%	299.36	12114.94	95.95	28302.79	30.97	6706.59	3.44	-3192.12	21.78	-10369.17	104.05	-4403.85	10.55	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.71	0.20	-11436.29	1.98	-4233.40	-0.06
		10X	Low	0%	314.10	12115.25	96.26	28298.51	26.69	6706.21	3.06	-3192.23	21.66	-10369.42	103.79	-4404.32	10.07	-26.71	-1.09	-2868.70	-13.11	-3111.97	-3.05	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40595.71	-1.81	-11457.99	-19.72	-4232.80	0.54
	Zone 34	0.1X	Low	0%	297.45	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.17	104.04	-4403.89	10.50	-26.70	-1.09	-2868.68	-13.09	-3111.92	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.50	-0.02	-11437.56	0.70	-4233.38	-0.04
		10X	Low	0%	303.87	12114.97	95.98	28302.40	30.57	6706.54	3.40	-3192.18	21.72	-10369.38	103.83	-4403.93	10.46	-26.70	-1.09	-2868.70	-13.10	-3111.92	-3.00	-2277.13	-13.19	-6.90	-0.04	-16.36	-0.02	40597.56	0.04	-11445.25	-6.99	-4232.90	0.44
	Zone 35	0.1X	Low	0%	296.97	12114.96	95.97	28302.41	30.59	6706.57	3.43	-3192.27	21.62	-10369.75	103.46	-4403.92	10.47	-26.70	-1.09	-2868.66	-13.06	-3111.90	-2.98	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11437.57	0.69	-4232.96	0.38
		10X	Low	0%	315.25	12115.02	96.03	28302.28	30.46	6706.40	3.26	-3190.72	23.17	-10363.69	109.52	-4403.57	10.82	-26.73	-1.11	-2868.98	-13.39	-3112.05	-3.13	-2277.40	-13.45	-6.90	-0.04	-16.36	-0.02	40597.39	-0.13	-11445.13	-6.87	-4237.19	-3.85
	Zone 36	0.1X	Low	0%	296.86	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.14	21.76	-10369.23	103.98	-4403.91	10.48	-26.70	-1.08	-2868.65	-13.06	-3111.92	-2.99	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.21	0.05	-4233.07	0.28
		10X	Low	0%	301.26	12114.97	95.98	28302.39	30.57	6706.54	3.39	-3192.03	21.86	-10368.76	104.45	-4403.74	10.65	-26.75	-1.14	-2868.99	-13.40	-3111.92	-3.00	-2277.40	-13.45	-6.90	-0.04	-16.36	-0.02	40597.50	-0.02	-11438.76	-0.50	-4236.13	-2.79
	Zone 37	0.1X	Low	0%	297.33	12114.94	95.95	28302.49	30.67	6706.57	3.42	-3192.13	21.76	-10369.16	104.06	-4403.88	10.51	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.55	0.04	-11437.75	0.51	-4233.34	0.00
		10X	Low	0%	301.27	12115.21	96.22	28301.50	29.68	6706.40	3.26	-3192.15	21.75	-10369.54	103.67	-4404.00	10.39	-26.70	-1.09	-2868.70	-13.10	-3111.94	-3.02	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.14	-0.38	-11443.68	-5.42	-4233.39	-0.05
	Zone 38	0.1X	Low	0%	296.73	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.76	-10369.19	104.02	-4403.89	10.50	-26.71	-1.10	-2868.68	-13.09	-3111.92	-3.00	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.01	-4233.28	0.06

Table 5-2. Sensitivity Analysis -- Inter-basin Flows and Stream Percolation

units: Acre-feet per year

Parameters			Multiplier	Sensitivity	diff (%)	Sum of absolute fluxes	Piru to Fillmore in System		Piru to Fillmore in System		Piru to Fillmore in System		Fillmore to Santa Paula in		Fillmore to Santa Paula in		Fillmore to Santa Paula		Santa Paula to		Santa Paula to Mound ib		Santa Paula to Mound ib		Santa Paula to Oxnard in		Santa Paula to		Santa Paula to		STR Percolation in Piru		STR Percolation in Fillmore		STR Percolation in Santa	
						Default = 129641.846	Default = 12018.990		Default = 28271.821		Default = 6703.143		Default = -3213.897		Default = -10473.213		Default = -4414.391		Default = -25.615		Default = -2855.593		Default = -3108.92		Default = -2263.948		Default = -6.86		Default = -16.337		Default = 40597.518		Default = -11438.262		Default = -4233.34	
						Sum of absolute diff	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.
Storage Coefficient		Zone 38	10X	Low	0%	297.40	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.12	21.78	-10369.15	104.06	-4403.87	10.52	-26.61	-1.00	-2868.71	-13.11	-3111.91	-2.99	-2277.18	-13.23	-6.90	-0.04	-16.36	-0.02	40597.51	0.00	-11438.32	-0.06	-4233.96	-0.62
		Zone 39	0.1X	Low	0%	296.85	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.13	21.76	-10369.20	104.01	-4403.91	10.48	-26.70	-1.09	-2868.69	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.21	0.05	-4233.18	0.16
			10X	Low	0%	299.05	12114.97	95.98	28302.39	30.56	6706.53	3.39	-3192.13	21.77	-10369.09	104.12	-4403.74	10.65	-26.70	-1.09	-2868.69	-13.10	-3111.94	-3.02	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.48	-0.04	-11438.77	-0.50	-4234.93	-1.59
	Model Layer 4 (storage coefficient = 0.001)	Zone 26	0.1X	Low	0%	297.53	12114.94	95.95	28302.51	30.69	6706.57	3.43	-3192.13	21.77	-10369.18	104.04	-4403.88	10.52	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.56	0.04	-11437.58	0.68	-4233.35	-0.01
			10X	Low	0%	302.62	12115.23	96.24	28301.32	29.50	6706.38	3.23	-3192.20	21.70	-10369.34	103.87	-4404.05	10.34	-26.70	-1.09	-2868.69	-13.10	-3111.94	-3.02	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.16	-0.35	-11445.07	-6.81	-4233.20	0.14
		Zone 31	0.1X	Low	0%	298.72	12113.75	94.76	28301.68	29.85	6706.37	3.22	-3192.13	21.77	-10369.18	104.03	-4403.86	10.53	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40595.16	-2.36	-11436.48	1.78	-4233.35	-0.01
			10X	Low	0%	359.62	12127.21	108.22	28309.80	37.97	6708.43	5.29	-3192.17	21.72	-10369.30	103.92	-4404.18	10.21	-26.70	-1.09	-2868.69	-13.10	-3111.96	-3.03	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40622.36	24.84	-11455.12	-16.85	-4233.22	0.12
		Zone 32	0.1X	Low	0%	298.32	12111.34	92.36	28299.42	27.60	6705.94	2.80	-3192.11	21.79	-10369.13	104.09	-4403.77	10.62	-26.70	-1.09	-2868.68	-13.09	-3111.90	-2.98	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40592.87	-4.65	-11434.25	4.01	-4233.36	-0.01
			10X	Low	0%	449.25	12150.27	131.29	28331.49	59.67	6712.46	9.31	-3192.38	21.52	-10369.82	103.39	-4405.09	9.30	-26.71	-1.09	-2868.71	-13.12	-3112.06	-3.14	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40642.65	45.13	-11477.13	-38.87	-4233.18	0.16
		Zone 33	0.1X	Low	0%	300.50	12114.91	95.93	28303.03	31.21	6706.61	3.47	-3192.11	21.79	-10369.15	104.07	-4403.82	10.57	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.75	0.23	-11435.47	2.79	-4233.40	-0.06
			10X	Low	0%	319.58	12115.52	96.53	28296.22	24.40	6705.99	2.84	-3192.33	21.57	-10369.65	103.57	-4404.59	9.80	-26.71	-1.09	-2868.71	-13.12	-3112.00	-3.08	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40595.36	-2.16	-11465.88	-27.62	-4232.79	0.55
		Zone 34	0.1X	Low	0%	297.50	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.17	104.04	-4403.89	10.50	-26.70	-1.09	-2868.68	-13.09	-3111.92	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.50	-0.01	-11437.51	0.75	-4233.39	-0.05
			10X	Low	0%	304.35	12114.98	95.99	28302.39	30.57	6706.54	3.39	-3192.18	21.72	-10369.41	103.80	-4403.93	10.46	-26.70	-1.09	-2868.70	-13.10	-3111.93	-3.01	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40597.56	0.04	-11445.73	-7.47	-4232.88	0.47
		Zone 35	0.1X	Low	0%	297.28	12114.96	95.97	28302.42	30.60	6706.58	3.44	-3192.37	21.53	-10370.13	103.08	-4403.95	10.45	-26.70	-1.09	-2868.64	-13.04	-3111.89	-2.97	-2277.08	-13.13	-6.90	-0.04	-16.36	-0.02	40597.54	0.02	-11437.16	1.10	-4232.53	0.81
			10X	Low	0%	328.88	12115.05	96.06	28302.21	30.38	6706.31	3.17	-3189.82	24.07	-10359.95	113.26	-4403.36	11.03	-26.74	-1.13	-2869.18	-13.59	-3112.13	-3.21	-2277.58	-13.63	-6.90	-0.04	-16.36	-0.02	40597.32	-0.20	-11449.14	-10.88	-4241.53	-8.19
		Zone 36	0.1X	Low	0%	297.32	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.16	21.74	-10369.31	103.91	-4403.93	10.46	-26.70	-1.08	-2868.62	-13.03	-3111.91	-2.99	-2277.07	-13.12	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.13	0.13	-4232.53	0.81
			10X	Low	0%	309.11	12114.98	95.99	28302.37	30.55	6706.51	3.37	-3191.87	22.02	-10368.06	105.15	-4403.54	10.85	-26.78	-1.16	-2869.30	-13.70	-3111.95	-3.03	-2277.63	-13.68	-6.90	-0.04	-16.36	-0.02	40597.47	-0.05	-11439.56	-1.30	-4241.53	-8.19
		Zone 37	0.1X	Low	0%	297.44	12114.94	95.95	28302.51	30.69	6706.57	3.43	-3192.13	21.76	-10369.17	104.04	-4403.88	10.51	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.56	0.04	-11437.66	0.60	-4233.33	0.01
			10X	Low	0%	302.39	12115.25	96.26	28301.31	29.49	6706.35	3.20	-3192.12	21.78	-10369.41	103.81	-4404.02	10.38	-26.71	-1.09	-2868.70	-13.11	-3111.95	-3.03	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40597.00	-0.52	-11444.61	-6.35	-4233.47	-0.13
		Zone 38	0.1X	Low	0%	296.74	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.76	-10369.20	104.02	-4403.90	10.49	-26.67	-1.06	-2868.72	-13.12	-3111.92	-3.00	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.01	-4233.25	0.09
			10X	Low	0%	297.81	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.12	21.78	-10369.13	104.09	-4403.85	10.54	-26.98	-1.37	-2868.40	-12.81	-3111.91	-2.99	-2277.20	-13.26	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.35	-0.09	-4234.22	-0.88
		Zone 39	0.1X	Low	0%	296.90	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.13	21.76	-10369.21	104.00	-4403.92	10.47	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.19	0.08	-4233.13	0.21
			10X	Low	0%	300.15	12114.97	95.98	28302.38	30.56	6706.52	3.38	-3192.11	21.79	-10368.96	104.25	-4403.60	10.79	-26.70	-1.09	-2868.69	-13.10	-3111.96	-3.04	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.47	-0.05	-11439.04	-0.78	-4235.45	-2.11
	Model Layer 5 (storage coefficient = 0.001)	Zone 26	0.1X	Low	0%	297.52	12114.94	95.95	28302.51	30.69	6706.57	3.43	-3192.13	21.77	-10369.18	104.04	-4403.88	10.51	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.55	0.04	-11437.59	0.68	-4233.35	-0.01
			10X	Low	0%	302.65	12115.23	96.24	28301.32	29.49	6706.38	3.23	-3192.20	21.70	-10369.34	103.87	-4404.05	10.34	-26.70	-1.09	-2868.69	-13.10	-3111.94	-3.02	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.16	-0.35	-11445.10	-6.83	-4233.20	0.14
		Zone 31	0.1X	Low	0%	298.33	12113.95	94.96	28301.78	29.96	6706.40	3.25	-3192.13	21.77	-10369.18	104.03	-4403.87	10.52	-26.70	-1.09	-2868.69	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40595.58	-1.94	-11436.78	1.48	-4233.34	0.00
			10X	Low	0%	351.12	12125.54	106.55	28308.99	37.17	6708.20	5.06	-3192.17	21.73	-10369.29	103.92	-4404.15	10.24	-26.70	-1.09	-2868.69	-13.10	-3111.95	-3.03	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40619.02	21.50	-11452.66	-14.40	-4233.25	0.09
		Zone 32	0.1X	Low	0%	298.17	12110.76	91.77	28298.88	27.06	6705.84	2.69	-3192.10	21.80	-10369.11	104.10	-4403.75	10.65	-26.70	-1.09	-2868.68	-13.09	-3111.90	-2.98	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40592.38	-5.14	-11433.69	4.57	-4233.35	-0.01
			10X	Low	0%	470.21	12155.77	136.78	28336.47	64.65	6713.46	10.32	-3192.42	21.47	-10369.95	103.26	-4405.30	9.10	-26.71	-1.09	-2868.71	-13.12	-3112.08	-3.16	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40647.13	49.62	-11482.55	-44.29	-4233.25	0.09
		Zone 33	0.1X	Low	0%	300.73	12114.92	95.93	28303.07	31.25	6706.61	3.47	-3192.11	21.79	-10369.14	104.07	-4403.81	10.58	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.76	0.24	-11435.32	2.95	-4233.41	-0.07
			10X	Low	0%	320.86	12115.50	96.51	28295.82	24.00	6705.96	2.81	-3192.34	21.56	-10369.67	103.54	-4404.63	9.76	-26.71	-1.09	-2868.71	-13.12	-3112.01	-3.09	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40595.26	-2.25	-11467.53	-29.27	-4232.74	0.60
		Zone 34	0.1X	Low	0%	297.49	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.17	104.04	-4403.89	10.50	-26.70	-1.09	-2868.68	-13.09	-3111.92	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.50	-0.02	-11437.52	0.74	-4233.39	-0.05
			10X	Low	0%	304.36	12114.98	95.99	28302.39	30.57	6706.54	3.39	-3192.18	21.72	-10369.43	103.79	-4403.93	10.46	-26.70	-1.09	-2868.70	-13.10	-3111.93	-3.01	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40597.56	0.04	-11445.76	-7.49	-4232.88	0.46
		Zone 35	0.1X	Low	0%	297.46	12114.96	95.97	28302.42	30.60	6706.58	3.44	-3192.38	21.52	-10370.25	102.97	-4403.96	10.44	-26.70	-1.08	-2868.63	-13.03	-3111.89	-2.97	-2277.07	-13.12	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11437.07	1.19	-4232.28	1.06
			10X	Low	0%	334.07	12115.06	96.07	28302.19	30.37	6706.29	3.14	-3189.66	24.23	-10358.79	114.42	-4403.25	11.15	-26.75	-1.13	-2869.27	-13.68	-3112.16	-3.24	-2277.64	-13.69	-6.90	-0.04	-16.36	-0.02	40597.29	-0.23	-11450.21	-11.94	-4244.06	-10.72
		Zone 36	0.1X	Low	0%	297.59	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.17	21.73	-10369.36	103.86	-4403.95	10.44	-26.69	-1.08	-2868.60	-13.01	-3111.91	-2.99	-2277.06	-13.11	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.08	0.18	-4232.18	1.16
			10X	Low	0%	314.47	12114.98	95.99	28302.36	30.53	6706.50	3.35	-3191.76	22.13	-10367.58	105.63	-4403.35	11.04	-26.80	-1.19	-2869.53	-13.93	-3111.97	-3.05	-2277.78	-13.83	-6.90	-0.04	-16.36	-0.02	40597.45	-0.07	-11440.14	-1.88	-4245.11	-11.77
		Zone 37	0.1X	Low	0%	297.77	12114.92	95.94	28302.55	30.73	6706.59	3.44	-3192.13	21.76	-10369.17	104.05	-4403.87	10.52	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.58	0.06	-11437.41	0.86	-4233.33	0.01
			10X	Low	0%	304.69	12115.38	96.39	28300.89	29.07	6706.21	3.07	-3192.13	21.76	-10369.45	103.76	-4404.09	10.30	-26.71	-1.09	-2868.70	-13.11	-3111.96	-3.04	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40596.77	-0.74	-11447.22	-8.96	-4233.49	-0.15
		Zone 38	0.1X	Low	0%	296.73	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.76	-10369.20	104.01	-4403.90	10.49	-26.69	-1.07	-2868.66	-13.07	-3111.92	-3.00	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.26	0.00	-4233.21	0.13
			10X	Low	0%	298.81	12114.96	95.98	28302.39	30.57	6706.55	3.40	-3192.11	21.79	-10369.08	104.13	-4403.83	10.56	-26.87	-1.26	-2868.92	-13.33	-3111.90	-2.98	-2277.24	-13.30	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.42	-0.16	-4234.63	-1.29
		Zone 39	0.1X	Low	0%	296.90	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.13	21.76	-10369.22	104.00	-4403.92	10.47	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.19	0.07	-4233.12	0.22
			10X	Low	0%	300.37	12114.97	95.98	28302.37	30.55	6706.52	3.38	-3192.11	21.79	-10368.95	104.26	-4403.59	10.81	-26.70	-1.09	-2868.69	-13.10	-3111.96	-3.04	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.46	-0.05	-11439.10	-0.83	-4235.58	-2.24
	Model Layer 6 (storage coefficient = 0.0005)	Zone 31	0.1X	Low	0%	297.58	12114.44	95.45	28302.07	30.25	6706.47	3.33	-3192.13	21.77	-10369.19	104.03	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40596.42	-1.10	-11437.53	0.73	-4233.34	0.00
			10X	Low	0%	327.70	12120.82	101.83	28306.06	34.24	6707.47	4.32	-3192.15	21.74	-10369.25	103.97	-4404.04	10.35	-26.70	-1.09	-2868.69	-13.10	-3111.94	-3.01	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40610.29	12.77	-11446.26	-7.99	-4233.30	0.04
		Zone 32	0.1X	Low	0%	297.39	12112.71	93.72	28300.48	28.66	6706.16	3.02	-3192.12	21.78	-10369.15	104.07	-4403.81	10.58	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40594.79	-2.72	-11435.82	2.45	-4233.34	0.00
			10X	Low	0%	391.37	12137.18	118.20	28321.21	49.39	6710.35	7.21	-3192.30	21.60	-10369.62	103.59	-4404.65	9.74	-26.71	-1.09	-2868.70	-13.11	-3112.01	-3.09	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40624.32	26.80	-11462.52	-24.26	-4233.30	0.04
		Zone 33	0.1X	Low	0%	299.23	12114.90	95.92	28302.83	31.01	6706.60	3.45	-3192.12	21.78	-10369.16	104.06	-4403.84	10.55	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.66	0.14	-11436.38	1.88	-4233.38	-0.04
			10X	Low	0%	312.38	12115.58	96.59	28298.11	26.29	6706.14	2.99	-3192.28	21.62	-10369.54	103.68	-4404.37	10.02	-26.71	-1.09	-2868.70	-13.11	-3111.98	-3.06	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40596.19	-1.33	-11457.24	-18.98	-4232.96	0.38
		Zone 34	0.1X	Low	0%	297.08	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.18	104.04	-4403.89	10.50	-26.70	-1.09	-2868.68	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.50	-0.01	-11437.90	0.36	-4233.36	-0.02
			10X	Low	0%	300.53	12114.97	95.98	28302.39	30.57	6706.54	3.40	-3192.14	21.76	-10369.34	103.87	-4403.93	10.46	-26.70	-1.09	-2868.69	-13.10	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.01	-11442.10	-3.84	-4233.12	0.22
		Zone 35	0.1X	Low	0%	297.07	12114.96	95.97	28302.41	30.59	6706.57	3.42	-3192.26	21.64	-10369.75	103.47	-4403.93	10.46	-26.70	-1.09	-2868.66	-13.06	-3111.90	-2.98	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11437.65	0.61	-4232.77	0.57
			10X	Low	0%	316.49	12115.01	96.03	28302.29	30.47	6706.41	3.27	-3190.85	23.05	-10363.68	109.54	-4403.54	10.85	-26.73	-1.11	-2868.99	-13.40	-3112.04	-3.12	-2277.39	-13.44	-6.90	-0.04	-16.36	-0.02	40597.39	-0.13	-11444.61	-6.34	-4239.03	-5.69
		Zone 36	0.1X	Low	0%	297.25	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.16	21.74	-10369.29	103.92	-4403.93	10.46	-26.70	-1.08	-2868.63	-13.03	-3111.91	-2.99	-2277.09	-13.14	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.16	0.11	-4232.58	0.76
			10X	Low	0%	308.32	12114.98	95.99	28302.37	30.55	6706.51	3.37	-3191.90	22.00	-10368.16	105.06	-4403.47	10.92	-26.77	-1.15	-2869.27	-13.68	-3111.97	-3.05	-2277.49	-13.54	-6.90	-0.04	-16.36	-0.02	40597.47	-0.05	-11439.56	-1.30	-4240.95	-7.61
		Zone 37	0.1X	Low	0%	297.40	12114.94	95.95	28302.49	30.67	6706.58	3.43	-3192.13	21.76	-10369.19	104.03	-4403.88	10.51	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.56	0.05	-11437.68	0.58	-4233.32	0.02
			10X	Low	0%	302.35	12115.23	96.24	28301.44	29.62	6706.31	3.17	-3192.12	21.77	-10369.26	103.95	-4404.00	10.39	-26.70	-1.09	-2868.70	-13.10	-3111.95	-3.03	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.04	-0.48	-11444.35	-6.09	-4233.51	-0.17
		Zone 38	0.1X	Low	0%	297.04	12115.00	96.01	28302.42	30.60	6706.56	3.42	-3192.13	21.76	-10369.20	104.01	-4403.90	10.49	-26.70	-1.08	-2868.66	-13.06	-3111.92	-3.00	-2277.11	-13.17	-6.90	-0.04	-16.36	-0.02	40597.33	-0.18	-11438.33	-0.07	-4233.21	0.13
			10X	Low	0%	298.77	12114.95	95.97	28302.38	30.56	6706.54	3.40	-3192.11	21.79	-10369.07	104.14	-4403.81	10.58	-26.78	-1.17	-2868.93	-13.34	-3111.88	-2.96	-2277.22	-13.27	-6.90	-0.04	-16.36	-0.02	40597.58	0.07	-11438.44	-0.17	-4234.63	-1.29
		Zone 39	0.1X	Low	0%	296.78	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.76	-10369.21	104.01	-4403.91	10.48	-26.70	-1.09	-2868.69	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.23	0.03	-4233.21	0.13
			10X	Low	0%	298.85	12114.97	95.98	28302.38	30.56	6706.53	3.39	-3192.11	21.78	-10369.04	104.17	-4403.70	10.70	-26.70	-1.09	-2868.69	-13.10	-3111.94	-3.02	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.48	-0.04	-11438.77	-0.51	-4234.61	-1.27
	Model Layer 7 (storage coefficient = 0.0005)	Zone 31	0.1X	Low	0%	297.70	12114.31	95.32	28301.99	30.17	6706.45	3.31	-3192.13	21.77	-10369.19	104.03	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40596.27	-1.24	-11437.33	0.94	-4233.34	0.00
			10X	Low	0%	336.26	12122.66	103.67	28307.38	35.56	6707.77	4.63	-3192.16	21.73	-10369.27	103.94	-4404.09	10.30	-26.70	-1.09	-2868.69	-13.10	-3111.94	-3.02	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40613.18	15.66	-11448.54	-10.27	-4233.30	0.04
		Zone 32	0.1X	Low	0%	297.48	12112.54	93.56	28300.32	28.50	6706.13	2.99	-3192.11	21.78	-10369.14	104.07	-4403.81	10.59	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40594.58	-2.94	-11435.60	2.66	-4233.34	0.00
			10X	Low	0%	398.75	12138.79	119.80	28322.82	50.99	6710.66	7.51	-3192.31	21.59	-10369.65	103.56	-4404.71	9.68	-26.71	-1.09	-2868.70	-13.11	-3112.01	-3.09	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40626.46	28.94	-11464.36	-26.10	-4233.31	0.03
		Zone 33	0.1X	Low	0%	299.33	12114.87	95.88	28302.87	31.05	6706.60	3.46	-3192.12	21.78	-10369.15	104.06	-4403.84	10.55	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.66	0.14	-11436.30	1.97	-4233.38	-0.04
			10X	Low	0%	312.76	12115.88	96.89	28297.70	25.88	6706.10	2.96	-3192.28	21.61	-10369.56	103.66	-4404.40	10.00	-26.71	-1.09	-2868.70	-13.11	-3111.98	-3.06	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40596.21	-1.31	-11457.84	-19.57	-4232.98	0.36
		Zone 34	0.1X	Low	0%	297.10	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.13	21.77	-10369.17	104.04	-4403.89	10.50	-26.70	-1.09	-2868.68	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11437.88	0.39	-4233.36	-0.02
			10X	Low	0%	300.49	12114.97	95.98	28302.39	30.57	6706.54	3.39	-3192.13	21.77	-10369.38	103.83	-4403.94	10.45	-26.70	-1.09	-2868.69	-13.10	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11442.13	-3.87	-4233.14	0.20
		Zone 35	0.1X	Low	0%	297.13	12114.96	95.97	28302.41	30.59	6706.57	3.43	-3192.27	21.63	-10369.78	103.43	-4403.93	10.46	-26.70	-1.09	-2868.65	-13.06	-3111.90	-2.98	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40597.52	0.01	-11437.60	0.66	-4232.72	0.62
			10X	Low	0%	317.77	12115.01	96.03	28302.28	30.46	6706.41	3.26	-3190.78	23.11	-10363.32	109.90	-4403.51	10.88	-26.73	-1.11	-2869.00	-13.41	-3112.05	-3.13	-2277.40	-13.45	-6.90	-0.04	-16.36	-0.02	40597.39	-0.13	-11444.91	-6.65	-4239.53	-6.19
		Zone 36	0.1X	Low	0%	297.45	12114.96	95.97	28302.41	30.58	6706.56	3.42	-3192.16	21.74	-10369.32	103.89	-4404.00	10.39	-26.70	-1.08	-2868.61	-13.02	-3111.89	-2.97	-2277.09	-13.14	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.06	0.20	-4232.35	0.99
			10X	Low	0%	312.90	12114.99	96.00	28302.34	30.52	6706.47	3.33	-3191.83	22.06	-10367.88	105.33	-4402.79	11.60	-26.78	-1.16	-2869.46	-13.87	-3112.23	-3.31	-2277.52	-13.57	-6.90	-0.04	-16.36	-0.02	40597.43	-0.09	-11440.36	-2.10	-4243.24	-9.90
		Zone 37	0.1X	Low	0%	304.23	12114.81	95.82	28302.84	31.02	6706.89	3.75	-3192.08	21.81	-10369.13	104.08	-4403.79	10.60	-26.70	-1.09	-2868.66	-13.07	-3111.85	-2.93	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40598.01	0.50	-11432.62	5.64	-4232.62	0.72
			10X	Low	0%	358.50	12116.55	97.56	28297.93	26.11	6703.20	0.05	-3192.58	21.32	-10369.67	103.54	-4404.80	9.59	-26.72	-1.10	-2868.96	-13.36	-3112.53	-3.61	-2277.31	-13.36	-6.90	-0.04	-16.36	-0.02	40592.60	-4.92	-11495.05	-56.78	-4240.46	-7.12
		Zone 38	0.1X	Low	0%	296.90	12114.97	95.98	28302.40	30.58	6706.56	3.41	-3192.14	21.76	-10369.22	104.00	-4403.93	10.46	-26.70	-1.08	-2868.61	-13.01	-3111.96	-3.04	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40597.48	-0.04	-11438.23	0.04	-4233.08	0.27
			10X	Low	0%	300.95	12114.97	95.98	28302.38	30.56	6706.53	3.39	-3192.07	21.82	-10368.93	104.29	-4403.55	10.84	-26.80	-1.18	-2869.41	-13.82	-3111.48	-2.56	-2277.25	-13.30	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.76	-0.50	-4235.99	-2.65
		Zone 39	0.1X	Low	0%	296.91	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.13	21.77	-10369.21	104.00	-4403.92	10.47	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.01	-11438.15	0.12	-4233.17	0.17
			10X	Low	0%	300.06	12114.98	95.99	28302.37	30.54	6706.51	3.36	-3192.13	21.76	-10369.00	104.21	-4403.62	10.78	-26.70	-1.09	-2868.70	-13.10	-3111.97	-3.05	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.45	-0.07	-11439.44	-1.18	-4235.02	-1.68
	Model Layer 8 (storage coefficient = 0.0005)	Zone 31	0.1X	Low	0%	298.59	12114.54	95.55	28302.09	30.27	6706.46	3.32	-3192.13	21.77	-10369.18	104.03	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40595.33	-2.19	-11437.72	0.54	-4233.34	0.00
			10X	Low	0%	328.78	12121.45	102.47	28306.93	35.11	6707.79	4.65	-3192.17	21.73	-10369.28	103.93	-4404.08	10.31	-26.70	-1.09	-2868.69	-13.10	-3111.94	-3.02	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40609.32	11.80	-11446.60	-8.33	-4233.34	0.00
		Zone 32	0.1X	Low	0%	297.36	12112.79	93.80	28300.42	28.60	6705.90	2.76	-3192.11	21.78	-10369.14	104.07	-4403.80	10.59	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40594.64	-2.88	-11435.79	2.47	-4233.34	0.00
			10X	Low	0%	400.13	12138.07	119.08	28322.57	50.75	6712.88	9.73	-3192.34	21.56	-10369.73	103.49	-4404.79	9.60	-26.71	-1.09	-2868.70	-13.11	-3112.02	-3.10	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40625.74	28.22	-11465.25	-26.99	-4233.50	-0.16
		Zone 33	0.1X	Low	0%	302.09	12114.78	95.79	28302.88	31.06	6707.03	3.89	-3192.09	21.80	-10369.09	104.13	-4403.64	10.75	-26.70	-1.09	-2868.68	-13.09	-3111.89	-2.97	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.90	0.38	-11434.36	3.90	-4233.32	0.02
			10X	Low	0%	330.50	12117.51	98.52	28297.76	25.94	6701.91	-1.23	-3192.59	21.31	-10370.37	102.85	-4406.33	8.06	-26.71	-1.09	-2868.72	-13.13	-3112.20	-3.28	-2277.17	-13.22	-6.90	-0.04	-16.36	-0.02	40594.50	-3.01	-11476.49	-38.23	-4233.91	-0.57
		Zone 34	0.1X	Low	0%	297.56	12114.96	95.97	28302.42	30.60	6706.59	3.45	-3192.12	21.78	-10369.15	104.07	-4403.82	10.57	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.55	0.04	-11437.59	0.68	-4233.33	0.01
			10X	Low	0%	302.23	12115.04	96.05	28302.19	30.37	6706.19	3.05	-3192.23	21.67	-10369.62	103.59	-4404.61	9.78	-26.71	-1.09	-2868.70	-13.11	-3112.00	-3.08	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40597.18	-0.34	-11444.96	-6.70	-4233.50	-0.16
		Zone 35	0.1X	Low	0%	297.46	12114.95	95.96	28302.45	30.63	6706.63	3.49	-3192.24	21.65	-10369.72	103.50	-4404.99	9.40	-26.70	-1.09	-2868.65	-13.06	-3111.73	-2.81	-2277.09	-13.14	-6.90	-0.04	-16.36	-0.02	40597.57	0.05	-11436.78	1.48	-4232.19	1.15
			10X	Low	0%	341.21	12115.25	96.26	28301.94	30.12	6705.82	2.68	-3191.14	22.75	-10364.26	108.95	-4393.39	21.00	-26.73	-1.11	-2869.02	-13.43	-3113.68	-4.76	-2277.47	-13.52	-6.90	-0.04	-16.37	-0.03	40596.89	-0.63	-11452.77	-14.51	-4244.76	-11.42
		Zone 36	0.1X	Low	0%	297.75	12114.95	95.96	28302.43	30.61	6706.61	3.46	-3192.17	21.73	-10369.36	103.85	-4404.83	9.56	-26.70	-1.08	-2868.60	-13.01	-3111.61	-2.69	-2277.07	-13.12	-6.90	-0.04	-16.36	-0.02	40597.56	0.04	-11437.38	0.89	-4231.66	1.68
			10X	Low	0%	336.55	12115.15	96.16	28302.08	30.26	6706.04	2.90	-3191.84	22.06	-10367.64	105.57	-4394.96	19.43	-26.74	-1.12	-2869.47	-13.87	-3114.83	-5.91	-2277.67	-13.72	-6.90	-0.04	-16.38	-0.04	40597.02	-0.50	-11446.74	-8.48	-4249.83	-16.49
		Zone 37	0.1X	Low	0%	307.74	12114.75	95.76	28303.00	31.18	6707.13	3.98	-3192.02	21.88	-10369.02	104.20	-4404.30	10.09	-26.70	-1.09	-2868.64	-13.05	-3111.67	-2.75	-2277.08	-13.14	-6.90	-0.04	-16.36	-0.02	40598.19	0.67	-11430.01	8.26	-4231.68	1.66
			10X	Low	0%	402.72	12117.39	98.40	28296.54	24.72	6700.92	-2.22	-3193.25	20.65	-10370.87	102.35	-4399.76	14.63	-26.73	-1.12	-2869.16	-13.57	-3114.33	-5.41	-2277.52	-13.57	-6.90	-0.04	-16.37	-0.04	40590.47	-7.05	-11520.77	-82.51	-4249.78	-16.44
		Zone 38	0.1X	Low	0%	297.09	12114.96	95.97	28302.41	30.59	6706.57	3.43	-3192.14	21.76	-10369.23	103.98	-4404.18	10.21	-26.70	-1.09	-2868.64	-13.04	-3112.00	-3.08	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11438.01	0.25	-4232.87	0.47
			10X	Low	0%	306.47	12115.02	96.03	28302.30	30.48	6706.40	3.26	-3192.07	21.82	-10368.85	104.36	-4401.15	13.24	-26.69	-1.07	-2869.13	-13.54	-3111.00	-2.08	-2277.26	-13.32	-6.90	-0.04	-16.39	-0.05	40597.37	-0.15	-11440.66	-2.40	-4237.97	-4.63
		Zone 39	0.1X	Low	0%	297.14	12114.96	95.97	28302.41	30.58	6706.56	3.42	-3192.12	21.78	-10369.19	104.02	-4403.92	10.47	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11438.01	0.26	-4233.12	0.22
			10X	Low	0%	301.81	12114.99	96.00	28302.32	30.50	6706.45	3.31	-3192.23	21.66	-10369.18	104.03	-4403.61	10.79	-26.71	-1.09	-2868.70	-13.11	-3112.02	-3.10	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40597.39	-0.13	-11440.85	-2.59	-4235.58	-2.24
	Model Layer 9 (storage coefficient = 0.0005)	Zone 31	0.1X	Low	0%	608.29	12109.52	90.53	28316.55	44.73	6718.94	15.80	-3191.08	22.82	-10369.30	103.91	-4404.36	10.03	-26.69	-1.07	-2868.46	-12.86	-3110.30	-1.38	-2276.91	-12.96	-6.90	-0.04	-16.35	-0.01	40616.06	18.54	-11232.85	205.41	-4165.15	68.19
			10X	Low	0%	616.66	12112.59	93.61	28318.99	47.17	6719.83	16.69	-3191.10	22.79	-10369.36	103.86	-4404.47	9.92	-26.69	-1.07	-2868.46	-12.87	-3110.31	-1.39	-2276.91	-12.97	-6.90	-0.04	-16.35	-0.01	40621.96	24.44	-11236.61	201.65	-4165.16	68.19
		Zone 32	0.1X	Low	0%	604.38	12107.74	88.75	28314.93	43.11	6718.11	14.97	-3191.06	22.83	-10369.25	103.96	-4404.27	10.12	-26.69	-1.07	-2868.46	-12.86	-3110.29	-1.37	-2276.91	-12.96	-6.90	-0.04	-16.35	-0.01	40614.17	16.66	-11230.79	207.47	-4165.15	68.19
			10X	Low	1%	651.87	12129.78	110.79	28334.31	62.49	6727.46	24.31	-3191.29	22.61	-10369.84	103.38	-4405.31	9.08	-26.69	-1.08	-2868.47	-12.88	-3110.40	-1.48	-2276.93	-12.98	-6.90	-0.04	-16.35	-0.01	40639.14	41.62	-11257.17	181.09	-4165.31	68.03
		Zone 33	0.1X	Low	0%	617.14	12109.38	90.39	28317.20	45.38	6720.22	17.08	-3191.01	22.89	-10369.09	104.13	-4403.76	10.63	-26.69	-1.07	-2868.45	-12.86	-3110.23	-1.31	-2276.90	-12.95	-6.90	-0.04	-16.35	-0.01	40617.11	19.60	-11227.81	210.46	-4164.98	68.36
			10X	Low	0%	525.83	12114.08	95.09	28311.95	40.13	6707.06	3.91	-3191.92	21.98	-10371.57	101.64	-4410.30	4.09	-26.69	-1.08	-2868.53	-12.94	-3110.99	-2.07	-2277.00	-13.06	-6.90	-0.04	-16.35	-0.02	40609.31	11.79	-11286.47	151.79	-4167.12	66.22
		Zone 34	0.1X	Low	0%	610.01	12109.69	90.70	28316.75	44.93	6719.10	15.96	-3191.07	22.83	-10369.25	103.96	-4404.18	10.21	-26.69	-1.07	-2868.46	-12.86	-3110.28	-1.36	-2276.91	-12.96	-6.90	-0.04	-16.35	-0.01	40616.40	18.89	-11232.28	205.98	-4165.09	68.25
			10X	Low	0%	595.48	12109.95	90.96	28316.22	44.40	6718.09	14.94	-3191.24	22.66	-10369.82	103.39	-4406.19	8.20	-26.69	-1.08	-2868.48	-12.88	-3110.51	-1.59	-2276.94	-12.99	-6.90	-0.04	-16.35	-0.01	40615.54	18.02	-11241.52	196.74	-4165.77	67.57
		Zone 35	0.1X	Low	0%	609.33	12109.65	90.66	28316.81	44.99	6719.19	16.04	-3191.08	22.82	-10369.37	103.84	-4407.37	7.02	-26.69	-1.07	-2868.45	-12.85	-3109.81	-0.89	-2276.88	-12.93	-6.90	-0.04	-16.35	-0.01	40616.49	18.97	-11230.56	207.70	-4163.86	69.48
			10X	Low	0%	601.92	12110.37	91.38	28315.66	43.83	6717.26	14.11	-3191.17	22.72	-10368.71	104.50	-4374.73	39.66	-26.70	-1.09	-2868.57	-12.98	-3115.13	-6.21	-2277.23	-13.28	-6.90	-0.04	-16.38	-0.04	40614.74	17.22	-11258.63	179.63	-4178.12	55.22
		Zone 36	0.1X	Low	0%	609.23	12109.66	90.67	28316.78	44.96	6719.14	16.00	-3191.10	22.80	-10369.44	103.77	-4406.84	7.55	-26.69	-1.07	-2868.46	-12.86	-3109.48	-0.55	-2276.87	-12.92	-6.90	-0.04	-16.35	-0.01	40616.45	18.93	-11231.10	207.17	-4163.43	69.91
			10X	Low	0%	602.68	12110.21	91.22	28315.87	44.05	6717.66	14.52	-3190.98	22.92	-10368.02	105.19	-4379.92	34.48	-26.71	-1.09	-2868.48	-12.89	-3118.44	-9.51	-2277.33	-13.38	-6.90	-0.04	-16.39	-0.06	40615.04	17.52	-11253.46	184.81	-4182.34	51.00
		Zone 37	0.1X	Low	0%	623.73	12109.35	90.36	28317.47	45.65	6720.00	16.85	-3190.89	23.01	-10368.85	104.37	-4405.31	9.08	-26.69	-1.07	-2868.41	-12.82	-3109.80	-0.88	-2276.86	-12.91	-6.90	-0.04	-16.35	-0.01	40617.42	19.91	-11221.84	216.42	-4162.98	70.36
			10X	Low	0%	458.46	12113.47	94.48	28308.94	37.12	6709.17	6.02	-3193.06	20.83	-10373.75	99.46	-4394.85	19.54	-26.72	-1.11	-2868.91	-13.31	-3115.18	-6.26	-2277.41	-13.47	-6.90	-0.04	-16.38	-0.04	40605.40	7.88	-11345.98	92.28	-4186.73	46.61
		Zone 38	0.1X	Low	0%	609.09	12109.69	90.71	28316.73	44.91	6719.05	15.91	-3191.09	22.81	-10369.35	103.86	-4405.18	9.22	-26.69	-1.07	-2868.49	-12.90	-3110.21	-1.29	-2276.90	-12.95	-6.90	-0.04	-16.35	-0.01	40616.37	18.85	-11232.48	205.79	-4164.54	68.80
			10X	Low	0%	604.24	12109.88	90.89	28316.43	44.61	6718.56	15.42	-3191.04	22.86	-10368.83	104.38	-4396.34	18.05	-26.69	-1.07	-2868.16	-12.57	-3111.19	-2.27	-2277.04	-13.10	-6.90	-0.04	-16.37	-0.04	40615.91	18.39	-11239.81	198.45	-4171.23	62.11
		Zone 39	0.1X	Low	0%	610.64	12109.70	90.71	28316.72	44.90	6719.04	15.89	-3191.06	22.84	-10369.30	103.91	-4404.42	9.97	-26.69	-1.07	-2868.45	-12.86	-3110.27	-1.34	-2276.91	-12.96	-6.90	-0.04	-16.35	-0.01	40616.36	18.84	-11232.42	205.84	-4163.90	69.44
			10X	Low	0%	588.78	12109.80	90.81	28316.48	44.66	6718.70	15.56	-3191.30	22.59	-10369.32	103.89	-4403.81	10.58	-26.69	-1.08	-2868.51	-12.91	-3110.64	-1.72	-2276.96	-13.01	-6.90	-0.04	-16.35	-0.01	40615.96	18.44	-11240.43	197.83	-4177.70	55.64

Table 5-2. Sensitivity Analysis -- Inter-basin Flows and Stream Percolation
units: Acre-feet per year

	Parameters		Multiplier	Sensitivity	diff (%)	Sum of absolute fluxes Default = 129641.846		Piru to Fillmore in System Default = 12018.990		Piru to Fillmore in System Default = 28271.821		Piru to Fillmore in System Default = 6703.143		Fillmore to Santa Paula in Default = -3213.897		Fillmore to Santa Paula in Default = -10473.213		Fillmore to Santa Paula Default = -4414.391		Santa Paula to Default = -25.615		Santa Paula to Mound ib Default = -2855.593		Santa Paula to Mound ib Default = -3108.92		Santa Paula to Oxnard in Default = -2263.948		Santa Paula to Default = -6.86		Santa Paula to Default = -16.337		STR Percolation in Piru Default = 40597.518		STR Percolation in Fillmore Default = -11438.262		STR Percolation in Santa Default = -4233.34	
						Sum of absolute diff	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.
	Model Layer 10 (storage coefficient = 0.0005)	Zone 32	0.1X	Low	1%	729.88	12107.14	88.15	28320.27	48.45	6723.30	20.15	-3181.92	31.98	-10341.31	131.90	-4379.35	35.05	-26.66	-1.05	-2868.11	-12.52	-3108.21	0.71	-2276.60	-12.65	-6.89	-0.03	-16.34	0.00	40621.80	24.28	-11142.79	295.48	-4205.86	27.48
			10X	Low	1%	753.92	12118.03	99.04	28330.41	58.59	6729.50	26.35	-3182.05	31.85	-10341.65	131.57	-4379.95	34.44	-26.66	-1.05	-2868.12	-12.53	-3108.28	0.64	-2276.61	-12.66	-6.89	-0.03	-16.34	0.00	40632.83	35.31	-11155.87	282.40	-4205.90	27.44
		Zone 33	0.1X	Low	1%	740.69	12107.78	88.79	28321.70	49.88	6725.10	21.95	-3181.85	32.05	-10341.13	132.09	-4378.79	35.60	-26.66	-1.05	-2868.10	-12.51	-3108.15	0.77	-2276.59	-12.64	-6.89	-0.03	-16.34	0.00	40623.56	26.05	-11138.61	299.65	-4205.69	27.65
			10X	Low	0%	647.36	12112.46	93.47	28316.41	44.58	6711.88	8.73	-3182.77	31.13	-10343.62	129.60	-4385.38	29.01	-26.67	-1.05	-2868.19	-12.59	-3108.91	0.01	-2276.69	-12.74	-6.89	-0.03	-16.34	0.00	40615.66	18.15	-11197.53	240.73	-4207.82	25.52
		Zone 34	0.1X	Low	1%	733.41	12108.09	89.10	28321.25	49.42	6723.97	20.83	-3181.91	31.99	-10341.29	131.92	-4379.22	35.17	-26.66	-1.05	-2868.11	-12.52	-3108.20	0.72	-2276.60	-12.65	-6.89	-0.03	-16.34	0.00	40622.83	25.31	-11143.10	295.16	-4205.80	27.54
			10X	Low	1%	718.42	12108.34	89.35	28320.71	48.89	6722.95	19.81	-3182.08	31.81	-10341.86	131.35	-4381.23	33.17	-26.67	-1.05	-2868.13	-12.54	-3108.43	0.49	-2276.62	-12.68	-6.89	-0.03	-16.34	0.00	40621.96	24.44	-11152.33	285.93	-4206.47	26.87
		Zone 35	0.1X	Low	1%	733.67	12108.05	89.06	28321.30	49.48	6724.06	20.91	-3181.92	31.97	-10341.41	131.80	-4382.41	31.98	-26.66	-1.05	-2868.10	-12.51	-3107.73	1.19	-2276.57	-12.62	-6.89	-0.03	-16.33	0.00	40622.92	25.40	-11141.38	296.88	-4204.56	28.78
			10X	Low	1%	723.81	12108.77	89.78	28320.15	48.32	6722.12	18.98	-3182.01	31.89	-10340.73	132.48	-4349.77	64.62	-26.68	-1.06	-2868.23	-12.63	-3113.06	-4.14	-2276.92	-12.97	-6.90	-0.04	-16.37	-0.03	40621.15	23.63	-11169.50	268.76	-4218.86	14.48
		Zone 36	0.1X	Low	1%	734.50	12108.06	89.07	28321.29	49.47	6724.02	20.88	-3181.94	31.95	-10341.49	131.72	-4382.04	32.35	-26.66	-1.05	-2868.11	-12.51	-3107.31	1.61	-2276.55	-12.60	-6.89	-0.03	-16.33	0.00	40622.89	25.37	-11141.76	296.51	-4203.98	29.36
			10X	Low	1%	724.18	12108.64	89.65	28320.31	48.49	6722.44	19.30	-3181.79	32.10	-10339.92	133.29	-4353.38	61.01	-26.68	-1.07	-2868.13	-12.54	-3117.20	-8.28	-2277.05	-13.10	-6.90	-0.05	-16.38	-0.05	40621.37	23.85	-11165.65	272.61	-4224.53	8.81
		Zone 37	0.1X	Low	1%	750.53	12107.67	88.68	28322.11	50.29	6725.06	21.92	-3181.73	32.17	-10340.89	132.32	-4380.77	33.62	-26.66	-1.04	-2868.05	-12.46	-3107.57	1.35	-2276.53	-12.59	-6.89	-0.03	-16.33	0.00	40624.07	26.55	-11130.99	307.27	-4203.09	30.25
			10X	Low	0%	559.15	12112.65	93.66	28312.05	40.23	6712.05	8.90	-3183.93	29.97	-10345.72	127.49	-4365.78	48.61	-26.71	-1.09	-2868.68	-13.09	-3114.57	-5.65	-2277.24	-13.29	-6.90	-0.04	-16.37	-0.04	40609.71	12.19	-11273.39	164.87	-4233.31	0.03
		Zone 38	0.1X	Low	1%	732.71	12108.09	89.10	28321.23	49.41	6723.93	20.79	-3181.94	31.96	-10341.40	131.81	-4380.35	34.05	-26.66	-1.05	-2868.15	-12.56	-3108.21	0.71	-2276.58	-12.63	-6.89	-0.03	-16.33	0.00	40622.80	25.28	-11143.16	295.11	-4205.12	28.22
			10X	Low	1%	725.49	12108.30	89.32	28320.88	49.06	6723.36	20.22	-3181.86	32.03	-10340.77	132.45	-4370.03	44.36	-26.66	-1.05	-2867.73	-12.13	-3108.26	0.66	-2276.76	-12.81	-6.90	-0.04	-16.36	-0.03	40622.25	24.73	-11151.77	286.50	-4213.22	20.13
		Zone 39	0.1X	Low	1%	739.07	12108.08	89.09	28321.27	49.45	6723.98	20.84	-3181.76	32.14	-10341.01	132.21	-4379.22	35.17	-26.66	-1.05	-2868.09	-12.50	-3108.12	0.80	-2276.58	-12.64	-6.89	-0.03	-16.34	0.00	40622.88	25.37	-11141.30	296.96	-4202.51	30.83
			10X	Low	1%	675.93	12108.40	89.42	28320.42	48.60	6722.83	19.69	-3183.57	30.33	-10344.71	128.51	-4381.19	33.20	-26.67	-1.06	-2868.26	-12.67	-3109.18	-0.26	-2276.74	-12.79	-6.90	-0.03	-16.34	-0.01	40621.46	23.94	-11170.26	268.00	-4240.78	-7.44
	Model Layer 1 (S.Y. = 0.15)	Zone 31	0.5X	Low	0%	302.96	12114.19	95.21	28302.02	30.20	6706.43	3.29	-3192.13	21.77	-10369.19	104.02	-4403.88	10.51	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40591.11	-6.41	-11437.14	1.13	-4233.36	-0.02
			2X	Low	0%	310.77	12116.44	97.45	28303.03	31.21	6706.76	3.62	-3192.13	21.77	-10369.19	104.03	-4403.92	10.47	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40607.26	9.74	-11440.31	-2.04	-4233.31	0.03
		Zone 32	0.5X	Low	0%	297.41	12113.24	94.25	28293.16	21.34	6705.44	2.30	-3192.09	21.81	-10369.10	104.11	-4403.59	10.80	-26.70	-1.09	-2868.68	-13.08	-3111.88	-2.96	-2277.11	-13.17	-6.90	-0.04	-16.36	-0.02	40606.38	8.87	-11441.31	-3.05	-4233.87	-0.53
			2X	Low	0%	339.23	12121.13	102.14	28319.94	48.12	6708.82	5.68	-3192.23	21.67	-10369.40	103.81	-4404.48	9.91	-26.71	-1.09	-2868.71	-13.11	-3111.98	-3.06	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40583.42	-14.10	-11435.86	2.40	-4232.46	0.88
		Zone 33	0.5X	Low	0%	339.35	12123.14	104.15	28303.01	31.19	6707.13	3.99	-3191.97	21.93	-10368.87	104.34	-4403.46	10.93	-26.70	-1.09	-2868.66	-13.07	-3111.86	-2.93	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40613.28	15.76	-11422.43	15.83	-4234.27	-0.93
			2X	Low	0%	336.97	12097.95	78.96	28301.41	29.59	6705.43	2.29	-3192.51	21.38	-10369.99	103.22	-4404.70	9.69	-26.71	-1.09	-2868.73	-13.14	-3112.03	-3.11	-2277.16	-13.22	-6.90	-0.04	-16.36	-0.02	40566.06	-31.46	-11466.66	-28.40	-4231.98	1.36
		Zone 34	0.5X	Low	0%	316.66	12114.93	95.94	28302.39	30.56	6706.51	3.36	-3192.43	21.47	-10369.92	103.29	-4404.00	10.40	-26.70	-1.09	-2868.68	-13.08	-3111.94	-3.02	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40597.30	-0.21	-11419.24	19.03	-4235.33	-1.99
			2X	Low	0%	341.57	12115.05	96.06	28302.31	30.49	6706.61	3.46	-3191.68	22.22	-10367.94	105.27	-4403.74	10.65	-26.70	-1.09	-2868.70	-13.10	-3111.88	-2.96	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40597.83	0.31	-11477.86	-39.60	-4230.23	3.11
		Zone 35	0.5X	Low	0%	301.20	12114.91	95.92	28302.53	30.71	6706.72	3.57	-3193.13	20.77	-10374.88	98.33	-4404.35	10.04	-26.68	-1.07	-2868.33	-12.74	-3111.76	-2.84	-2276.83	-12.88	-6.90	-0.04	-16.36	-0.02	40597.66	0.14	-11431.52	6.74	-4227.94	5.40
			2X	Low	0%	335.24	12115.06	96.07	28302.16	30.34	6706.26	3.11	-3190.43	23.47	-10358.94	114.27	-4403.06	11.33	-26.75	-1.13	-2869.32	-13.73	-3112.20	-3.28	-2277.66	-13.71	-6.90	-0.04	-16.36	-0.02	40597.24	-0.27	-11451.18	-12.92	-4244.88	-11.54
		Zone 36	0.5X	Low	0%	299.59	12114.94	95.96	28302.46	30.64	6706.64	3.49	-3192.62	21.28	-10371.32	101.90	-4404.69	9.70	-26.30	-0.69	-2866.63	-11.04	-3111.89	-2.97	-2275.70	-11.75	-6.89	-0.03	-16.36	-0.02	40597.61	0.09	-11435.72	2.55	-4225.85	7.49
			2X	Low	0%	331.84	12114.99	96.00	28302.32	30.49	6706.44	3.30	-3191.45	22.44	-10366.23	106.98	-4402.72	11.68	-27.19	-1.58	-2871.76	-16.16	-3111.96	-3.04	-2279.00	-15.05	-6.91	-0.04	-16.36	-0.02	40597.39	-0.13	-11441.86	-3.60	-4254.66	-21.31
		Zone 37	0.5X	Low	0%	316.26	12114.58	95.59	28303.95	32.13	6707.04	3.90	-3192.76	21.14	-10368.13	105.09	-4403.18	11.21	-26.70	-1.08	-2868.64	-13.05	-3111.79	-2.87	-2277.09	-13.14	-6.90	-0.04	-16.36	-0.02	40598.31	0.79	-11422.20	16.06	-4233.49	-0.15
			2X	Low	0%	324.02	12115.59	96.60	28299.52	27.70	6705.71	2.57	-3191.47	22.42	-10371.16	102.06	-4404.73	9.66	-26.71	-1.09	-2868.73	-13.14	-3112.07	-3.15	-2277.16	-13.21	-6.90	-0.04	-16.36	-0.02	40595.99	-1.53	-11468.67	-30.41	-4233.77	-0.43
		Zone 39	0.5X	Low	0%	299.33	12114.95	95.96	28302.44	30.62	6706.60	3.46	-3191.97	21.92	-10368.82	104.39	-4403.68	10.71	-26.70	-1.09	-2868.68	-13.09	-3111.88	-2.96	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.58	0.06	-11436.79	1.47	-4232.98	0.36
			2X	Low	0%	298.90	12114.99	96.00	28302.32	30.50	6706.45	3.31	-3192.44	21.46	-10369.93	103.28	-4404.34	10.05	-26.70	-1.09	-2868.70	-13.11	-3111.99	-3.07	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40597.38	-0.14	-11441.19	-2.93	-4234.07	-0.72
	Model Layer 2 (S.Y. = 0.15)	Zone 31	0.5X	Low	0%	297.14	12114.92	95.94	28302.36	30.54	6706.54	3.40	-3192.13	21.76	-10369.20	104.01	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40596.95	-0.57	-11438.26	0.01	-4233.35	-0.01
			2X	Low	0%	299.03	12115.24	96.25	28302.51	30.69	6706.59	3.44	-3192.13	21.76	-10369.20	104.02	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40599.03	1.51	-11438.70	-0.44	-4233.34	0.00
		Zone 32	0.5X	Low	0%	299.74	12115.61	96.63	28302.37	30.55	6706.55	3.41	-3192.14	21.76	-10369.22	104.00	-4403.91	10.48	-26.70	-1.09	-2868.68	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40599.16	1.64	-11439.08	-0.81	-4233.40	-0.06
			2X	Low	0%	300.31	12113.62	94.64	28302.37	30.55	6706.54	3.40	-3192.12	21.78	-10369.16	104.05	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40594.17	-3.35	-11436.75	1.51	-4233.22	0.12
		Zone 33	0.5X	Low	0%	315.91	12112.67	93.68	28314.28	42.46	6707.20	4.05	-3191.86	22.04	-10368.49	104.73	-4403.10	11.29	-26.70	-1.09	-2868.67	-13.08	-3111.81	-2.89	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40602.84	5.32	-11439.69	-1.43	-4232.71	0.63
			2X	Low	0%	299.44	12117.57	98.58	28289.25	17.42	6705.77	2.63	-3192.48	21.42	-10370.08	103.13	-4404.83	9.56	-26.71	-1.09	-2868.70	-13.11	-3112.04	-3.12	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40591.16	-6.36	-11447.19	-8.93	-4234.17	-0.83
		Zone 34	0.5X	Low	0%	303.02	12114.93	95.94	28302.47	30.65	6706.64	3.50	-3191.59	22.31	-10368.08	105.14	-4403.72	10.67	-26.70	-1.09	-2868.67	-13.08	-3111.88	-2.96	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40597.57	0.06	-11434.09	4.18	-4233.10	0.24
			2X	Low	0%	300.84	12115.01	96.02	28302.24	30.42	6706.43	3.28	-3192.96	20.94	-10370.81	102.41	-4404.11	10.28	-26.71	-1.09	-2868.71	-13.12	-3111.96	-3.04	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.39	-0.13	-11444.64	-6.38	-4233.81	-0.47
		Zone 35	0.5X	Low	0%	296.63	12114.97	95.98	28302.38	30.56	6706.55	3.41	-3192.19	21.71	-10369.44	103.78	-4403.91	10.48	-26.70	-1.09	-2868.67	-13.08	-3111.91	-2.99	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40597.51	0.00	-11438.10	0.16	-4233.16	0.18
			2X	Low	0%	298.26	12114.97	95.98	28302.37	30.55	6706.54	3.39	-3192.02	21.88	-10368.70	104.52	-4403.86	10.53	-26.71	-1.09	-2868.71	-13.12	-3111.93	-3.01	-2277.15	-13.20	-6.90	-0.04	-16.36	-0.02	40597.49	-0.02	-11438.76	-0.49	-4233.76	-0.41
		Zone 36	0.5X	Low	0%	297.03	12114.97	95.98	28302.38	30.56	6706.55	3.41	-3192.15	21.75	-10369.27	103.94	-4403.92	10.47	-26.70	-1.08	-2868.64	-13.05	-3111.91	-2.99	-2277.09	-13.14	-6.90	-0.04	-16.36	-0.02	40597.51	-0.01	-11438.23	0.03	-4232.77	0.57
			2X	Low	0%	298.38	12114.97	95.98	28302.37	30.55	6706.54	3.40	-3192.10	21.80	-10369.06	104.16	-4403.84	10.55	-26.71	-1.10	-2868.78	-13.18	-3111.93	-3.01	-2277.20	-13.25	-6.90	-0.04	-16.36	-0.02	40597.50	-0.02	-11438.48	-0.22	-4234.47	-1.13
		Zone 37	0.5X	Low	0%	326.78	12113.72	94.73	28306.42	34.60	6707.61	3.47	-3191.67	22.23	-10367.32	105.89	-4403.41	10.98	-26.70	-1.09	-2868.64	-13.04	-3111.81	-2.89	-2277.08	-13.13	-6.90	-0.04	-16.36	-0.02	40598.19	0.67	-11414.69	23.57	-4232.91	0.43
			2X	Low	0%	332.21	12117.26	98.27	28294.93	23.11	6706.18	3.04	-3193.38	20.51	-10373.03	100.18	-4404.82	9.57	-26.71	-1.10	-2868.77	-13.18	-3112.11	-3.19	-2277.20	-13.26	-6.90	-0.04	-16.36	-0.02	40596.11	-1.40	-11482.48	-44.22	-4234.46	-1.12
		Zone 39	0.5X	Low	0%	296.81	12114.97	95.98	28302.38	30.56	6706.55	3.41	-3192.12	21.78	-10369.16	104.05	-4403.87	10.52	-26.70	-1.09	-2868.69	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.18	0.08	-4233.31	0.03
			2X	Low	0%	296.90	12114.97	95.98	28302.37	30.55	6706.54	3.40	-3192.13	21.74	-10369.26	103.95	-4403.94	10.45	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.49	-0.03	-11438.59	-0.32	-4233.41	-0.07
	Model Layer 3 (S.Y. = 0.15)	Zone 26	0.5X	Low	0%	360.10	12112.79	93.80	28311.88	40.06	6708.13	4.99	-3191.49	22.41	-10367.66	105.55	-4402.46	11.93	-26.70	-1.09	-2868.64	-13.04	-3111.73	-2.81	-2277.08	-13.13	-6.90	-0.04	-16.36	-0.02	40600.92	3.40	-11391.06	47.20	-4233.98	-0.64
			2X	Low	0%	374.11	12118.75	99.76	28286.88	15.06	6704.02	0.88	-3193.15	20.74	-10371.58	101.63	-4406.18	8.21	-26.71	-1.10	-2868.77	-13.17	-3112.22	-3.30	-2277.20	-13.26	-6.90	-0.04	-16.36	-0.02	40592.34	-5.18	-11528.90	-90.64	-4232.21	1.13
		Zone 31	0.5X	Low	0%	632.36	11997.66	-21.33	28229.14	-42.68	6688.23	-14.91	-3191.65	22.24	-10367.99	105.23	-4401.01	13.38	-26.70	-1.08	-2868.62	-13.03	-3111.53	-2.61	-2277.06	-13.11	-6.90	-0.04	-16.36	-0.02	40382.30	-215.22	-11271.28	166.99	-4233.84	-0.50
			2X	Low	1%	1206.05	12304.50	285.51	28418.47	146.65	6735.48	32.34	-3192.93	20.97	-10371.22	101.99	-4408.50	5.90	-26.71	-1.10	-2868.78	-13.18	-3112.52	-3.60	-2277.23	-13.28	-6.90	-0.04	-16.36	-0.02	40922.40	324.88	-11694.03	-255.77	-4232.52	0.82
		Zone 32	0.5X	Low	1%	1572.34	11776.70	-242.29	28027.46	-244.36	6648.83	-54.31	-3189.86	24.03	-10363.41	109.80	-4392.33	22.06	-26.68	-1.07	-2868.46	-12.86	-3110.51	-1.59	-2276.87	-12.92	-6.90	-0.04	-16.35	-0.01	40146.46	-451.06	-11044.49	393.78	-4235.49	-2.15
			2X	Low	2%	2315.19	12579.89	560.91	28664.67	392.85	6779.83	76.68	-3195.46	18.44	-10377.82	95.40	-4418.93	-4.54	-26.73	-1.11	-2868.93	-13.34	-3113.67	-4.75	-2277.41	-13.46	-6.90	-0.04	-16.37	-0.03	41236.71	639.19	-11930.57	-492.31	-4235.47	-2.13
		Zone 33	0.5X	Low	0%	538.51	12112.69	93.70	28344.87	73.05	6711.17	8.02	-3190.43	23.46	-10365.19	108.02	-4398.65	15.74	-26.69	-1.08	-2868.52	-12.93	-3111.26	-2.34	-2276.96	-13.01	-6.90	-0.04	-16.36	-0.02	40610.68	13.16	-11267.37	170.90	-4236.38	-3.04
			2X	Low	0%	614.34	12121.21	102.23	28238.81	-33.01	6700.35	-2.79	-3194.56	19.34	-10374.93	98.28	-4411.44	2.95	-26.72	-1.11	-2868.90	-13.31	-3112.86	-3.94	-2277.34	-13.39	-6.90	-0.04	-16.37	-0.03	40583.20	-14.32	-11745.20	-306.93	-4230.66	2.68
		Zone 34	0.5X	Low	0%	305.07	12114.94	95.95	28302.41	30.58	6706.59	3.45	-3192.20	21.70	-10369.16	104.06	-4403.77	10.62	-26.70	-1.09	-2868.68	-13.08	-3111.90	-2.98	-2277.11	-13.17	-6.90	-0.04	-16.36	-0.02	40597.46	-0.06	-11430.51	7.75	-4233.86	-0.52
			2X	Low	0%	312.18	12115.05	96.06	28302.30	30.48	6706.45	3.30	-3192.11	21.78	-10369.43	103.79	-4404.15	10.24	-26.71	-1.09	-2868.71	-13.11	-3111.96	-3.03	-2277.14	-13.20	-6.90	-0.04	-16.36	-0.02	40597.56	0.04	-11453.46	-15.20	-4232.55	0.80
		Zone 35	0.5X	Low	0%	310.99	12114.19	95.20	28304.17	32.35	6708.75	5.60	-3215.43	-1.54	-10454.80	18.41	-4408.29	6.10	-26.38	-0.77	-2864.45	-8.86	-3109.99	-1.07	-2273.06	-9.11	-6.88	-0.02	-16.35	-0.01	40599.33	1.82	-11339.94	98.32	-4201.52	31.82
			2X	Low	0%	647.03	12115.96	96.97	28300.18	28.35	6703.82	0.67	-3163.57	50.72	-10269.03	204.19	-4399.43	14.96	-27.05	-1.43	-2873.40	-17.80	-3114.14	-5.22	-2281.34	-17.39	-6.91	-0.05	-16.38	-0.04	40595.22	-2.30	-11562.16	-123.90	-4316.37	-83.03
		Zone 36	0.5X	Low	0%	312.06	12114.95	95.96	28302.44	30.62	6706.61	3.47	-3192.57	21.33	-10371.16	102.05	-4404.28	10.11	-26.61	-1.00	-2867.84	-12.24	-3111.94	-3.02	-2275.89	-11.94	-6.90	-0.03	-16.36	-0.02	40597.56	0.04	-11436.34	1.92	-4215.03	18.31
			2X	Low	0%	347.46	12115.00	96.01	28302.31	30.49	6706.43	3.29	-3191.32	22.58	-10365.55	107.67	-4402.80	11.59	-26.84	-1.23	-2870.25	-14.65	-3112.00	-3.08	-2279.30	-15.35	-6.90	-0.04	-16.36	-0.02	40597.40	-0.11	-11442.20	-3.93	-4270.76	-37.42
		Zone 37	0.5X	Low	0%	315.97	12114.32	95.34	28305.83	34.01	6707.66	4.51	-3192.25	21.65	-10370.02	103.20	-4403.46	10.93	-26.70	-1.09	-2868.64	-13.05	-3111.82	-2.89	-2277.09	-13.14	-6.90	-0.04	-16.36	-0.02	40600.38	2.86	-11425.80	12.46	-4232.55	0.79
			2X	Low	0%	324.04	12116.09	97.10	28296.79	24.97	6704.81	1.67	-3191.83	22.07	-10367.40	105.81	-4404.54	9.85	-26.71	-1.09	-2868.76	-13.17	-3112.08	-3.16	-2277.19	-13.24	-6.90	-0.04	-16.36	-0.02	40593.16	-4.36	-11464.18	-25.92	-4234.91	-1.57
		Zone 38	0.5X	Low	0%	300.65	12114.96	95.97	28302.41	30.59	6706.57	3.42	-3192.19	21.71	-10369.45	103.76	-4404.07	10.32	-28.69	-3.07	-2868.30	-12.71	-3111.97	-3.05	-2276.61	-12.66	-6.89	-0.03	-16.36	-0.02	40597.53	0.01	-11437.90	0.36	-4230.40	2.94
			2X	Low	0%	304.30	12114.97	95.98	28302.39	30.56	6706.53	3.39	-3192.06	21.84	-10368.87	104.34	-4403.63	10.76	-24.68	0.93	-2868.84	-13.25	-3111.84	-2.92	-2277.82	-13.87	-6.90	-0.04	-16.36	-0.02	40597.48	-0.04	-11438.79	-0.53	-4239.17	-5.83
		Zone 39	0.5X	Low	0%	301.90	12114.93	95.95	28302.49	30.67	6706.67	3.53	-3192.38	21.52	-10370.69	102.53	-4405.46	8.93	-26.70	-1.09	-2868.65	-13.06	-3111.74	-2.82	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40597.67	0.16	-11435.26	3.00	-4227.89	5.45
			2X	Low	0%	320.35	12115.01	96.02	28302.23	30.41	6706.32	3.18	-3191.68	22.22	-10366.41	106.81	-4400.76	13.63	-26.71	-1.09	-2868.74	-13.15	-3112.26	-3.34	-2277.17	-13.22	-6.90	-0.04	-16.36	-0.02	40597.21	-0.31	-11444.08	-5.81	-4244.43	-11.09
	Model Layer 4 (S.Y. = 0.05)	Zone 26	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
			2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		Zone 31	0.5X	Low	0%	296.86	12114.70	95.72	28302.21	30.39	6706.51	3.37	-3192.13	21.77	-10369.19	104.03	-4403.89	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.21	-0.31	-11437.90	0.36	-4233.34	0.00
			2X	Low	0%	299.34	12115.55	96.56	28302.82	31.00	6706.65	3.51	-3192.13	21.76	-10369.20	104.01	-4403.91	10.48	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40598.32	0.81	-11439.05	-0.79	-4233.34	0.00
		Zone 32	0.5X	Low	0%	296.62	12114.05	95.06	28301.59	29.77	6706.39	3.24	-3192.12	21.77	-10369.17	104.05	-4403.86	10.53	-26.70	-1.09	-2868.69	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40596.68	-0.84	-11437.32	0.94	-4233.33	0.01
			2X	Low	0%	303.88	12116.79	97.80	28304.01	32.19	6706.88	3.74	-3192.15	21.75	-10369.23	103.98	-4403.96	10.43	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40599.20	1.68	-11440.12	-1.86	-4233.36	-0.02
		Zone 33	0.5X	Low	0%	296.95	12115.00	96.01	28302.56	30.74	6706.56	3.41	-3192.13	21.77	-10369.18	104.03	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.49	-0.03	-11438.22	0.04	-4233.34	0.00
			2X	Low	0%	296.41	12114.91	95.92	28302.09	30.27	6706.55	3.40	-3192.14	21.76	-10369.21	104.01	-4403.91	10.48	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.57	0.05	-11438.36	-0.09	-4233.35	-0.01
		Zone 34	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
			2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		Zone 35	0.5X	Low	0%	300.24	12114.94	95.95	28302.45	30.63	6706.62	3.48	-3192.72	21.17	-10371.76	101.46	-4404.23	10.16	-26.68	-1.07	-2868.37	-12.78	-3111.84	-2.92	-2276.84	-12.89	-6.90	-0.04	-16.36	-0.02	40597.57	0.06	-11435.73	2.53	-4228.24	5.10
			2X	Low	0%	319.90	12115.01	96.02	28302.30	30.48	6706.43	3.28	-3191.00	22.90	-10364.24	108.98	-4403.20	11.19	-26.75	-1.13	-2869.30	-13.71	-3112.07	-3.15	-2277.67	-13.72	-6.90	-0.04	-16.36	-0.02	40597.40	-0.12	-11443.18	-4.92	-4243.59	-10.24
		Zone 36	0.5X	Low	0%	309.00	12114.93	95.94	28302.47	30.65	6706.65	3.51	-3192.79	21.11	-10372.04	101.18	-4404.74	9.65	-26.62	-1.00	-2867.51	-11.92	-3111.78	-2.86	-2276.20	-12.26	-6.89	-0.03	-16.36	-0.02	40597.62	0.10	-11434.97	3.29	-4217.86	15.49
			2X	Low	0%	345.42	12115.02	96.03	28302.27	30.45	6706.38	3.23	-3191.01	22.89	-10364.30	108.92	-4402.31	12.08	-26.85	-1.24	-2870.85	-15.26	-3112.18	-3.26	-2278.76	-14.82	-6.90	-0.04	-16.36	-0.02	40597.35	-0.17	-11443.98	-5.72	-4264.63	-31.29
		Zone 37	0.5X	Low	0%	297.29	12114.96	95.97	28302.42	30.60	6706.56	3.42	-3192.14	21.76	-10369.20	104.02	-4403.89	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.51	0.00	-11437.66	0.60	-4233.35	-0.01
			2X	Low	0%	297.82	12114.98	95.99	28302.36	30.53	6706.54	3.40	-3192.12	21.78	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.50	-0.02	-11439.39	-1.13	-4233.32	0.02
		Zone 38	0.5X	Low	0%	297.59	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.16	21.74	-10369.30	103.92	-4403.95	10.44	-25.23	0.38	-2869.47	-13.87	-3111.93	-3.01	-2277.03	-13.08	-6.90	-0.04	-16.36	-0.02	40597.52	0.01	-11438.12	0.15	-4232.37	0.97
			2X	Low	0%	300.65	12114.97	95.98	28302.39	30.57	6706.54	3.40	-3192.09	21.81	-10369.01	104.20	-4403.78	10.61	-28.54	-2.92	-2868.19	-12.60	-3111.89	-2.97	-2277.29	-13.35	-6.90	-0.04	-16.36	-0.02	40597.50	-0.02	-11438.52	-0.25	-4235.25	-1.91
		Zone 39	0.5X	Low	0%	297.03	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.12	21.77	-10369.22	103.99	-4403.94	10.45	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.53	0.01	-11438.13	0.14	-4233.03	0.31
			2X	Low	0%	297.75	12114.97	95.98	28302.39	30.57	6706.54	3.40	-3192.13	21.77	-10369.13	104.09	-4403.80	10.59	-26.70	-1.09	-2868.69	-13.09	-3111.93	-3.01	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.50	-0.02	-11438.54	-0.28	-4233.96	-0.62
	Model Layer 5 (S.Y. = 0.15)	Zone 26	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
			2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		Zone 31	0.5X	Low	0%	308.87	12099.08	80.09	28290.62	18.80	6703.80	0.66	-3192.04	21.86	-10368.95	104.26	-4403.41	10.98	-26.70	-1.09	-2868.68	-13.08	-3111.86	-2.94	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40574.95	-22.57	-11418.97	19.30	-4233.32	0.02
			2X	Low	0%	428.63	12144.52	125.53	28324.35	52.53	6711.61	8.47	-3192.31	21.59	-10369.66	103.55	-4404.77	9.63	-26.71	-1.09	-2868.70	-13.11	-3112.02	-3.10	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40638.77	41.25	-11473.73	-35.47	-4233.40	-0.06
		Zone 32	0.5X	Low	0%	384.49	12041.95	22.96	28232.13	-39.69	6692.17	-10.98	-3191.45	22.44	-10367.35	105.87	-4401.07	13.32	-26.70	-1.09	-2868.65	-13.06	-3111.60	-2.68	-2277.08	-13.14	-6.90	-0.04	-16.36	-0.02	40529.02	-68.50	-11368.50	69.77	-4232.40	0.94
			2X	Low	1%	750.76	12228.49	209.50	28403.81	131.99	6726.75	23.60	-3193.12	20.78	-10371.86	101.35	-4408.05	6.34	-26.71	-1.10	-2868.74	-13.14	-3112.39	-3.47	-2277.19	-13.24	-6.90	-0.04	-16.36	-0.02	40710.42	112.91	-11550.20	-111.94	-4234.68	-1.34
		Zone 33	0.5X	Low	0%	328.75	12114.80	95.81	28308.12	36.30	6706.98	3.84	-3192.01	21.89	-10368.88	104.33	-4403.29	11.10	-26.70	-1.09	-2868.66	-13.07	-3111.84	-2.92	-2277.10	-13.15	-6.90	-0.04	-16.36	-0.02	40598.60	1.09	-11414.91	23.35	-4234.09	-0.75
			2X	Low	0%	331.84	12115.73	96.75	28291.63	19.81	6705.82	2.68	-3192.43	21.47	-10369.93	103.29	-4405.03	9.36	-26.71	-1.09	-2868.73	-13.13	-3112.06	-3.14	-2277.16	-13.22	-6.90	-0.04	-16.36	-0.02	40595.96	-1.56	-11483.45	-45.18	-4232.22	1.12
		Zone 34	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
			2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		Zone 35	0.5X	Low	0%	298.05	12114.93	95.94	28302.47	30.65	6706.64	3.50	-3192.38	21.52	-10373.22	99.99	-4404.12	10.27	-26.69	-1.07	-2868.46	-12.87	-3111.83	-2.91	-2276.91	-12.96	-6.90	-0.04	-16.36	-0.02	40597.58	0.07	-11434.25	4.02	-4230.18	3.16
			2X	Low	0%	321.73	12115.03	96.04	28302.26	30.44	6706.38	3.23	-3190.05	23.85	-10361.48	111.74	-4403.38	11.01	-26.74	-1.12	-2869.13	-13.54	-3112.08	-3.16	-2277.54	-13.59	-6.90	-0.04	-16.36	-0.02	40597.36	-0.16	-11445.96	-7.69	-4239.44	-6.10
		Zone 36	0.5X	Low	0%	300.54	12114.95	95.97	28302.42	30.60	6706.59	3.44	-3192.28	21.62	-10369.84	103.37	-4404.30	10.09	-26.67	-1.06	-2868.25	-12.66	-3111.82	-2.90	-2276.83	-12.88	-6.90	-0.04	-16.36	-0.02	40597.55	0.03	-11437.34	0.92	-4228.38	4.96
			2X	Low	0%	311.87	12114.98	96.00	28302.36	30.53	6706.49	3.35	-3191.86	22.04	-10367.98	105.23	-4403.22	11.17	-26.76	-1.15	-2869.51	-13.91	-3112.06	-3.14	-2277.68	-13.73	-6.90	-0.04	-16.36	-0.02	40597.44	-0.08	-11439.96	-1.70	-4243.13	-9.78
		Zone 37	0.5X	Low	0%	334.87	12113.28	94.30	28307.99	36.17	6708.42	5.27	-3191.91	21.99	-10368.59	104.62	-4402.91	11.49	-26.70	-1.09	-2868.67	-13.07	-3111.79	-2.87	-2277.10	-13.16	-6.90	-0.04	-16.36	-0.02	40600.69	3.17	-11410.92	27.35	-4233.07	0.28
			2X	Low	0%	343.04	12117.80	98.81	28292.80	20.97	6703.42	0.28	-3192.50	21.40	-10370.21	103.00	-4405.54	8.85	-26.71	-1.09	-2868.72	-13.12	-3112.13	-3.21	-2277.16	-13.21	-6.90	-0.04	-16.36	-0.02	40592.13	-5.38	-11491.43	-53.17	-4233.82	-0.48
Specific Yield		Zone 38	0.5X	Low	0%	293.75	12114.96	95.97	28302.42	30.60	6706.58	3.44	-3192.20	21.69	-10369.52	103.70	-4404.34	10.05	-26.60	-0.98	-2863.77	-8.18	-3112.60	-3.68	-2276.89	-12.95	-6.90	-0.04	-16.36	-0.02	40597.55	0.03	-11437.63	0.64	-4231.55	1.79
			2X	Low	0%	309.31	12114.97	95.98	28302.37	30.55	6706.51	3.37	-3192.02	21.88	-10368.68	104.53	-4403.30	11.09	-26.78	-1.16	-2873.95	-18.36	-3111.21	-2.29	-2277.49	-13.55	-6.90	-0.04	-16.36	-0.02	40597.46	-0.05	-11439.20	-0.94	-4238.84	-5.50
		Zone 39	0.5X	Low	0%	298.02	12114.96	95.97	28302.41	30.59	6706.57	3.43	-3192.14	21.76	-10369.27	103.94	-4404.04	10.35	-26.70	-1.09	-2868.68	-13.09	-3111.89	-2.97	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.54	0.02	-11437.86	0.40	-4232.16	1.19
			2X	Low	0%	300.38	12114.97	95.98	28302.38	30.55	6706.52	3.38	-3192.12	21.78	-10369.02	104.20	-4403.58	10.81	-26.70	-1.09	-2868.69	-13.10	-3111.96	-3.04	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.47	-0.05	-11439.08	-0.82	-4235.68	-2.34
		Zone 31	0.5X	Low	0%	298.53	12113.50	94.52	28301.41	29.59	6706.32	3.17	-3192.13	21.77	-10369.18	104.04	-4403.86	10.54	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40595.09	-2.43	-11436.20	2.07	-4233.35	-0.01
			2X	Low	0%	310.69	12117.84	98.85	28304.31	32.49	6707.01	3.87	-3192.14	21.75	-10369.22	103.99	-4403.96	10.43	-26.70	-1.09	-2868.69	-13.09	-3111.93	-3.01	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40602.36	4.84	-11442.28	-4.02	-4233.32	0.02
		Zone 32	0.5X	Low	0%	296.29	12114.22	95.23	28301.60	29.78	6706.39	3.25	-3192.12	21.77	-10369.17	104.04	-4403.86	10.53	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40596.93	-0.59	-11437.60	0.67	-4233.33	0.02
			2X	Low	0%	302.37	12116.41	97.42	28303.95	32.13	6706.87	3.72	-3192.15	21.75	-10369.23	103.98	-4403.95	10.44	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40598.69	1.17	-11439.57	-1.31	-4233.37	-0.03
		Zone 33	0.5X	Low	0%	296.78	12114.95	95.96	28302.48	30.66	6706.56	3.42	-3192.13	21.77	-10369.18	104.03	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.24	0.02	-4233.34	0.00
			2X	Low	0%	296.54	12115.00	96.01	28302.24	30.42	6706.54	3.39	-3192.14	21.76	-10369.21	104.01	-4403.91	10.48	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.31	-0.05	-4233.35	-0.01
		Zone 34	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00

Table 5-2. Sensitivity Analysis -- Inter-basin Flows and Stream Percolation

units: Acre-feet per year

Parameters		Multiplier	Sensitivity	diff (%)	Sum of absolute fluxes Default = 129641.846	Piru to Fillmore in System Default = 12018.990		Piru to Fillmore in System Default = 28271.821		Piru to Fillmore in System Default = 6703.143		Fillmore to Santa Paula in Default = -3213.897		Fillmore to Santa Paula in Default = -10473.213		Fillmore to Santa Paula Default = -4414.391		Santa Paula to Default = -25.615		Santa Paula to Mound ib Default = -2855.593		Santa Paula to Mound ib Default = -3108.92		Santa Paula to Oxnard in Default = -2263.948		Santa Paula to Default = -6.86		Santa Paula to Default = -16.337		STR Percolation in Piru Default = 40597.518		STR Percolation in Fillmore Default = -11438.262		STR Percolation in Santa Default = -4233.34	
					Sum of absolute diff	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.	flux	diff.
Model Layer 6 (S.Y. = 0.05)	Zone 34	2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
	Zone 35	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
	Zone 36	0.5X	Low	0%	296.70	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.14	21.76	-10369.21	104.00	-4403.93	10.46	-26.70	-1.09	-2868.67	-13.08	-3111.90	-2.98	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.24	0.03	-4233.23	0.11
		2X	Low	0%	297.09	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.16	104.06	-4403.83	10.56	-26.71	-1.09	-2868.71	-13.12	-3111.94	-3.02	-2277.15	-13.21	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.31	-0.05	-4233.54	-0.20
	Zone 37	0.5X	Low	0%	305.25	12114.73	95.74	28303.23	31.41	6706.82	3.68	-3192.35	21.55	-10370.38	102.83	-4404.01	10.38	-26.70	-1.09	-2868.65	-13.05	-3111.83	-2.91	-2277.09	-13.15	-6.90	-0.04	-16.36	-0.02	40597.91	0.40	-11430.46	7.80	-4232.12	1.22
		2X	Low	0%	316.45	12115.41	96.42	28300.85	29.03	6706.05	2.91	-3191.75	22.15	-10366.84	106.38	-4403.56	10.83	-26.71	-1.09	-2868.76	-13.17	-3112.08	-3.15	-2277.18	-13.23	-6.90	-0.04	-16.36	-0.02	40596.76	-0.75	-11453.08	-14.82	-4235.80	-2.46
	Zone 38	0.5X	Low	0%	297.82	12114.96	95.98	28302.40	30.58	6706.56	3.41	-3192.13	21.77	-10369.17	104.04	-4403.94	10.45	-26.70	-1.08	-2869.19	-13.60	-3112.08	-3.16	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.84	-0.49
		2X	Low	0%	296.08	12114.97	95.98	28302.40	30.58	6706.55	3.41	-3192.15	21.75	-10369.25	103.97	-4403.82	10.57	-26.71	-1.09	-2867.33	-11.73	-3111.58	-2.66	-2277.09	-13.14	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.25	0.01	-4232.20	1.14
	Zone 39	0.5X	Low	0%	297.84	12114.96	95.97	28302.42	30.60	6706.59	3.44	-3192.19	21.71	-10369.54	103.67	-4404.37	10.02	-26.70	-1.09	-2868.68	-13.09	-3111.86	-2.94	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40597.56	0.04	-11437.45	0.81	-4232.11	1.23
		2X	Low	0%	302.61	12114.98	95.99	28302.35	30.53	6706.48	3.34	-3192.02	21.88	-10368.52	104.70	-4402.92	11.48	-26.71	-1.09	-2868.70	-13.11	-3112.02	-3.10	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40597.42	-0.09	-11439.89	-1.63	-4235.77	-2.43
Model Layer 7 (S.Y. = 0.1)	Zone 31	0.5X	Low	0%	337.03	12080.42	61.43	28277.75	5.92	6700.67	-2.48	-3191.95	21.95	-10368.72	104.49	-4402.91	11.48	-26.70	-1.09	-2868.67	-13.07	-3111.79	-2.87	-2277.10	-13.16	-6.90	-0.04	-16.36	-0.02	40541.67	-55.85	-11395.09	43.17	-4233.35	-0.01
		2X	Low	0%	588.38	12177.07	158.09	28347.76	75.94	6716.98	13.84	-3192.49	21.40	-10370.15	103.07	-4405.67	8.72	-26.71	-1.09	-2868.72	-13.12	-3112.13	-3.21	-2277.16	-13.21	-6.90	-0.04	-16.36	-0.02	40697.63	100.11	-11514.52	-76.26	-4233.60	-0.26
	Zone 32	0.5X	Low	0%	304.78	12088.05	69.06	28278.21	6.39	6701.46	-1.68	-3191.92	21.98	-10368.63	104.58	-4402.89	11.50	-26.70	-1.09	-2868.67	-13.08	-3111.80	-2.88	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40566.38	-31.13	-11410.12	28.14	-4233.30	0.04
		2X	Low	0%	514.43	12166.22	147.23	28347.40	75.58	6715.95	12.81	-3192.54	21.36	-10370.27	102.95	-4405.75	8.64	-26.71	-1.09	-2868.72	-13.12	-3112.13	-3.21	-2277.16	-13.21	-6.90	-0.04	-16.36	-0.02	40658.36	60.85	-11492.39	-54.13	-4233.55	-0.21
	Zone 33	0.5X	Low	0%	306.33	12114.71	95.72	28303.03	31.21	6707.33	4.19	-3192.07	21.82	-10369.04	104.17	-4403.66	10.73	-26.70	-1.09	-2868.68	-13.09	-3111.89	-2.97	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40598.09	0.57	-11430.81	7.45	-4233.25	0.09
		2X	Low	0%	309.64	12115.63	96.64	28300.63	28.81	6705.47	2.33	-3192.25	21.65	-10369.47	103.74	-4404.30	10.09	-26.70	-1.09	-2868.69	-13.10	-3111.97	-3.05	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40596.52	-1.00	-11452.98	-14.72	-4233.50	-0.16
	Zone 34	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
	Zone 35	0.5X	Low	0%	299.09	12114.94	95.95	28302.45	30.63	6706.62	3.48	-3193.25	20.65	-10371.79	101.42	-4404.15	10.24	-26.69	-1.08	-2868.48	-12.89	-3111.82	-2.90	-2276.98	-13.04	-6.90	-0.04	-16.36	-0.02	40597.57	0.06	-11435.26	3.00	-4229.64	3.70
		2X	Low	0%	318.25	12115.01	96.02	28302.30	30.47	6706.42	3.28	-3190.26	23.63	-10364.19	109.02	-4403.29	11.11	-26.73	-1.11	-2869.09	-13.50	-3112.11	-3.18	-2277.40	-13.45	-6.90	-0.04	-16.36	-0.02	40597.39	-0.13	-11444.06	-5.80	-4240.81	-7.47
	Zone 36	0.5X	Low	0%	307.99	12114.85	95.86	28302.69	30.87	6706.99	3.84	-3192.54	21.36	-10371.09	102.12	-4411.23	3.16	-26.68	-1.06	-2868.19	-12.60	-3108.64	0.28	-2276.66	-12.71	-6.90	-0.03	-16.35	-0.01	40598.01	0.49	-11430.45	7.81	-4217.55	15.79
		2X	Low	0%	365.51	12115.16	96.17	28301.91	30.09	6705.82	2.68	-3191.36	22.54	-10365.61	107.61	-4391.47	22.92	-26.76	-1.14	-2869.77	-14.18	-3117.32	-8.40	-2278.03	-14.08	-6.90	-0.04	-16.38	-0.04	40596.69	-0.83	-11451.84	-13.58	-4264.56	-31.22
	Zone 37	0.5X	Low	0%	548.27	12111.18	92.19	28311.85	40.02	6717.53	14.39	-3191.59	22.31	-10382.18	91.04	-4427.85	-13.46	-26.52	-0.90	-2865.76	-10.17	-3103.32	5.60	-2274.84	-10.89	-6.89	-0.02	-16.31	0.03	40607.66	10.15	-11286.22	152.04	-4148.29	85.06
		2X	Low	1%	792.05	12121.40	102.41	28287.80	15.98	6691.30	-11.84	-3193.86	20.04	-10349.56	123.66	-4369.40	45.00	-27.02	-1.40	-2873.60	-18.01	-3124.72	-15.80	-2280.83	-16.88	-6.92	-0.06	-16.43	-0.10	40582.48	-15.04	-11697.06	-258.79	-4380.40	-147.06
	Zone 38	0.5X	Low	0%	325.98	12114.86	95.87	28302.66	30.84	6706.95	3.80	-3192.25	21.65	-10369.85	103.36	-4410.91	3.48	-26.74	-1.13	-2879.40	-23.80	-3122.69	-13.77	-2277.26	-13.31	-6.90	-0.04	-16.35	-0.01	40597.96	0.45	-11431.89	6.37	-4225.25	8.09
		2X	Low	0%	336.43	12115.12	96.13	28302.00	30.18	6705.96	2.82	-3191.93	21.96	-10368.11	105.11	-4393.25	21.14	-26.62	-1.01	-2853.19	2.41	-3091.49	17.43	-2276.81	-12.86	-6.90	-0.04	-16.38	-0.04	40596.83	-0.69	-11448.03	-9.77	-4248.18	-14.84
	Zone 39	0.5X	Low	0%	349.18	12114.57	95.59	28303.36	31.53	6707.87	4.72	-3190.25	23.64	-10367.27	105.94	-4398.83	15.56	-26.69	-1.08	-2868.52	-12.92	-3110.65	-1.73	-2276.96	-13.01	-6.90	-0.04	-16.35	-0.01	40599.11	1.59	-11407.52	30.74	-4222.28	11.06
		2X	Low	0%	363.92	12115.66	96.67	28300.60	28.78	6704.10	0.95	-3196.25	17.64	-10376.02	97.19	-4411.39	3.00	-26.73	-1.11	-2869.02	-13.43	-3114.26	-5.34	-2277.44	-13.49	-6.90	-0.04	-16.37	-0.04	40594.51	-3.01	-11499.97	-61.70	-4254.86	-21.52
Model Layer 8 (S.Y. = 0.05)	Zone 31	0.5X	Low	0%	301.73	12115.36	96.38	28302.54	30.72	6706.56	3.42	-3192.13	21.76	-10369.19	104.02	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40593.92	-3.60	-11439.18	-0.92	-4233.34	0.00
		2X	Low	0%	303.90	12113.84	94.86	28301.90	30.08	6706.45	3.31	-3192.13	21.77	-10369.18	104.03	-4403.87	10.52	-26.70	-1.09	-2868.68	-13.09	-3111.91	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40604.33	6.81	-11436.15	2.12	-4233.35	-0.01
	Zone 32	0.5X	Low	0%	300.80	12115.57	96.58	28302.74	30.92	6706.72	3.57	-3192.13	21.76	-10369.20	104.02	-4403.91	10.48	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40595.51	-2.01	-11439.30	-1.04	-4233.34	0.00
		2X	Low	0%	298.02	12114.81	95.83	28302.33	30.51	6706.51	3.36	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40598.86	1.34	-11437.99	0.28	-4233.34	0.00
	Zone 33	0.5X	Low	0%	296.75	12114.95	95.96	28302.42	30.60	6706.58	3.44	-3192.13	21.77	-10369.18	104.03	-4403.88	10.51	-26.70	-1.09	-2868.69	-13.09	-3111.92	-2.99	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.23	0.03	-4233.34	0.00
		2X	Low	0%	296.64	12114.98	95.99	28302.38	30.56	6706.53	3.39	-3192.13	21.76	-10369.20	104.02	-4403.90	10.49	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.29	-0.02	-4233.34	0.00
	Zone 34	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
	Zone 35	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
	Zone 36	0.5X	Low	0%	298.34	12114.86	95.88	28302.59	30.77	6706.83	3.69	-3192.18	21.72	-10369.54	103.67	-4408.81	5.58	-26.70	-1.09	-2868.72	-13.13	-3109.79	-0.86	-2277.03	-13.08	-6.90	-0.04	-16.35	-0.01	40597.83	0.31	-11433.89	4.38	-4229.21	4.13
		2X	Low	0%	328.99	12115.11	96.12	28302.02	30.20	6706.00	2.85	-3192.07	21.82	-10368.66	104.55	-4393.97	20.43	-26.71	-1.10	-2868.61	-13.01	-3116.17	-7.24	-2277.28	-13.33	-6.90	-0.04	-16.38	-0.04	40596.84	-0.68	-11447.05	-8.78	-4242.13	-8.79
	Zone 37	0.5X	Low	0%	365.35	12114.08	95.09	28304.77	32.95	6709.53	6.38	-3192.22	21.68	-10370.75	102.46	-4424.96	-10.57	-26.67	-1.05	-2868.23	-12.64	-3105.92	3.00	-2276.59	-12.64	-6.89	-0.03	-16.33	0.01	40601.24	3.72	-11398.22	40.04	-4210.25	23.09
		2X	Low	0%	466.28	12116.51	97.52	28298.09	26.27	6701.09	-2.06	-3192.04	21.85	-10366.86	106.35	-4365.05	49.34	-26.78	-1.16	-2869.45	-13.86	-3122.87	-13.95	-2278.09	-14.14	-6.90	-0.04	-16.42	-0.08	40590.81	-6.71	-11510.59	-72.32	-4273.96	-40.62
	Zone 38	0.5X	Low	0%	302.52	12114.98	95.99	28302.37	30.55	6706.51	3.37	-3192.08	21.82	-10368.96	104.25	-4403.23	11.16	-26.71	-1.10	-2869.26	-13.67	-3112.72	-3.80	-2277.20	-13.25	-6.90	-0.04	-16.36	-0.02	40597.46	-0.06	-11439.07	-0.80	-4235.99	-2.65
		2X	Low	0%	298.31	12114.95	95.96	28302.45	30.62	6706.62	3.48	-3192.22	21.68	-10369.58	103.64	-4405.07	9.33	-26.68	-1.07	-2868.23	-12.64	-3110.00	-1.08	-2276.98	-13.04	-6.90	-0.04	-16.36	-0.02	40597.59	0.07	-11436.93	1.33	-4229.01	4.33
	Zone 39	0.5X	Low	0%	302.11	12114.92	95.94	28302.49	30.67	6706.68	3.53	-3191.88	22.02	-10368.73	104.48	-4403.60	10.79	-26.70	-1.09	-2868.67	-13.08	-3111.80	-2.88	-2277.11	-13.16	-6.90	-0.04	-16.36	-0.02	40597.67	0.15	-11435.17	3.09	-4232.16	1.18
		2X	Low	0%	303.32	12115.04	96.06	28302.22	30.40	6706.31	3.17	-3192.63	21.27	-10370.13	103.08	-4404.51	9.88	-26.71	-1.09	-2868.72	-13.13	-3112.15	-3.23	-2277.16	-13.21	-6.90	-0.04	-16.36	-0.02	40597.22	-0.30	-11444.39	-6.12	-4235.68	-2.34
Model Layer 9 (S.Y. = 0.1)	Zone 31	0.5X	Low	0%	297.06	12112.34	93.35	28300.00	28.18	6705.79	2.65	-3192.11	21.79	-10369.14	104.07	-4403.78	10.61	-26.70	-1.09	-2868.68	-13.09	-3111.90	-2.98	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40594.05	-3.47	-11435.75	2.51	-4233.37	-0.03
		2X	Low	0%	326.52	12121.16	102.17	28307.93	36.11	6708.11	4.97	-3192.18	21.71	-10369.33	103.88	-4404.12	10.27	-26.70	-1.09	-2868.69	-13.10	-3111.94	-3.02	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40608.47	10.95	-11444.25	-5.99	-4233.32	0.02
	Zone 32	0.5X	Low	0%	301.27	12109.01	90.03	28297.76	25.94	6705.09	1.95	-3192.08	21.82	-10369.07	104.15	-4403.67	10.72	-26.70	-1.09	-2868.68	-13.09	-3111.89	-2.97	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40588.34	-9.18	-11431.21	7.05	-4233.28	0.06
		2X	Low	0%	349.74	12125.95	106.96	28311.32	39.50	6709.59	6.45	-3192.23	21.66	-10369.46	103.75	-4404.30	10.09	-26.70	-1.09	-2868.69	-13.10	-3111.96	-3.04	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40615.58	18.06	-11450.95	-12.69	-4233.45	-0.11
	Zone 33	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
	Zone 34	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
	Zone 35	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
	Zone 36	0.5X	Low	0%	308.50	12114.74	95.75	28302.82	31.00	6707.20	4.06	-3192.26	21.64	-10370.10	103.12	-4415.41	-1.02	-26.69	-1.07	-2868.67	-13.08	-3106.33	2.59	-2276.87	-12.92	-6.90	-0.04	-16.34	0.00	40598.21	0.69	-11428.03	10.23	-4222.05	11.29
		2X	Low	0%	375.37	12115.39	96.40	28301.56	29.74	6705.27	2.13	-3191.89	22.01	-10367.46	105.75	-4381.10	33.30	-26.74	-1.12	-2868.71	-13.12	-3122.97	-14.05	-2277.63	-13.68	-6.90	-0.04	-16.40	-0.06	40596.11	-1.40	-11458.47	-20.21	-4255.71	-22.37
	Zone 37	0.5X	Low	1%	703.65	12104.66	85.67	28322.62	50.80	6731.81	28.66	-3189.20	24.70	-10364.14	109.08	-4448.24	-33.85	-26.63	-1.01	-2867.82	-12.23	-3095.47	13.45	-2275.81	-11.87	-6.89	-0.03	-16.27	0.07	40625.50	27.98	-11191.88	246.38	-4175.47	57.87
		2X	Low	1%	1062.84	12131.49	112.51	28265.11	-6.71	6659.90	-43.24	-3197.34	16.56	-10377.89	95.32	-4321.44	92.95	-26.85	-1.24	-2870.18	-14.59	-3142.18	-33.26	-2279.45	-15.50	-6.91	-0.05	-16.53	-0.19	40542.53	-54.99	-11906.77	-468.51	-4340.56	-107.22
	Zone 38	0.5X	Low	0%	301.39	12114.84	95.85	28302.66	30.84	6706.94	3.80	-3192.21	21.68	-10369.75	103.47	-4410.80	3.59	-26.70	-1.08	-2869.12	-13.53	-3108.14	0.78	-2277.00	-13.05	-6.90	-0.04	-16.35	-0.01	40597.95	0.43	-11432.10	6.16	-4226.27	7.07
		2X	Low	0%	344.54	12115.20	96.21	28301.89	30.06	6705.78	2.64	-3191.98	21.92	-10368.14	105.07	-4390.16	24.23	-26.72	-1.10	-2867.84	-12.25	-3119.43	-10.51	-2277.36	-13.41	-6.90	-0.04	-16.38	-0.04	40596.64	-0.88	-11450.46	-12.19	-4247.31	-13.97
	Zone 39	0.5X	Low	0%	474.86	12113.89	94.90	28304.92	33.10	6710.22	7.07	-3187.97	25.93	-10360.09	113.13	-4393.05	21.34	-26.67	-1.05	-2868.24	-12.65	-3108.28	0.64	-2276.65	-12.70	-6.90	-0.03	-16.34	0.00	40601.57	4.05	-11356.68	81.58	-4166.67	66.68
		2X	Low	0%	547.11	12116.77	97.78	28297.91	26.09	6700.04	-3.11	-3199.78	14.12	-10386.95	86.26	-4425.96	-11.57	-26.77	-1.16	-2869.46	-13.87	-3118.35	-9.43	-2277.97	-14.02	-6.90	-0.04	-16.40	-0.06	40590.33	-7.19	-11584.43	-146.17	-4349.59	-116.25
Model Layer 10 (S.Y. = 0.1 except Zone 38)	Zone 32	0.5X	Low	0%	295.52	12112.85	93.86	28300.51	28.69	6705.53	2.38	-3192.11	21.79	-10369.13	104.08	-4403.79	10.60	-26.70	-1.09	-2868.68	-13.09	-3111.90	-2.98	-2277.12	-13.17	-6.90	-0.04	-16.36	-0.02	40596.39	-1.13	-11435.69	2.57	-4233.31	0.03
		2X	Low	0%	312.39	12118.62	99.63	28305.75	33.92	6708.34	5.19	-3192.17	21.73	-10369.30	103.92	-4404.08	10.32	-26.70	-1.09	-2868.69	-13.10	-3111.94	-3.02	-2277.13	-13.18	-6.90	-0.04	-16.36	-0.02	40599.91	2.39	-11443.05	-4.79	-4233.41	-0.07
	Zone 33	0.5X	Low	0%	312.40	12117.65	98.66	28304.40	32.58	6706.69	3.54	-3192.04	21.86	-10368.96	104.26	-4403.35	11.05	-26.70	-1.09	-2868.68	-13.08	-3111.85	-2.93	-2277.11	-13.17	-6.90	-0.04	-16.36	-0.02	40600.77	3.25	-11431.55	6.71	-4233.18	0.16
		2X	Low	0%	307.13	12113.44	94.45	28299.37	27.55	6703.95	0.81	-3192.34	21.56	-10369.71	103.50	-4405.02	9.37	-26.71	-1.09	-2868.70	-13.11	-3112.05	-3.13	-2277.14	-13.19	-6.90	-0.04	-16.36	-0.02	40593.24	-4.28	-11452.84	-14.58	-4233.79	-0.45
	Zone 34	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
	Zone 35	0.5X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
		2X	Low	0%	296.67	12114.96	95.98	28302.40	30.58	6706.55	3.41	-3192.13	21.77	-10369.19	104.02	-4403.89	10.50	-26.70	-1.09	-2868.69	-13.09	-3111.92	-3.00	-2277.12	-13.18	-6.90	-0.04	-16.36	-0.02	40597.52	0.00	-11438.26	0.00	-4233.34	0.00
	Zone 36	0.5X	Low	0%	327.16	12114.65	95.67	28303.01	31.19	6707.51	4.37	-3192.29	21.61	-10370.43	102.78	-4421.17	-6.78	-26.67	-1.06	-2868.74	-13.15	-3102.41	6.51	-2276.72	-12.77	-6.90	-0.03	-16.33	0.01	40598.48	0.96	-11423.60	14.67	-4217.73	15.61
		2X	Low	0%	407.66	12115.50	96.51	28301.23	29.41	6704.75	1.61	-3191.83	22.07	-10366.94	106.27	-4371.38	43.01	-26.76	-1.15	-2868.58	-12.99	-3129.68	-20.76	-2277.87	-13.92	-6.90	-0.04	-16.41	-0.07	40595.60	-1.92	-11466.14	-27.87	-4263.41	-30.06
	Zone 37	0.5X	Low	0%	546.35	12108.70	89.71	28312.48	40.66	6723.66	20.52	-3192.33	21.57	-10372.68	100.54	-4449.39	-35.00	-26.58	-0.96	-2867.08	-11.48	-3098.19	10.73	-2275.58	-11.63	-6.89	-0.03	-16.28	0.05	40614.67	17.15	-11312.98	125.28	-4172.30	61.04
		2X	Low	1%	763.82	12124.81	105.82	28283.19	11.37	6675.15	-27.99	-3191.97	21.93	-10364.47	108.74	-4333.75	80.64	-26.91	-1.30	-2871.13	-15.54	-3133.80	-24.88	-2279.56	-15.61	-6.91	-0.05	-16.48	-0.14	40563.60	-33.92	-11659.58	-221.32	-4327.91	-94.57
	Zone 38 (S.Y.=0.05)	0.5X	Low	0%	319.92	12114.77	95.78	28302.80	30.98	6707.19	4.04	-3192.23	21.66	-10370.00	103.22	-4415.33	-0.94	-26.69	-1.07	-2868.64	-13.05	-3124.62	-15.70	-2276.90	-12.95	-6.90	-0.04	-16.34	0.00	40598.15	0.63	-11428.64	9.62	-4223.11	10.23
		2X	Low	0%	369.99	12115.29	96.31	28301.67	29.85	6705.43	2.28	-3191.95	21.95	-10367.80	105.42	-4383.47	30.92	-26.73	-1.12	-2868.17	-12.58	-3090.43	18.49	-2277.50	-13.55	-6.90	-0.04	-16.39	-0.05	40596.33	-1.19	-11455.58	-17.31	-4252.27	-18.93
	Zone 39	0.5X	Low	0%	362.02	12114.78	95.79	28303.01	31.19	6707.42	4.27	-3190.94	22.96	-10365.52	107.70	-4401.78	12.61	-26.69	-1.08	-2868.58	-12.99	-3111.13	-2.21	-2277.01	-13.06	-6.90	-0.04	-16.35	-0.02	40598.52	1.00	-11417.14	21.12	-4197.36	35.98
		2X	Low	0%	381.47	12115.29	96.31	28301.39	29.57	6705.08	1.93	-3194.00	19.89	-10375.38	97.84	-4407.27	7.12	-26.72	-1.11	-2868.87	-13.28	-3113.28	-4.36	-2277.33	-13.38	-6.90	-0.04	-16.37	-0.03	40595.89	-1.63	-11473.64	-35.38	-4292.95	-59.61

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

	Parameters		Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
Parameters	SCR Underflow (5000 AFY)		0.5X (2500 AFY)	High	Low
			0.8X (4000 AFY)	High	Low
			1.2X (6000 AFY)	High	Low
			1.5X (7500 AFY)	High	Low
			2X (10000 AFY)	High	Low
	EVT Rate		0.1X	High	Medium
			10X	High	High
	EVT Extinct Depth (5 ft)		2.5 ft	Low	Low
			10 ft	Medium	Low
	HFB #9 (0.001)		0.1X (0.0001)	High	Medium
			10X (0.01)	High	Medium
	HFB #10 and HFB #19 (1.0E-6 to 1.0E-2)		0.1X	Low	Low
			10X	Low	Low
	HFB #73 (1.0E-7)		0.1X (1.0E-8)	Low	Low
			10X (1.0E-6)	Low	Low
	HFB #98 (1.1E-4)		0.1X (1.1E-5)	Low	Low
			10X (1.1E-3)	Low	Low
	HFB #98 (1.1E-5)		0.1X (1.1E-6)	Low	Low
			10X (1.1E-4)	Low	Low
	Surface Recharge from Appiled Water	Fillmore basin only	0.5X	Low	Low
			1.5X	Low	Low
		Piru basin only	0.5X	Low	Low
			1.5X	Low	Low
		Santa Paula basin only	0.5X	Medium	Low
			1.5X	Medium	Low
	Surface Recharge from Precipitation	Fillmore basin only	0.5X	High	Low
			1.5X	High	Low
		Piru basin only	0.5X	High	Low
			1.5X	High	Low
		Santa Paula basin only	0.5X	High	Low
			1.5X	High	Low
	Surface Recharge from Pumped Water	Fillmore basin only	0.5X	High	Low
			1.5X	High	Low
		Piru basin only	0.5X	High	Low
			1.5X	High	Low
		Santa Paula basin only	0.5X	Medium	Low
			1.5X	Low	Low
	STR Conductance for Piru Creek		0.1X	High	Medium
			10X	High	Medium
	STR Conductance for Sespe Creek		0.1X	High	Low
			10X	High	Low
	STR Conductance for Santa Paula Creek		0.1X	Low	Low
			10X	Low	Low
	STR Conductance for Santa Clara River	Piru basin only	0.1X	High	High
			10X	High	Medium
		Fillmore basin only	0.1X	Low	Low
			10X	High	Low
		Santa Paula basin only	0.1X	Low	Low
			10X	High	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

	Parameters		Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
		Oxnard and Mound basins only	0.1X	Low	Low
			10X	Low	Low
	Horizontal Hydraulic Conductivity		**Multiplier**	**Calibration Residual Sensitivity**	**Flow Budget Sensitivity**
	Model Layer 1	Zone 31 (1200 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 32 (1200 Ft/day)	0.1X	Medium	Low
			10X	Low	Low
		Zone 33 (600 ft/day)	0.1X	Medium	Low
			10X	Medium	Low
		Zone 34 (200 Ft/day)	0.1X	Low	Low
			10X	Medium	Low
		Zone 35 (200 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 36 (200 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 37 (200 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Model Layer 2	Zone 31 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 32 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 33 (0.1 ft/day)	0.1X	High	Low
			10X	Medium	Low
		Zone 34 (0.1 ft/day)	0.1X	Medium	Low
			10X	Medium	Low
		Zone 35 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 36 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 37 (100ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Model Layer 3	Zone 26 (600 ft/day)	0.1X	High	Low
			10X	High	Low
		Zone 31 (1200 ft/day)	0.1X	High	Low
			10X	High	Low
		Zone 32 (1200 ft/day)	0.1X	High	Medium
			10X	High	Medium
		Zone 33 (400 ft/day)	0.1X	High	High
			10X	High	High
		Zone 34 (100 ft/day)	0.1X	Medium	Low
			10X	High	Low
		Zone 35 (100 ft/day)	0.1X	Medium	Low
			10X	High	High

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

		Parameters	Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
		Zone 36 (100 ft/day)	0.1X	Low	Low
			10X	High	Low
		Zone 37 (100 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 38 (100 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Model Layer 4	Zone 26 (400 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 31 (1000 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 32 (1000 ft/day)	0.1X	Low	Low
			10X	High	Low
		Zone 33 (200 ft/day)	0.1X	Low	Low
			10X	High	Low
		Zone 34 (100 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 35 (1 ft/day)	0.1X	High	Low
			10X	Low	Low
		Zone 36 (1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 37 (100 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 38 (1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Model Layer 5	Zone 26 (400 ft/day)	0.1X	High	Low
			10X	High	Low
		Zone 31 (1000 ft/day)	0.1X	Medium	Low
			10X	Low	Low
		Zone 32 (1000 ft/day)	0.1X	High	Medium
			10X	High	Medium
		Zone 33 (200 ft/day)	0.1X	High	Medium
			10X	High	High
		Zone 34 (100 ft/day)	0.1X	High	Low
			10X	High	Medium
		Zone 35 (100 ft/day)	0.1X	High	Medium
			10X	High	High
		Zone 36 (100 ft/day)	0.1X	High	Low
			10X	High	Low
		Zone 37 (100 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 38 (100 ft/day)	0.1X	Medium	Low
			10X	Low	Low
		Zone 39 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
rizontal Hydraulic Conductivity		Zone 31 (1 ft/day)	0.1X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

		Parameters	Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
Ho	Model Layer 6	Zone 31 (1 ft/day)	10X	Low	Low
		Zone 32 (1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 33 (1 ft/day)	0.1X	Low	Low
			10X	Medium	Low
		Zone 34 (1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 35 (1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 36 (0.1 ft/day)	0.1X	Medium	Low
			10X	Low	Low
		Zone 37 (1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 38 (0.01 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Model Layer 7	Zone 31 (200 ft/day)	0.1X	Medium	Low
			10X	Medium	Low
		Zone 32 (200 ft/day)	0.1X	High	High
			10X	High	High
		Zone 33 (100 ft/day)	0.1X	High	High
			10X	High	High
		Zone 34 (100 ft/day)	0.1X	High	Low
			10X	High	Medium
		Zone 35 (50 ft/day)	0.1X	High	Medium
			10X	High	High
		Zone 36 (50 ft/day)	0.1X	Medium	Low
			10X	Medium	Low
		Zone 37 (5 ft/day)	0.1X	Low	Low
			10X	Medium	Low
		Zone 38 (20 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (5 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Model Layer 8	Zone 31 (0.01 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 32 (0.01 ft/day)	0.1X	High	Low
			10X	Medium	Low
		Zone 33 (0.01 ft/day)	0.1X	Low	Low
			10X	High	Low
		Zone 34 (0.01 ft/day)	0.1X	High	Low
			10X	High	Low
		Zone 35 (0.01 ft/day)	0.1X	High	Low
			10X	High	Medium
		Zone 36 (0.01 ft/day)	0.1X	Low	Low
			10X	High	Low
		Zone 37 (0.01 ft/day)	0.1X	Low	Low
			10X	Medium	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

		Parameters	Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
		Zone 38 (0.01 ft/day)	0.1X	Low	Low
			10X	Medium	Low
		Zone 39 (0.01 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Model Layer 9	Zone 31 (100 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 32 (100 ft/day)	0.1X	High	Low
			10X	High	Low
		Zone 33 (100 ft/day)	0.1X	High	Low
			10X	High	Medium
		Zone 34 (100 ft/day)	0.1X	High	Low
			10X	High	Low
		Zone 35 (50 ft/day)	0.1X	High	Low
			10X	High	Low
		Zone 36 (50 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 37 (5 ft/day)	0.1X	High	Low
			10X	High	Low
		Zone 38 (20 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (5 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Model Layer 10	Zone 32 (100 ft/day)	0.1X	High	Medium
			10X	High	Medium
		Zone 33 (100 ft/day)	0.1X	High	Medium
			10X	High	Medium
		Zone 34 (100 ft/day)	0.1X	Low	Low
			10X	Medium	Low
		Zone 35 (50 ft/day)	0.1X	Low	Low
			10X	Medium	Low
		Zone 36 (50 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 37 (1 ft/day)	0.1X	Low	Low
			10X	Medium	Low
		Zone 38 (20 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (1 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Vertical Hydraulic Conductivity		**Multiplier**	**Calibration Residual Sensitivity**	**Flow Budget Sensitivity**
	Model Layer 1	Zone 31 (120 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 32 (120 Ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 33 (60 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 34 (20 Ft/day)	0.1X	Low	Low
			10X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

	Parameters	Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
Model Layer 1	Zone 35 (20 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 36 (20 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 37 (20 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 39 (1 ft/day)	0.1X	Low	Low
		10X	Low	Low
Model Layer 2	Zone 31 (0.01 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 32 (0.01 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 33 (0.01 ft/day)	0.1X	Medium	Low
		10X	High	Low
	Zone 34 (0.01 ft/day)	0.1X	Medium	Low
		10X	Medium	Low
	Zone 35 (0.01 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 36 (0.01 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 37 (10ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 39 (1 ft/day)	0.1X	Low	Low
		10X	Low	Low
Model Layer 3	Zone 26 (60 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 31 (120 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 32 (120 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 33 (40 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 34 (10 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 35 (10 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 36 (10 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 37 (10 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 38 (10 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 39 (1 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 26 (40 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 31 (100 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 32 (100 ft/day)	0.1X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

		Parameters	Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
Vertical Hydraulic Conductivity	Model Layer 4	Zone 32 (100 ft/day)	10X	Low	Low
		Zone 33 (20 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 34 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 35 (0.1 ft/day)	0.1X	Low	Low
			10X	High	Low
		Zone 36 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 37 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 38 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (1 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Model Layer 5	Zone 26 (40 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 31 (100 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 32 (100 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 33 (20 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 34 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 35 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 36 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 37 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 38 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (1 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Model Layer 6	Zone 31 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 32 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 33 (0.1 ft/day)	0.1X	Medium	Low
			10X	Low	Low
		Zone 34 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 35 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 36 (0.01 ft/day)	0.1X	Low	Low
			10X	Medium	Low
		Zone 37 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

	Parameters	Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
	Zone 38 (0.001 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 39 (0.01 ft/day)	0.1X	Low	Low
		10X	Low	Low
Model Layer 7	Zone 31 (20 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 32 (20 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 33 (10 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 34 (10 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 35 (5 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 36 (5 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 37 (0.5 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 38 (2 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 39 (0.5 ft/day)	0.1X	Low	Low
		10X	Low	Low
Model Layer 8	Zone 31 (0.001 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 32 (0.001 ft/day)	0.1X	Medium	Low
		10X	High	Low
	Zone 33 (0.001 ft/day)	0.1X	High	Low
		10X	Low	Low
	Zone 34 (0.001 ft/day)	0.1X	High	Low
		10X	High	Low
	Zone 35 (0.001 ft/day)	0.1X	High	Medium
		10X	High	Low
	Zone 36 (0.001 ft/day)	0.1X	High	Low
		10X	Low	Low
	Zone 37 (0.001 ft/day)	0.1X	Medium	Low
		10X	Low	Low
	Zone 38 (0.001 ft/day)	0.1X	Medium	Low
		10X	Low	Low
	Zone 39 (0.001 ft/day)	0.1X	Low	Low
		10X	Low	Low
Model Layer 9	Zone 31 (10 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 32 (10 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 33 (10 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 34 (10 ft/day)	0.1X	Low	Low
		10X	Low	Low
	Zone 35 (5 ft/day)	0.1X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

	Parameters		Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
	Model Layer 9	Zone 35 (5 ft/day)	10X	Low	Low
		Zone 36 (5 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 37 (0.5 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 38 (2 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (0.5 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Model Layer 10	Zone 32 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 33 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 34 (10 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 35 (5 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 36 (5 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 37 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 38 (2 ft/day)	0.1X	Low	Low
			10X	Low	Low
		Zone 39 (0.1 ft/day)	0.1X	Low	Low
			10X	Low	Low
	Storage Coefficient		**Multiplier**	**Calibration Residual Sensitivity**	**Flow Budget Sensitivity**
	Model Layer 1 (storage coefficient = 0.001)	Zone 31	0.1X	Low	Low
			10X	Low	Low
		Zone 32	0.1X	Low	Low
			10X	Low	Low
		Zone 33	0.1X	Low	Low
			10X	Low	Low
		Zone 34	0.1X	Low	Low
			10X	Low	Low
		Zone 35	0.1X	Low	Low
			10X	Low	Low
		Zone 36	0.1X	Low	Low
			10X	Low	Low
		Zone 37	0.1X	Low	Low
			10X	Low	Low
		Zone 39	0.1X	Low	Low
			10X	Low	Low
		Zone 31	0.1X	Low	Low
			10X	Low	Low
		Zone 32	0.1X	Low	Low
			10X	Low	Low
		Zone 33	0.1X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

Parameters		Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
Model Layer 2 (storage coefficient = 0.001)	Zone 33	10X	Low	Low
	Zone 34	0.1X	Low	Low
		10X	Low	Low
	Zone 35	0.1X	Low	Low
		10X	Low	Low
	Zone 36	0.1X	Low	Low
		10X	Low	Low
	Zone 37	0.1X	Low	Low
		10X	Low	Low
	Zone 39	0.1X	Low	Low
		10X	Low	Low
Model Layer 3 (storage coefficient = 0.001)	Zone 26	0.1X	Low	Low
		10X	Low	Low
	Zone 31	0.1X	Low	Low
		10X	Low	Low
	Zone 32	0.1X	Low	Low
		10X	Low	Low
	Zone 33	0.1X	Low	Low
		10X	Low	Low
	Zone 34	0.1X	Low	Low
		10X	Low	Low
	Zone 35	0.1X	Low	Low
		10X	Low	Low
	Zone 36	0.1X	Low	Low
		10X	Low	Low
	Zone 37	0.1X	Low	Low
		10X	Low	Low
	Zone 38	0.1X	Low	Low
		10X	Low	Low
	Zone 39	0.1X	Low	Low
		10X	Low	Low
Model Layer 4 (storage coefficient = 0.001)	Zone 26	0.1X	Low	Low
		10X	Low	Low
	Zone 31	0.1X	Low	Low
		10X	Low	Low
	Zone 32	0.1X	Low	Low
		10X	Low	Low
	Zone 33	0.1X	Low	Low
		10X	Low	Low
	Zone 34	0.1X	Low	Low
		10X	Low	Low
	Zone 35	0.1X	Low	Low
		10X	Low	Low
	Zone 36	0.1X	Low	Low
		10X	Low	Low
	Zone 37	0.1X	Low	Low
		10X	Low	Low
	Zone 38	0.1X	Low	Low
		10X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

	Parameters		Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
Storage Coefficient		Zone 39	0.1X	Low	Low
			10X	Low	Low
	Model Layer 5 (storage coefficient = 0.001)	Zone 26	0.1X	Low	Low
			10X	Low	Low
		Zone 31	0.1X	Low	Low
			10X	Low	Low
		Zone 32	0.1X	Low	Low
			10X	Low	Low
		Zone 33	0.1X	Low	Low
			10X	Low	Low
		Zone 34	0.1X	Low	Low
			10X	Low	Low
		Zone 35	0.1X	Low	Low
			10X	Low	Low
		Zone 36	0.1X	Low	Low
			10X	Low	Low
		Zone 37	0.1X	Low	Low
			10X	Low	Low
		Zone 38	0.1X	Low	Low
			10X	Low	Low
		Zone 39	0.1X	Low	Low
			10X	Low	Low
	Model Layer 6 (storage coefficient = 0.0005)	Zone 31	0.1X	Low	Low
			10X	Low	Low
		Zone 32	0.1X	Low	Low
			10X	Low	Low
		Zone 33	0.1X	Low	Low
			10X	Low	Low
		Zone 34	0.1X	Low	Low
			10X	Low	Low
		Zone 35	0.1X	Low	Low
			10X	Low	Low
		Zone 36	0.1X	Low	Low
			10X	Low	Low
		Zone 37	0.1X	Low	Low
			10X	Low	Low
		Zone 38	0.1X	Low	Low
			10X	Low	Low
		Zone 39	0.1X	Low	Low
			10X	Low	Low
	Model Layer 7 (storage coefficient	Zone 31	0.1X	Low	Low
			10X	Low	Low
		Zone 32	0.1X	Low	Low
			10X	Low	Low
		Zone 33	0.1X	Low	Low
			10X	Low	Low
		Zone 34	0.1X	Low	Low
			10X	Low	Low
		Zone 35	0.1X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

Parameters		Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
(storage coefficient = 0.0005)	Zone 35	10X	Low	Low
	Zone 36	0.1X	Low	Low
		10X	Low	Low
	Zone 37	0.1X	Low	Low
		10X	Low	Low
	Zone 38	0.1X	Low	Low
		10X	Low	Low
	Zone 39	0.1X	Low	Low
		10X	Low	Low
Model Layer 8 (storage coefficient = 0.0005)	Zone 31	0.1X	Low	Low
		10X	Low	Low
	Zone 32	0.1X	Low	Low
		10X	Low	Low
	Zone 33	0.1X	Low	Low
		10X	Low	Low
	Zone 34	0.1X	Low	Low
		10X	Low	Low
	Zone 35	0.1X	Low	Low
		10X	Low	Low
	Zone 36	0.1X	Low	Low
		10X	Low	Low
	Zone 37	0.1X	Low	Low
		10X	Low	Low
	Zone 38	0.1X	Low	Low
		10X	Low	Low
	Zone 39	0.1X	Low	Low
		10X	Low	Low
Model Layer 9 (storage coefficient = 0.0005)	Zone 31	0.1X	Low	Low
		10X	Low	Low
	Zone 32	0.1X	Low	Low
		10X	Low	Low
	Zone 33	0.1X	Low	Low
		10X	Low	Low
	Zone 34	0.1X	Low	Low
		10X	Low	Low
	Zone 35	0.1X	Low	Low
		10X	Low	Low
	Zone 36	0.1X	Low	Low
		10X	Low	Low
	Zone 37	0.1X	Low	Low
		10X	Low	Low
	Zone 38	0.1X	Low	Low
		10X	Low	Low
	Zone 39	0.1X	Low	Low
		10X	Low	Low
	Zone 32	0.1X	Low	Low
		10X	Low	Low
	Zone 33	0.1X	Low	Low
		10X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

Parameters		Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
Model Layer 10 (storage coefficient = 0.0005)	Zone 34	0.1X	Low	Low
		10X	Low	Low
	Zone 35	0.1X	Low	Low
		10X	Low	Low
	Zone 36	0.1X	Low	Low
		10X	Low	Low
	Zone 37	0.1X	Low	Low
		10X	Low	Low
	Zone 38	0.1X	Low	Low
		10X	Low	Low
	Zone 39	0.1X	Low	Low
		10X	Low	Low
Specific Yield		**Multiplier**	**Calibration Residual Sensitivity**	**Flow Budget Sensitivity**
Model Layer 1 (S.Y. = 0.15)	Zone 31	0.5X	Low	Low
		2X	Low	Low
	Zone 32	0.5X	Low	Low
		2X	Low	Low
	Zone 33	0.5X	Low	Low
		2X	Low	Low
	Zone 34	0.5X	Low	Low
		2X	Low	Low
	Zone 35	0.5X	Low	Low
		2X	Low	Low
	Zone 36	0.5X	Low	Low
		2X	Low	Low
	Zone 37	0.5X	Low	Low
		2X	Low	Low
	Zone 39	0.5X	Low	Low
		2X	Low	Low
Model Layer 2 (S.Y. = 0.15)	Zone 31	0.5X	Low	Low
		2X	Low	Low
	Zone 32	0.5X	Low	Low
		2X	Low	Low
	Zone 33	0.5X	Low	Low
		2X	Low	Low
	Zone 34	0.5X	Low	Low
		2X	Low	Low
	Zone 35	0.5X	Low	Low
		2X	Low	Low
	Zone 36	0.5X	Low	Low
		2X	Low	Low
	Zone 37	0.5X	Low	Low
		2X	Low	Low
	Zone 39	0.5X	Low	Low
		2X	Low	Low
	Zone 26	0.5X	Low	Low
		2X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

	Parameters	Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
Model Layer 3 (S.Y. = 0.15)	Zone 31	0.5X	Medium	Low
		2X	High	Low
	Zone 32	0.5X	High	Low
		2X	High	Low
	Zone 33	0.5X	Low	Low
		2X	Medium	Low
	Zone 34	0.5X	Low	Low
		2X	Low	Low
	Zone 35	0.5X	Low	Low
		2X	Low	Low
	Zone 36	0.5X	Low	Low
		2X	Low	Low
	Zone 37	0.5X	Low	Low
		2X	Low	Low
	Zone 38	0.5X	Low	Low
		2X	Low	Low
	Zone 39	0.5X	Low	Low
		2X	Low	Low
Model Layer 4 (S.Y. = 0.05)	Zone 26	0.5X	Low	Low
		2X	Low	Low
	Zone 31	0.5X	Low	Low
		2X	Low	Low
	Zone 32	0.5X	Low	Low
		2X	Low	Low
	Zone 33	0.5X	Low	Low
		2X	Low	Low
	Zone 34	0.5X	Low	Low
		2X	Low	Low
	Zone 35	0.5X	Low	Low
		2X	Low	Low
	Zone 36	0.5X	Low	Low
		2X	Low	Low
	Zone 37	0.5X	Low	Low
		2X	Low	Low
	Zone 38	0.5X	Low	Low
		2X	Low	Low
	Zone 39	0.5X	Low	Low
		2X	Low	Low
Model Layer 5 (S.Y. = 0.15)	Zone 26	0.5X	Low	Low
		2X	Low	Low
	Zone 31	0.5X	Low	Low
		2X	Low	Low
	Zone 32	0.5X	Low	Low
		2X	Medium	Low
	Zone 33	0.5X	Low	Low
		2X	Low	Low
	Zone 34	0.5X	Low	Low
		2X	Low	Low
	Zone 35	0.5X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

			Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
Specific Yield		Zone 35	2X	Low	Low
		Zone 36	0.5X	Low	Low
			2X	Low	Low
		Zone 37	0.5X	Low	Low
			2X	Low	Low
		Zone 38	0.5X	Low	Low
			2X	Low	Low
		Zone 39	0.5X	Low	Low
			2X	Low	Low
	Model Layer 6 (S.Y. = 0.05)	Zone 31	0.5X	Low	Low
			2X	Low	Low
		Zone 32	0.5X	Low	Low
			2X	Low	Low
		Zone 33	0.5X	Low	Low
			2X	Low	Low
		Zone 34	0.5X	Low	Low
			2X	Low	Low
		Zone 35	0.5X	Low	Low
			2X	Low	Low
		Zone 36	0.5X	Low	Low
			2X	Low	Low
		Zone 37	0.5X	Low	Low
			2X	Low	Low
		Zone 38	0.5X	Low	Low
			2X	Low	Low
		Zone 39	0.5X	Low	Low
			2X	Low	Low
	Model Layer 7 (S.Y. = 0.1)	Zone 31	0.5X	Low	Low
			2X	Low	Low
		Zone 32	0.5X	Low	Low
			2X	Low	Low
		Zone 33	0.5X	Low	Low
			2X	Low	Low
		Zone 34	0.5X	Low	Low
			2X	Low	Low
		Zone 35	0.5X	Low	Low
			2X	Low	Low
		Zone 36	0.5X	Low	Low
			2X	Low	Low
		Zone 37	0.5X	Low	Low
			2X	Low	Low
		Zone 38	0.5X	Low	Low
			2X	Low	Low
		Zone 39	0.5X	Low	Low
			2X	Low	Low
		Zone 31	0.5X	Low	Low
			2X	Low	Low
		Zone 32	0.5X	Low	Low
			2X	Low	Low

Table 5-3. Sensitivity Analysis -- Sensitivity Levels

Parameters		Multiplier	Calibration Residual Sensitivity	Flow Budget Sensitivity
Model Layer 8 (S.Y. = 0.05)	Zone 33	0.5X	Low	Low
		2X	Low	Low
	Zone 34	0.5X	Low	Low
		2X	Low	Low
	Zone 35	0.5X	Low	Low
		2X	Low	Low
	Zone 36	0.5X	Low	Low
		2X	Low	Low
	Zone 37	0.5X	Low	Low
		2X	Low	Low
	Zone 38	0.5X	Low	Low
		2X	Low	Low
	Zone 39	0.5X	Low	Low
		2X	Low	Low
Model Layer 9 (S.Y. = 0.1)	Zone 31	0.5X	Low	Low
		2X	Low	Low
	Zone 32	0.5X	Low	Low
		2X	Low	Low
	Zone 33	0.5X	Low	Low
		2X	Low	Low
	Zone 34	0.5X	Low	Low
		2X	Low	Low
	Zone 35	0.5X	Low	Low
		2X	Low	Low
	Zone 36	0.5X	Low	Low
		2X	Low	Low
	Zone 37	0.5X	Low	Low
		2X	Low	Low
	Zone 38	0.5X	Low	Low
		2X	Low	Low
	Zone 39	0.5X	Low	Low
		2X	Low	Low
Model Layer 10 (S.Y. = 0.1 except Zone 38)	Zone 32	0.5X	Low	Low
		2X	Low	Low
	Zone 33	0.5X	Low	Low
		2X	Low	Low
	Zone 34	0.5X	Low	Low
		2X	Low	Low
	Zone 35	0.5X	Low	Low
		2X	Low	Low
	Zone 36	0.5X	Low	Low
		2X	Low	Low
	Zone 37	0.5X	Low	Low
		2X	Low	Low
	Zone 38 (S.Y.=0.05)	0.5X	Low	Low
		2X	Low	Low
	Zone 39	0.5X	Low	Low
		2X	Low	Low

FIGURES

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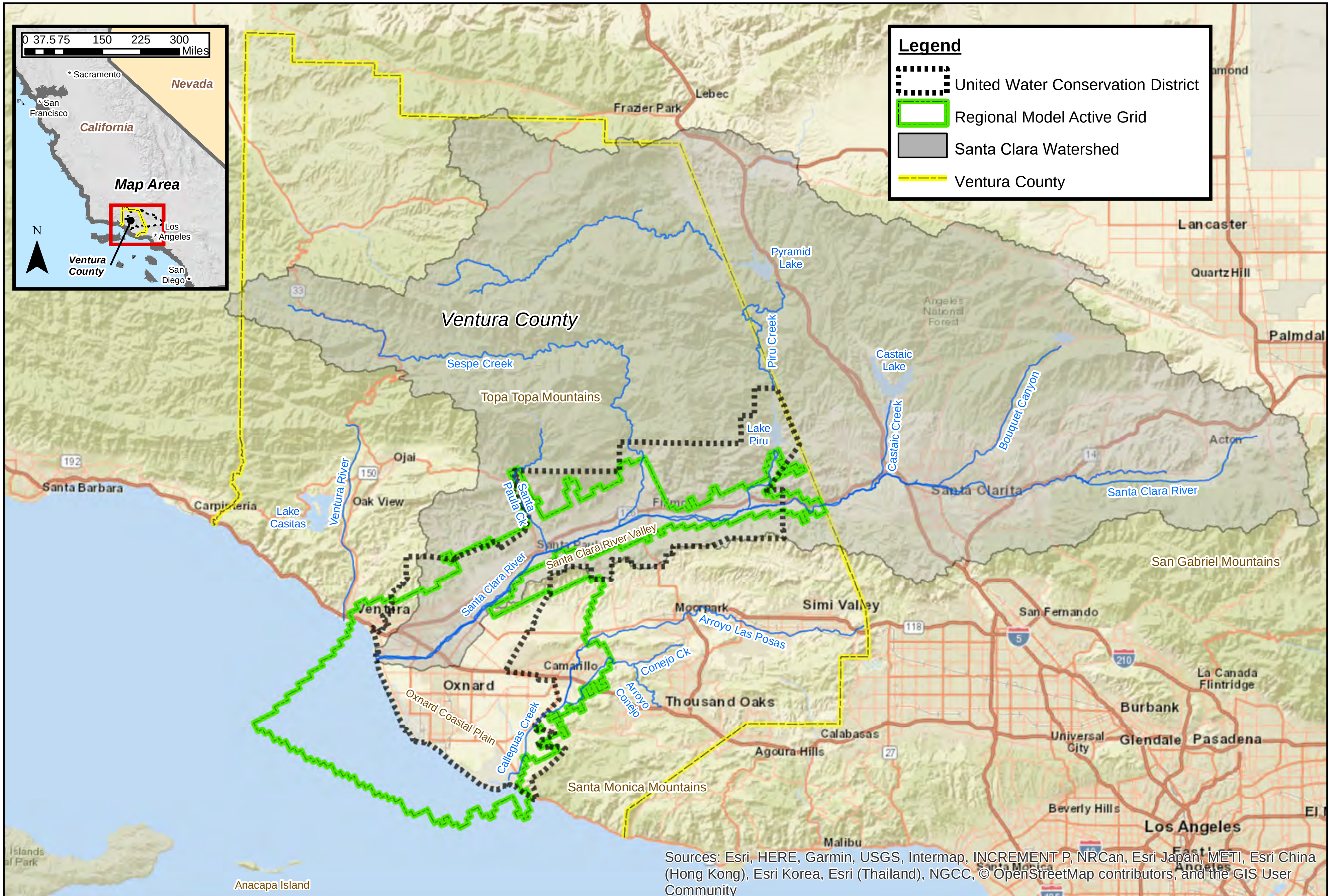

N

0 3 6 12 18 Miles

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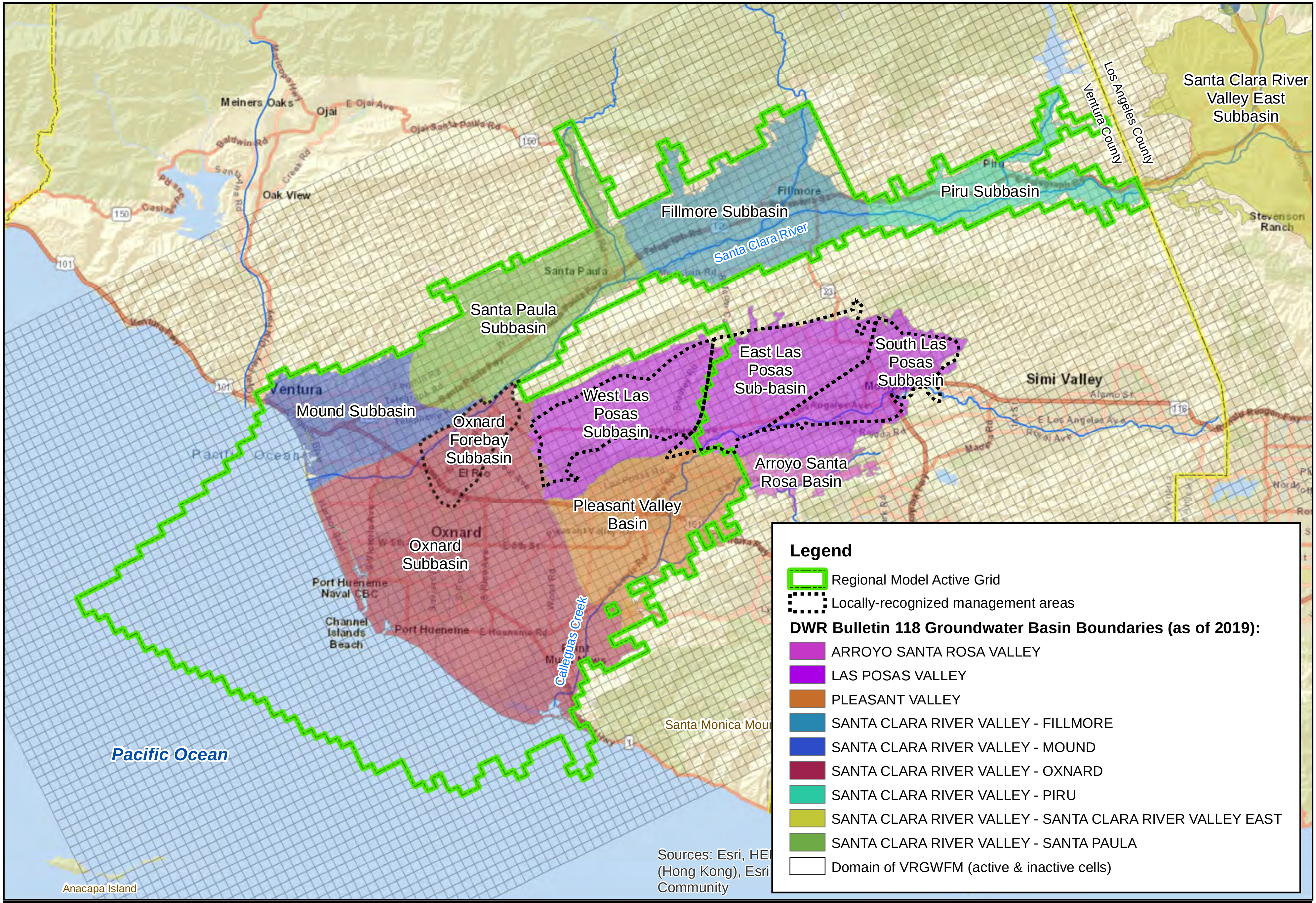
Figure 1-1.
Location Map



N

0 1 2 4 6 8 10 Miles

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Figure 1-2.
Regional Model Domain

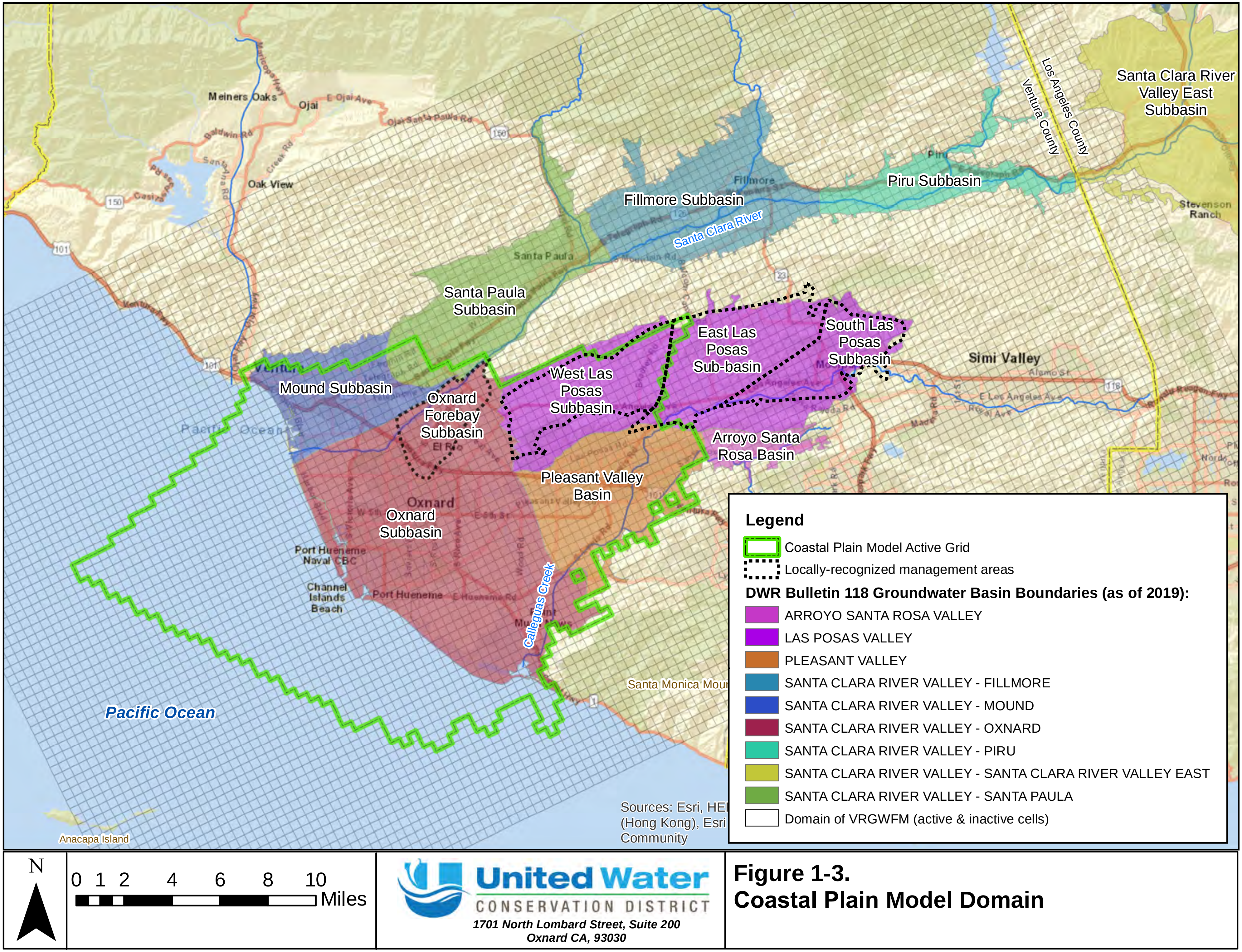

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Figure 1-3.
Coastal Plain Model Domain

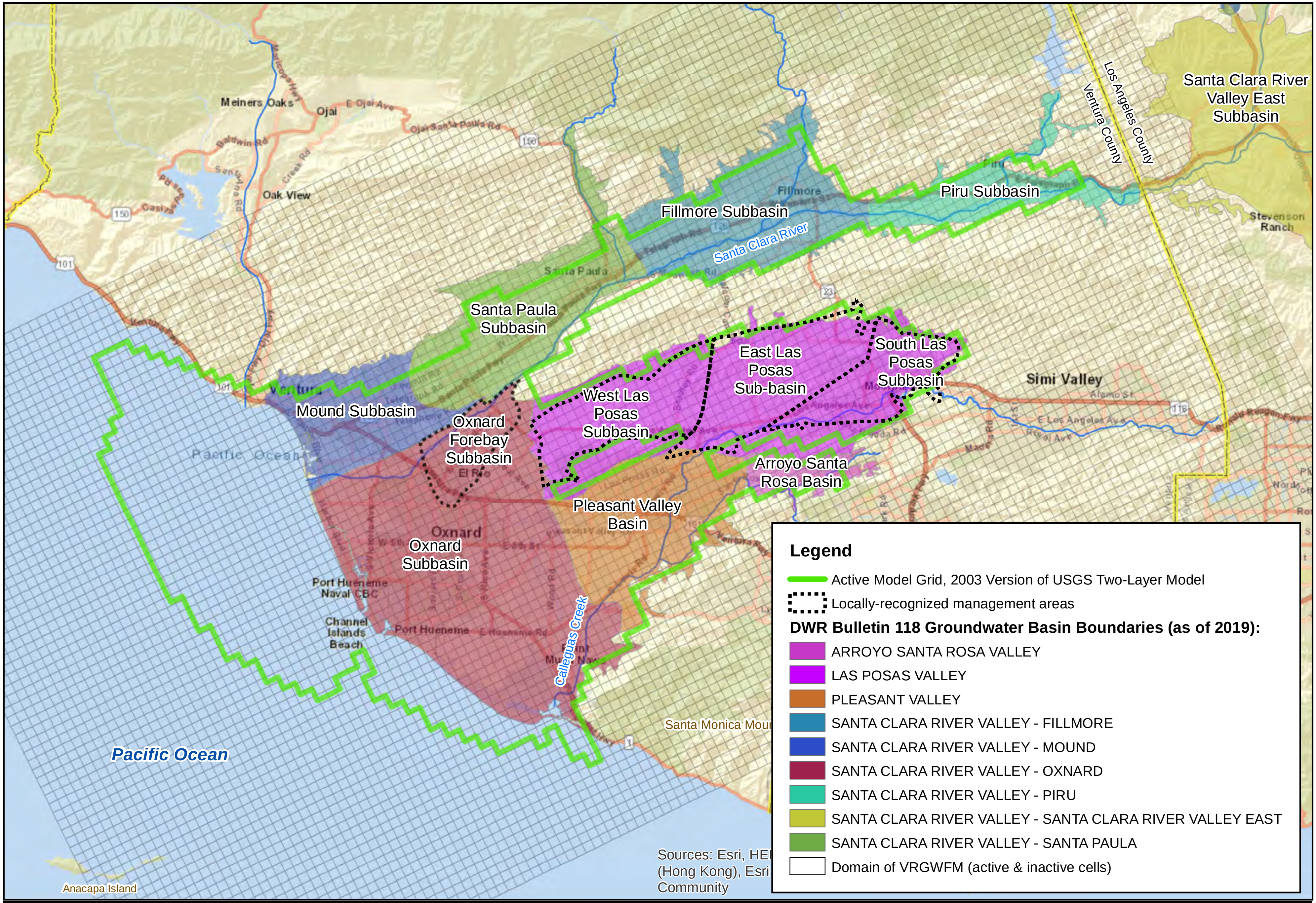

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Figure 1-4.
USGS (2003) Model Domain

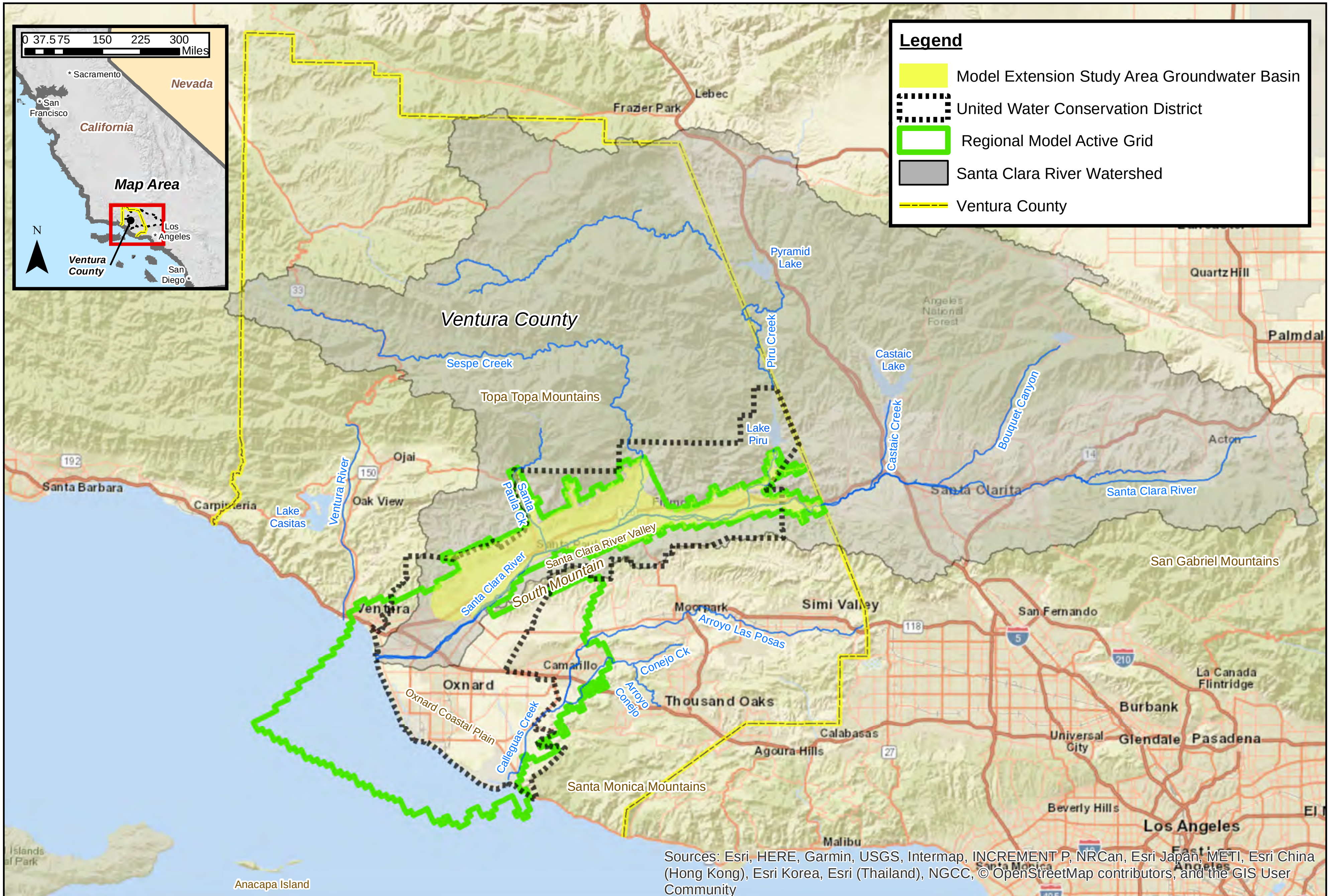

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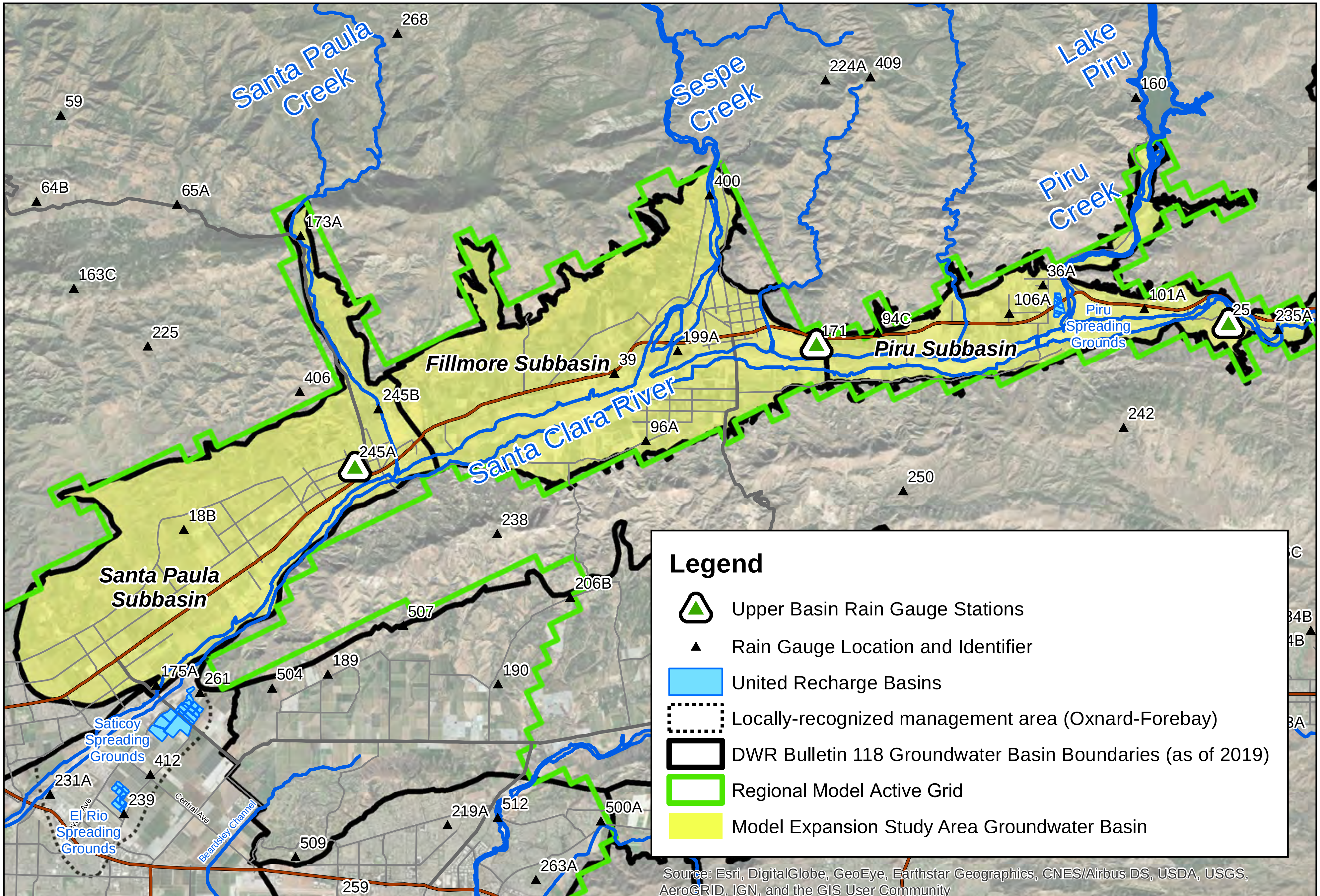
Figure 2-1.
Location Map with Regional Model Expansion Basins



N

0 1 2 4 6 Miles

(At original document size of 11x8.5)

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Figure 2-2.
Regional Model Expansion Basins

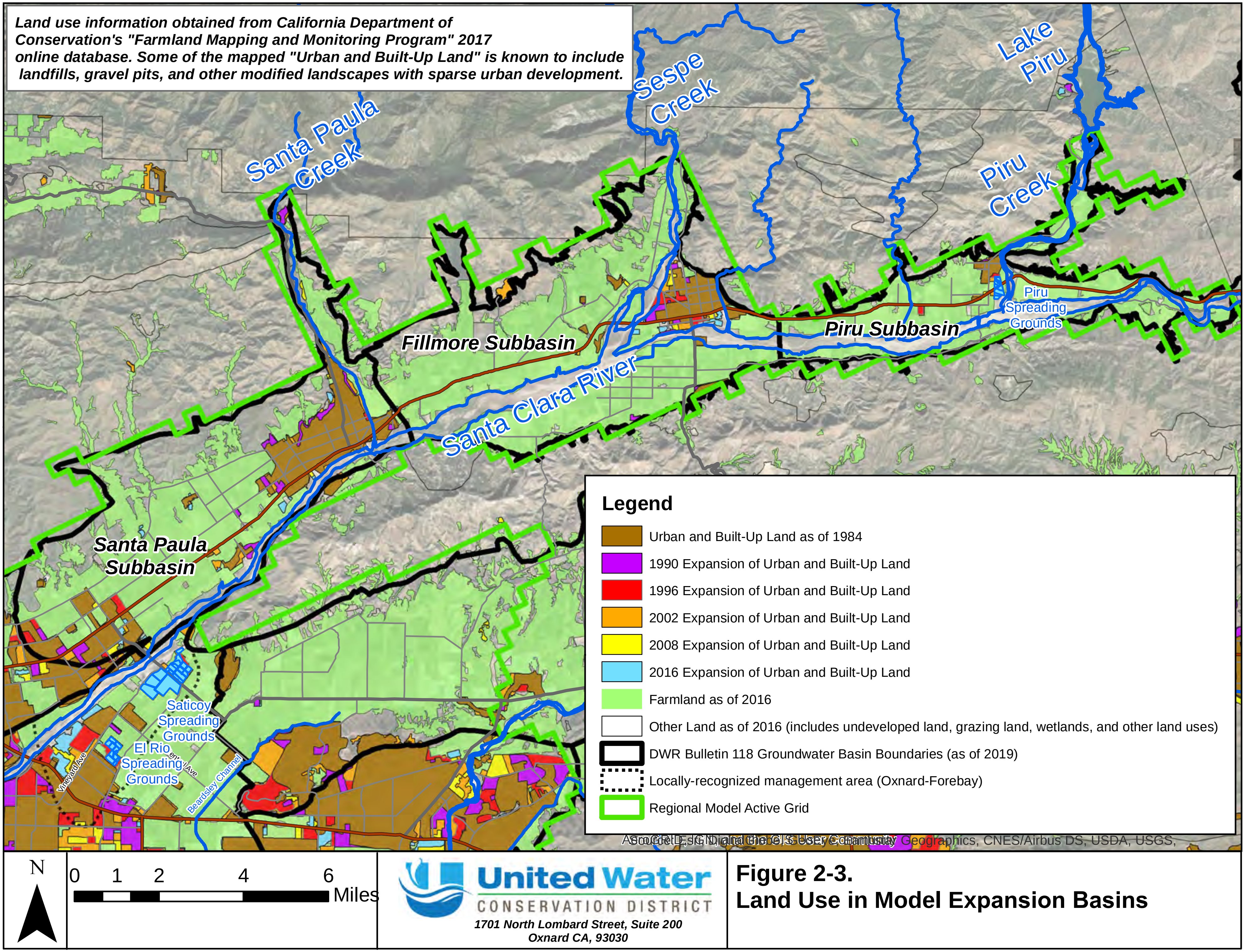

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Figure 2-3.
Land Use in Model Expansion Basins

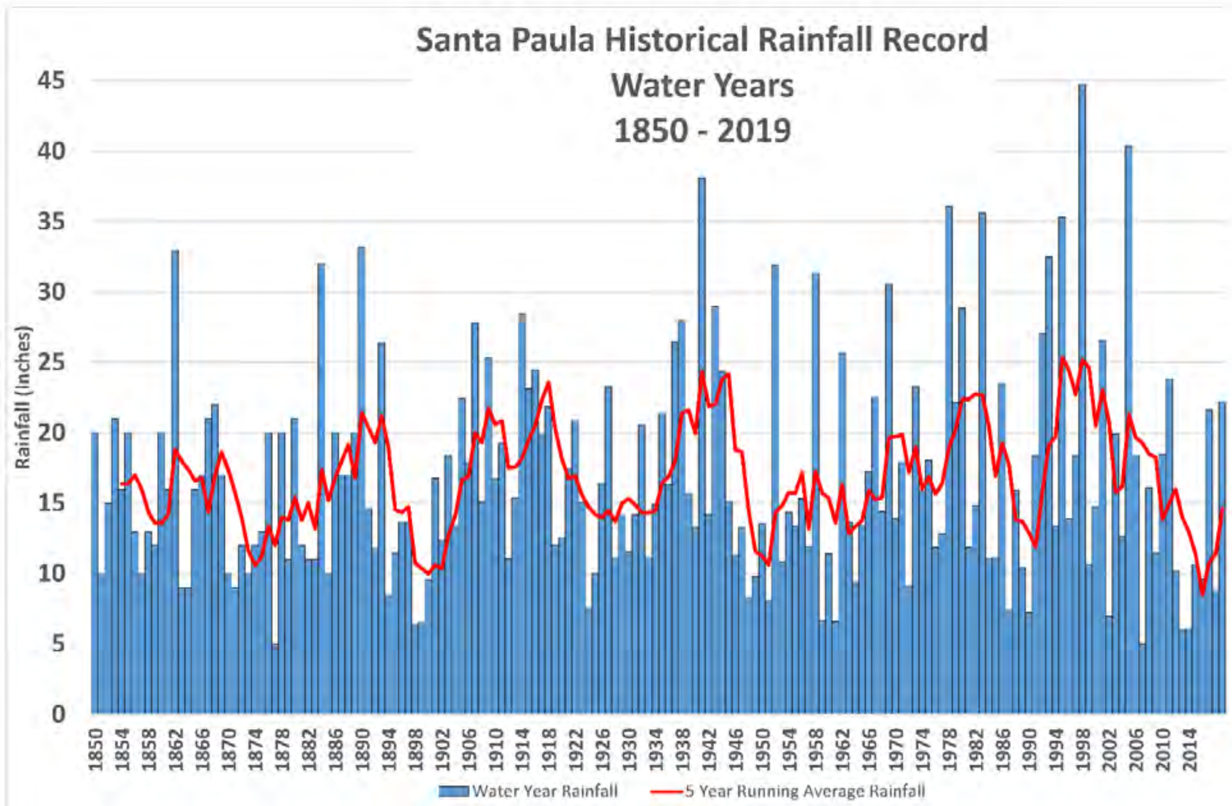

Figure 2-4. Santa Paula Annual Water Year (WY) Precipitation Totals (blue) and 5-year Moving Average (Red) from WY 1850 to 2019.

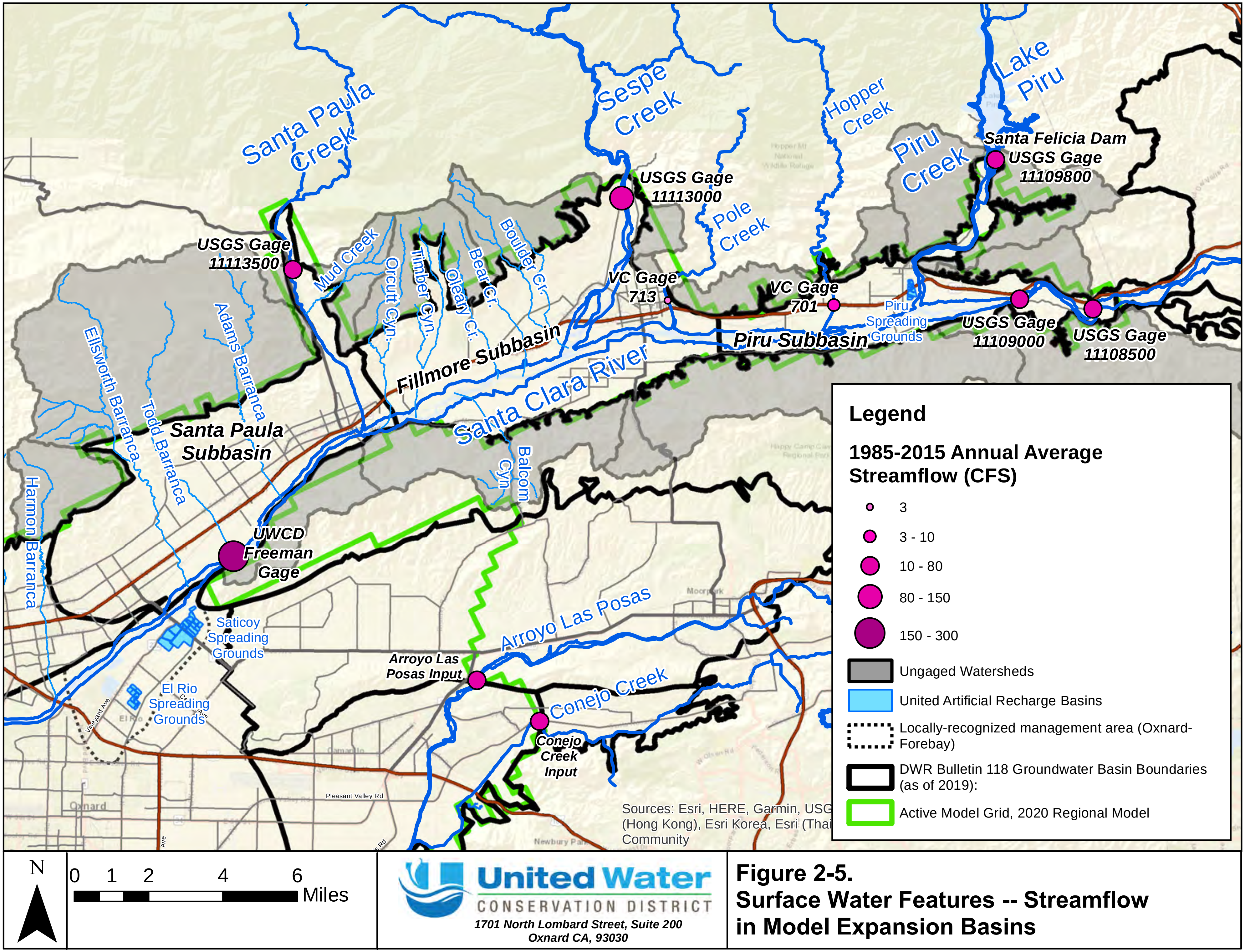

Figure 2-5. Surface Water Features -- Streamflow in Model Expansion Basins

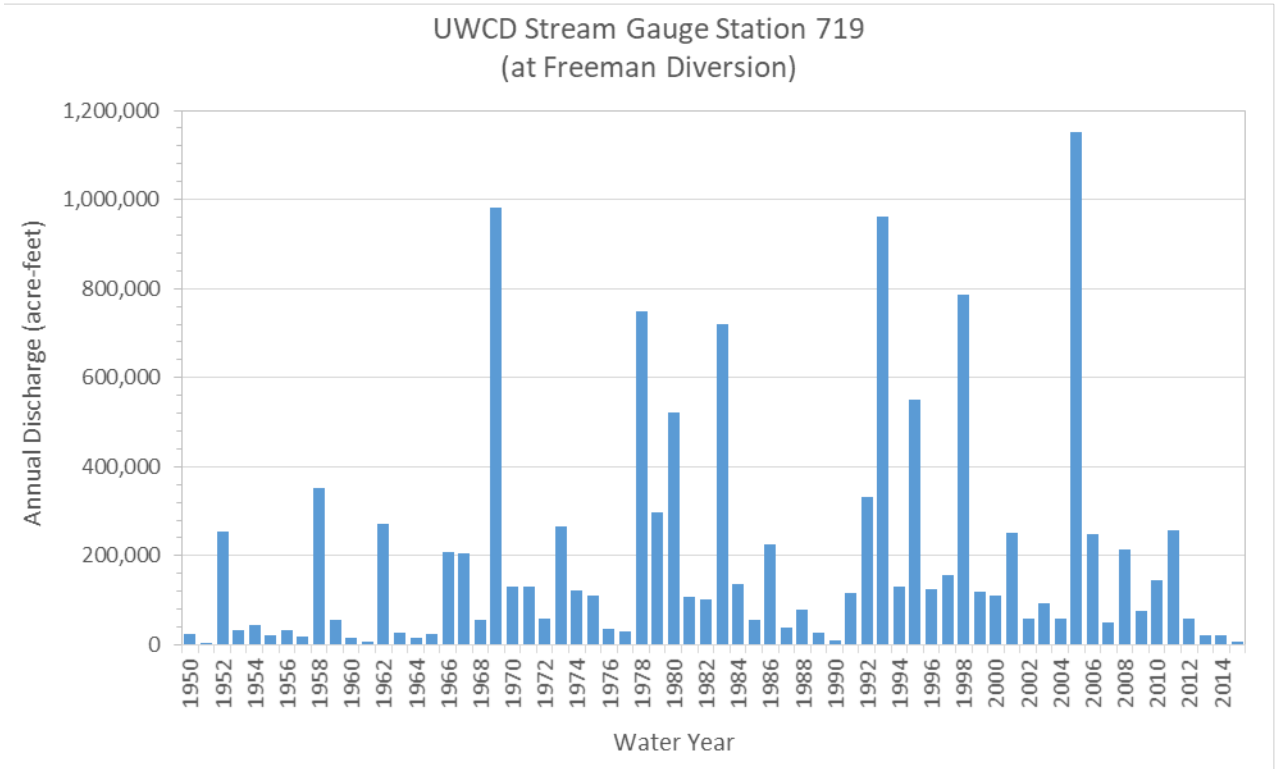

Figure 2-6. Annual Discharge in Santa Clara River at Freeman Diversion Water Years 1950-2015

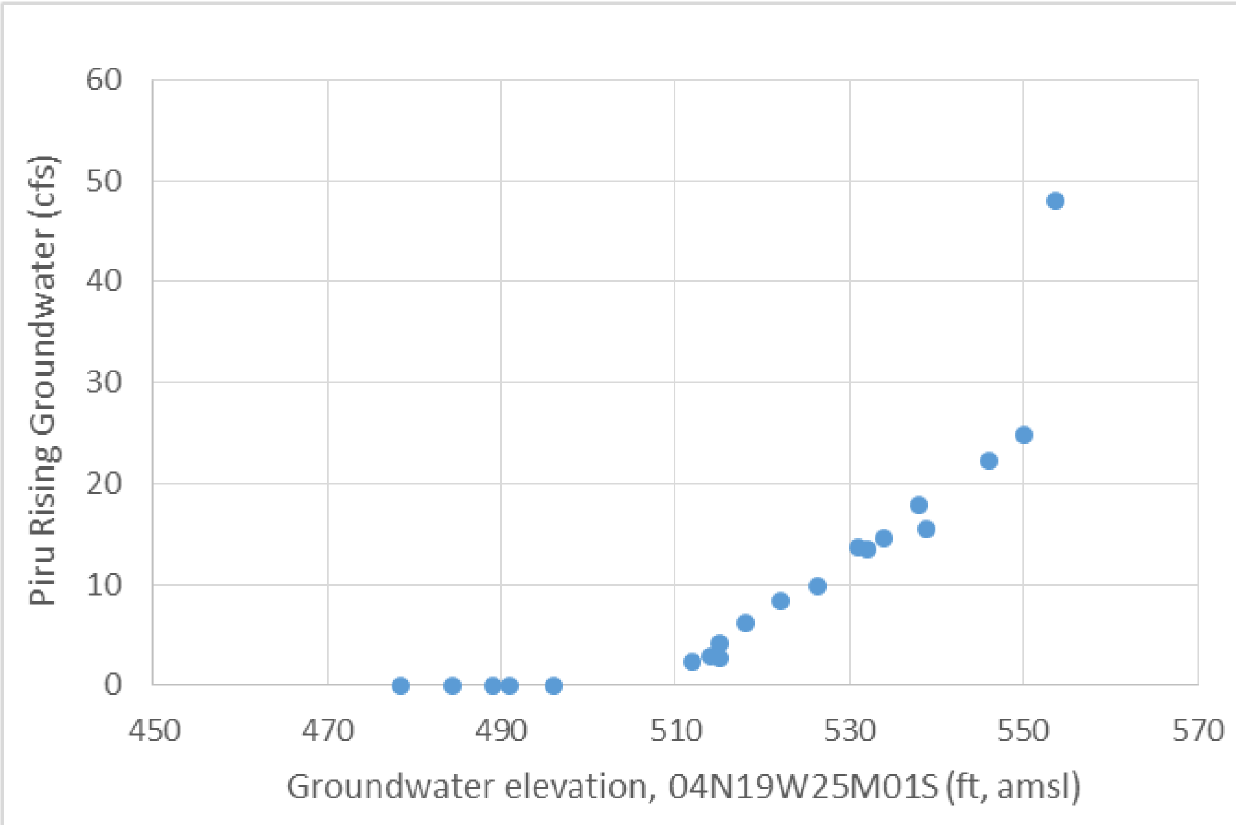

Figure 2-7. Observed Relationship Between Rising Groundwater at the Piru-Fillmore Basin Boundary and Groundwater Elevation in Piru Basin Well 04N19W25M01.

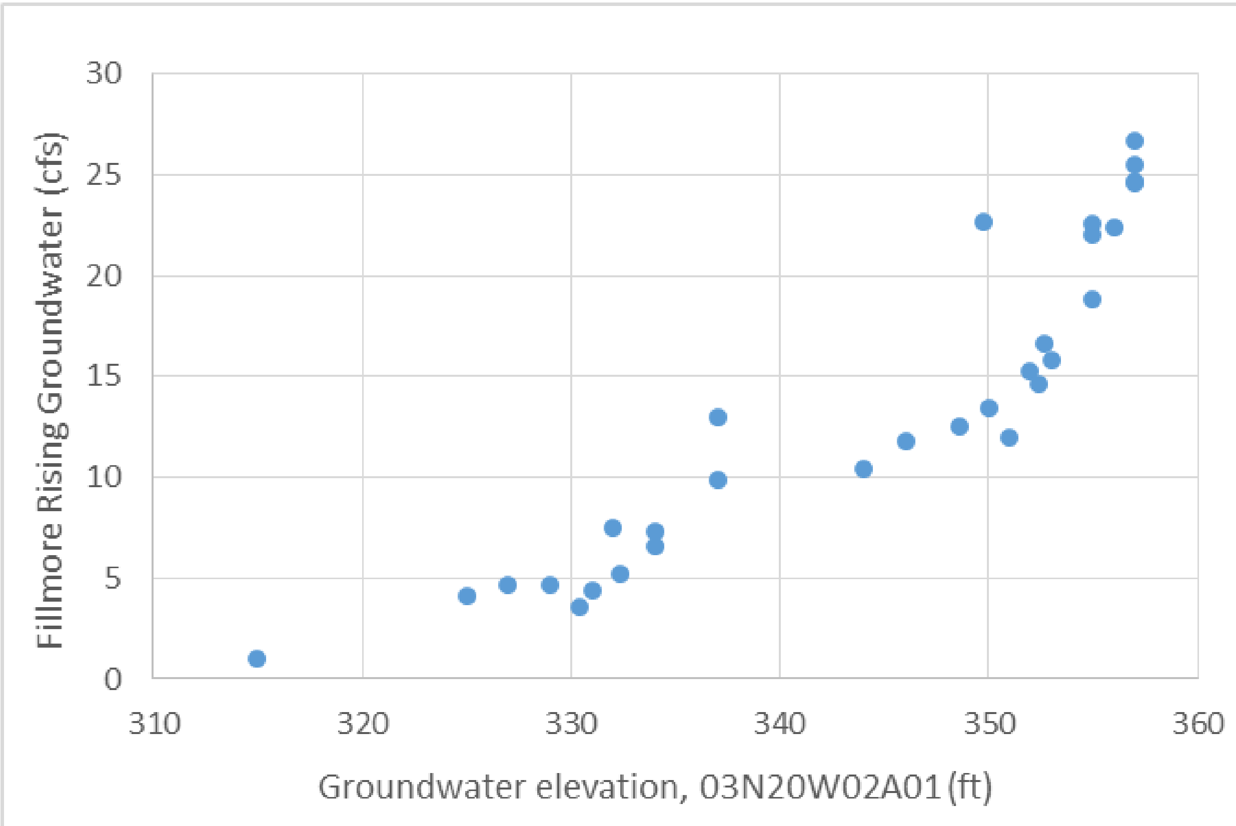

Figure 2-8. Observed Relationship Between Rising Groundwater at the Fillmore-Santa Paula Basin Boundary and Groundwater Elevation in Fillmore Basin Well 03N20W02A01.

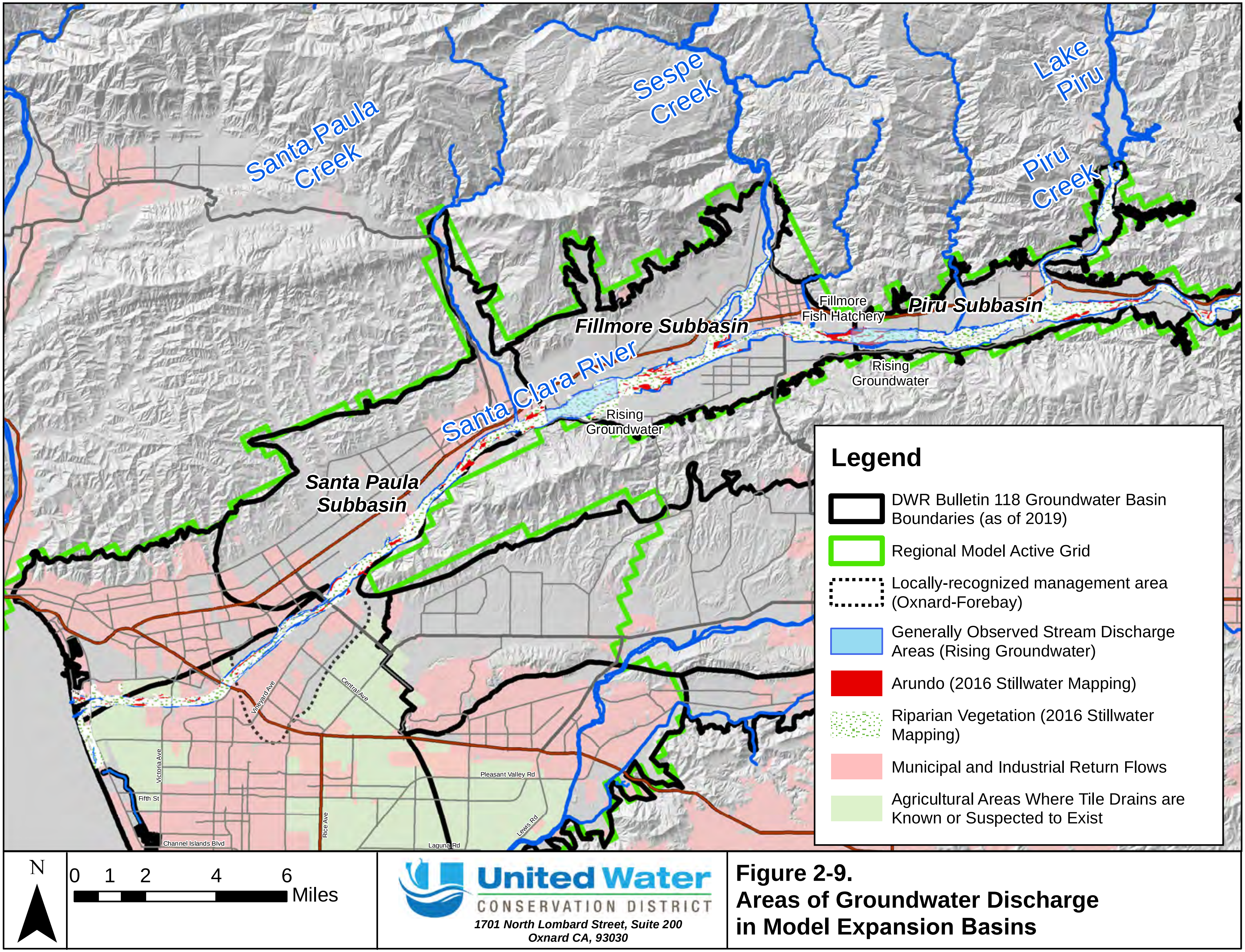

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Figure 2-9.
Areas of Groundwater Discharge in Model Expansion Basins

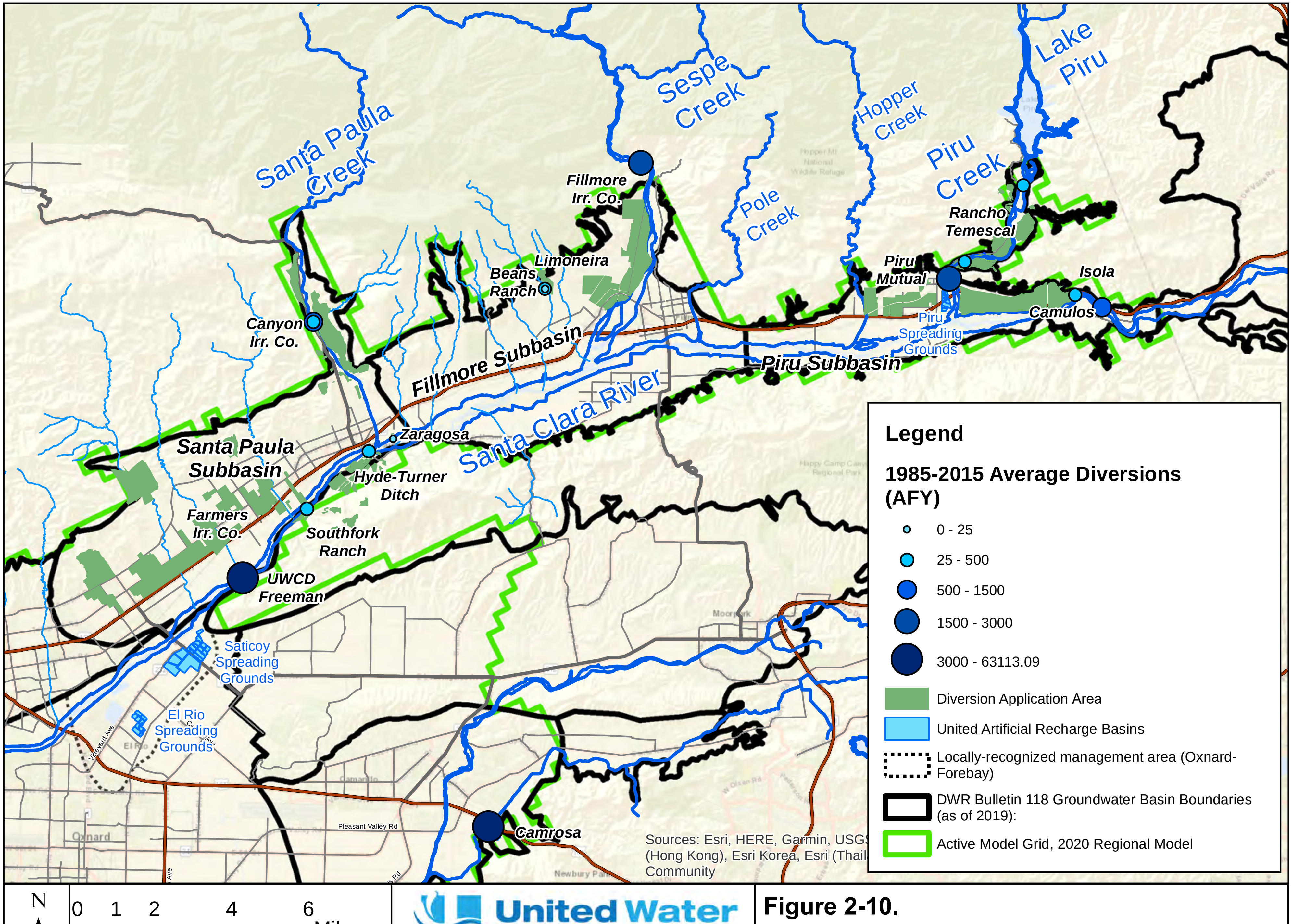

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Figure 2-10. Surface Water Features -- Diversions in Model Expansion Basins

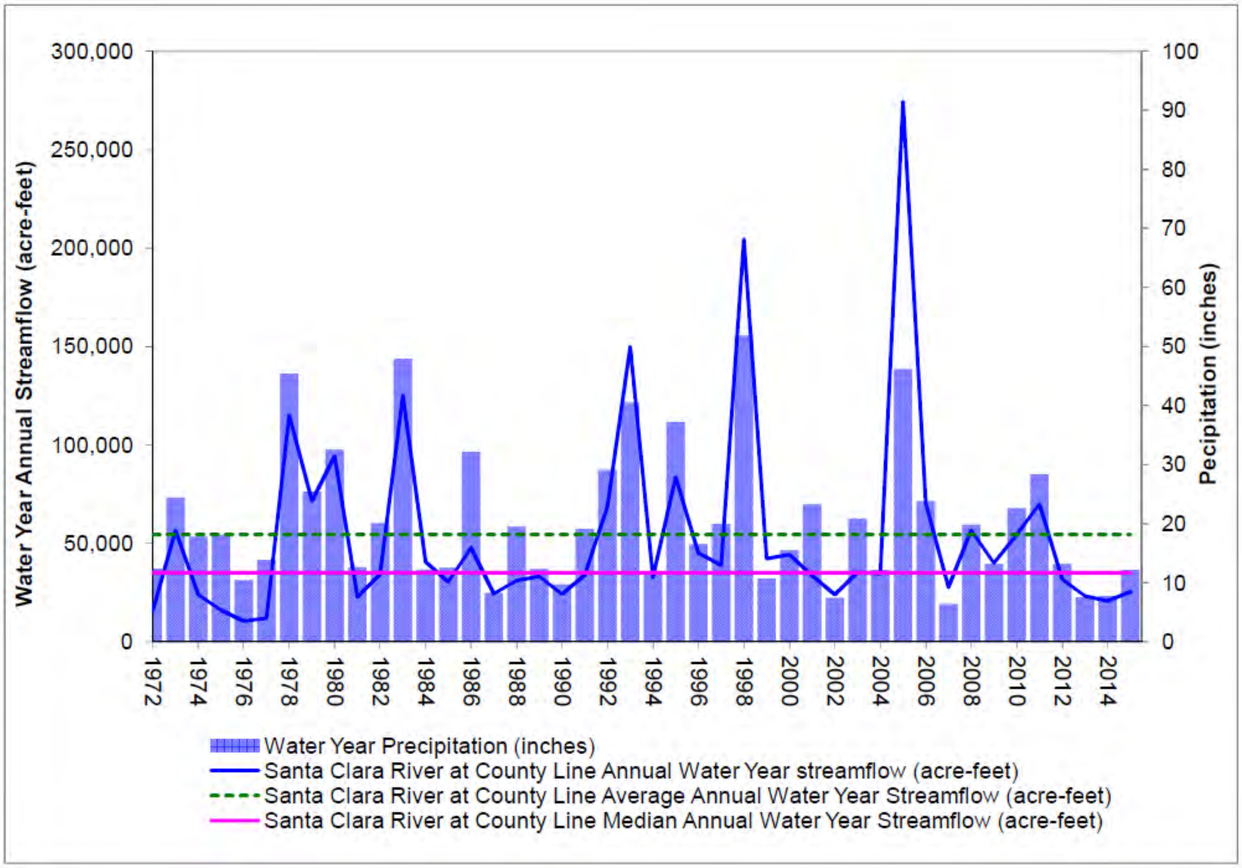

Figure 2-11. Santa Clara River Historical Annual Streamflow Near Ventura/L.A. Count Line and Piru Groundwater Basin Precipitation (streamflow data from USGS) (UWCD, 2016; Figure 10)

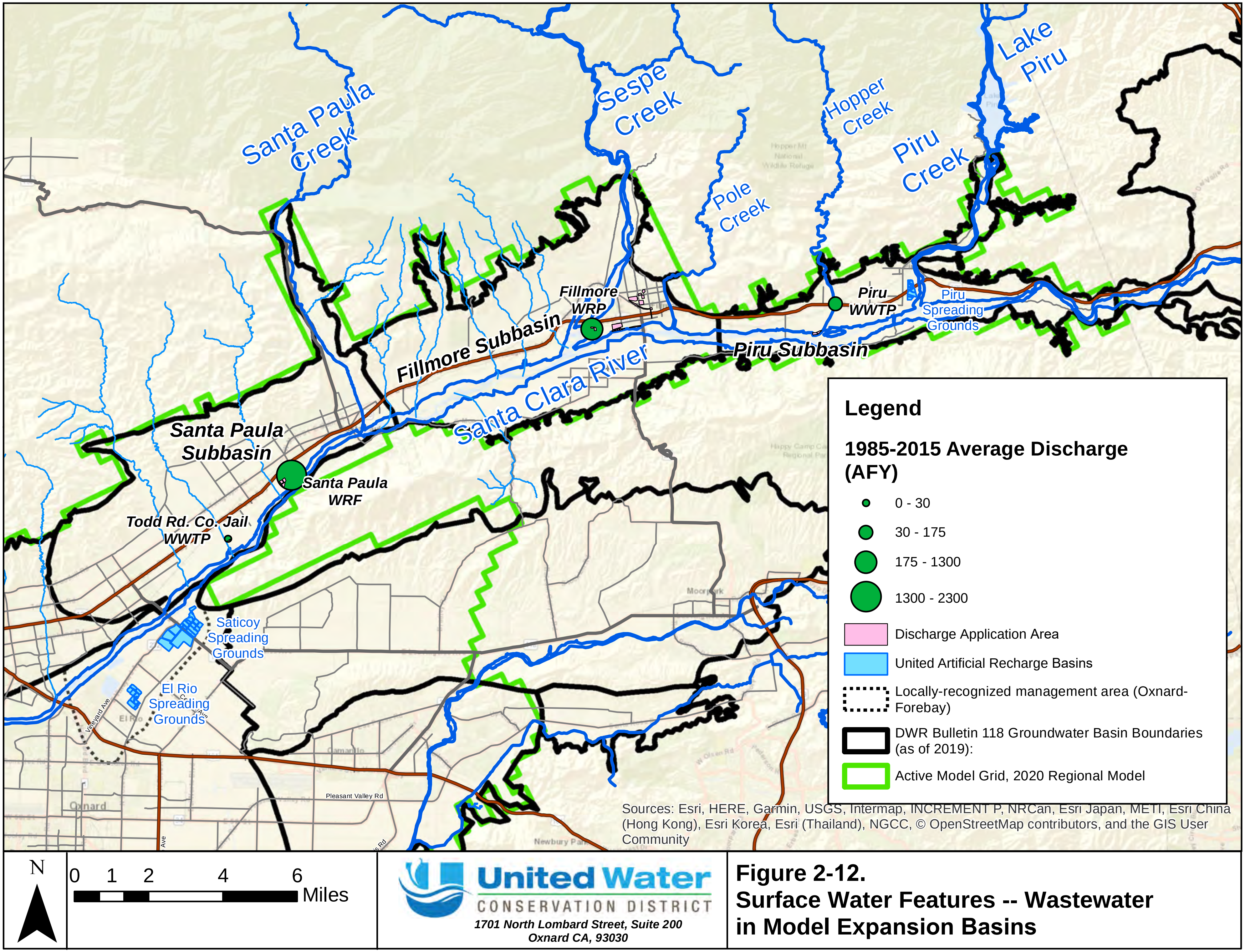

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Figure 2-12.
Surface Water Features -- Wastewater in Model Expansion Basins

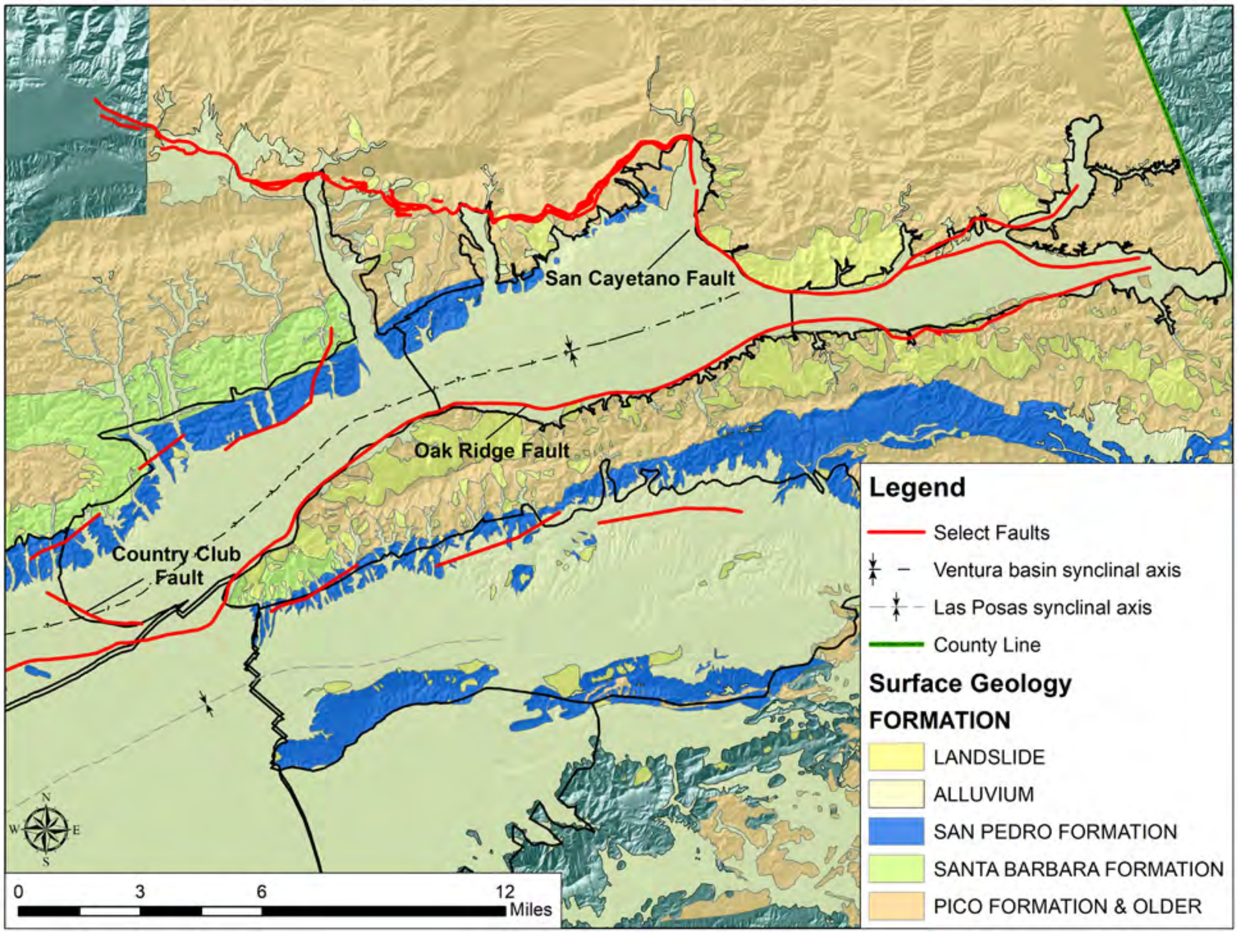

Figure 2-13. Model Expansion Basins Surface Geology Map with Select Faults and Synclinal Axis; Fault locations may be concealed or inferred.

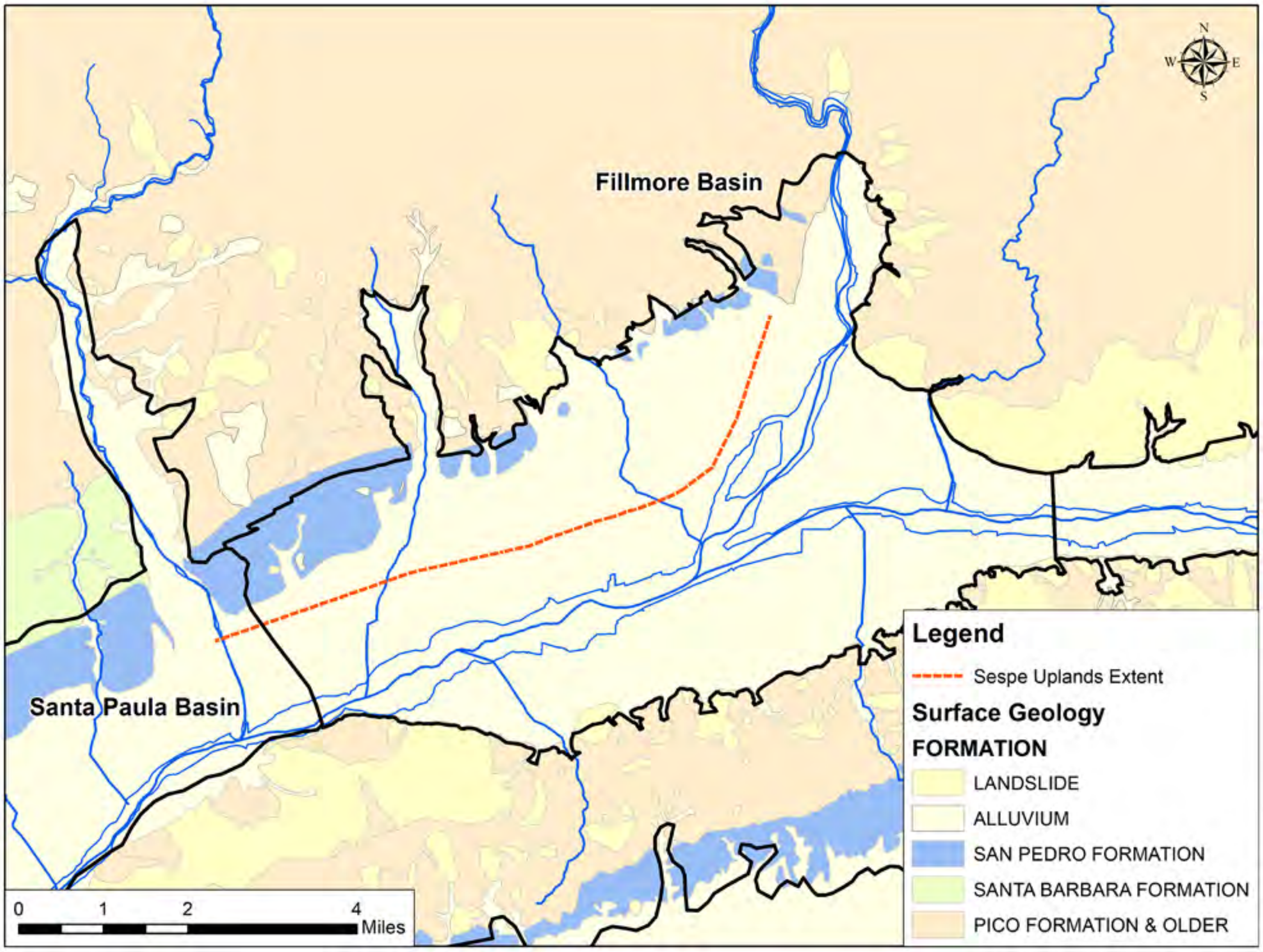

Figure 2-14. Approximate Extent of Sespe Upland .

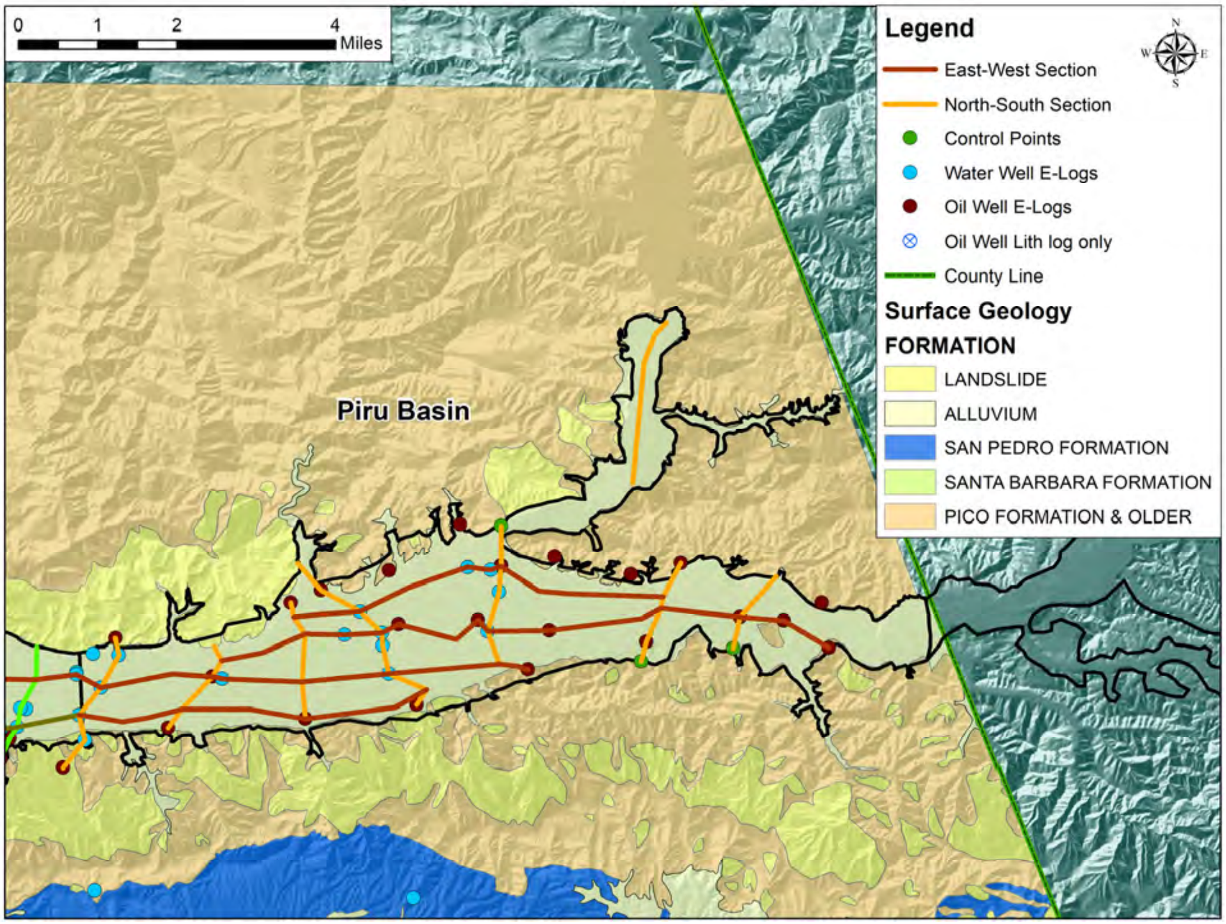

Figure 2-15. Piru Basin Stratigraphic Section Locations.

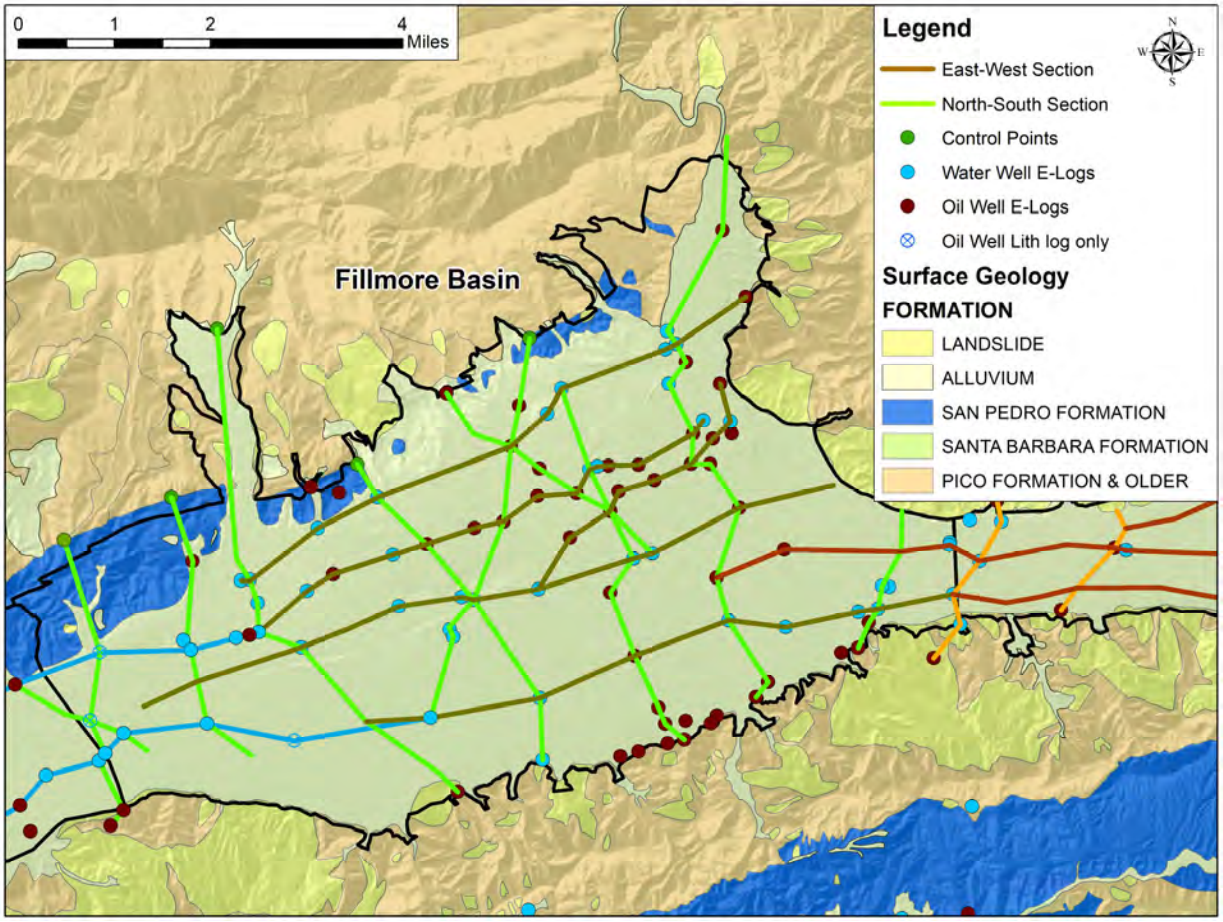

Figure 2-16. Fillmore Basin Stratigraphic Section Locations.

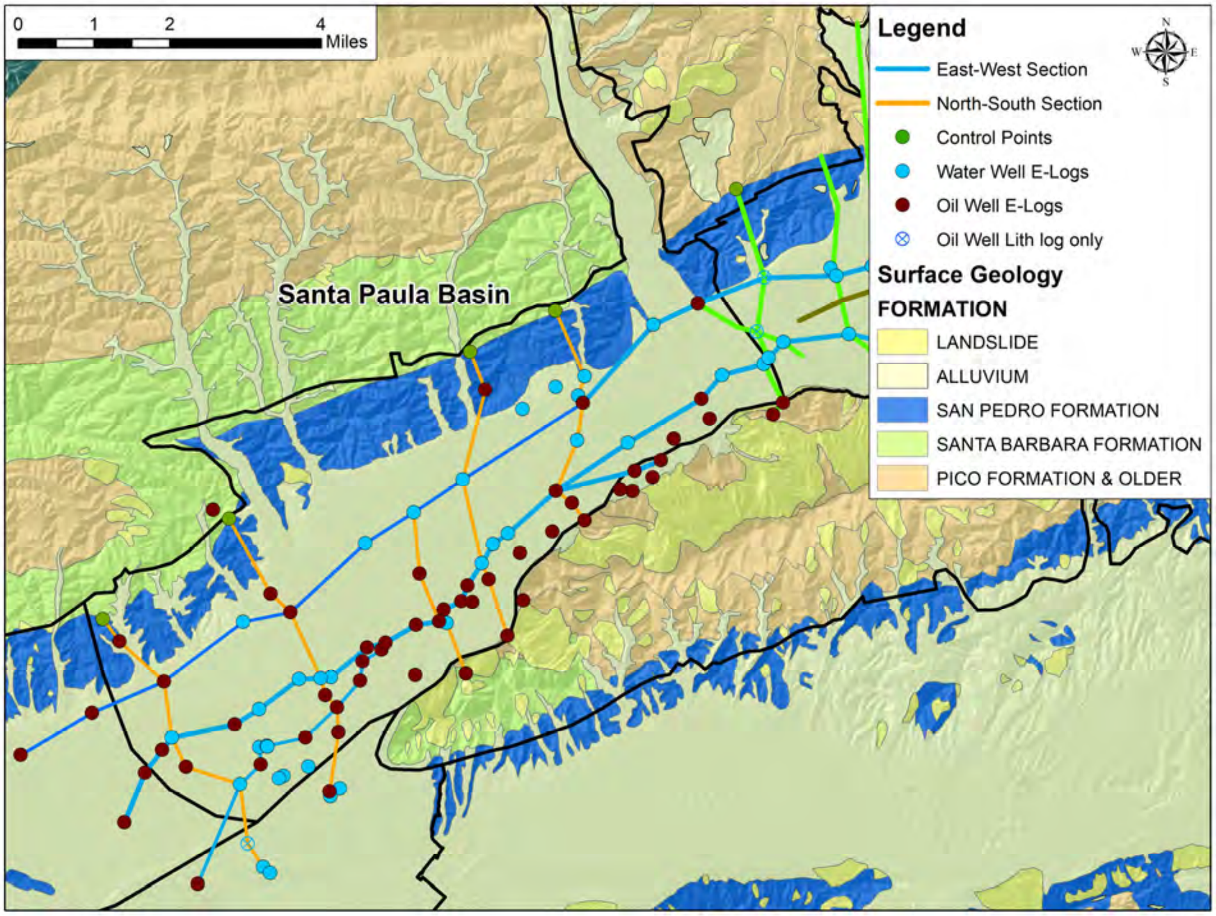

Figure 2-17. Santa Paula Stratigraphic Section Locations.

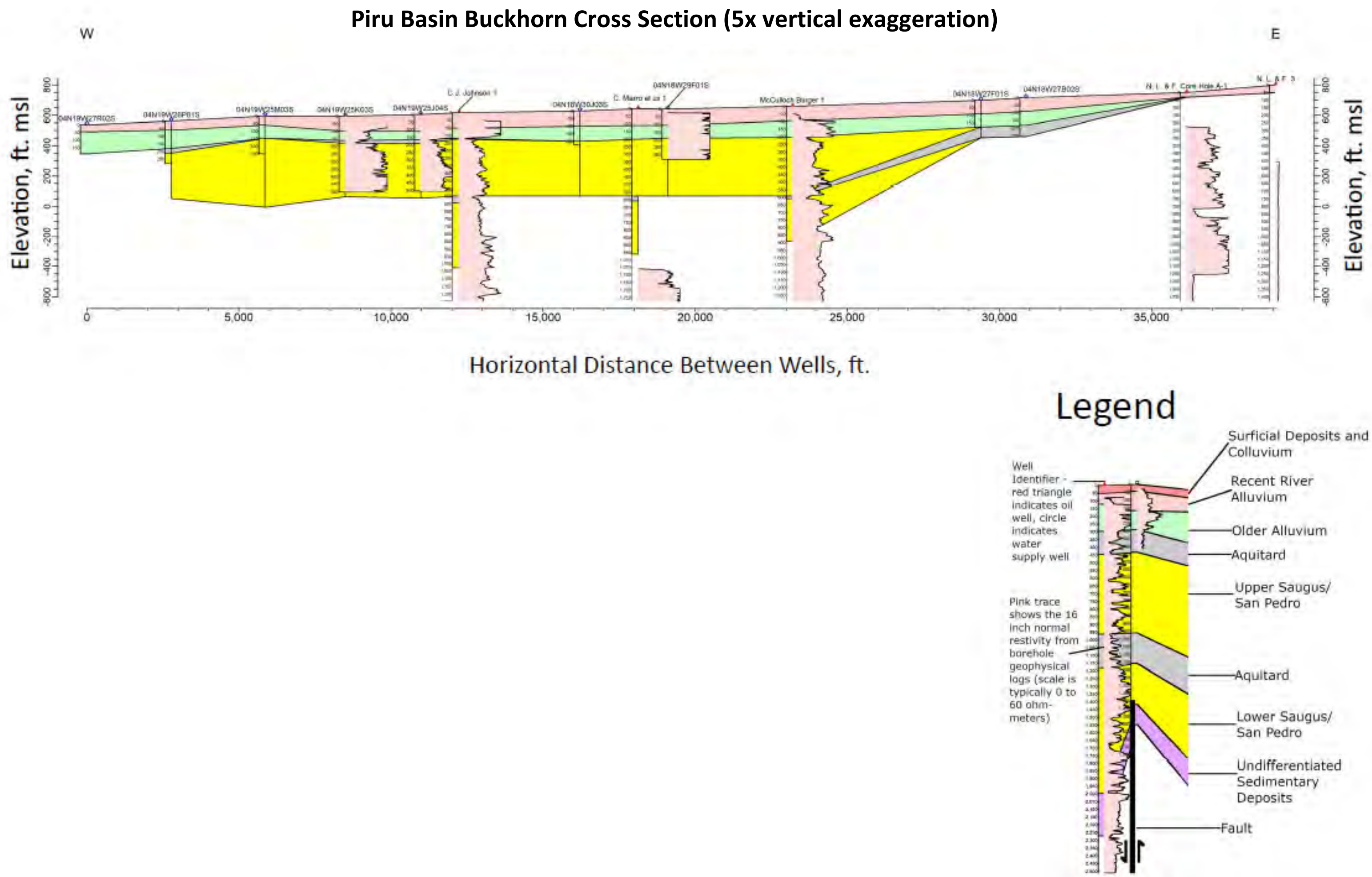

Figure 2-18. Piru Basin East-West Section.

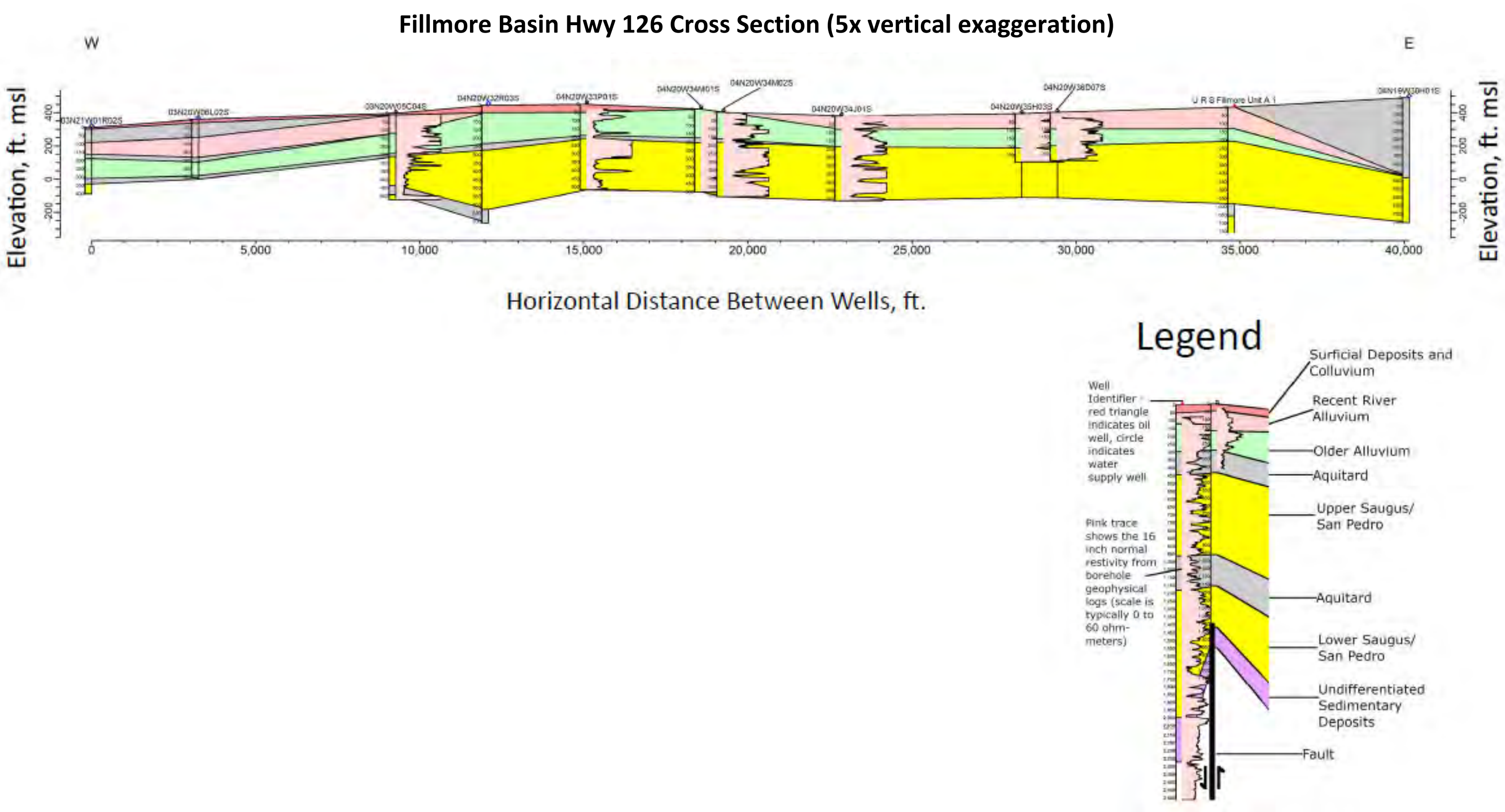

Figure 2-19. **Fillmore Basin East-West Section.**

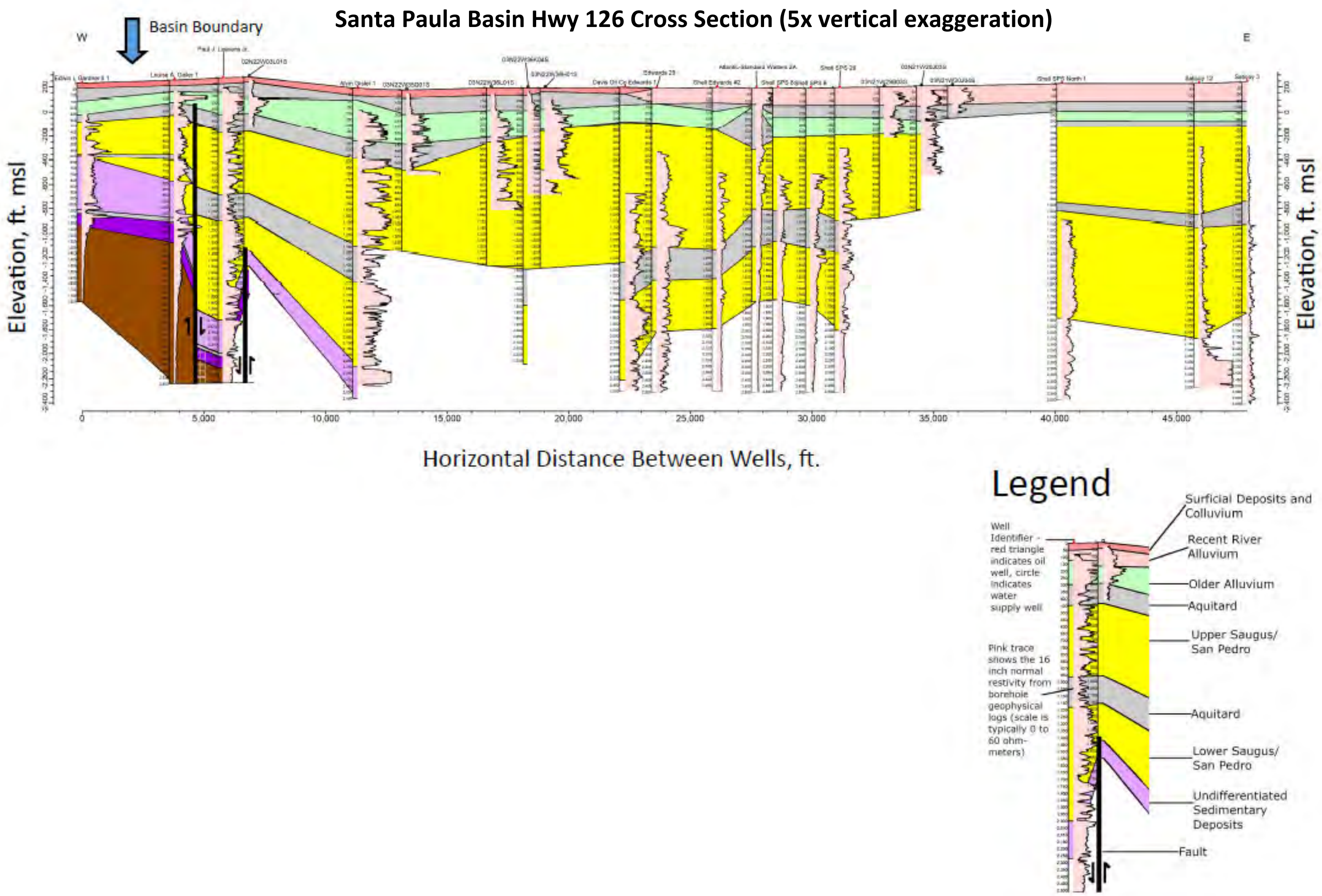

Figure 2-20. Santa Paula Basin East-West Section Showing Approximate Fault Locations and Offset.

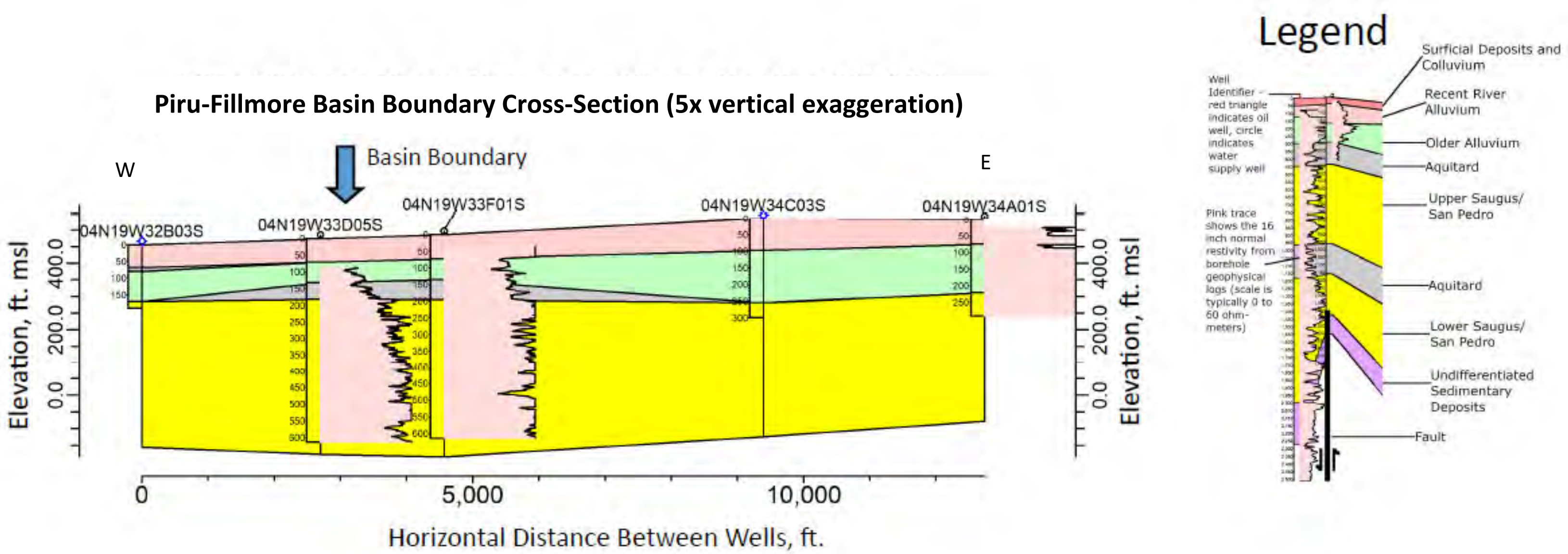

Figure 2-21. Piru-Fillmore Basin Boundary Area of Rising Groundwater.

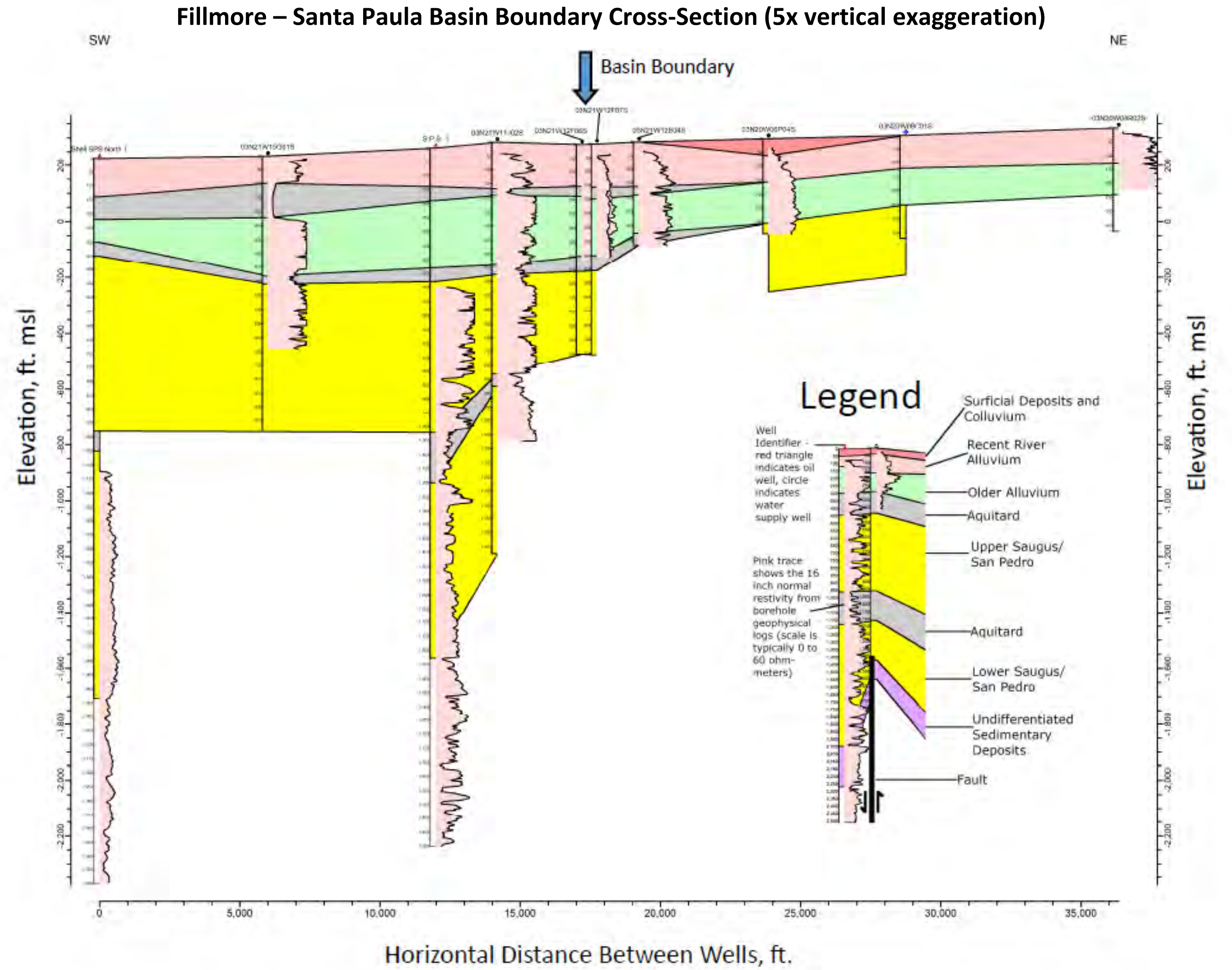

Figure 2-22. Fillmore-Santa Paula Basin Boundary Area of Rising Groundwater.

Piru, Fillmore, and Santa Paula Basins (Model Expansion Basins)

Aquifer System	Hydrostratigraphic Unit	Model Layer
A	Surficial Deposits and Colluvium	1
A	Aquitard	2
A	Recent (younger) Alluvium	3
B	Aquitard	4
B	Older Alluvium	5
B	Aquitard	6
B	Upper Saugus/San Pedro	7
C	Aquitard	8
C	Lower Saugus/San Pedro	9
C	Undifferentiated Sedimentary Deposits	10

Mound Basin

Aquifer System	Hydrostratigraphic Unit	Model Layer
Shallow	Ground Surface to the bottom of Semi-Perched Aquifer	1
UAS	Aquitard	2
UAS	Aquitard	3
UAS	Aquitard	4
UAS	Mugu Aquifer	5
LAS	Mugu-Hueneme Aquitard	6
LAS	Hueneme Aquifer	7
LAS	Hueneme-Fox Canyon Aquitard	8
LAS	Fox Canyon Aquifer - upper	9
LAS	Fox Canyon upper - basal Aquitard	10
LAS	Fox Canyon Aquifer - basal	11

Oxnard, Pleasant Valley, West Las Posas*

Aquifer System	Hydrostratigraphic Unit	Model Layer
Shallow	Ground Surface to the bottom of Semi-Perched Aquifer	1
UAS	Semi Perched-Oxnard Aquitard	2
UAS	Oxnard Aquifer	3
UAS	Oxnard-Mugu Aquitard	4
UAS	Mugu Aquifer	5
LAS	Mugu-Hueneme Aquitard	6
LAS	Hueneme Aquifer	7
LAS	Hueneme-Fox Canyon Aquitard	8
LAS	Fox Canyon Aquifer - upper	9
LAS	Fox Canyon upper - basal Aquitard	10
LAS	Fox Canyon Aquifer - basal	11
LAS	Santa Barbara and/or other Formation - upper	12
LAS	Grimes Canyon Aquifer	13

*Shallow and UAS combined in West Las Posas

Figure 2-23. Conceptual Diagrams Illustrating Relationships Between Model Layers and Hydrostratigraphic Units.

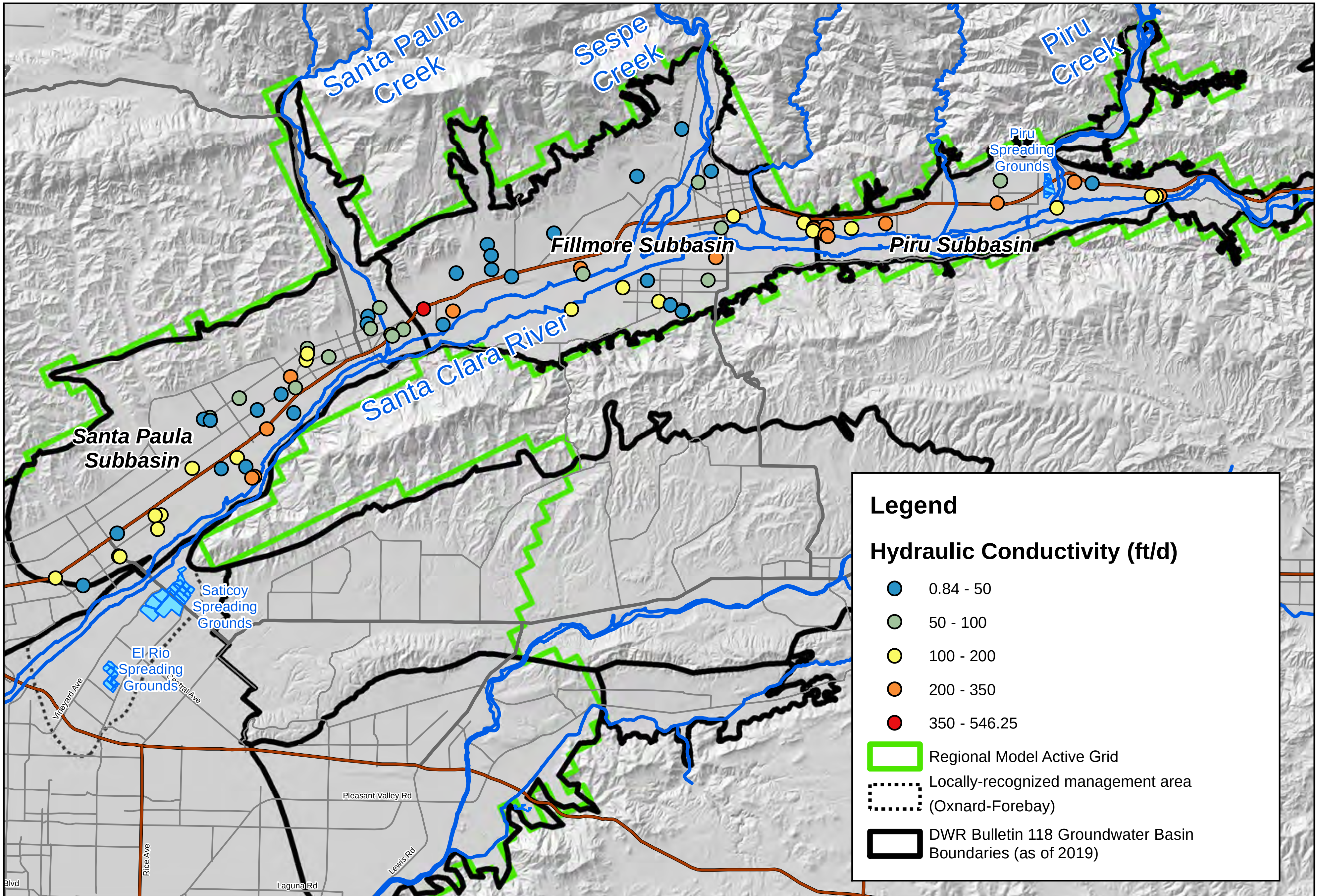

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Figure 2-24.
Horizontal Hydraulic Conductivity Estimates from Specific Capacity Data

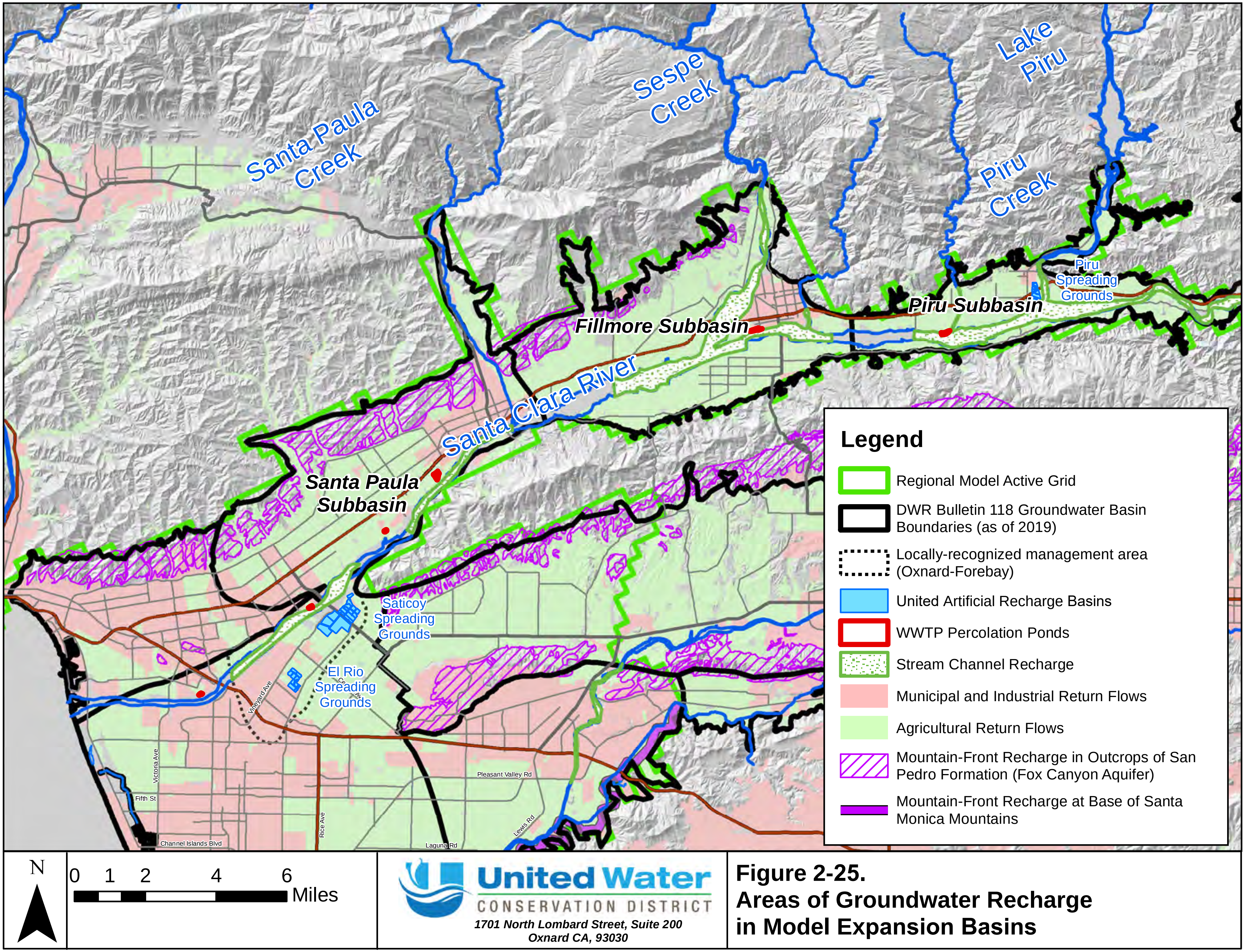

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Figure 2-25.
Areas of Groundwater Recharge in Model Expansion Basins

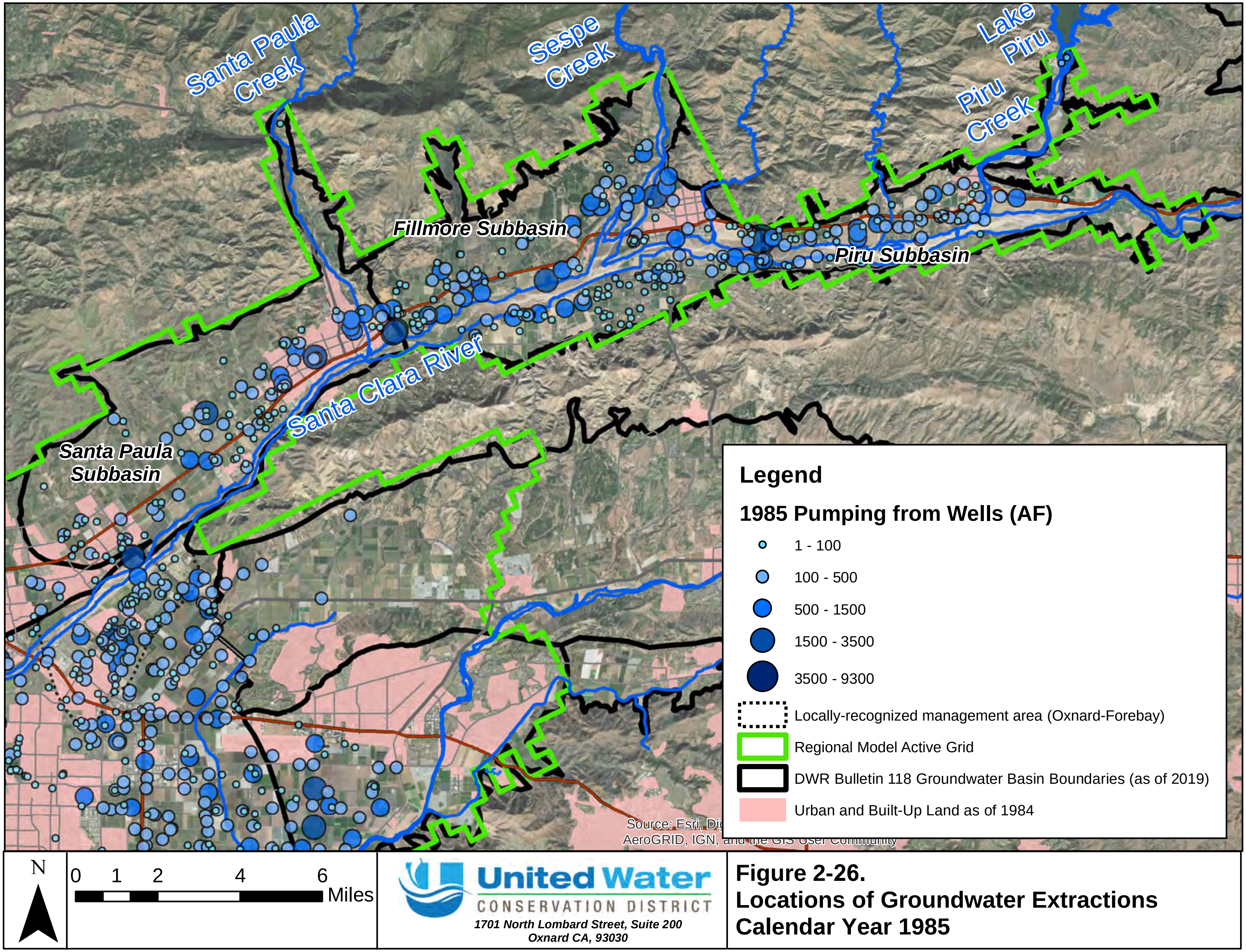

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Figure 2-26.
Locations of Groundwater Extractions Calendar Year 1985

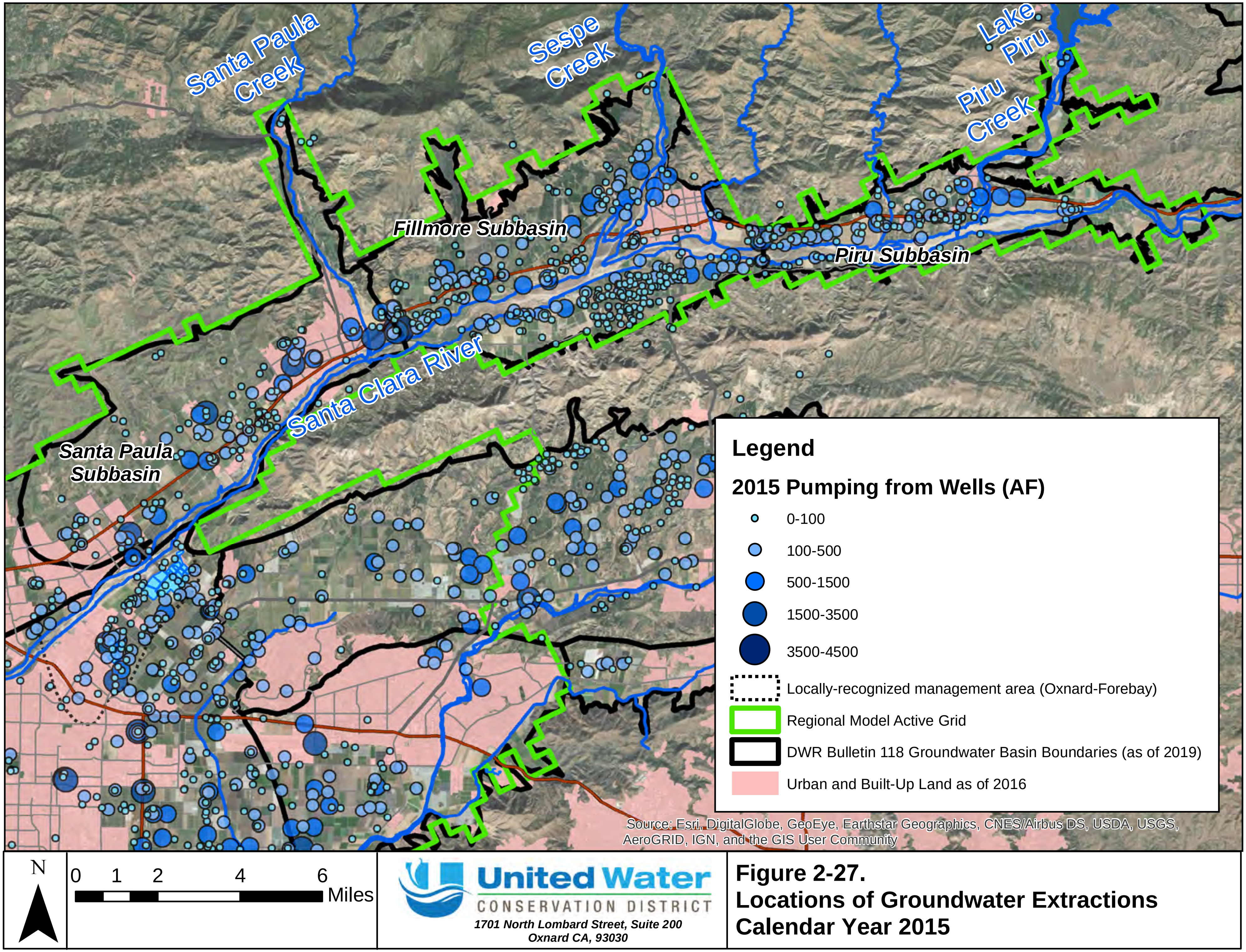

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Figure 2-27.
Locations of Groundwater Extractions Calendar Year 2015

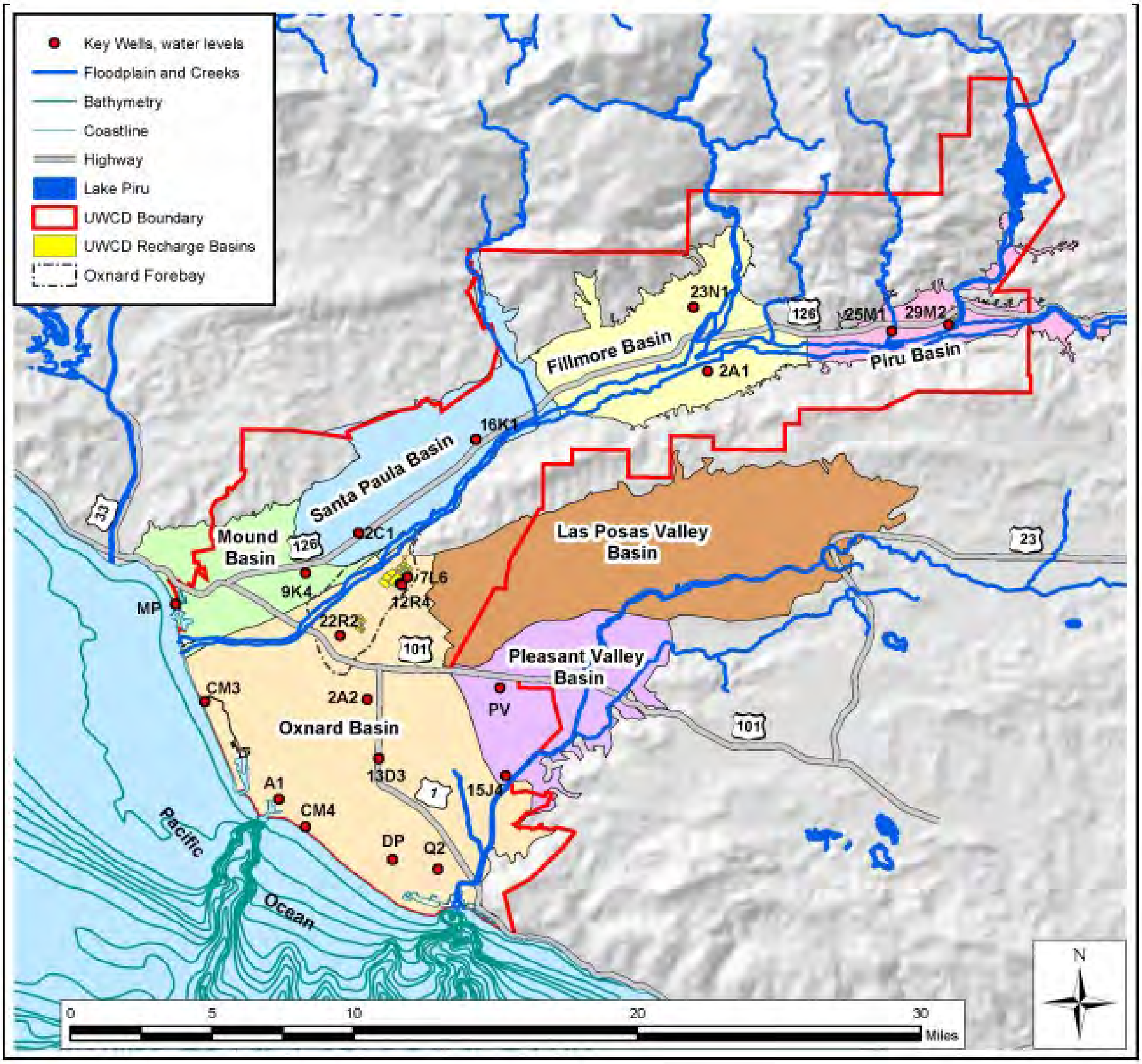

Figure 2-28. Location of Key Groundwater Monitoring Wells.

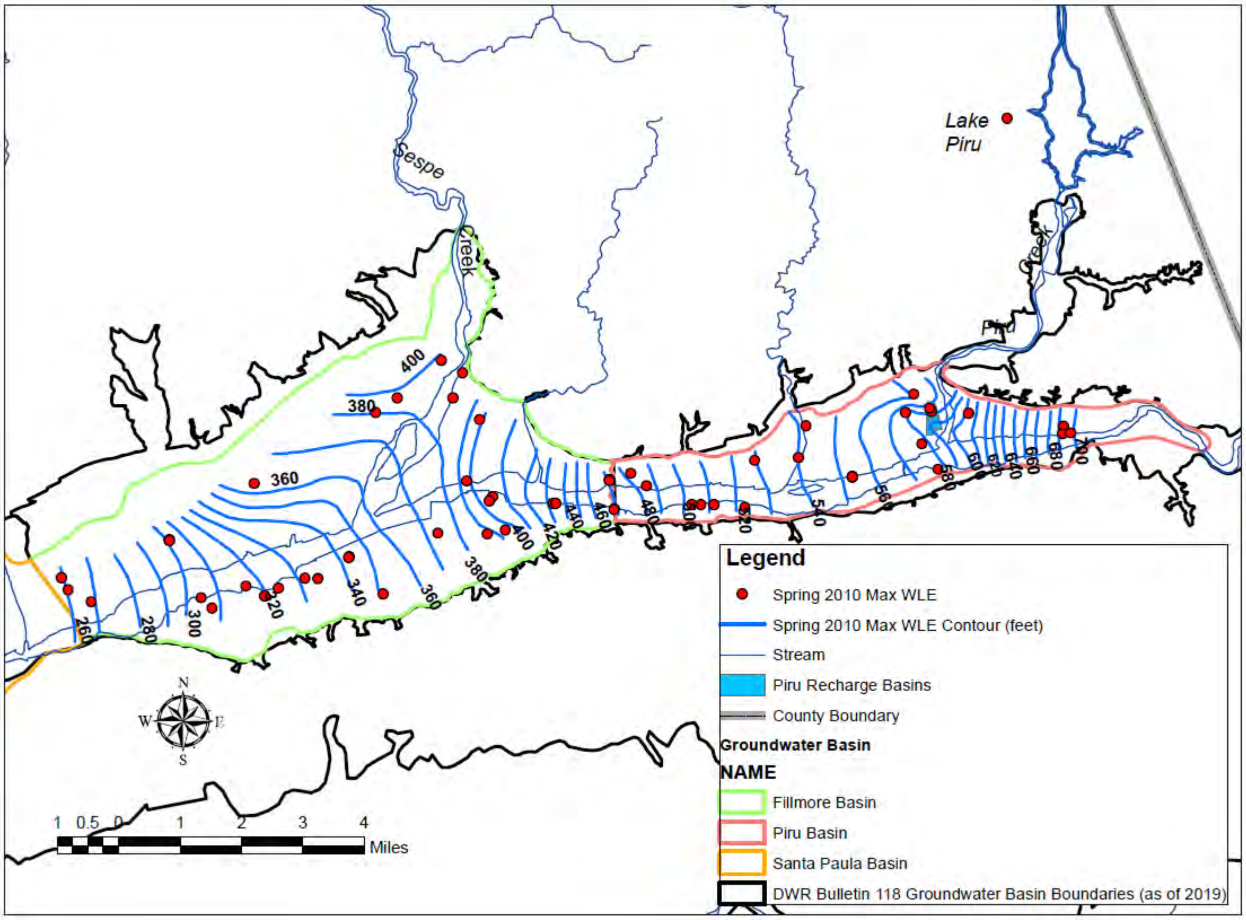

Figure 2-29. Spring 2010 Groundwater Elevation Contours for Piru and Fillmore Basins (United, 2013; Figure 20) Note: Historical GW basin boundaries that were representative in source report are included in addition to the updated DWR (2019) basin boundaries.

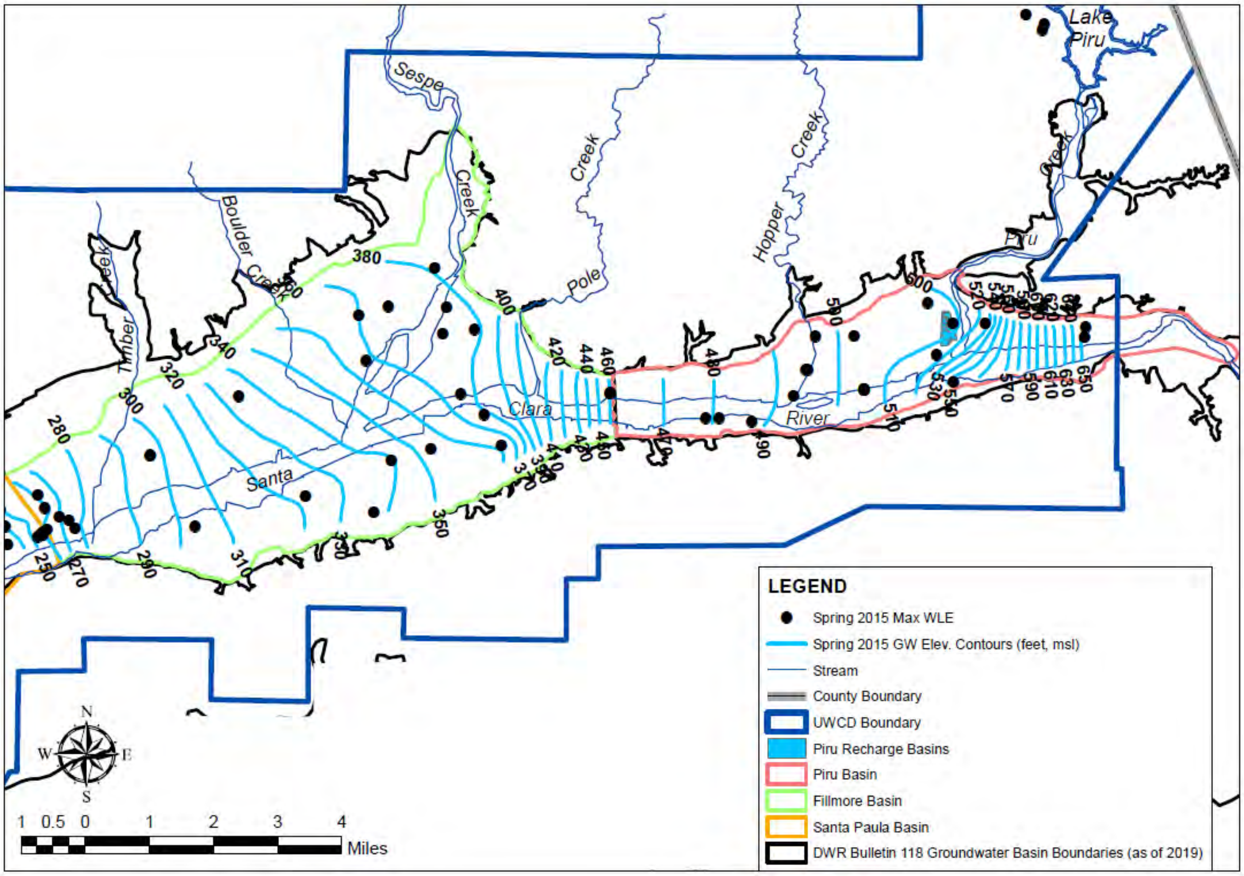

Figure 2-30. Spring 2015 Groundwater Elevation Contours for Piru and Fillmore Basins (United, 2016; Figure 5) Note: Historical GW basin boundaries that were representative in source report are included in addition to the updated DWR (2019) basin boundaries.

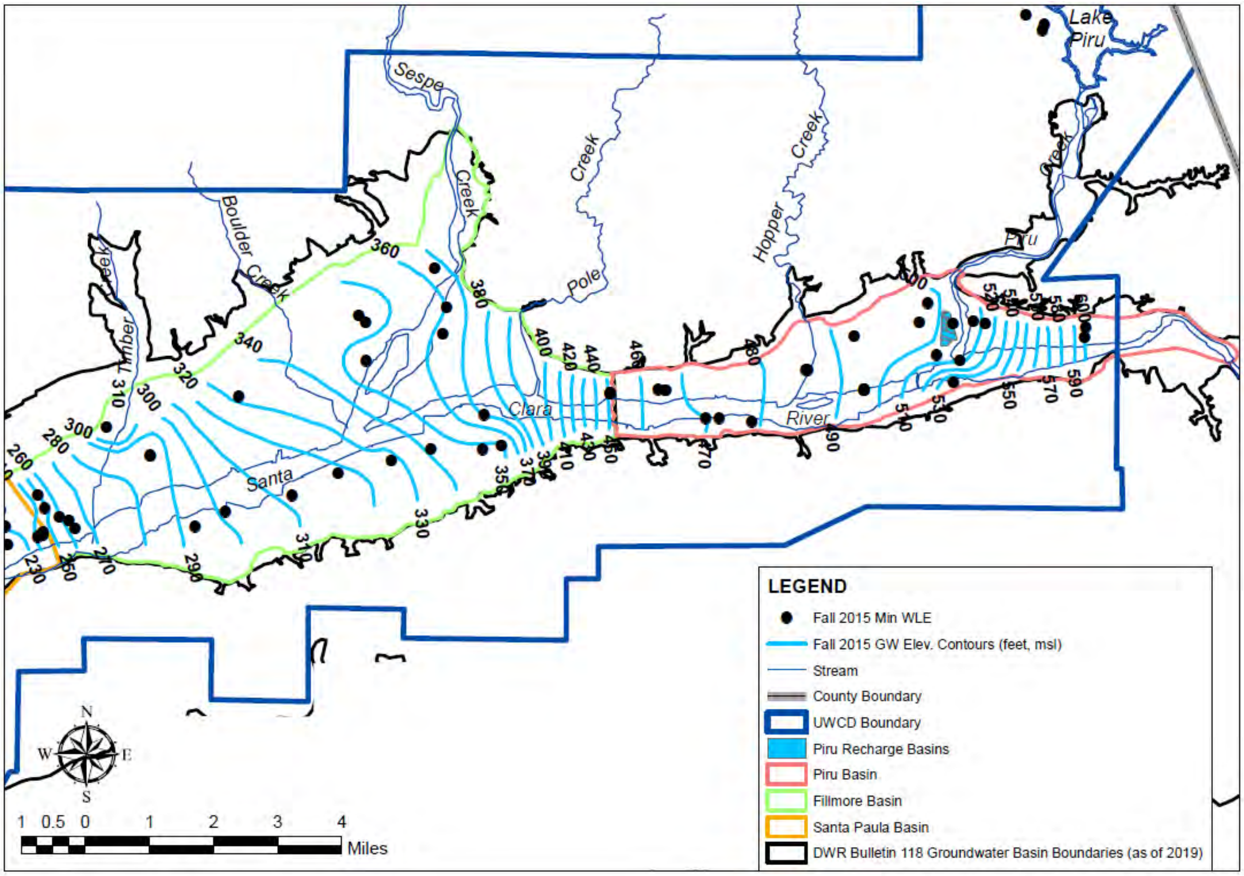

Figure 2-31. Fall 2015 Groundwater Elevation Contours for Piru and Fillmore Basins (United, 2016; Figure 6). Note: Historical GW basin boundaries that were representative in source report are included in addition to the updated DWR (2019) basin boundaries.

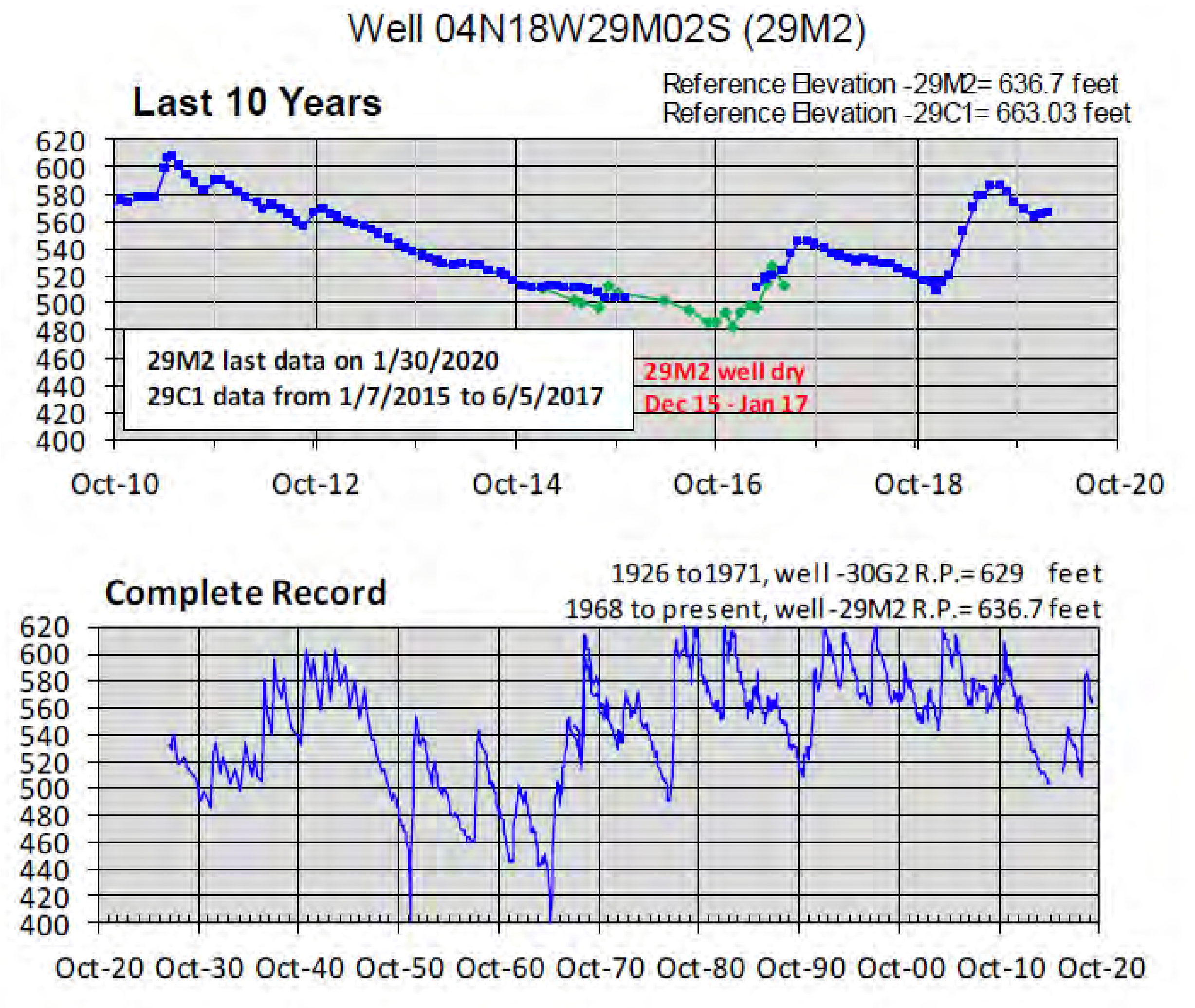

Figure 2-32. Piru Basin Key Well 29M2 (04N18W29M02S) Time-Series for the Last 10 Years and for the Complete Record (United, 2020; Page 4)

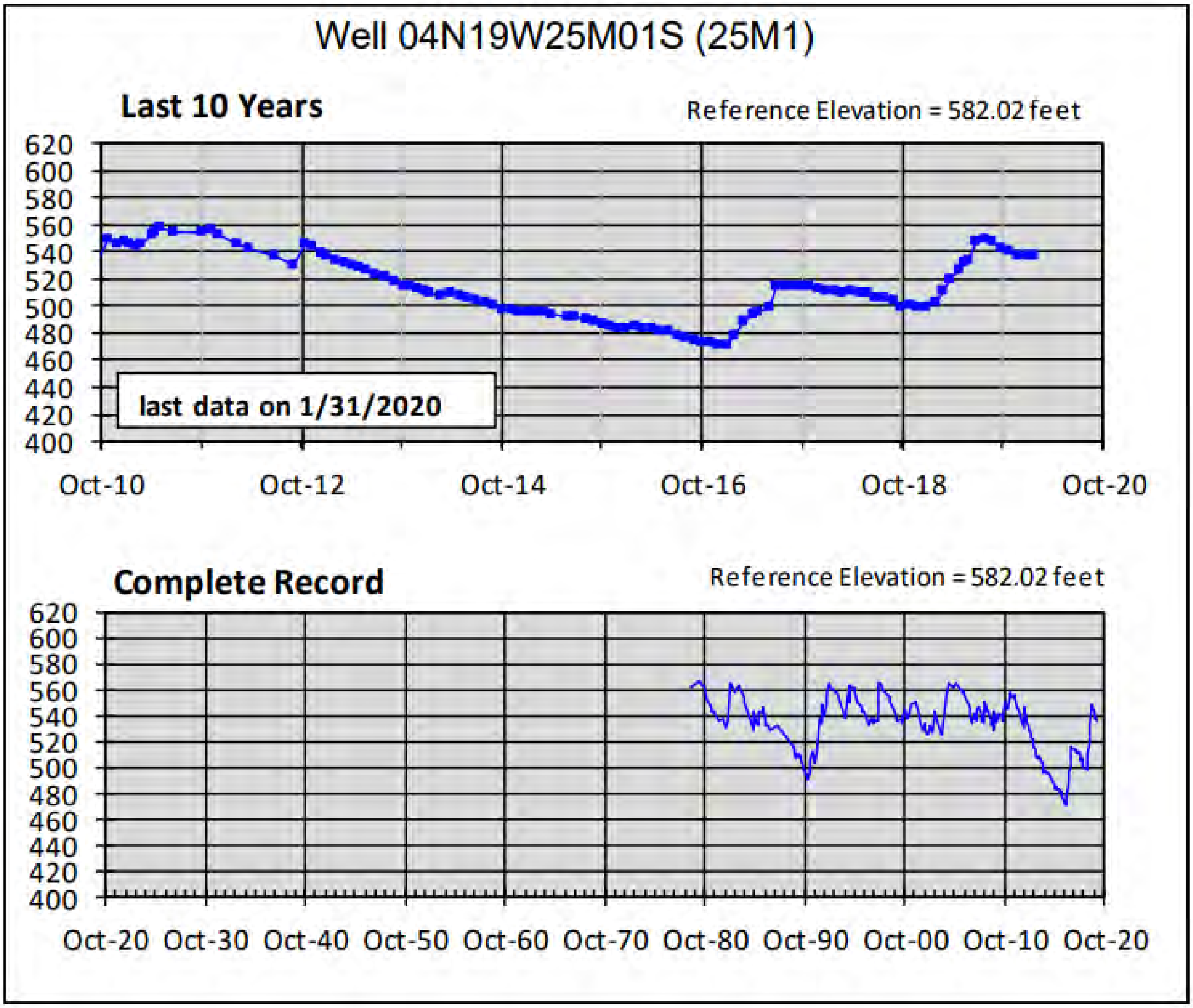

Figure 2-33. Piru Basin Key Well 25M1 (04N19W25M01S) Time-Series for the Last 10 Years and for the Complete Record (United, 2020; Page 4)

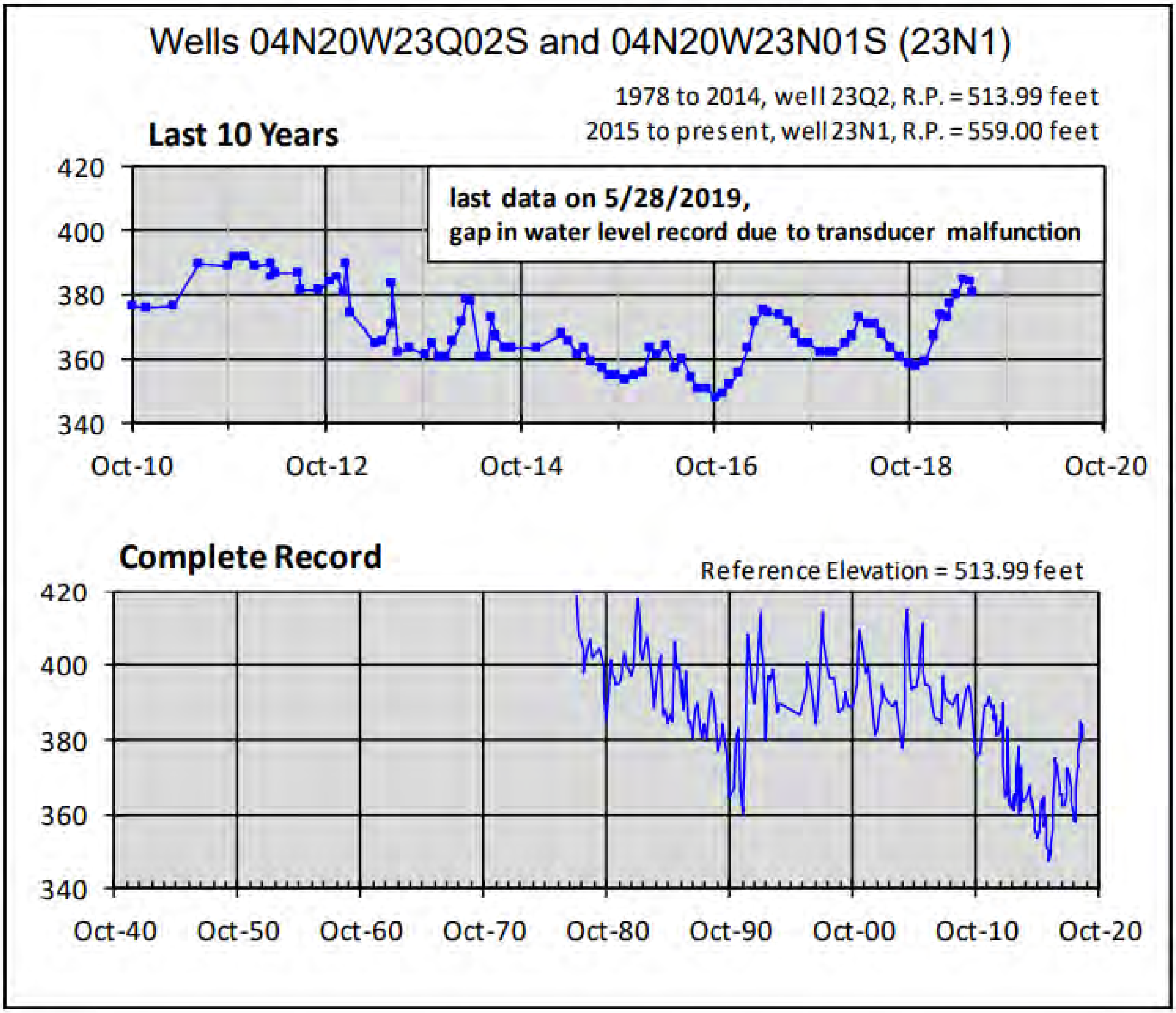

Figure 2-34. Fillmore Basin Key Well 23N1 (04N20W23Q02S and 04N20W23N01S) Time-Series for the Last 10 Years and for the Complete Record (United, 2020; Page 5)

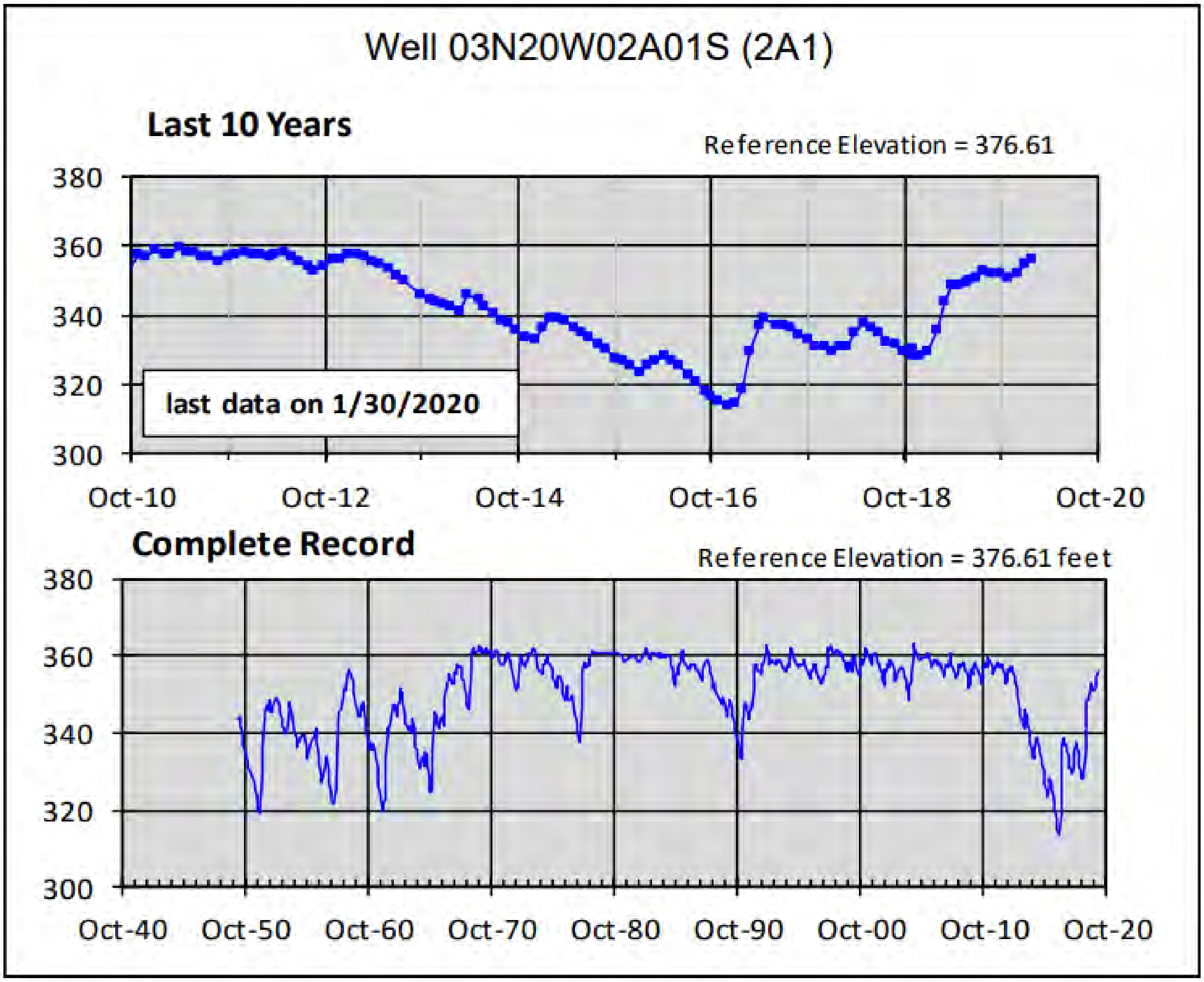

Figure 2-35. Fillmore Basin Key Well 2A1 (03N20W02A01S) Time-Series for the last 10 years and for the Complete Record (United, 2020; Page 5)

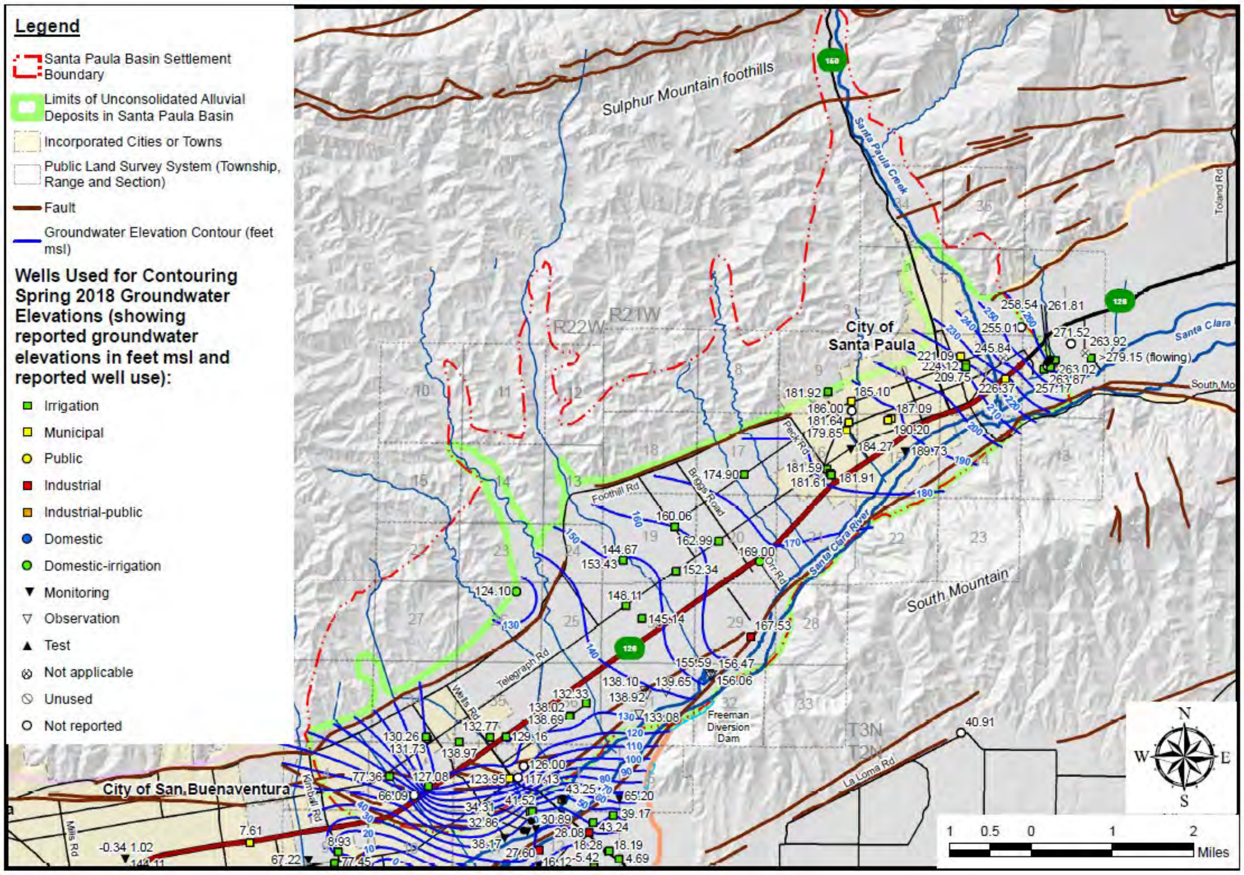

Figure 2-36. Spring 2018 groundwater elevation contours for Santa Paula basin (United, 2020; Figure 14). Generally representative for contouring over 1985-2015 simulation period

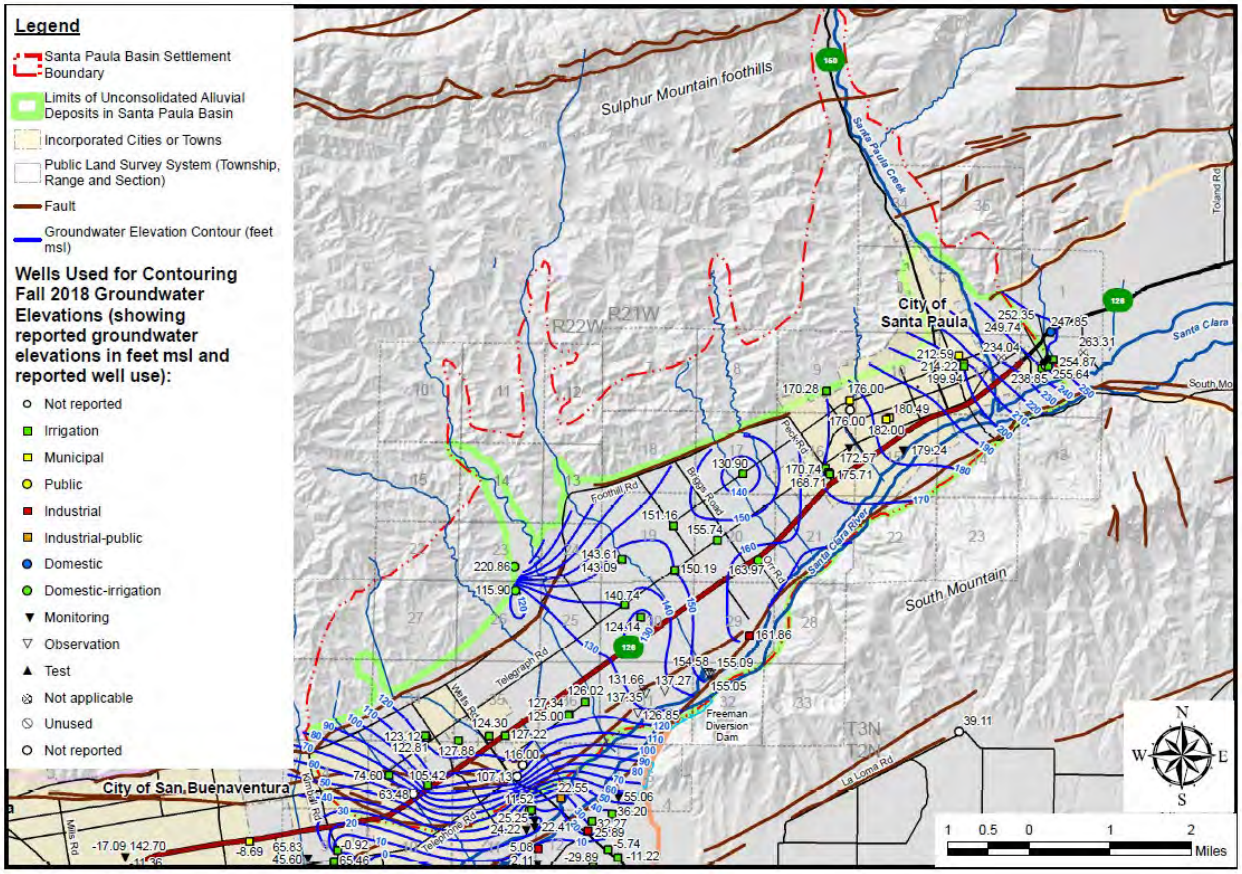

Figure 2-37. Fall 2018 Groundwater Elevation Contours for Santa Paula Basin (United, 2020; Figure 15). Generally representative for contouring over 1985-2015 simulation period

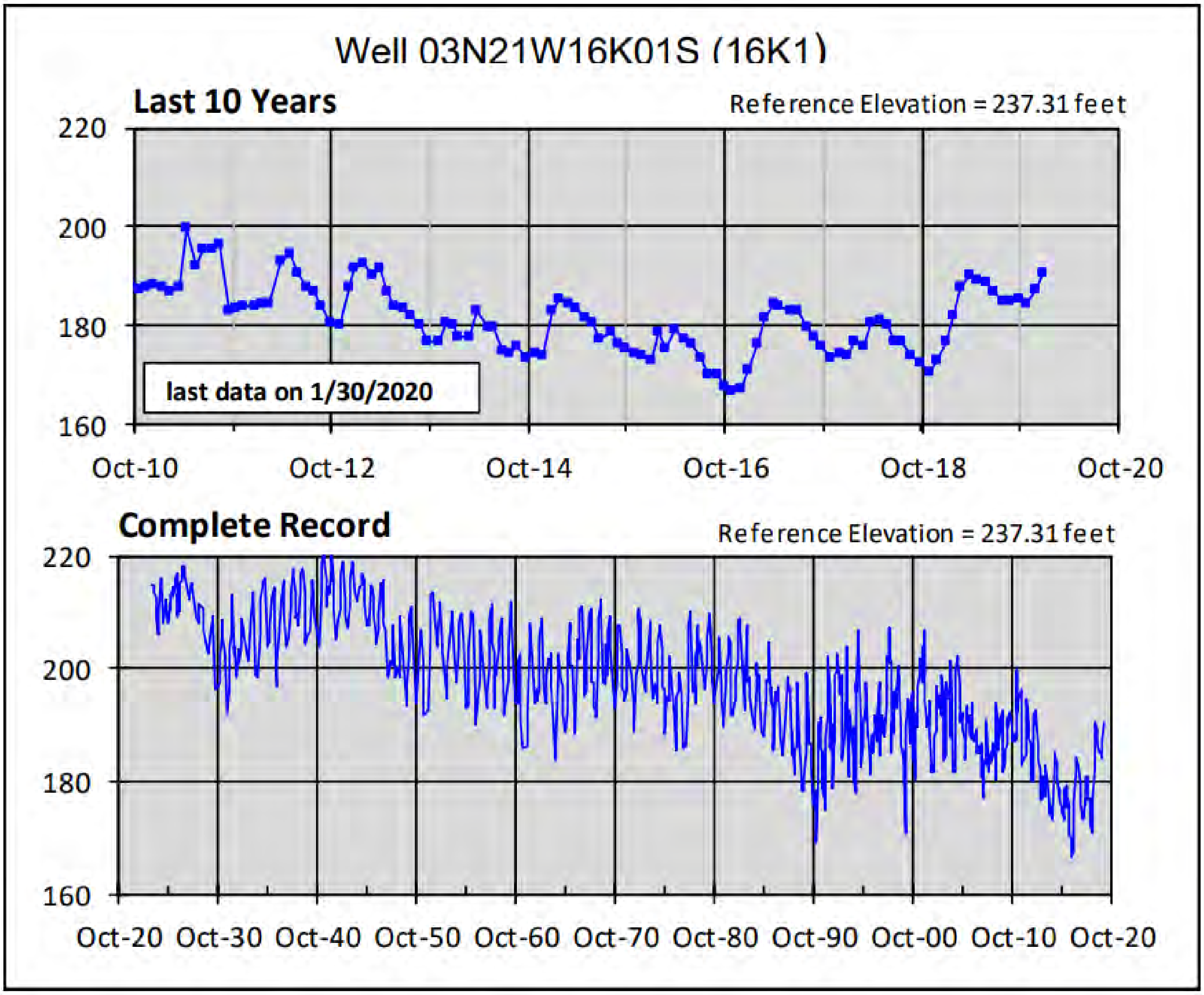

Figure 2-38. Santa Paula Basin Key Well 16K1 Time-Series for the Last 10 years and for the Complete Record (United, 2020; Page 5)

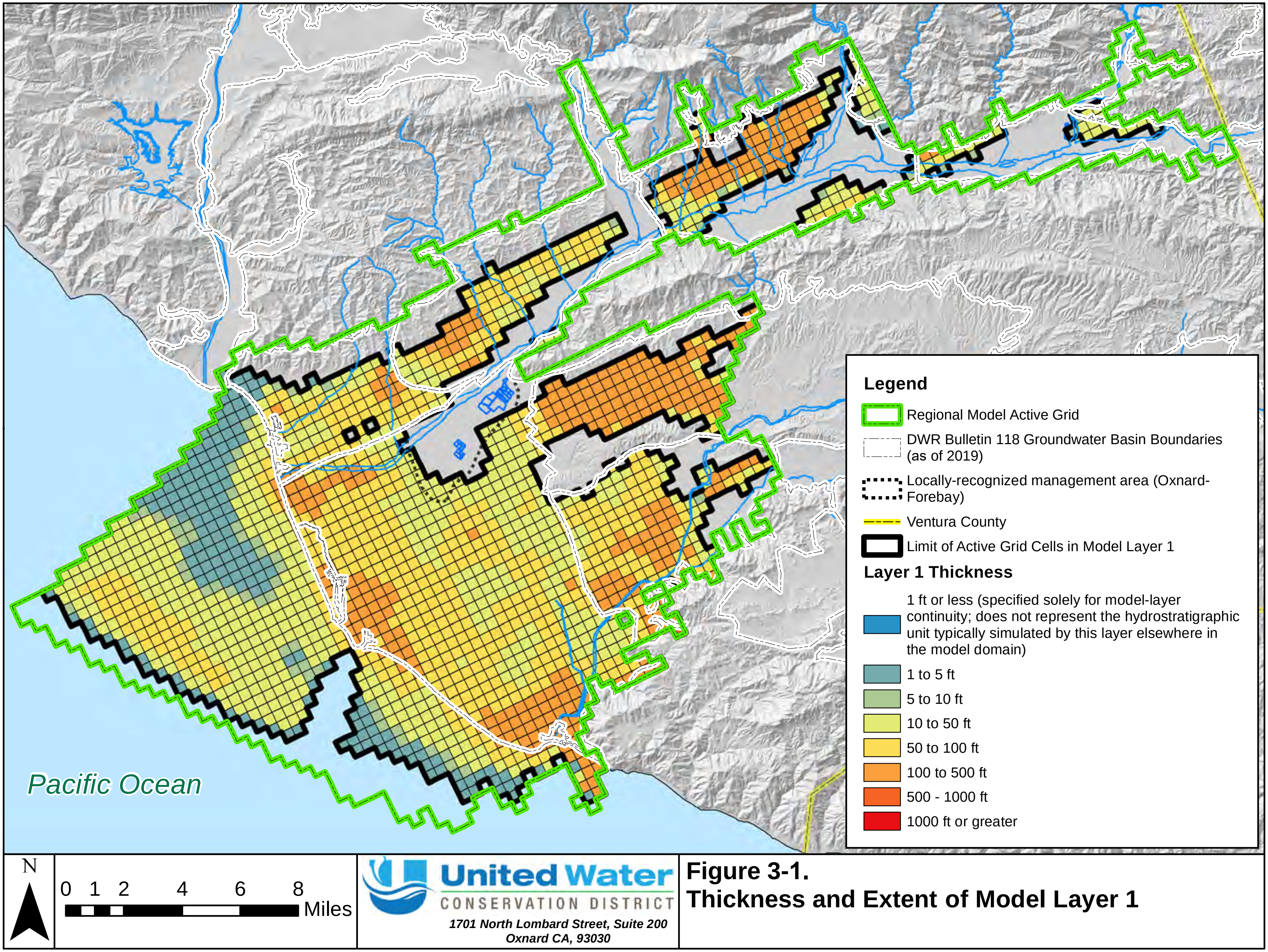

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Figure 3-1.
Thickness and Extent of Model Layer 1

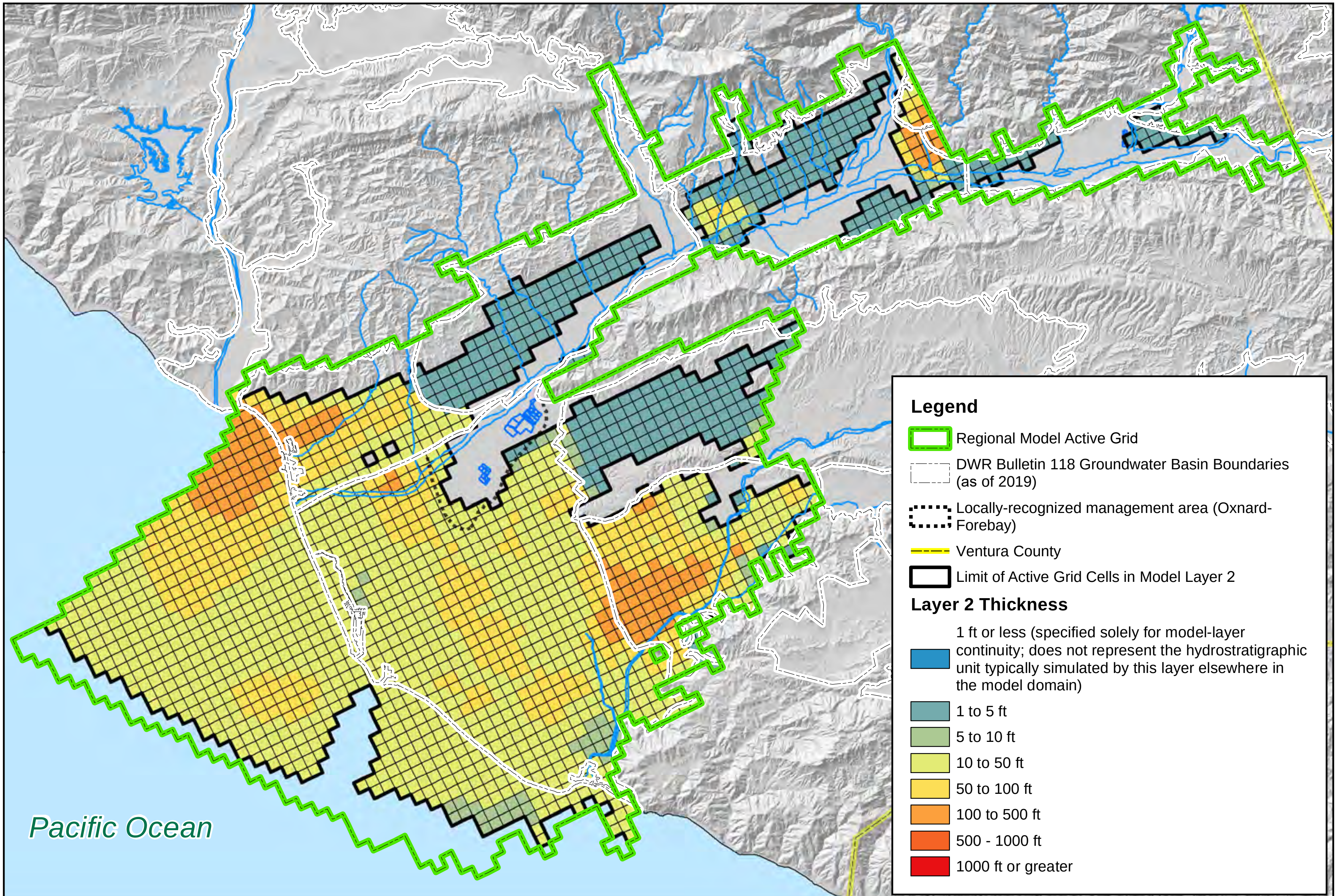

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Figure 3-2.
Thickness and Extent of Model Layer 2

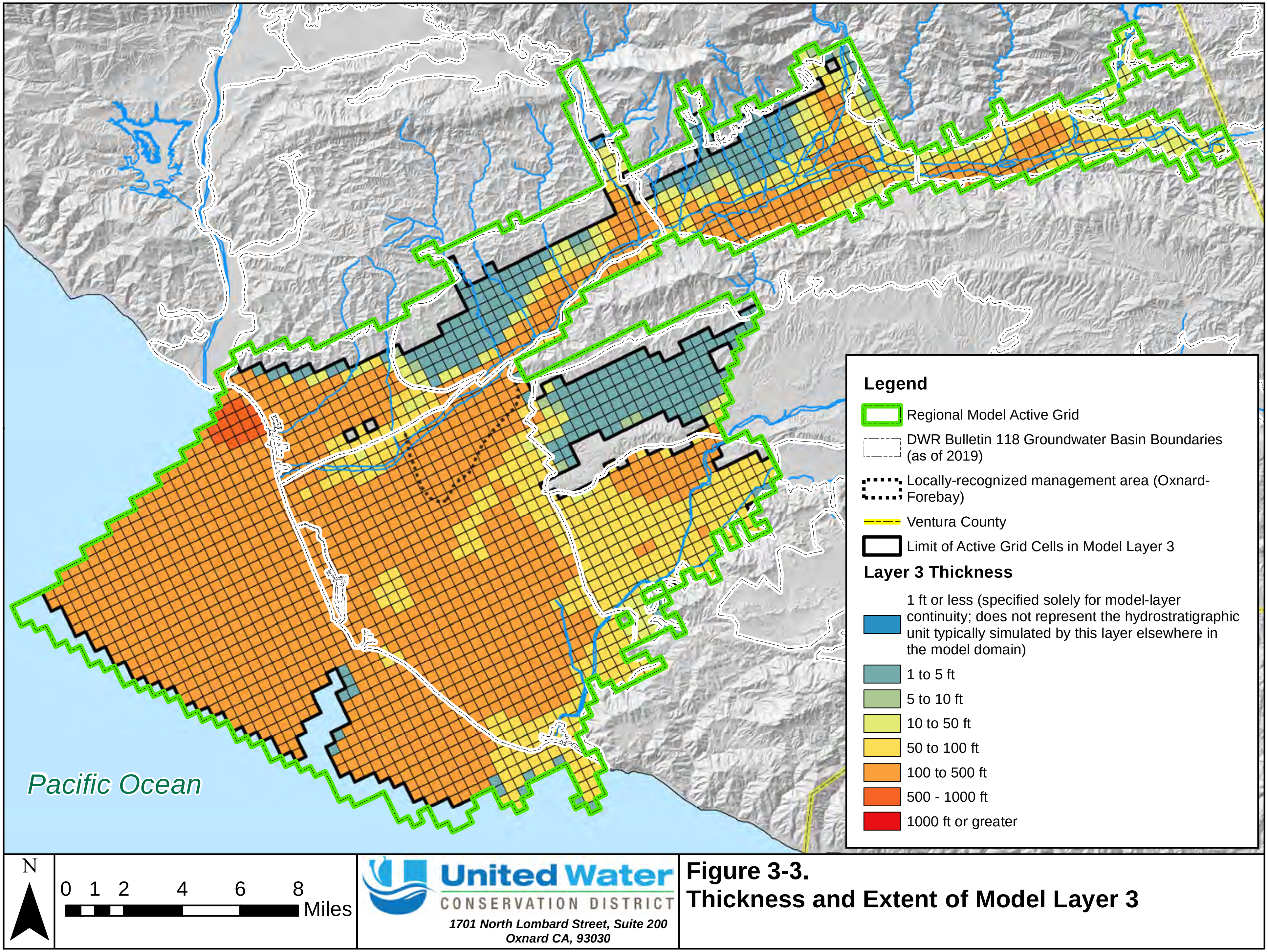

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Figure 3-3.
Thickness and Extent of Model Layer 3

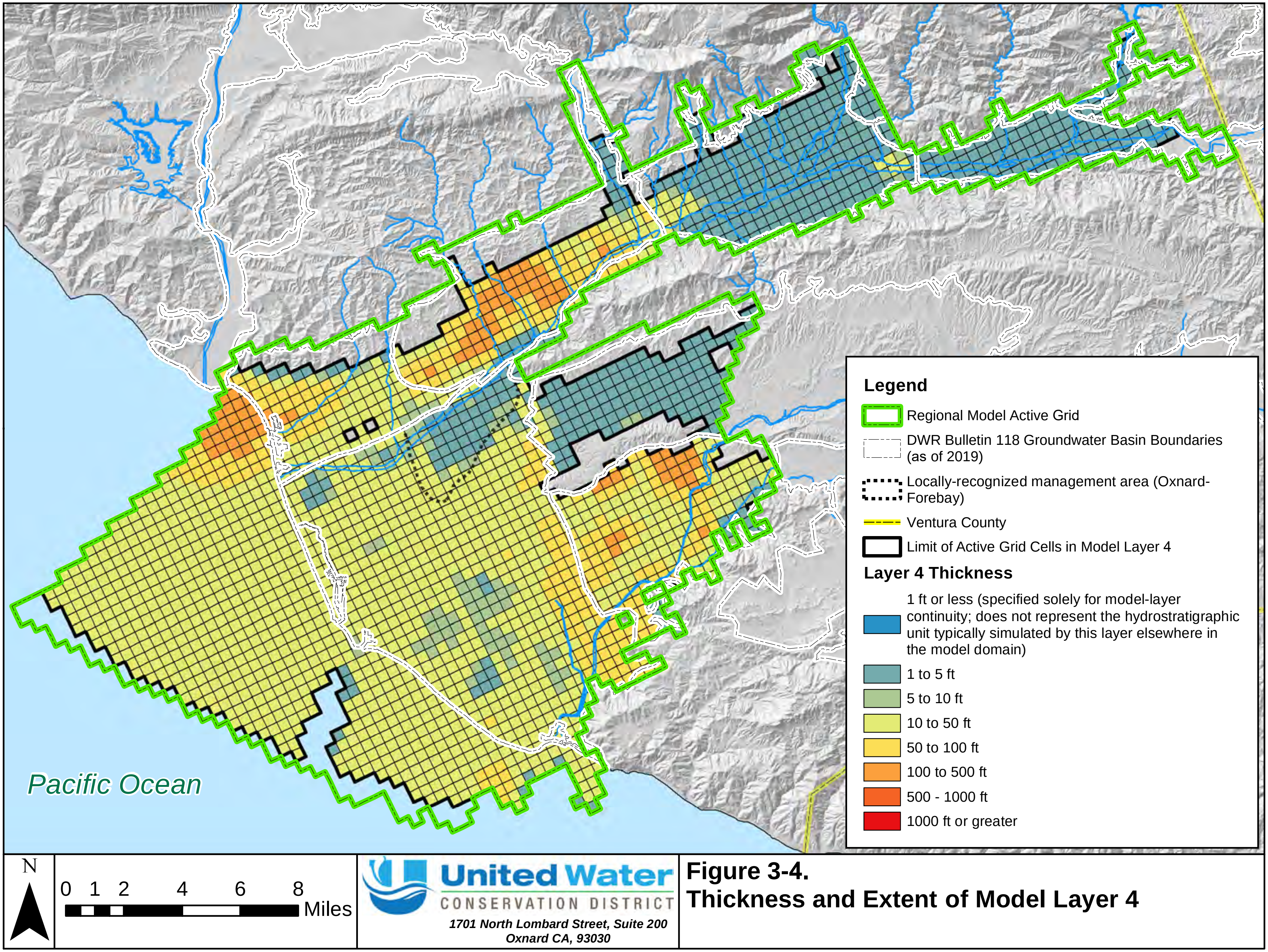

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Figure 3-4.
Thickness and Extent of Model Layer 4

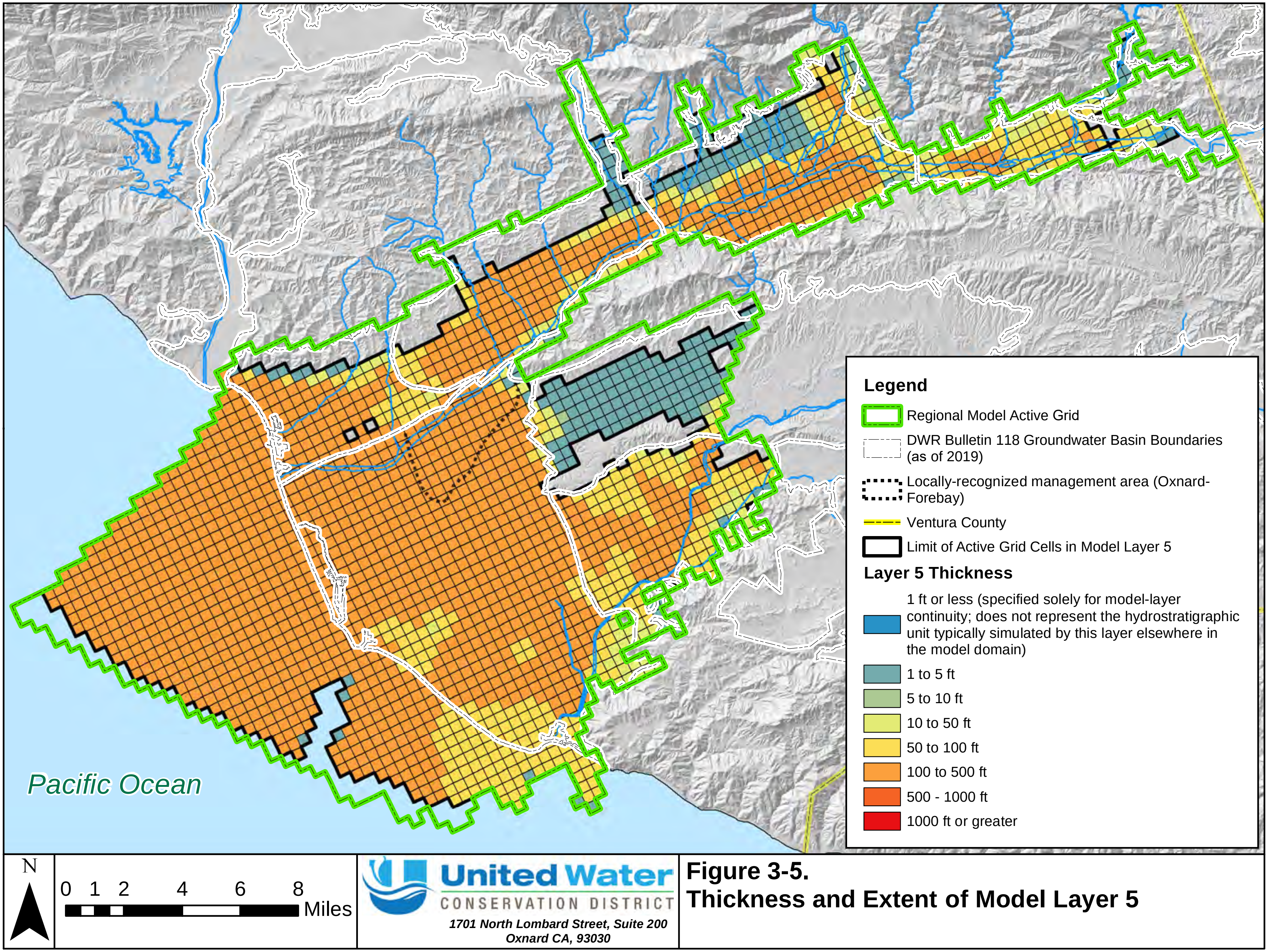

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Figure 3-5.
Thickness and Extent of Model Layer 5

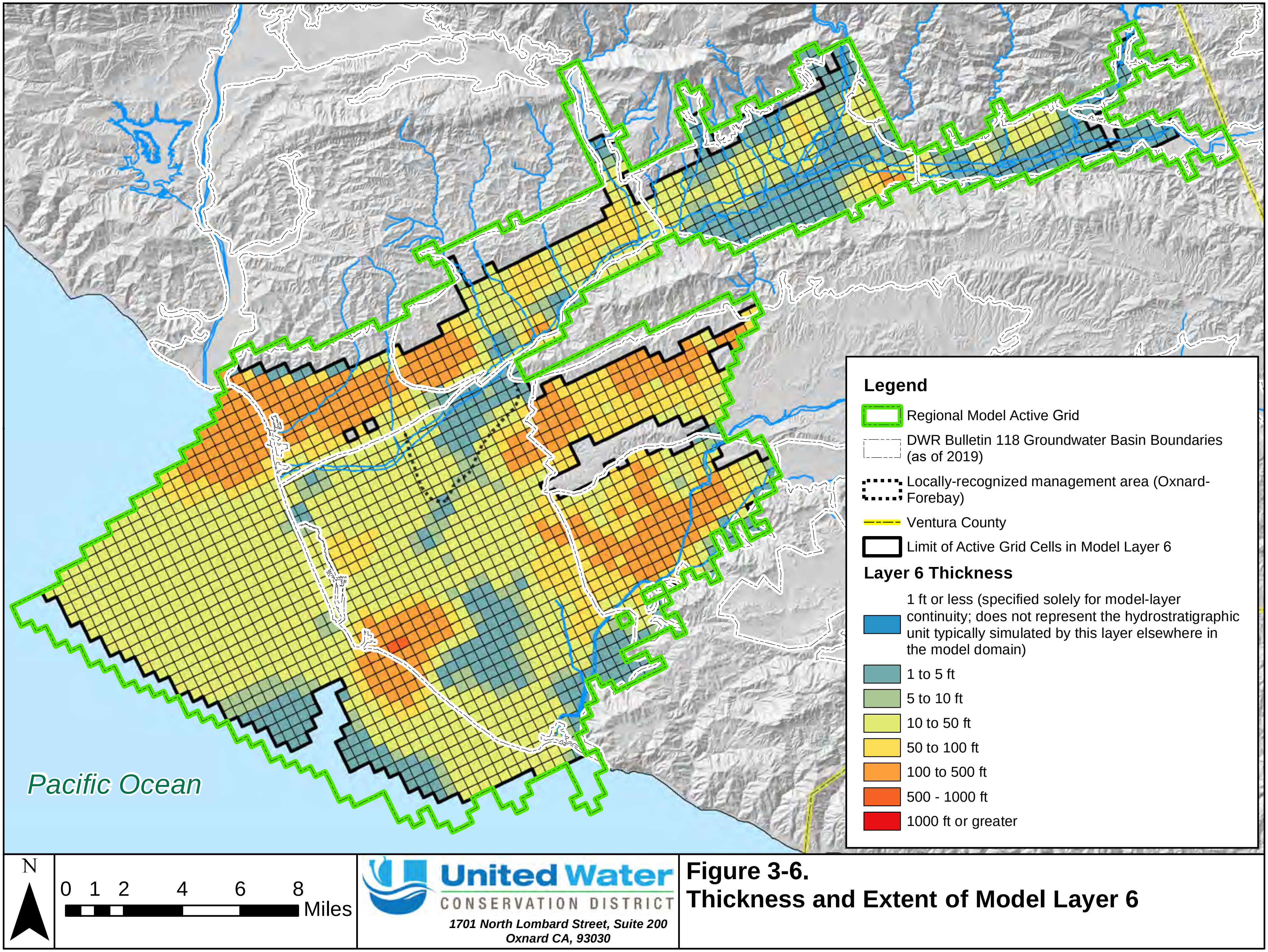

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Figure 3-6.
Thickness and Extent of Model Layer 6

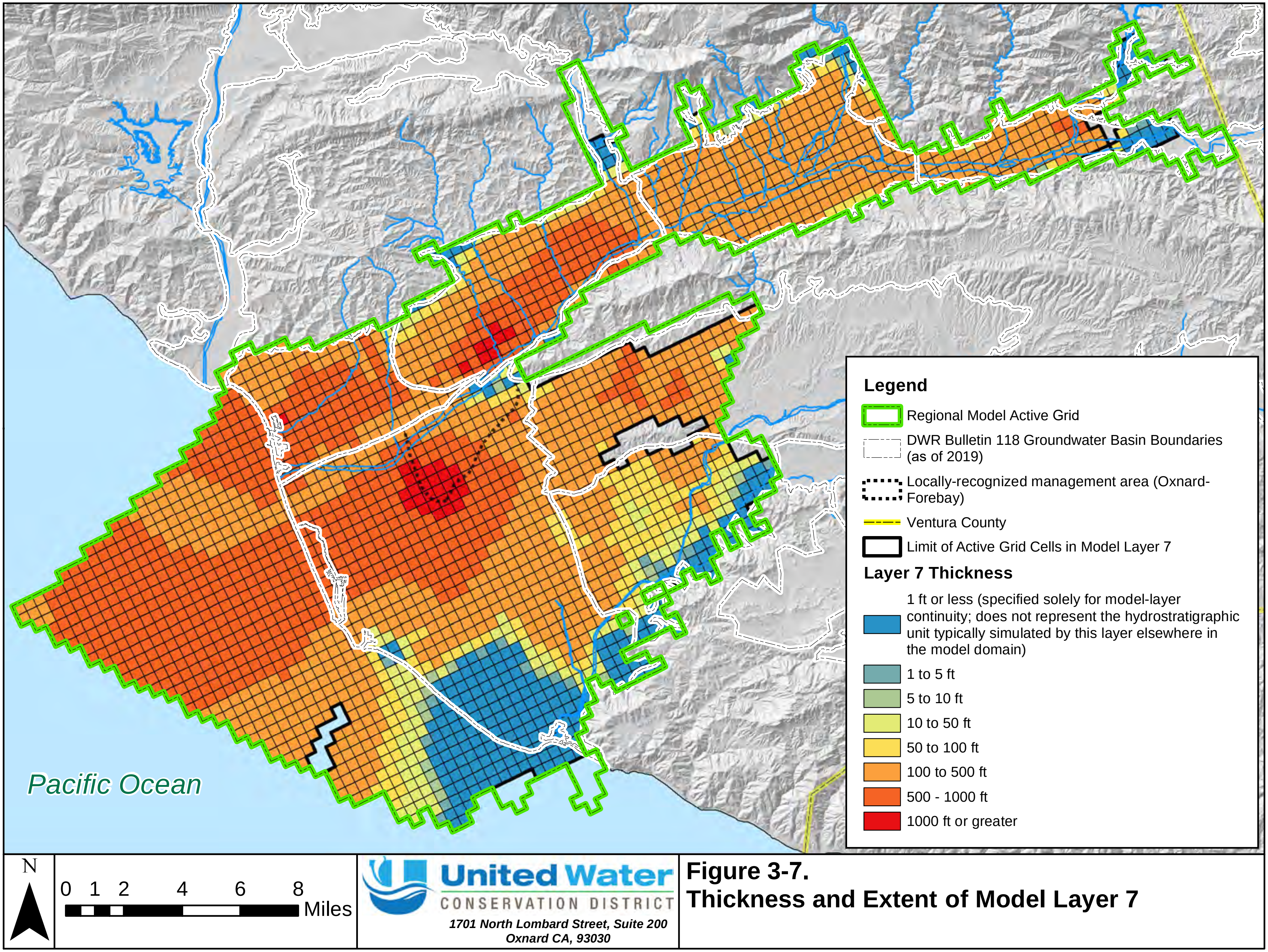

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Figure 3-7.
Thickness and Extent of Model Layer 7

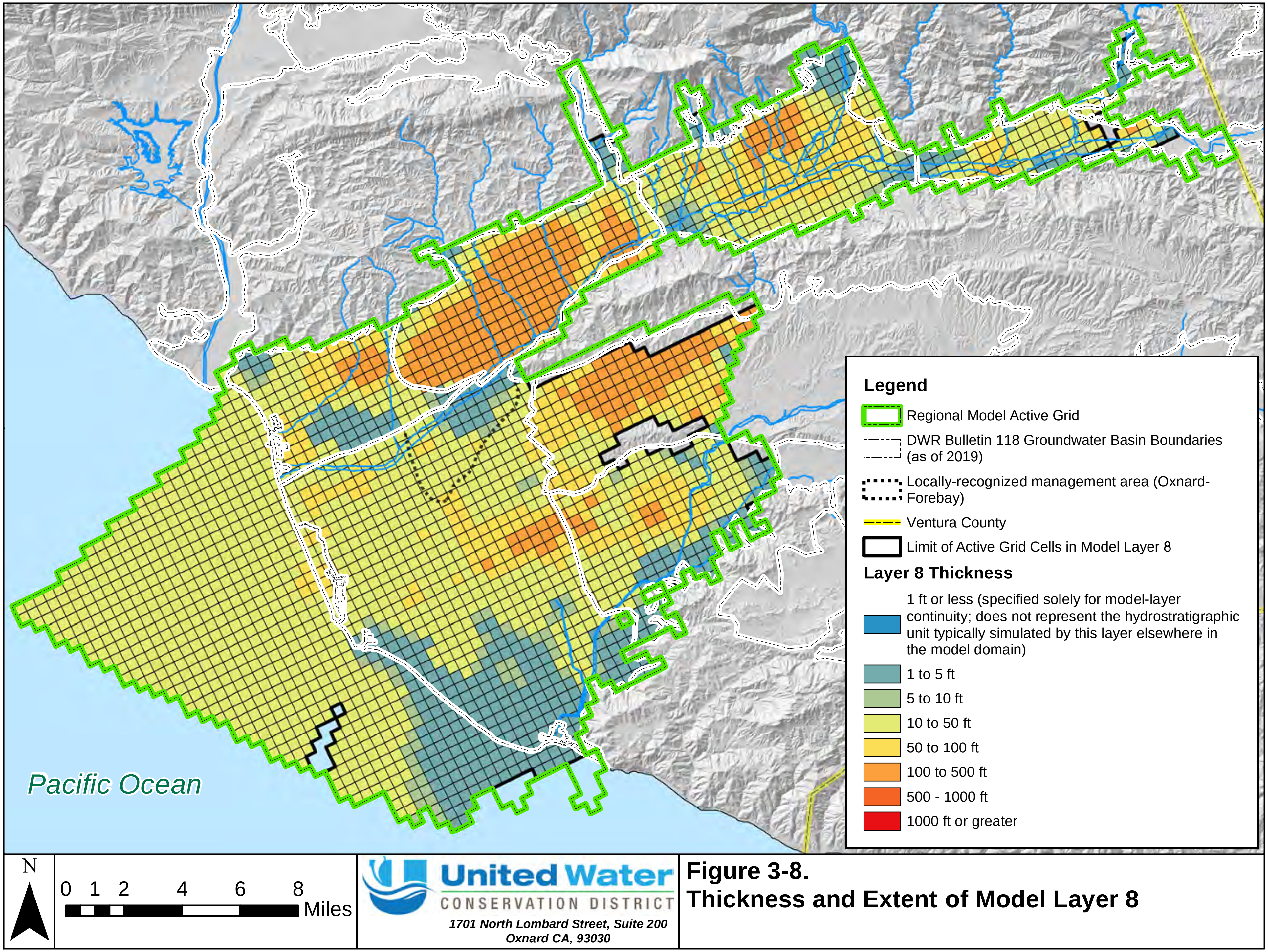

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Figure 3-8.
Thickness and Extent of Model Layer 8

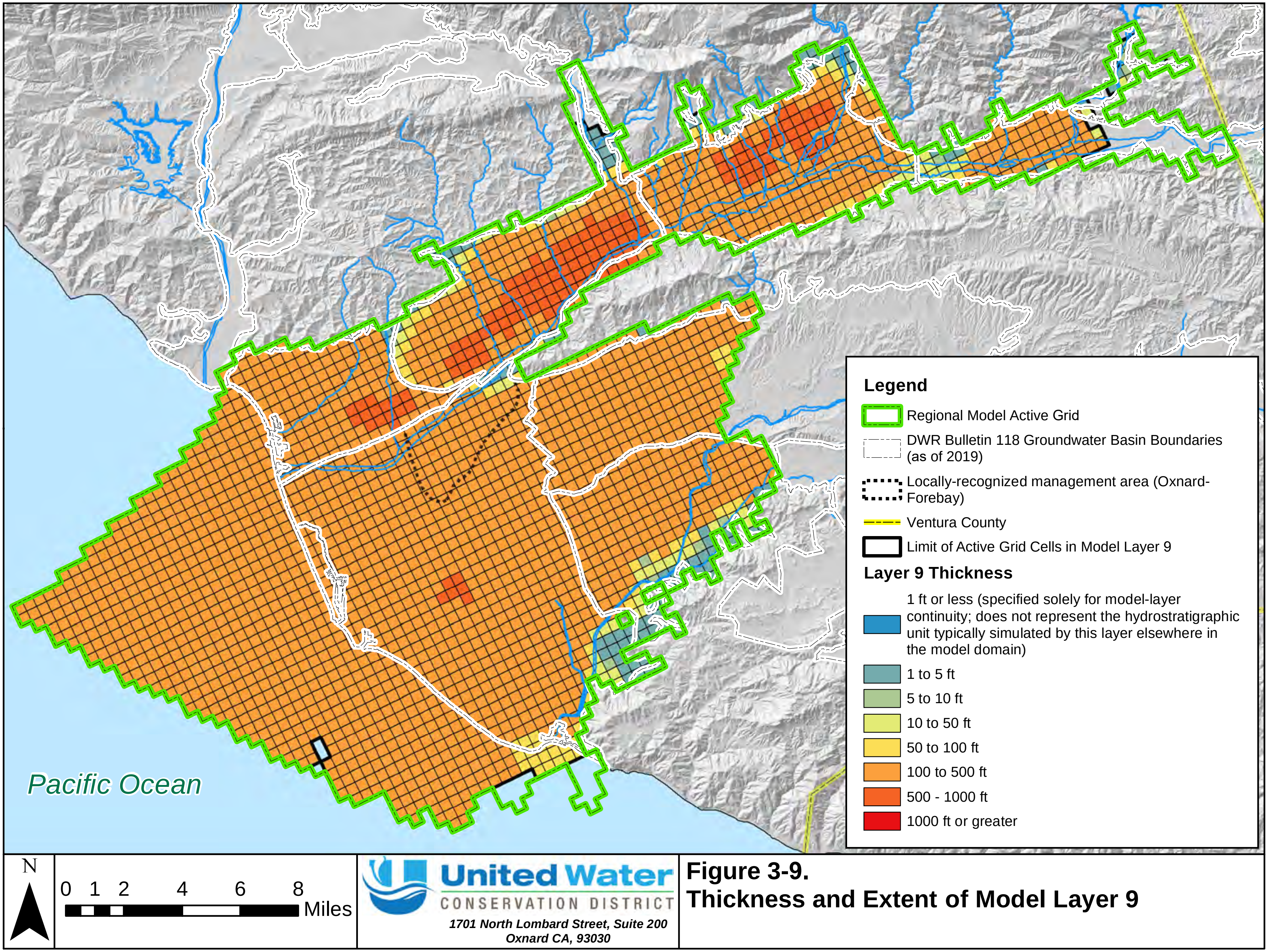

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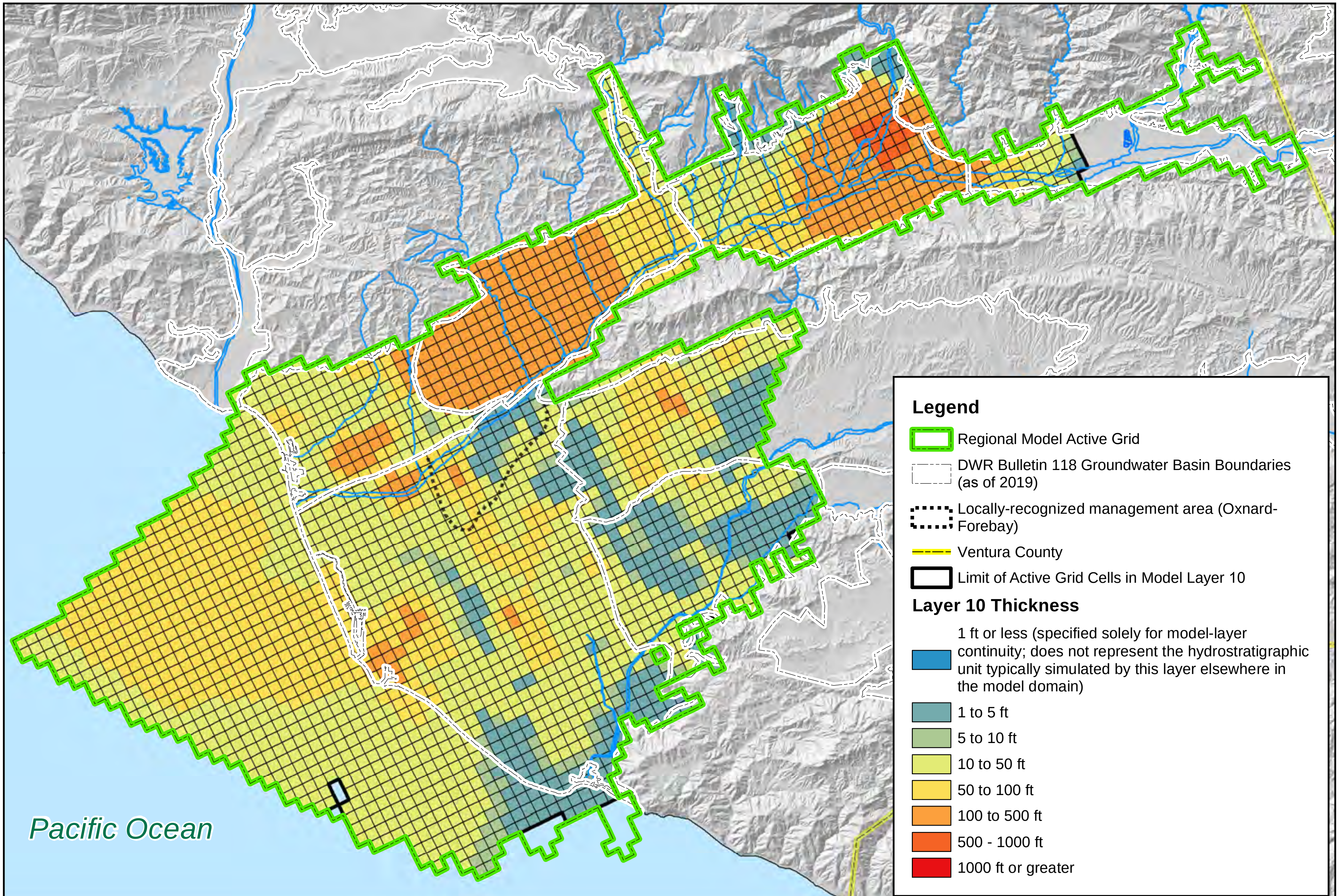
Figure 3-9.
Thickness and Extent of Model Layer 9



N

0 1 2 4 6 8 Miles

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Figure 3-10.
Thickness and Extent of Model Layer 10

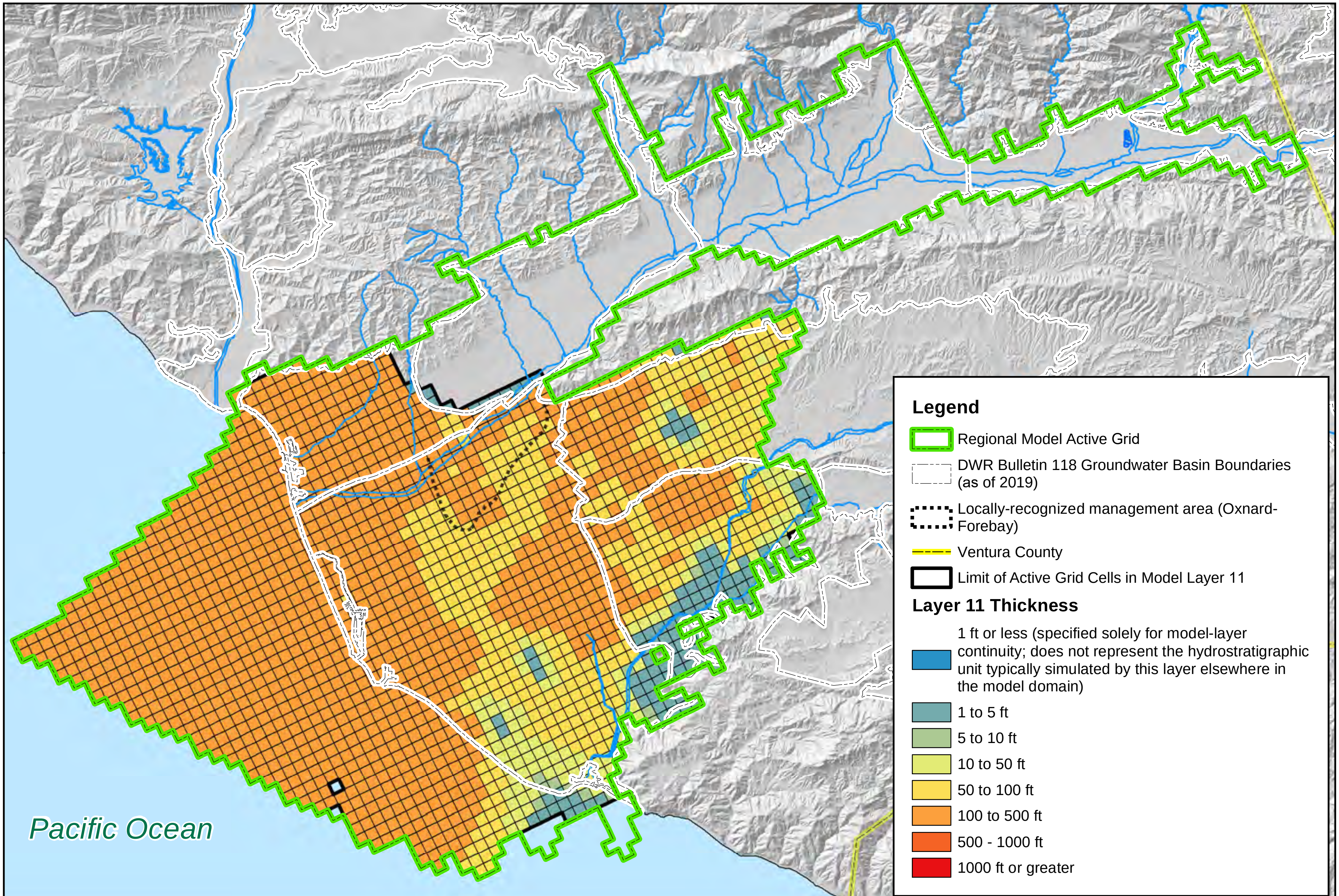

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Figure 3-11.
Thickness and Extent of Model Layer 11

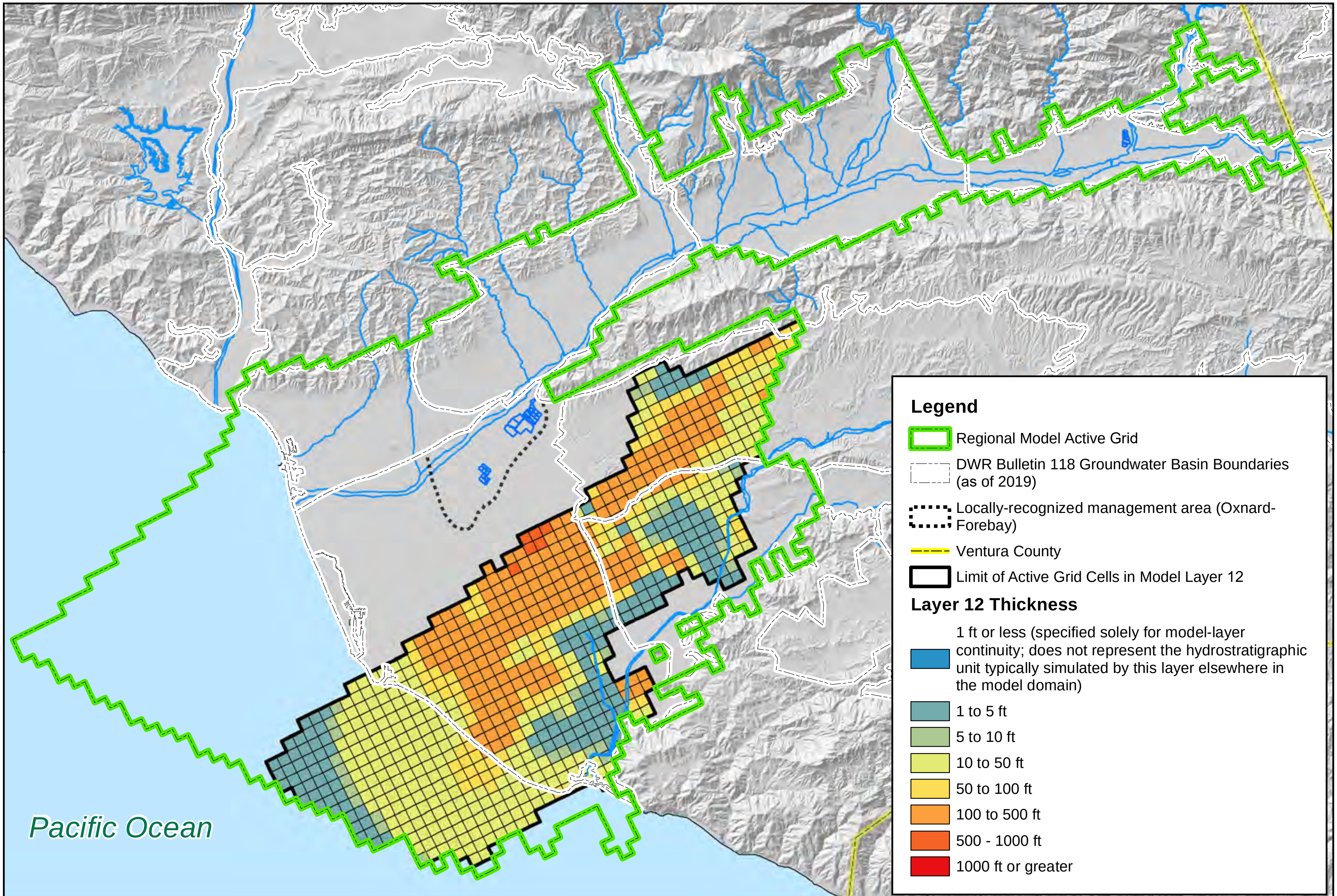

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Figure 3-12.
Thickness and Extent of Model Layer 12

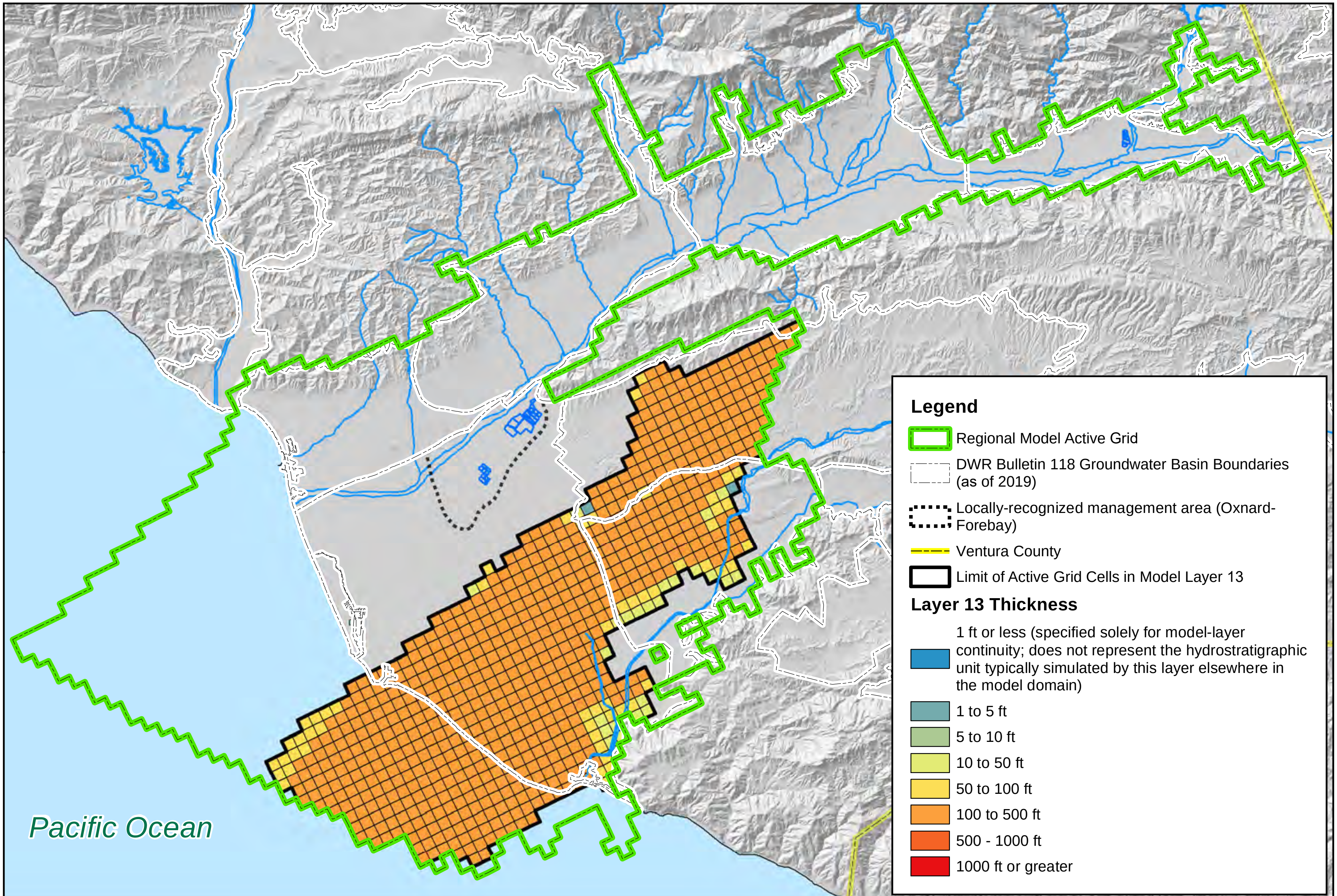

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Figure 3-13.
Thickness and Extent of Model Layer 13

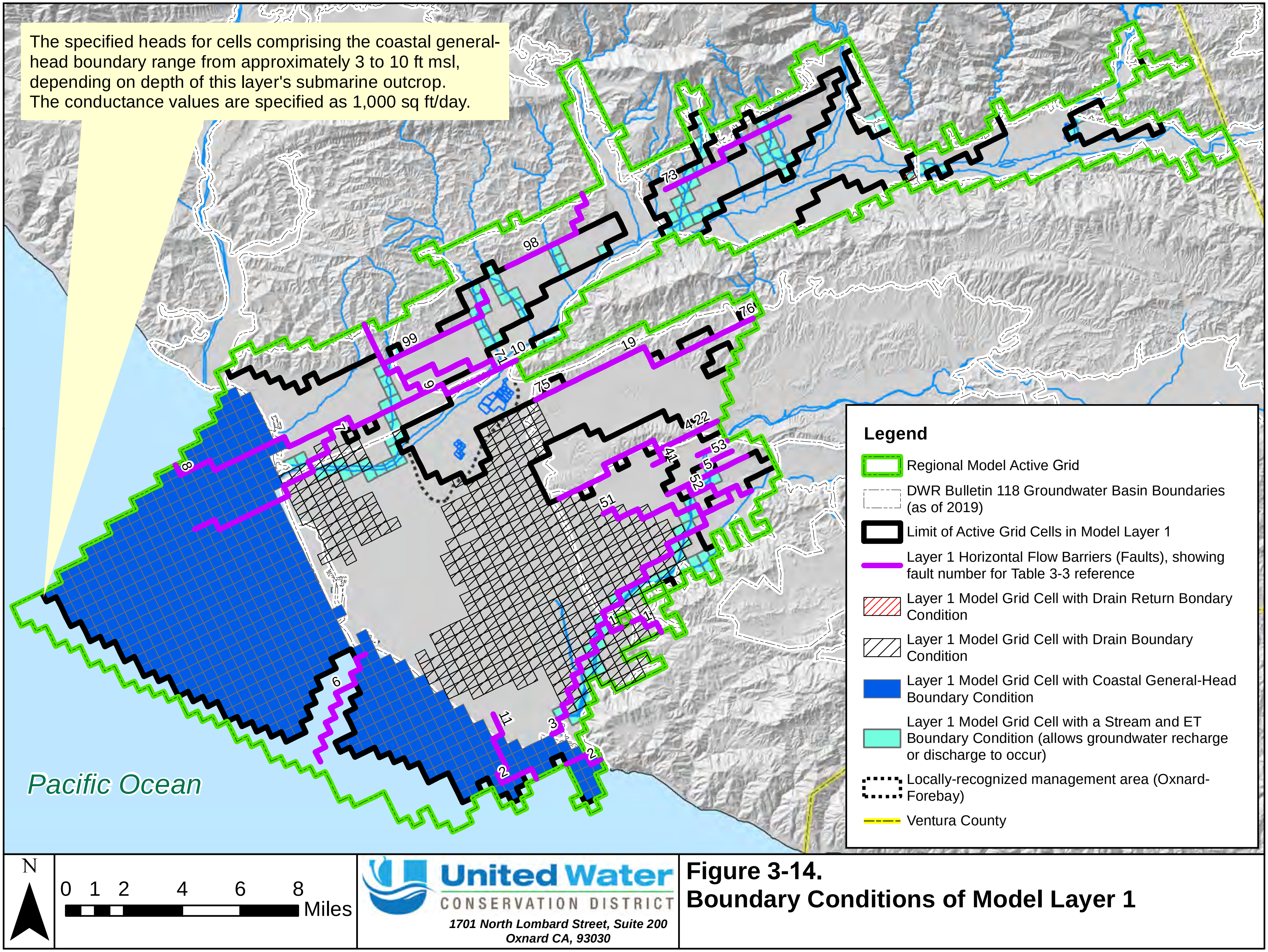

Figure 3-14.
Boundary Conditions of Model Layer 1

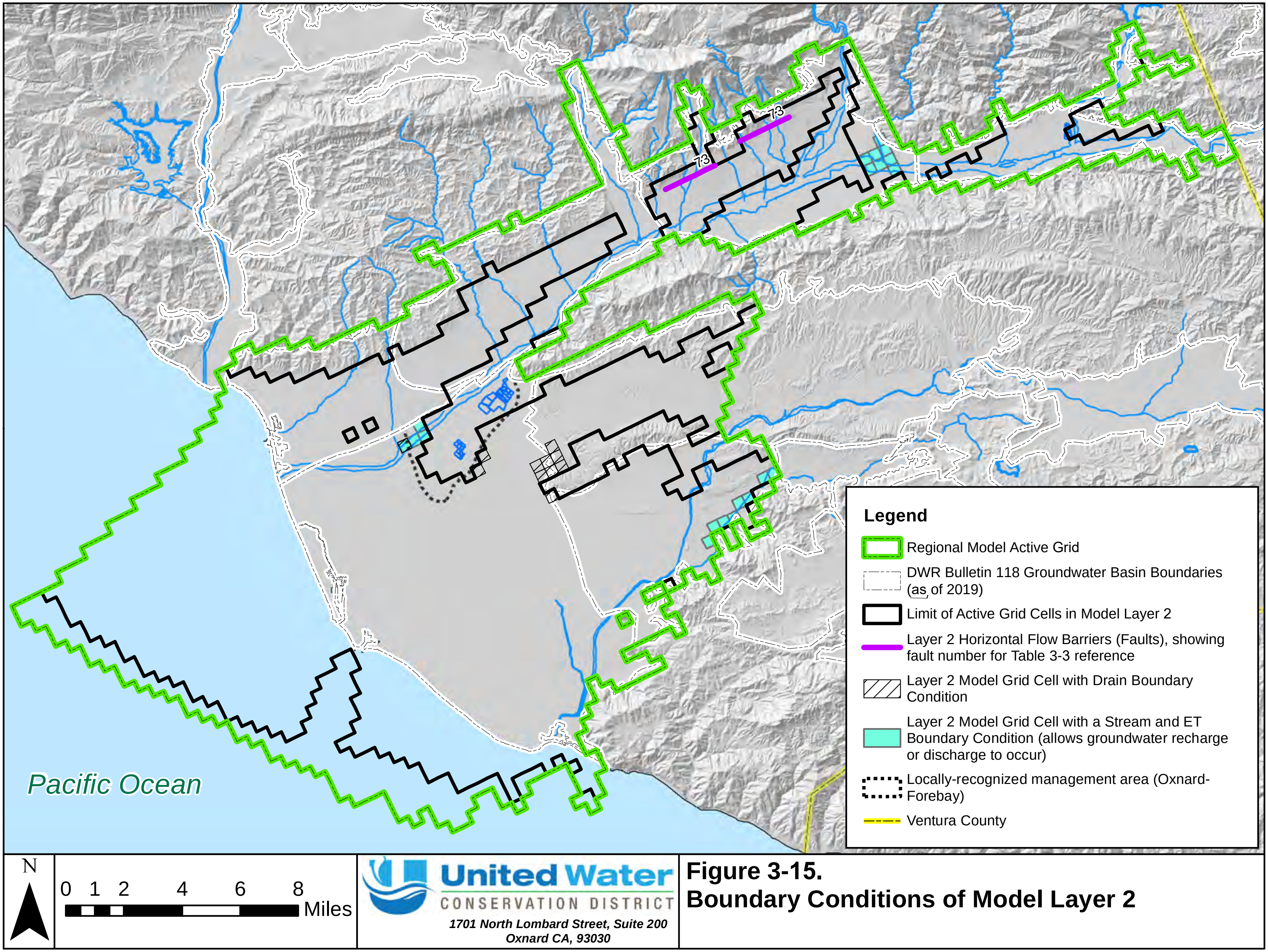

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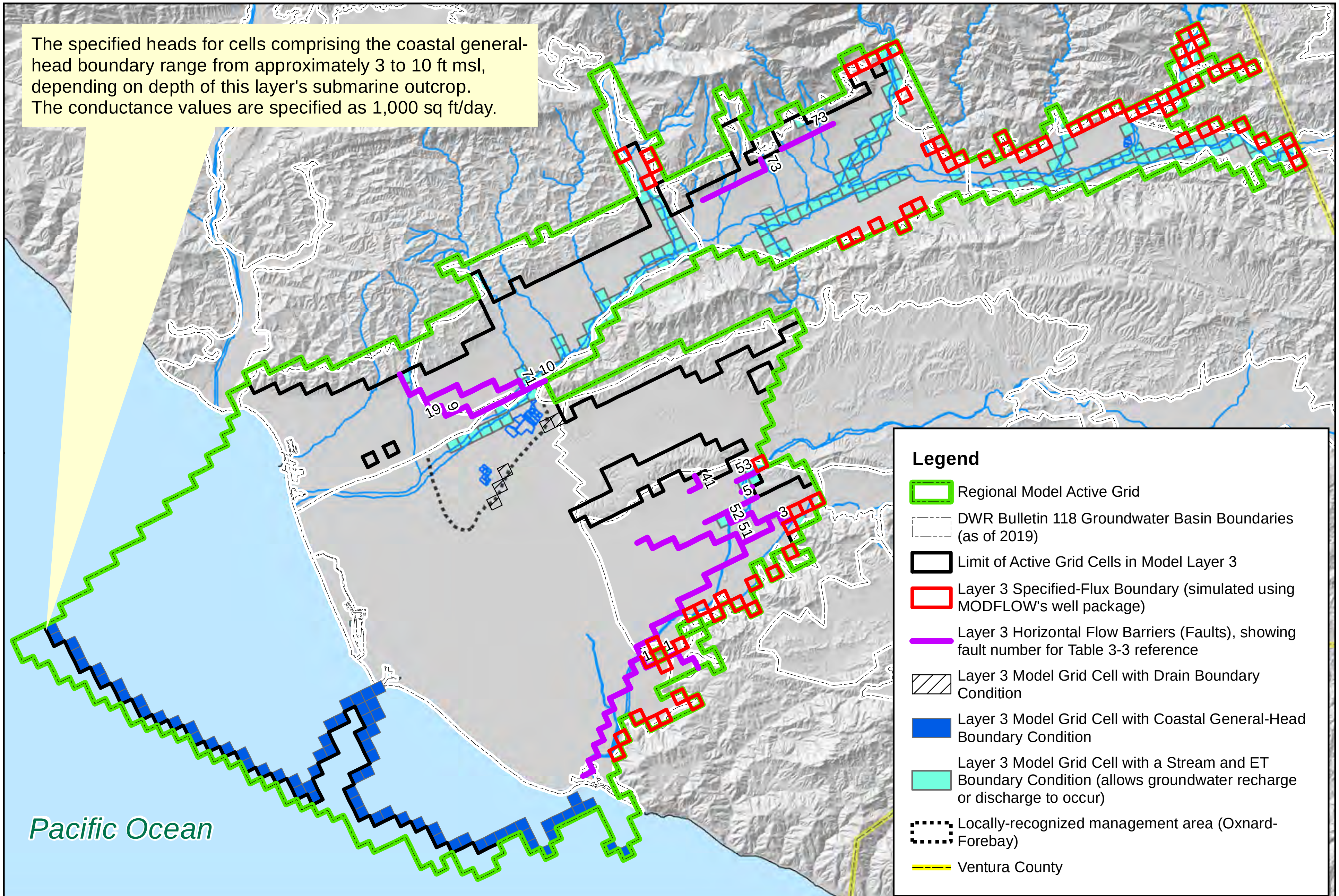
Figure 3-15.
Boundary Conditions of Model Layer 2



N

0 1 2 4 6 8 Miles

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Figure 3-16.
Boundary Conditions of Model Layer 3

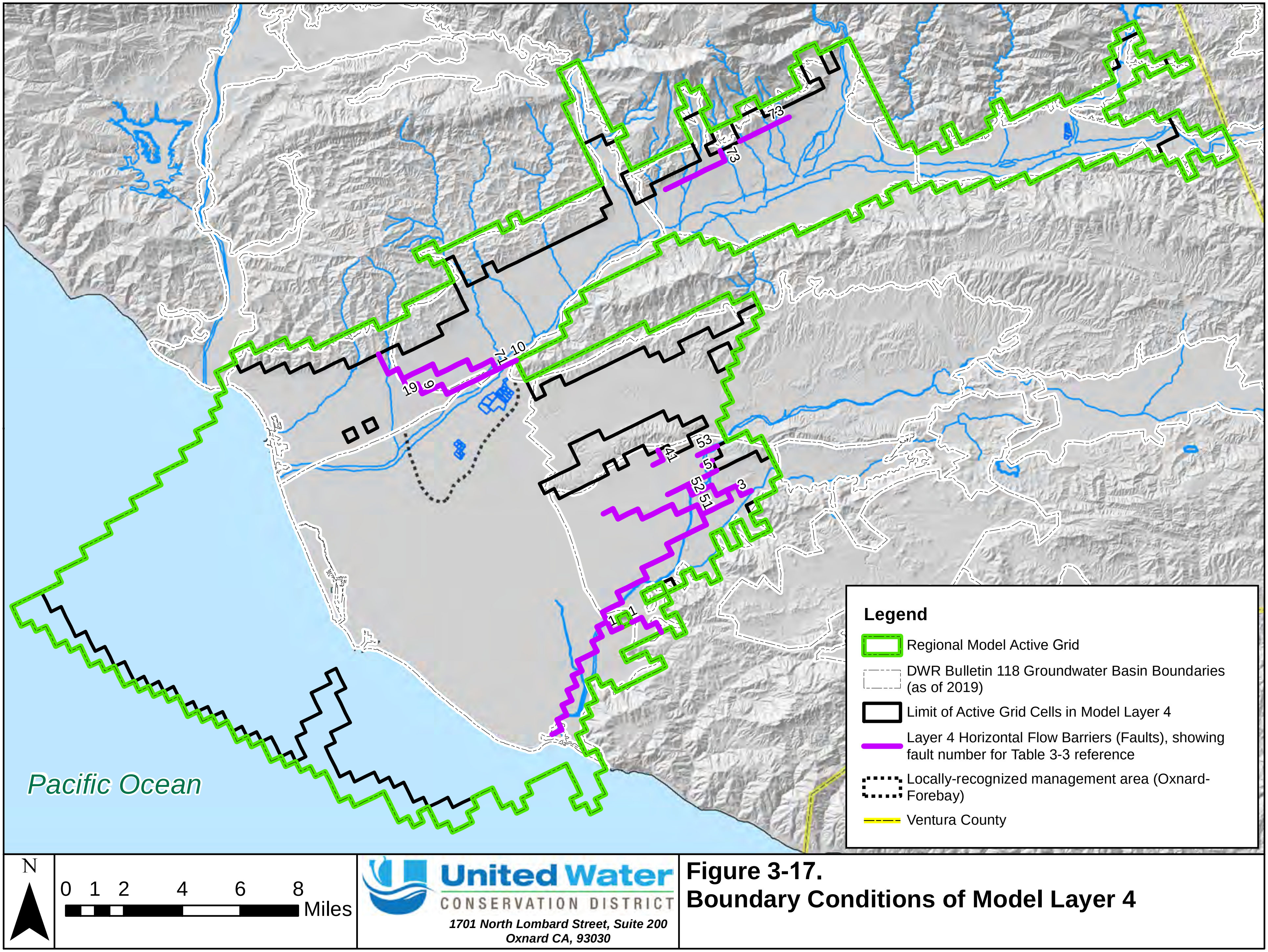

Figure 3-17.
Boundary Conditions of Model Layer 4

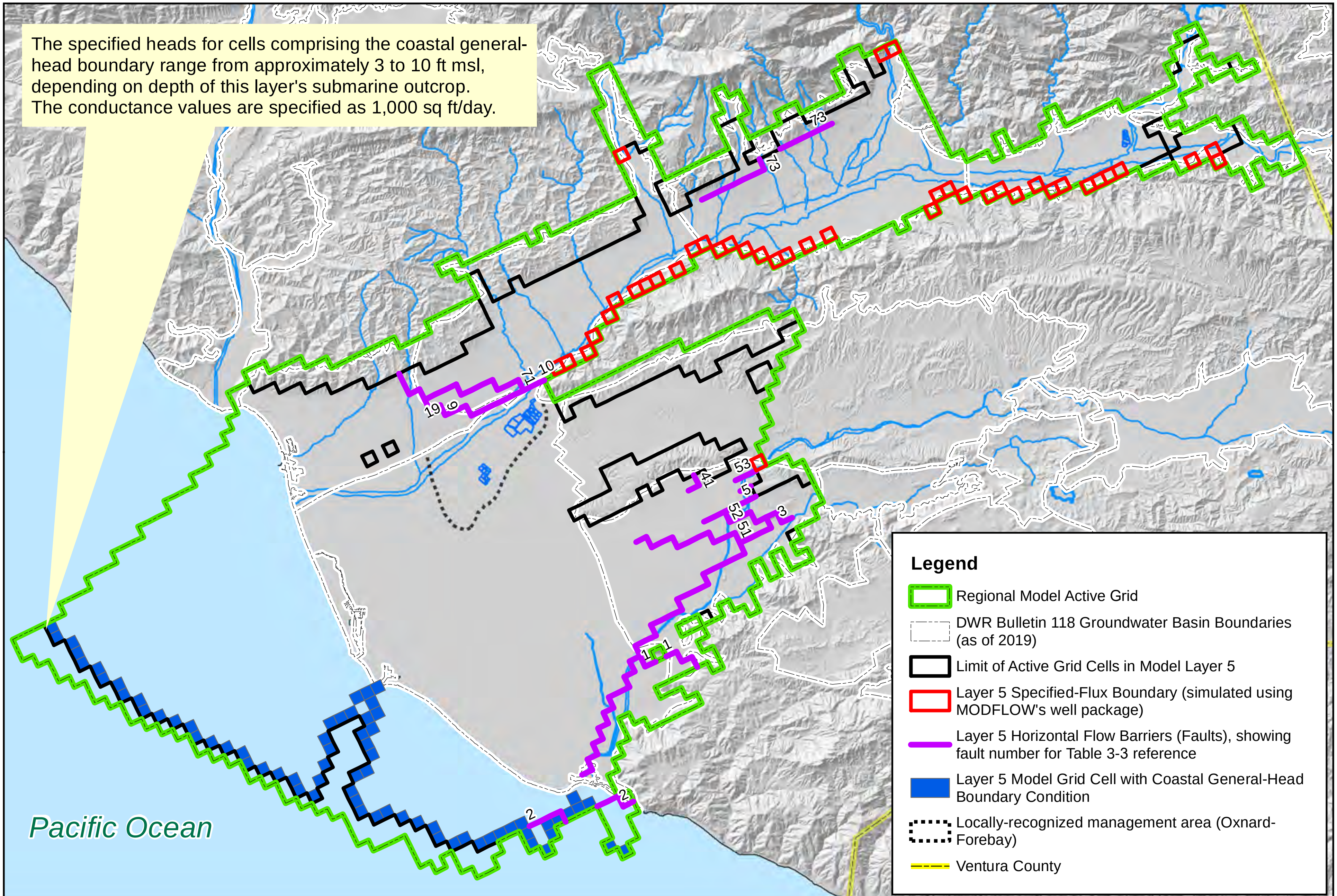

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Figure 3-18.
Boundary Conditions of Model Layer 5

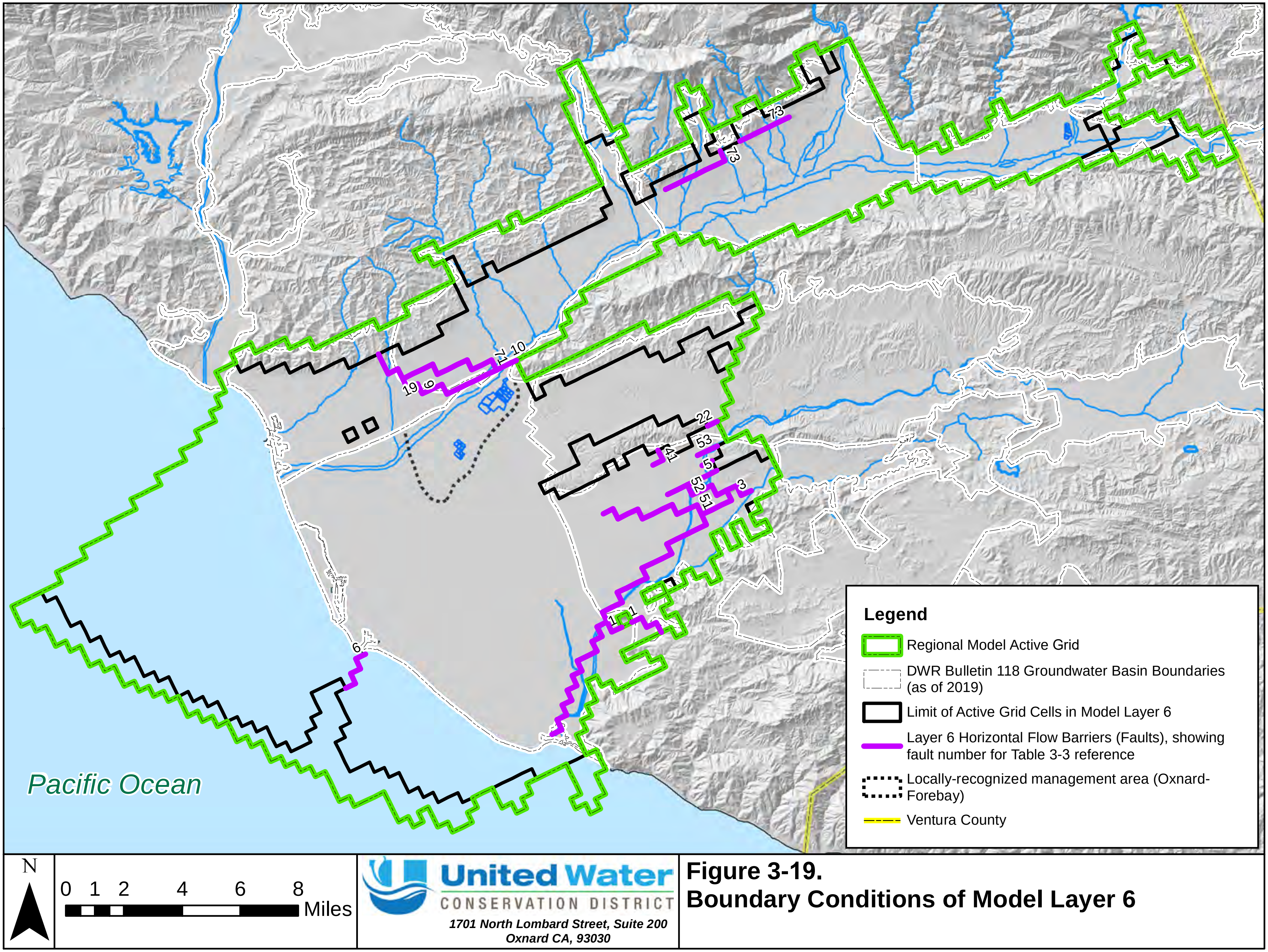
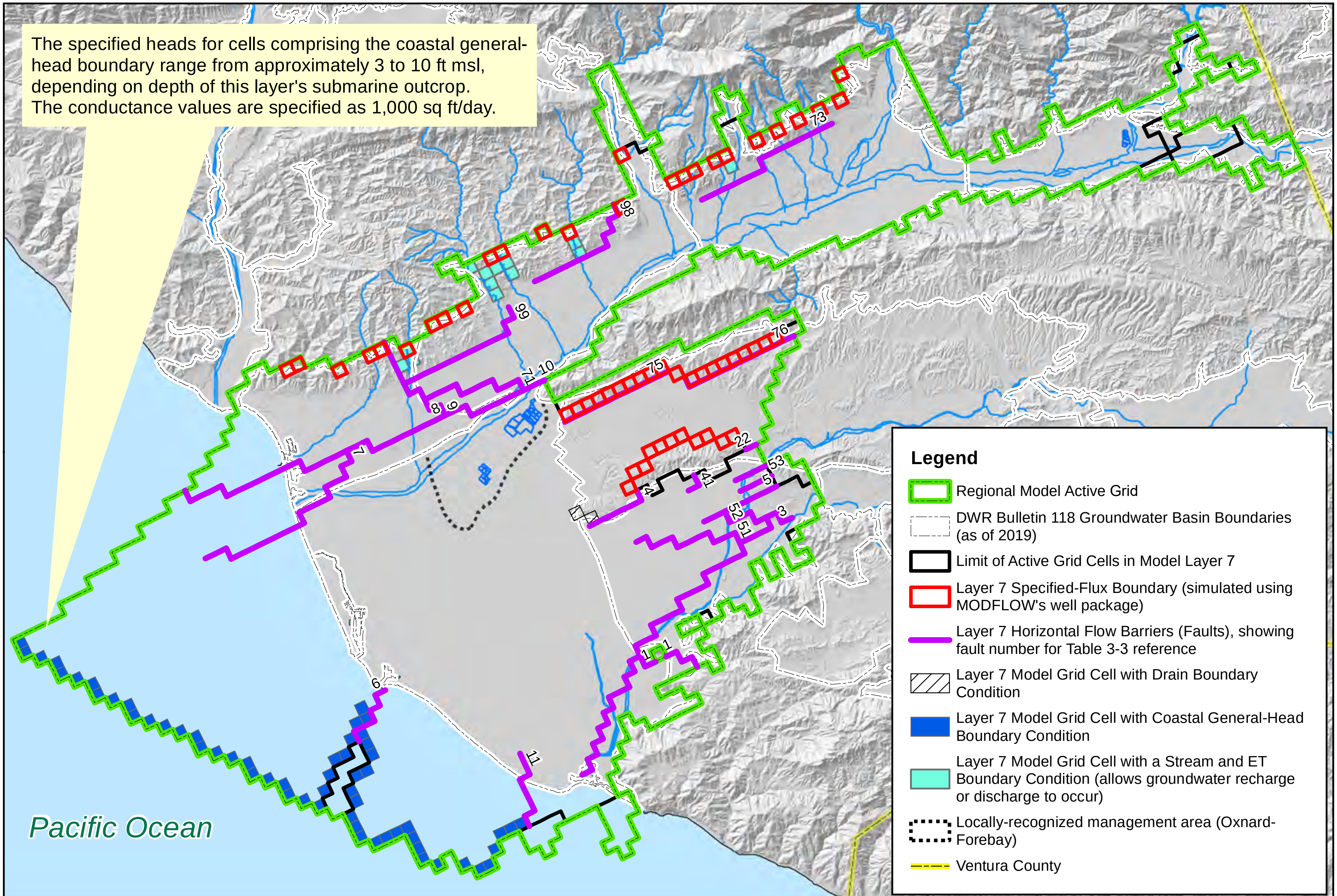


Figure 3-19.
Boundary Conditions of Model Layer 6



N

0 1 2 4 6 8 Miles

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Figure 3-20.
Boundary Conditions of Model Layer 7

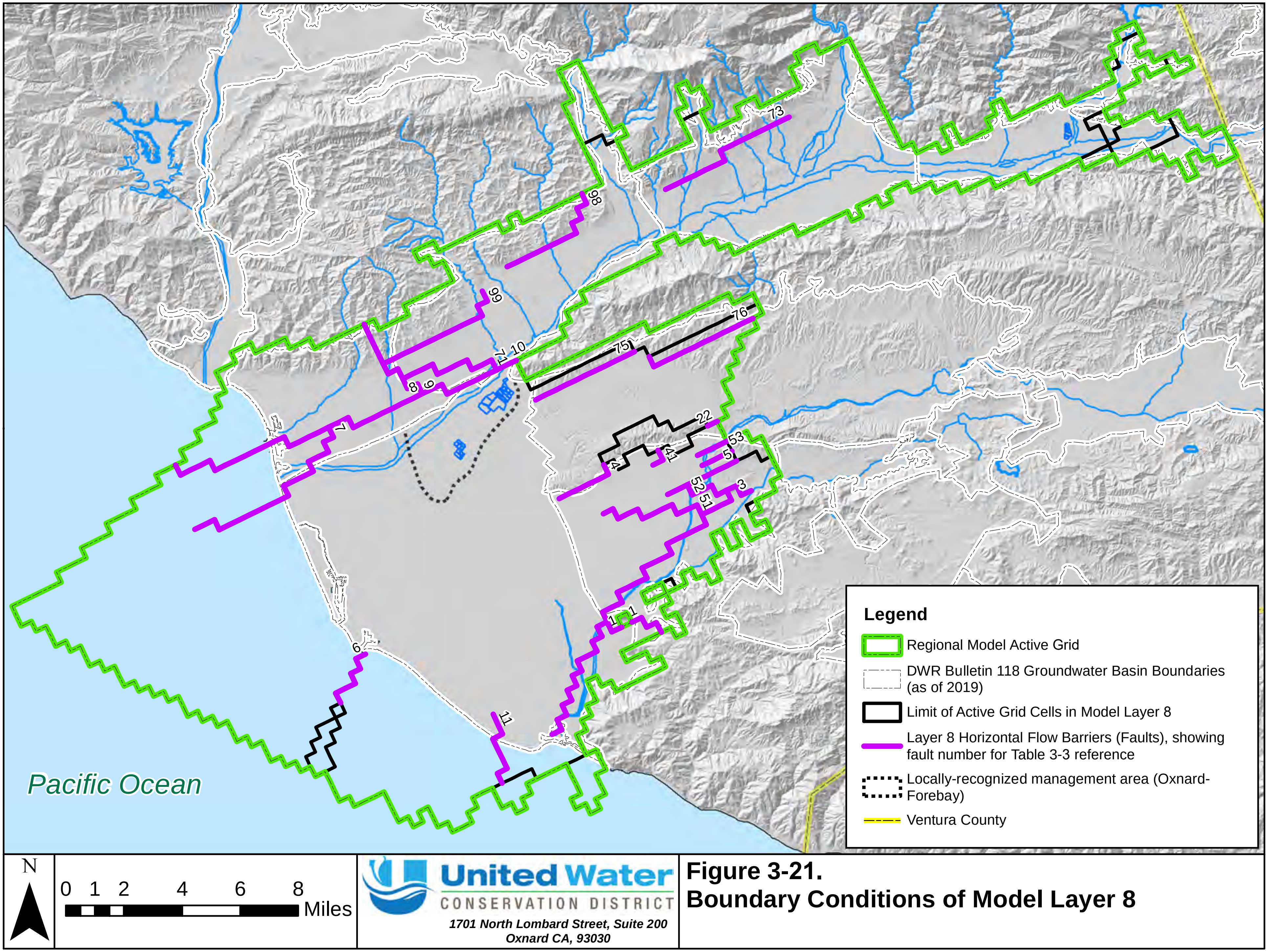

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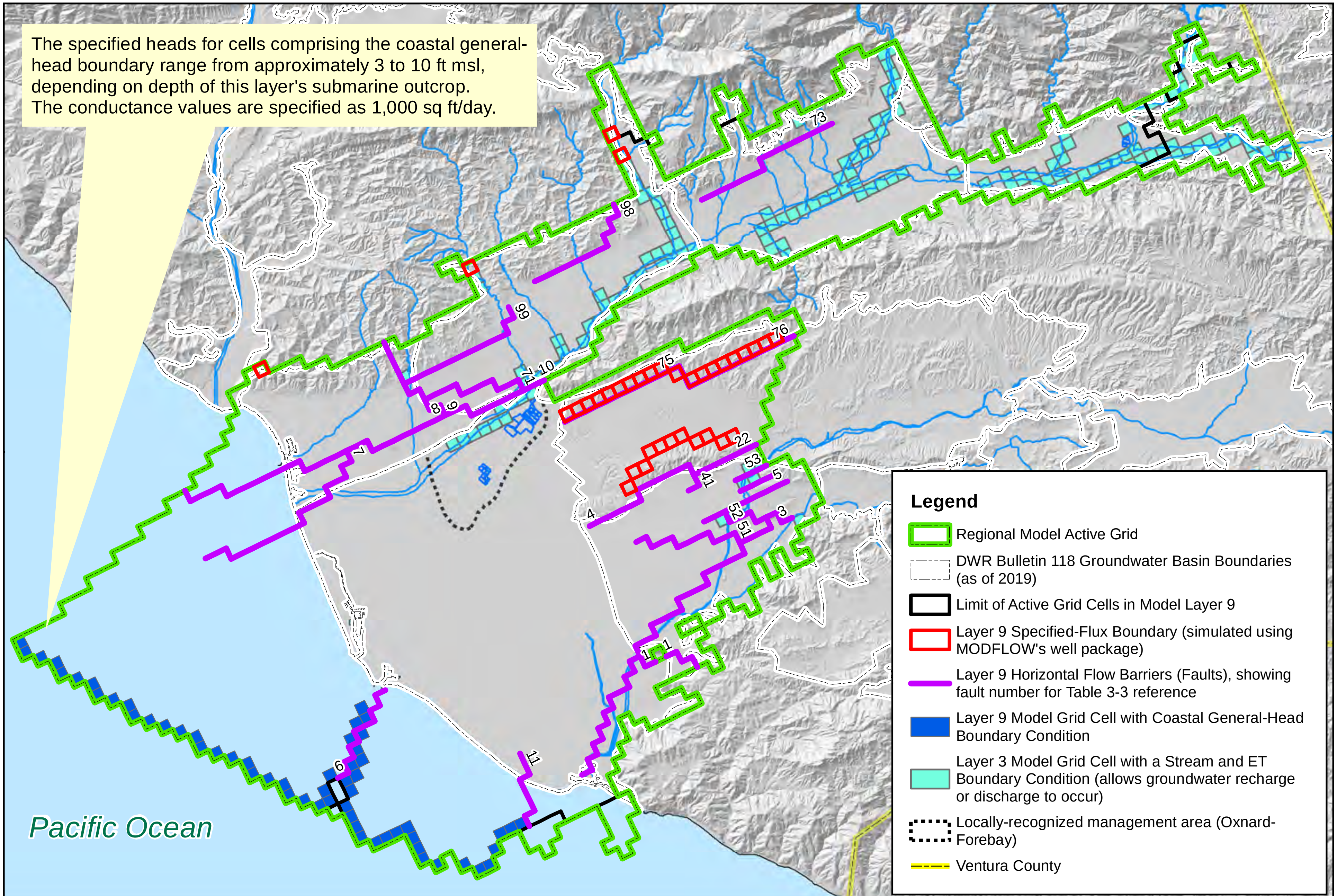
Figure 3-21.
Boundary Conditions of Model Layer 8



N

0 1 2 4 6 8 Miles

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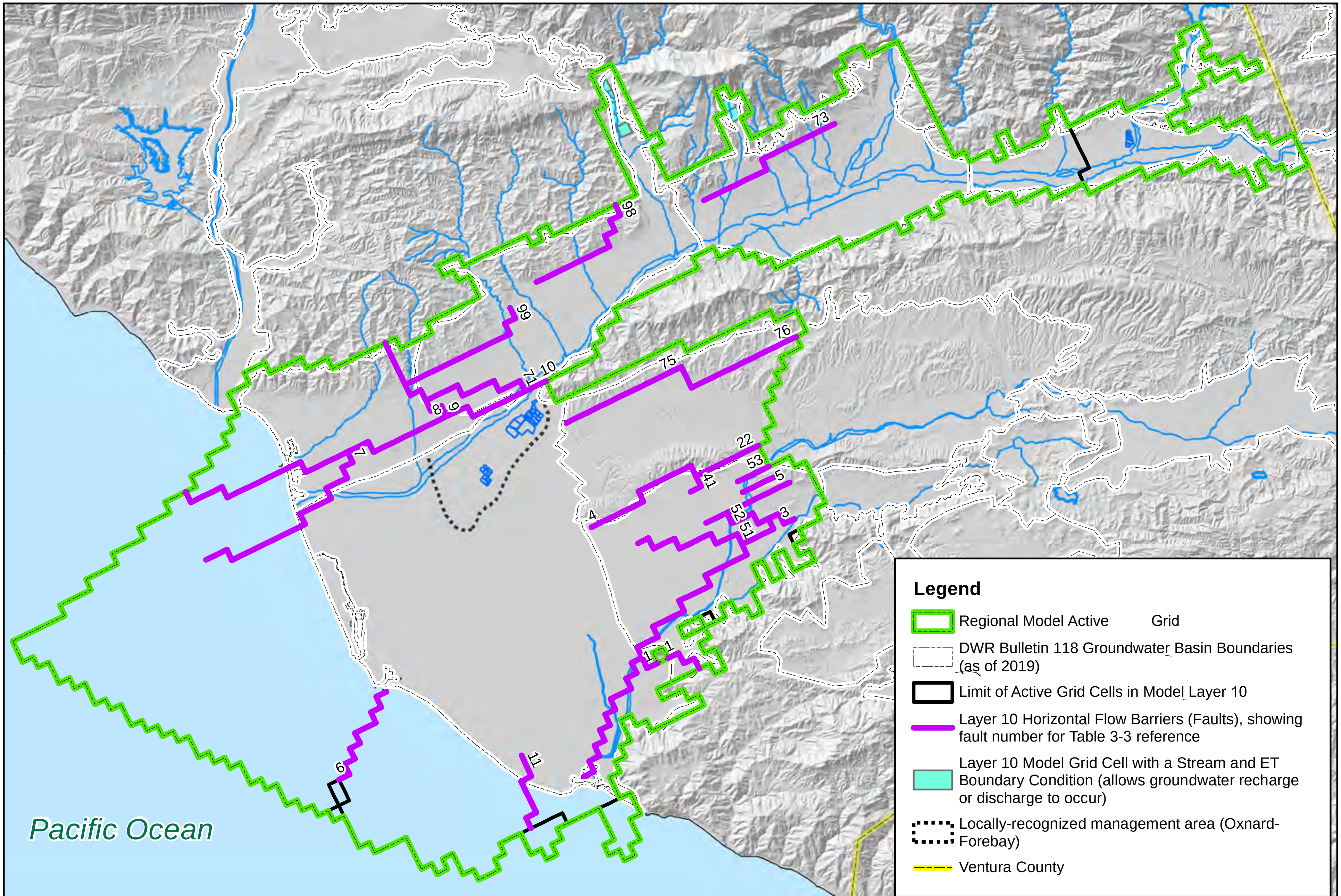
Figure 3-22.
Boundary Conditions of Model Layer 9



N

0 1 2 4 6 8 Miles

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Figure 3-23.
Boundary Conditions of Model Layer 10

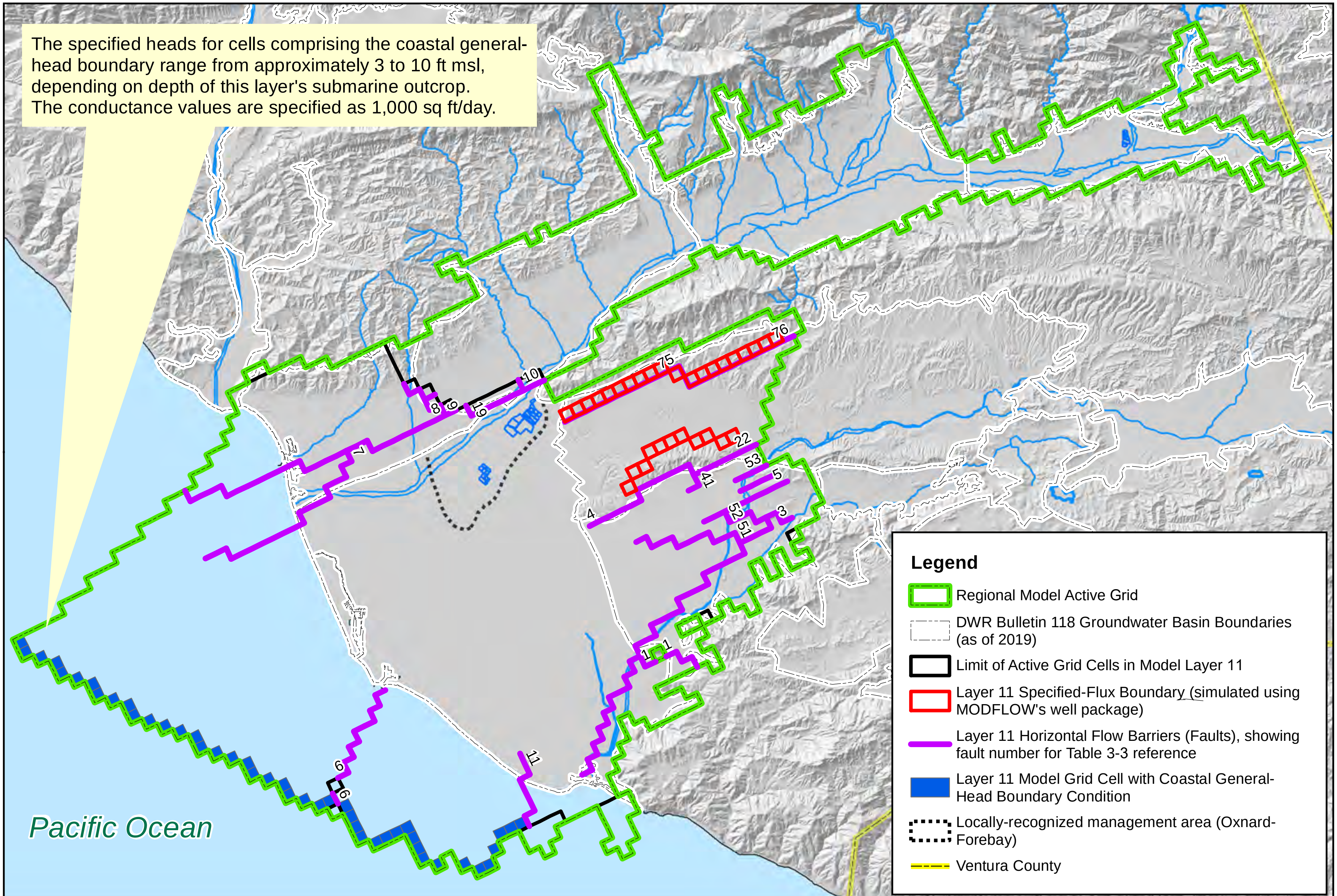

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Figure 3-24.
Boundary Conditions of Model Layer 11

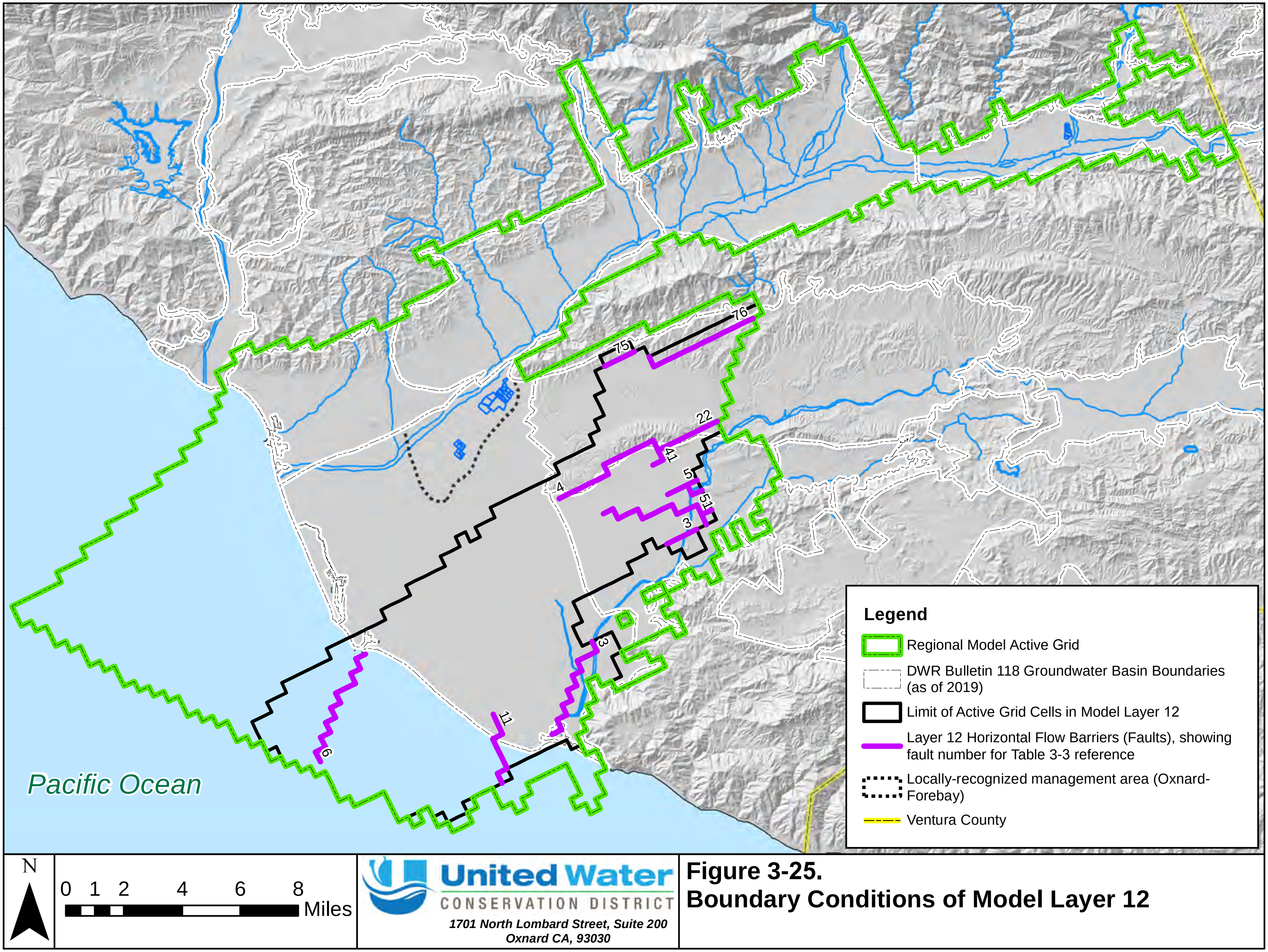

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Figure 3-25.
Boundary Conditions of Model Layer 12

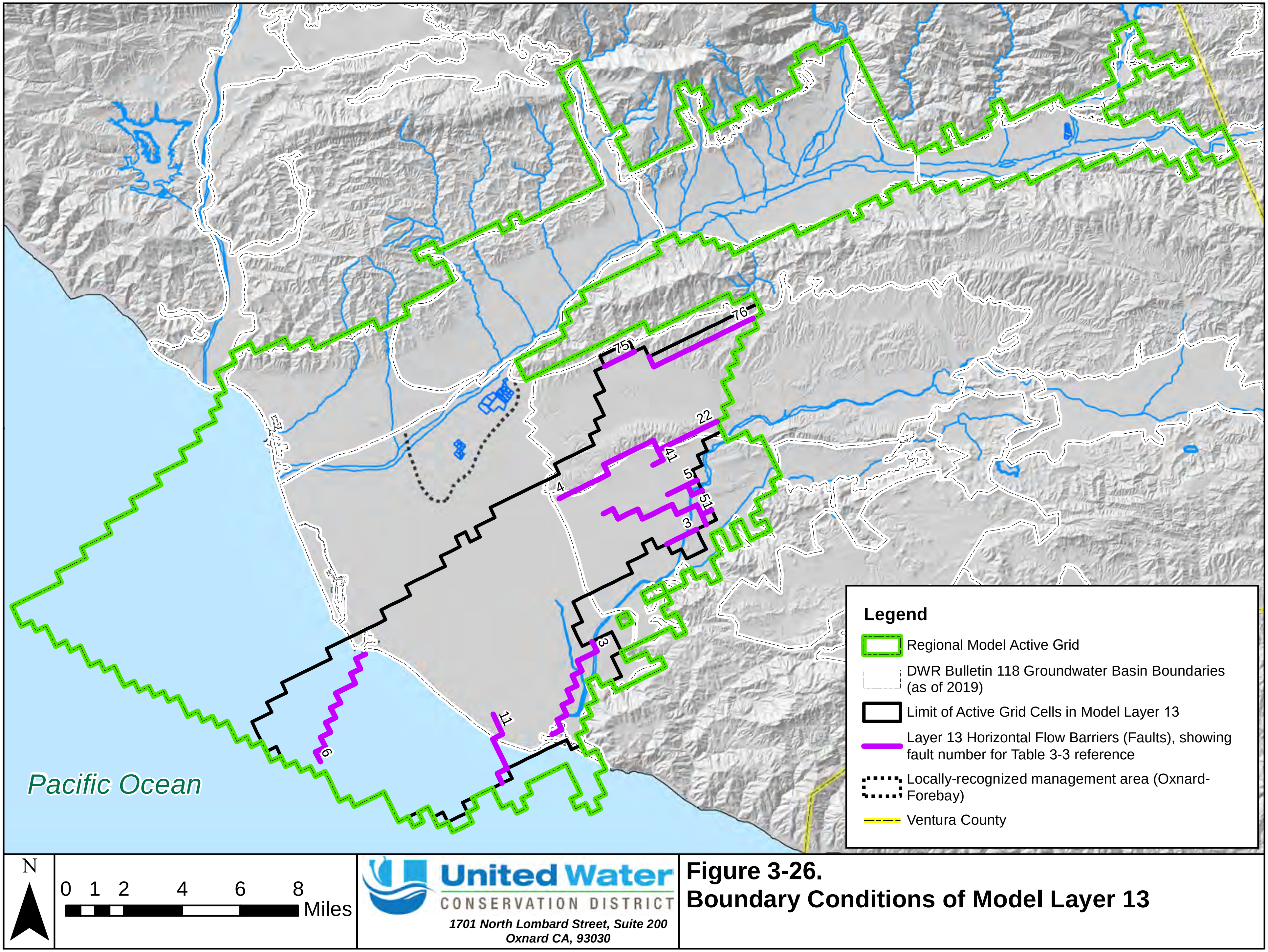

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Figure 3-26.
Boundary Conditions of Model Layer 13

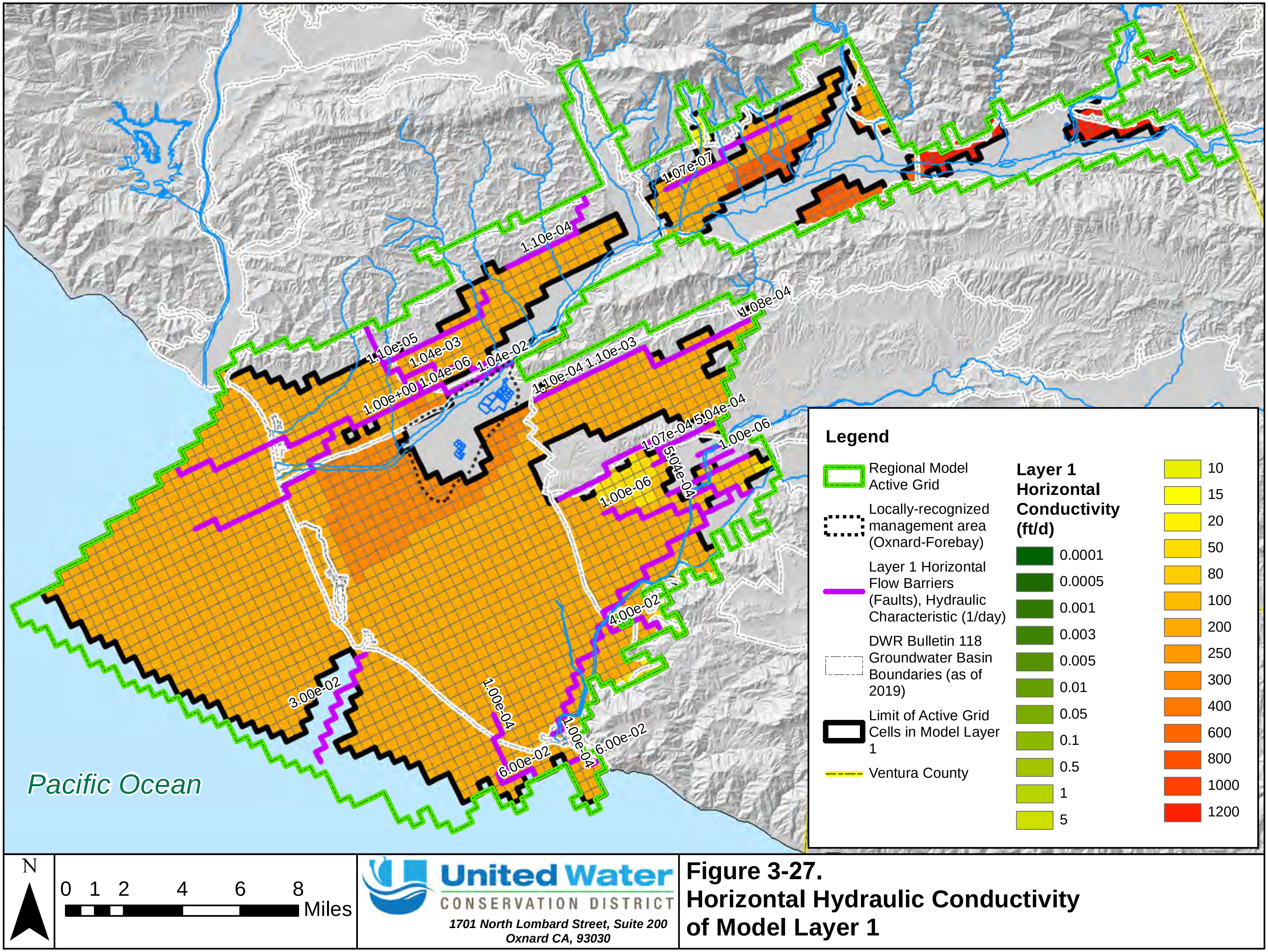

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Figure 3-27. Horizontal Hydraulic Conductivity of Model Layer 1

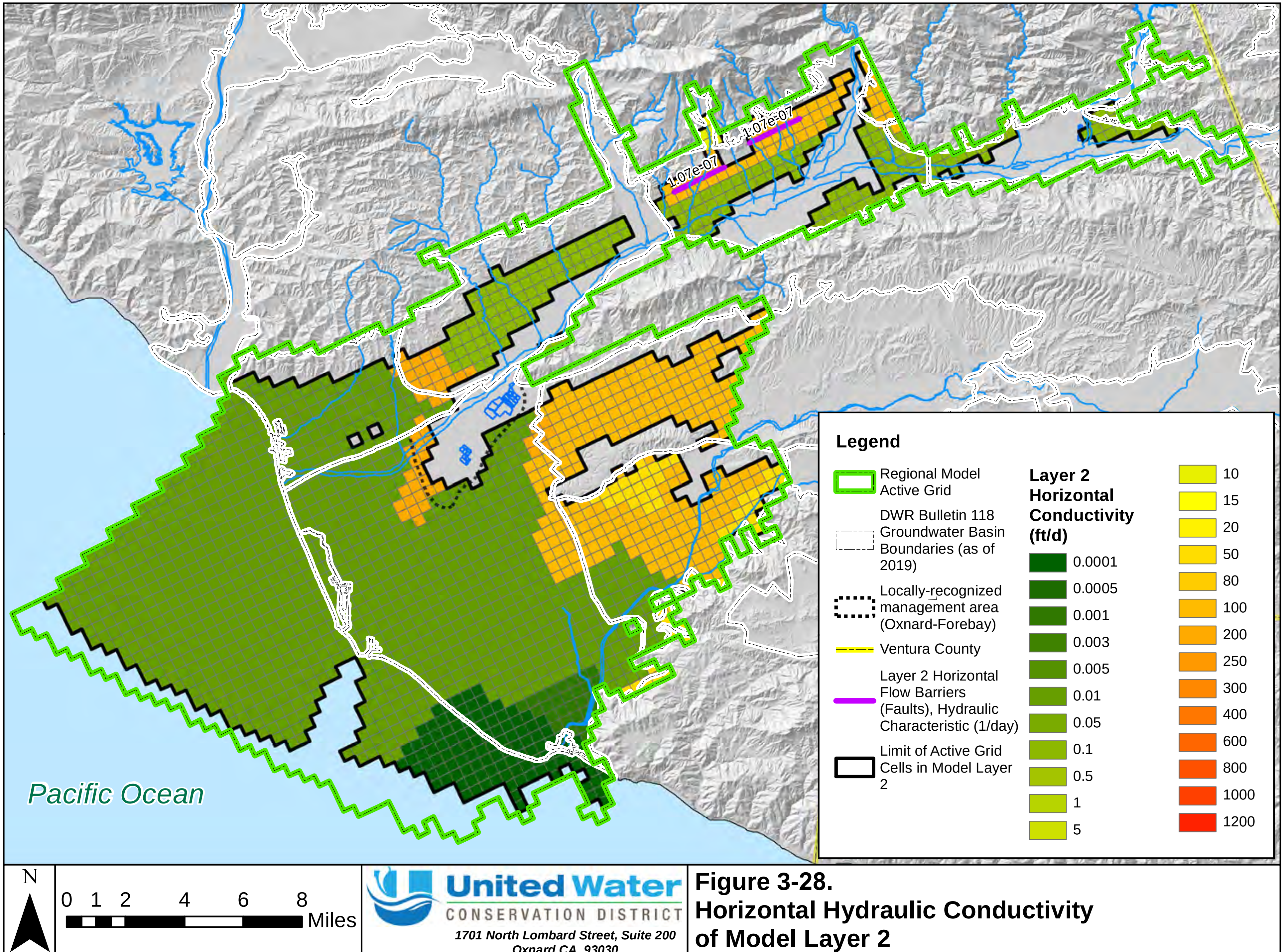

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Figure 3-28.
Horizontal Hydraulic Conductivity of Model Layer 2

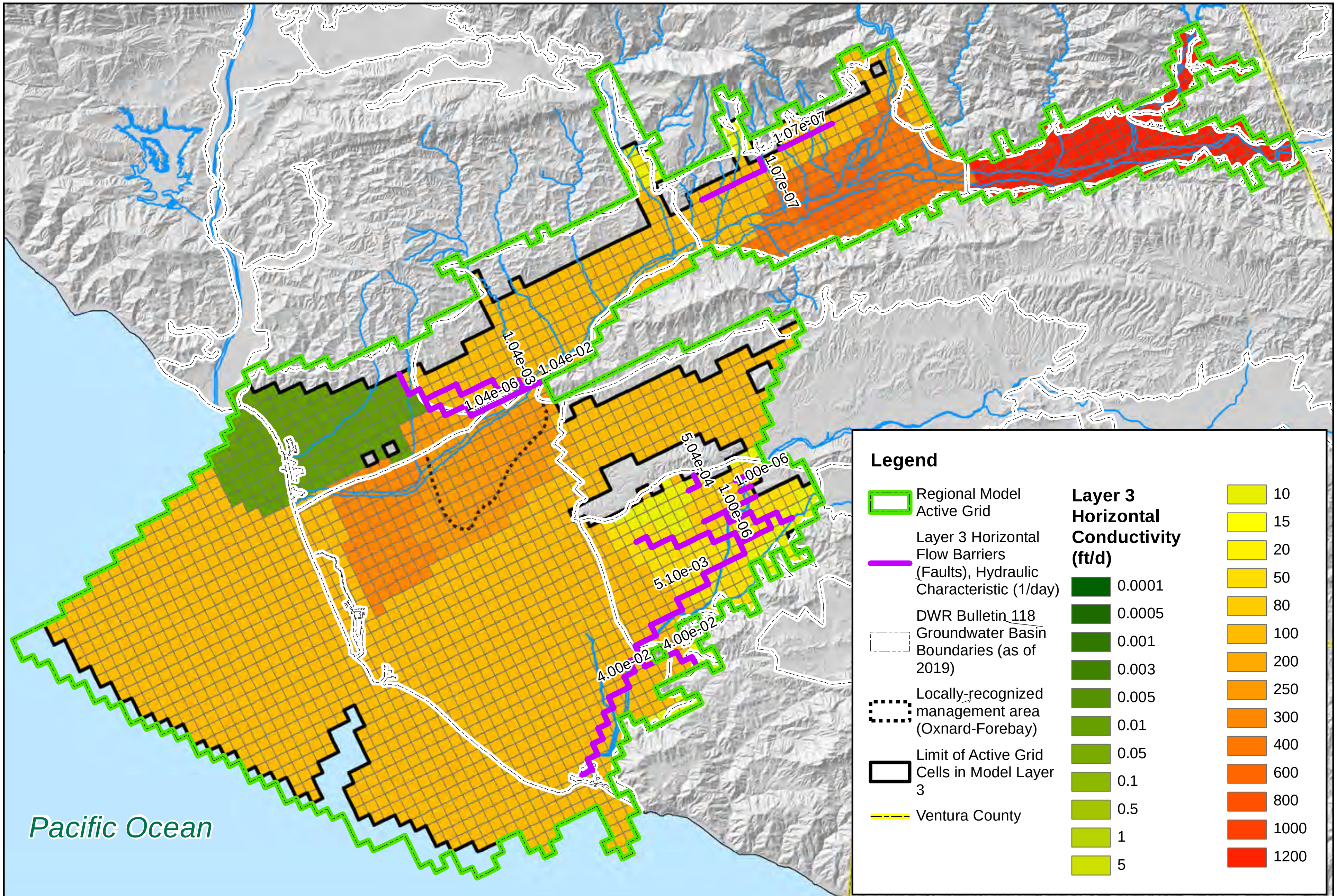

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Figure 3-29.
Horizontal Hydraulic Conductivity of Model Layer 3

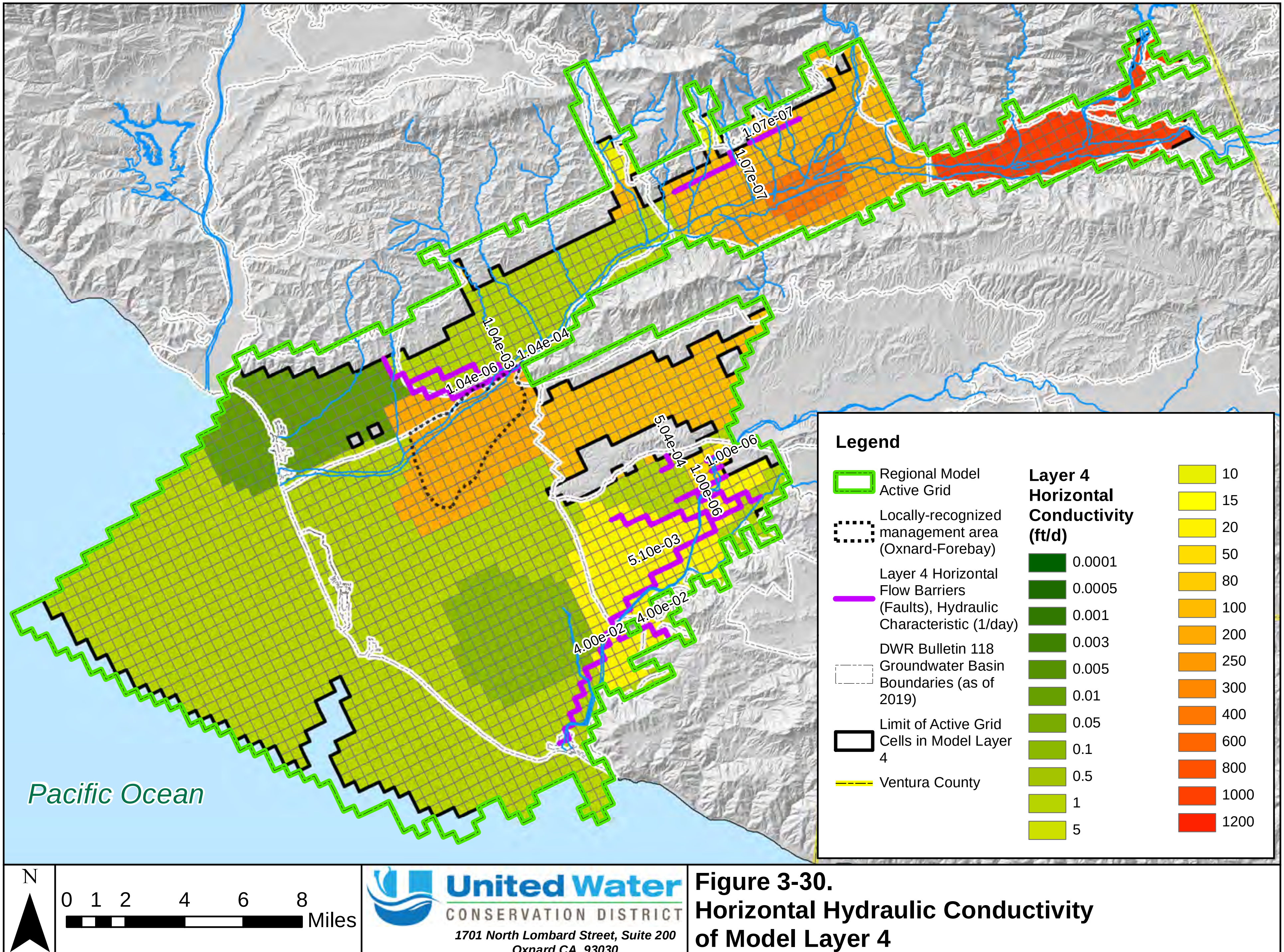

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Figure 3-30.
Horizontal Hydraulic Conductivity of Model Layer 4

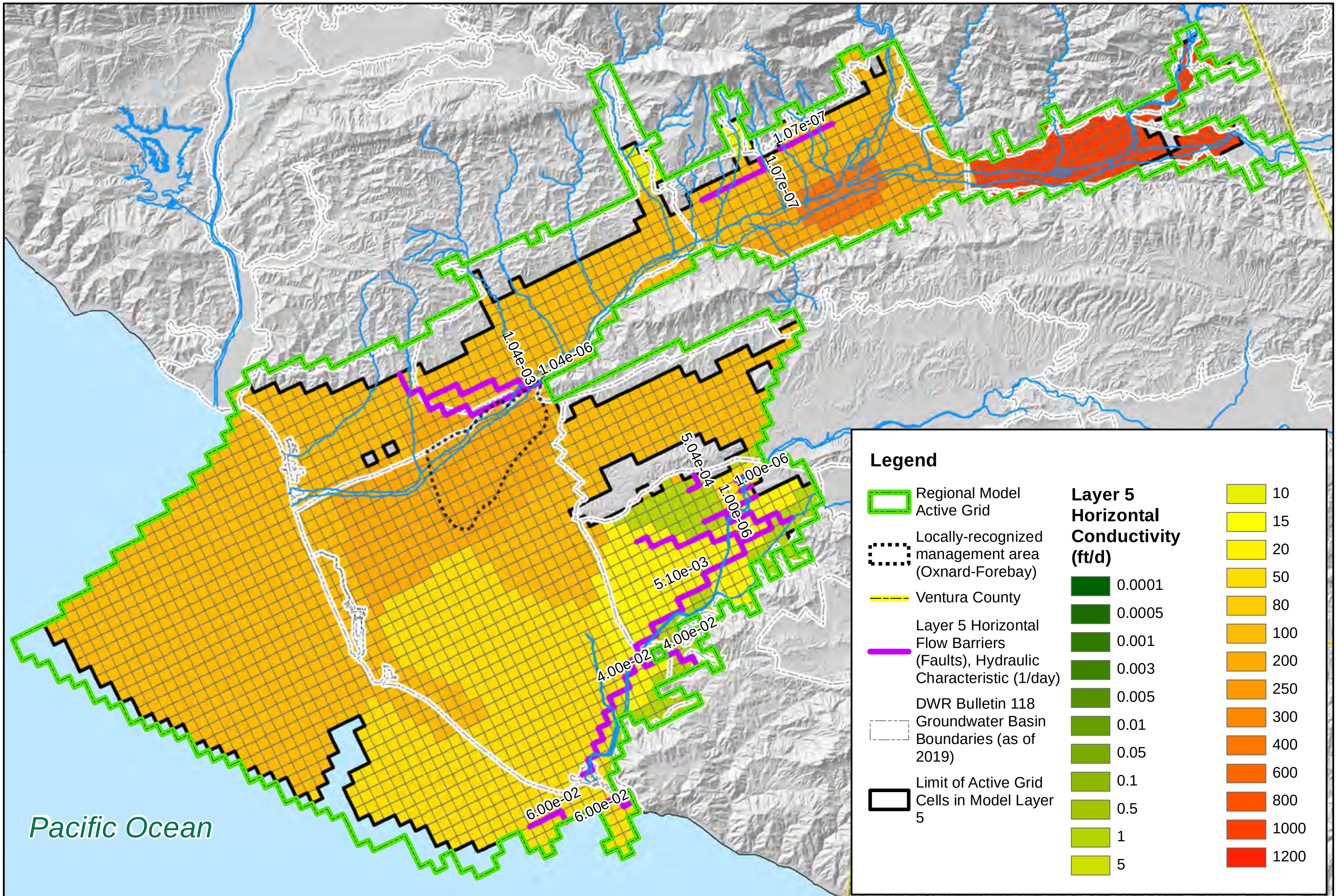

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Figure 3-31.
Horizontal Hydraulic Conductivity of Model Layer 5

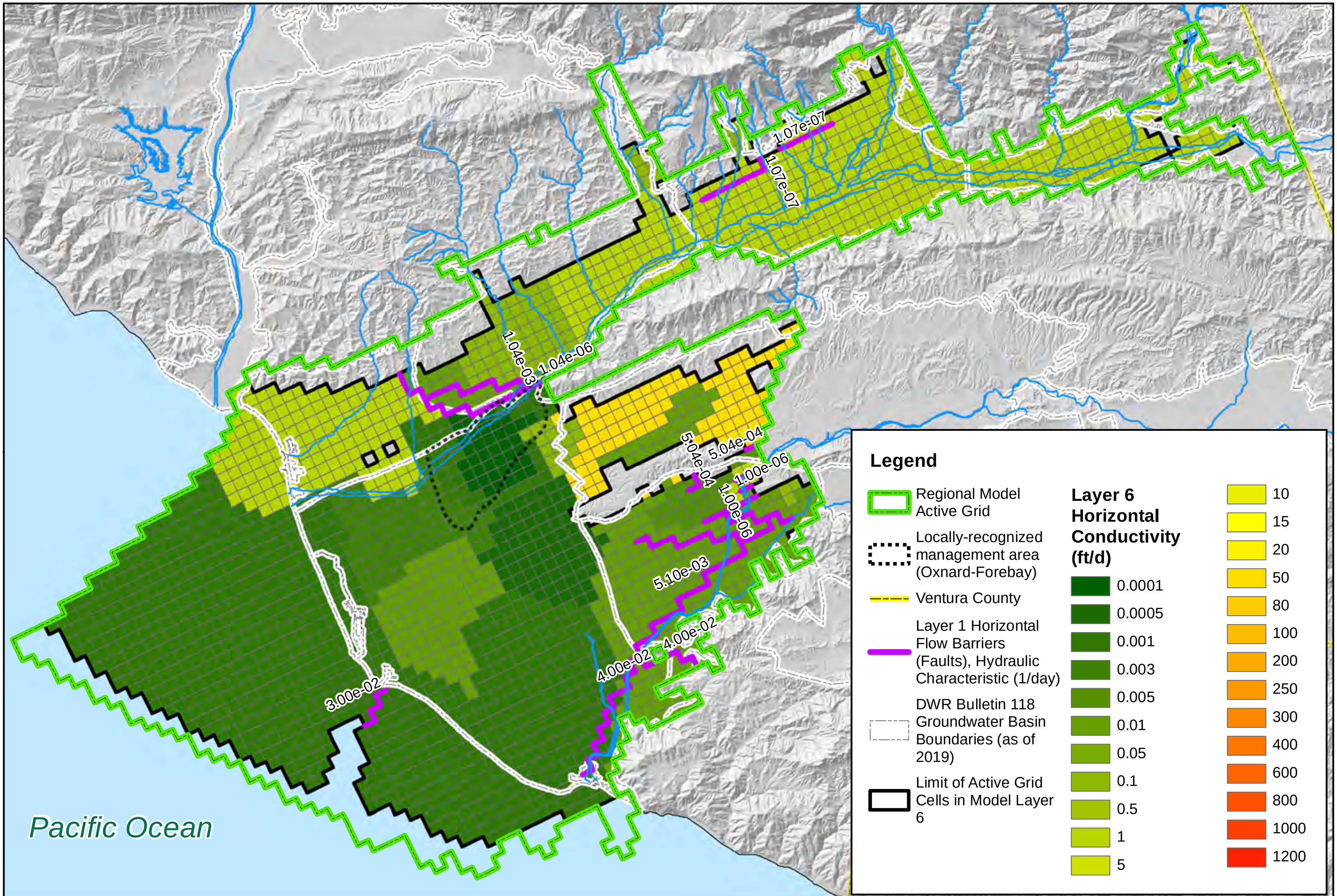

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Figure 3-32. Horizontal Hydraulic Conductivity of Model Layer 6

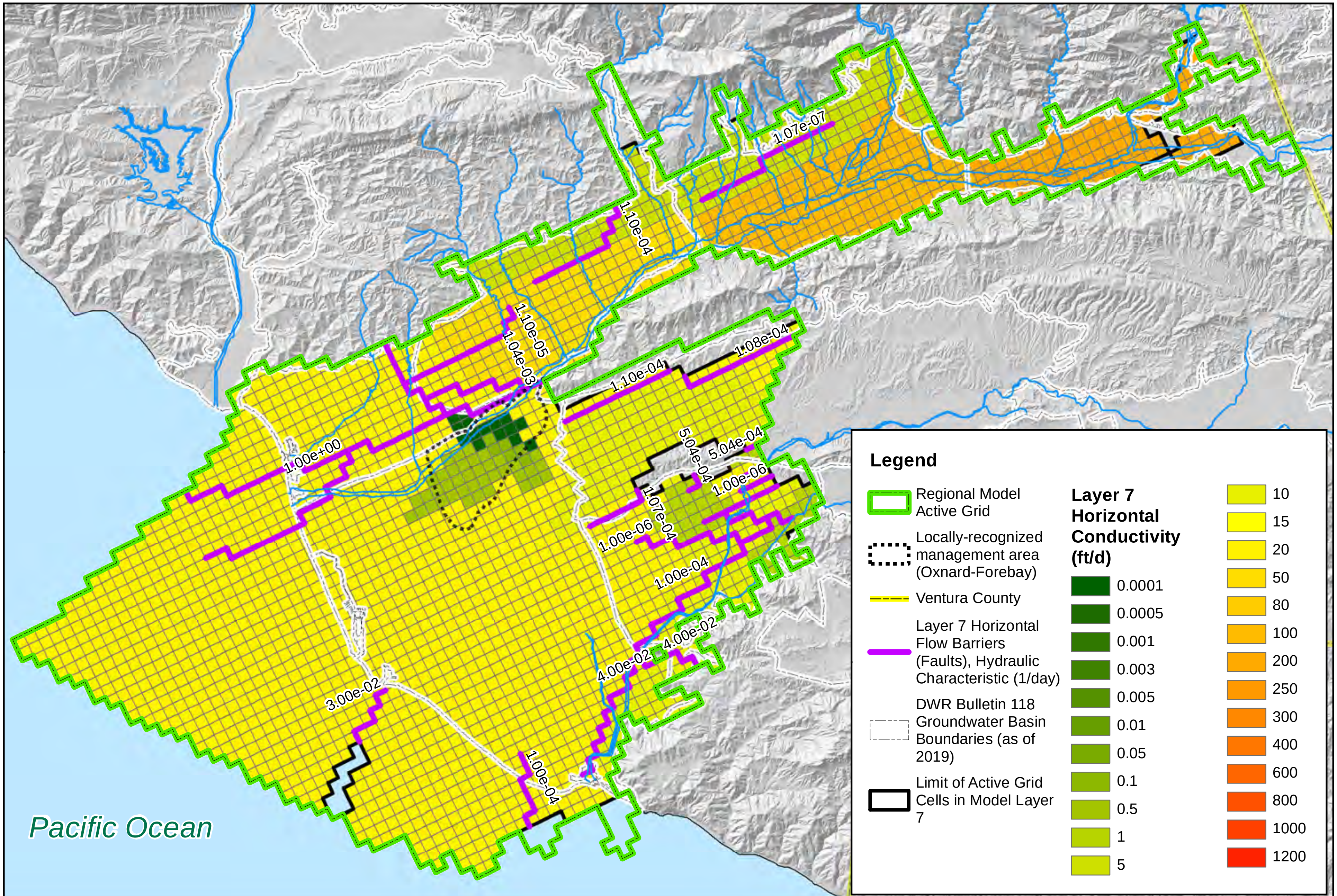

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Figure 3-33. Horizontal Hydraulic Conductivity of Model Layer 7

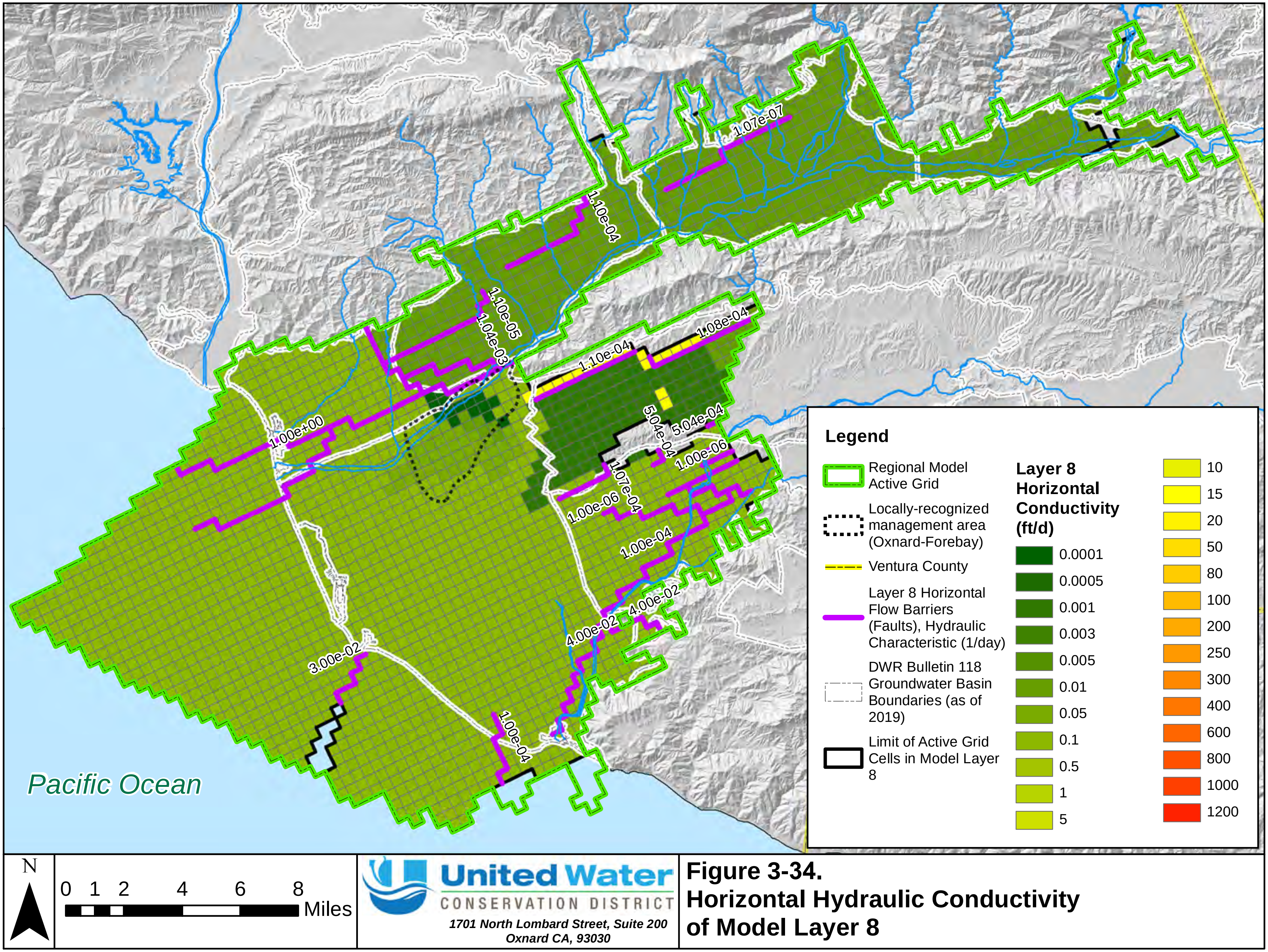
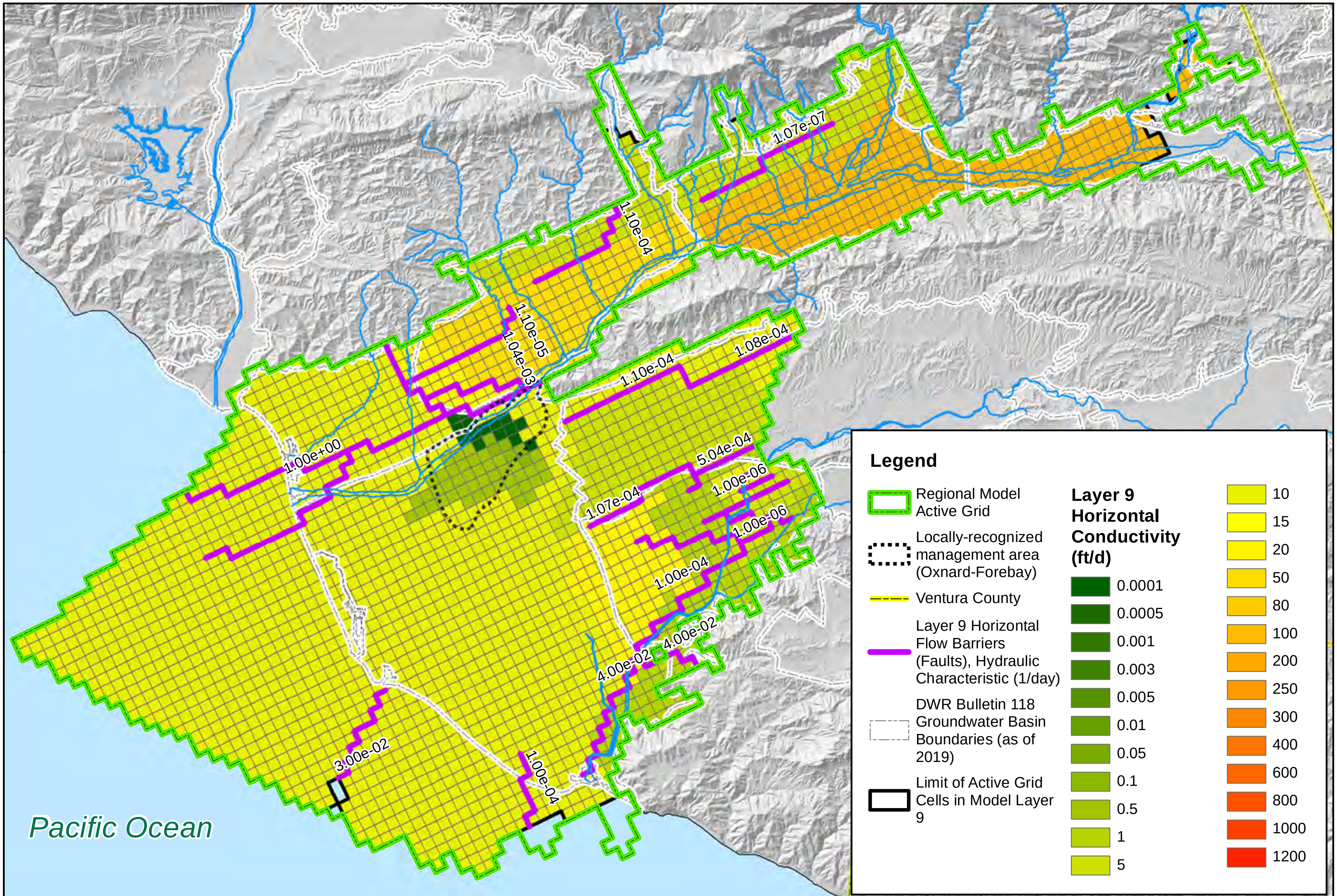


Figure 3-34.
Horizontal Hydraulic Conductivity of Model Layer 8



N

0 1 2 4 6 8 Miles

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Figure 3-35.
Horizontal Hydraulic Conductivity of Model Layer 9

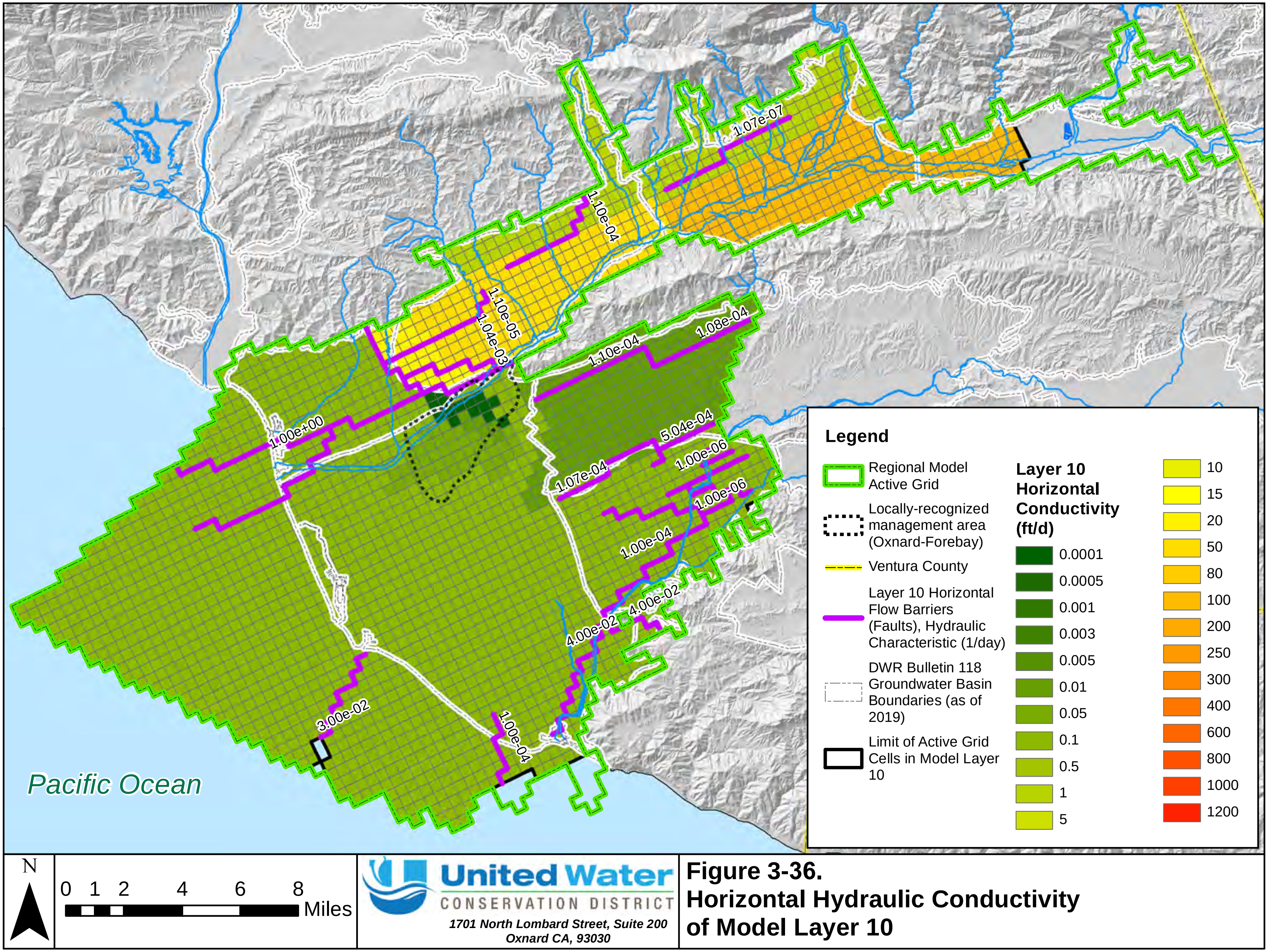

Figure 3-36. Horizontal Hydraulic Conductivity of Model Layer 10

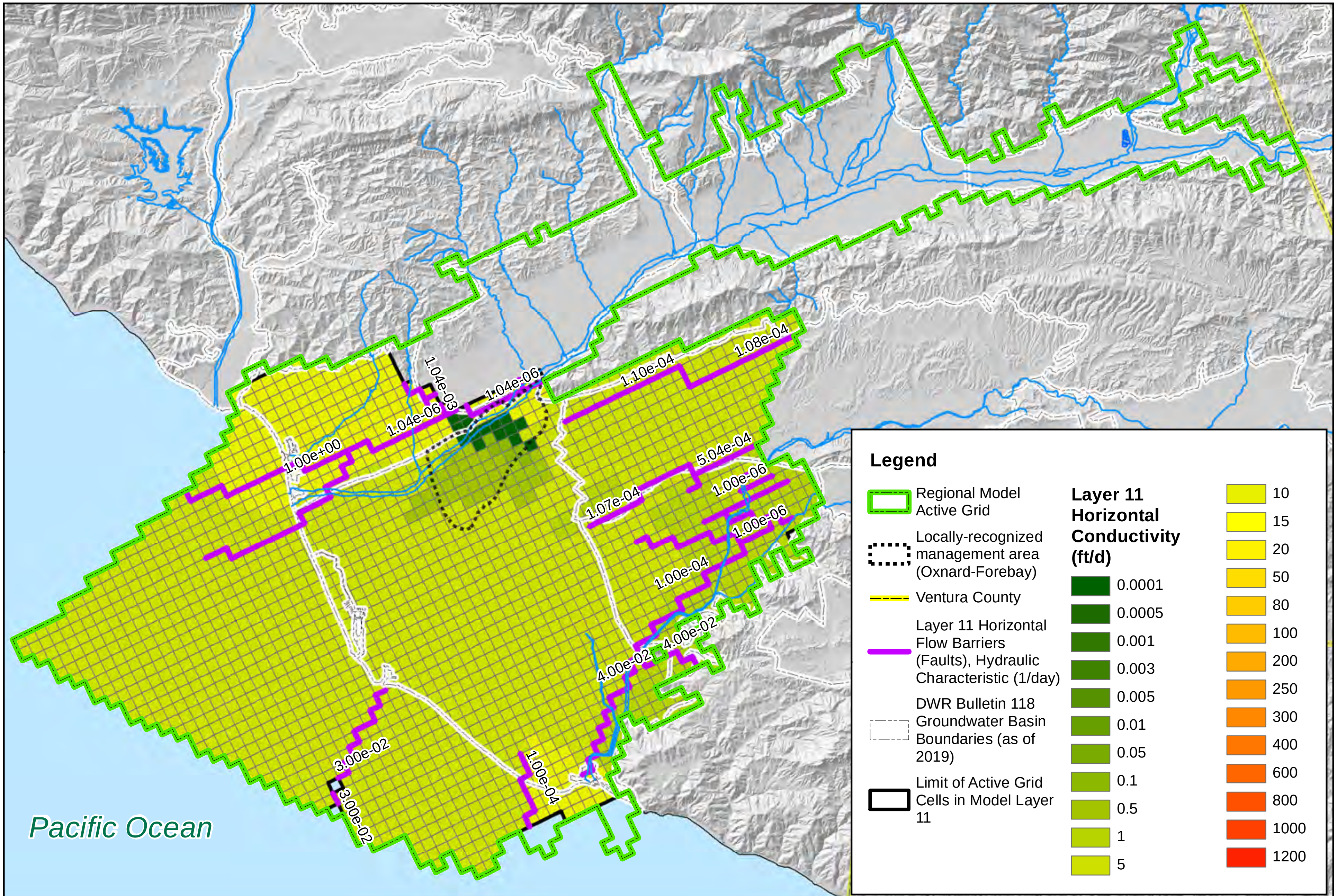

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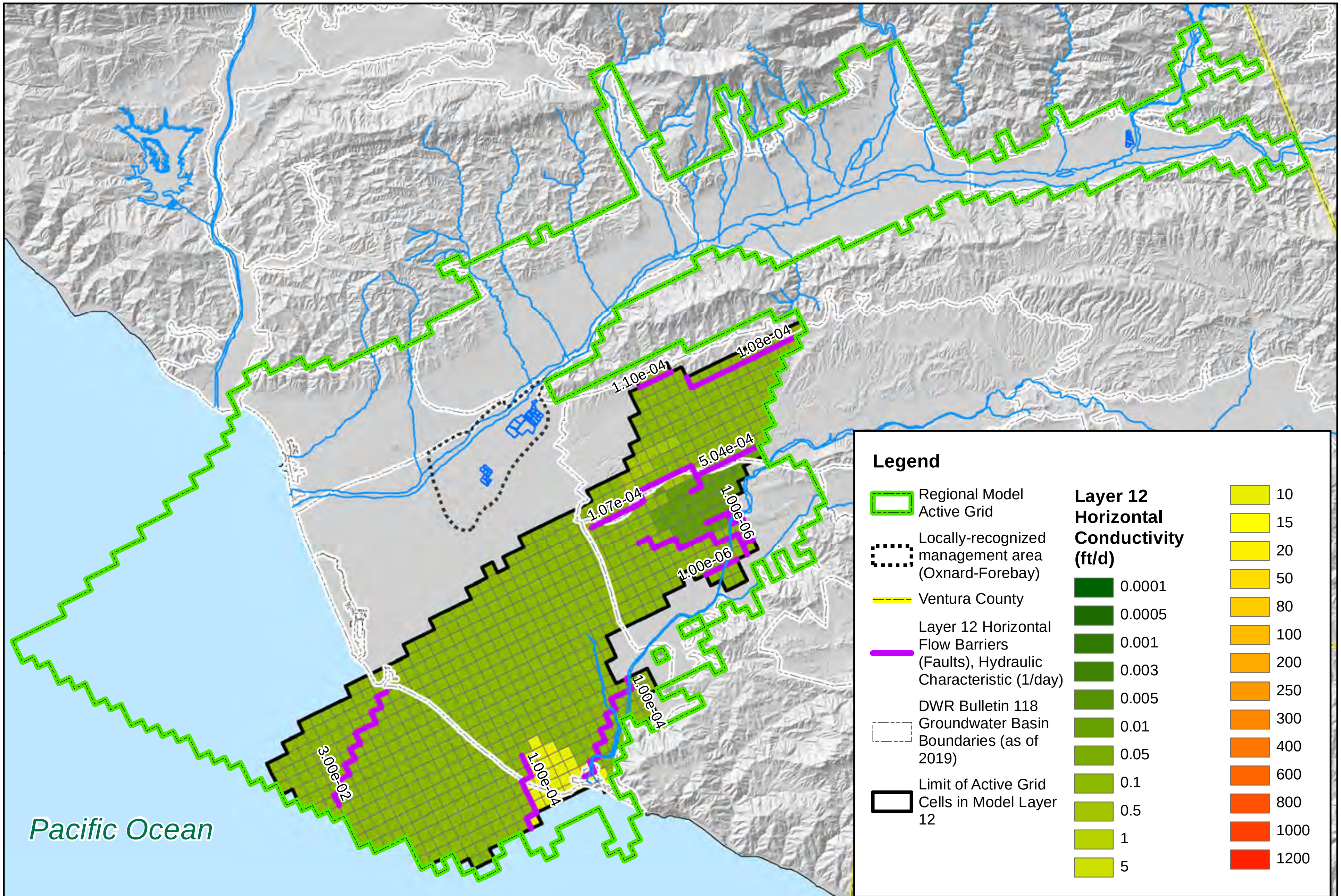
Figure 3-37.
Horizontal Hydraulic Conductivity of Model Layer 11



N

0 1 2 4 6 8 Miles

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Figure 3-38.
Horizontal Hydraulic Conductivity of Model Layer 12

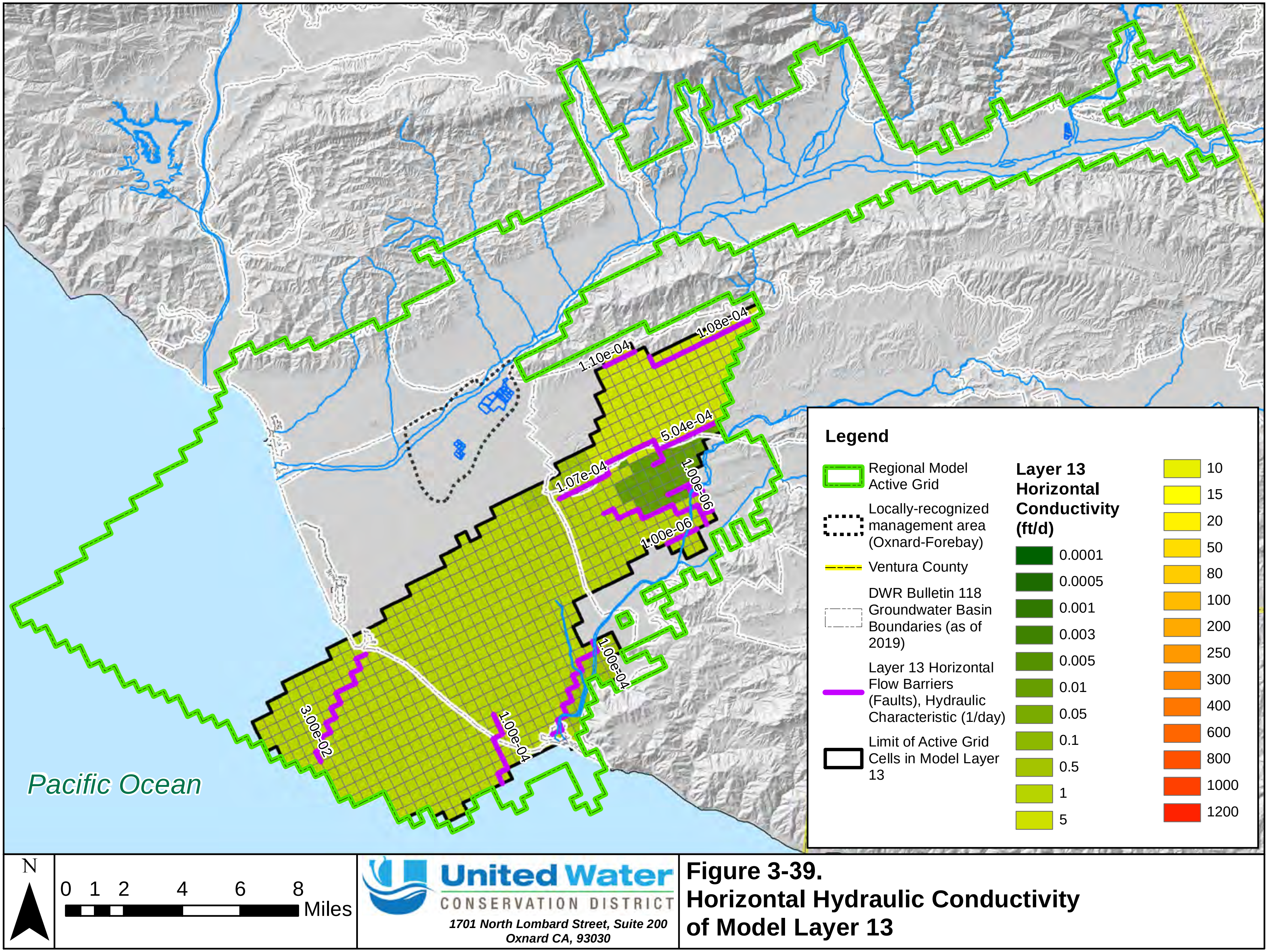

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Figure 3-39.
Horizontal Hydraulic Conductivity of Model Layer 13

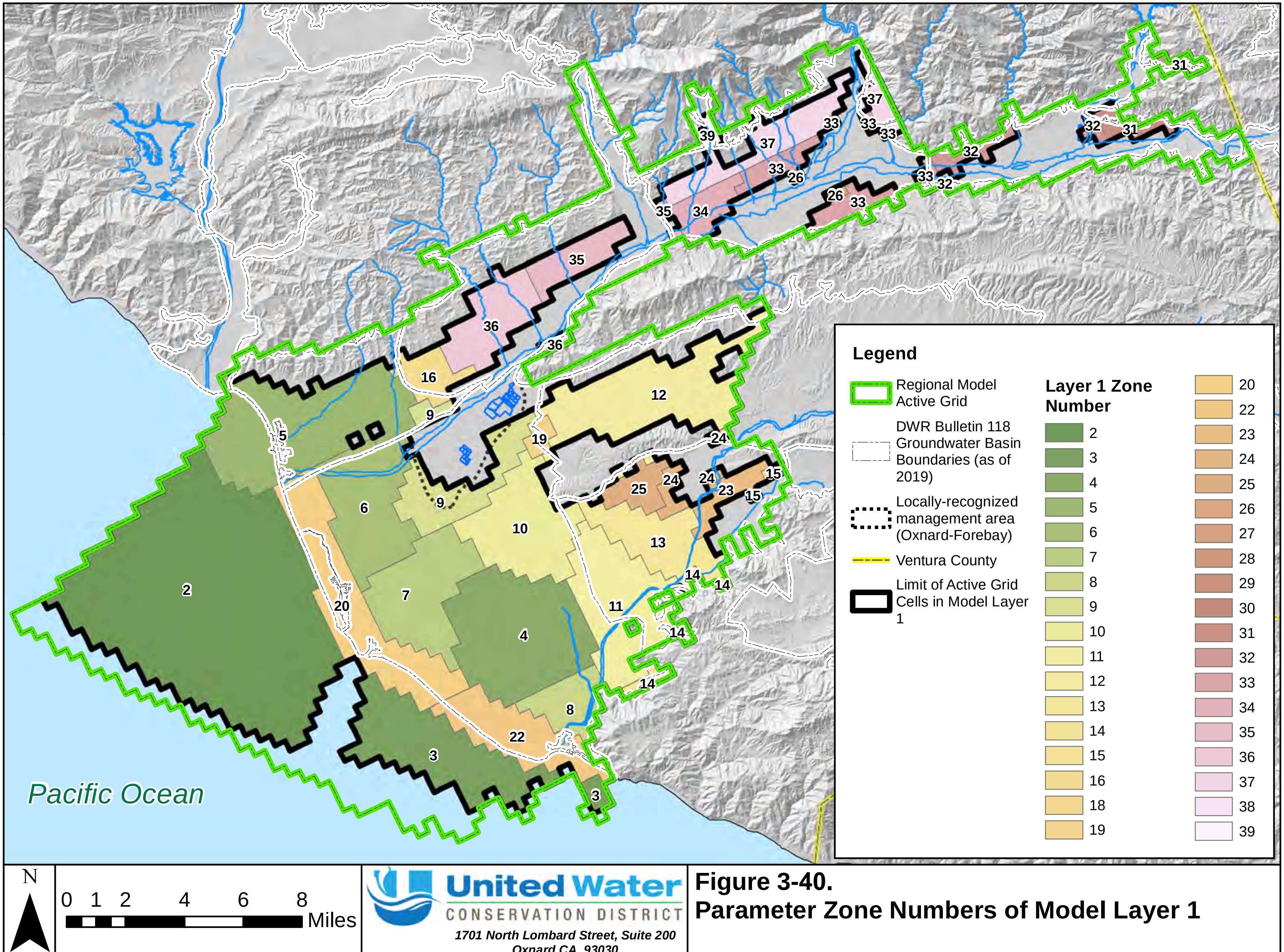

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Figure 3-40.
Parameter Zone Numbers of Model Layer 1

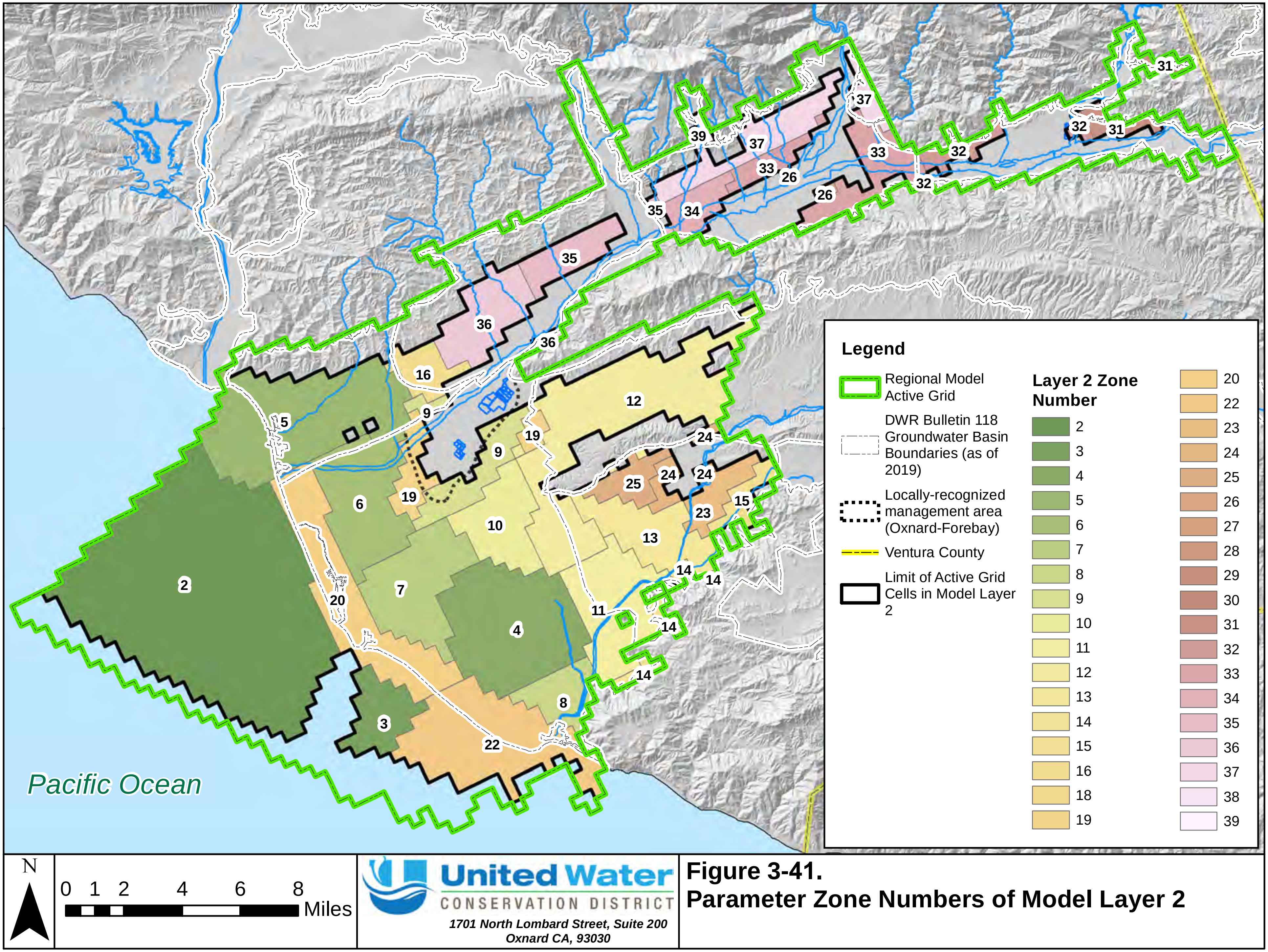

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Figure 3-41.
Parameter Zone Numbers of Model Layer 2

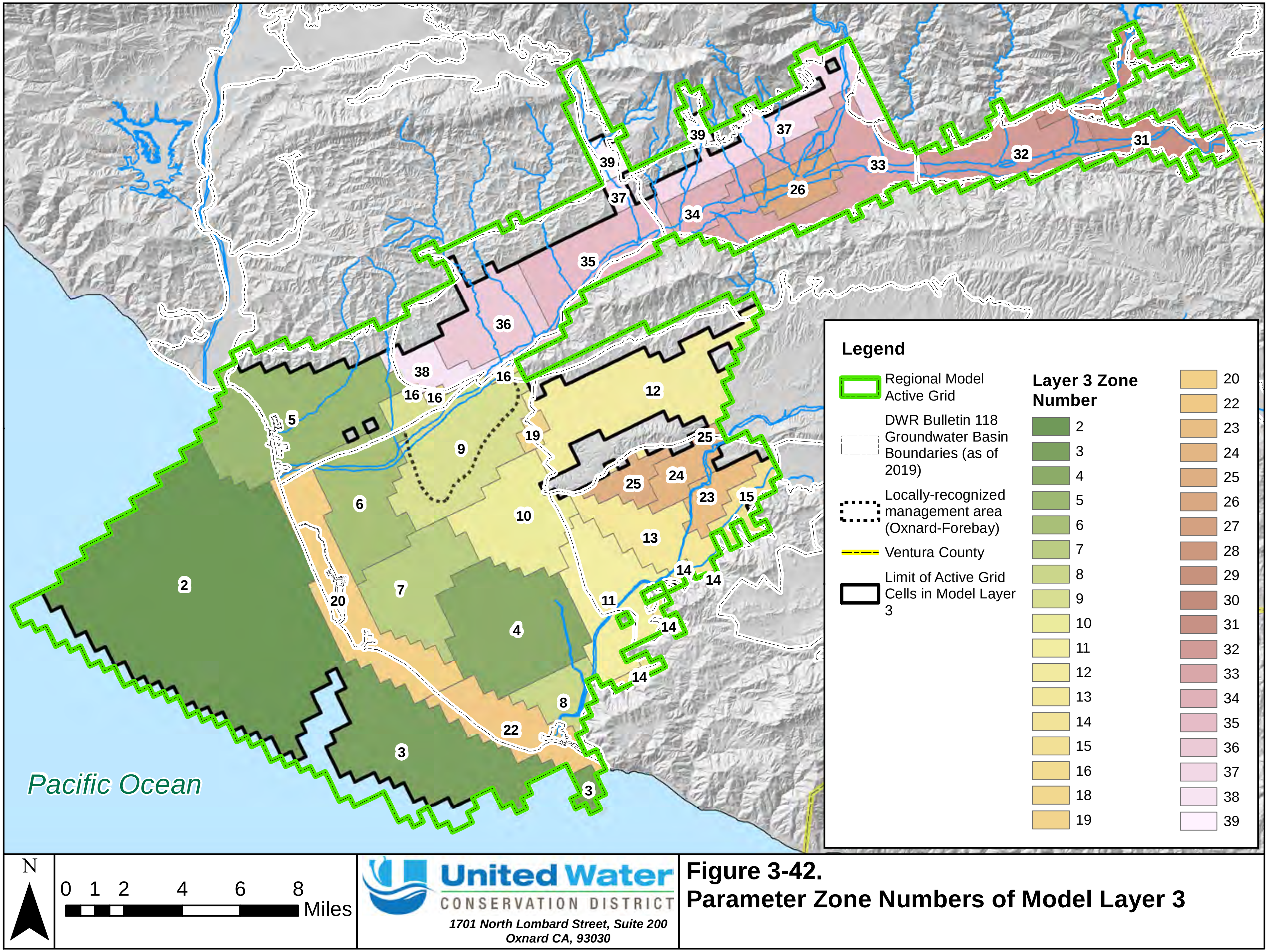

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Figure 3-42.
Parameter Zone Numbers of Model Layer 3

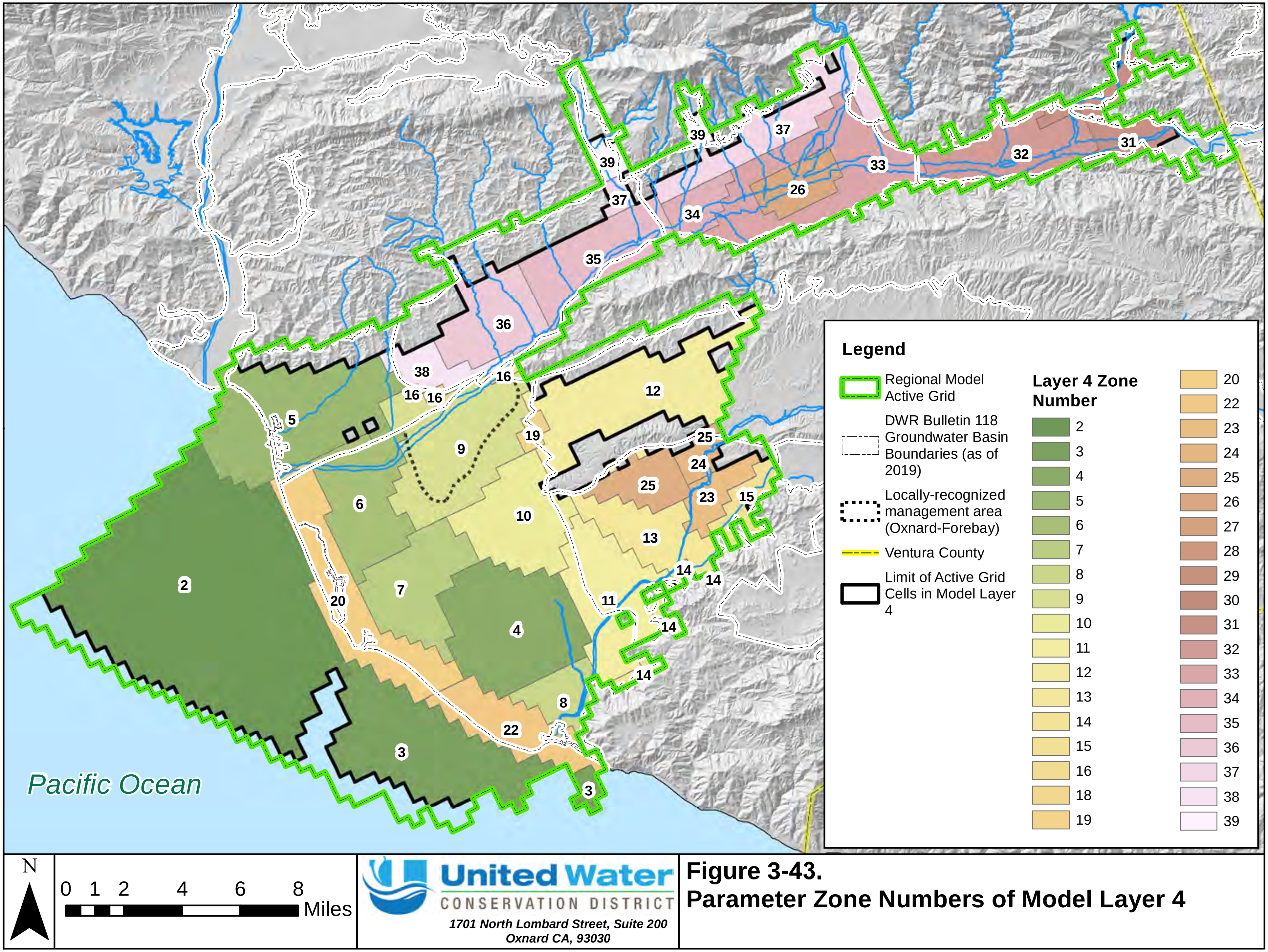

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Figure 3-43.
Parameter Zone Numbers of Model Layer 4

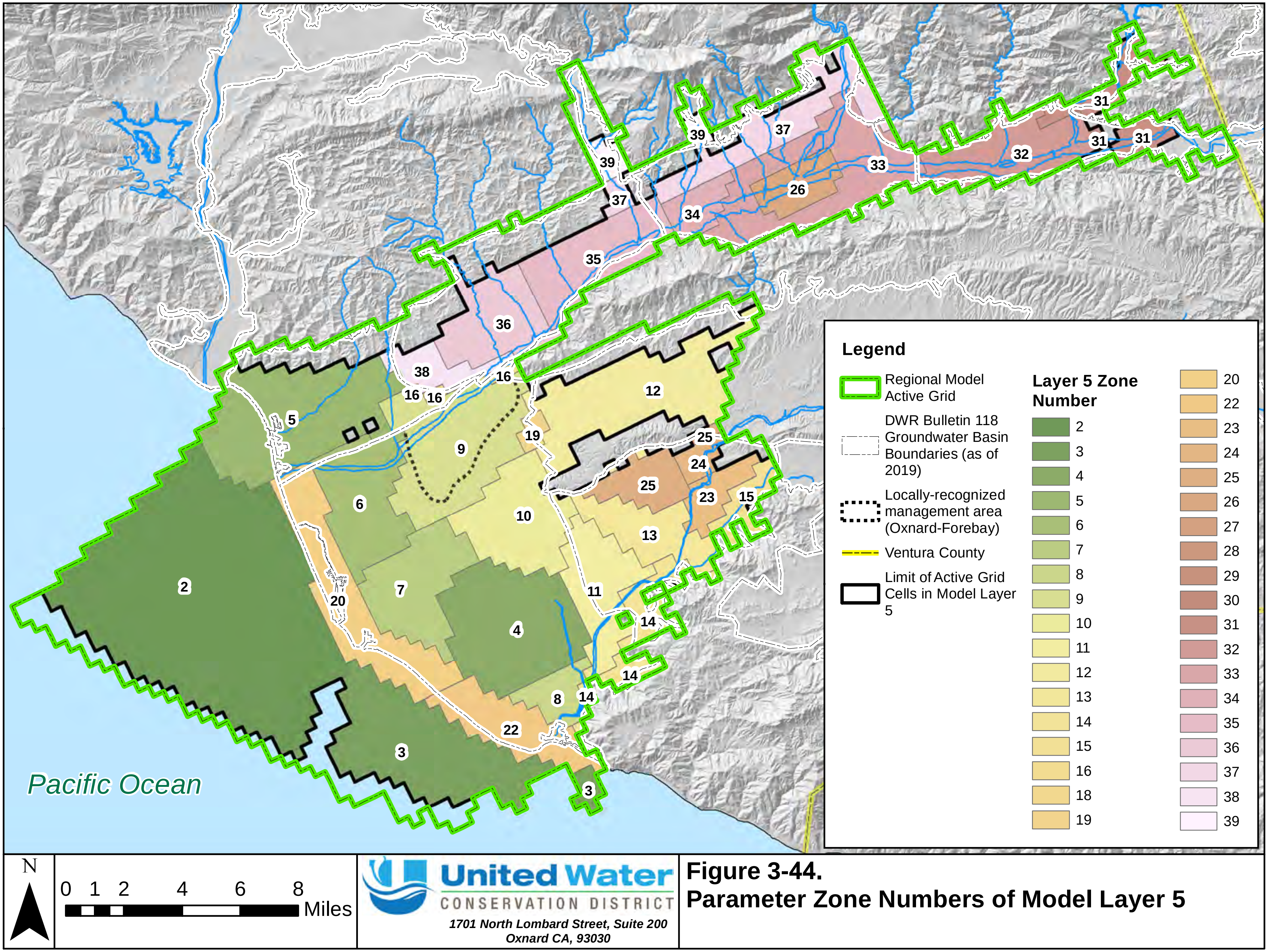

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Figure 3-44.
Parameter Zone Numbers of Model Layer 5

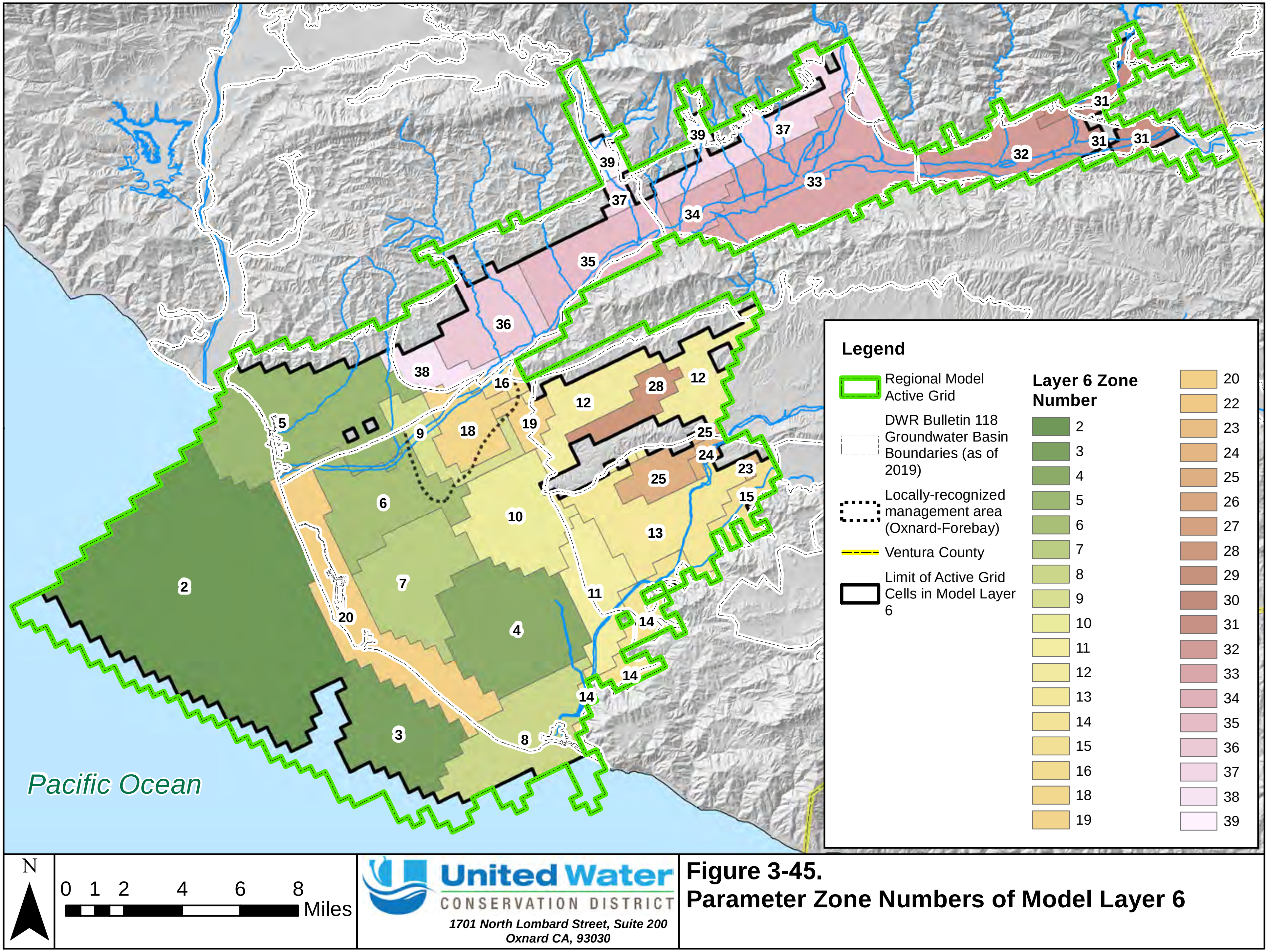

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Figure 3-45.
Parameter Zone Numbers of Model Layer 6

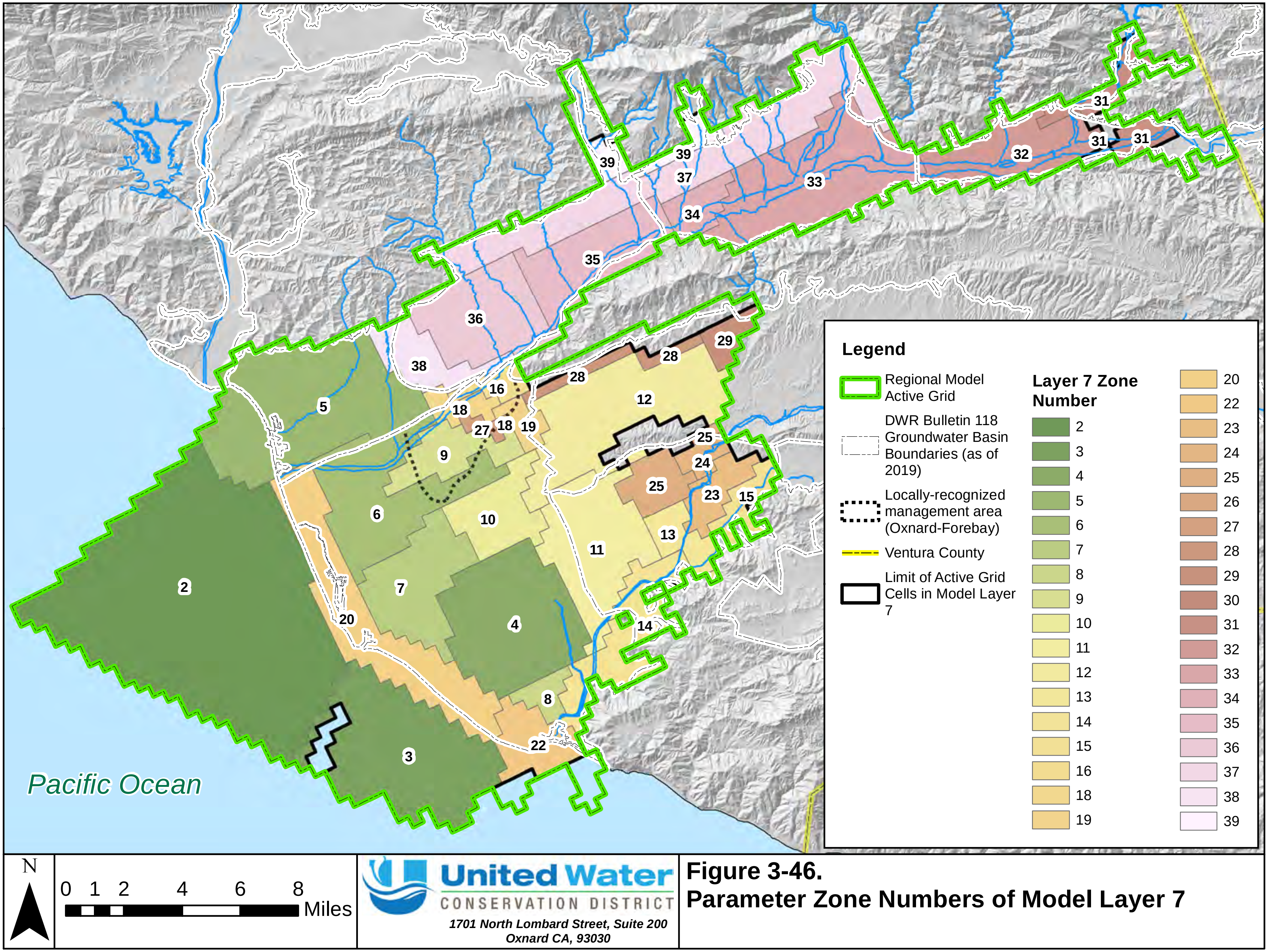

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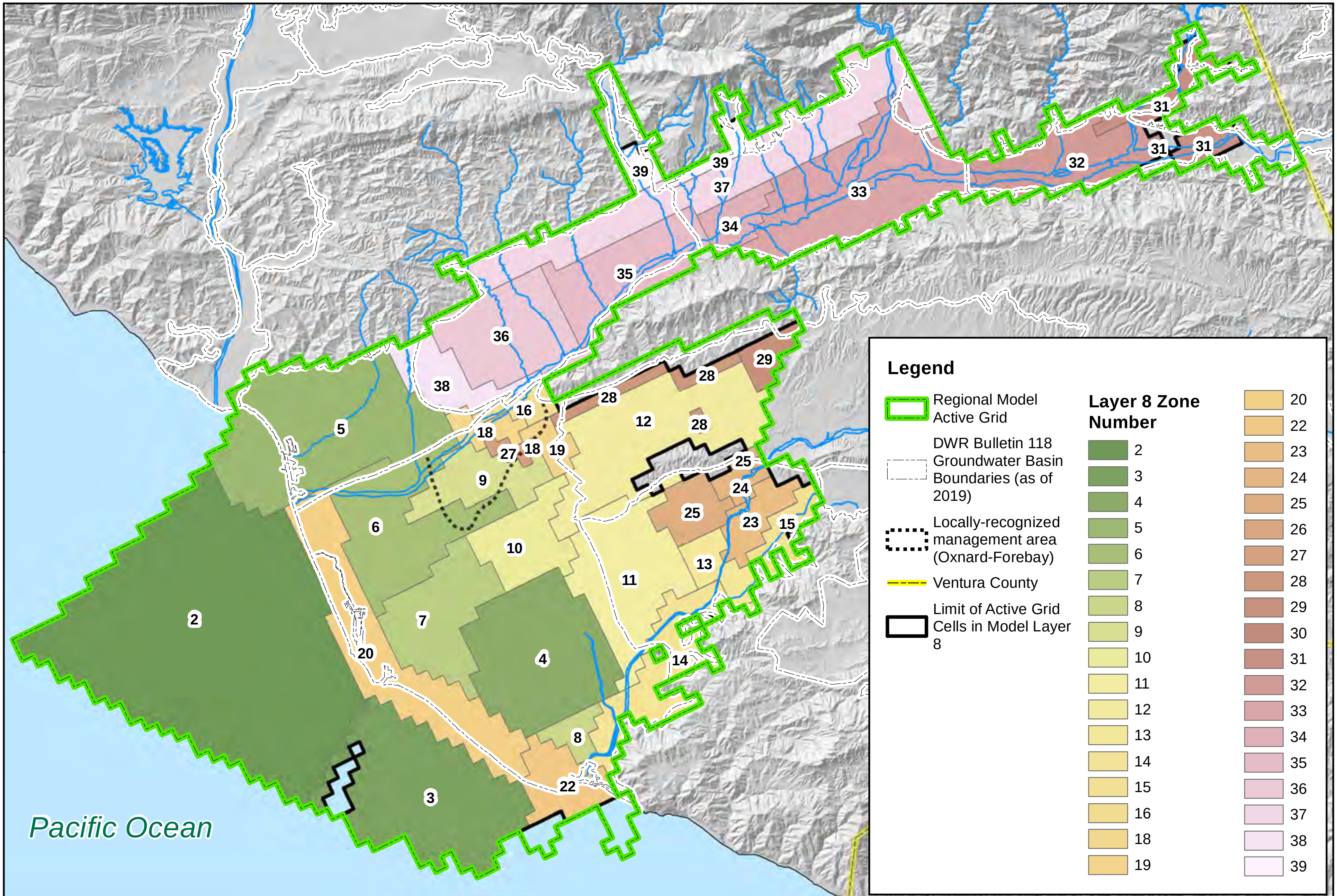
Figure 3-46.
Parameter Zone Numbers of Model Layer 7



N

0 1 2 4 6 8 Miles

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Figure 3-47.
Parameter Zone Numbers of Model Layer 8

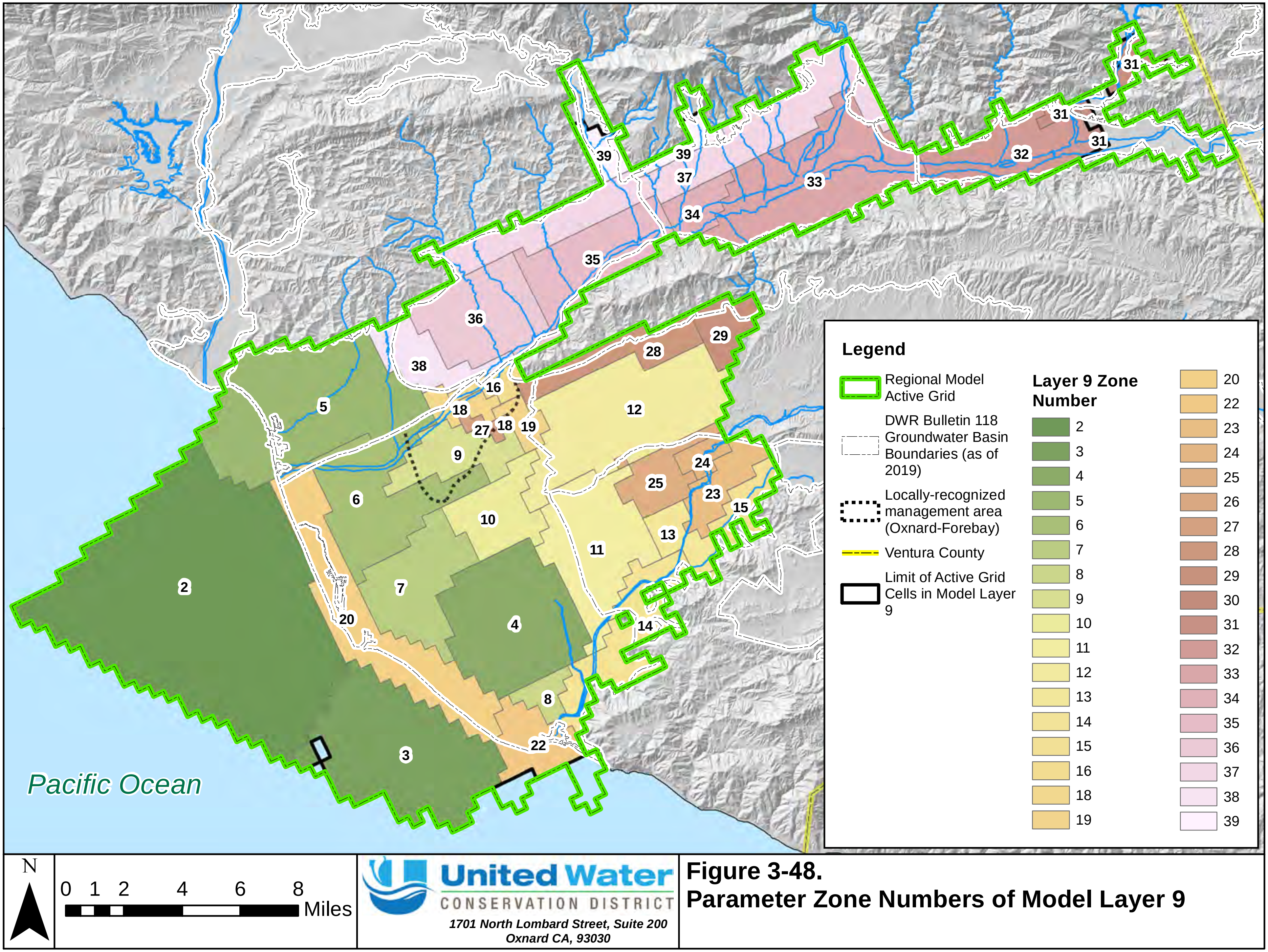
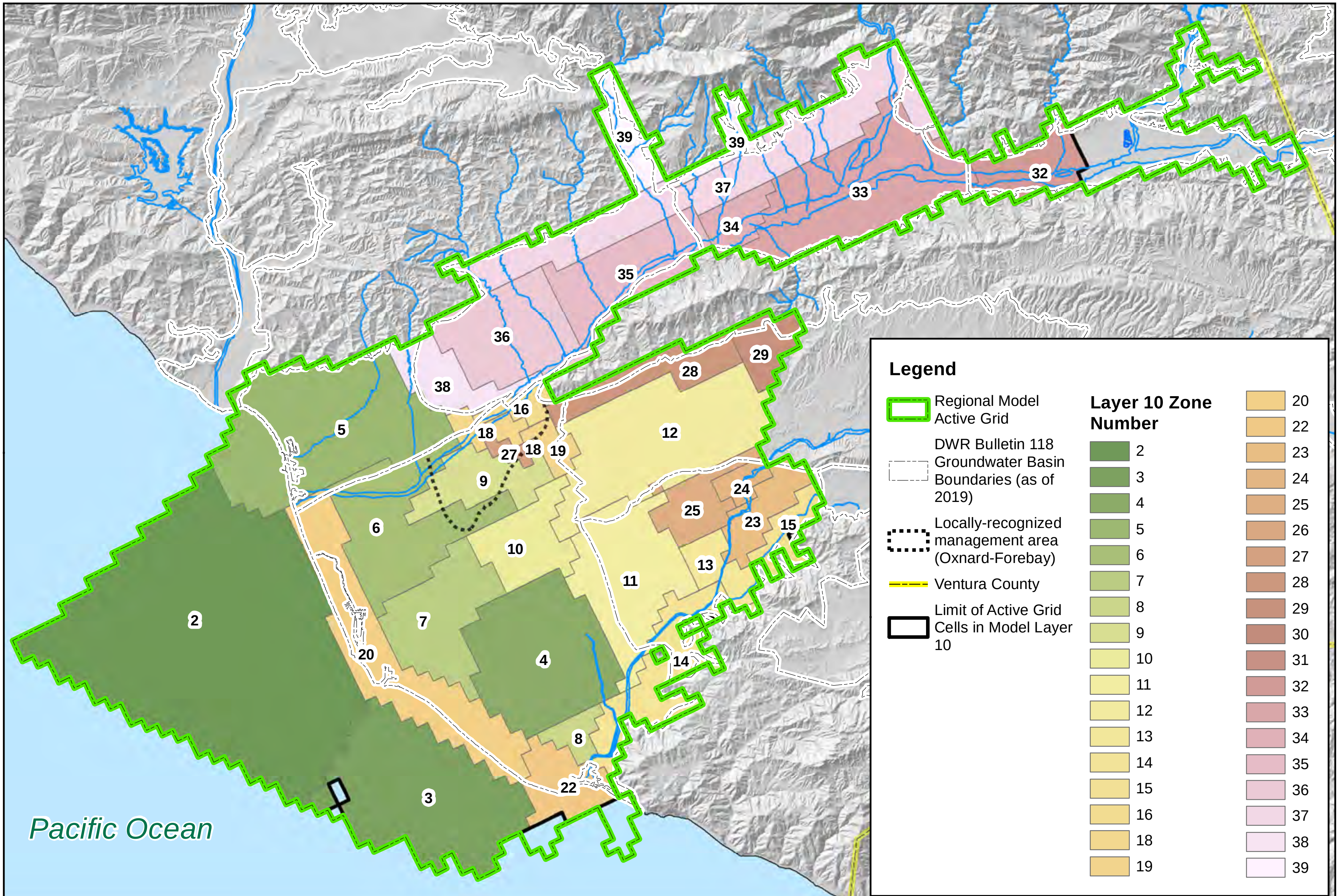


Figure 3-48.
Parameter Zone Numbers of Model Layer 9



N

0 1 2 4 6 8 Miles

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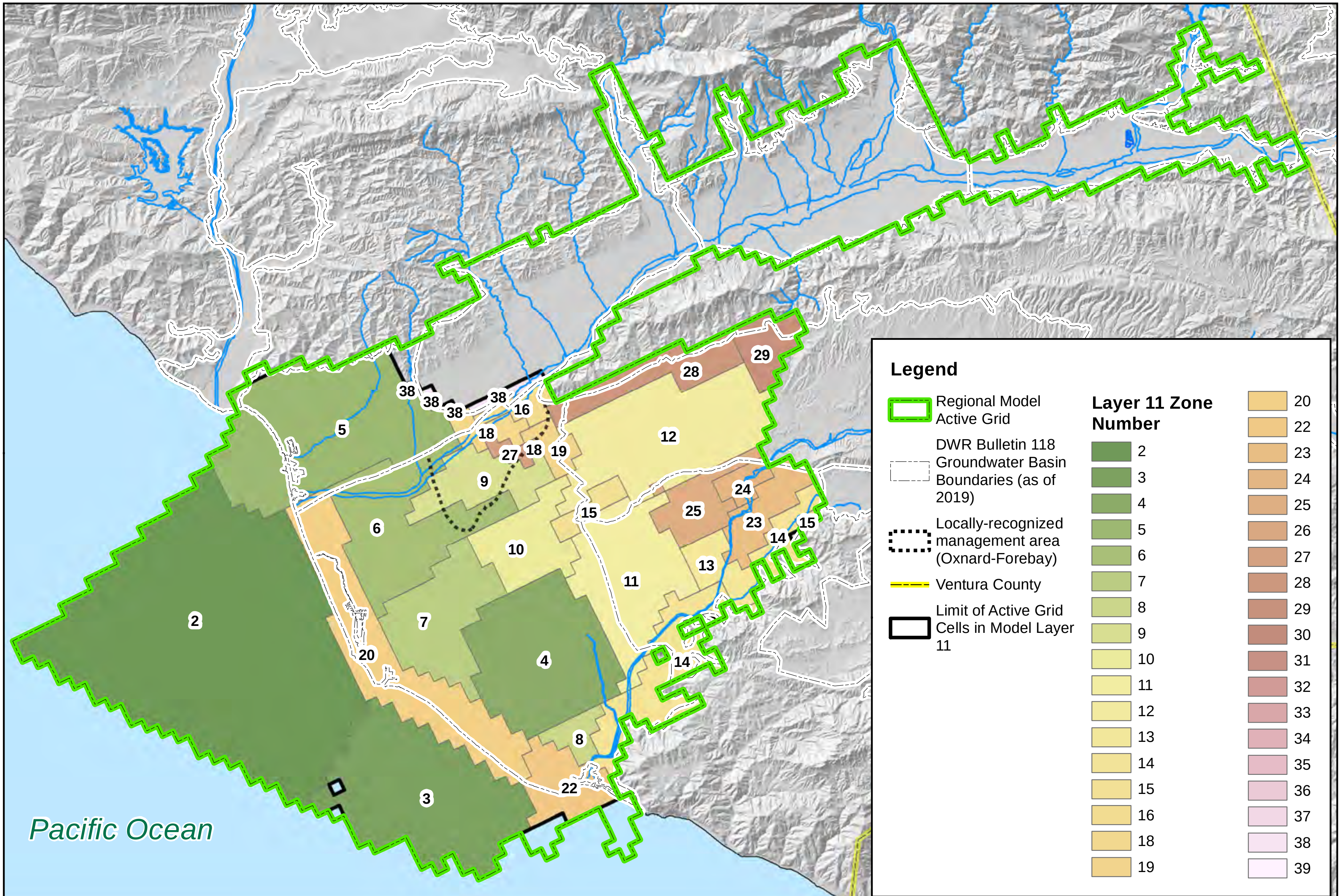
Figure 3-49.
Parameter Zone Numbers of Model Layer 10



N

0 1 2 4 6 8 Miles

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Figure 3-50.
Parameter Zone Numbers of Model Layer 11

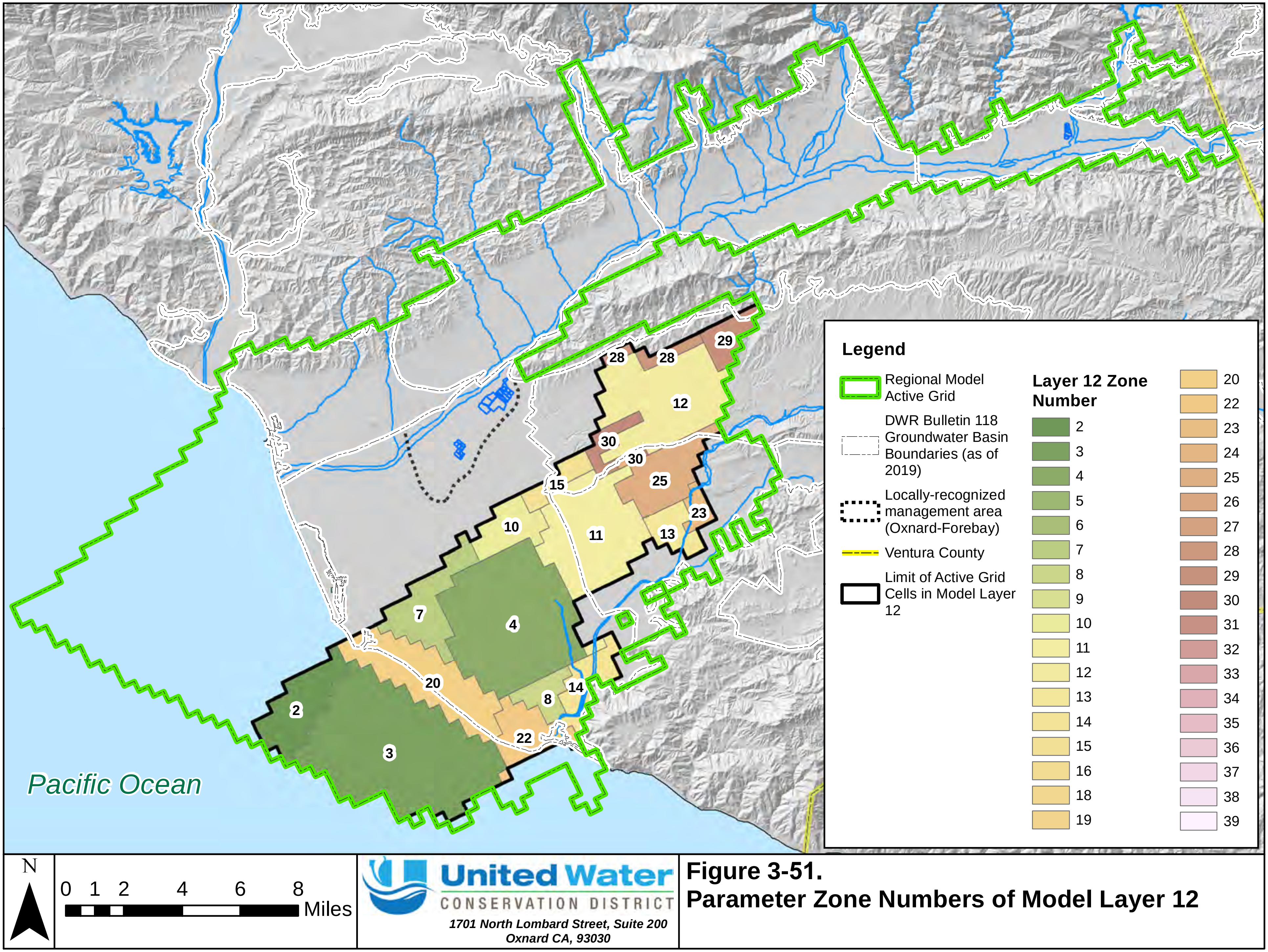

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Figure 3-51.
Parameter Zone Numbers of Model Layer 12

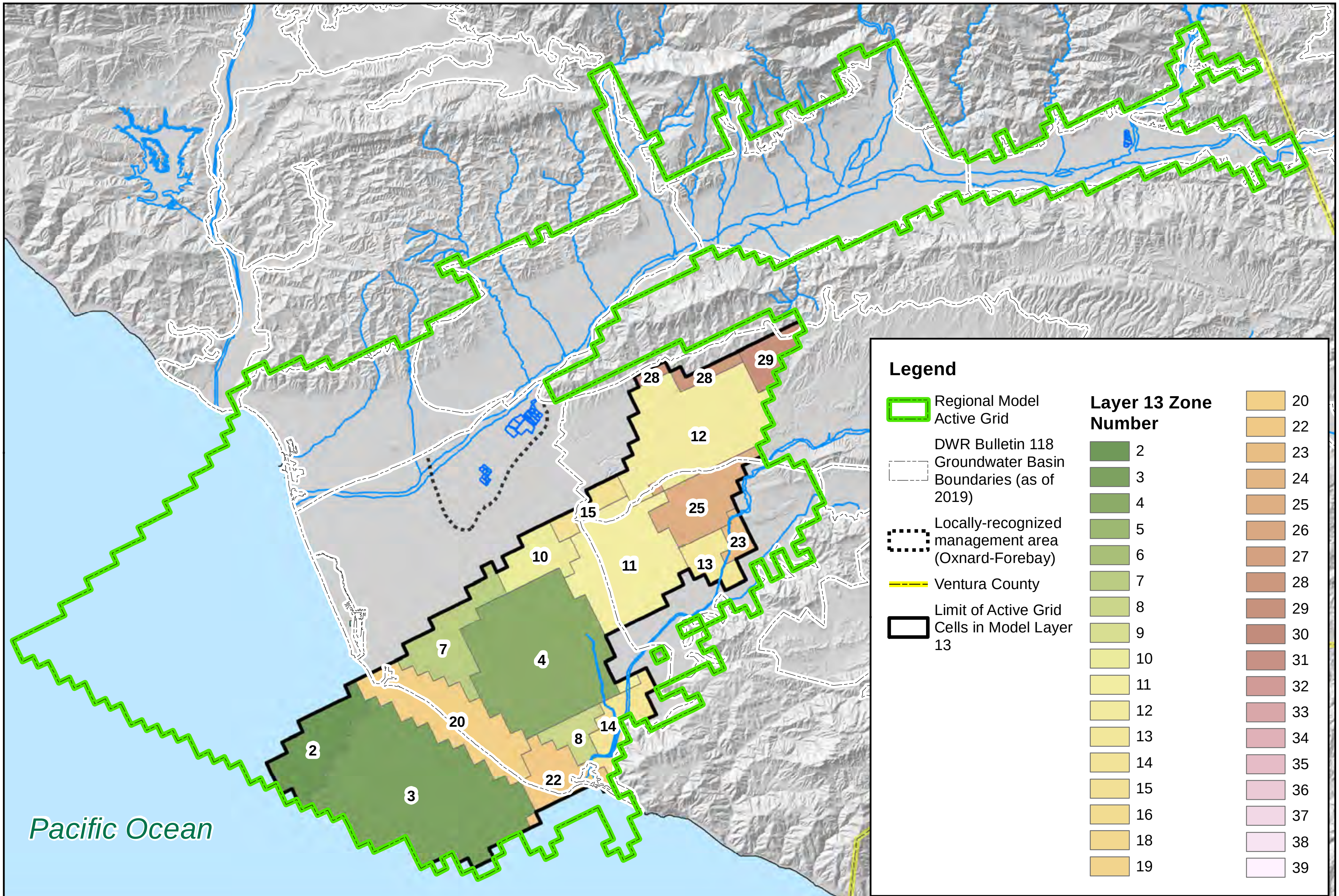

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Figure 3-52.
Parameter Zone Numbers of Model Layer 13

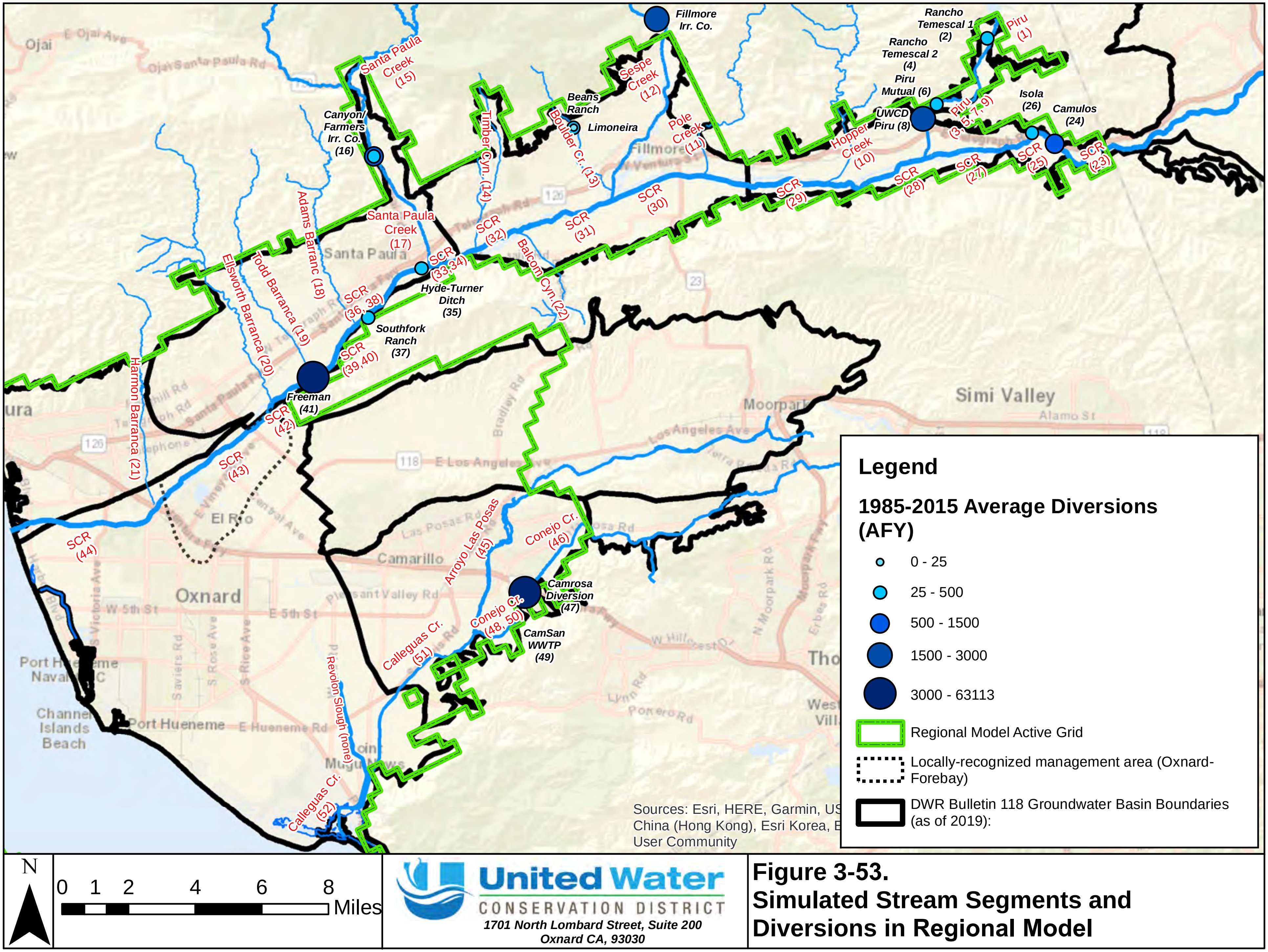

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Figure 3-53. Simulated Stream Segments and Diversions in Regional Model

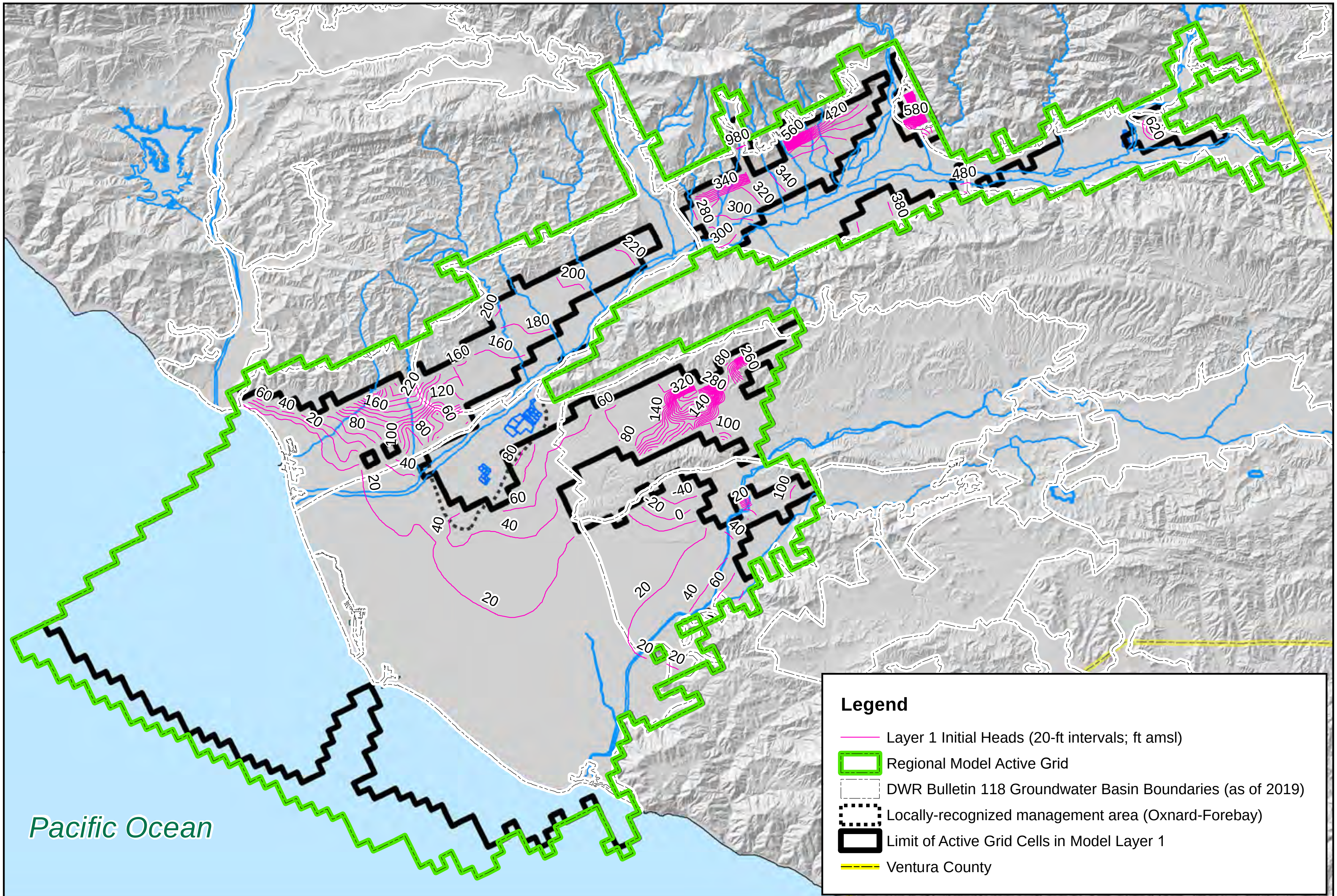

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Figure 3-54.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 1

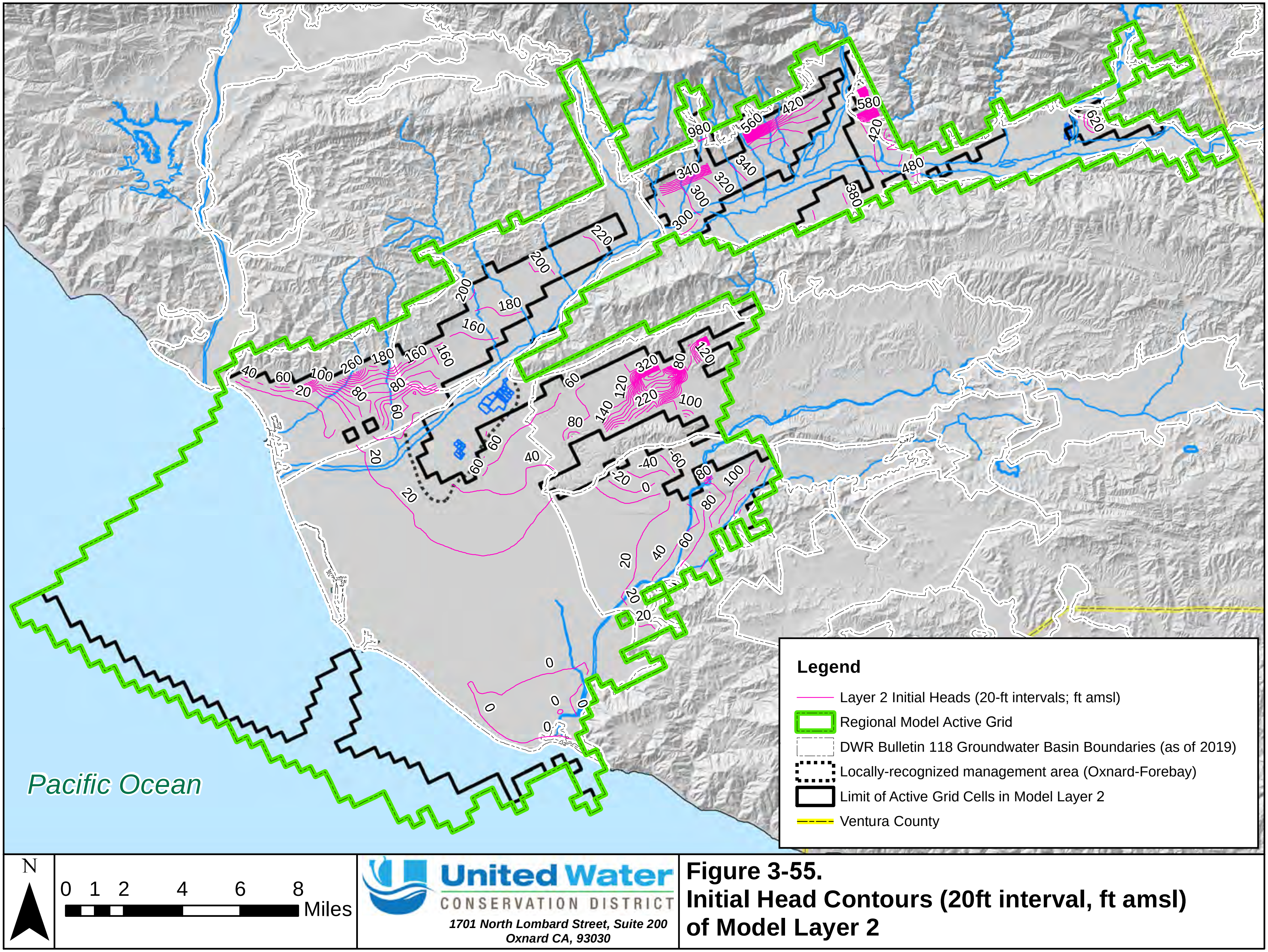

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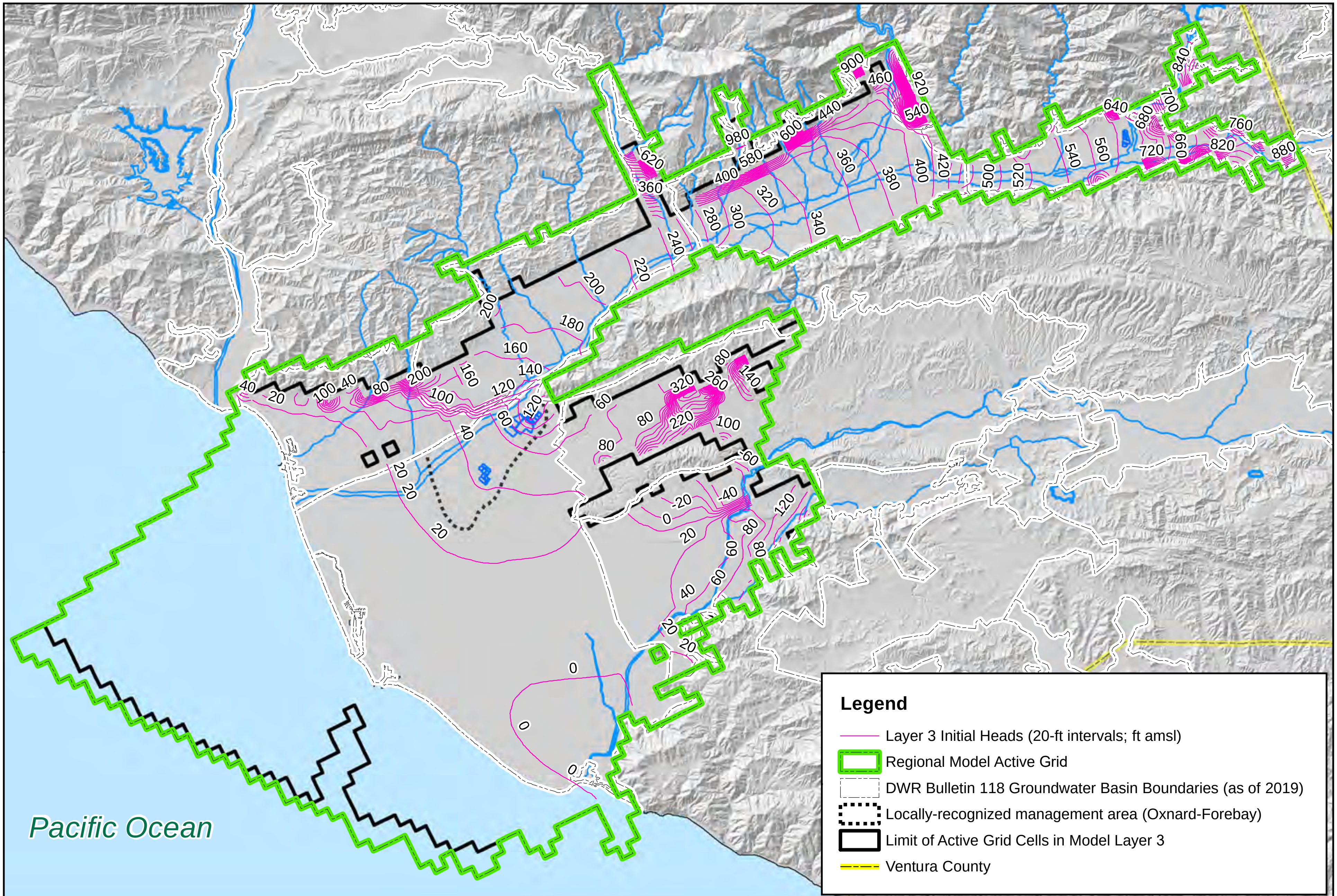
Figure 3-55.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 2



N

0 1 2 4 6 8 Miles

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Figure 3-56.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 3

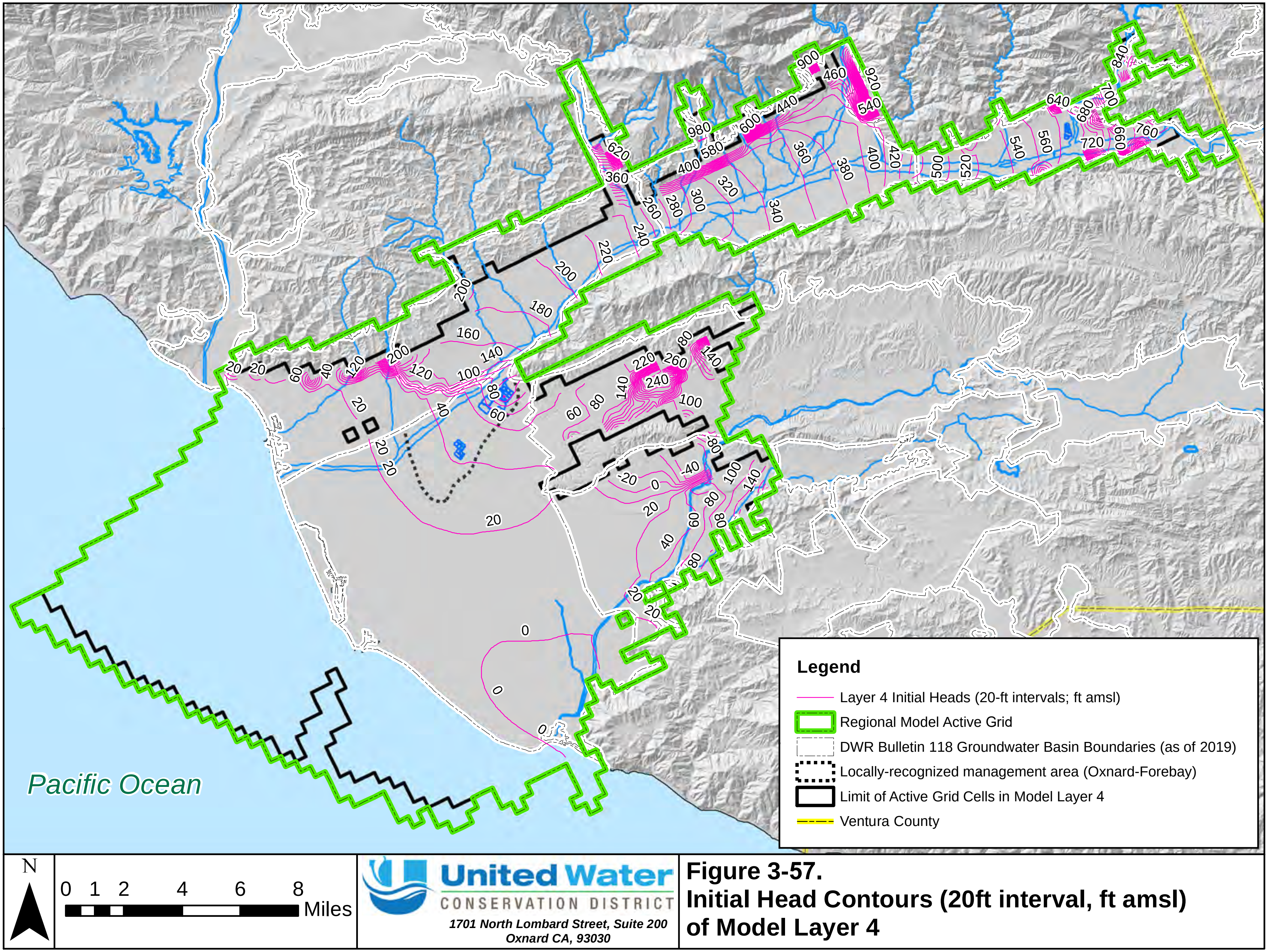

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Figure 3-57.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 4

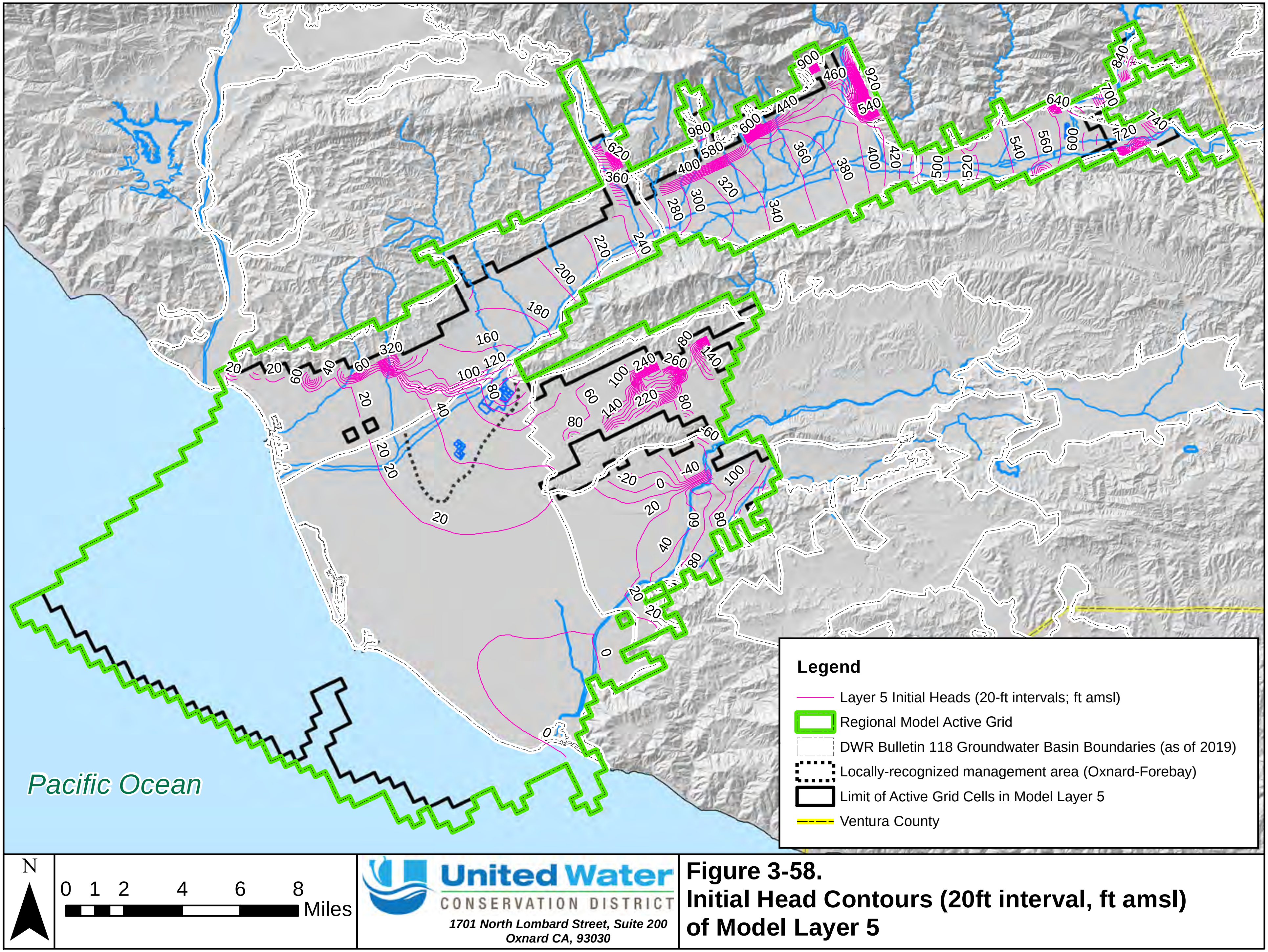

Figure 3-58.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 5

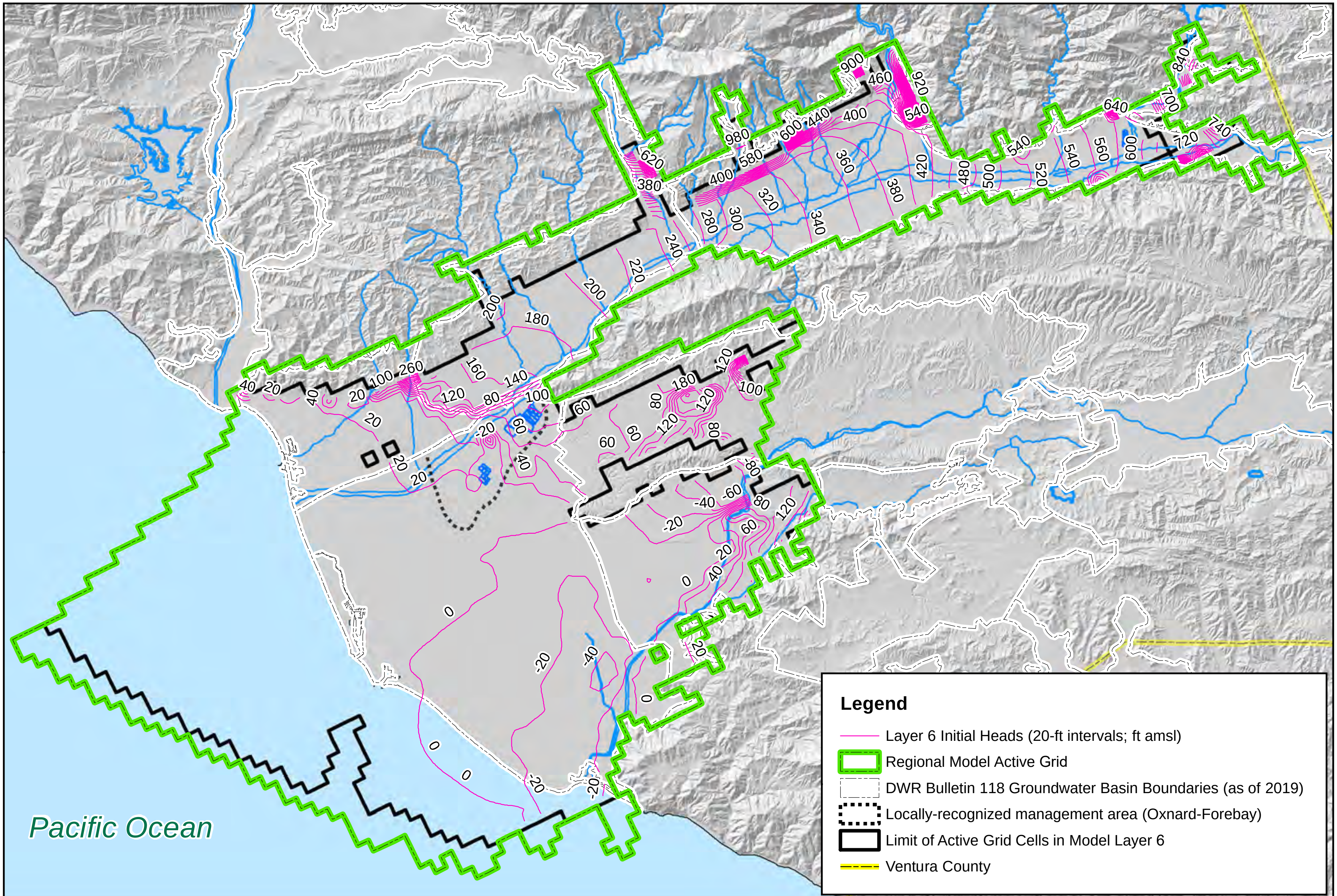

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Figure 3-59.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 6

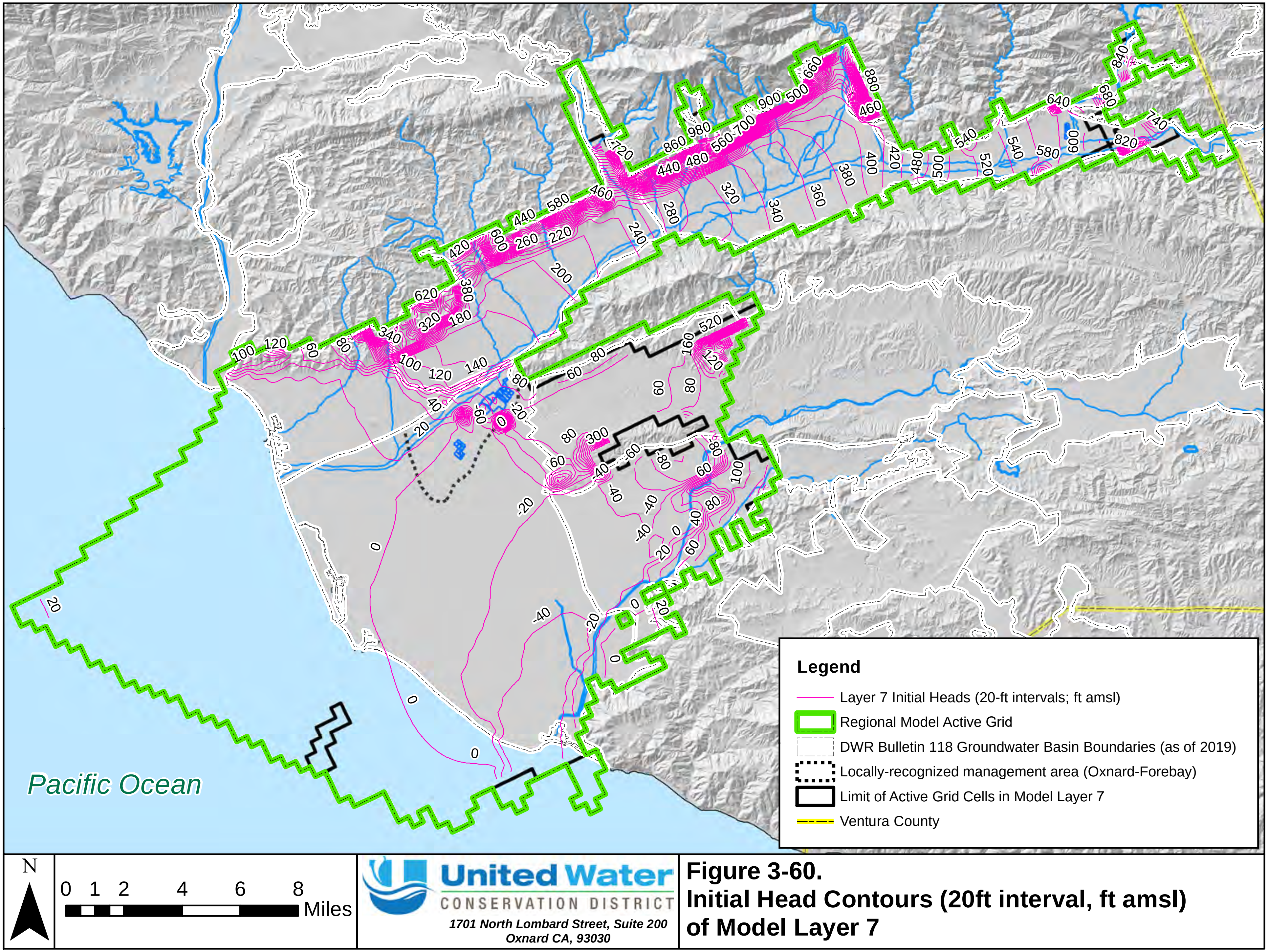

Figure 3-60.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 7

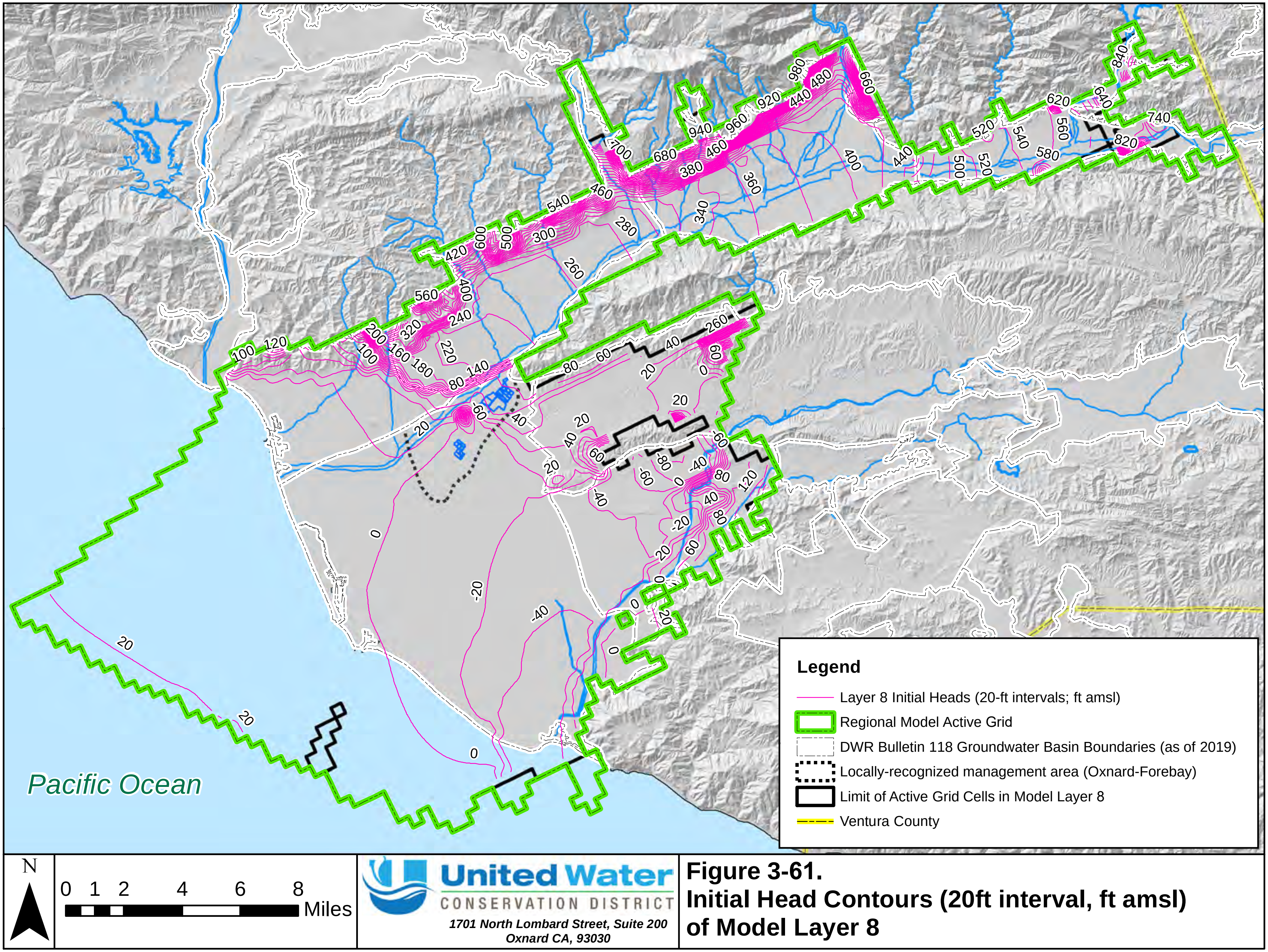

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Figure 3-61.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 8

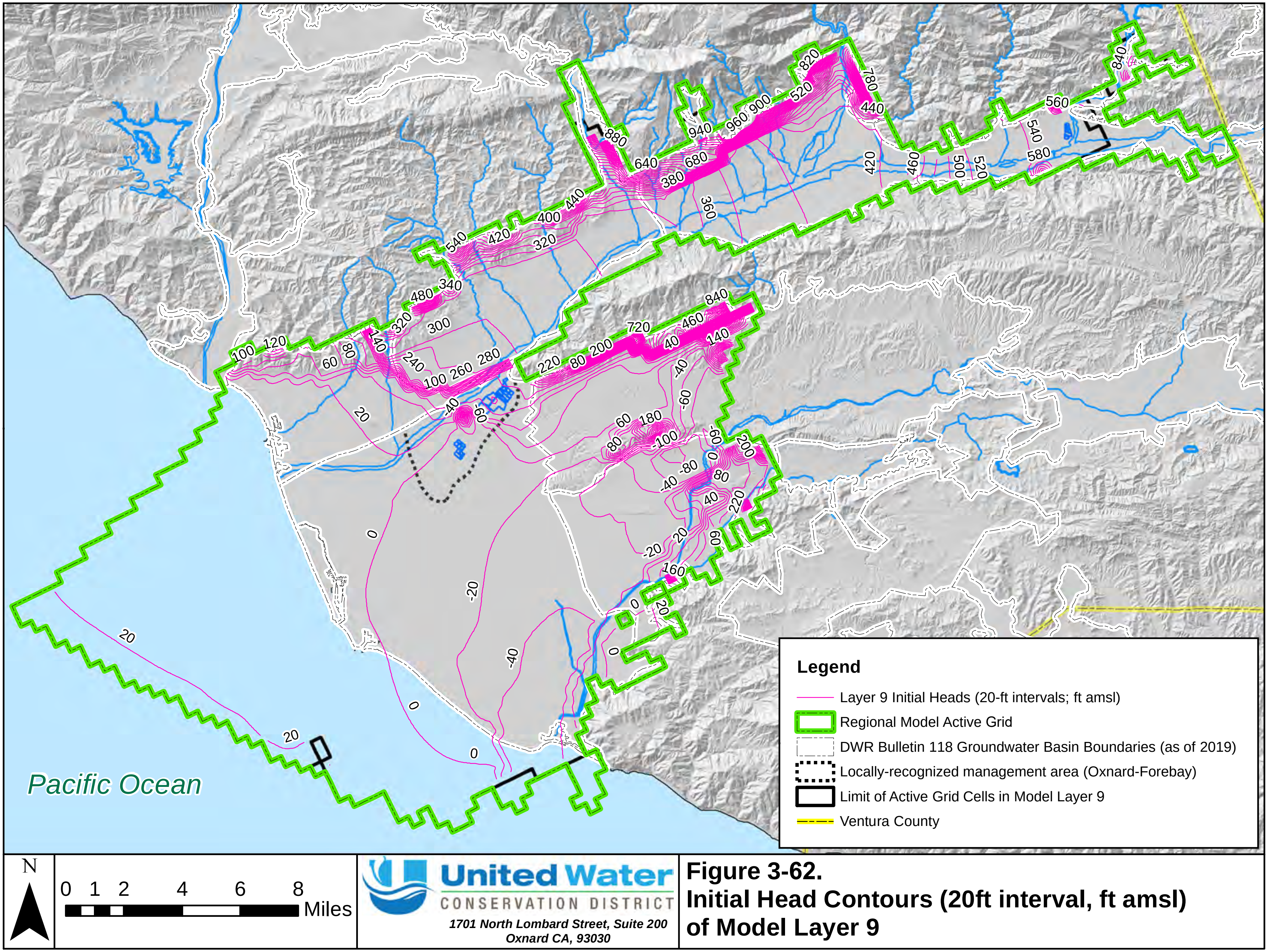

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Figure 3-62.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 9

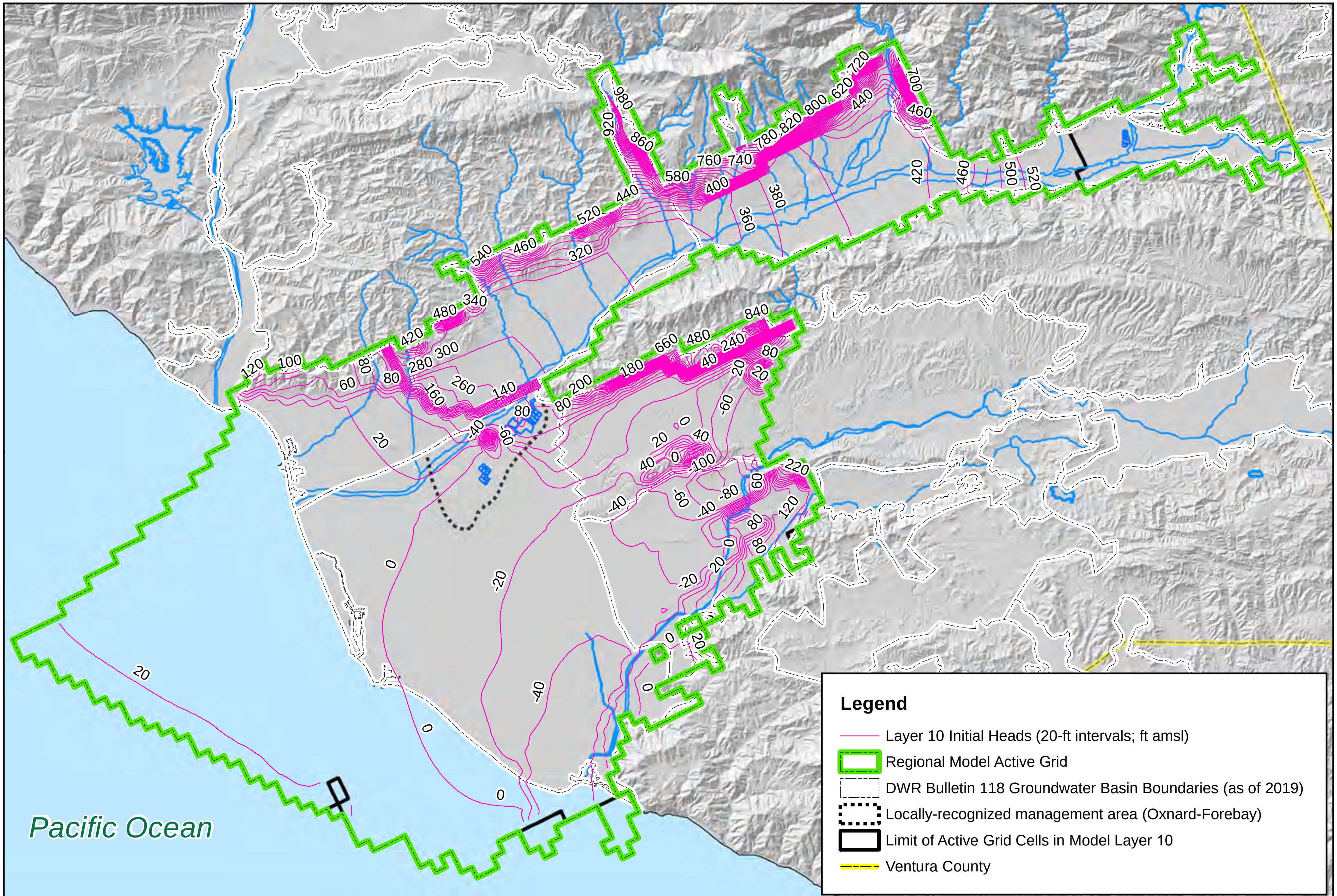

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Figure 3-63.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 10

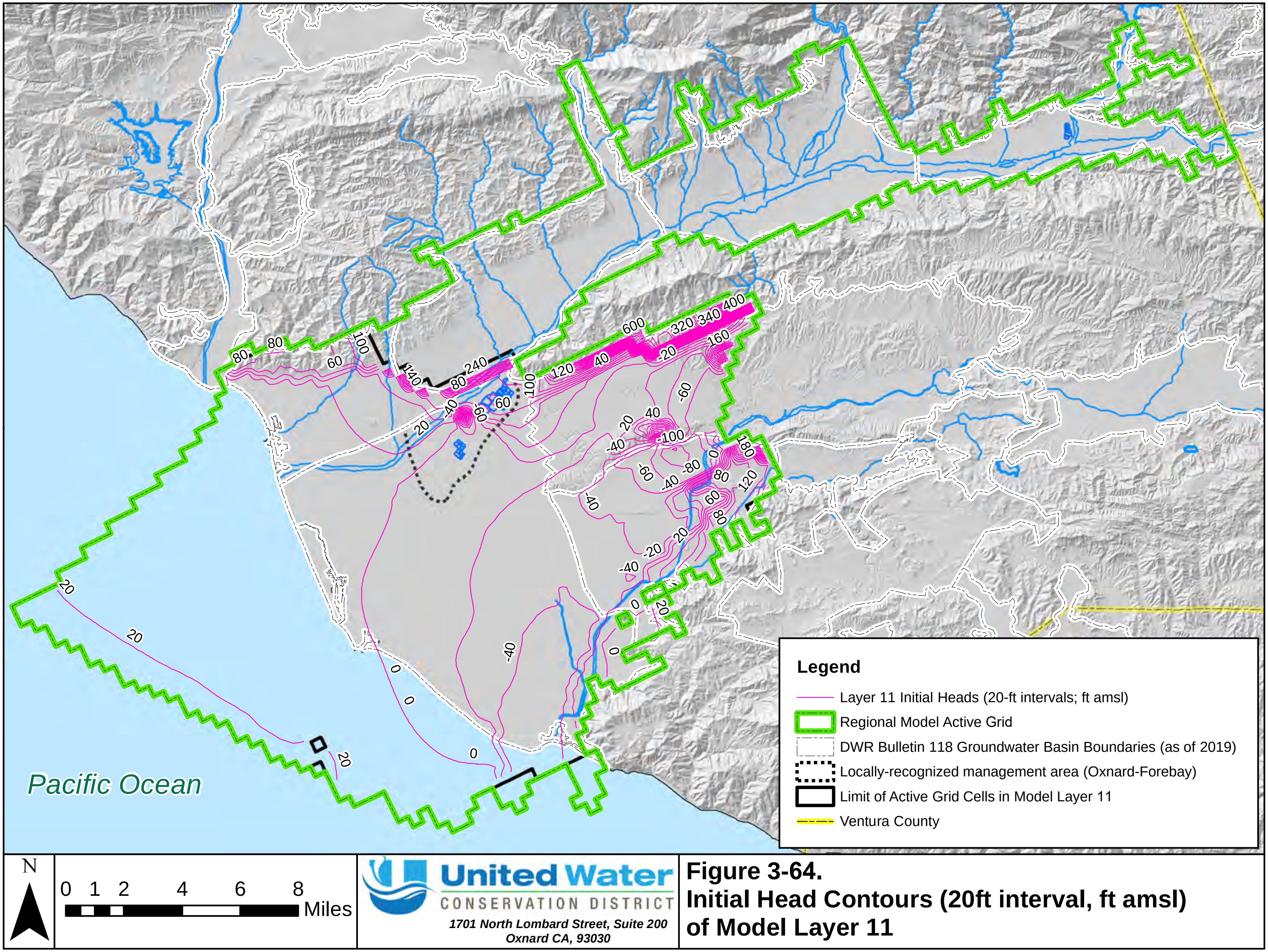

Figure 3-64.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 11

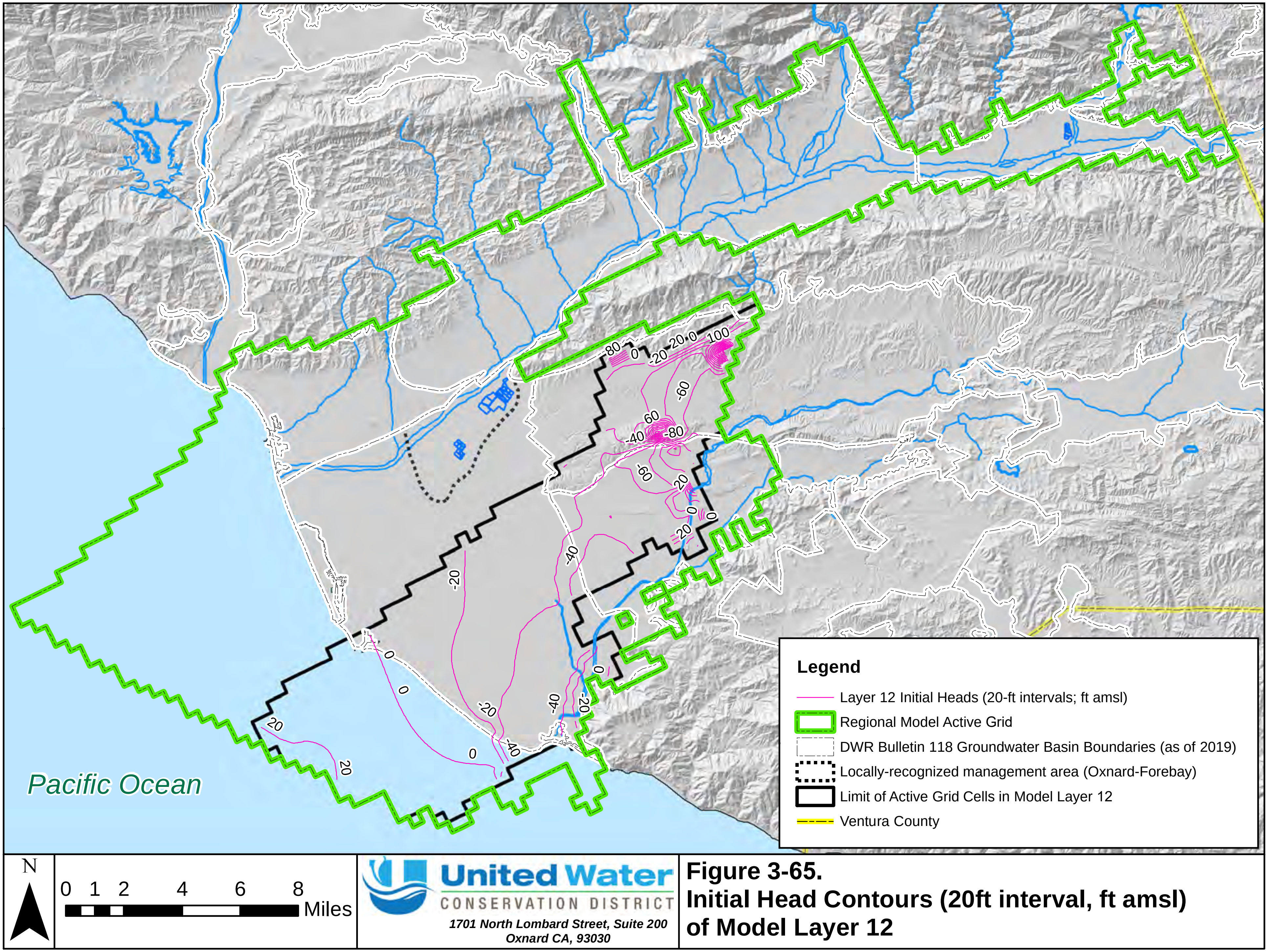

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Figure 3-65.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 12

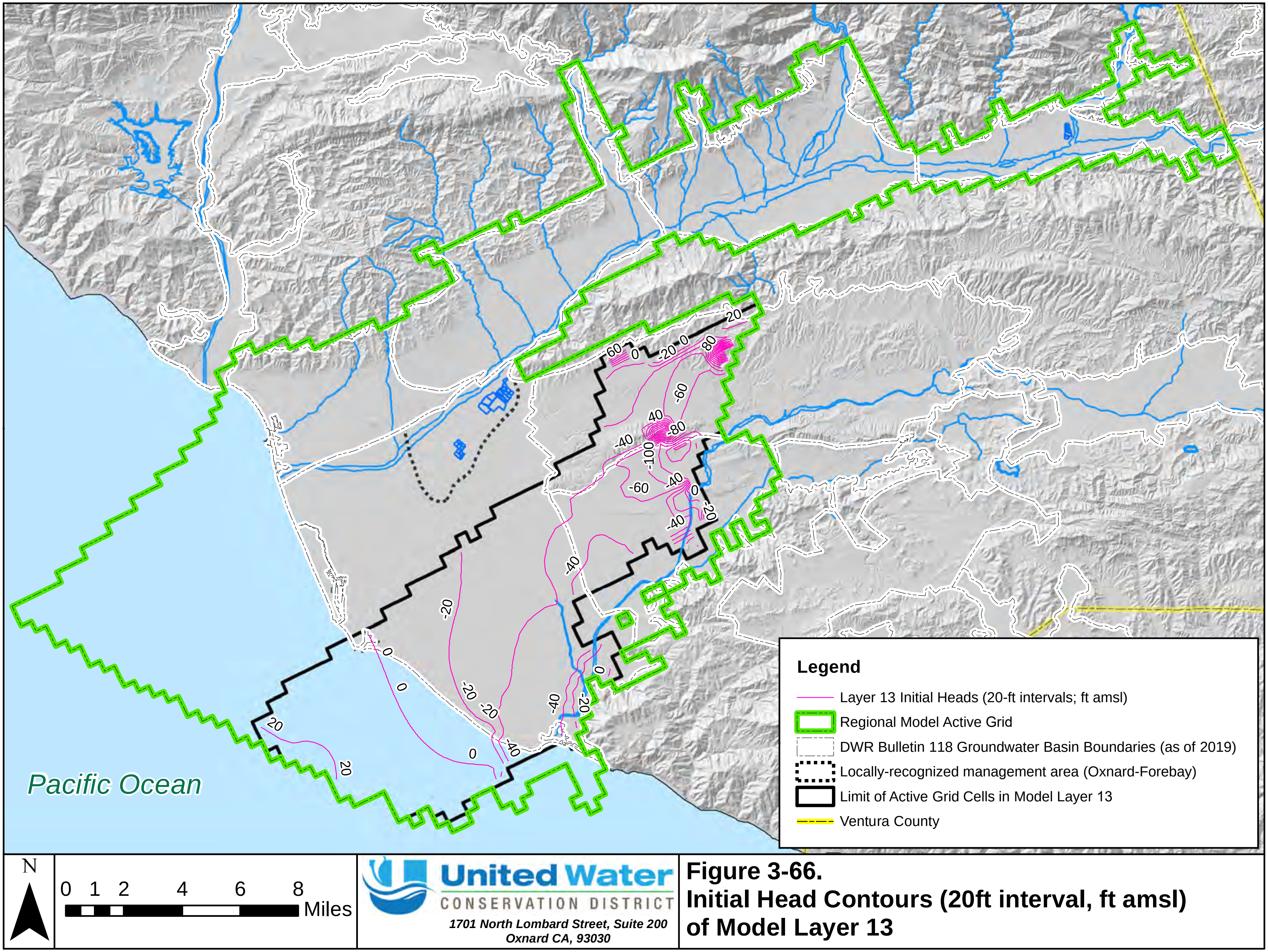

Figure 3-66.
Initial Head Contours (20ft interval, ft amsl) of Model Layer 13

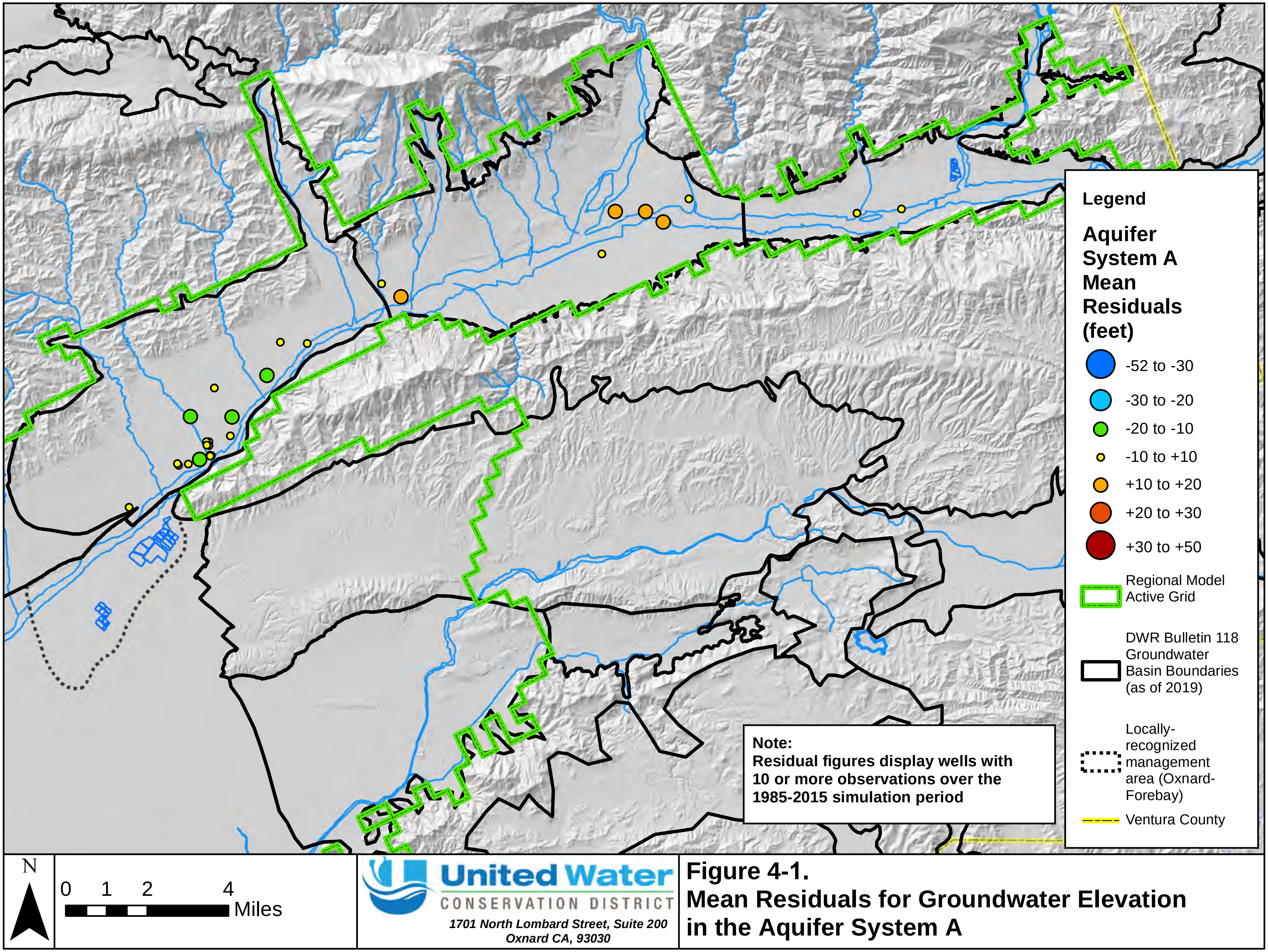

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Figure 4-1.
Mean Residuals for Groundwater Elevation in the Aquifer System A

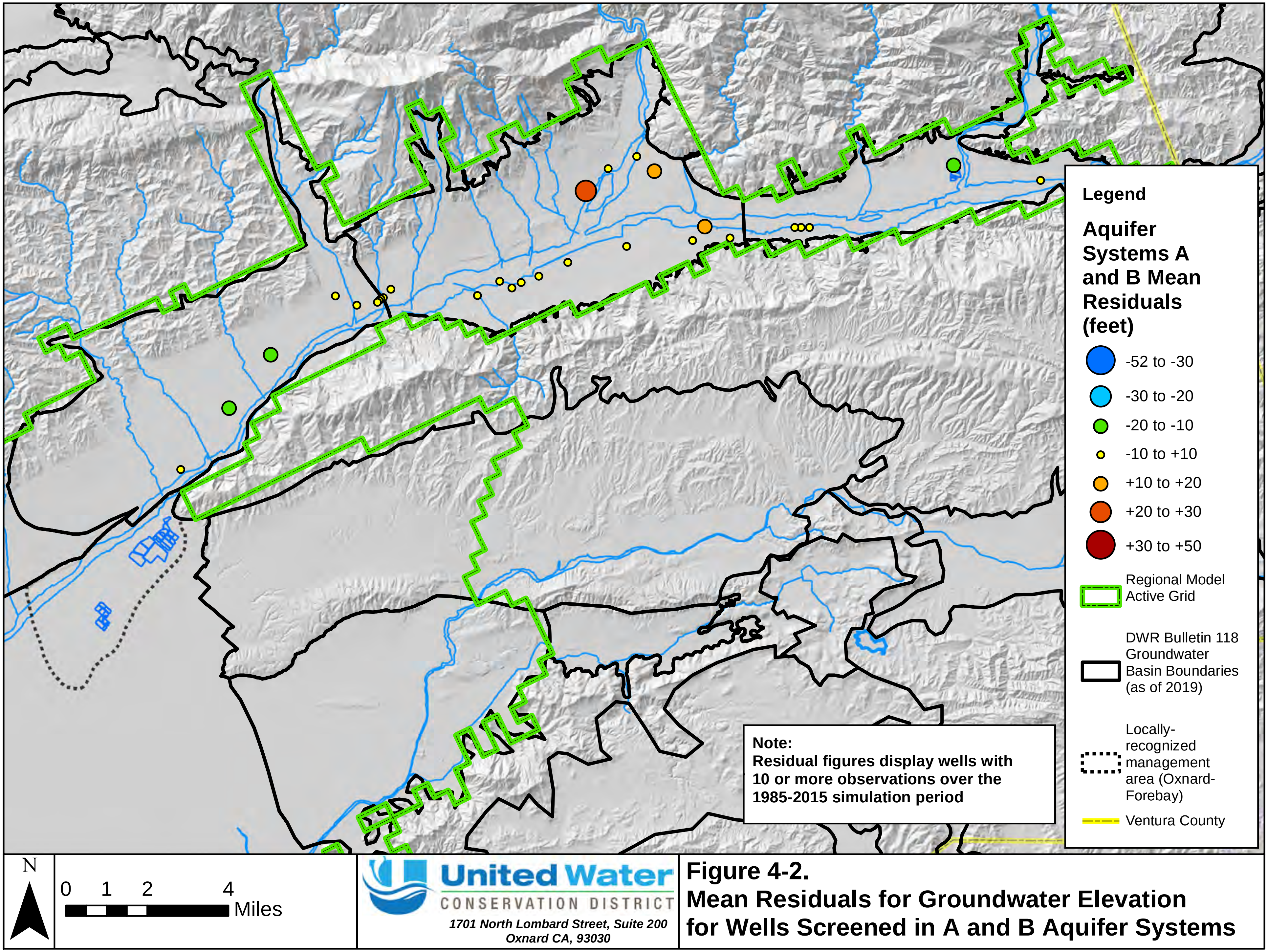

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Figure 4-2.
Mean Residuals for Groundwater Elevation for Wells Screened in A and B Aquifer Systems

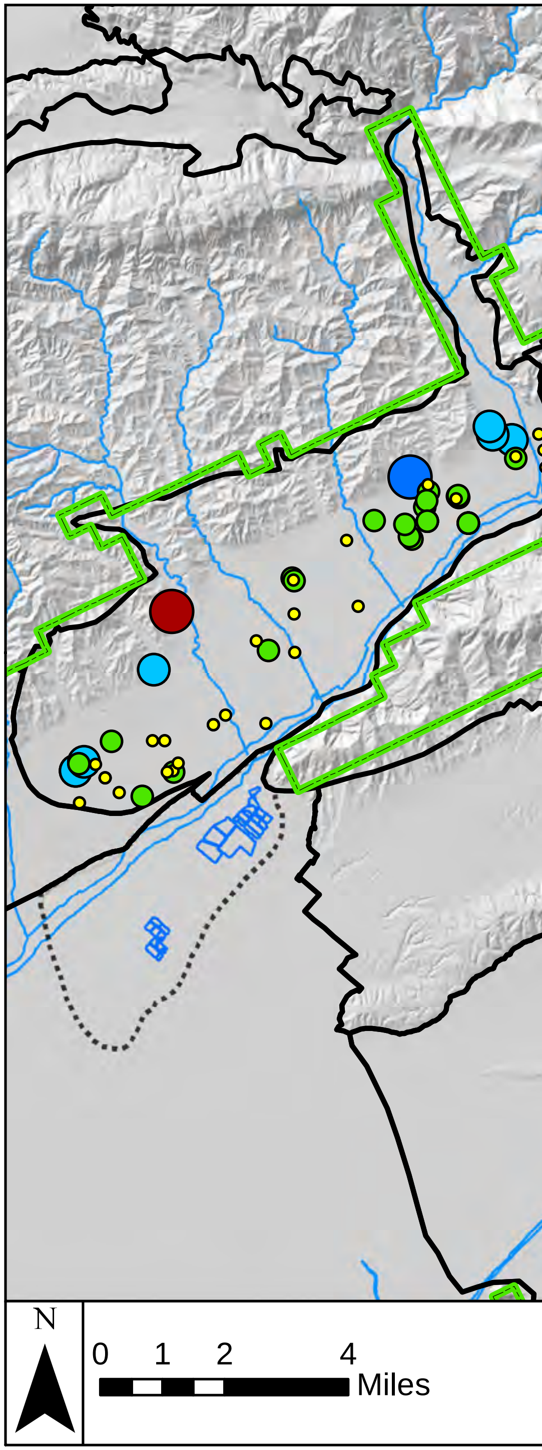

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Figure 4-3.
Mean Residuals for Groundwater Elevation in the Aquifer System B

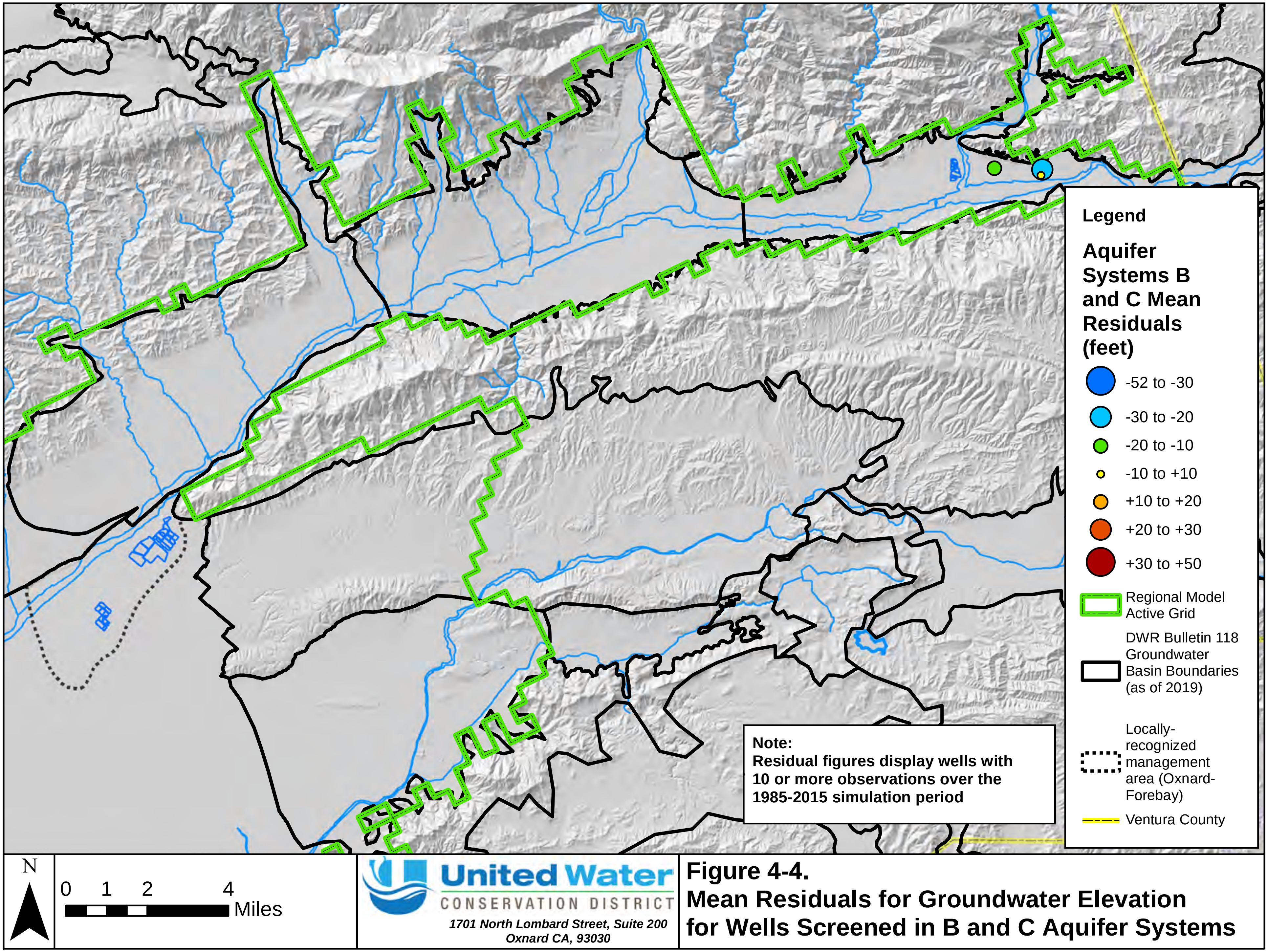

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Figure 4-4.
Mean Residuals for Groundwater Elevation for Wells Screened in B and C Aquifer Systems

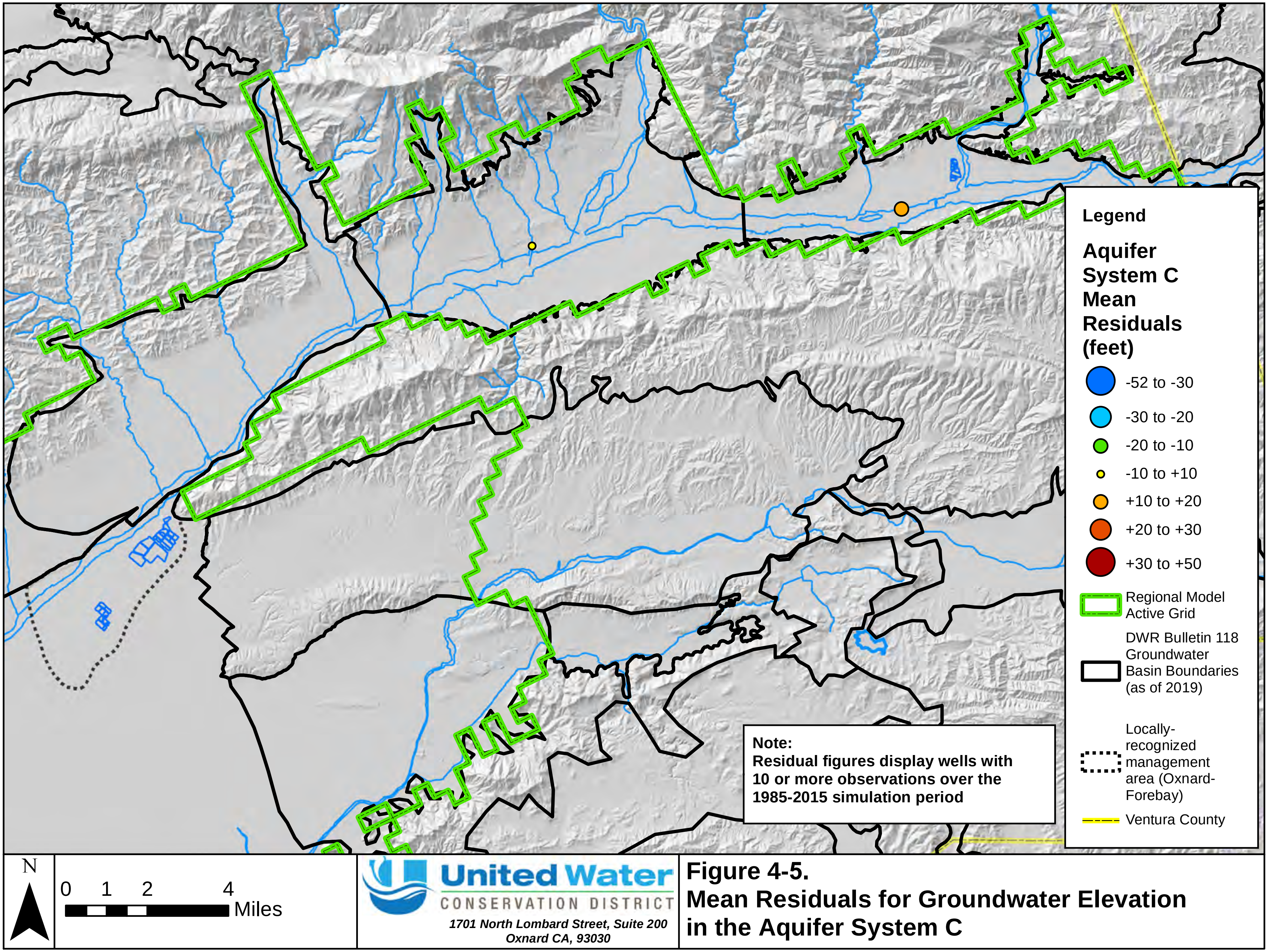

Figure 4-5.
Mean Residuals for Groundwater Elevation in the Aquifer System C

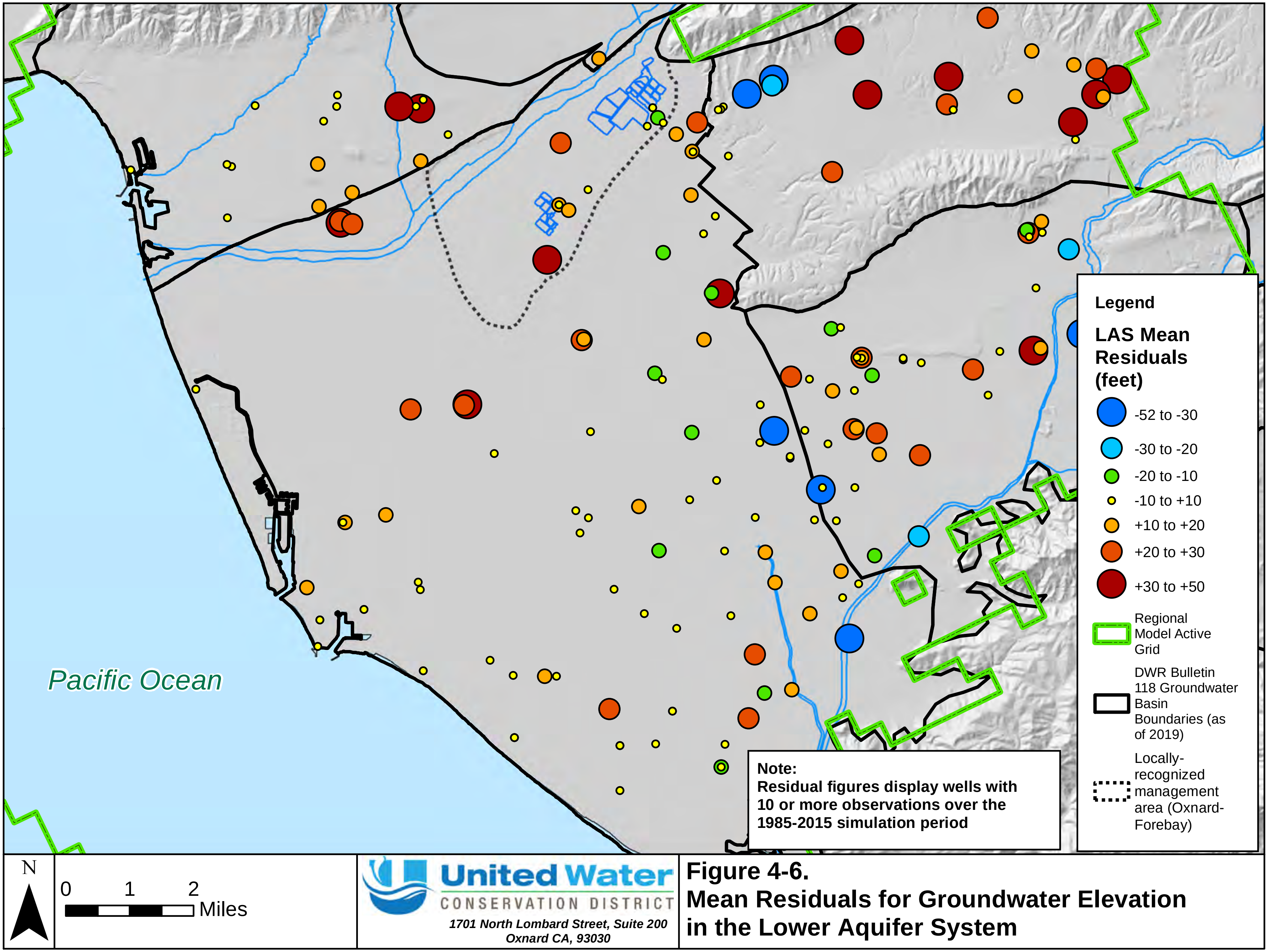

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Figure 4-6.
Mean Residuals for Groundwater Elevation in the Lower Aquifer System

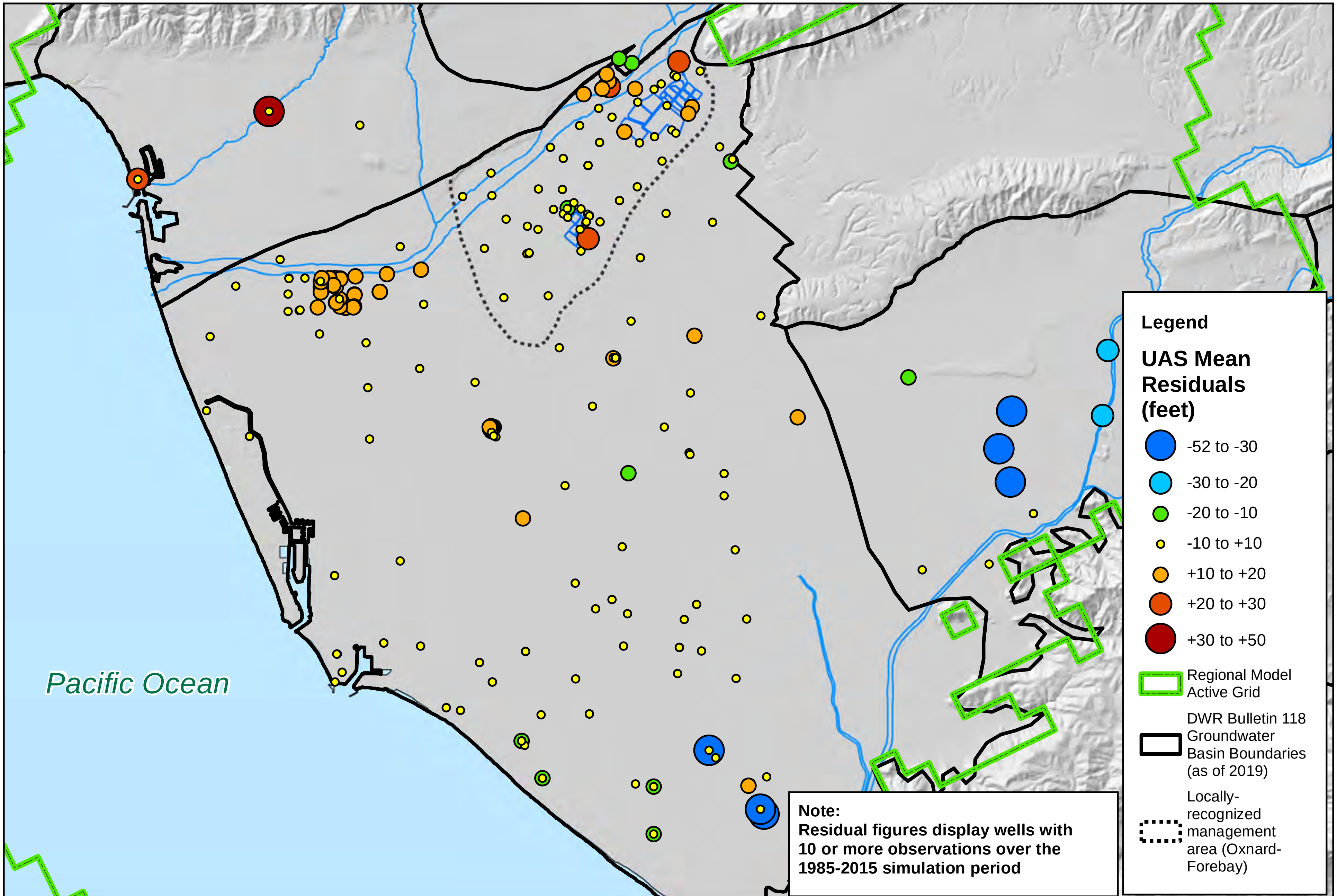

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Figure 4-7.
Mean Residuals for Groundwater Elevation in the Upper Aquifer System

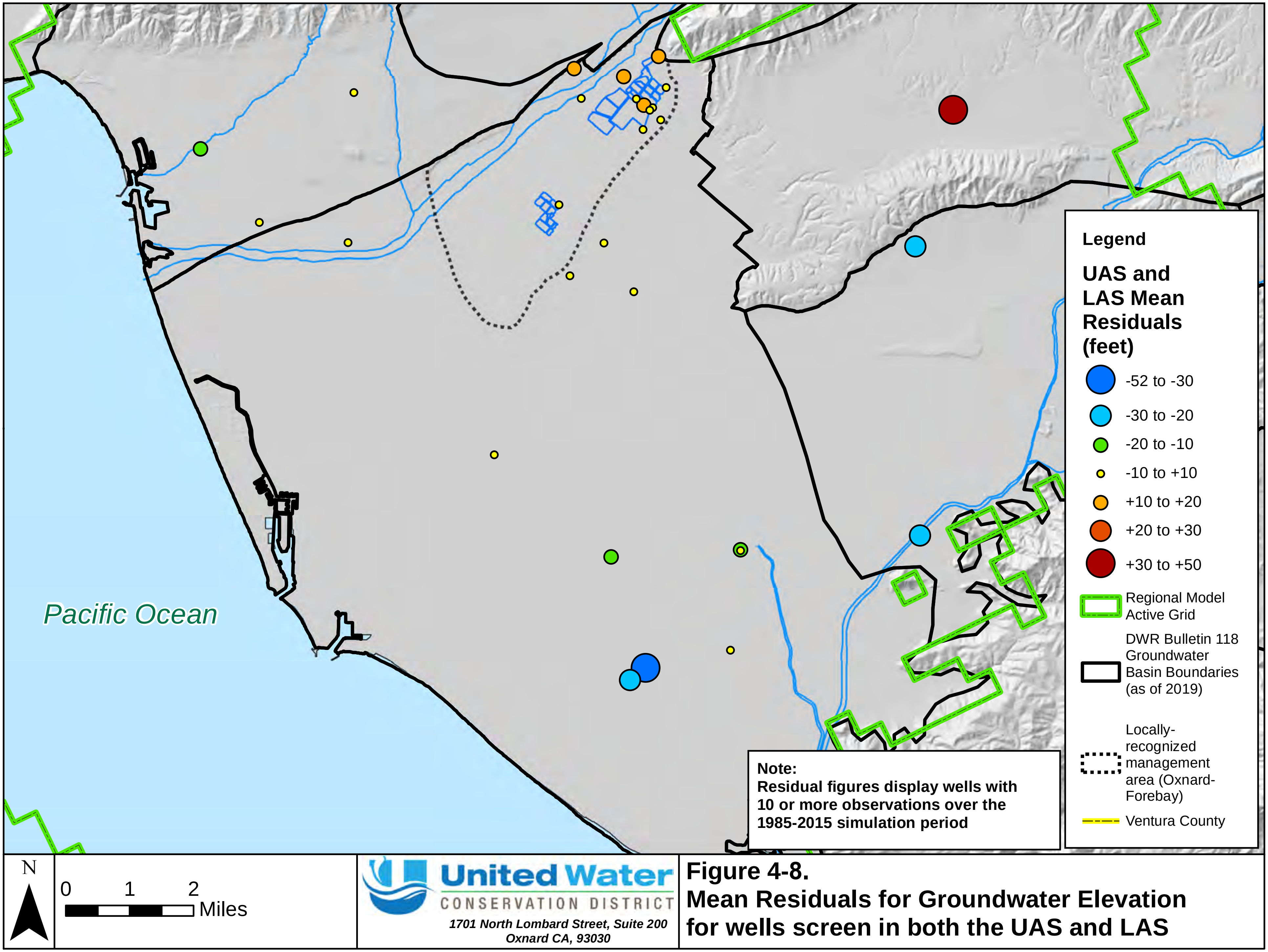

Figure 4-8.
Mean Residuals for Groundwater Elevation for wells screen in both the UAS and LAS

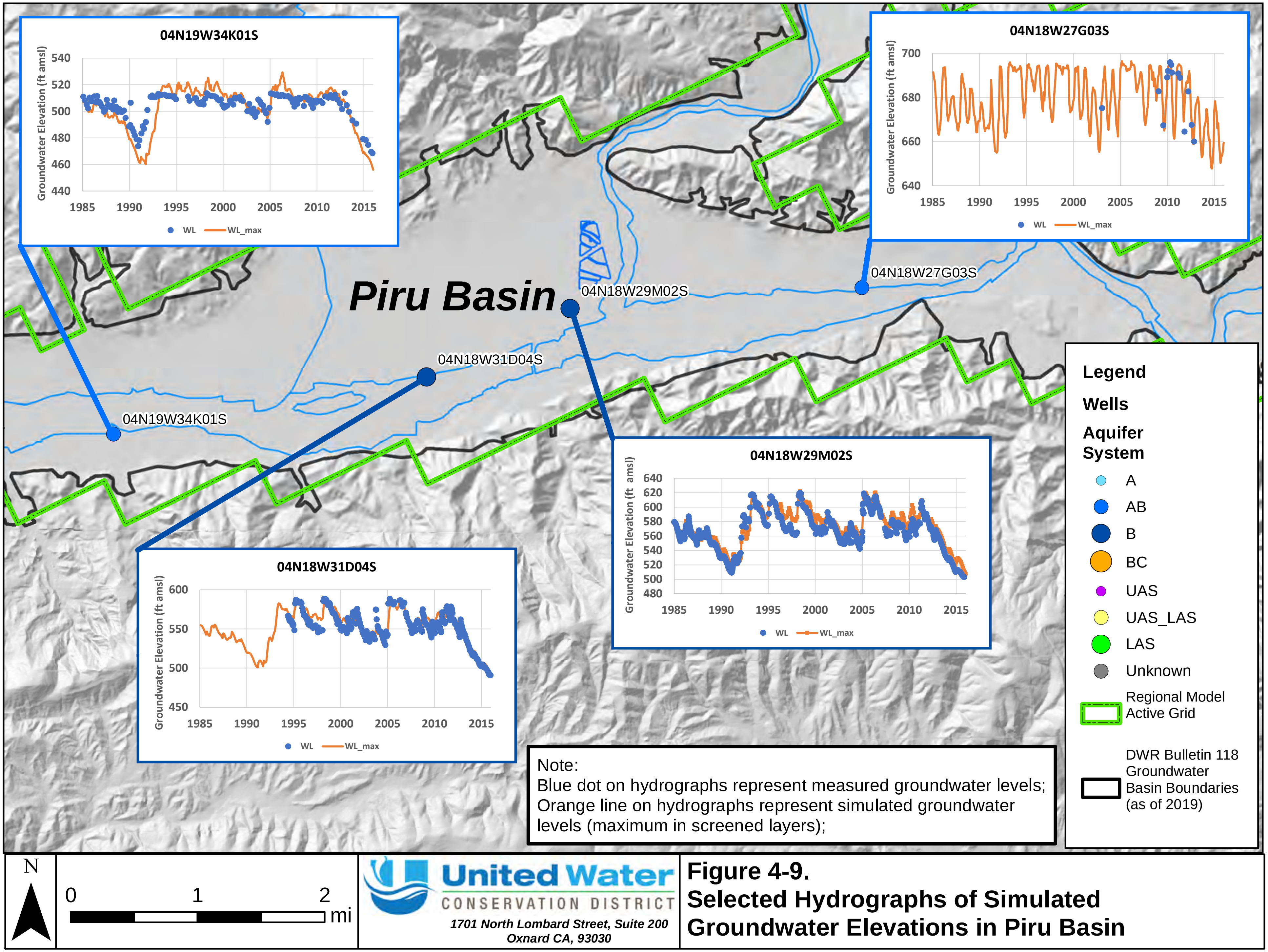

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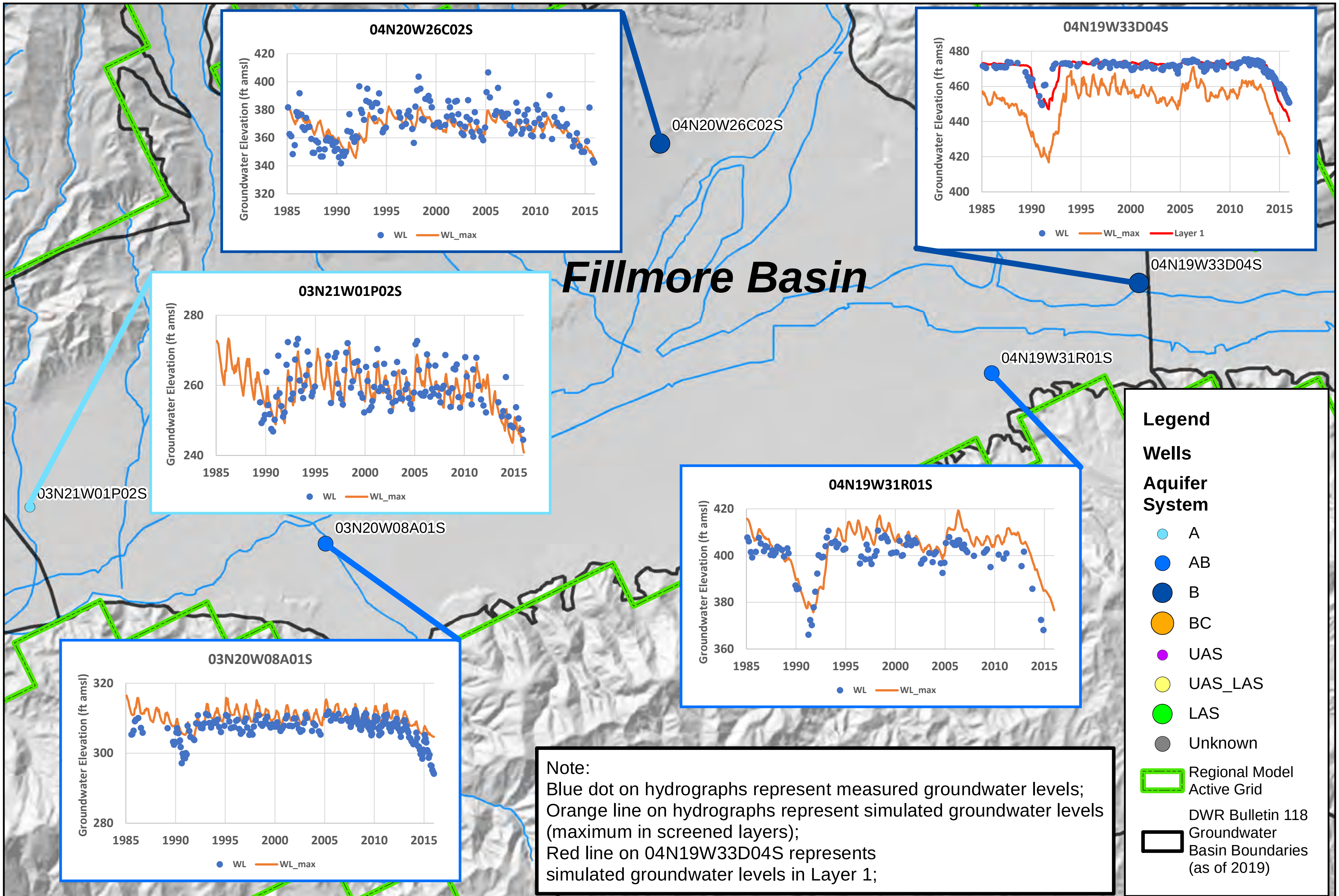
Figure 4-9.
Selected Hydrographs of Simulated Groundwater Elevations in Piru Basin



Note:
Blue dot on hydrographs represent measured groundwater levels;
Orange line on hydrographs represent simulated groundwater levels (maximum in screened layers);
Red line on 04N19W33D04S represents simulated groundwater levels in Layer 1;

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Figure 4-10.
Selected Hydrographs of Simulated Groundwater Elevations in Fillmore Basin

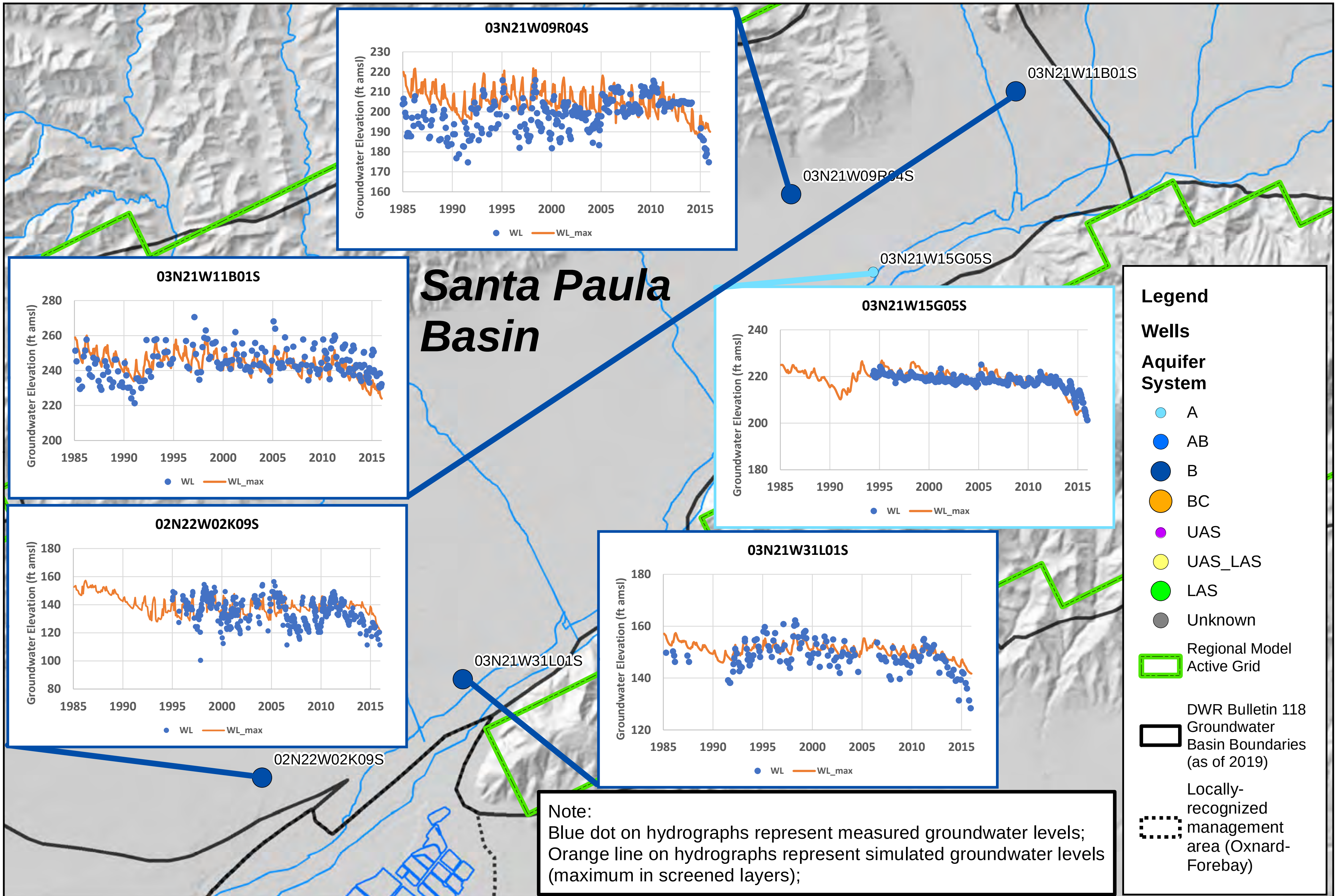

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Figure 4-11.
Selected Hydrographs of Simulated Groundwater Elevations in Santa Paula Basin

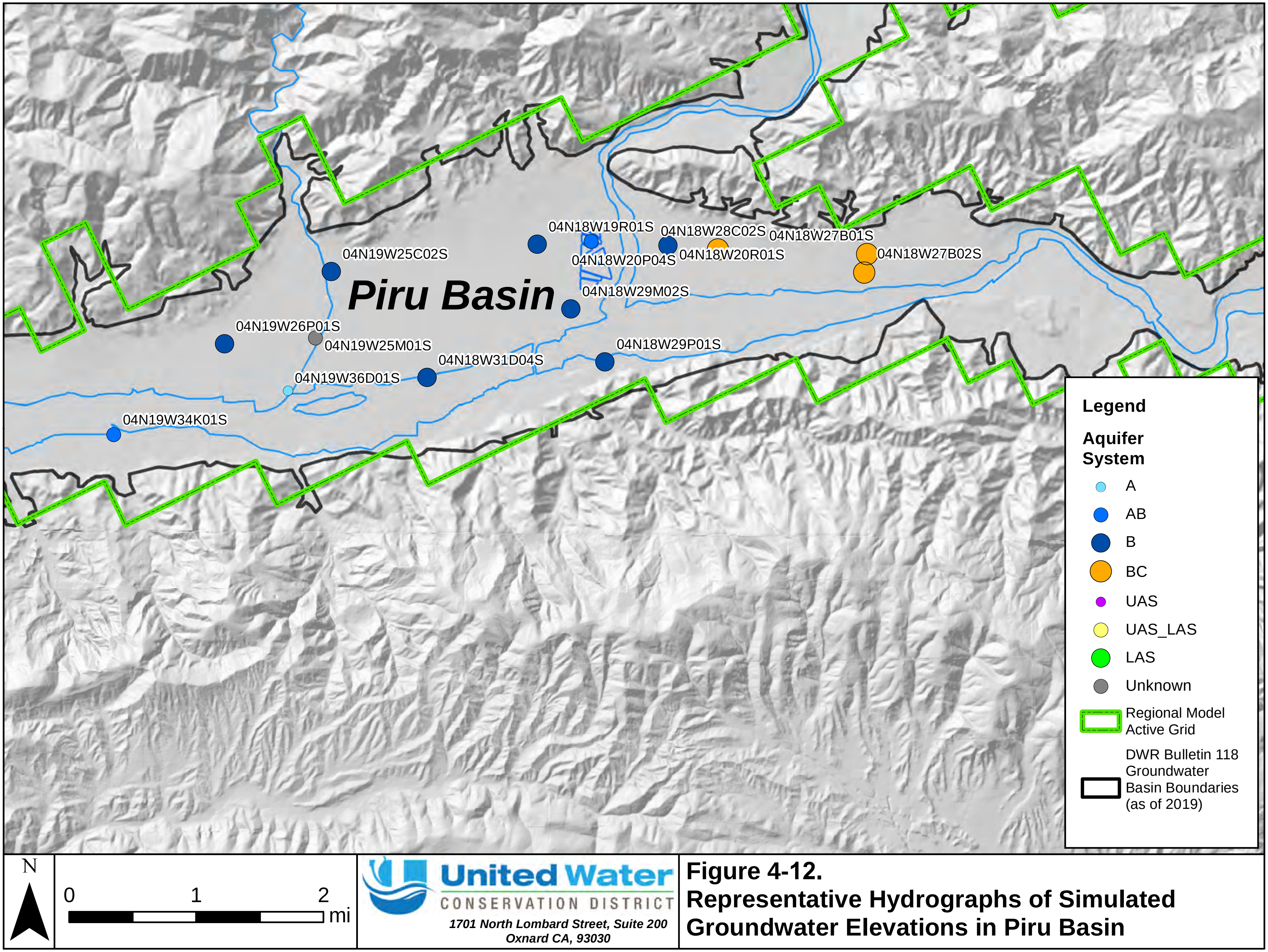

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Figure 4-12.
Representative Hydrographs of Simulated Groundwater Elevations in Piru Basin

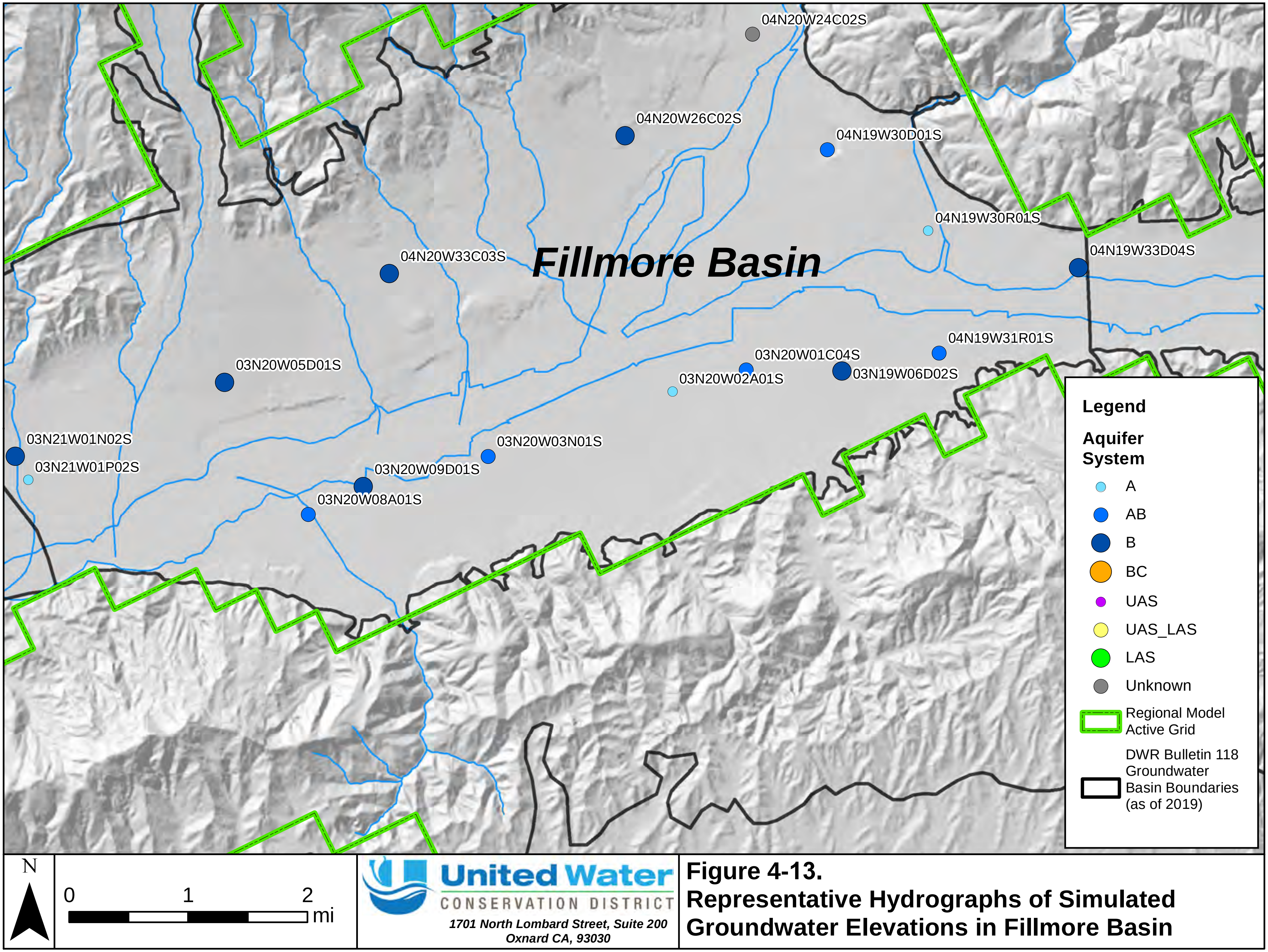

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Figure 4-13.
Representative Hydrographs of Simulated Groundwater Elevations in Fillmore Basin

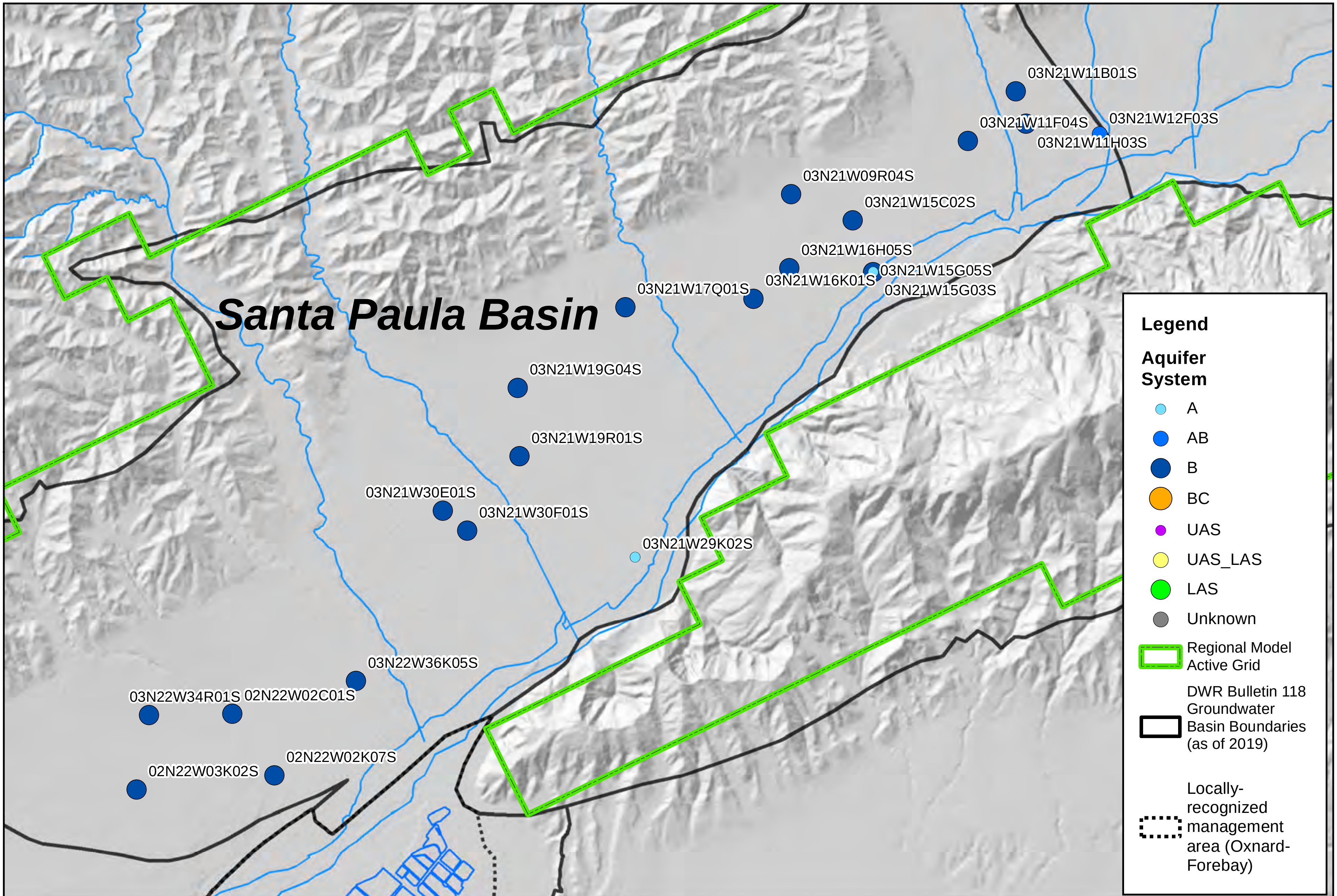

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Figure 4-14.
Representative Hydrographs of Simulated Groundwater Elevations in Santa Paula Basin

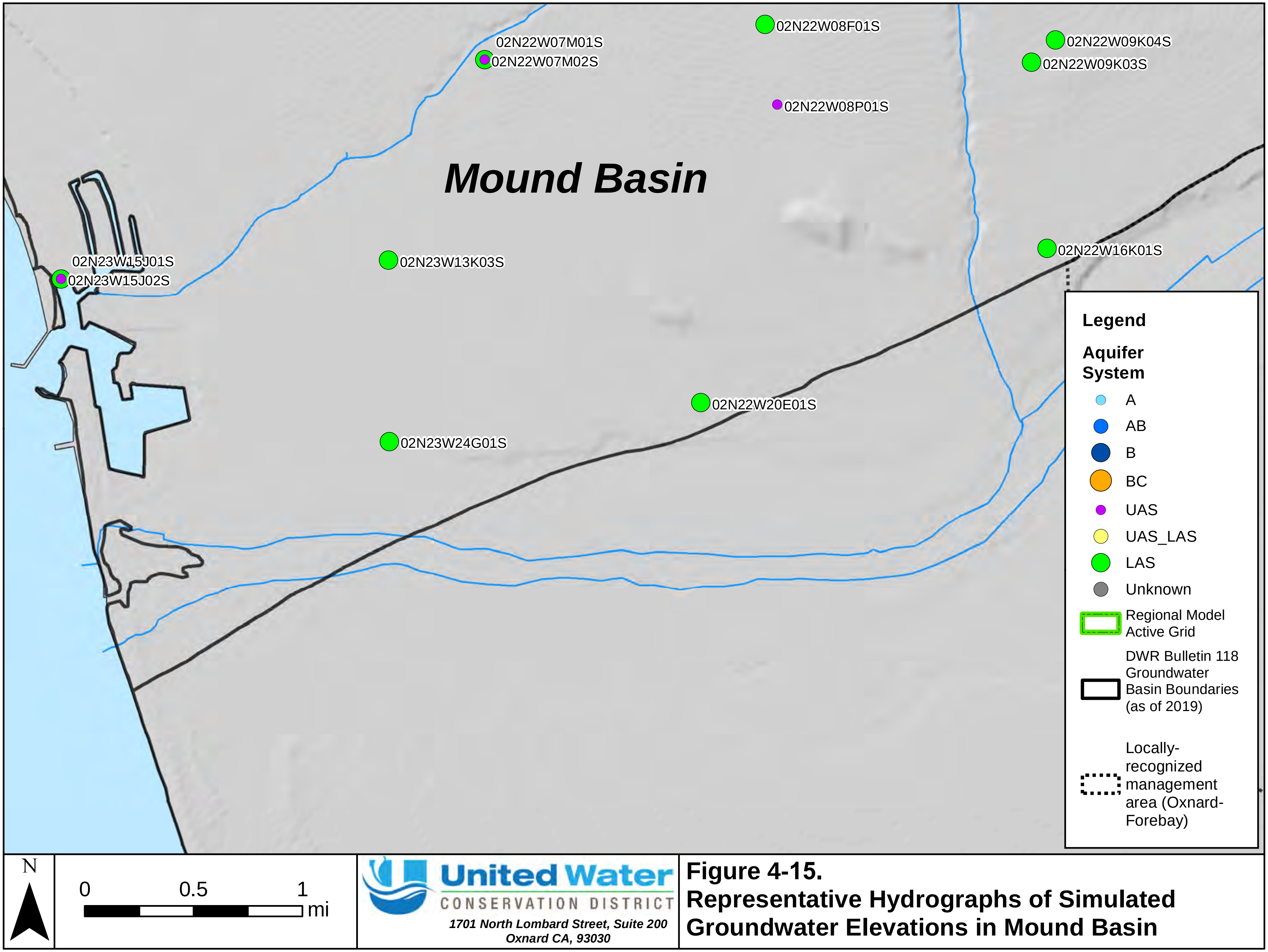

Figure 4-15.
Representative Hydrographs of Simulated Groundwater Elevations in Mound Basin

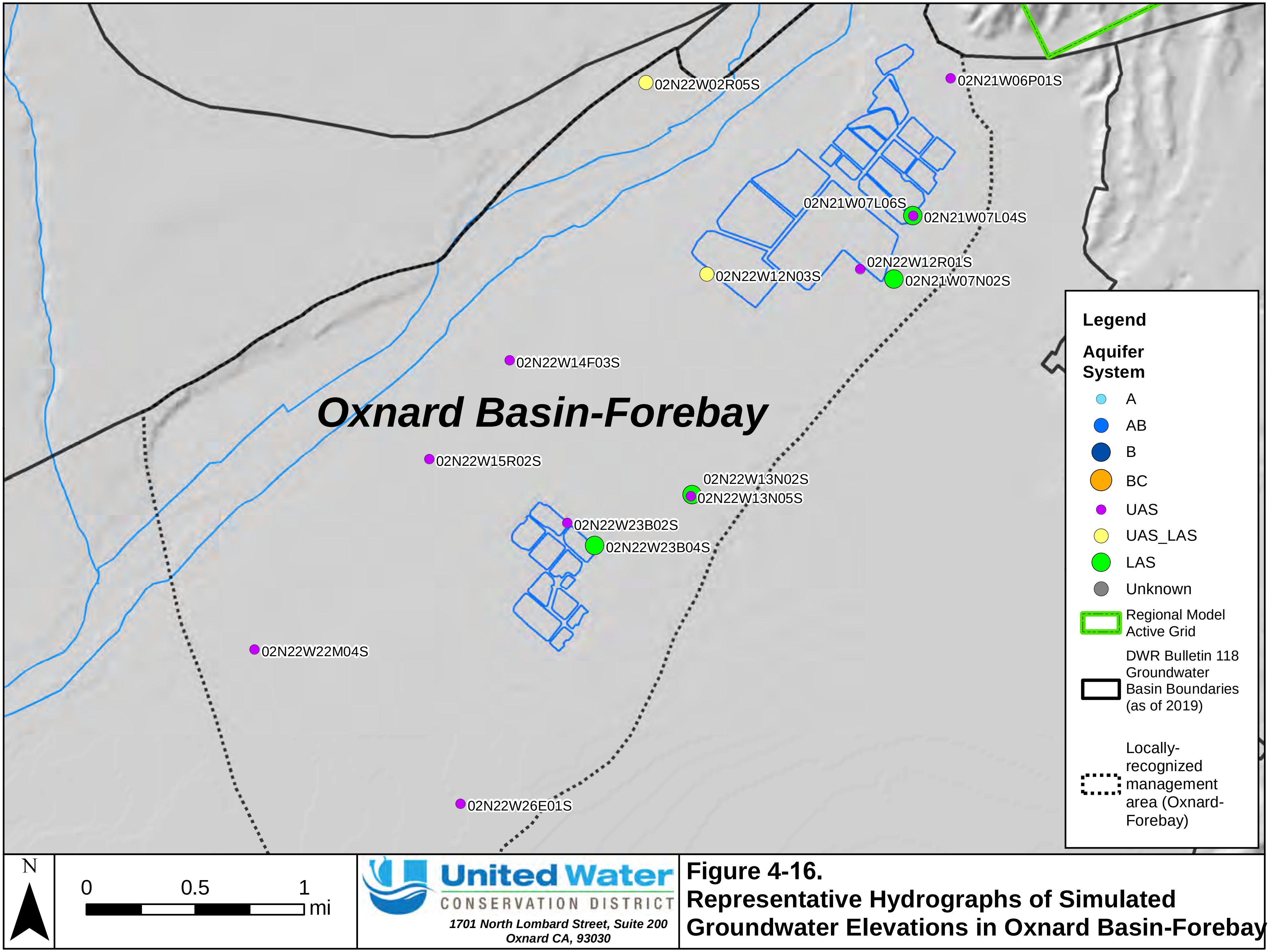

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Figure 4-16.
Representative Hydrographs of Simulated Groundwater Elevations in Oxnard Basin-Forebay

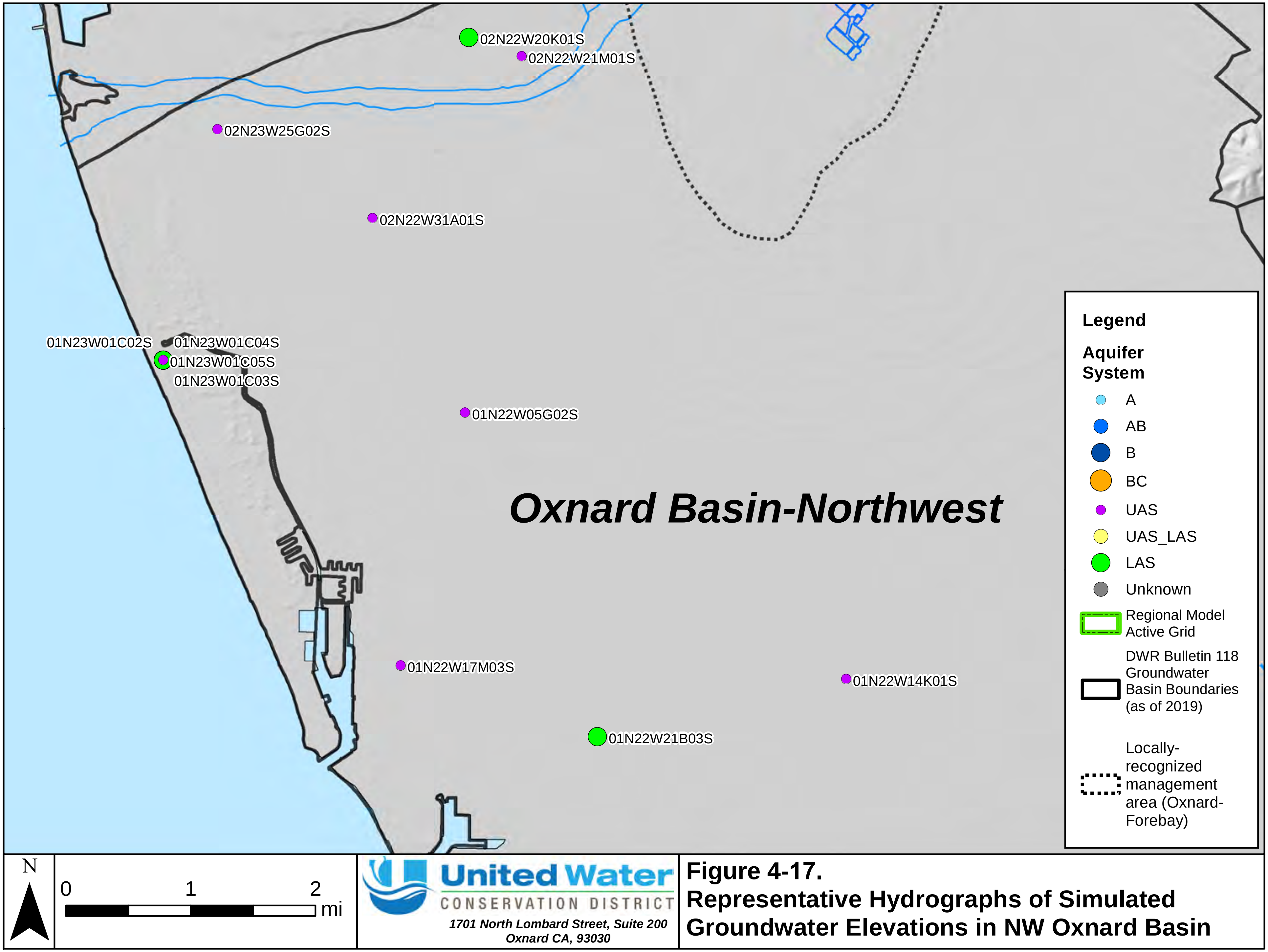

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Figure 4-17.
Representative Hydrographs of Simulated Groundwater Elevations in NW Oxnard Basin

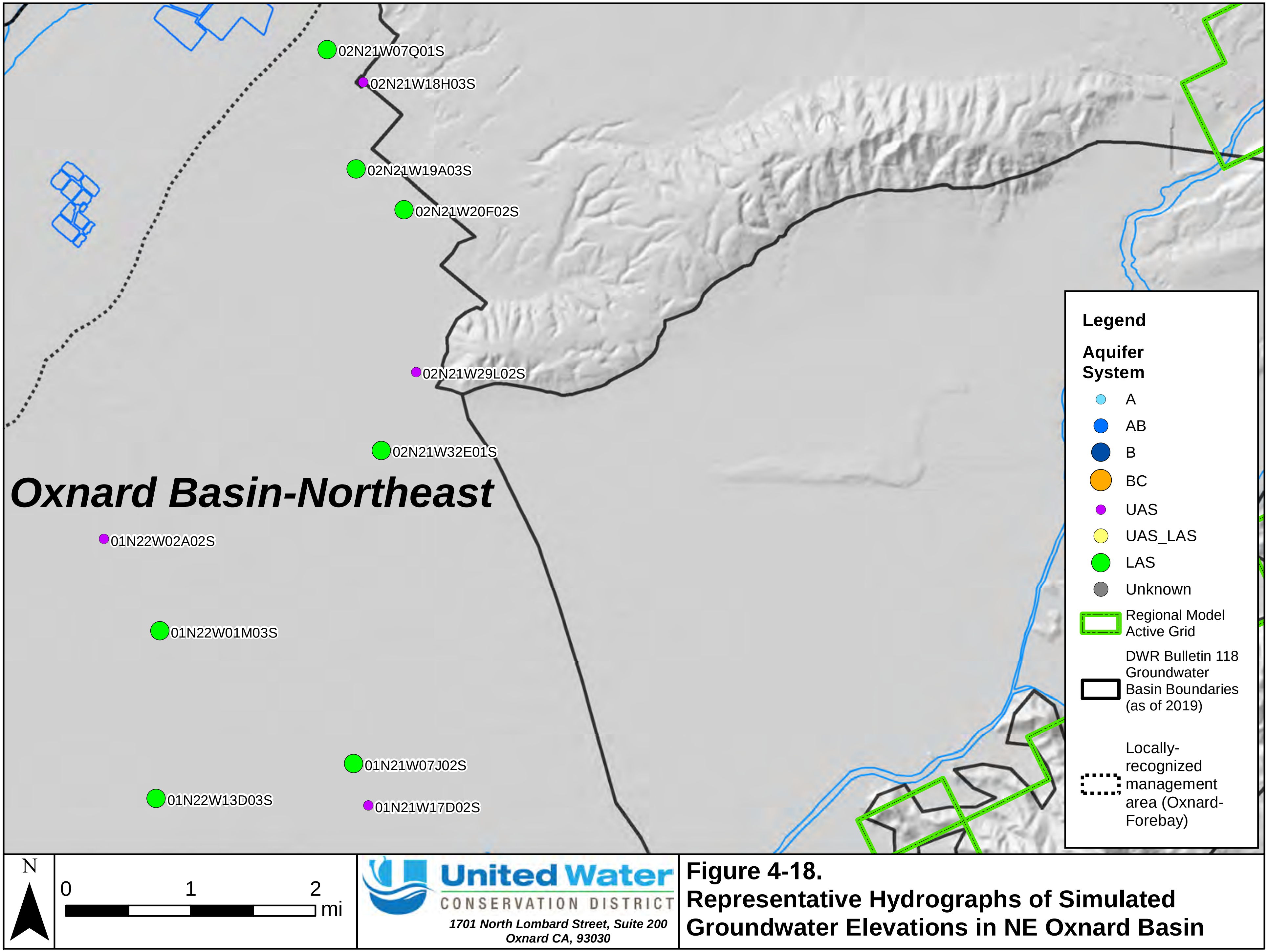

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Figure 4-18.
Representative Hydrographs of Simulated Groundwater Elevations in NE Oxnard Basin

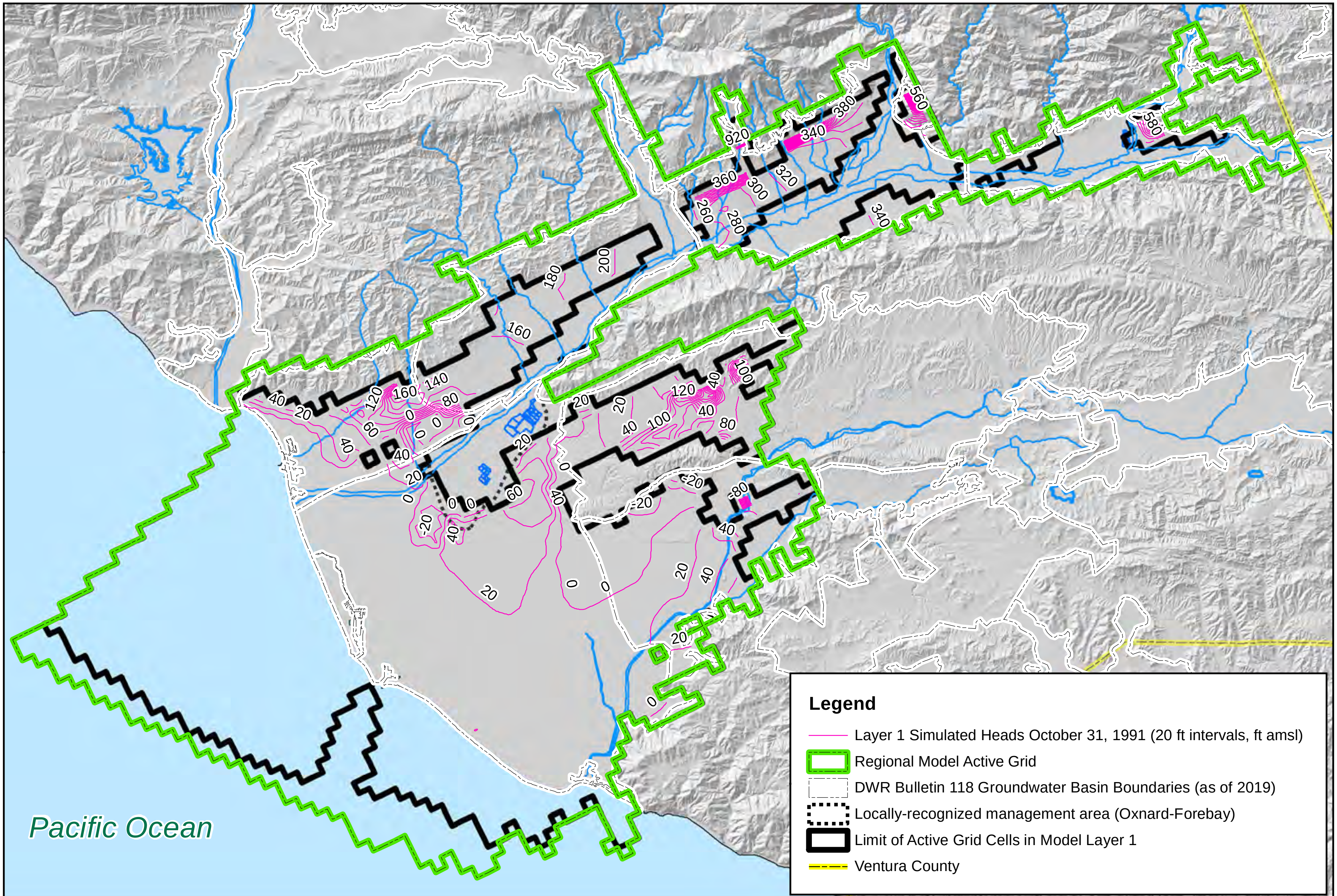

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Figure 4-19.
October 1991 Simulated Head Contours of Model Layer 1

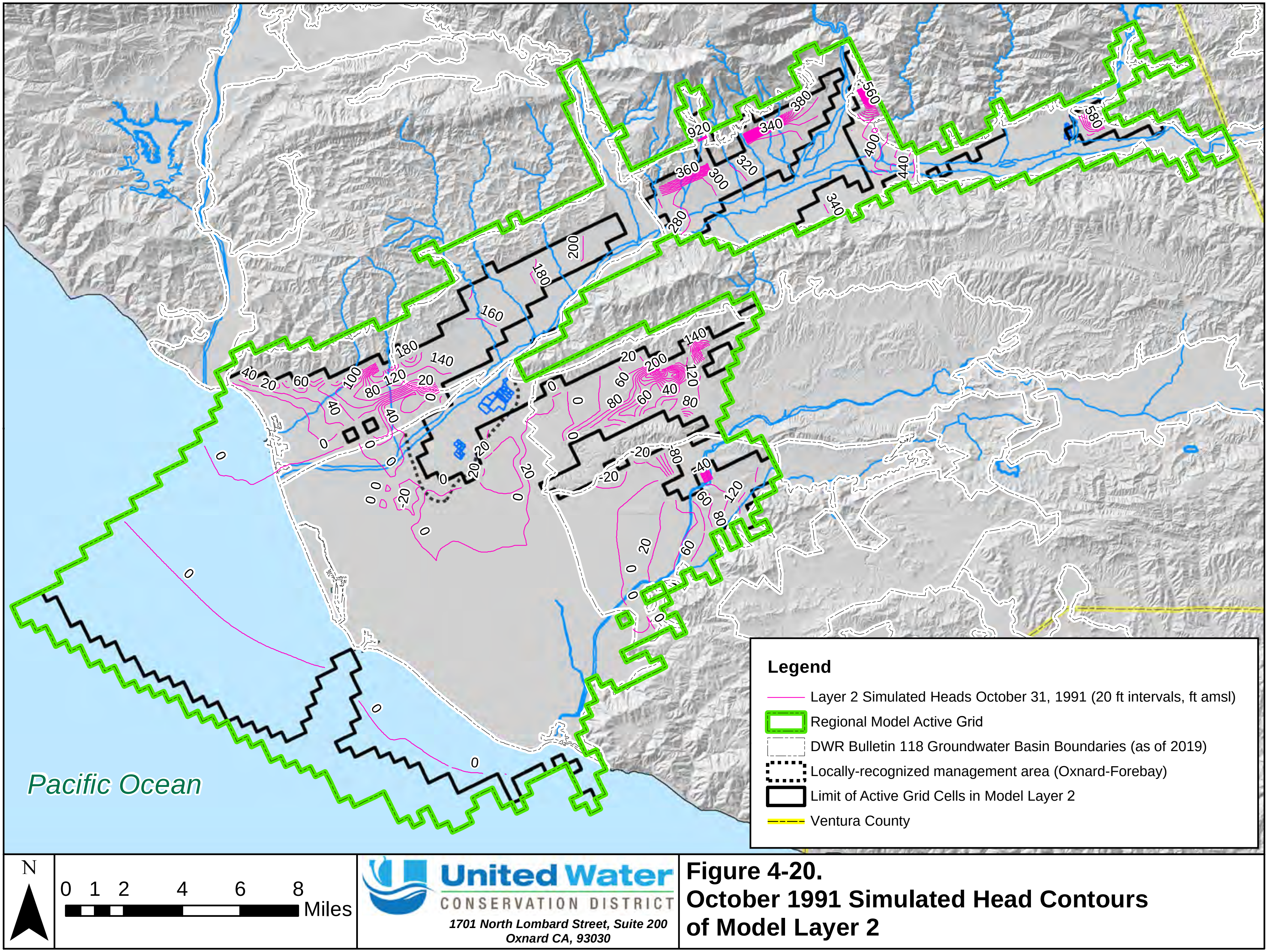

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Figure 4-20.
October 1991 Simulated Head Contours of Model Layer 2

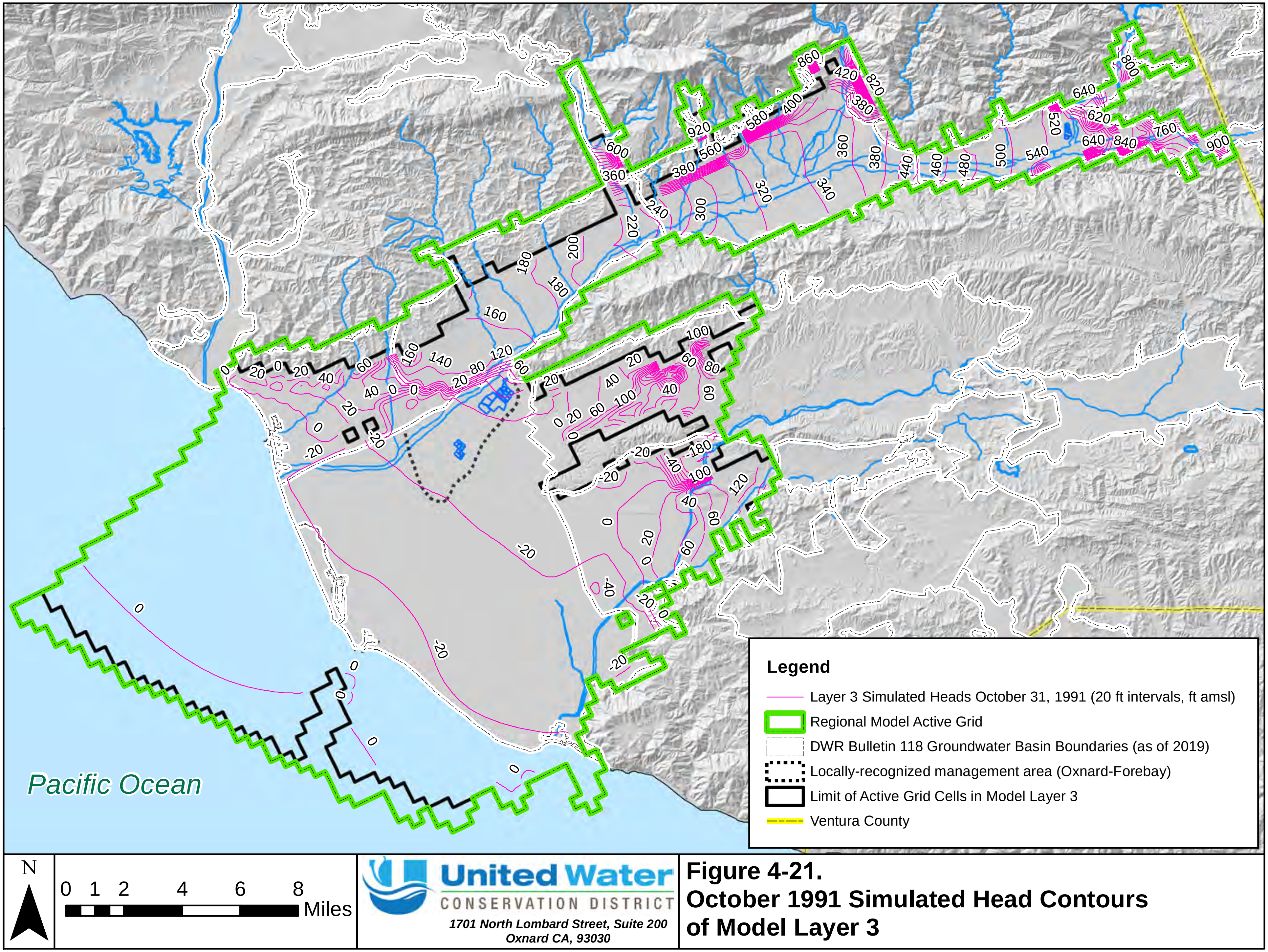

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Figure 4-21.
October 1991 Simulated Head Contours of Model Layer 3

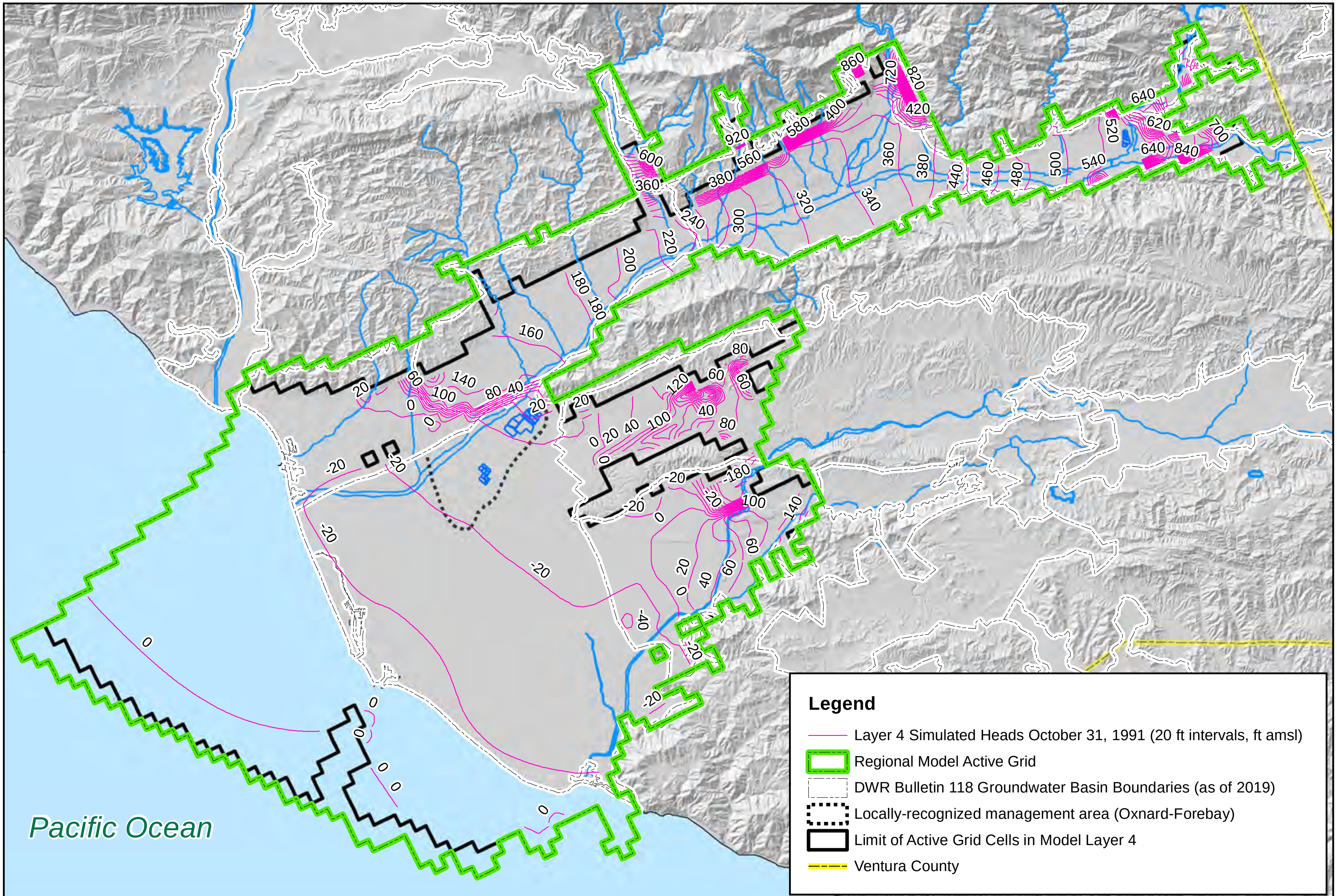

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Figure 4-22.
October 1991 Simulated Head Contours of Model Layer 4

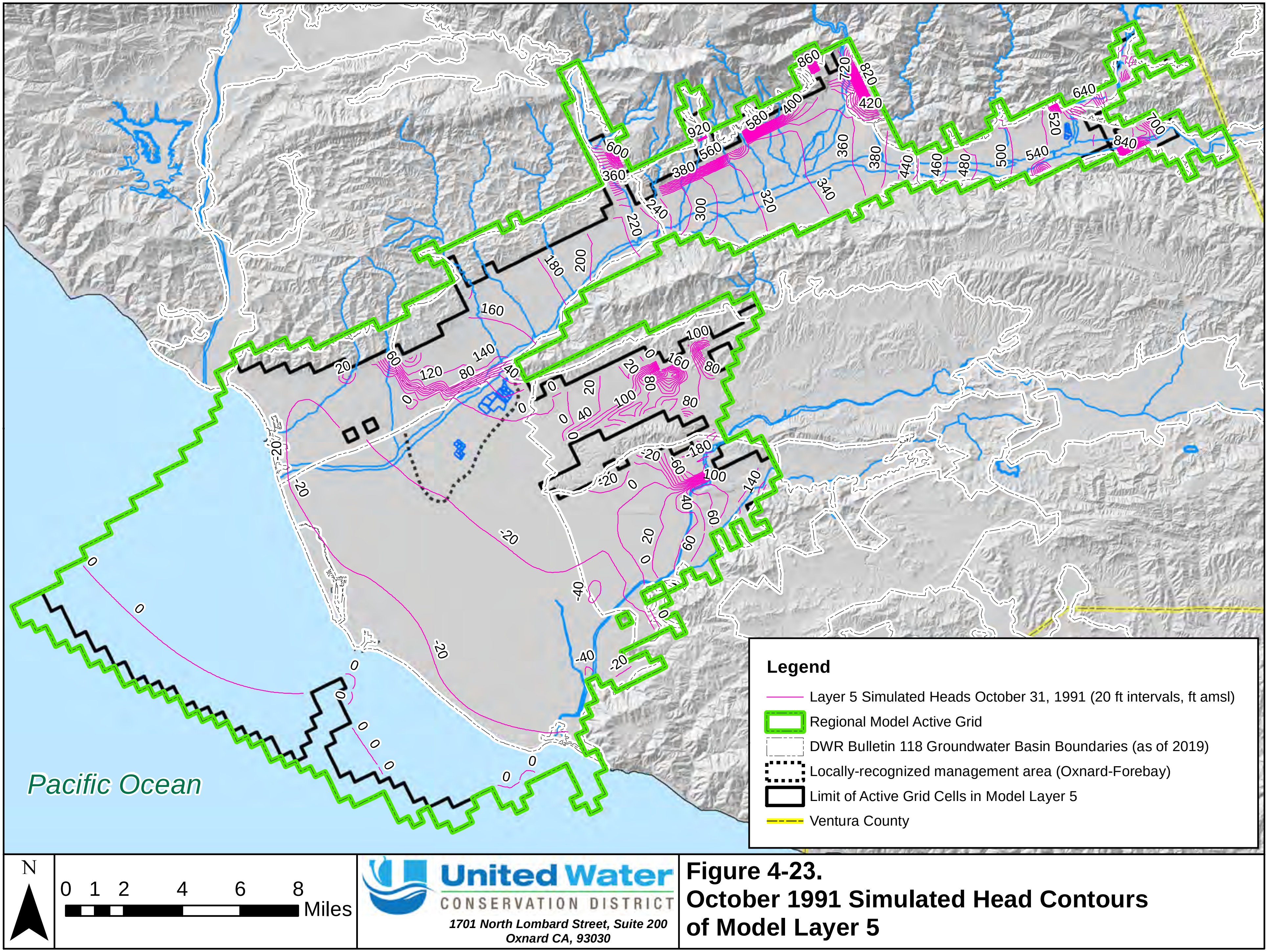

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Figure 4-23.
October 1991 Simulated Head Contours of Model Layer 5

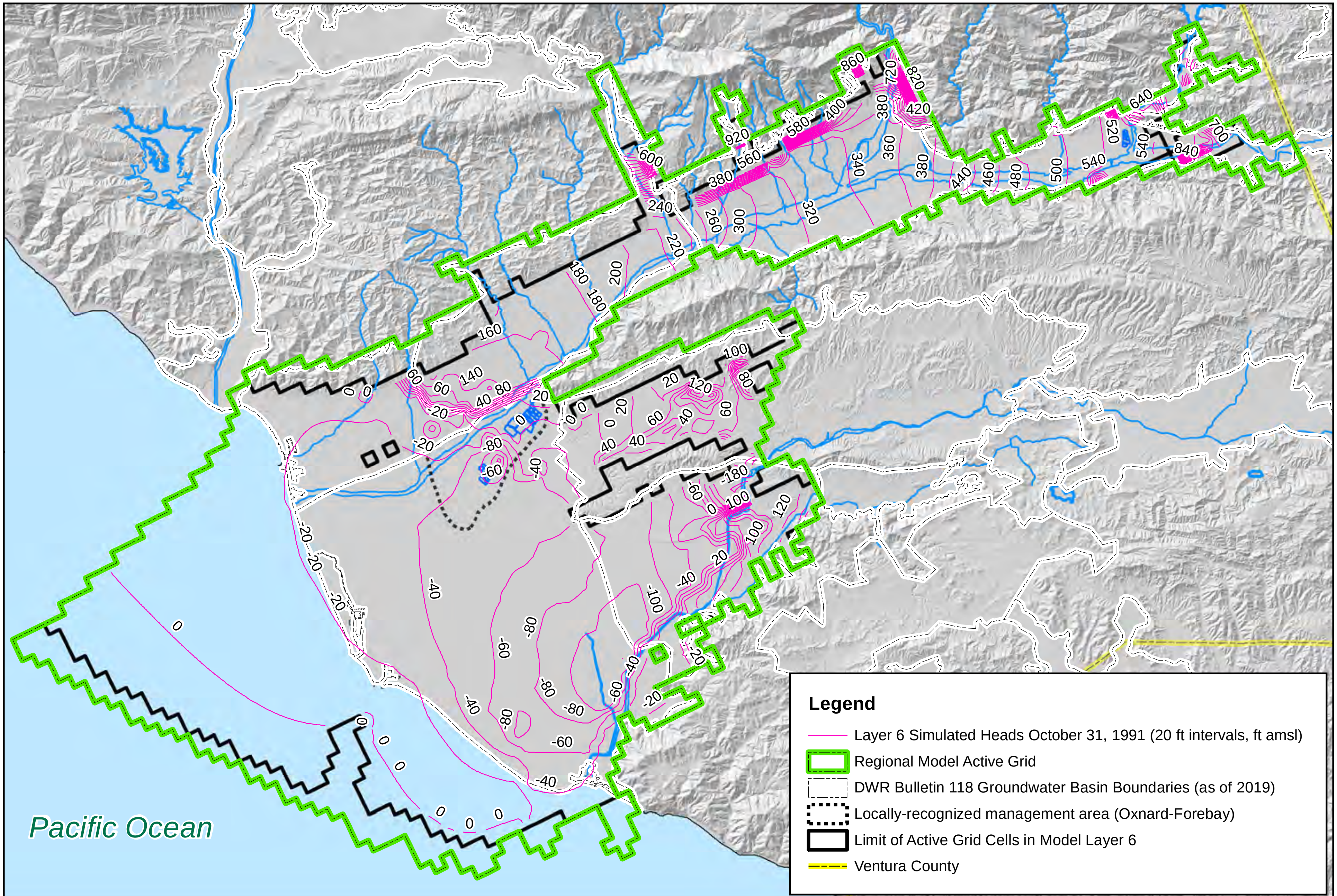

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Figure 4-24.
October 1991 Simulated Head Contours of Model Layer 6

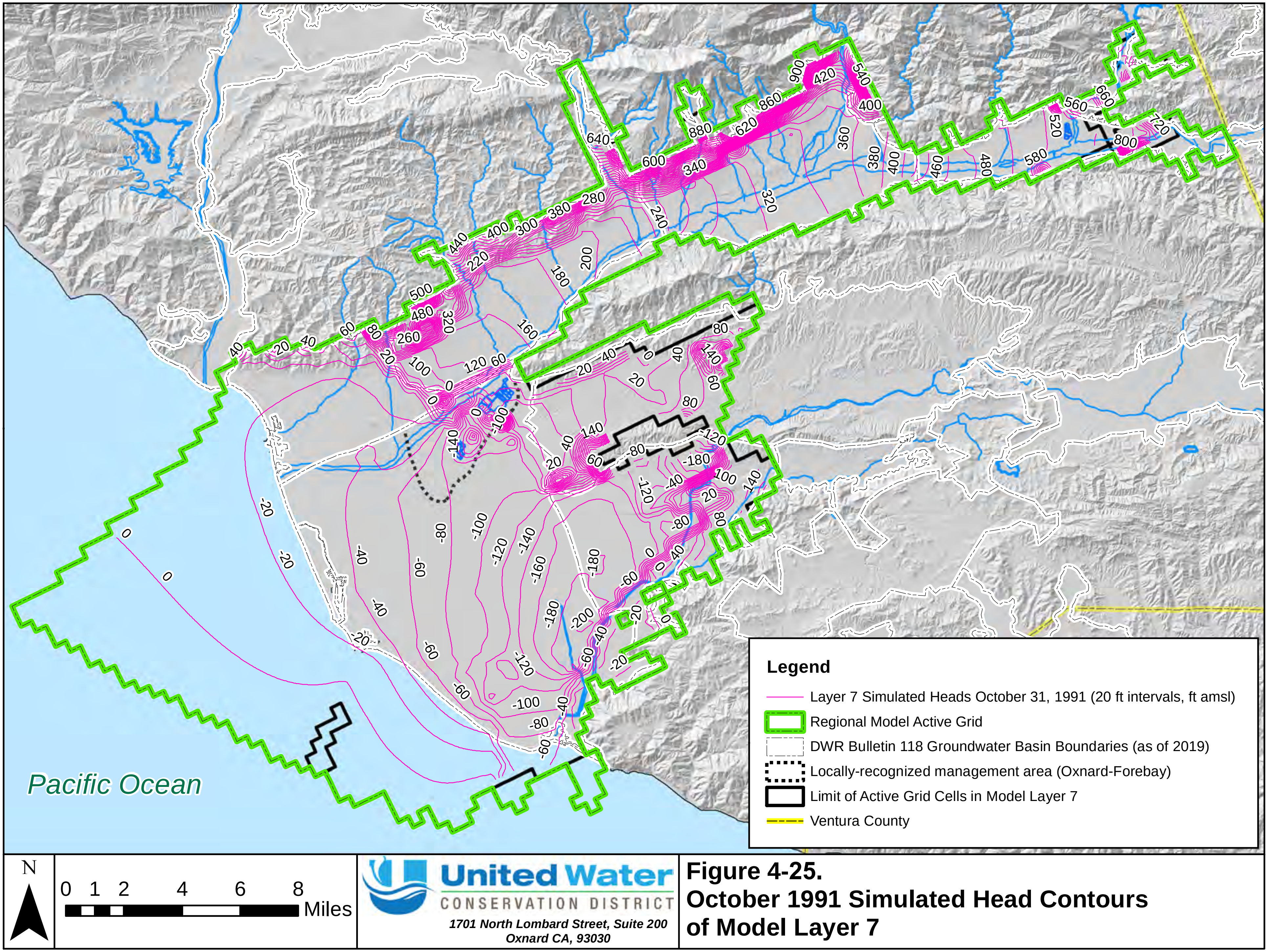

Figure 4-25.
October 1991 Simulated Head Contours of Model Layer 7

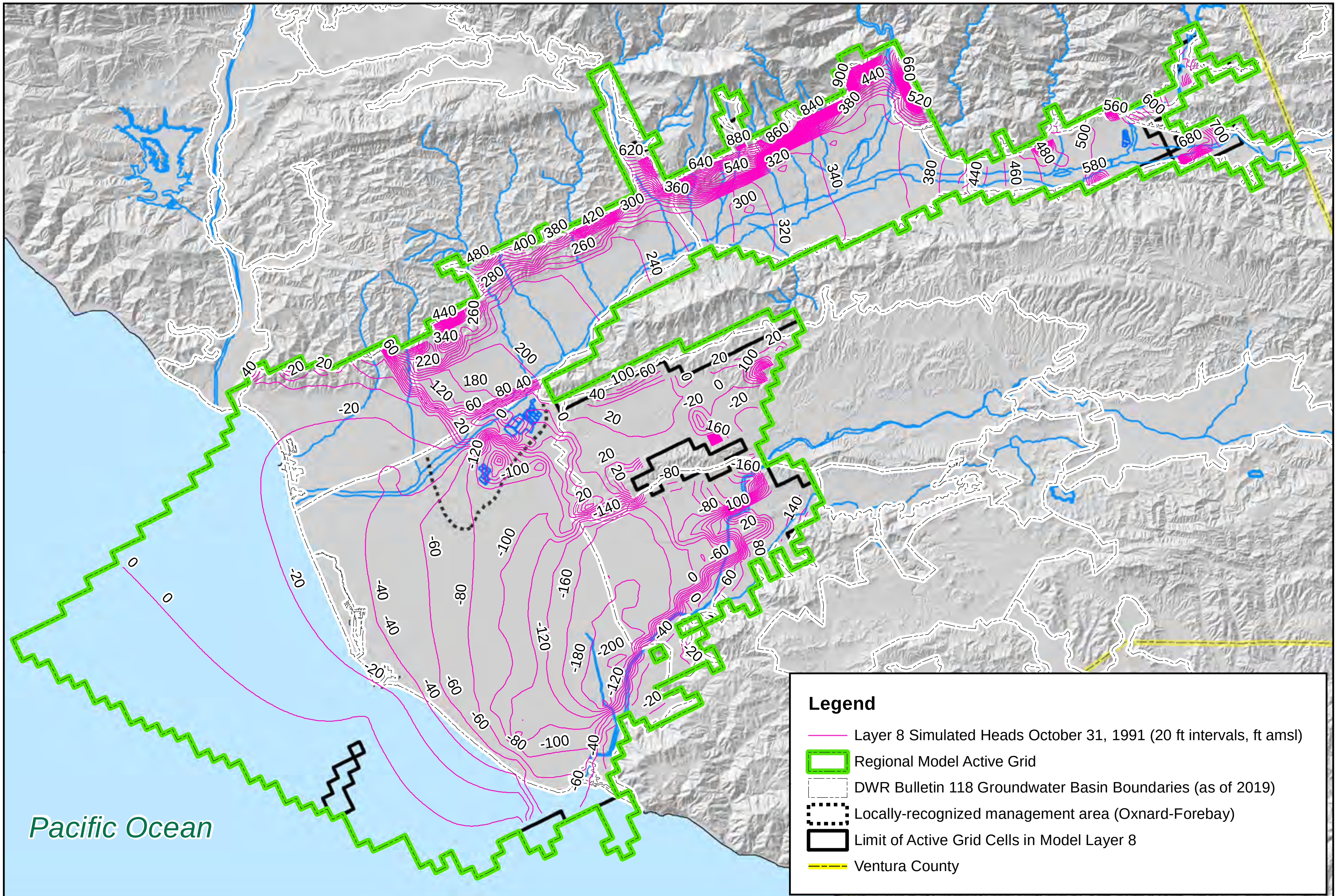

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Figure 4-26.
October 1991 Simulated Head Contours of Model Layer 8

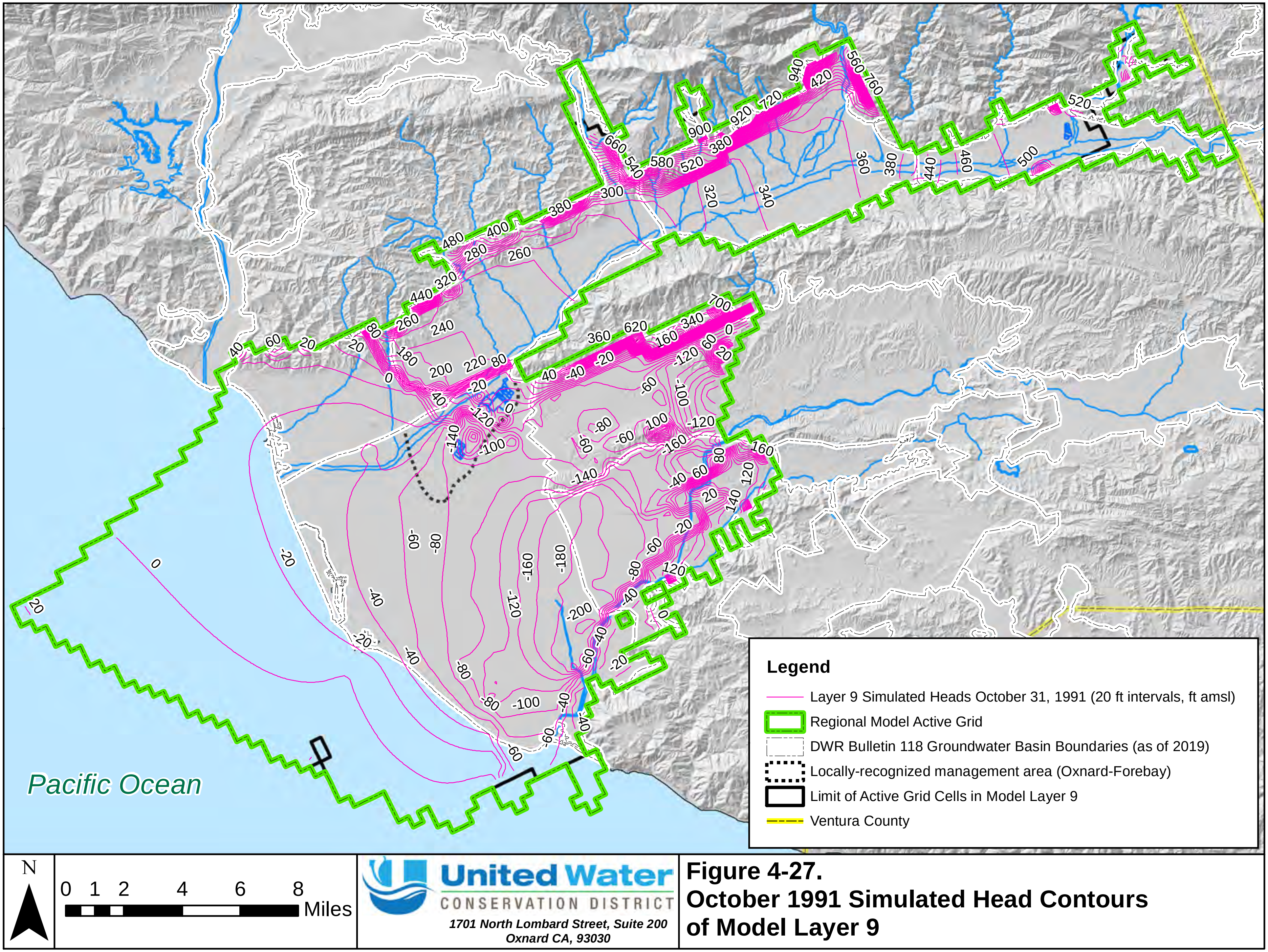

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Figure 4-27.
October 1991 Simulated Head Contours of Model Layer 9

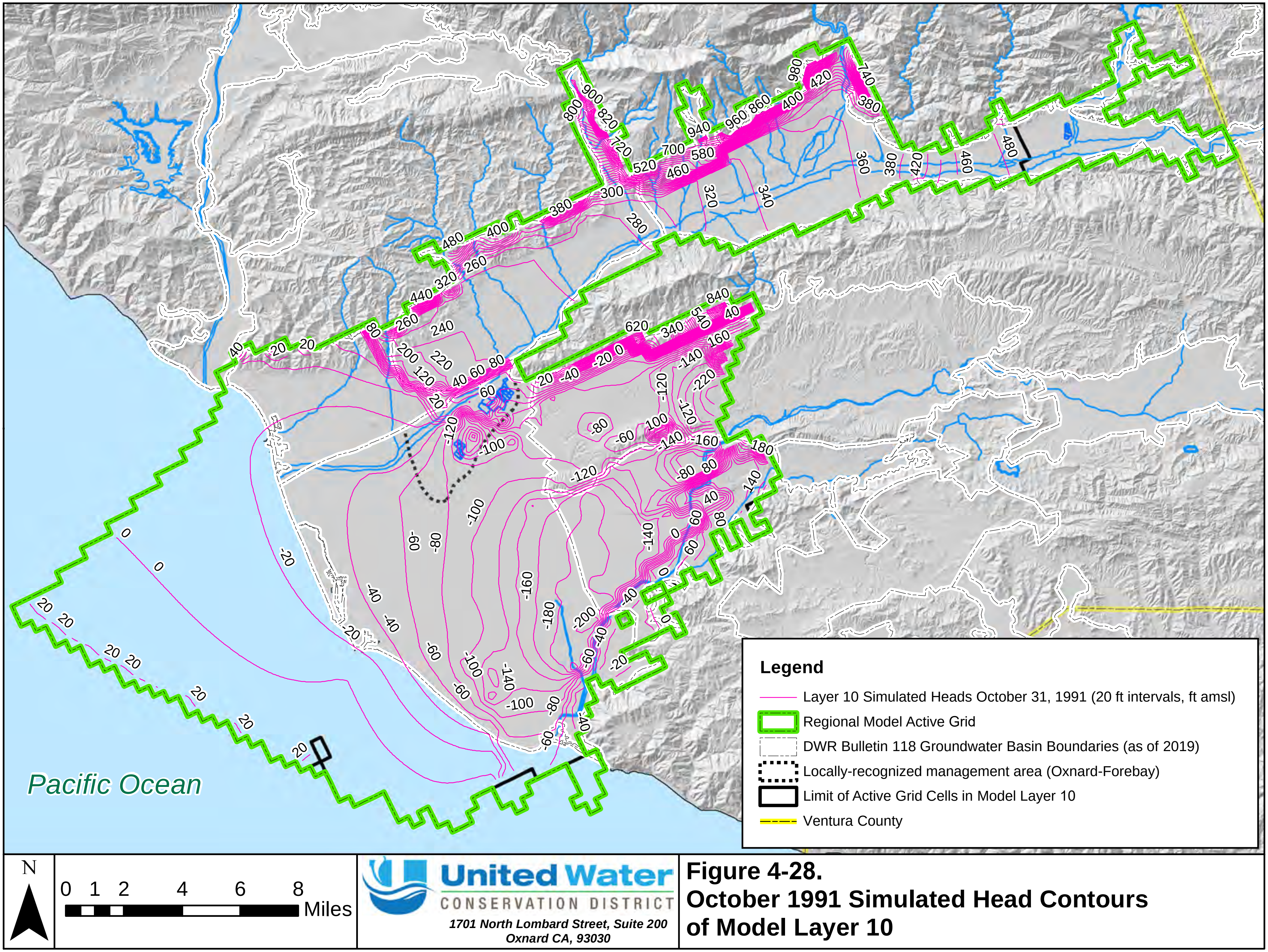

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Figure 4-28. October 1991 Simulated Head Contours of Model Layer 10

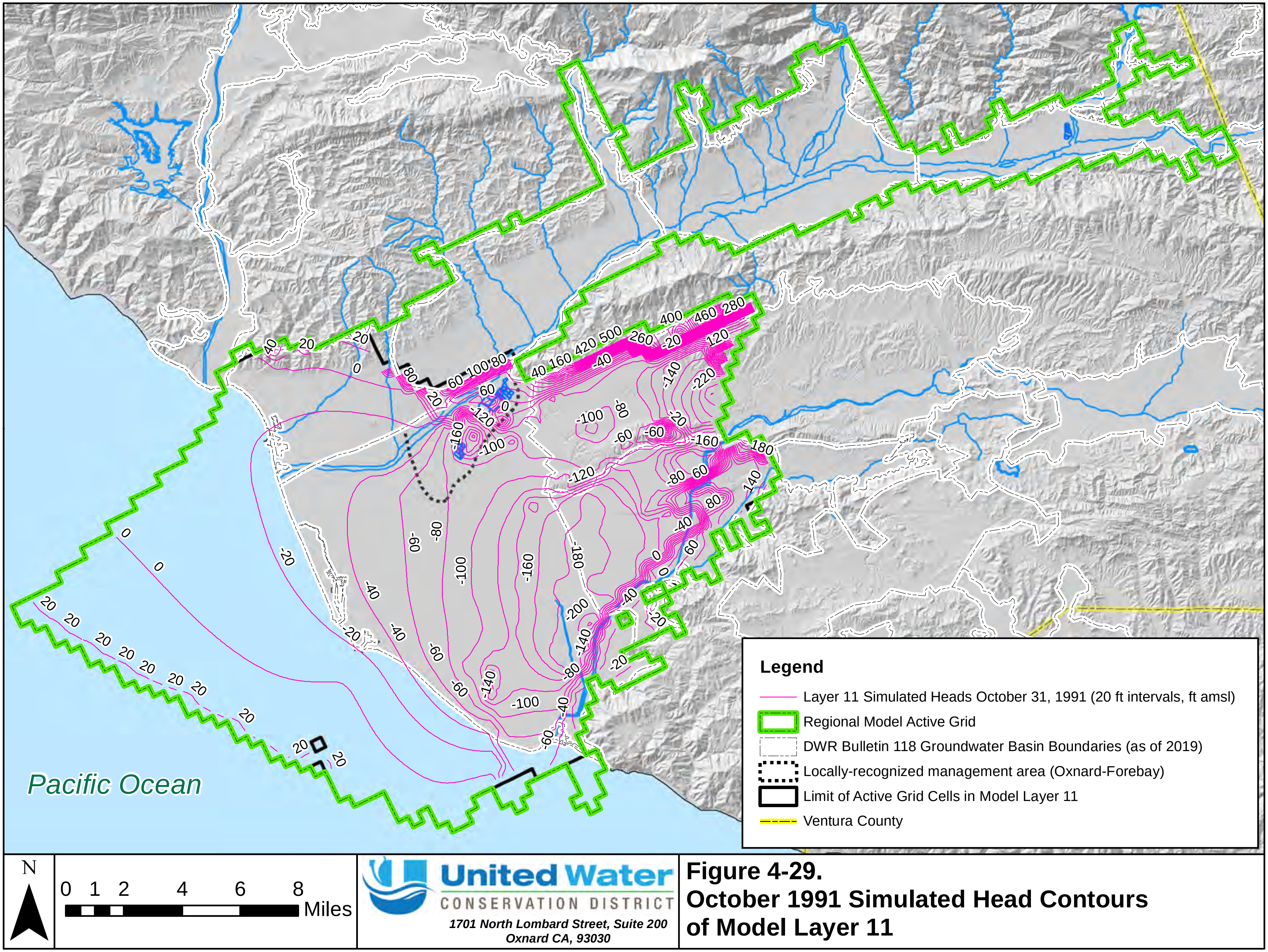

Figure 4-29. October 1991 Simulated Head Contours of Model Layer 11

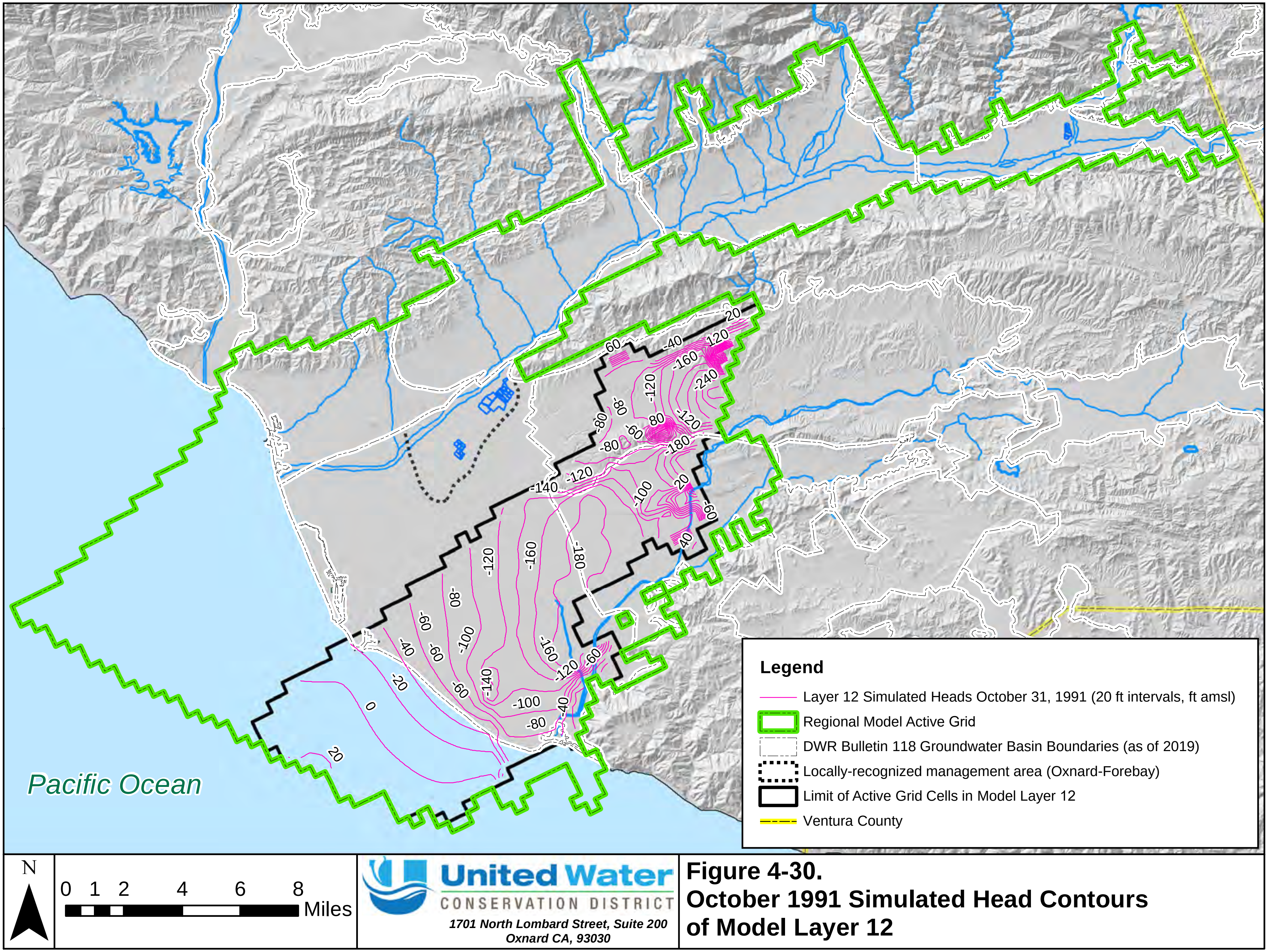

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Figure 4-30.
October 1991 Simulated Head Contours of Model Layer 12

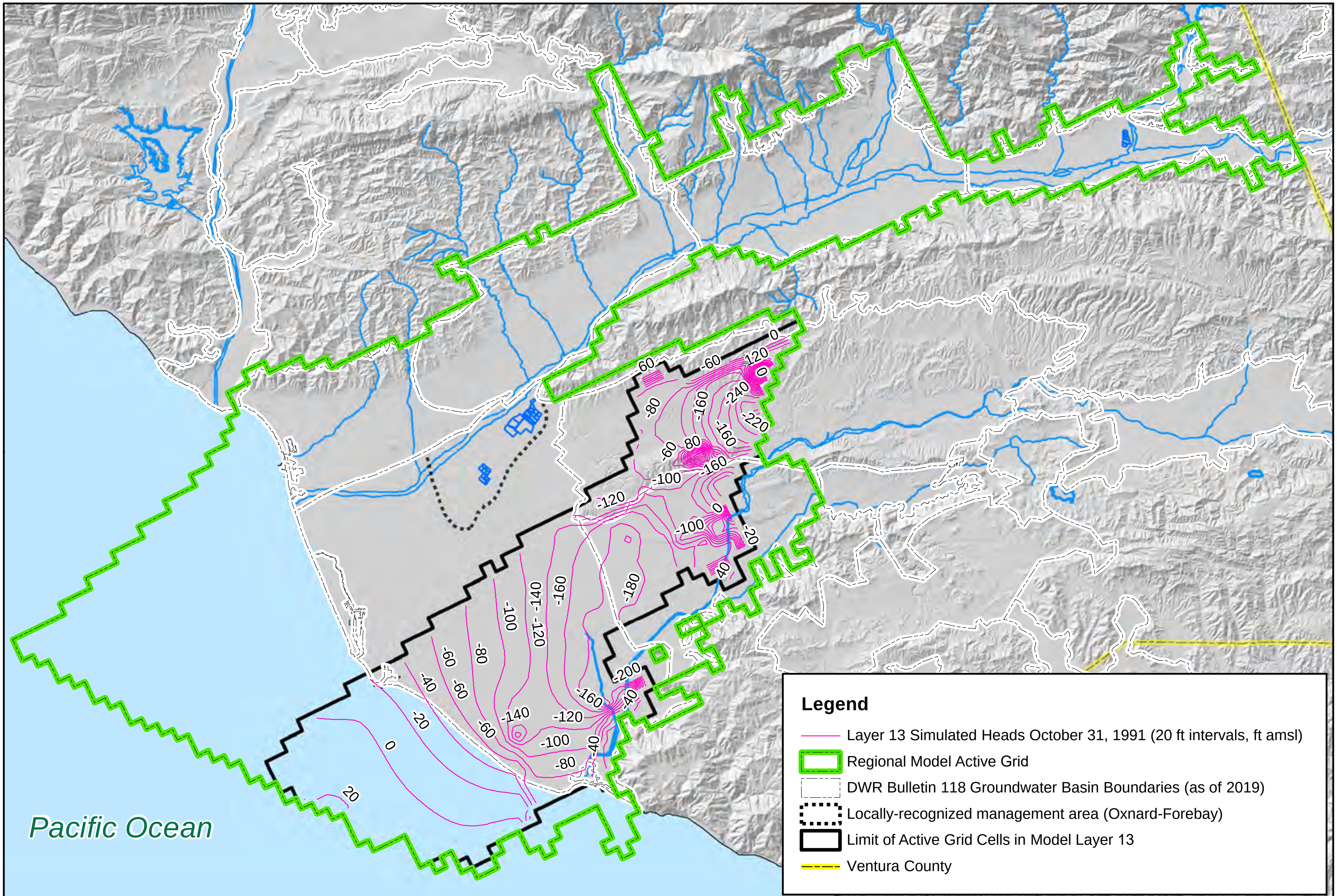

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Figure 4-31.
October 1991 Simulated Head Contours of Model Layer 13

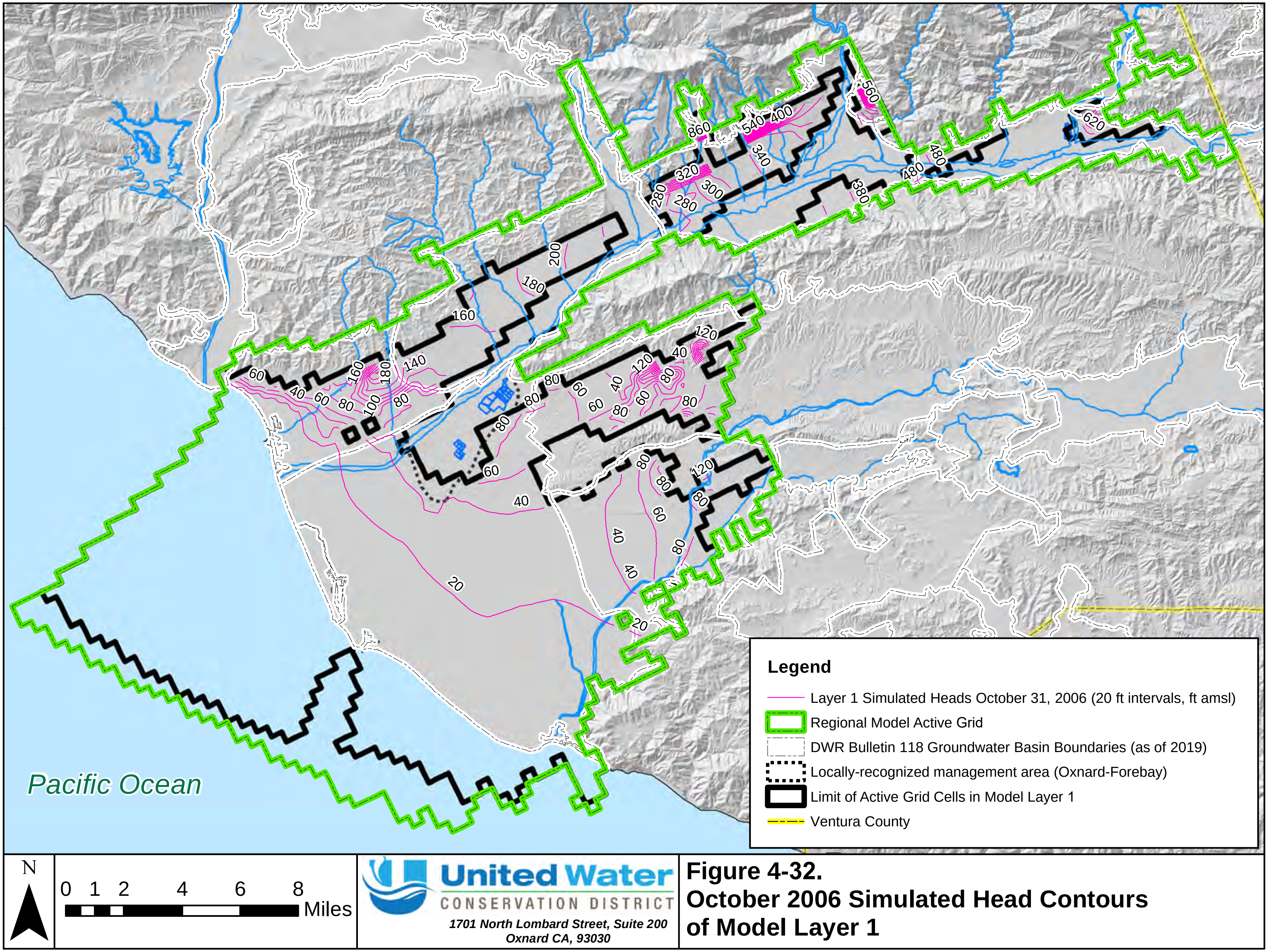

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Figure 4-32.
October 2006 Simulated Head Contours of Model Layer 1

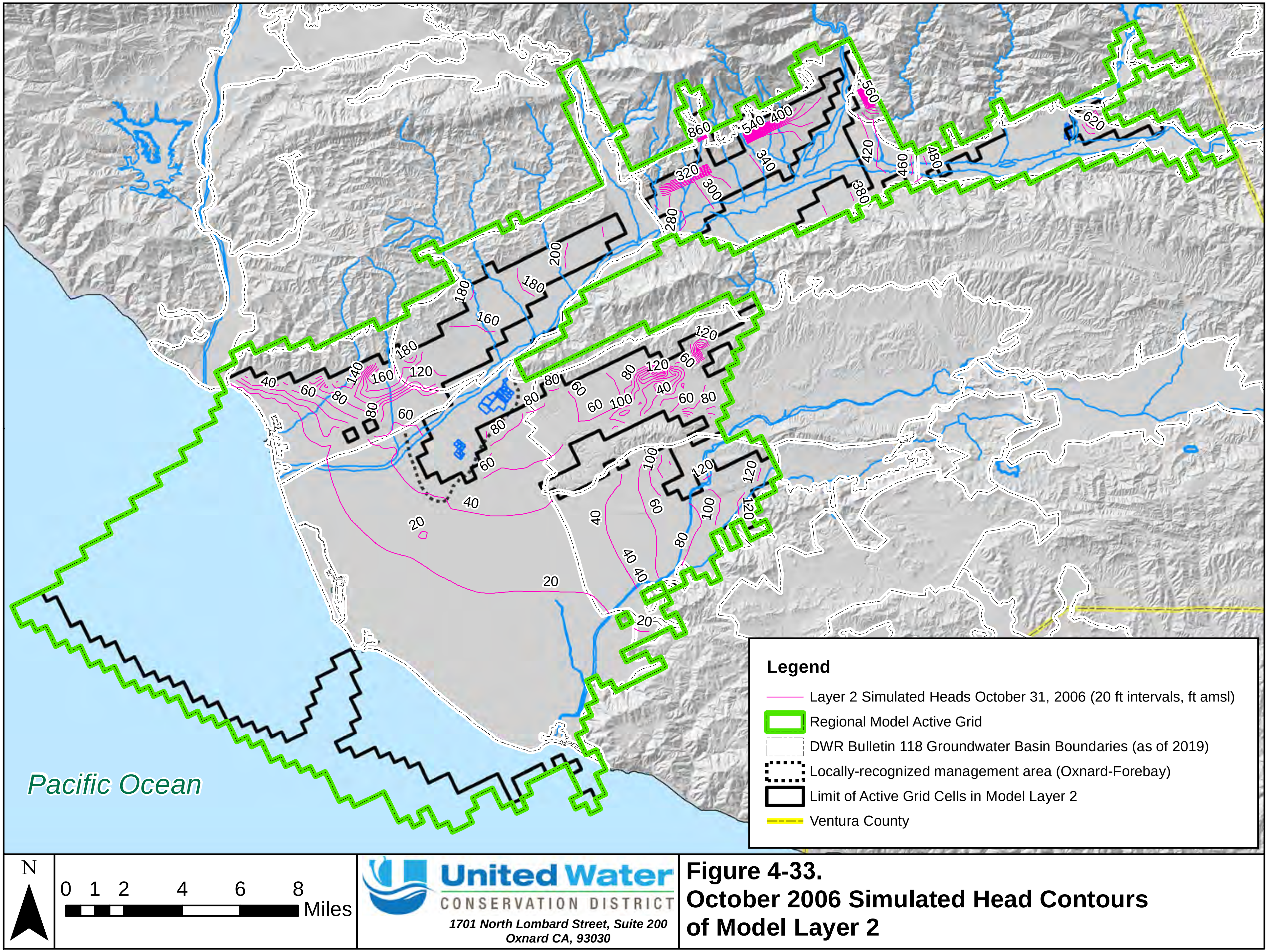

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Figure 4-33. October 2006 Simulated Head Contours of Model Layer 2

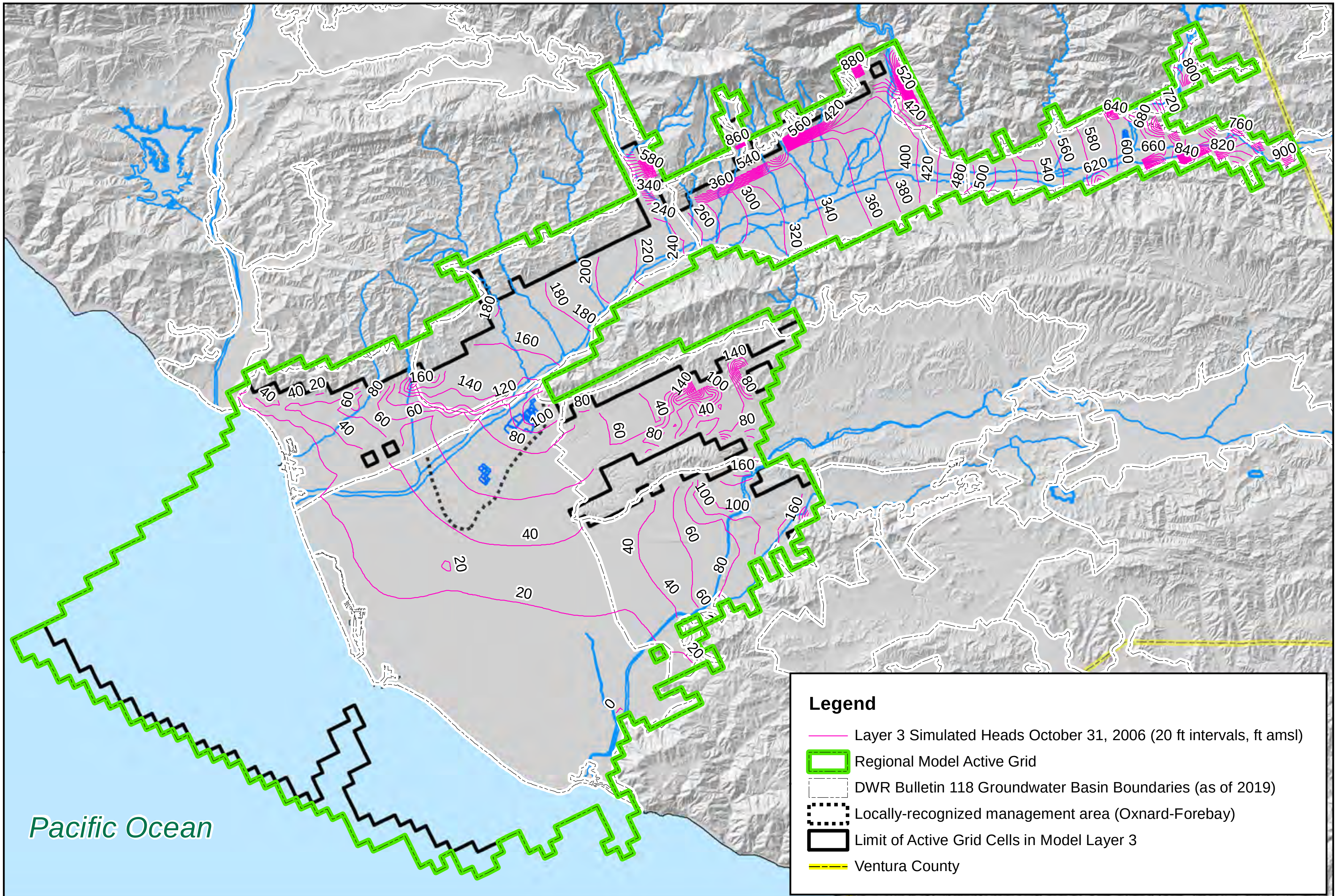

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Figure 4-34.
October 2006 Simulated Head Contours of Model Layer 3

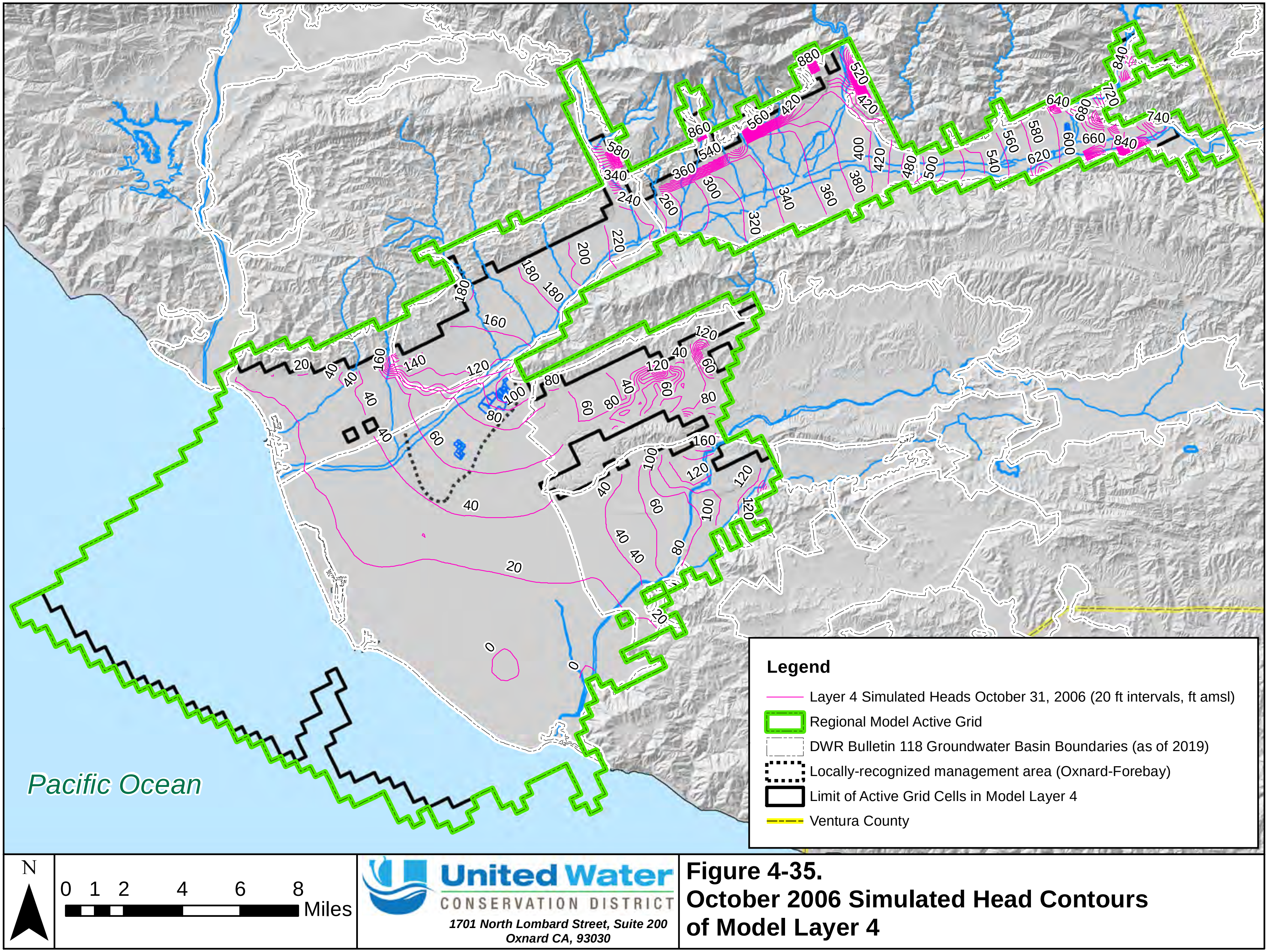

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Figure 4-35.
October 2006 Simulated Head Contours of Model Layer 4

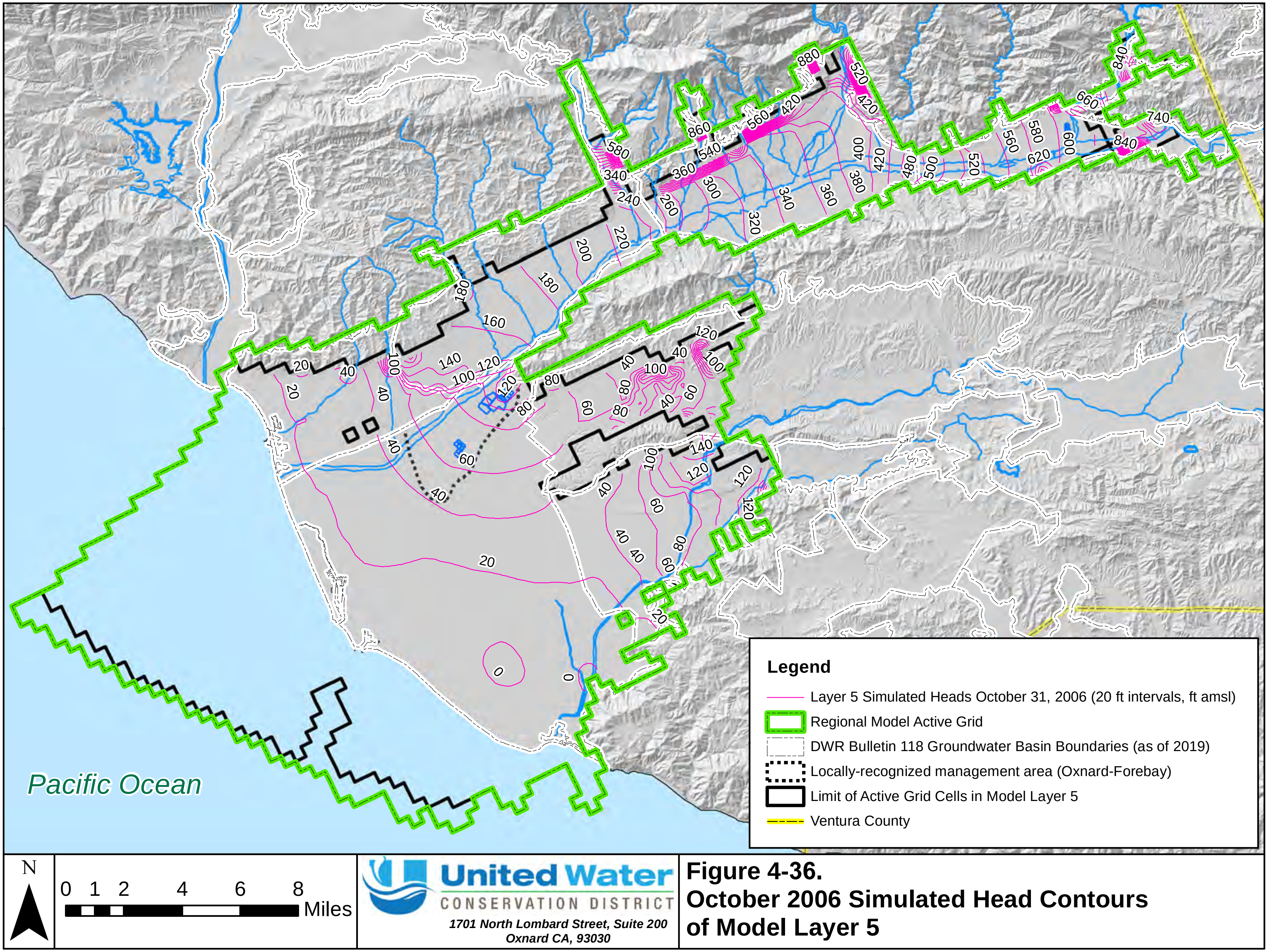

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Figure 4-36.
October 2006 Simulated Head Contours of Model Layer 5

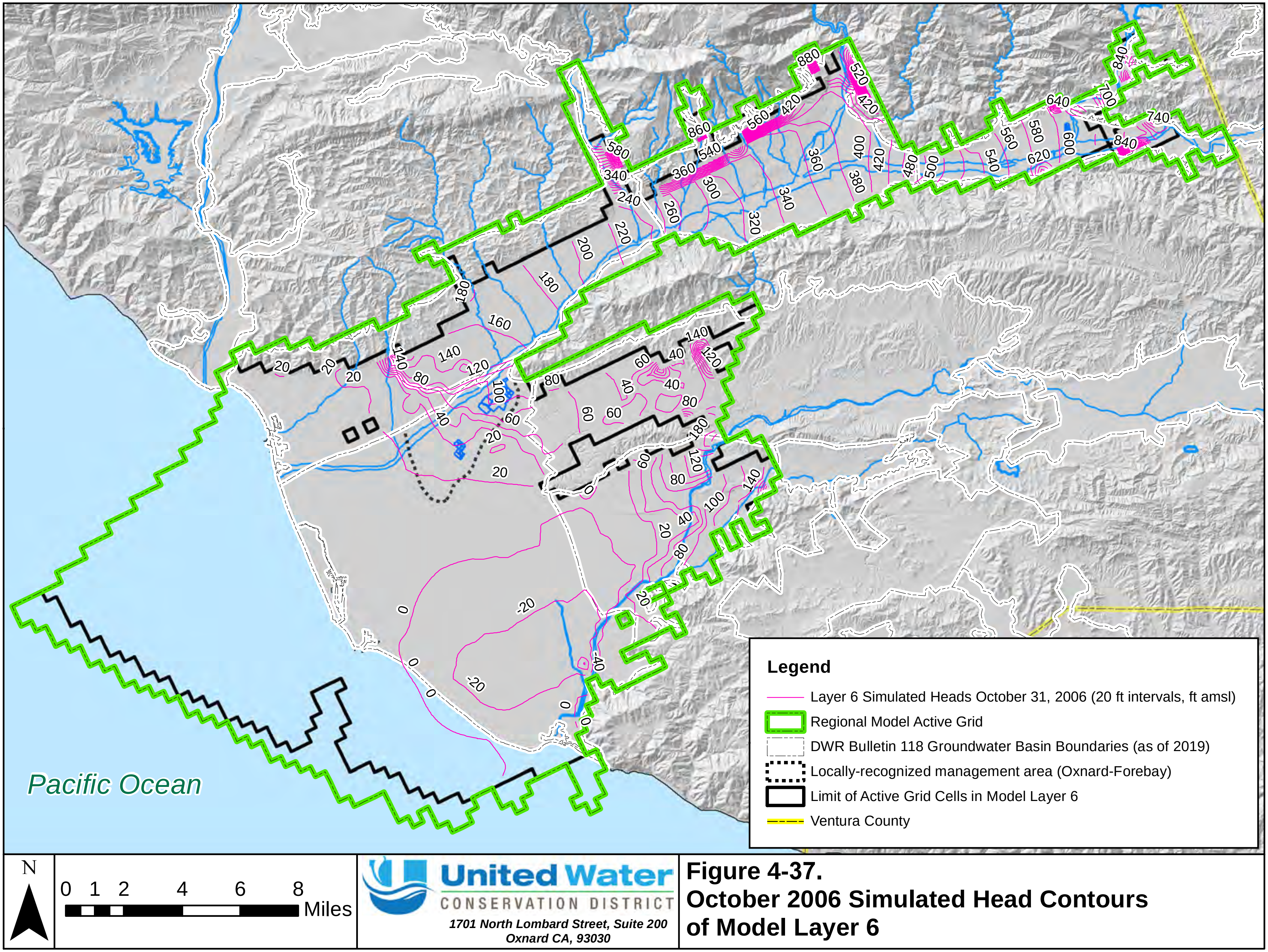

Figure 4-37.
October 2006 Simulated Head Contours of Model Layer 6

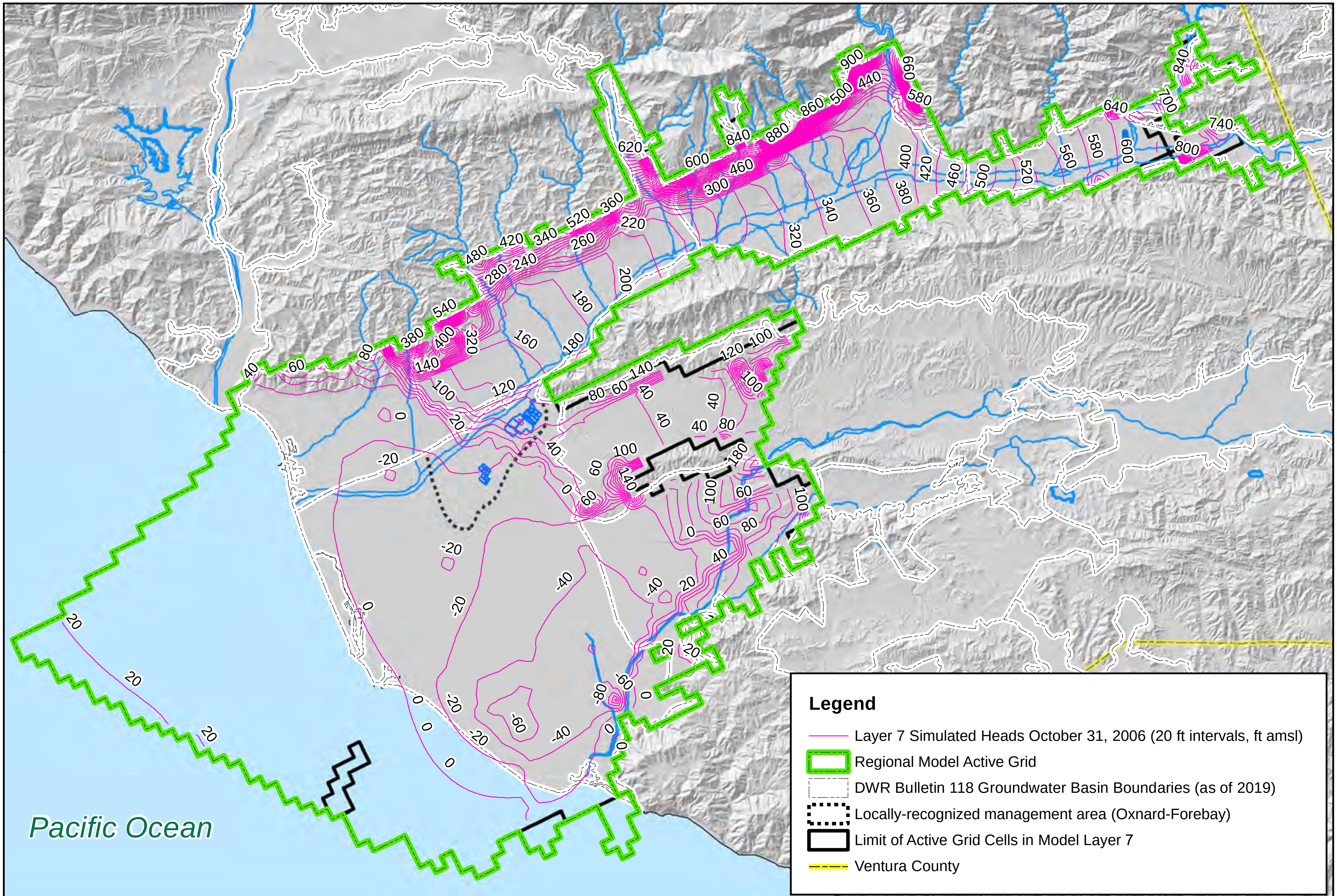

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Figure 4-38.
October 2006 Simulated Head Contours of Model Layer 7

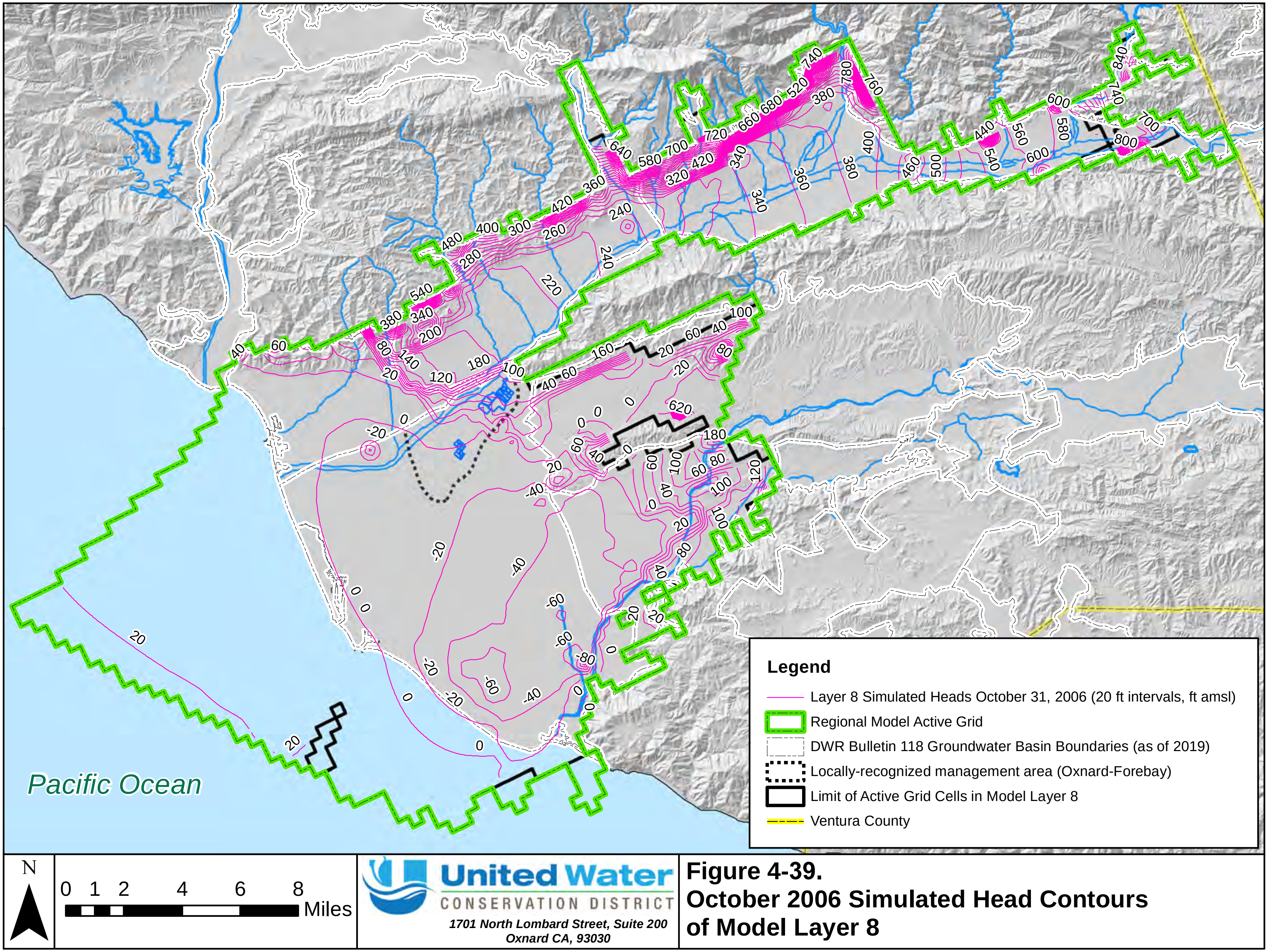

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Figure 4-39.
October 2006 Simulated Head Contours of Model Layer 8

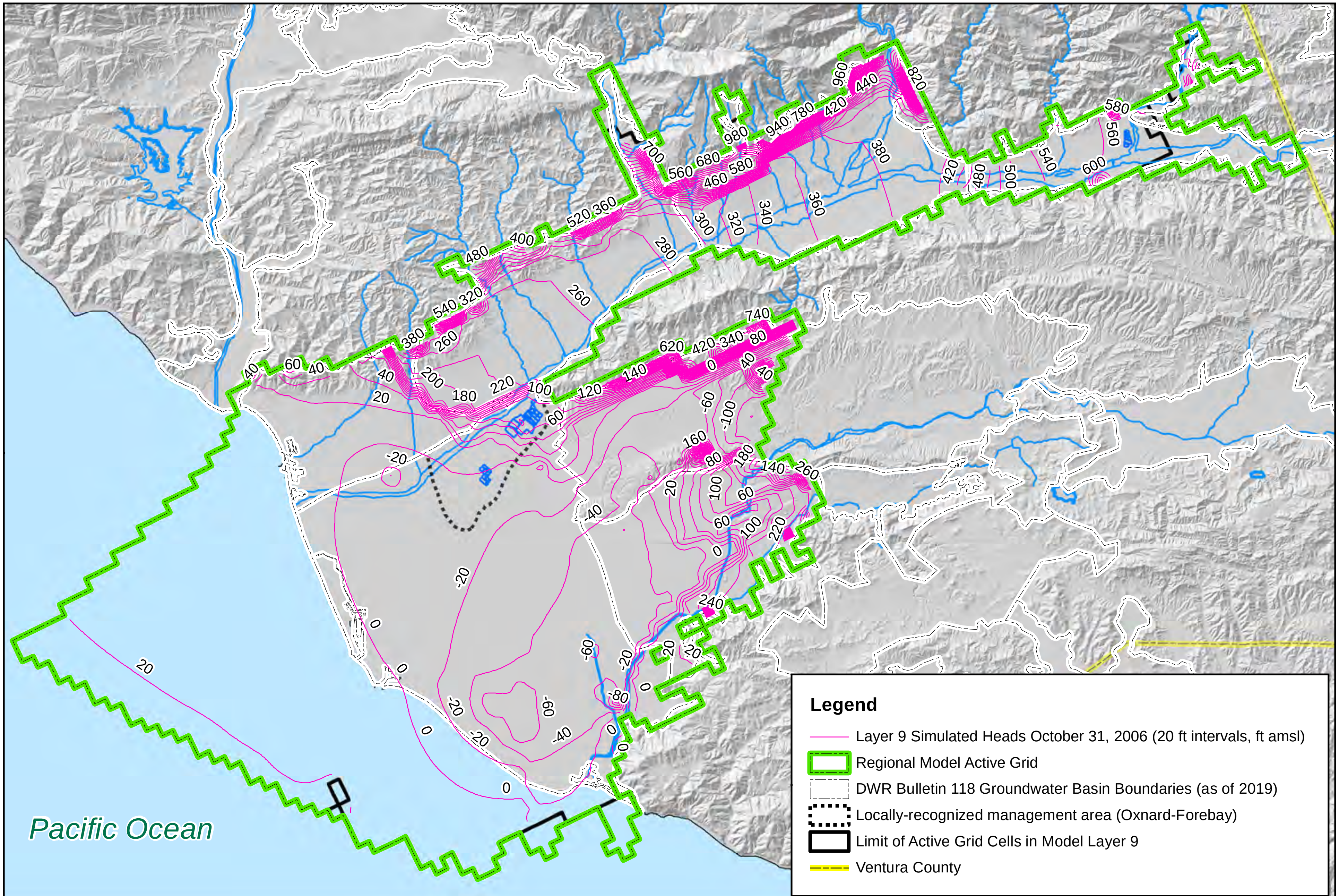

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Figure 4-40.
October 2006 Simulated Head Contours of Model Layer 9

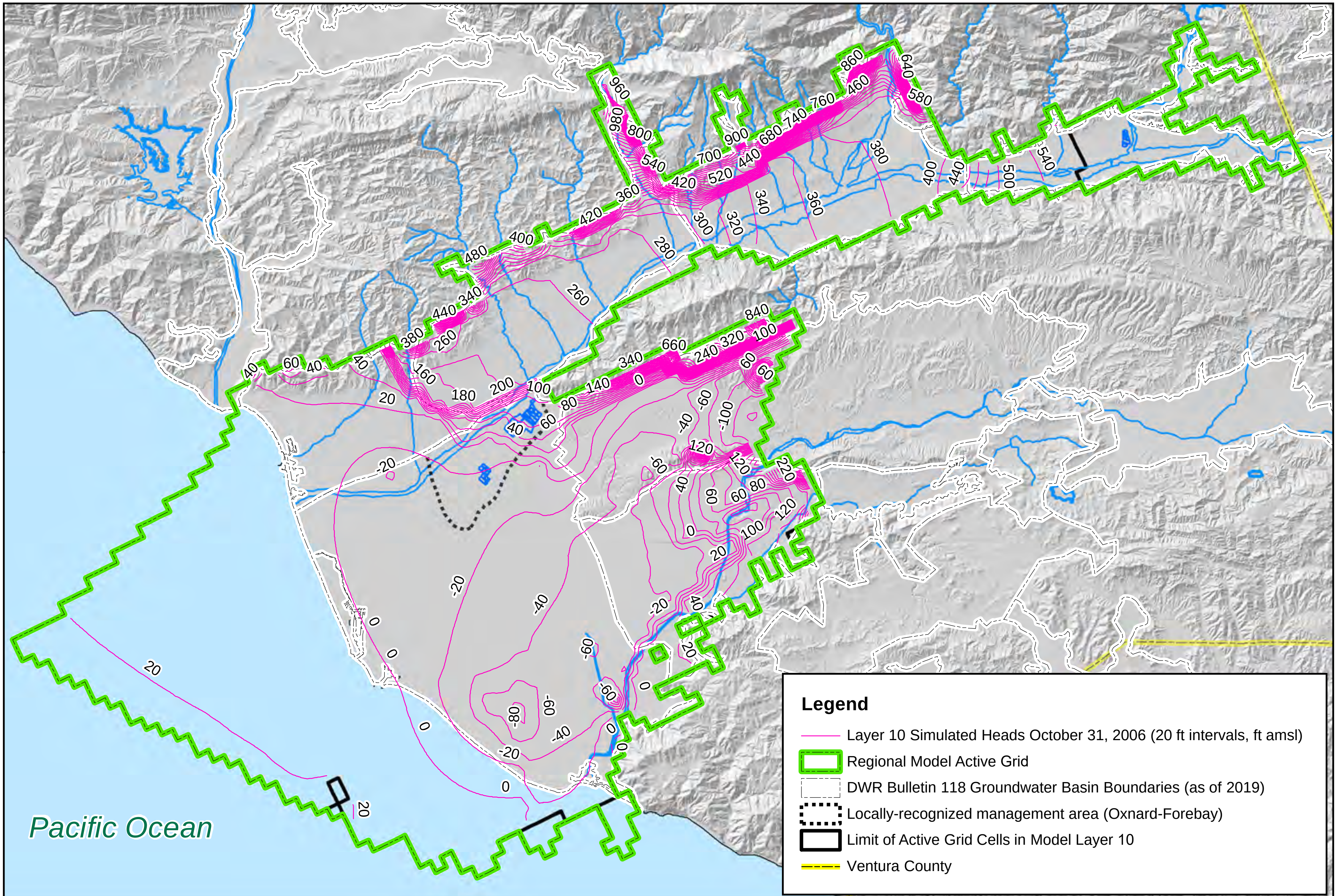

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Figure 4-41.
October 2006 Simulated Head Contours of Model Layer 10

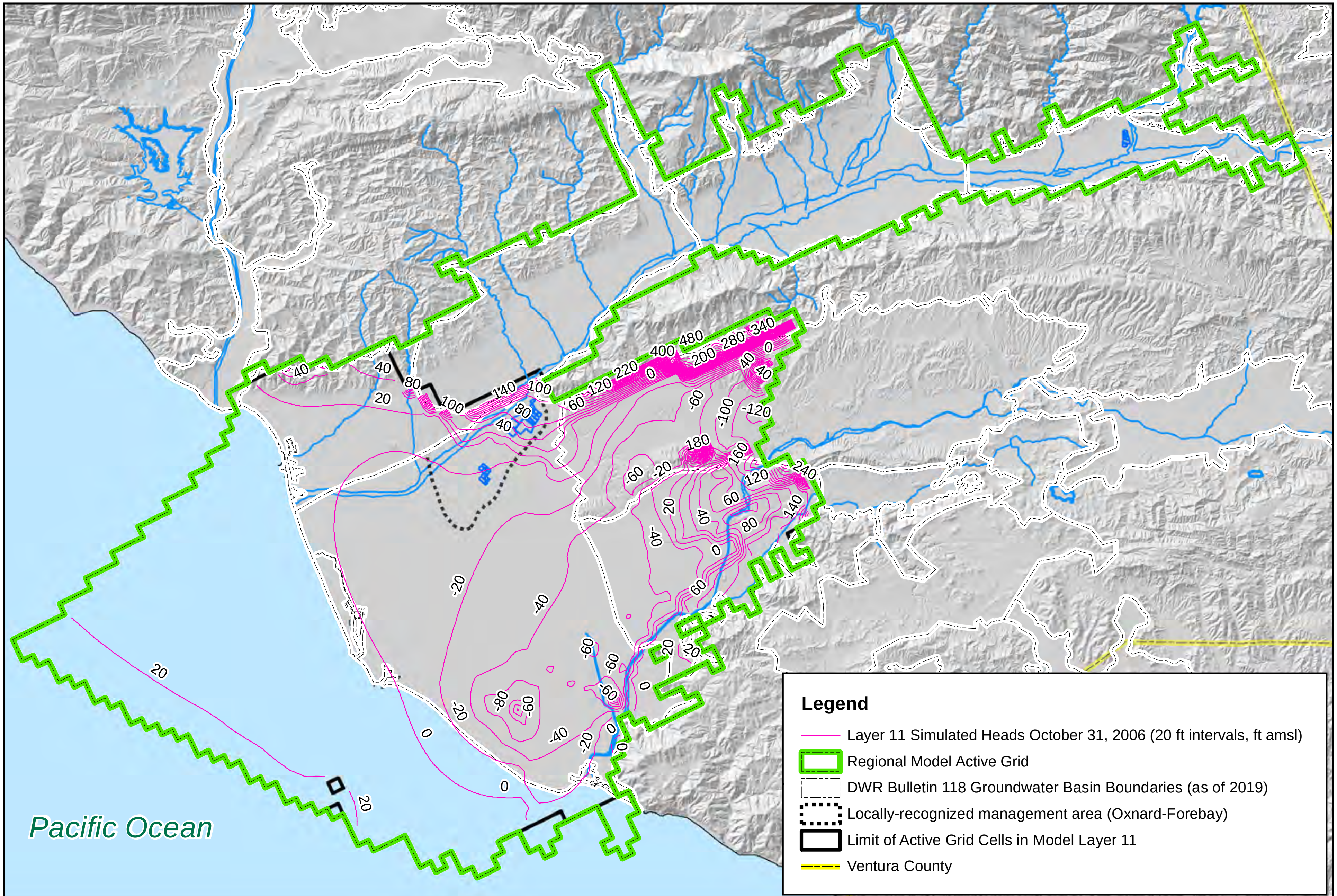

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Figure 4-42.
October 2006 Simulated Head Contours of Model Layer 11

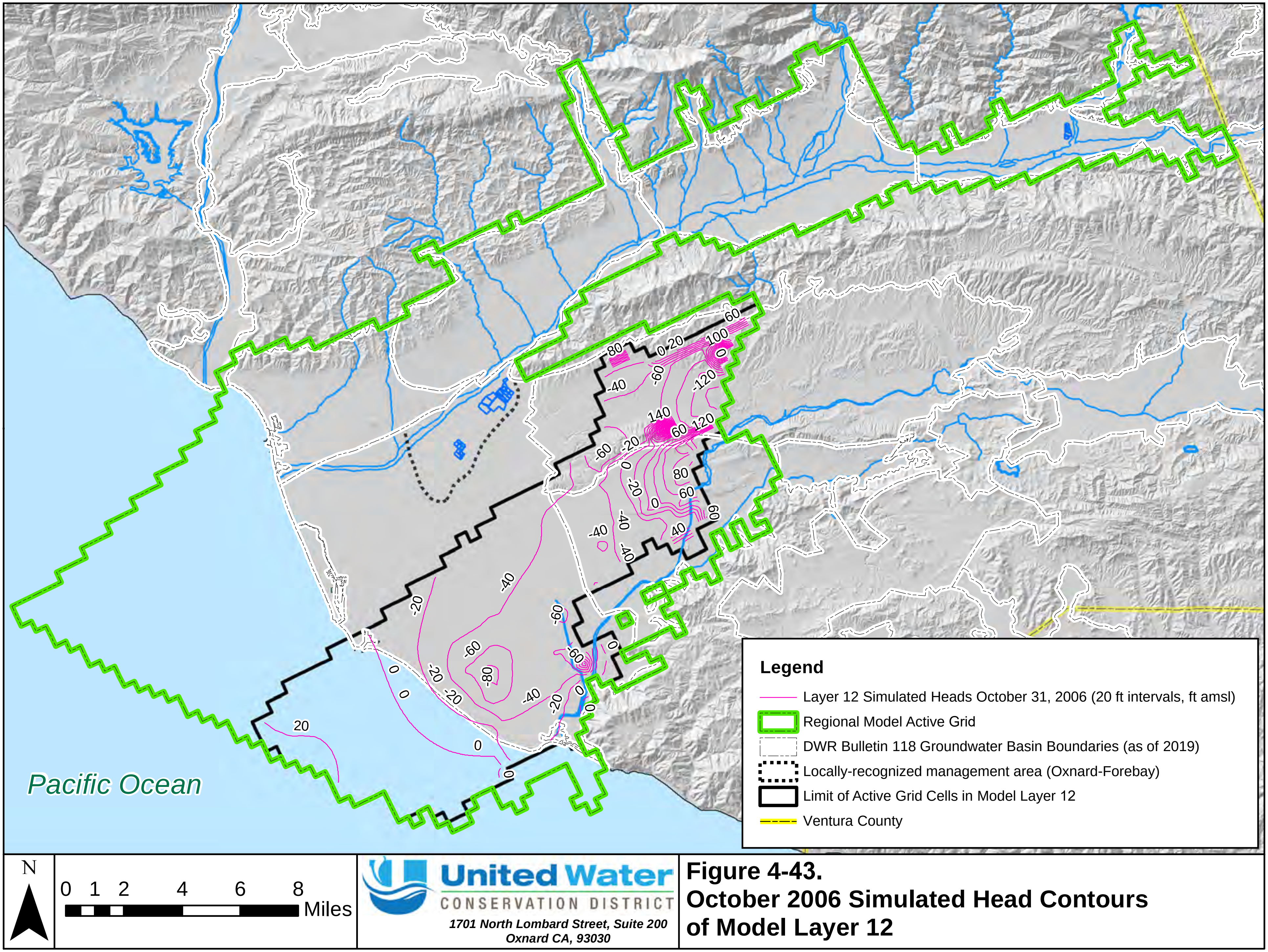

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Figure 4-43.
October 2006 Simulated Head Contours of Model Layer 12

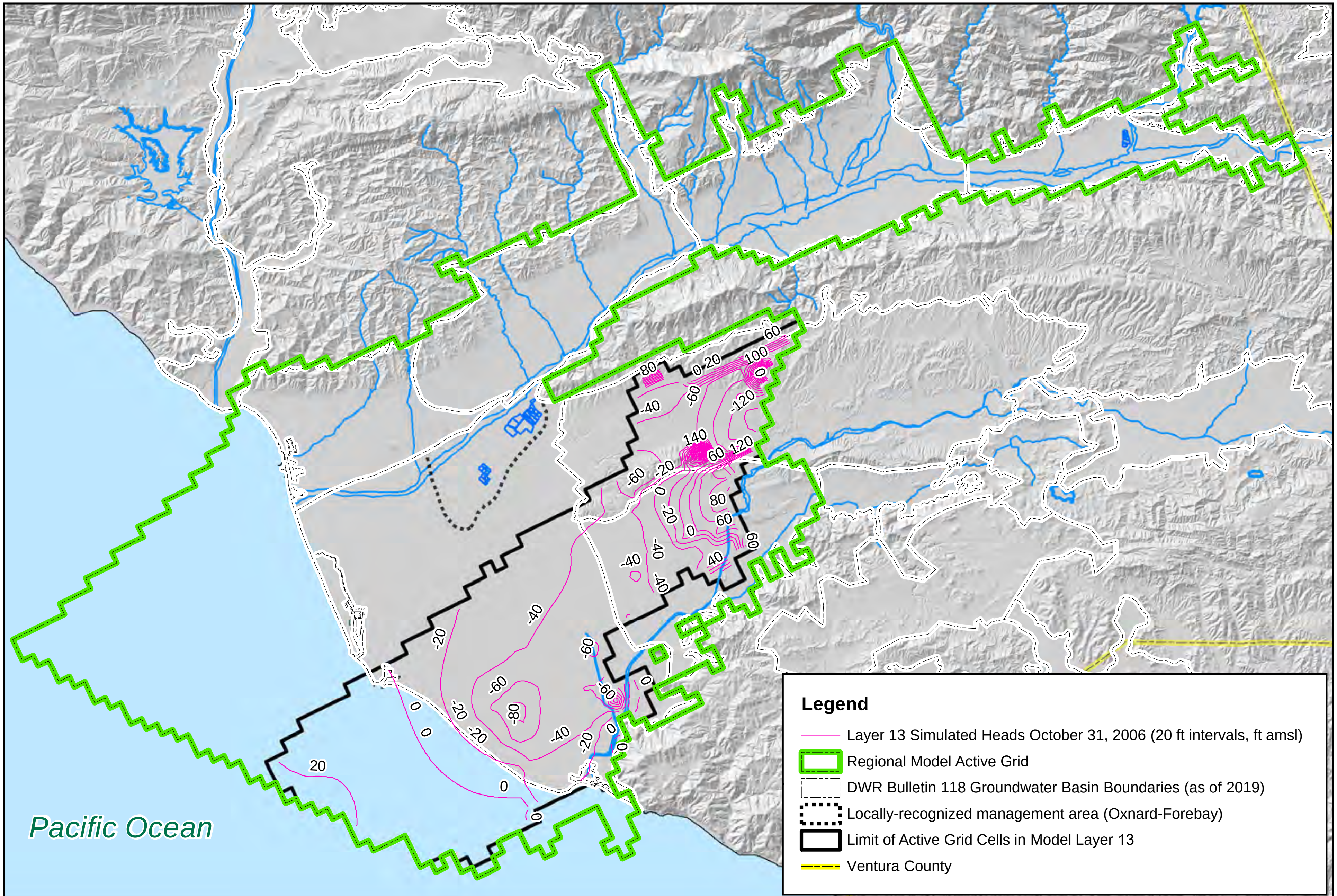

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Figure 4-44.
October 2006 Simulated Head Contours of Model Layer 13

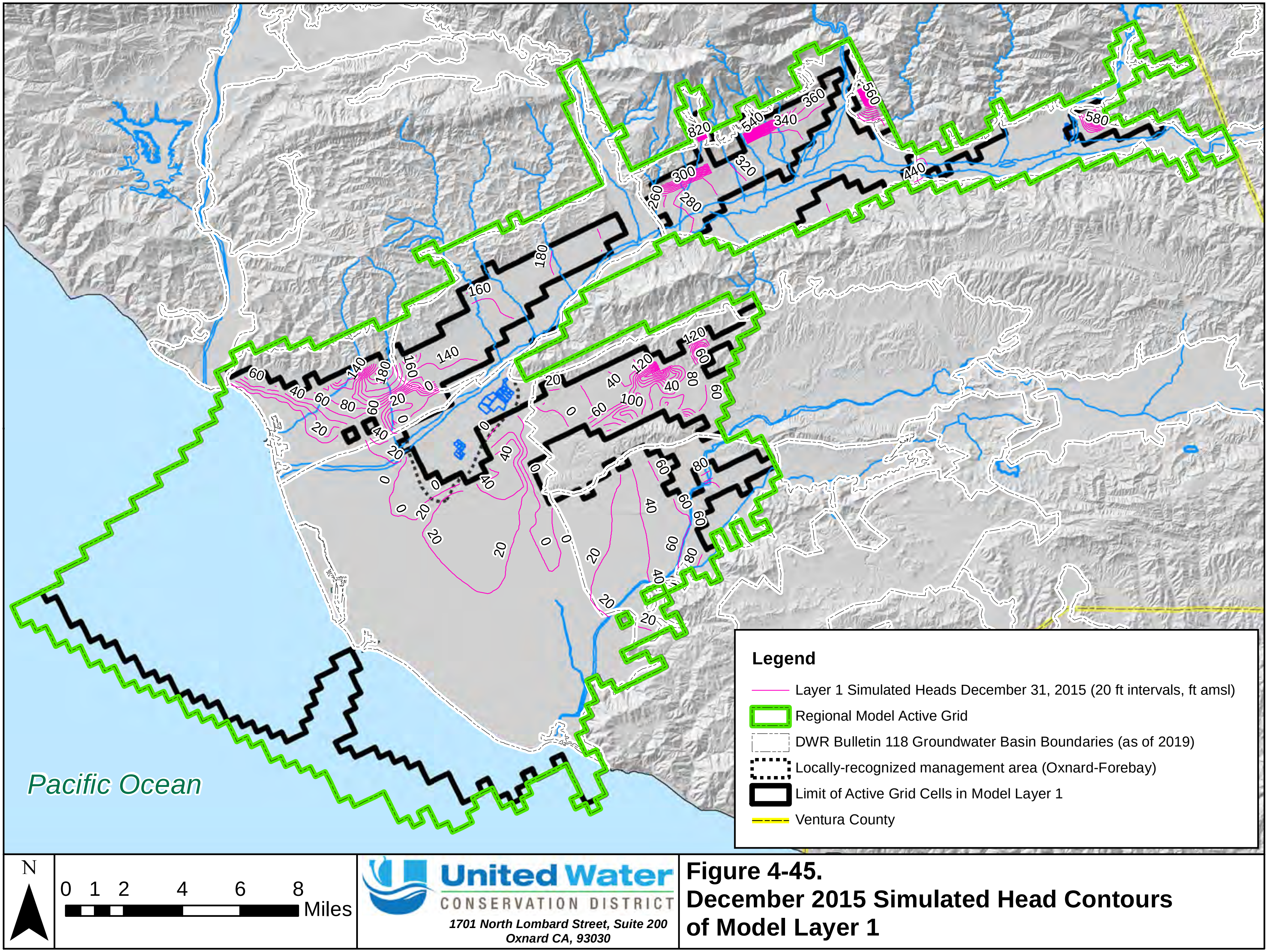

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Figure 4-45.
December 2015 Simulated Head Contours of Model Layer 1

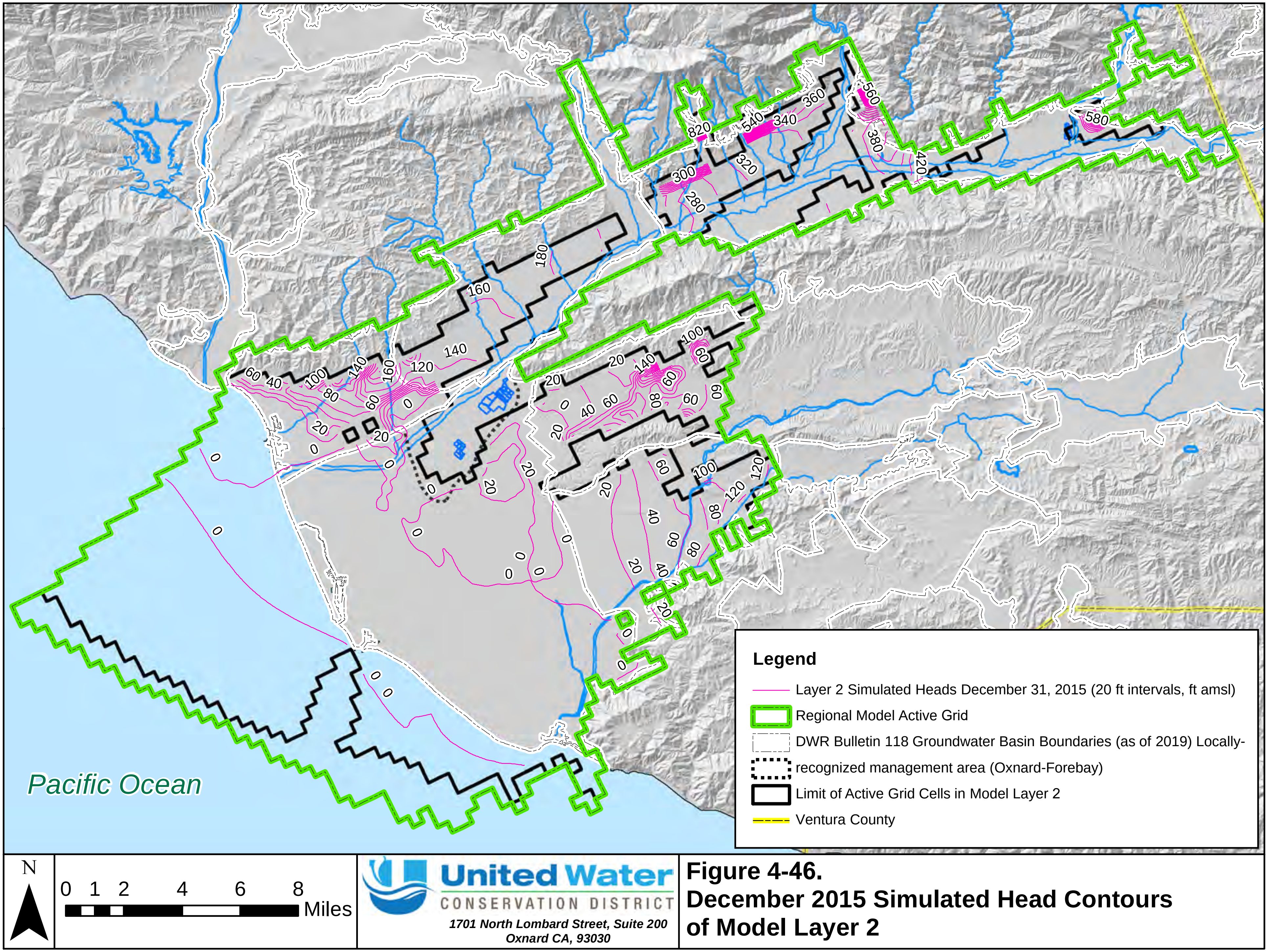

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Figure 4-46. December 2015 Simulated Head Contours of Model Layer 2

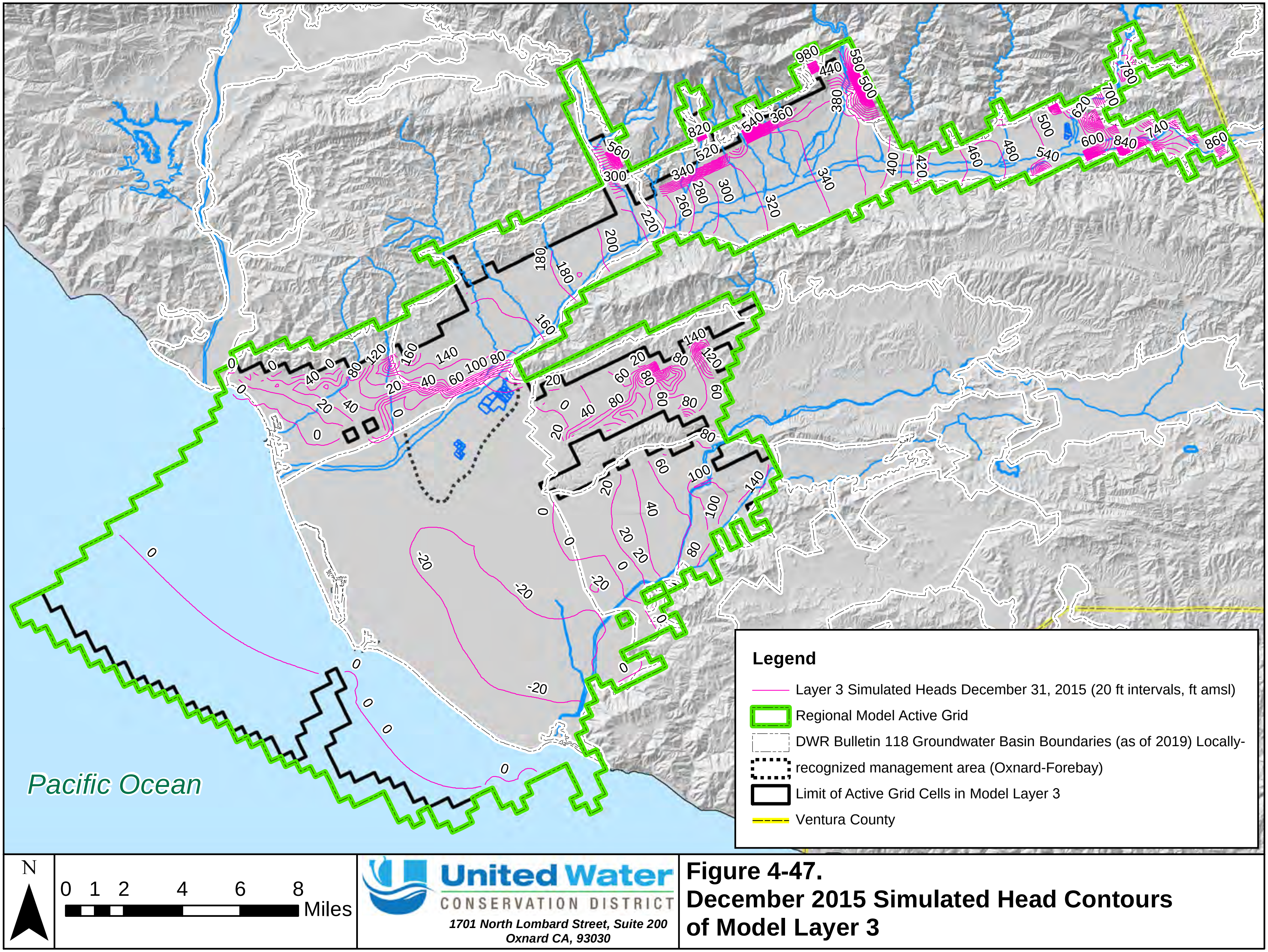

Figure 4-47.
December 2015 Simulated Head Contours of Model Layer 3

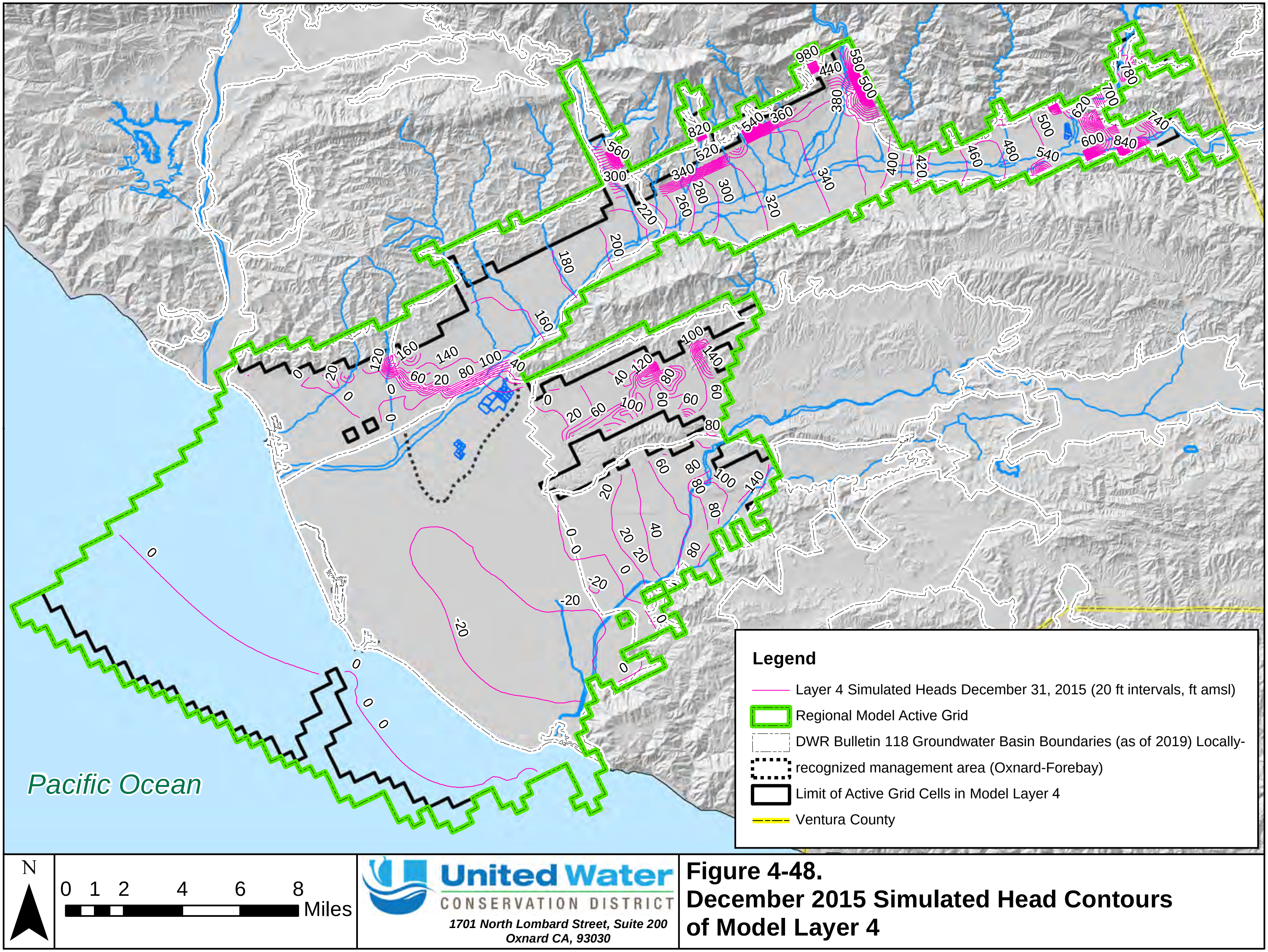

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Figure 4-48.
December 2015 Simulated Head Contours of Model Layer 4

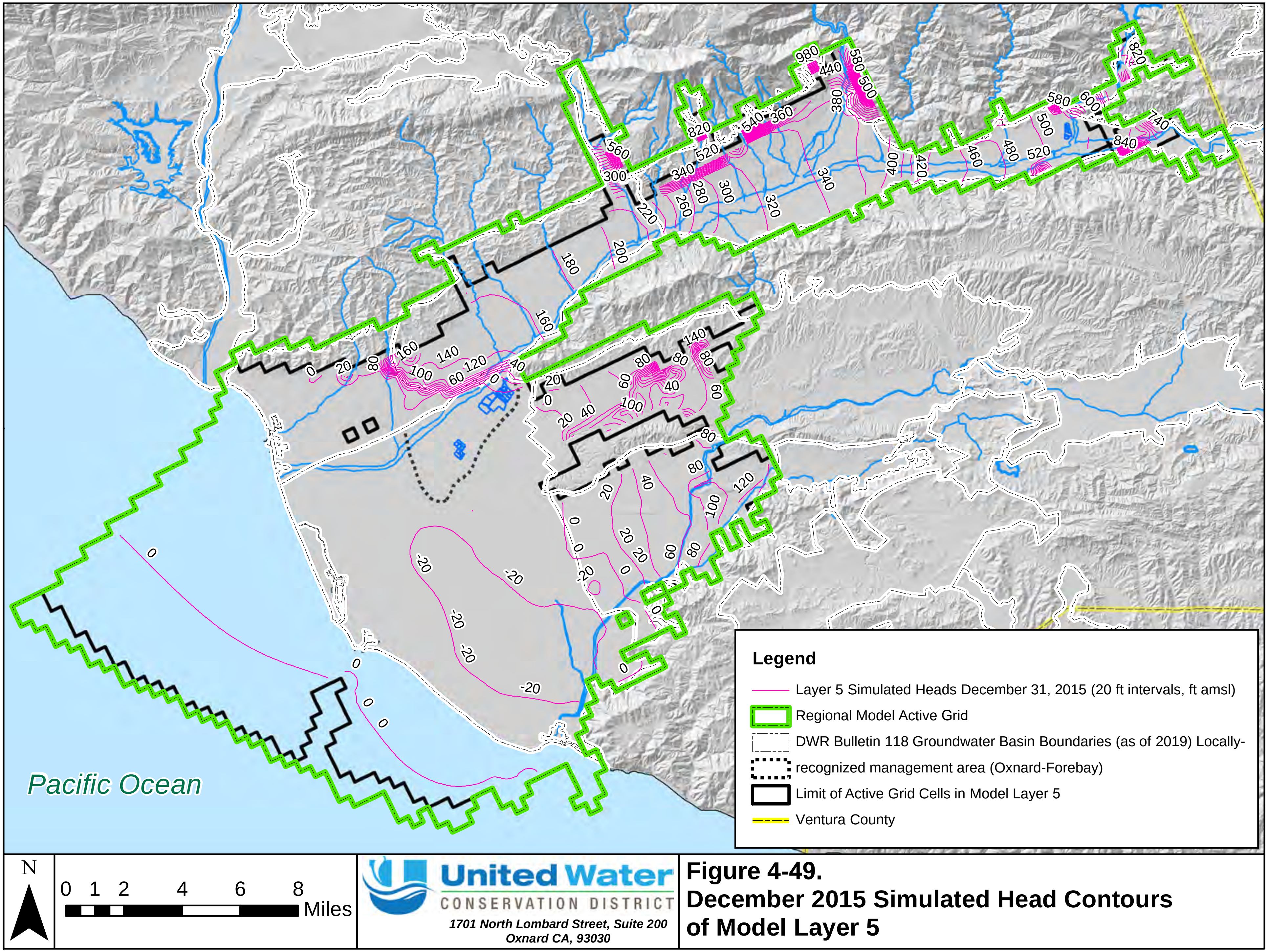
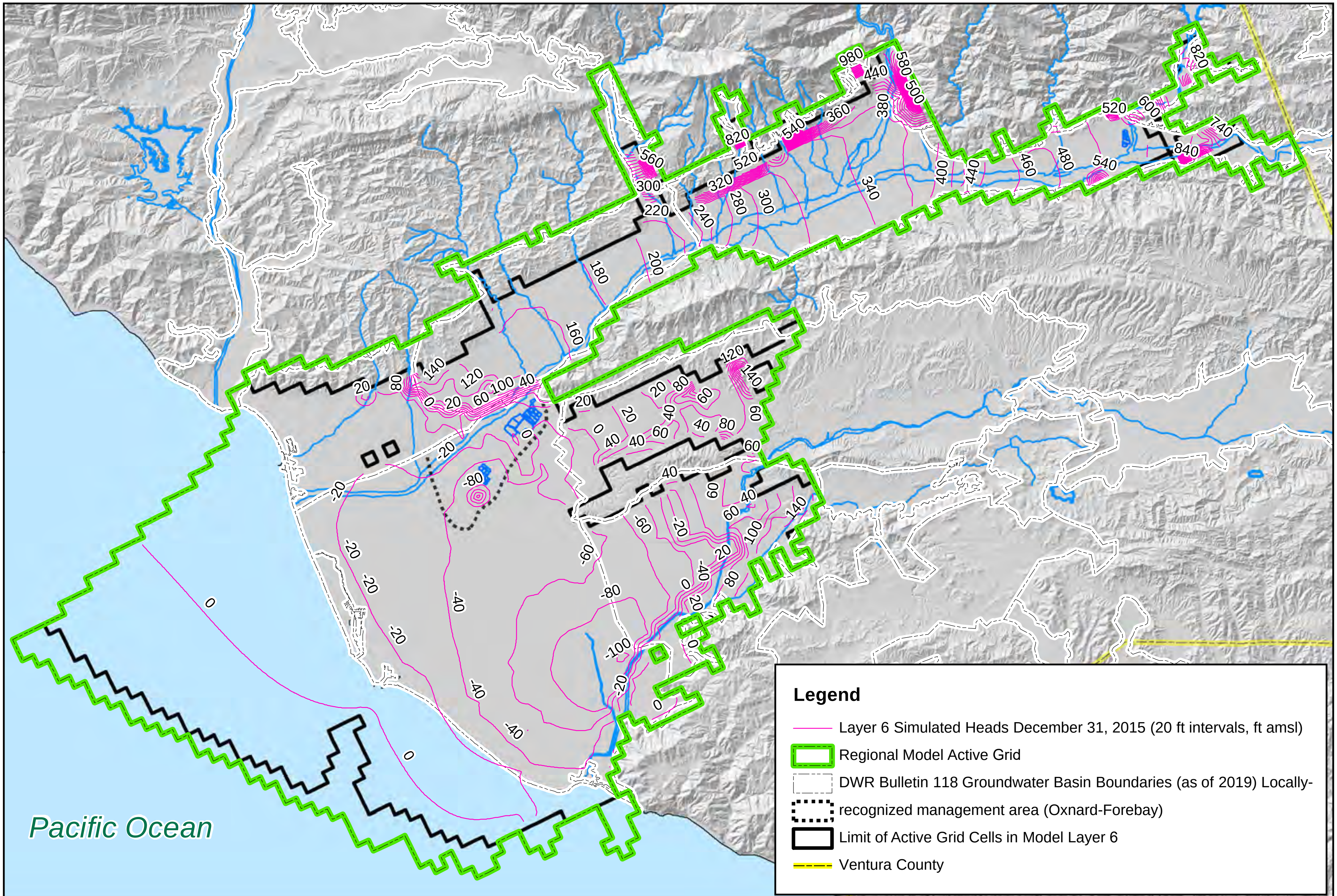


Figure 4-49.
December 2015 Simulated Head Contours of Model Layer 5



N

0 1 2 4 6 8 Miles

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Figure 4-50.
December 2015 Simulated Head Contours of Model Layer 6

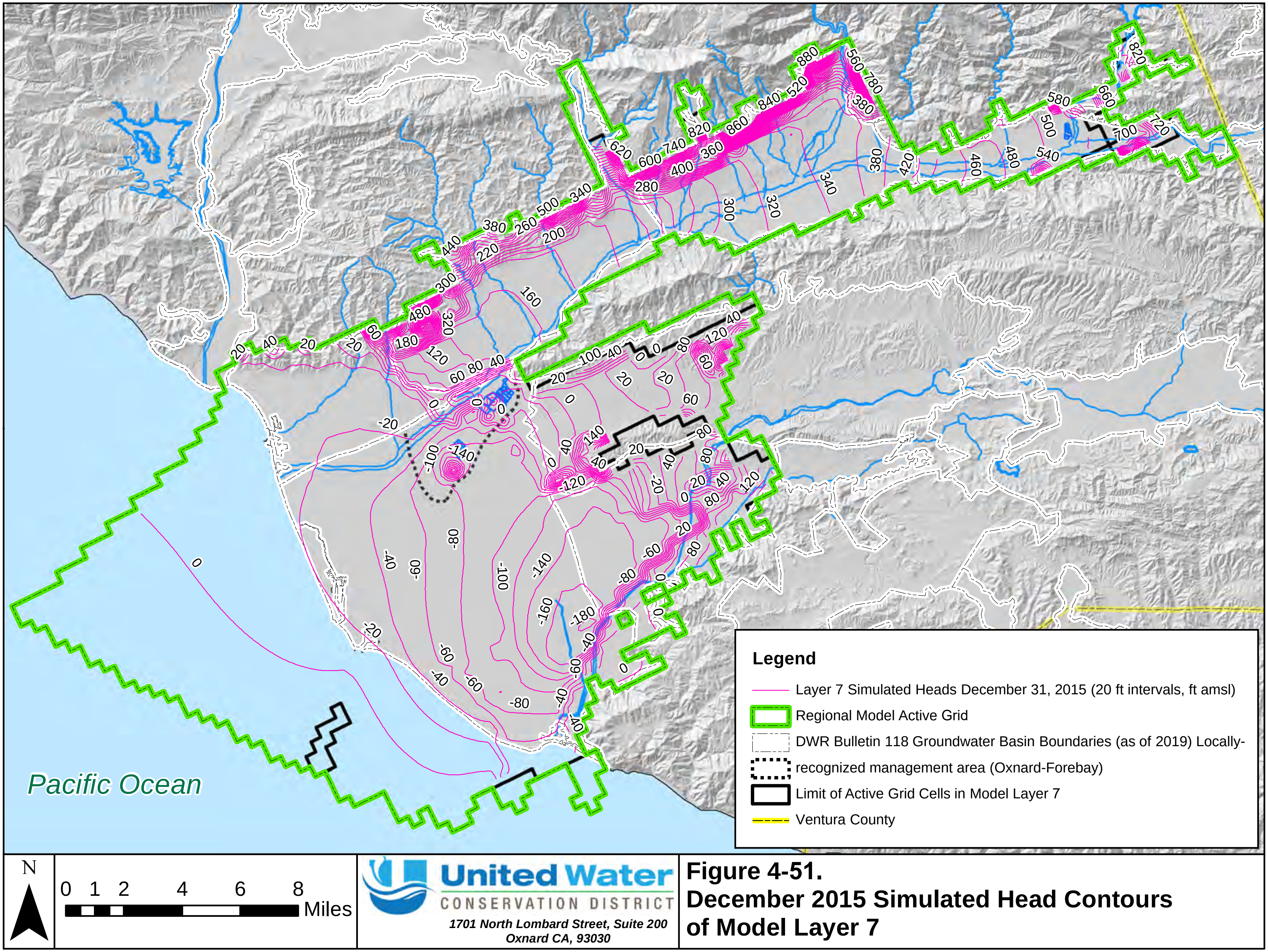

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Figure 4-51.
December 2015 Simulated Head Contours of Model Layer 7

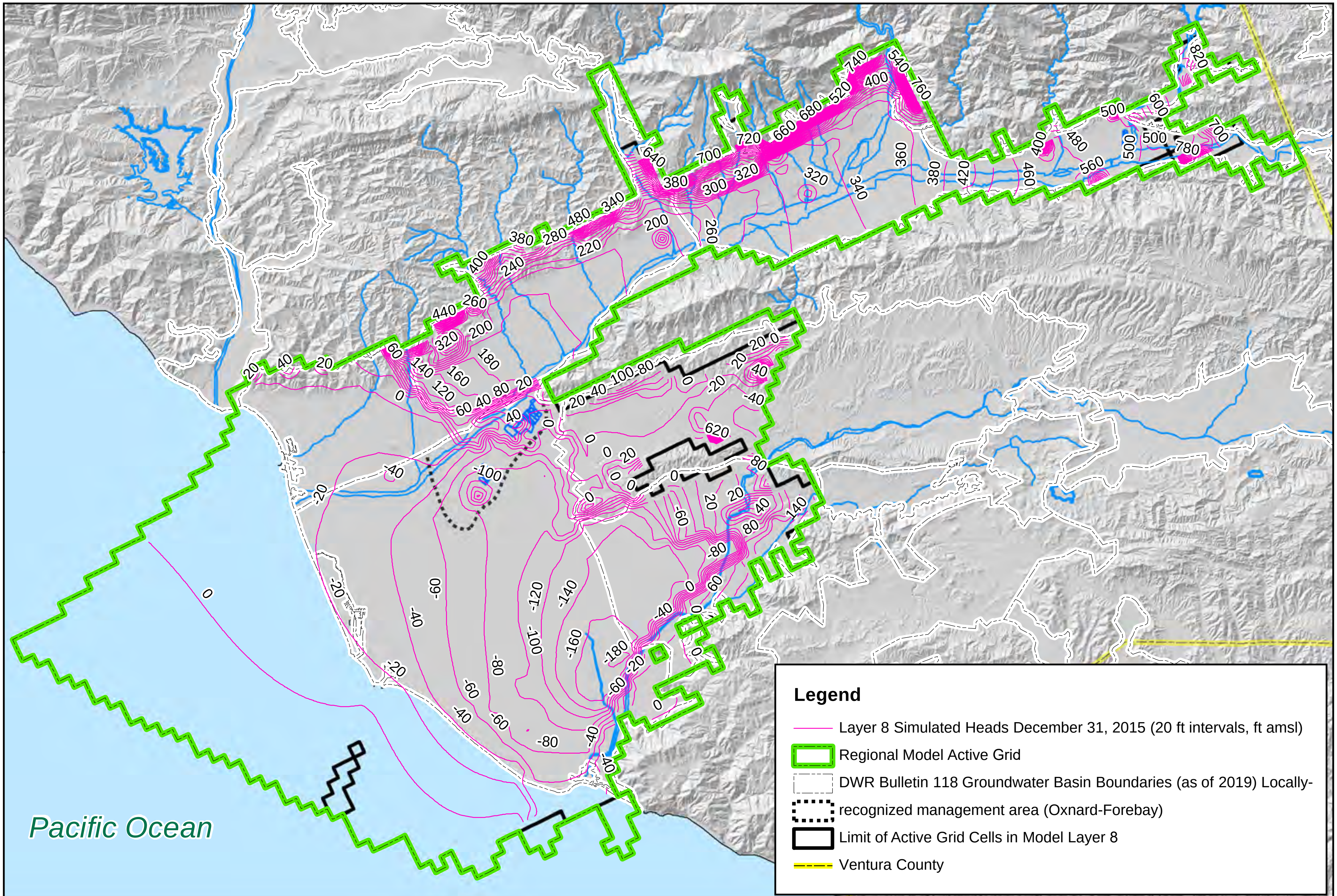

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Figure 4-52.
December 2015 Simulated Head Contours of Model Layer 8

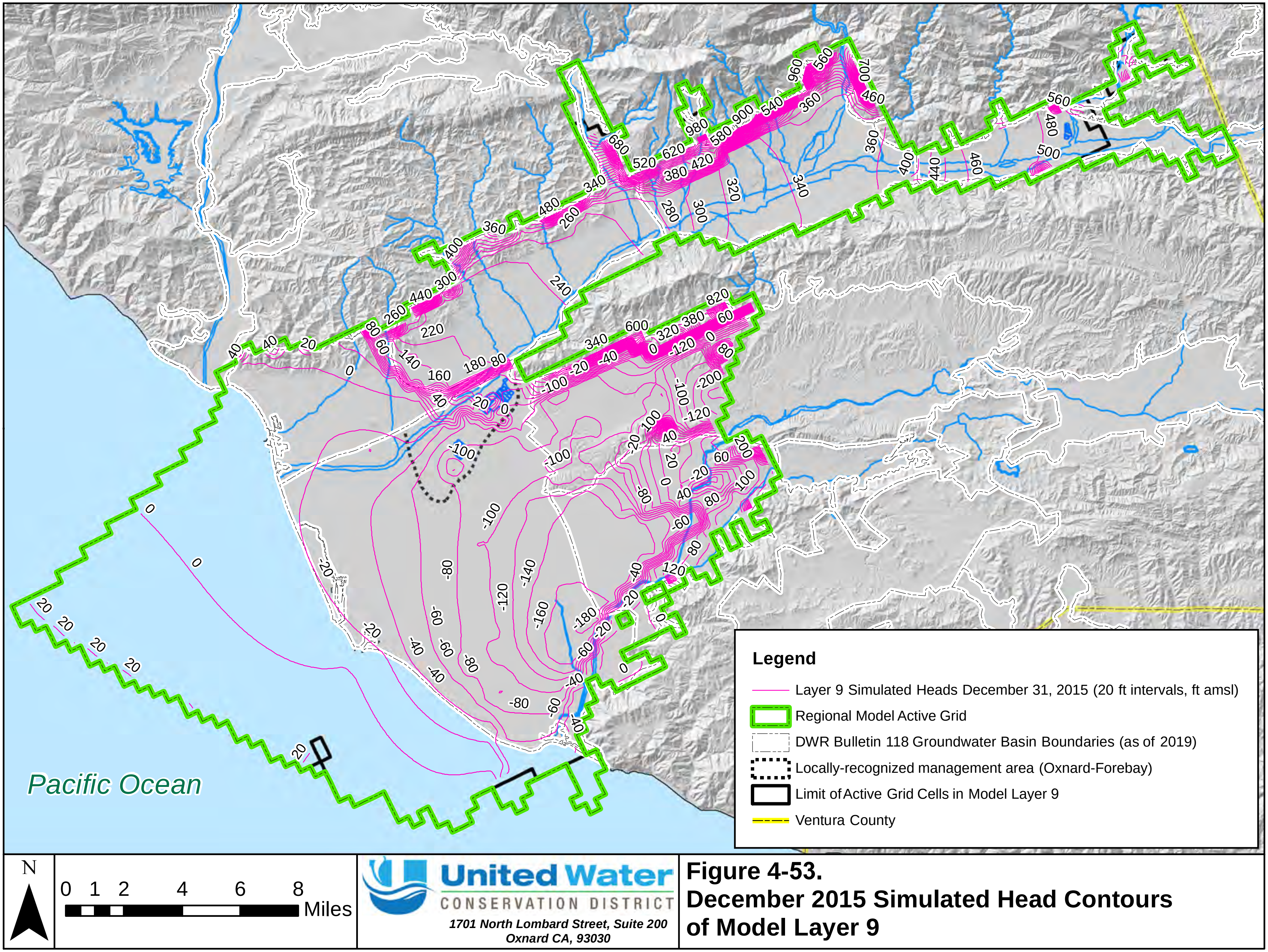

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Figure 4-53.
December 2015 Simulated Head Contours of Model Layer 9

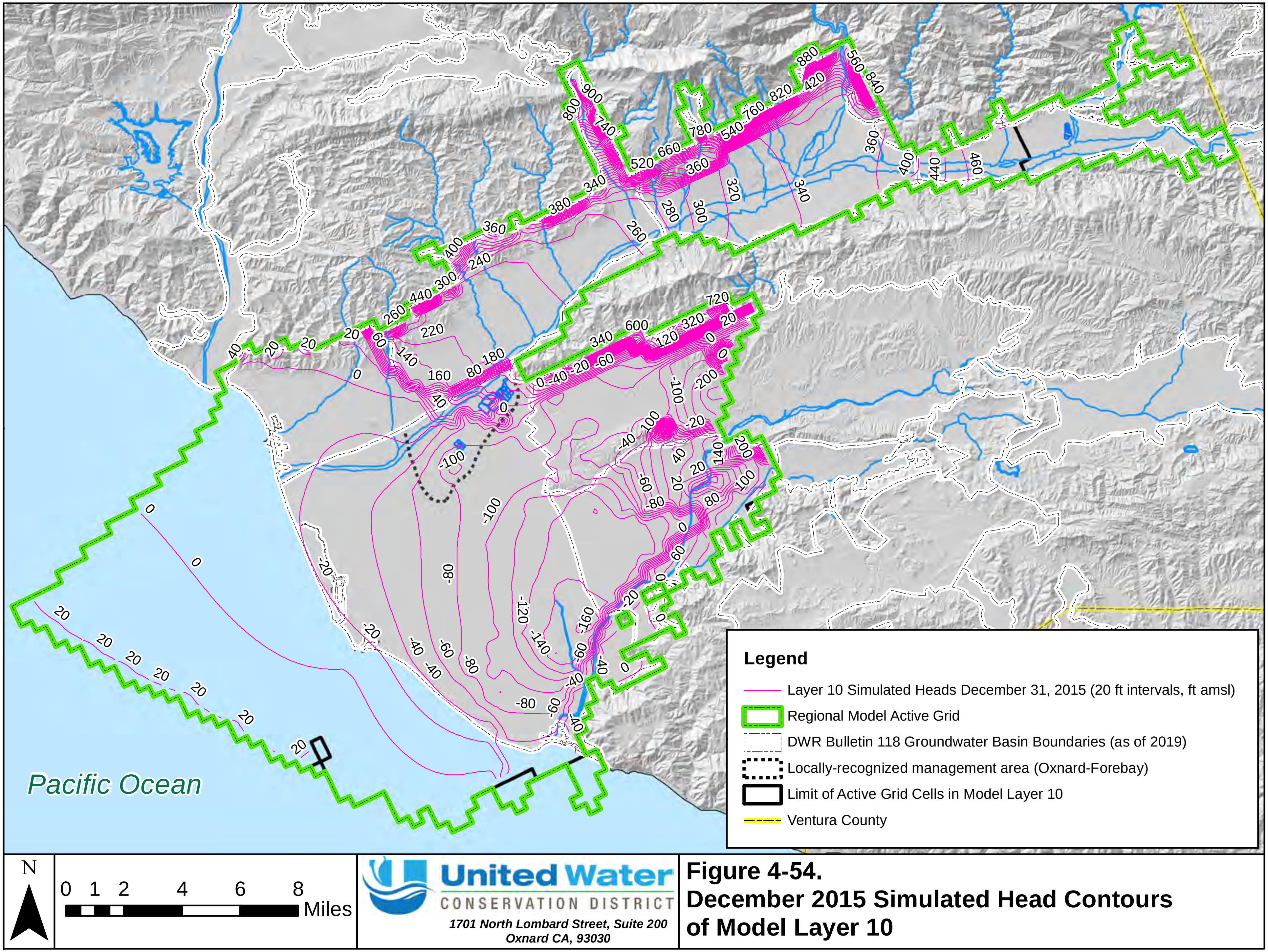

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Figure 4-54.
December 2015 Simulated Head Contours of Model Layer 10

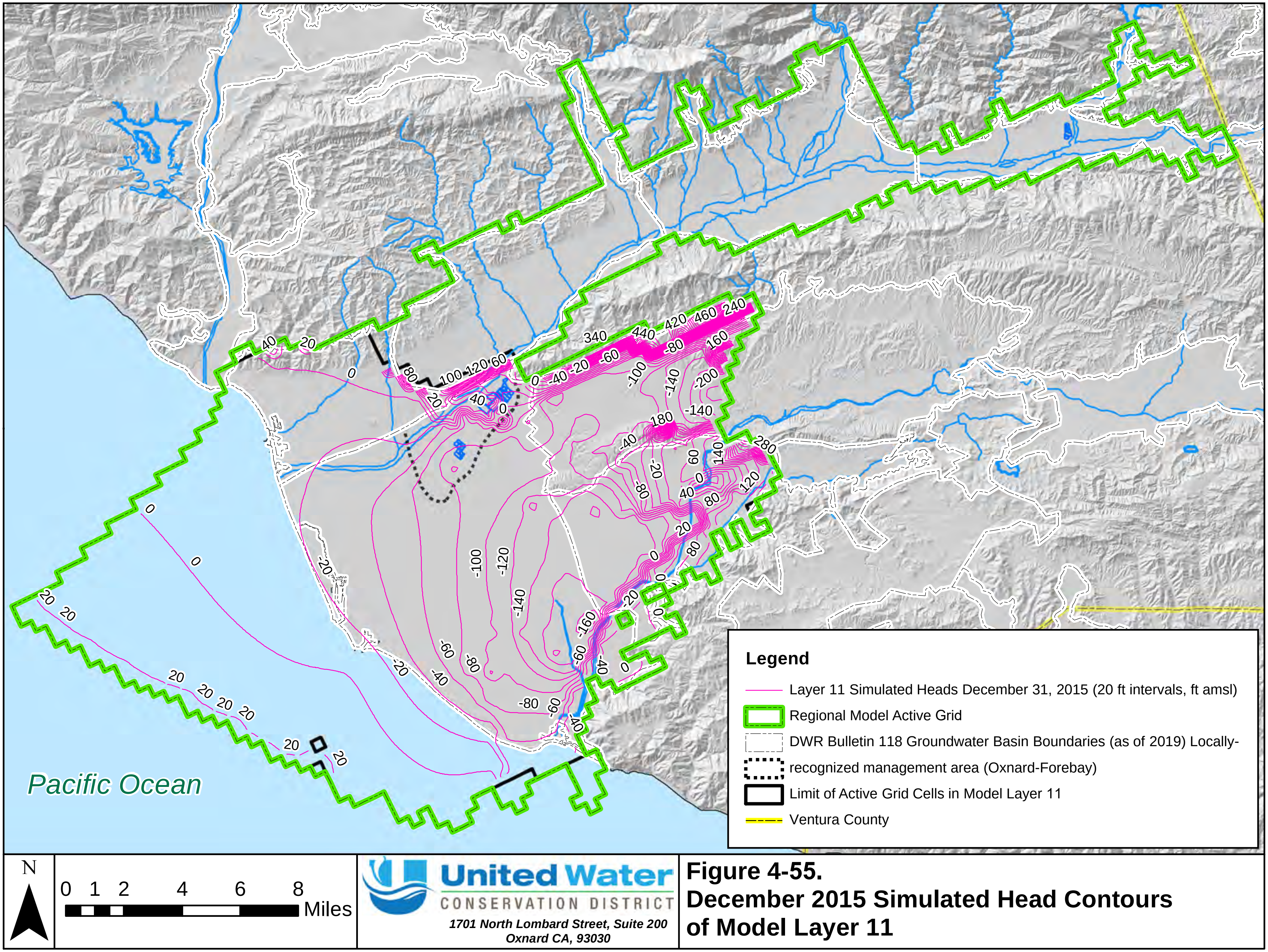

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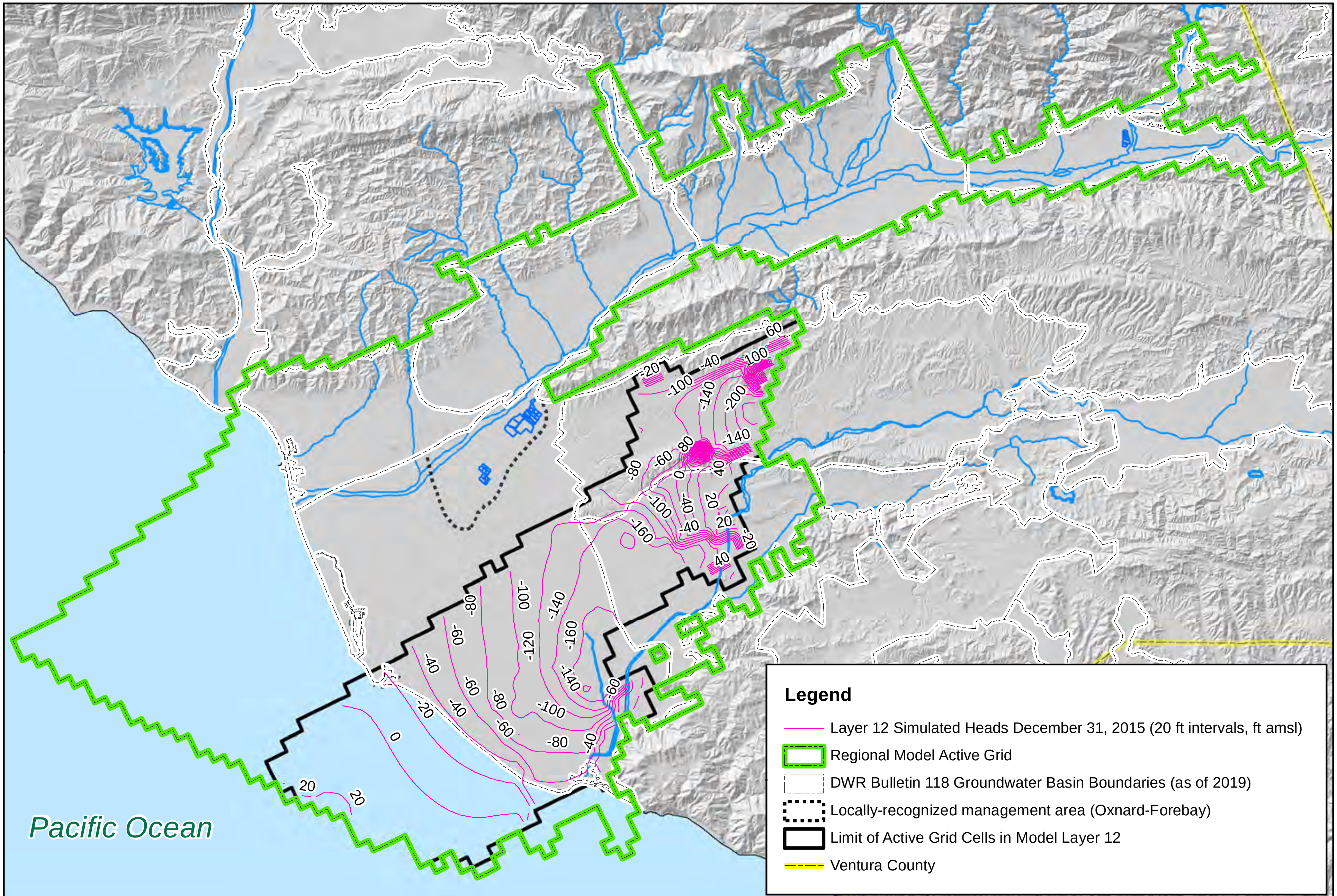
Figure 4-55.
December 2015 Simulated Head Contours of Model Layer 11



N

0 1 2 4 6 8 Miles

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Figure 4-56.
December 2015 Simulated Head Contours of Model Layer 12

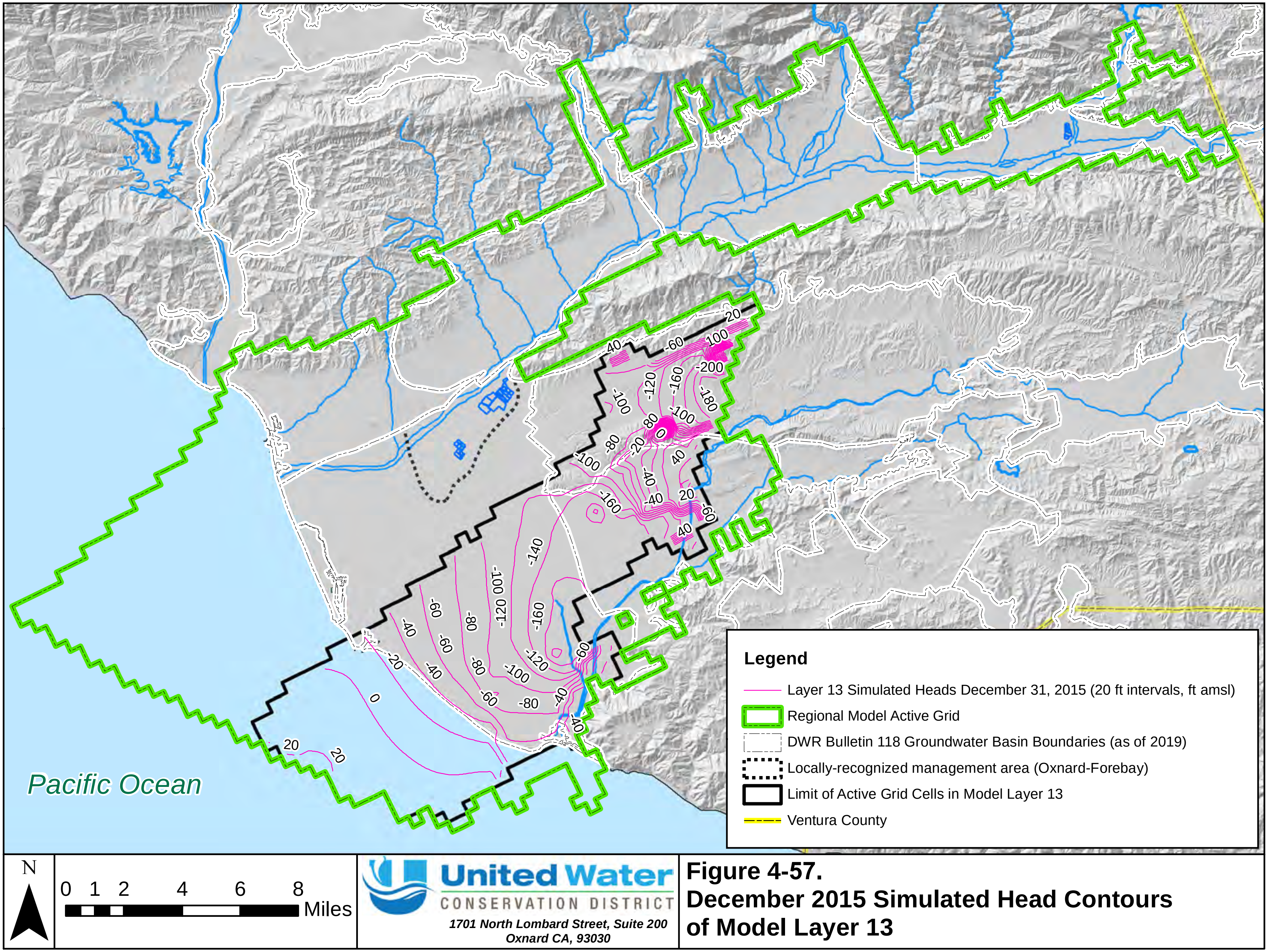

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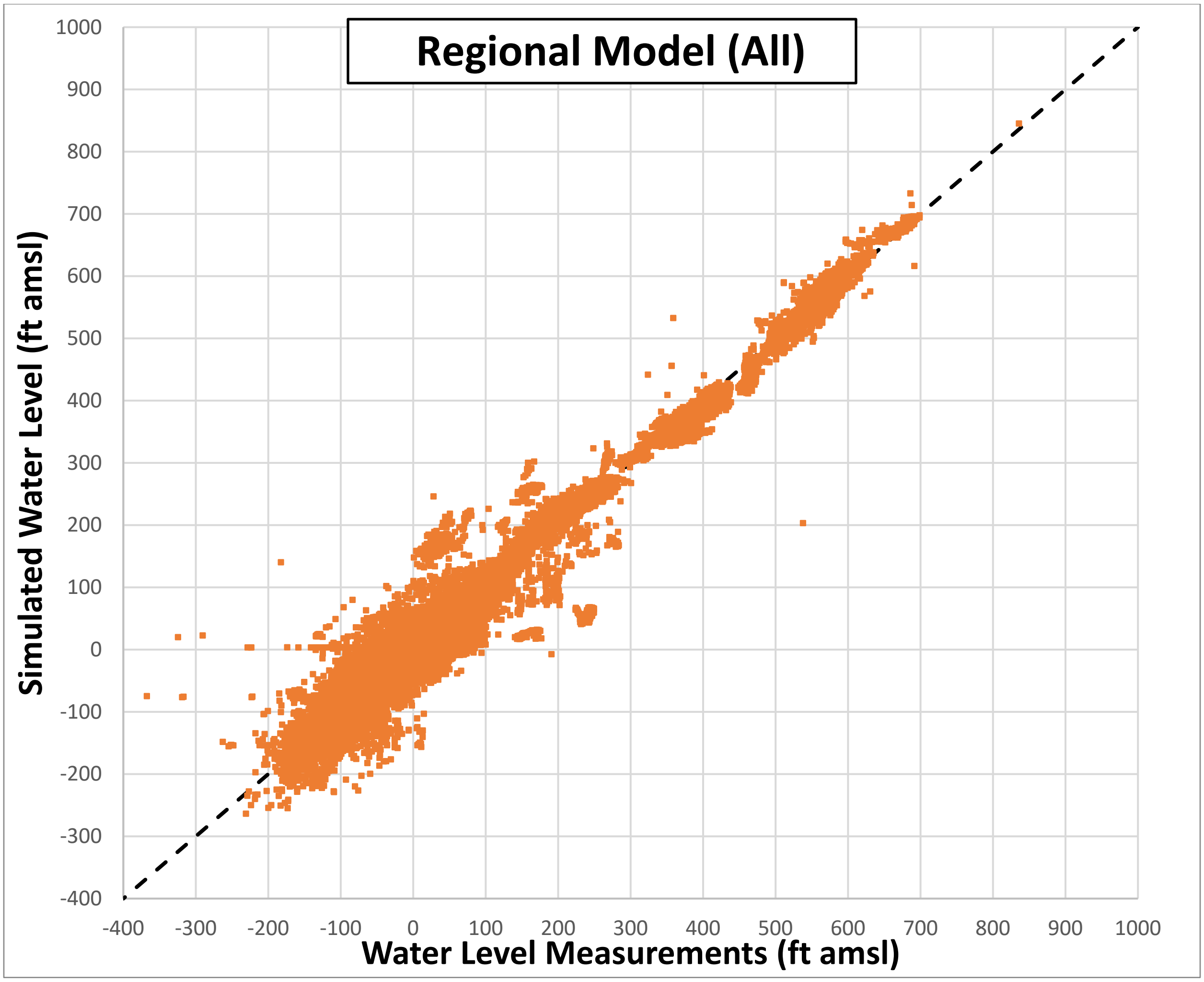
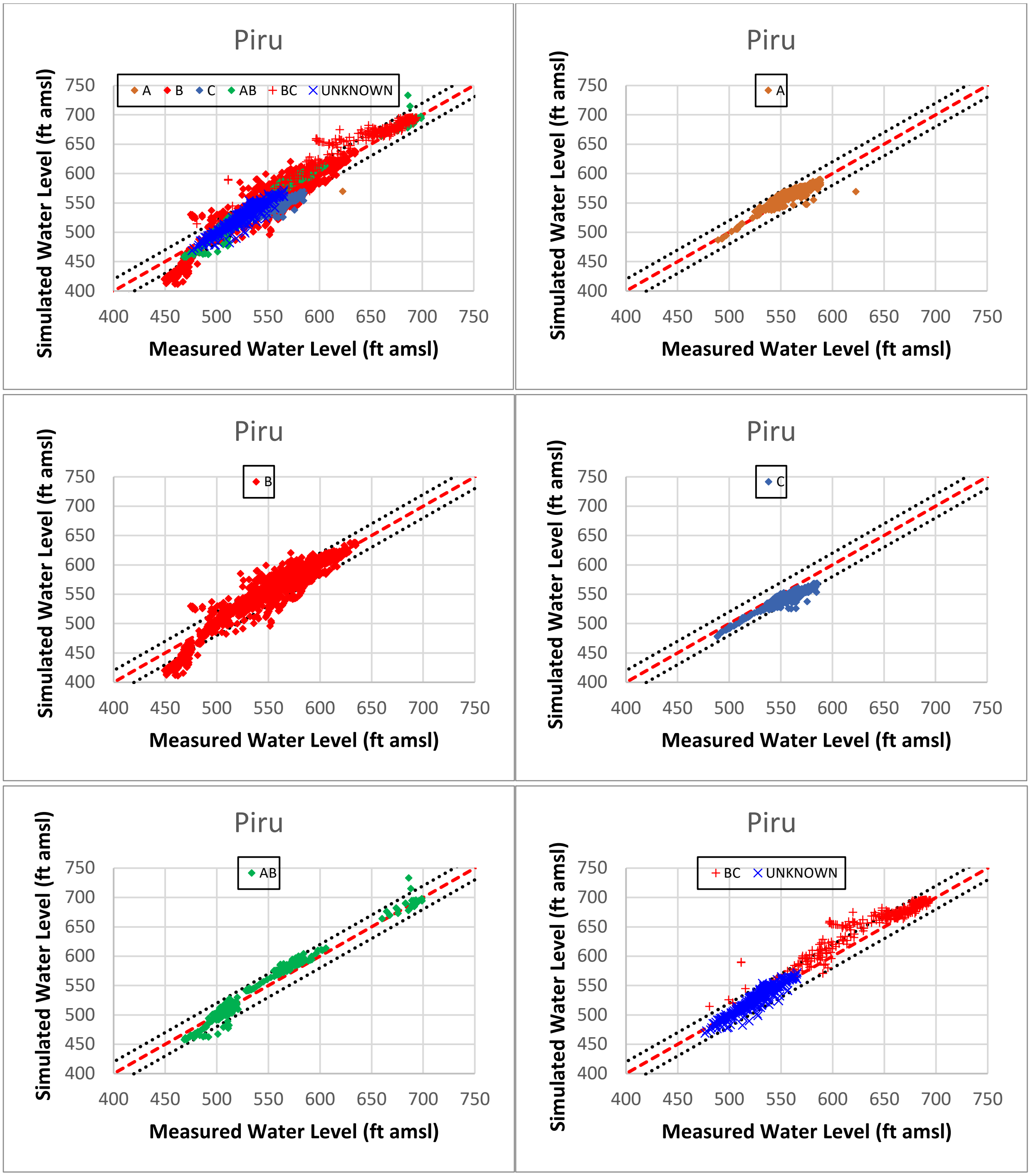
Figure 4-57.
December 2015 Simulated Head Contours of Model Layer 13



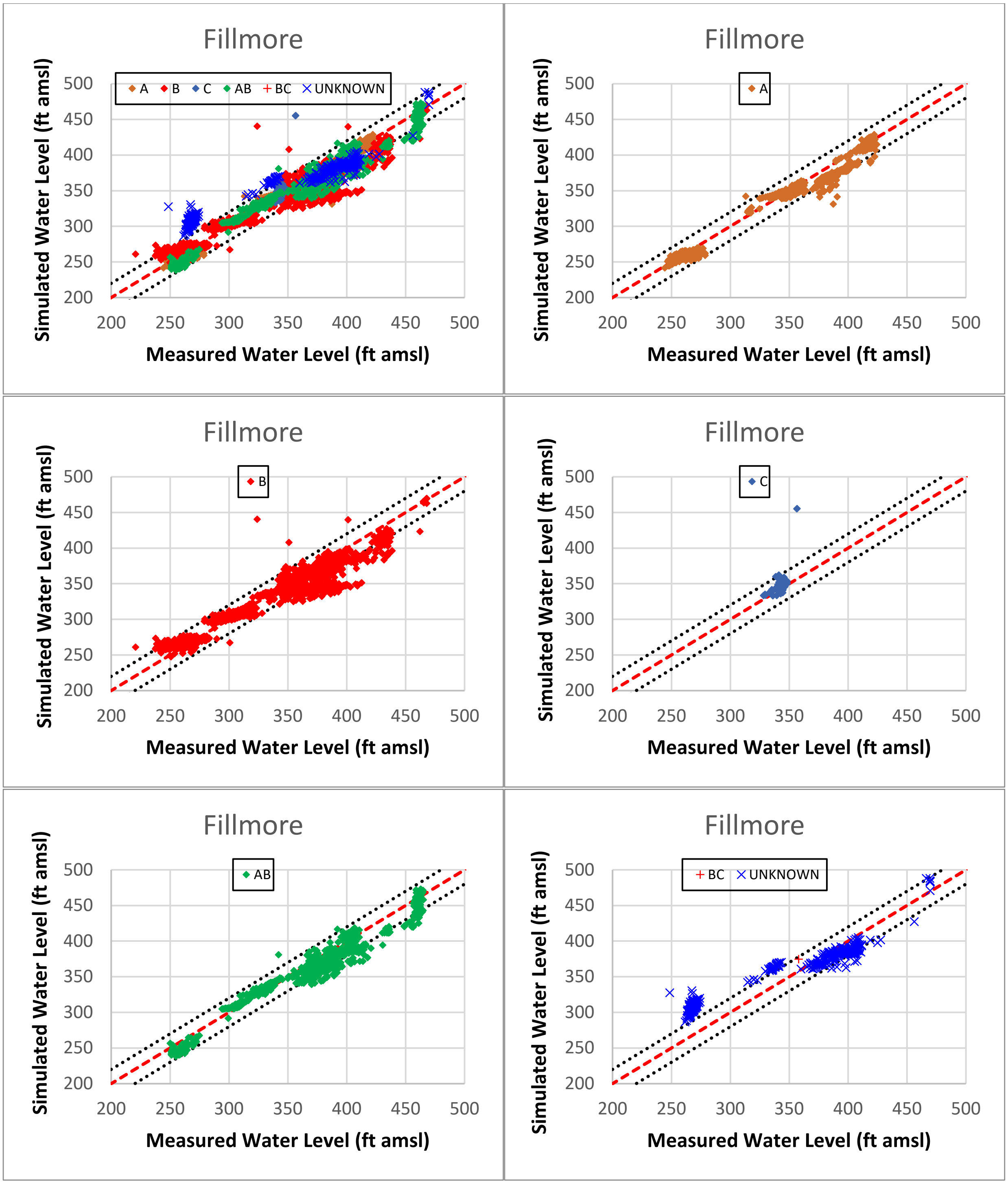
Note: Dashed black line represents a 1 : 1 relationship between measured and simulated groundwater levels.

Figure 4-58. Scatterplots of Simulated versus Measured Groundwater Elevations in the Regional Model Domain (all)



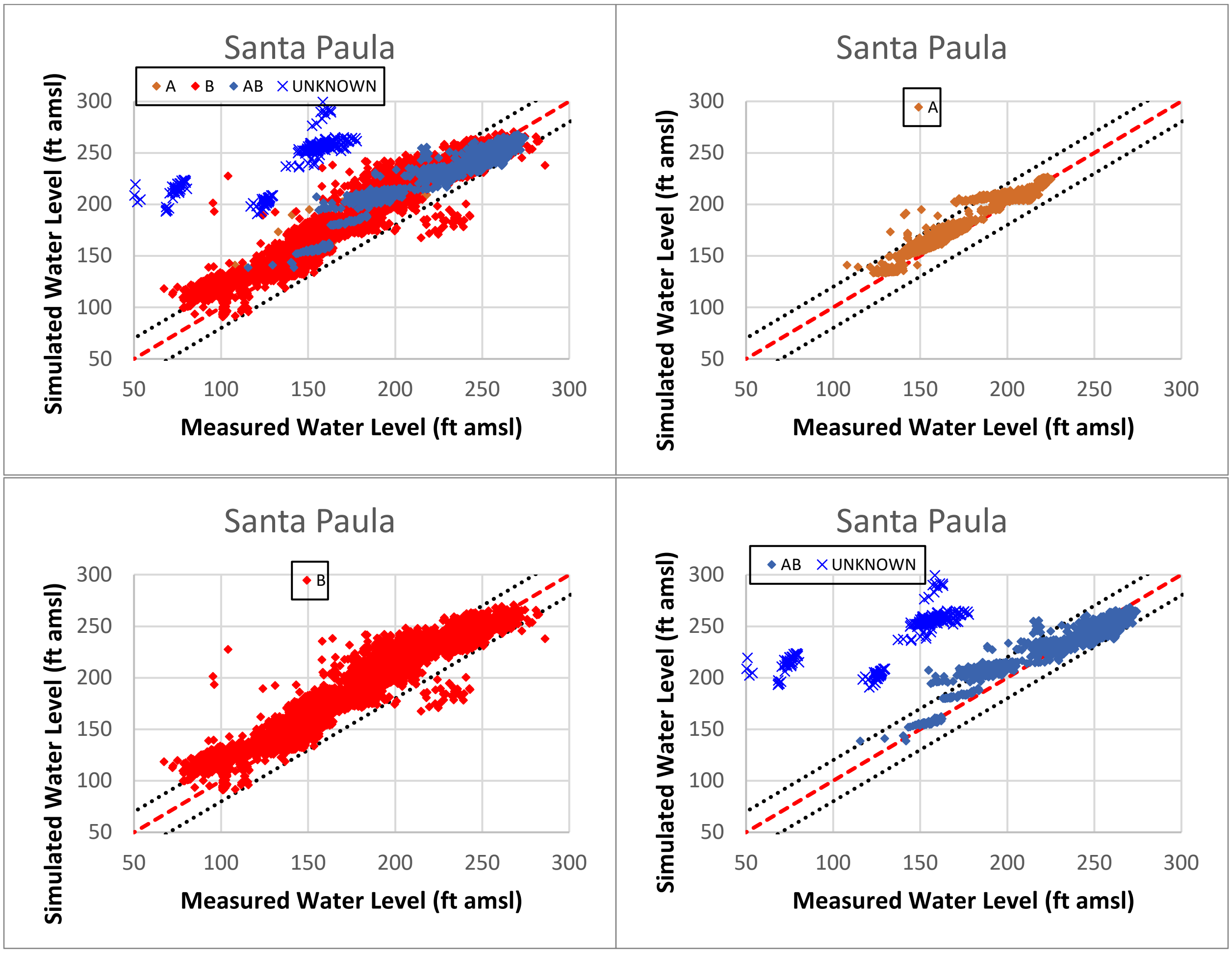
Note: Dashed red line in each graph represents a 1 : 1 relationship between measured and simulated groundwater levels. Dotted black lines are offset 20 feet above and below the 1 : 1 (dashed red) line.

Figure 4-59: Scatterplots of Simulated versus Measured Groundwater Elevations in the Piru Basin



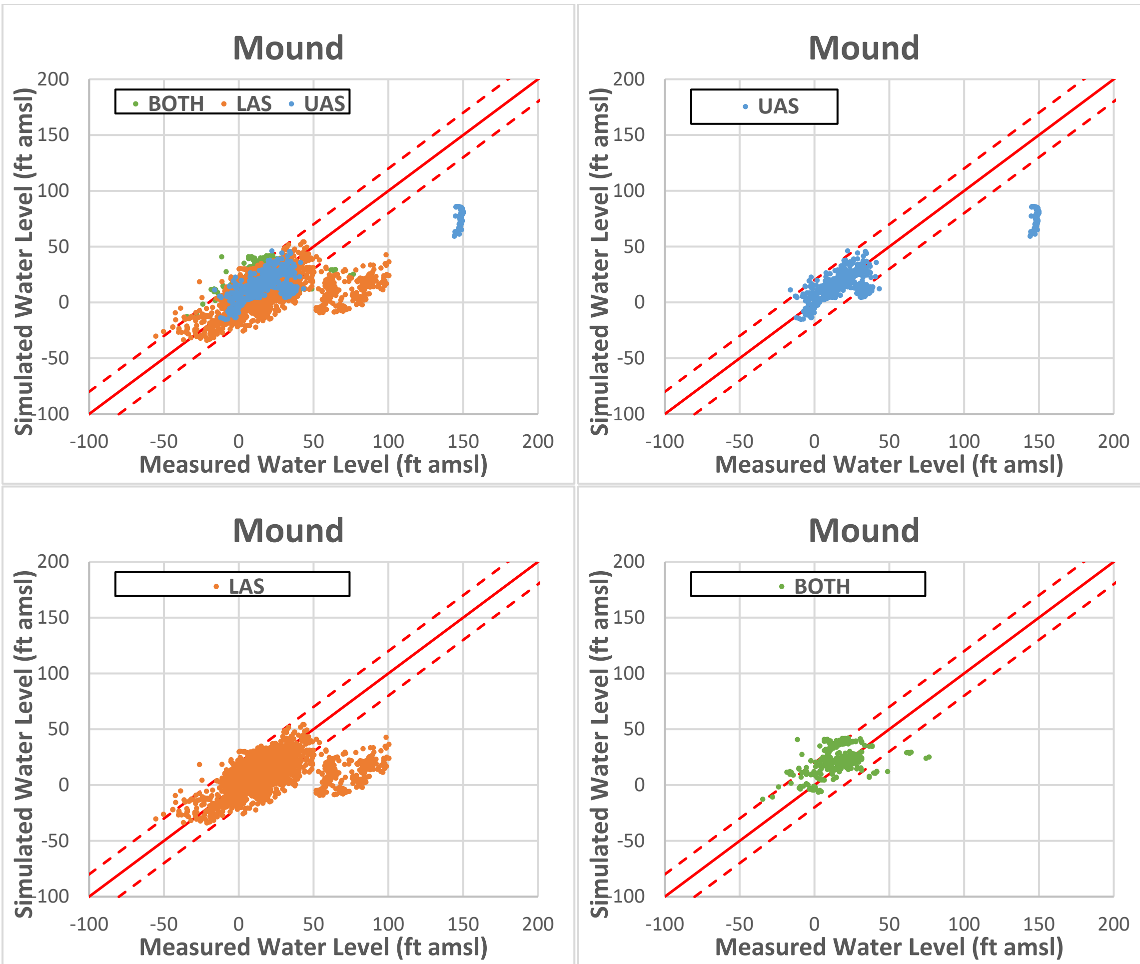
Note: Dashed red line in each graph represents a 1 : 1 relationship between measured and simulated groundwater levels. Dotted black lines are offset 20 feet above and below the 1 : 1 (dashed red) line.

Figure 4-60: Scatterplots of Simulated versus Measured Groundwater Elevations in the Fillmore Basin



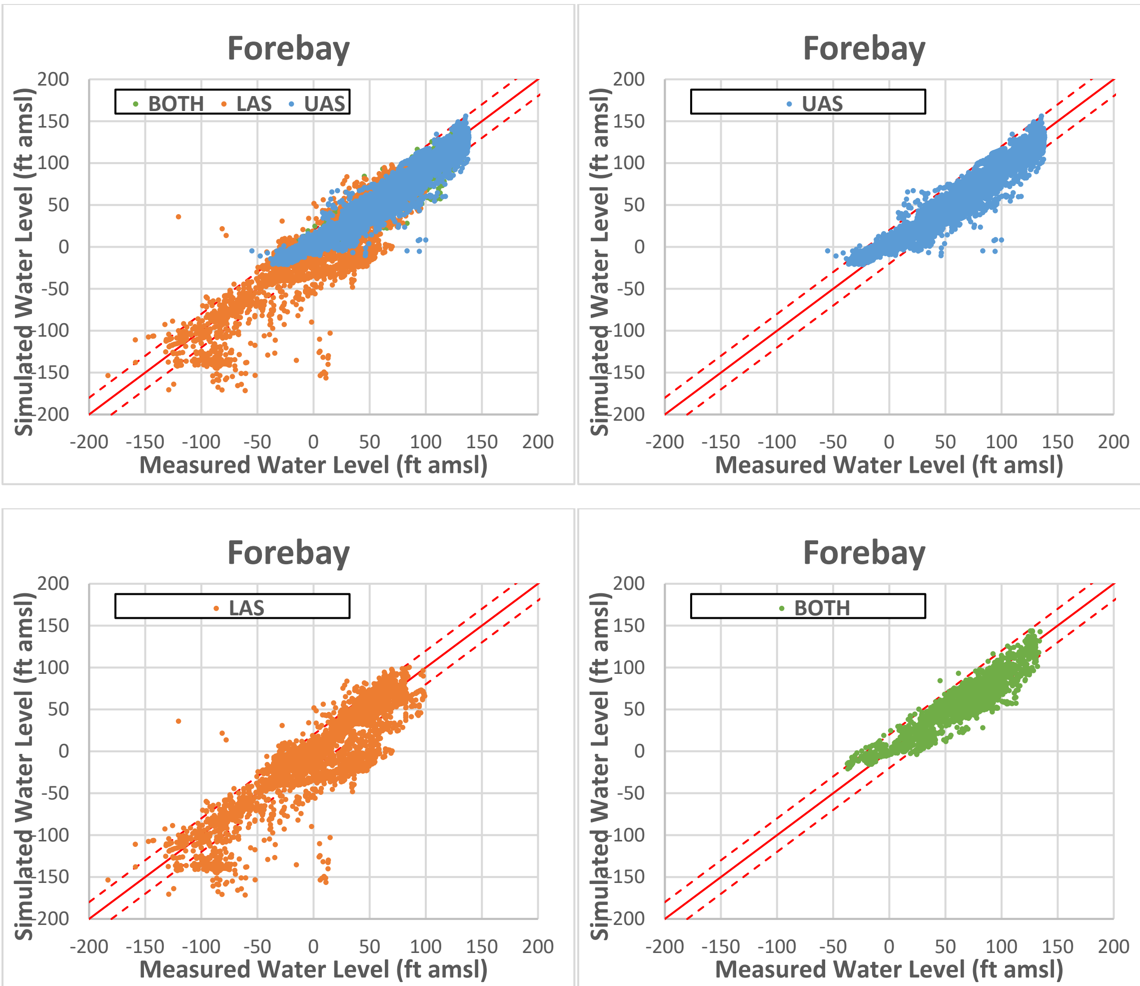
Note: Dashed red line in each graph represents a 1 : 1 relationship between measured and simulated groundwater levels. Dotted black lines are offset 20 feet above and below the 1 : 1 (dashed red) line.

Figure 4-61: Scatterplots of Simulated versus Measured Groundwater Elevations in the Santa Paula Basin



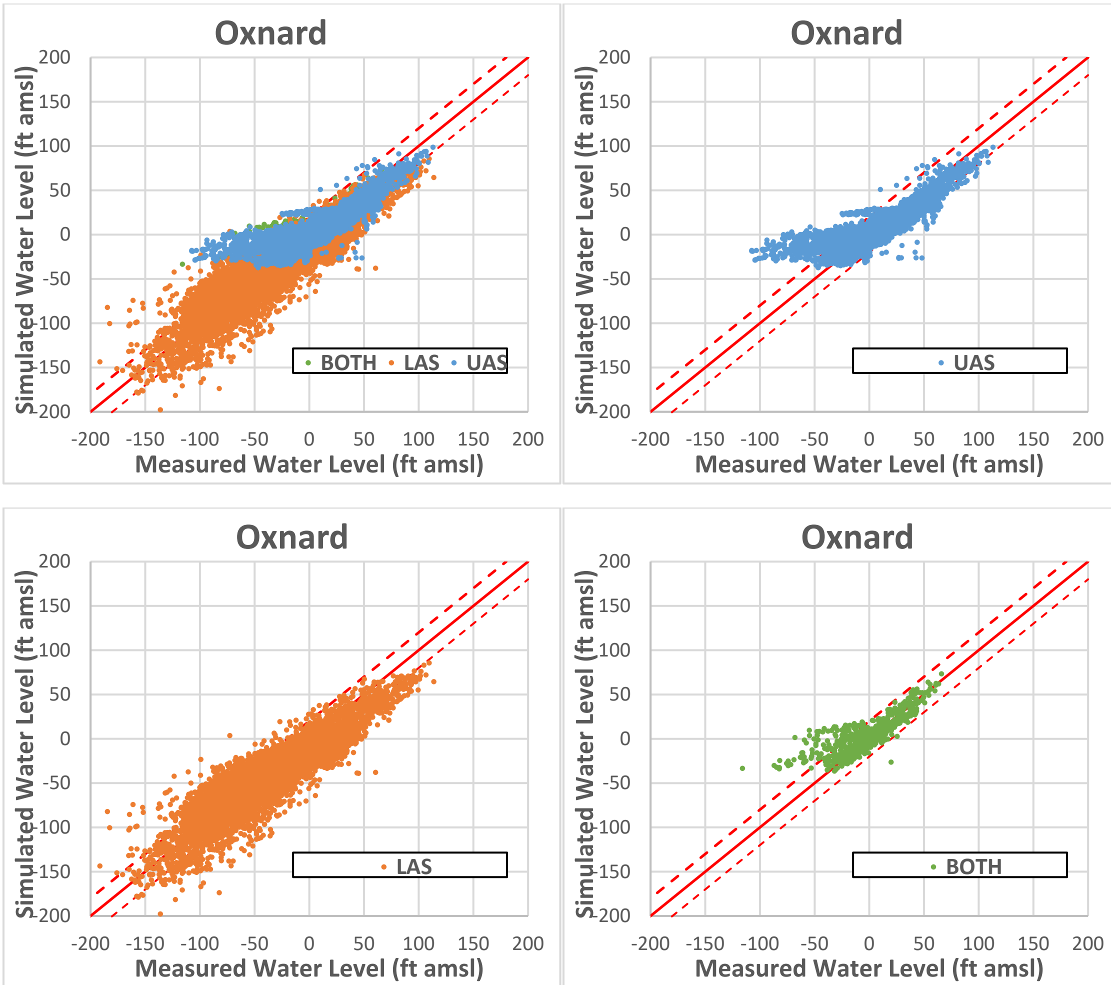
Note: Solid red line in each graph represents a 1 : 1 relationship between measured and simulated groundwater levels. Dashed red lines are offset 20 feet above and below the 1 : 1 (solid) line.

Figure 4-62. Scatterplots of Simulated versus Measured Groundwater Elevations in the Mound Basin



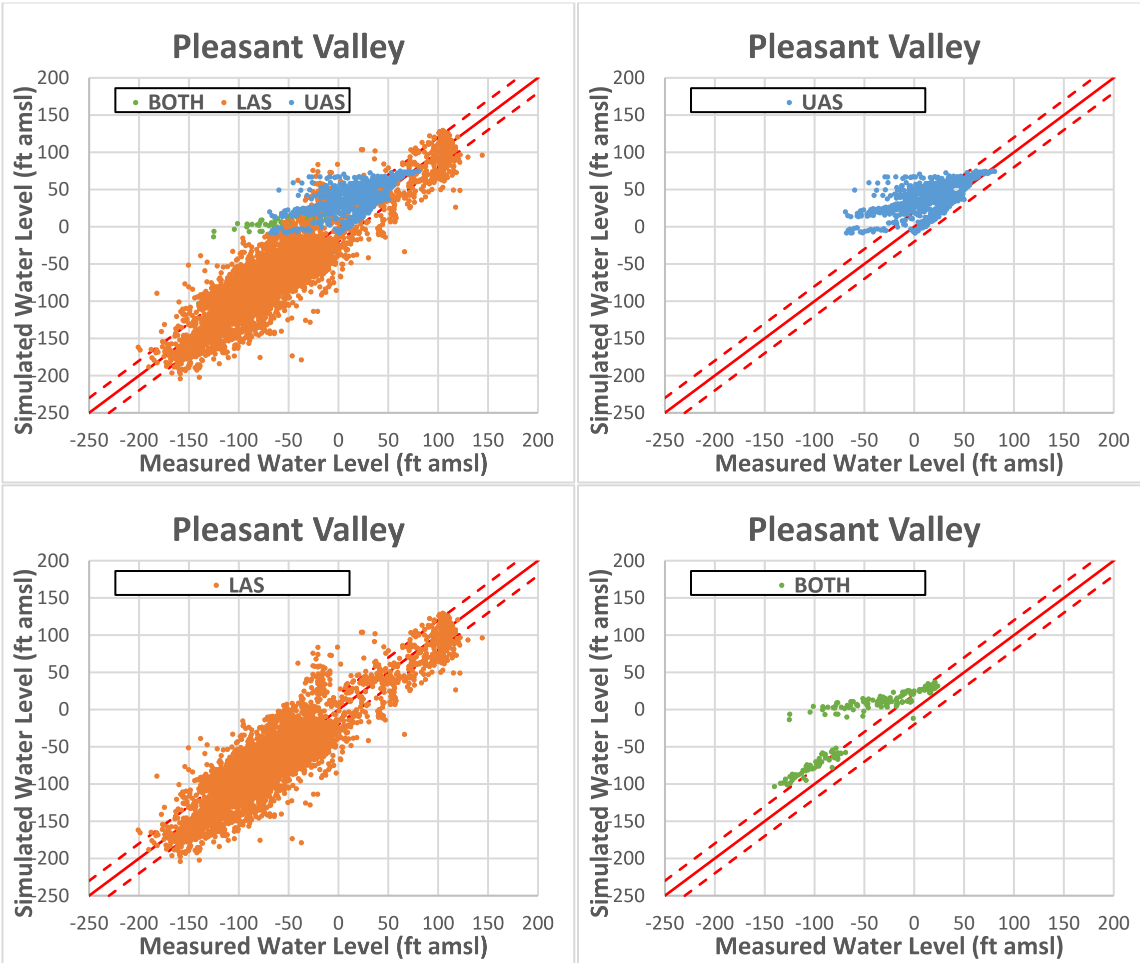
Note: Solid red line in each graph represents a 1 : 1 relationship between measured and simulated groundwater levels. Dashed red lines are offset 20 feet above and below the 1 : 1 (solid) line.

Figure 4-63. Scatterplots of Simulated versus Measured Groundwater Elevations in the Forebay of the Oxnard Basin



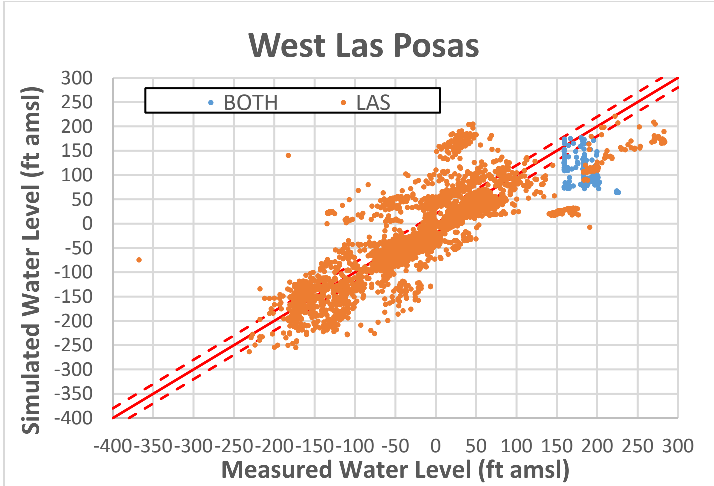
Note: Solid red line in each graph represents a 1 : 1 relationship between measured and simulated groundwater levels. Dashed red lines are offset 20 feet above and below the 1 : 1 (solid) line.

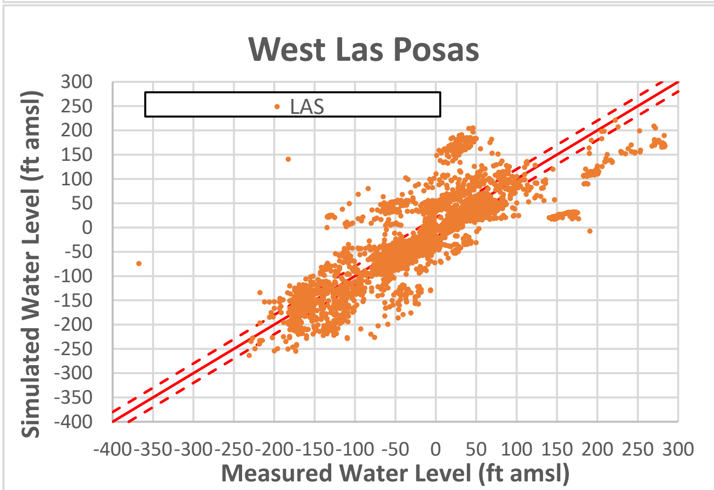
Figure 4-64. Scatterplots of Simulated versus Measured Groundwater Elevations in the Oxnard Basin

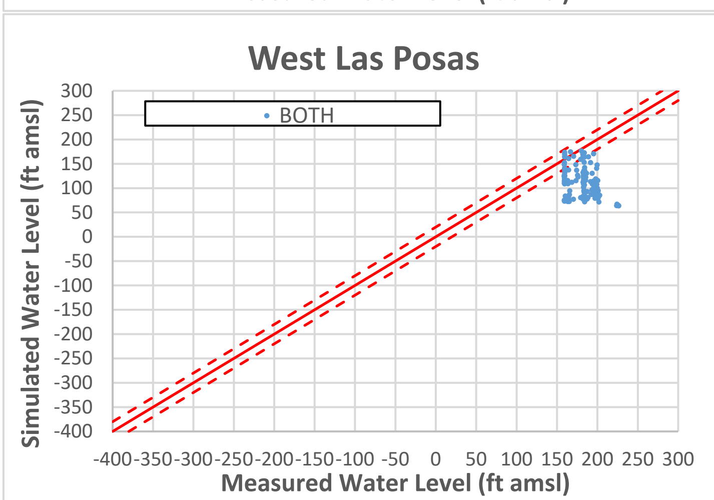


Note: Solid red line in each graph represents a 1 : 1 relationship between measured and simulated groundwater levels. Dashed red lines are offset 20 feet above and below the 1 : 1 (solid) line.

Figure 4-65. Scatterplots of Simulated versus Measured Groundwater Elevations in the Pleasant Valley Basin







Note: Solid red line in each graph represents a 1 : 1 relationship between measured and simulated groundwater levels. Dashed red lines are offset 20 feet above and below the 1 : 1 (solid) line.

Figure 4-66. Scatterplots of Simulated versus Measured Groundwater Elevations in the West Las Posas Basin

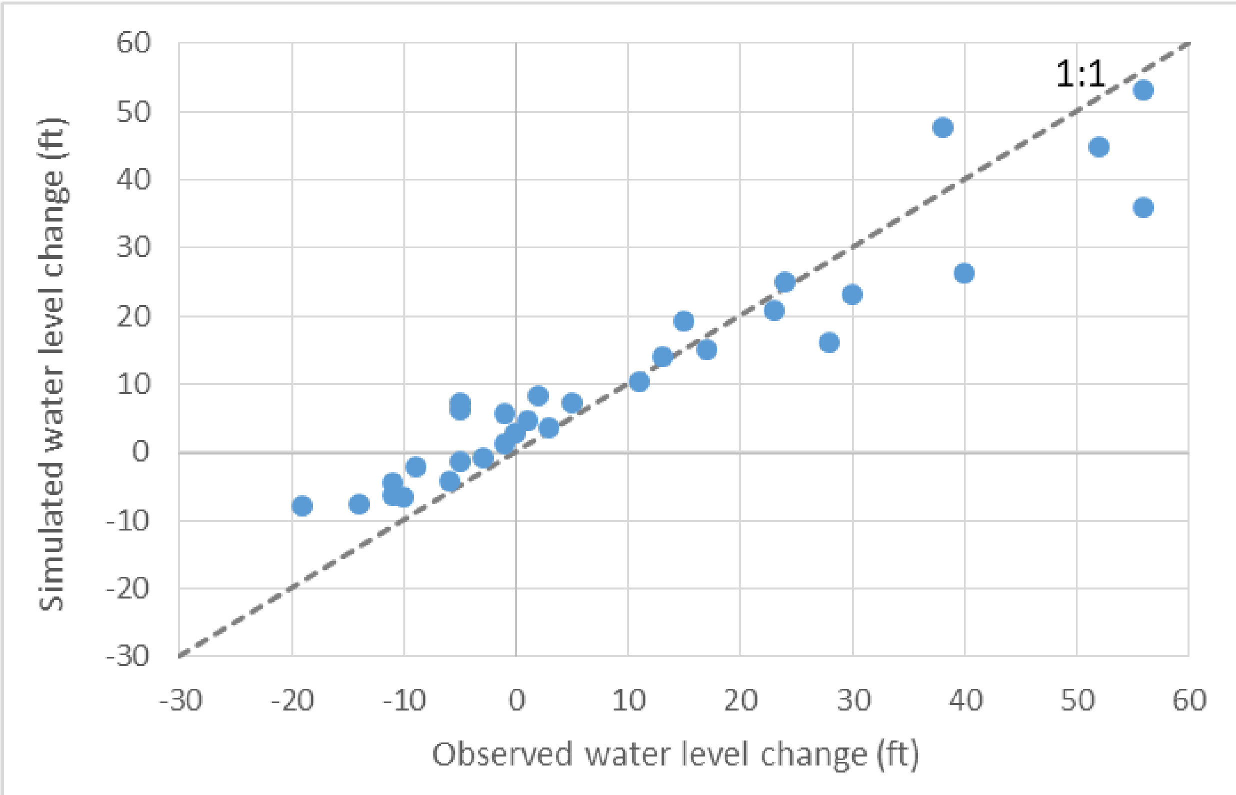


Figure 4-67. Simulated and Observed Change in Groundwater Elevation in Piru Basin (04N18W29M2) During the Wet Season (January 1 to May 1)).Groundwater elevation increases were calculated by subtracting January 1 elevations from May 1 elevations, resulting in one data point annually. Positive changes indicate an increase in groundwater elevation.

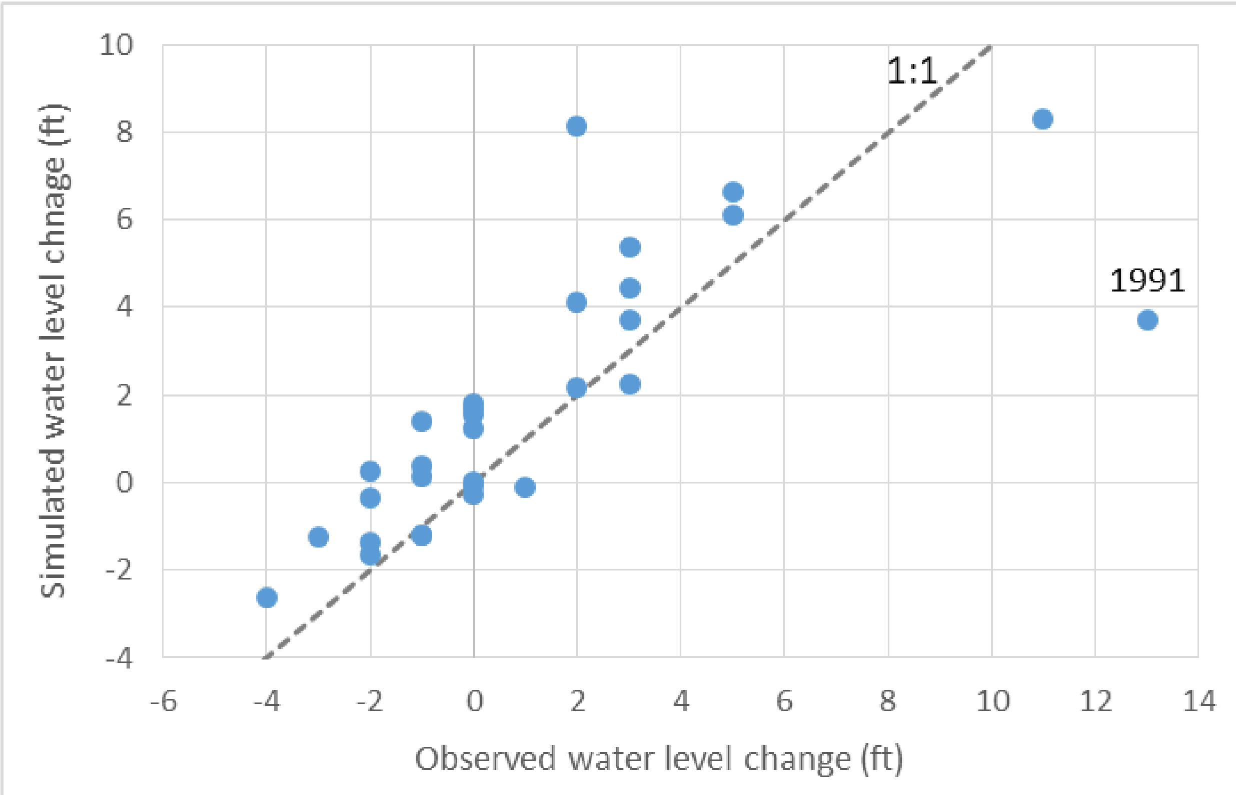


Figure 4-68. Simulated and Observed Change in Groundwater Elevation in Fillmore Basin (03N20W02A01) During the Wet Season (January 1 to May 1). Groundwater elevation increases were calculated by subtracting January 1 elevations from May 1 elevations, resulting in one data point annually. Positive changes indicate an increase in groundwater elevation.

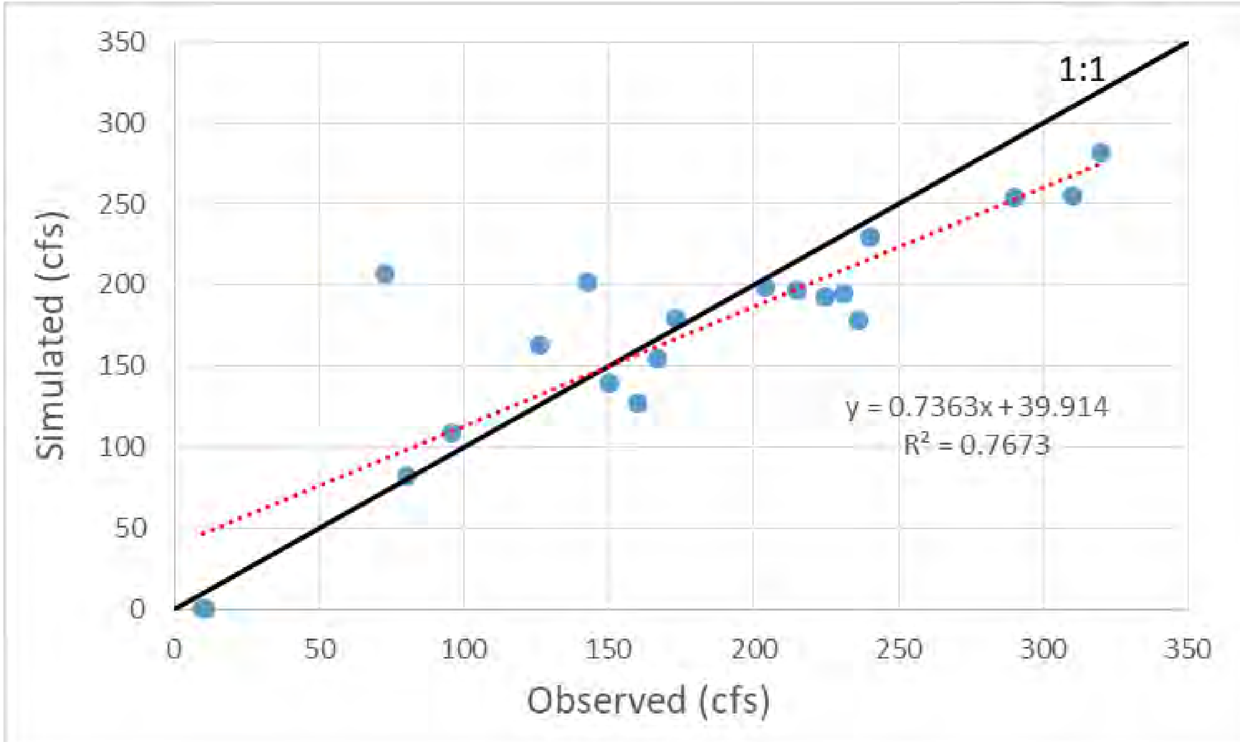


Figure 4-69. Simulated and Observed Monthly Average Streamflow Near the Downstream End of Piru Basin (Cavin Rd.) During Conservation Releases (2000-2015). Observed monthly average streamflows were calculated as the mean of observed flows when multiple flow measurements were performed during one month.

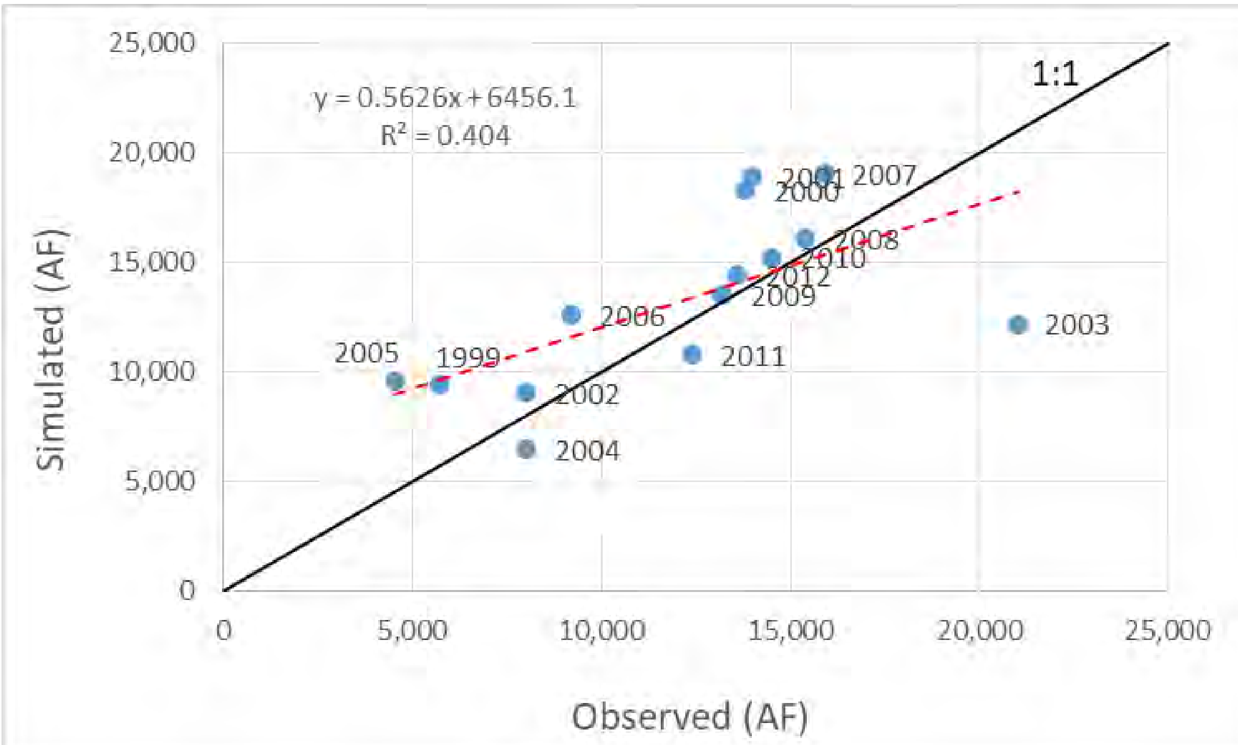
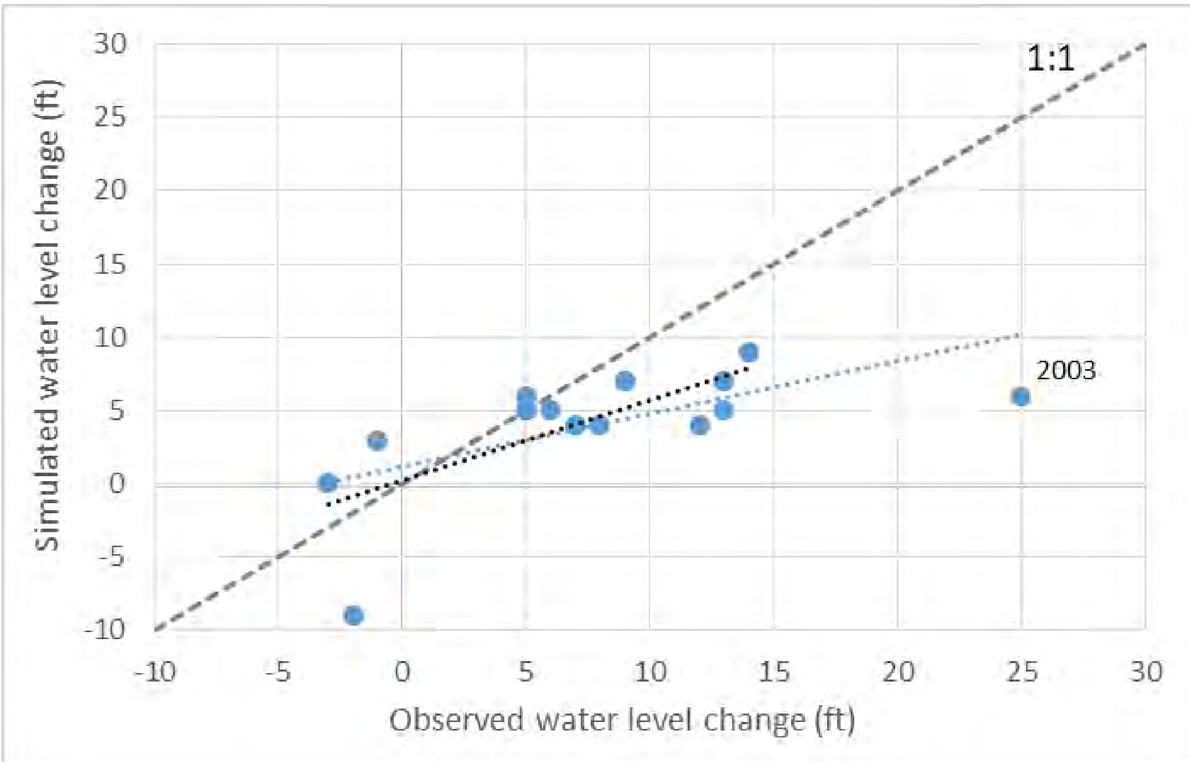


Figure 4-70. Simulated and Observed Total Percolation Volume to Piru Basin (acre-feet) During Conservation Releases (1999-2015).

(A)



(B)

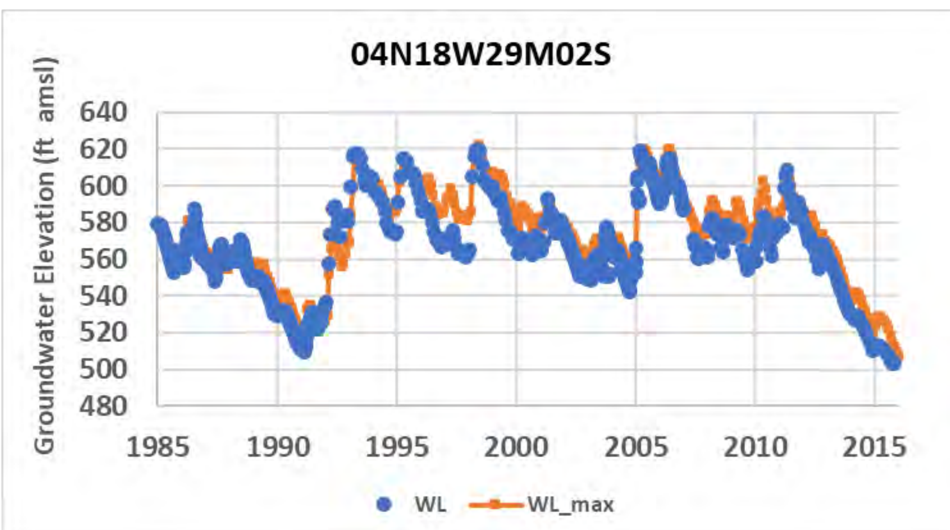


Figure 4-71. (A) Simulated and Bbserved Change in Groundwater Elevation in Piru Basin (well 04N18W29M2) Due to Conservation Releases. Changes in groundwater elevations were calculated as elevations just after minus elevations just before conservations releases. Positive changes indicate an increase in groundwater elevation following a release. Best-fit linear trend lines are shown for the full dataset (blue dotted line) and without outlier year 2003 (black dotted line). (B) Simulated (orange line) and observed (blue dots) groundwater elevations in well 04N18W29M2.

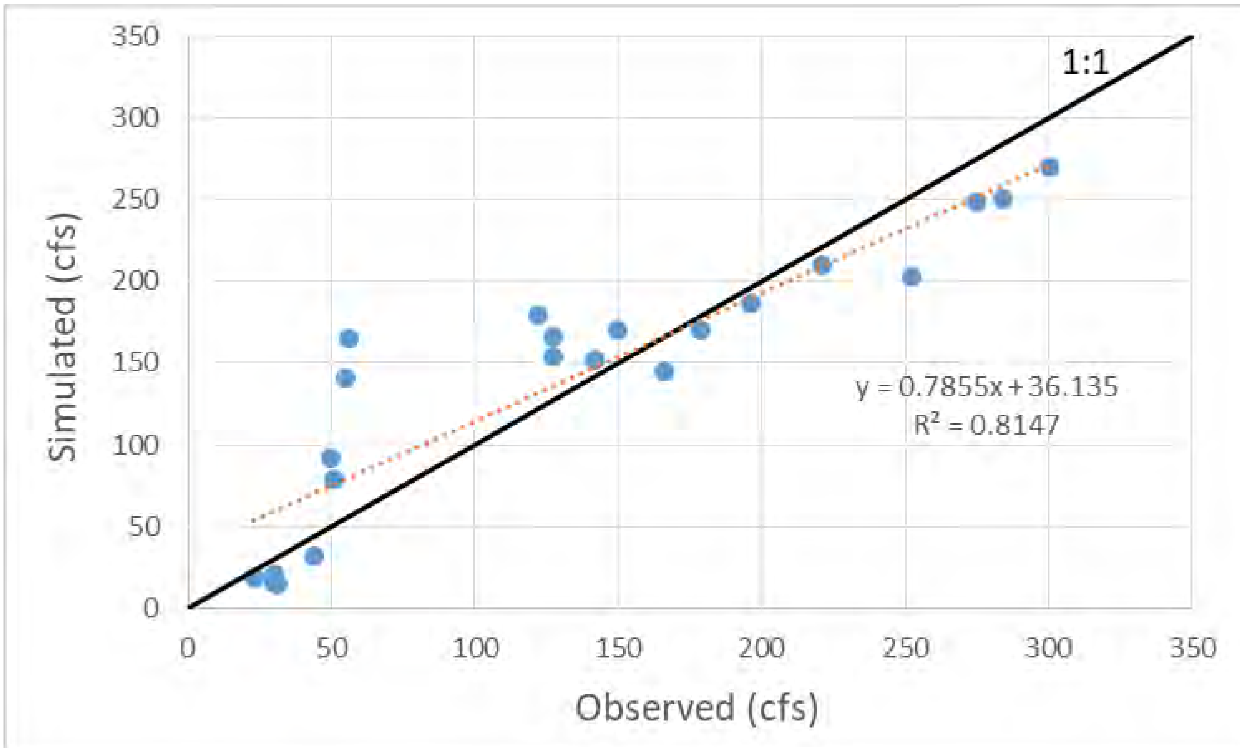


Figure 4-72. Simulated and Observed Monthly Average Streamflow Near the Downstream End of Fillmore Basin (Willard Rd.) During Conservation Releases (2000-2015). Observed monthly average streamflows were calculated as the mean of observed flows when multiple flow measurements were performed during one month.

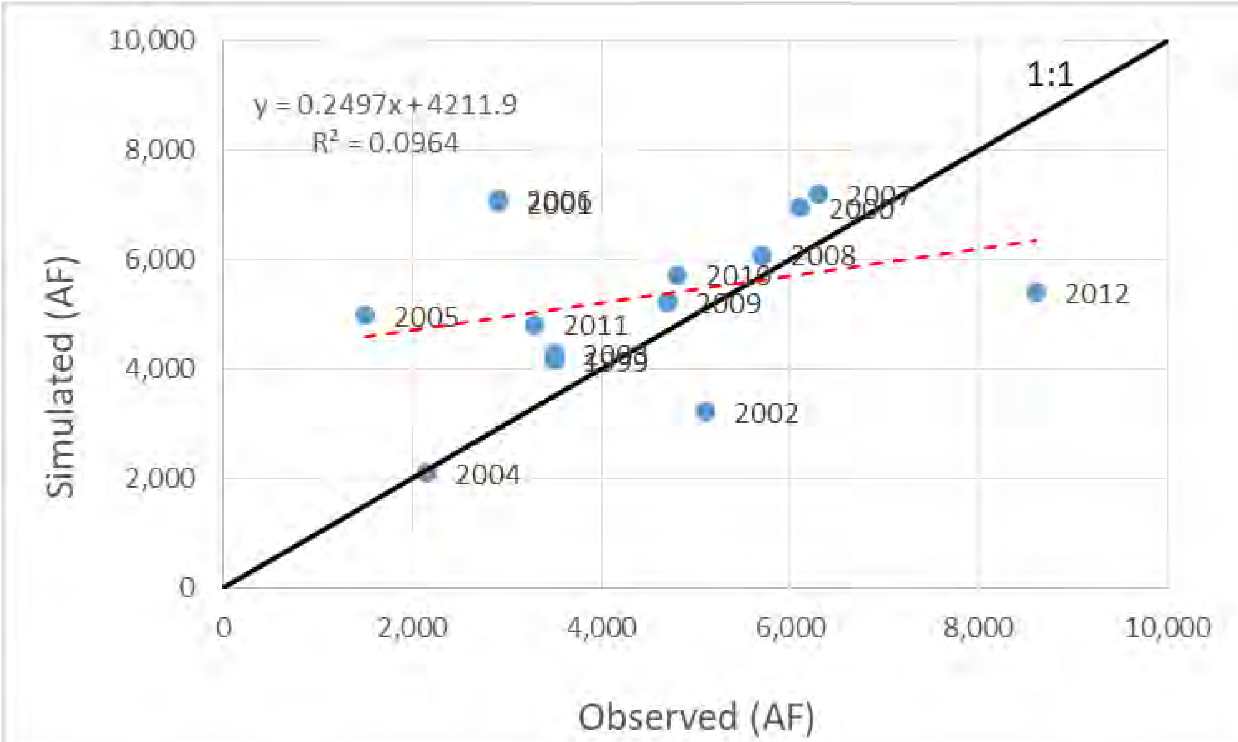
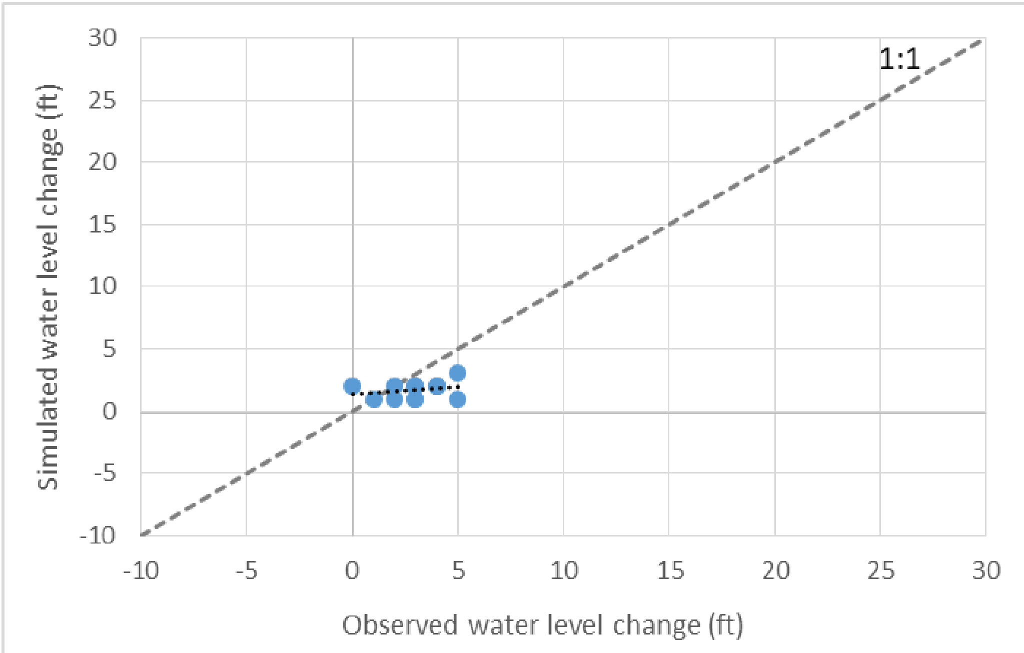


Figure 4-73. Simulated and Observed Total Percolation Volume in Fillmore Basin (acre-feet) During Conservation Releases (1999-2015).

(A)



(B)

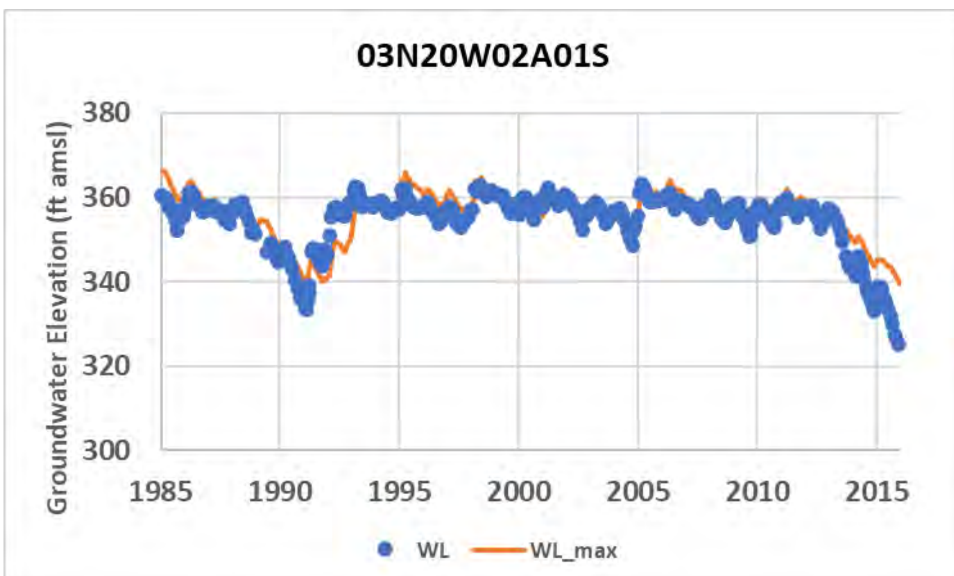


Figure 4-74. (A) Simulated and Observed Change in Groundwater Elevation in Fillmore Basin (03N20W02A01) Due to Conservation Releases. Changes in groundwater elevations were calculated as elevations just after minus elevations just before conservations releases. Positive changes indicate an increase in groundwater elevation. Best-fit linear trend line is shown by a black dotted line. (B) Simulated (orange line) and observed (blue dots) groundwater elevations in well 03N20W02A01.

EAST — STREAM FLOW → — WEST

Features (top of figure): Ventura/LA county line (segment 23), Newhall Diversion (segment 25), USGS gage (segment 27), Piru Creek (segment 28), Hopper Creek, Cavin Rd, Fish Hatchery Outfall (segment 29)

Stress	Year	MM	Release	23-1	23-2	23-3	23-4	23-5	23-6	23-7	23-8	25-1	25-2	25-3	25-4
313	2011	1		61	60	59	46	49	46	67	68	66	62	68	62
314	2011	2		79	78	78	65	69	66	85	85	83	80	85	80
315	2011	3		316	315	314	300	304	301	322	323	322	318	323	316
316	2011	4		197	195	194	180	184	181	201	202	200	196	201	194
317	2011	5		72	70	69	56	59	55	76	76	69	65	71	65
318	2011	6		70	68	68	54	57	54	74	74	63	59	65	59
319	2011	7		35	33	33	26	27	24	38	39	27	24	29	27
320	2011	8		35	33	33	26	27	24	39	40	28	25	30	27
321	2011	9	1	21	19	19	13	14	11	25	26	14	11	16	14
322	2011	10	1	44	43	42	35	36	34	49	49	46	43	48	45
323	2011	11		51	50	50	42	44	41	56	57	55	52	56	54
324	2011	12		56	55	55	46	48	46	62	62	60	57	62	59
325	2012	1		41	40	39	27	30	27	47	47	45	42	47	42
326	2012	2		45	43	43	36	37	35	49	49	47	44	49	46
327	2012	3		70	69	69	60	62	60	76	76	74	71	76	73
328	2012	4		77	76	76	67	69	66	82	83	80	77	82	79
329	2012	5		47	46	45	38	39	36	51	52	45	42	47	45
330	2012	6		27	25	25	19	20	17	31	31	20	17	22	20
331	2012	7		27	25	24	18	19	16	30	31	19	16	20	18
332	2012	8		21	20	19	8	11	7	26	26	14	11	16	12
333	2012	9	1	21	20	19	14	14	11	25	26	14	11	16	14
334	2012	10	1	31	29	29	22	24	21	36	36	24	21	26	24
335	2012	11		41	40	39	32	33	31	46	46	36	33	37	35
336	2012	12		48	47	47	39	41	38	54	55	46	43	48	45
337	2013	1		43	42	41	34	35	33	49	49	40	38	42	40
338	2013	2		38	37	36	30	31	29	43	43	41	38	42	40
339	2013	3		41	39	39	26	29	25	46	46	44	40	46	41

Stress	27-1	27-2	27-3	27-4	27-5	27-6	27-7	27-8	27-9	27-10	27-11	27-12	27-13	27-14
313	61	62	66	67	69	62	36	24	16	0	0	0	0	0
314	79	80	83	85	86	81	59	50	44	29	13	6	6	4
315	314	316	322	324	326	320	297	289	287	286	242	196	194	68
316	192	194	199	201	202	196	173	165	165	171	142	95	92	60
317	64	65	69	70	71	65	41	32	31	31	3	0	0	0
318	58	59	62	64	65	58	35	26	24	18	0	0	0	0
319	26	27	27	28	29	24	9	0	0	0	0	0	0	0
320	27	27	28	29	30	25	9	0	0	0	0	0	0	0
321	14	14	14	15	16	12	2	0	0	0	0	0	0	0
322	45	45	46	47	48	43	26	10	8	5	2	1	1	0
323	54	54	55	56	57	52	34	16	12	6	2	1	1	0
324	59	59	60	61	62	56	38	19	14	6	3	2	2	1
325	41	42	45	46	47	37	8	0	0	0	0	0	0	0
326	46	46	47	48	49	44	27	11	6	2	0	0	0	0
327	73	73	74	76	77	71	52	33	27	19	13	9	9	7
328	79	79	80	82	83	77	58	39	34	23	14	10	10	8
329	44	45	45	46	47	42	25	8	4	0	0	0	0	0
330	19	20	20	21	22	18	4	0	0	0	0	0	0	0
331	18	18	18	19	21	16	2	0	0	0	0	0	0	0
332	12	12	14	16	17	8	0	0	0	0	0	0	0	0
333	14	14	14	15	16	12	0	0	0	0	0	0	0	0
334	24	24	24	25	26	22	6	0	0	0	0	0	0	0
335	35	35	35	37	38	33	17	4	3	1	0	0	0	0
336	45	45	46	47	48	43	26	9	5	1	0	0	0	0
337	40	40	40	42	43	38	21	5	4	2	1	1	1	0
338	40	40	41	42	43	38	22	7	3	0	0	0	0	0
339	40	41	43	45	46	35	5	2	2	1	0	0	0	0

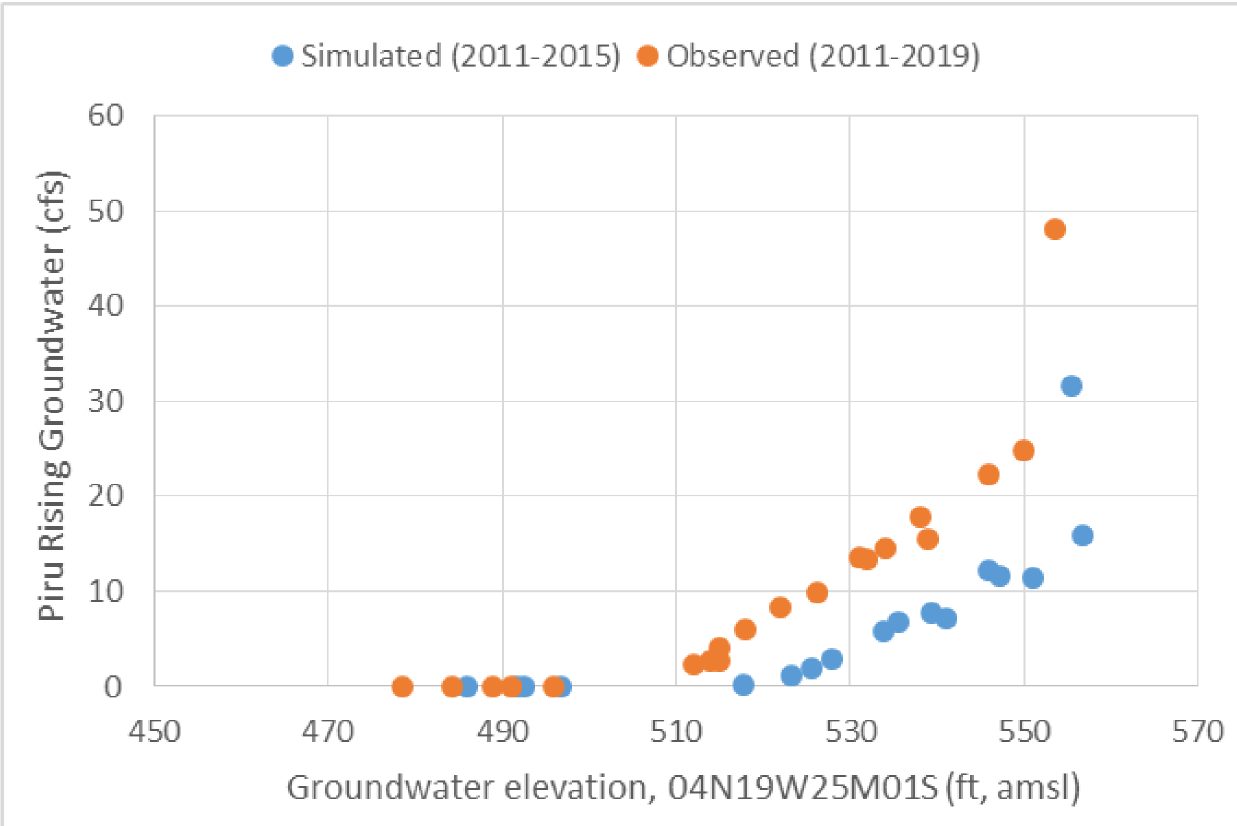
Stress	28-1	28-2	28-3	28-4	28-5	28-6	28-7	28-8	28-9	28-10	29-1	29-2	29-3	29-4	29-5	29-6	29-7	29-8	29-9	29-10	29-11	29-12
313	1	1	1	1	1	1	1	0	0	0	3	3	3	2	2	2	4	9	10	15	20	20
314	4	4	4	4	3	3	3	3	3	3	12	12	12	12	12	12	13	14	14	15	17	17
315	167	167	167	167	166	166	166	166	166	166	224	224	224	224	224	224	225	225	226	227	228	228
316	51	51	51	51	51	51	50	50	50	50	60	59	59	59	60	60	60	62	62	64	67	67
317	0	0	0	0	0	0	0	0	0	1	4	4	4	4	4	5	7	11	11	15	20	20
318	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	3	4	6	6	9	12	12
319	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	3	5	9	10	14	19	19
320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	7	8	12	16	16
321	195	191	183	176	170	163	157	152	150	147	145	144	143	140	140	138	140	159	161	169	175	173
322	215	213	207	202	198	193	188	185	184	184	182	181	181	179	178	177	179	196	198	203	209	207
323	32	32	32	32	32	31	31	31	31	31	31	31	31	31	31	32	33	36	37	39	42	42
324	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	5	5	9	12	12
325	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6	6	10	14	14
326	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5	8	12	12
327	7	7	7	7	7	7	7	6	6	6	8	8	8	8	8	8	9	10	11	13	15	15
328	7	7	7	7	7	7	7	7	7	7	14	14	14	14	14	14	14	15	16	17	19	19
329	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5	8	12	12
330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5	8	12	12
331	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	4	7	10	10
332	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	7	9	9
333	242	237	227	219	212	205	197	192	187	177	175	173	170	163	161	154	155	168	170	175	177	174
334	247	244	238	233	228	223	218	214	211	205	203	202	200	195	193	189	190	202	203	208	211	209
335	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	6	7	7
336	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	3	6	8	8
337	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	2	4	5	7	9	9
338	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	5	7	7
339	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	6	6

Figure 4-75. Simulated Monthly Streamflow in the Santa Clara River across Piru basin (UWCD groundwater model stream segments 23 – 29). Monthly streamflow is derived from daily model outputs. Columns indicate one model cell, rows indicate months, flow direction is from left to right. Watershed features are indicated at the top for reference, including known losing (red), gaining (green), and stable (yellow) reaches. In the heatmap with monthly flows, flow magnitudes are colored from low (red) to high (blue). A. Upstream portion of dry gap in Piru basin, B. Stream channel percolation during conservation release, C. Piru-Fillmore basin boundary rising groundwater.

				EAST												STREAM FLOW →																						WEST
						Fish Hatchery Outfall						A St bridge								Sespe Creek							Start Rising GW						Willard					SP Creek
		Stream Segment							30											31										32				33				
		Stream Cell		10	11	12	13	14	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	5
Stress	Year	MM	Release																																			
322	2011	10	1	203	209	207	206	206	204	203	202	201	199	196	194	192	192	190	187	199	197	195	193	190	188	187	187	191	192	199	199	202	202	203	203	203	202	202
323	2011	11		39	42	42	42	42	41	41	41	41	41	41	41	41	41	40	40	56	56	56	56	56	55	55	55	56	57	66	66	68	68	69	69	69	69	69
324	2011	12		9	12	12	12	12	11	11	11	11	11	11	11	11	11	11	10	28	28	27	27	27	27	27	27	28	28	38	38	40	40	41	41	41	41	41
325	2012	1		10	14	14	14	14	13	13	13	13	13	13	13	12	12	12	12	29	28	28	28	28	28	28	28	29	29	40	40	42	42	44	44	43	43	43
326	2012	2		8	12	12	11	11	11	11	11	11	11	10	10	10	10	10	10	23	22	22	22	22	22	22	22	23	23	31	32	33	34	34	34	34	34	34
327	2012	3		13	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	68	68	68	68	68	67	67	67	68	68	78	79	79	80	81	81	81	80	80
328	2012	4		17	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	92	92	92	92	92	92	92	92	92	92	103	103	104	104	105	105	105	105	105
329	2012	5		8	12	12	12	12	11	11	11	11	11	11	11	11	11	10	10	26	26	25	25	25	25	25	25	26	26	35	35	37	37	38	38	38	38	38
330	2012	6		8	12	12	11	11	11	11	11	11	10	10	10	10	10	10	9	13	13	13	13	12	12	12	12	13	13	19	20	21	21	22	22	22	22	22
331	2012	7		7	10	10	9	9	9	9	9	9	9	8	8	8	8	8	8	8	8	8	8	7	7	7	7	8	8	14	14	15	16	16	16	16	16	16
332	2012	8		7	9	9	8	8	8	8	8	8	7	7	7	7	7	7	6	6	6	6	6	6	5	5	5	6	6	12	12	13	13	13	13	13	13	13
333	2012	9	1	175	177	174	173	173	169	169	167	166	163	160	157	154	153	151	147	147	145	142	139	135	132	129	129	133	133	138	138	140	140	140	140	140	139	138
334	2012	10	1	208	211	209	207	207	205	205	203	202	200	197	195	193	192	191	187	189	187	184	182	179	177	174	174	178	179	184	184	186	186	186	186	185	185	185
335	2012	11		6	7	7	7	7	6	6	6	6	6	6	6	5	5	5	5	6	6	6	6	6	5	5	5	6	6	13	13	14	14	15	15	14	14	14
336	2012	12		6	8	8	7	7	7	7	7	7	7	7	6	6	6	6	6	8	8	8	8	8	8	8	8	9	9	18	18	19	20	20	20	20	20	20
337	2013	1		7	9	9	9	9	9	9	9	8	8	8	8	8	8	8	8	16	15	15	15	15	15	15	15	16	16	26	27	28	29	29	29	29	29	29
338	2013	2		5	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	12	12	11	11	11	11	11	11	12	12	20	20	22	22	23	23	23	22	22
339	2013	3		4	6	6	5	5	5	5	5	5	5	4	4	4	4	4	4	10	9	9	9	9	9	9	9	10	10	18	18	19	20	20	20	20	20	20
340	2013	4		4	5	5	4	4	4	4	4	4	4	4	3	3	3	3	3	4	4	4	4	3	3	3	3	4	4	11	11	12	13	13	13	13	12	12
341	2013	5		3	4	4	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1	2	2	8	8	9	9	10	10	9	9	9
342	2013	6		3	3	3	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	6	6	7	7	7	7	7	7	7
343	2013	7		2	2	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5	5	7	7	7	7	6	6	6
344	2013	8		1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5	5	6	6	6	6	6	6	6
345	2013	9		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5	5	6	6	6	6	6	6	6
346	2013	10		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5	5	6	6	6	6	6	6	6
347	2013	11		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5	5	6	6	6	6	6	6	6
348	2013	12		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5	5	6	6	6	6	6	6	6

Figure 4-76. Simulated Monthly Streamflow in the Santa Clara River across Fillmore Basin (UWCD groundwater model stream segments 30 – 32). Monthly streamflow is derived from daily model outputs. Columns indicate one model cell, rows indicate months, flow direction is from left to right. Watershed features are indicated at the top for reference, including known losing (red), gaining (green), and stable (yellow) reaches. In the heatmap with monthly flows, flow magnitudes are colored from low (red) to high (blue). A. Stream channel percolation during conservation release, B. Stream channel percolation during dry winter period with low flows, C. Fillmore – Santa Paula basin boundary with rising groundwater.

(A)



(B)

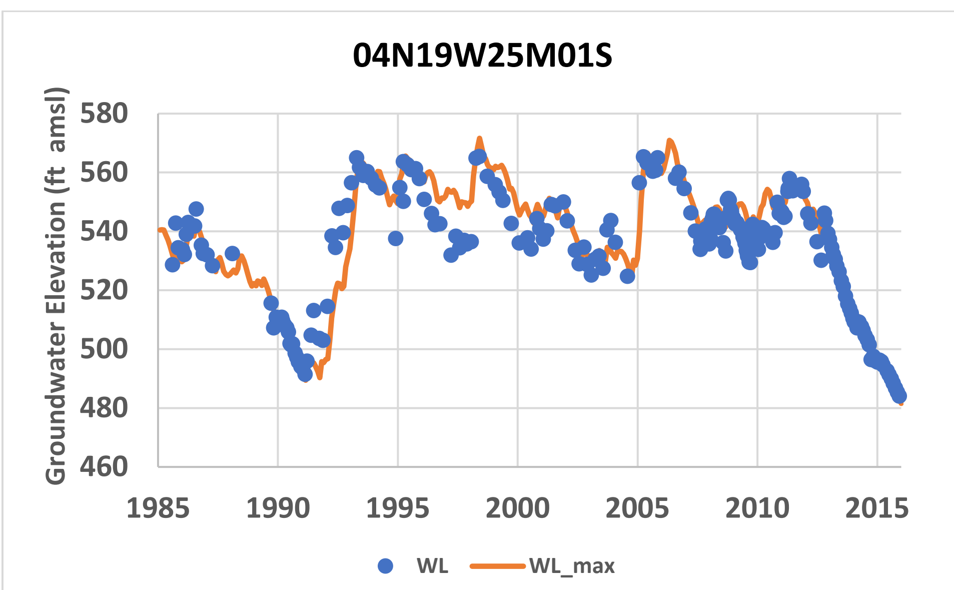
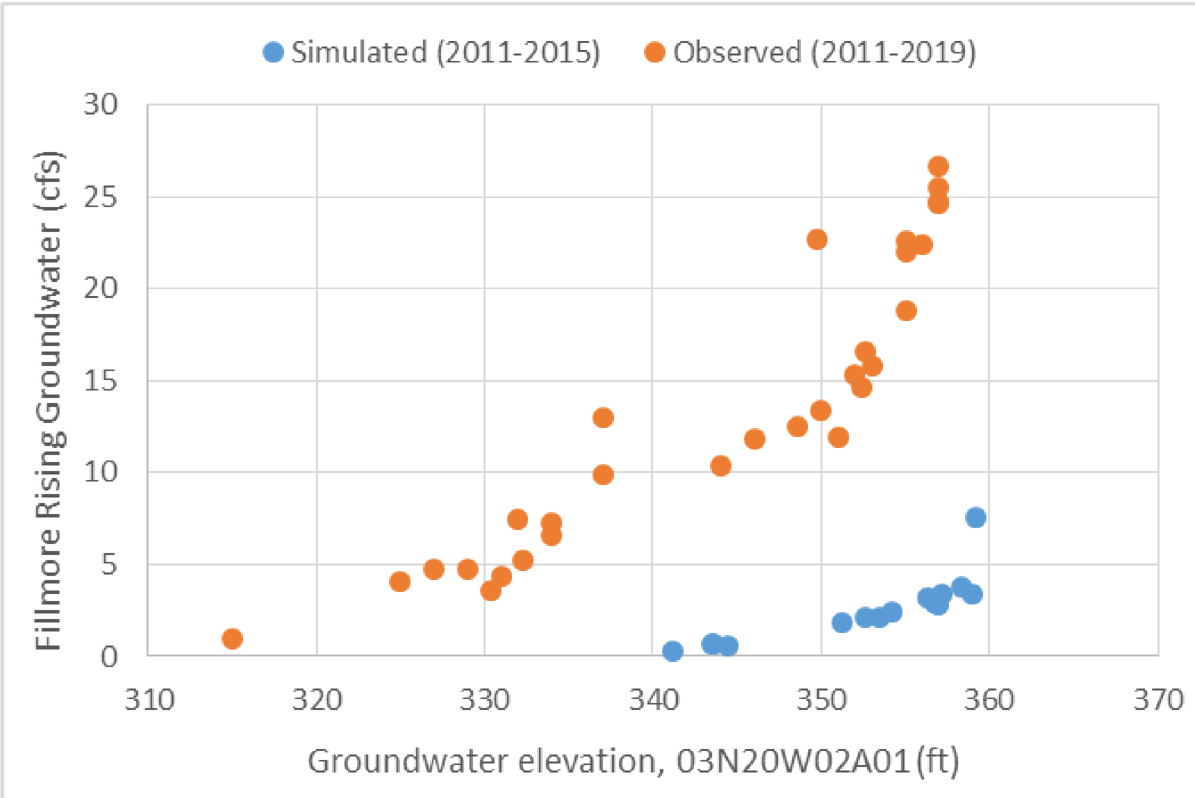


Figure 4-77. (A) Simulated and Observed Relationship Between Rising Groundwater at the Piru-Fillmore Basin Boundary and Groundwater Elevation in Piru Basin Well 04N19W25M01. (B) Simulated (orange line) and observed (blue dots) groundwater elevations in Piru basin well 04N19W25M01.

(A)



(B)

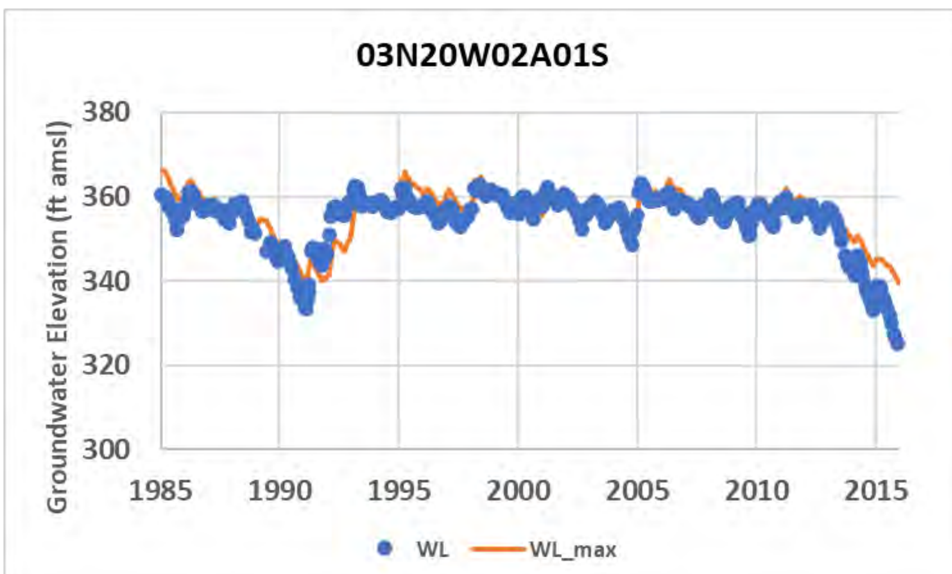


Figure 4-78. (A) Simulated and Observed Relationship Between Rising Groundwater at the Fillmore-Santa Paula Basin Boundary and Groundwater Elevation in Fillmore Basin Well 03N20W02A01. (B) Simulated (orange line) and observed (blue dots) groundwater elevations in Fillmore basin well 03N20W02A01.

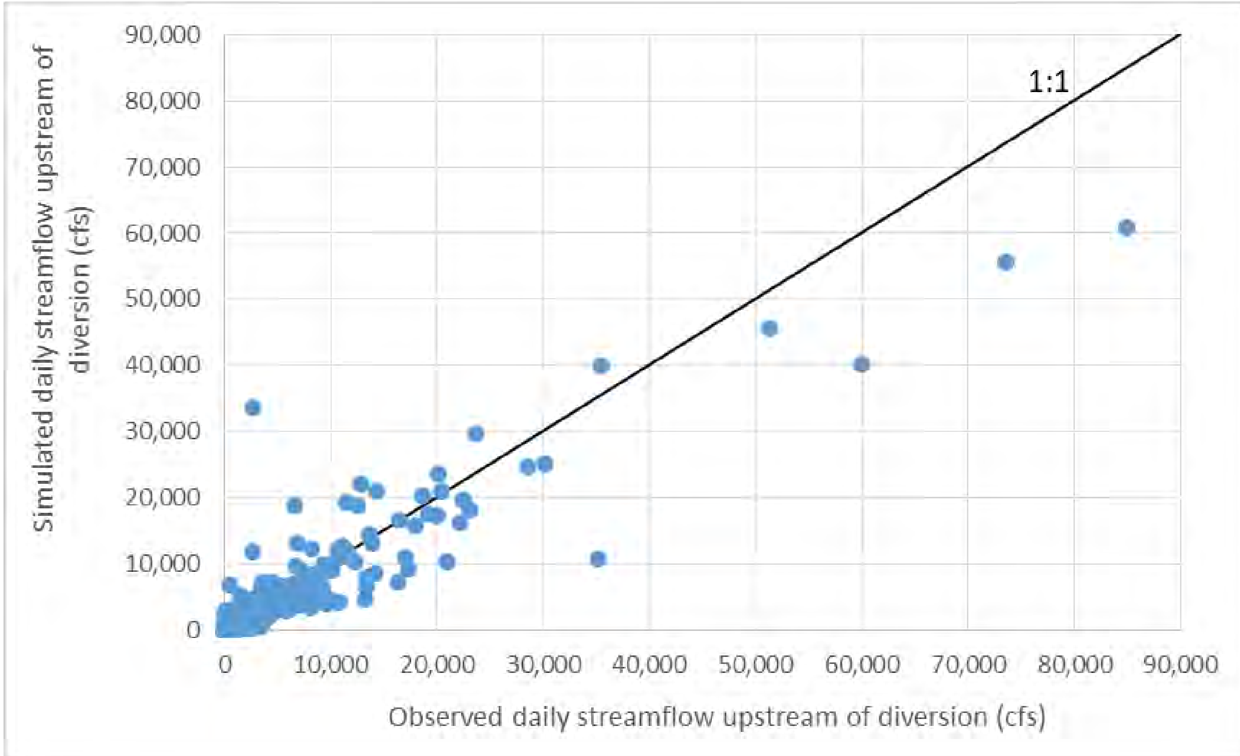


Figure 4-79. Simulated (Regional Model) and Observed Daily Streamflow Upstream of the Freeman Diversion.

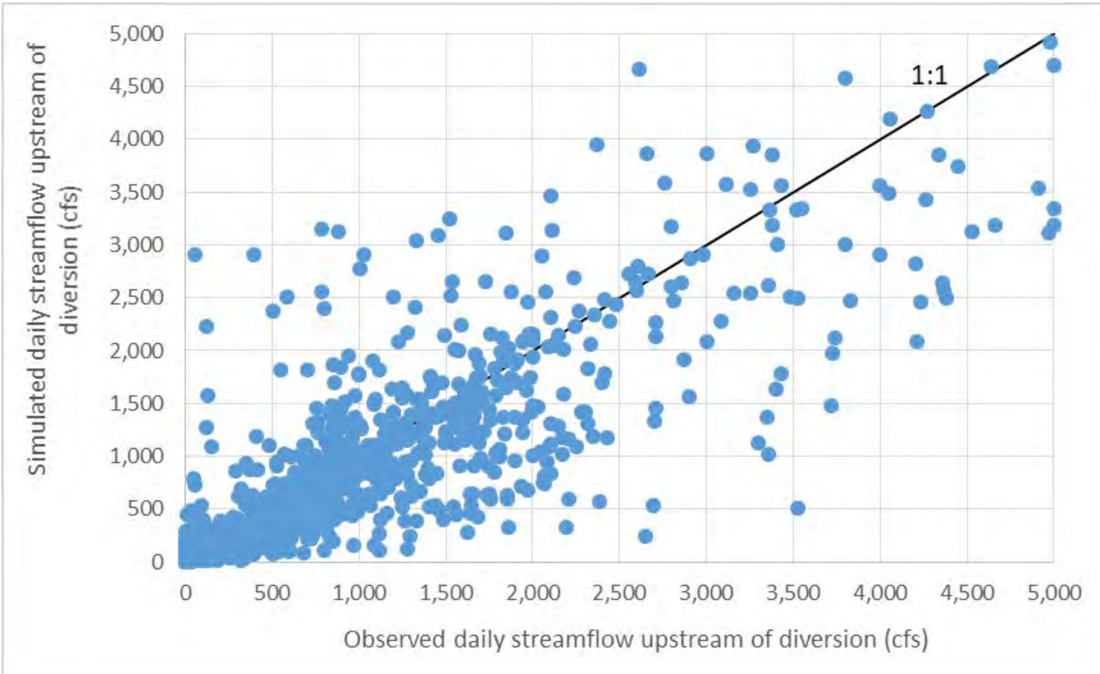


Figure 4-80. Simulated (Regional Model) and Observed daily Streamflow Upstream of the Freeman Diversion.

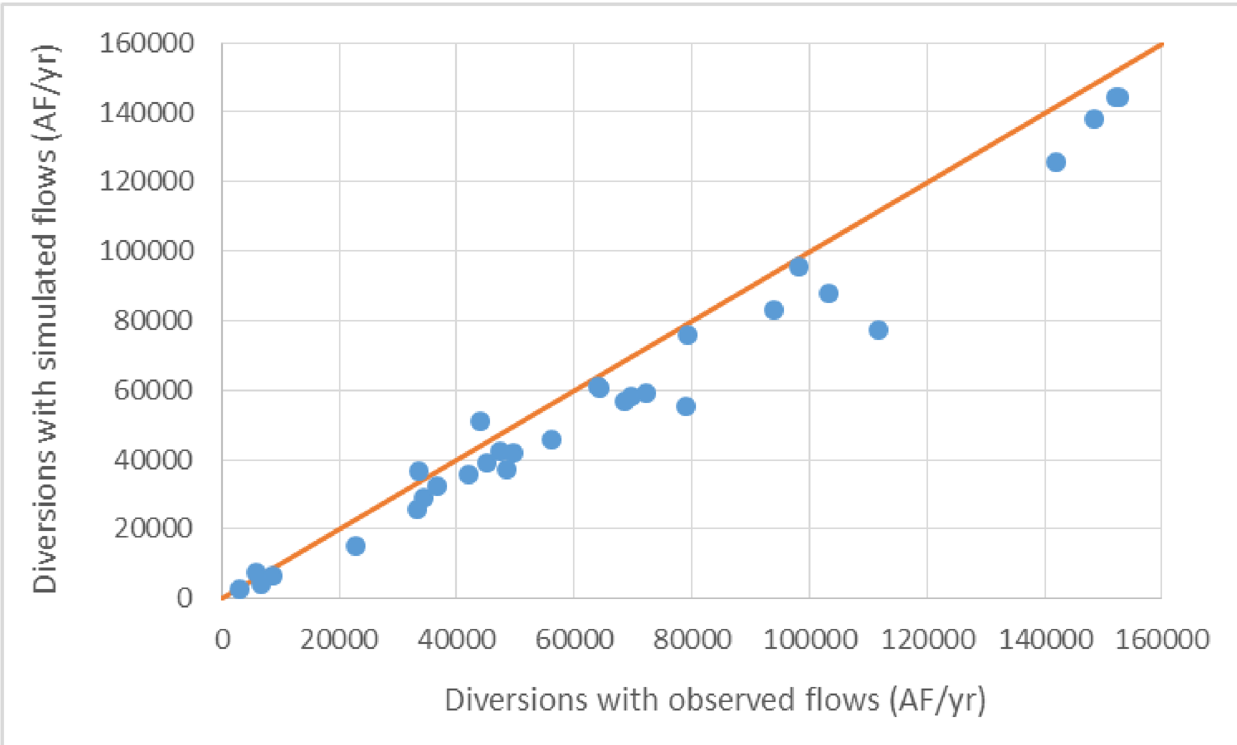


Figure 4-81. Simulated Annual Diversions Based on Observed Flows and Flows Simulated by the Regional Model (1985-2015). Diversion simulations assumed bypass flow operations proposed in United's Freeman Diversion Multiple Species Habitat Conservation Plan, without any infrastructure improvements. The orange line represents the 1:1 line.

Appendix A – Additional Model Expansion Calibration Hydrographs

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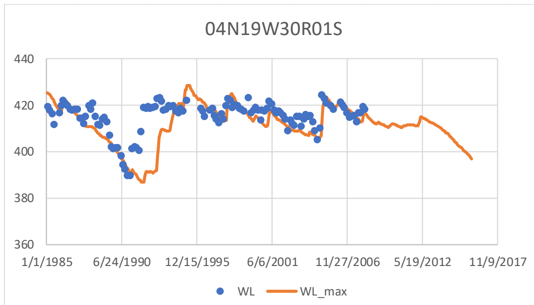
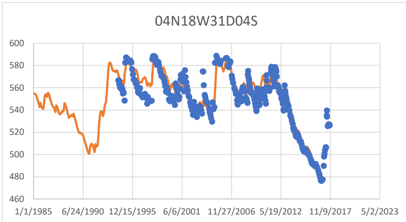
Legend



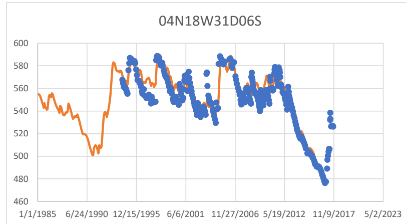
		173	0	300	0	305	
04N19W30R01S		2	3	3.6	8.3	5.3	
04N19W30R01S		2	459.475	3.6	8.3	5.3	
Aquifer	A	G.S.	459.475	OBS #	128		

		Depth to Top of Screen	Est. Depth to Top of Screen	Depth to Bottom of Screen	Est. Depth to Bottom of Screen	Well Depth
Well ID		Upper Screened Model Layer	Lower Screened Model Layer	R.M.	RMS	ARM
Well ID		Model layer with best fit simulated WL		R.M.	RMS	ARM
Aquifer	System	G.S.	Ground surface elev	OBS #	WL data number	

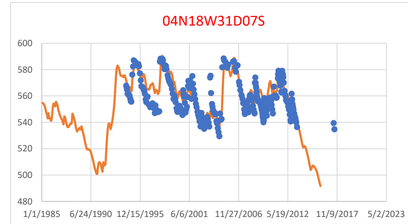
Well Hydrographs in Piru basin



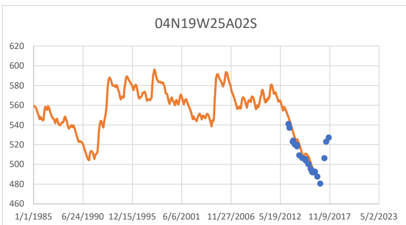
	310	0	330	0	330
04N18W31D04S	7	7	-4.0	7.6	6.2
04N18W31D04S	7		-4.0	7.6	6.2
Aquifer B	G.S.	601.054	OBS #	317	



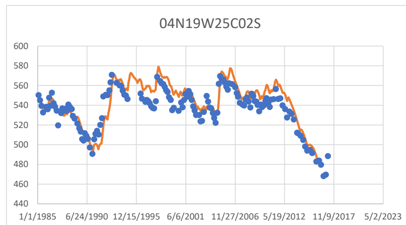
	140	0	160	0	160
04N18W31D06S	5	5	-4.0	7.5	6.1
04N18W31D06S	7		-3.8	7.4	6.0
Aquifer B	G.S.	661.434	OBS #	97	



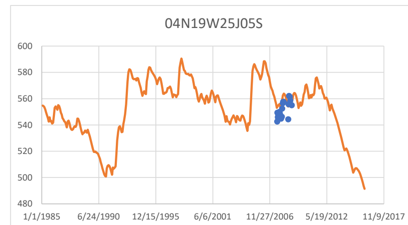
	50	0	70	0	70
04N18W31D07S	3	3	-3.9	7.7	6.2
04N18W31D07S	7		-3.6	7.6	6.1
Aquifer A	G.S.	601.054	OBS #	289	



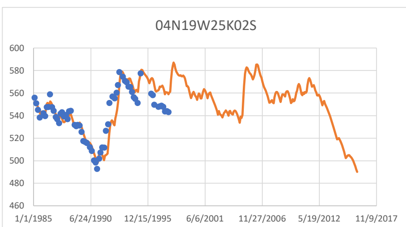
	267	0	460	0	460
04N19W25A02S	7	7	-6.4	6.7	6.4
04N19W25A02S	8		1.5	2.6	2.2
Aquifer B	G.S.	628.34	OBS #	17	



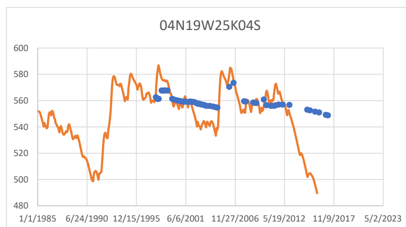
	265	0	504	0	504
04N19W25C02S	7	7	-4.8	10.3	8.8
04N19W25C02S	8		2.0	9.5	6.6
Aquifer B	G.S.	641.037	OBS #	149	



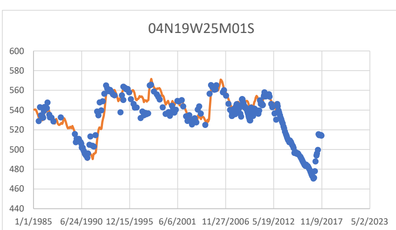
	180	0	380	0	400
04N19W25J05S	7	7	-6.3	7.0	6.5
04N19W25J05S	8		4.8	6.3	5.0
Aquifer B	G.S.	603.437	OBS #	26	



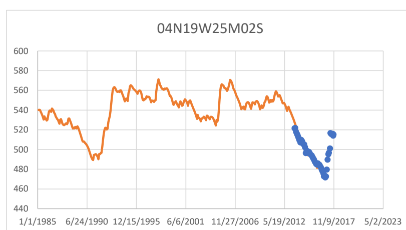
	120	0	290	0	302
04N19W25K02S	5	7	-1.3	9.9	7.5
04N19W25K02S	7		-1.2	9.9	7.4
Aquifer B	G.S.	603.563	OBS #	66	



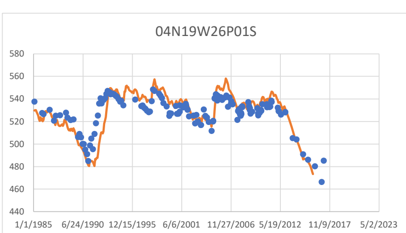
	220	0	370	0	380
04N19W25K04S	7	7	4.9	16.3	11.0
04N19W25K04S	3		5.0	16.3	11.0
Aquifer B	G.S.	602.712	OBS #	50	



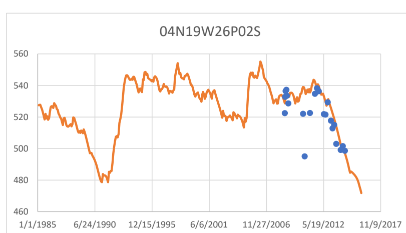
	0	0	0	0	0
04N19W25M01S	0	0	-2.3	7.0	5.2
04N19W25M01S	5		-1.8	7.0	5.0
unknown	G.S.	585.269	OBS #	232	



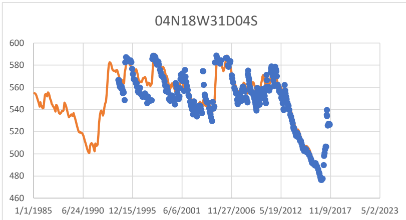
	526	0	626	0	634
04N19W25M02S	7	8	-0.9	2.5	2.0
04N19W25M02S	5		-0.5	2.5	2.0
Aquifer B+C	G.S.	585.335	OBS #	29	



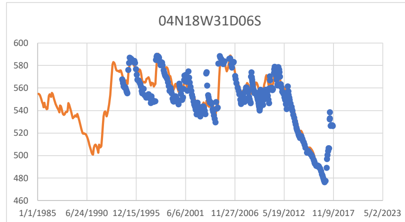
	212	0	268	0	280
04N19W26P01S	7	7	-1.5	9.7	7.5
04N19W26P01S	6		0.1	9.6	6.8
Aquifer B	G.S.	568.779	OBS #	152	



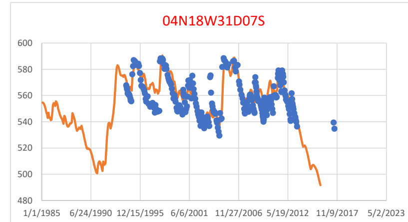
	0	0	0	256	-256
04N19W26P02S	7	7	-6.7	11.5	7.5
04N19W26P02S	10		-0.9	10.3	7.0
Aquifer B	G.S.	558.667	OBS #	22	



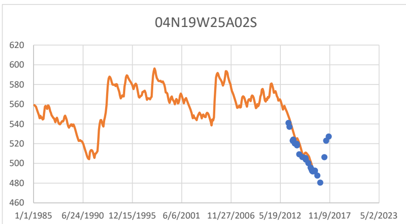
		310	0	330	0	330
04N18W31D04S	7		7	-4.0	7.6	6.2
04N18W31D04S		7		-4.0	7.6	6.2
Aquifer B		G.S.	601.054	OBS #	317	



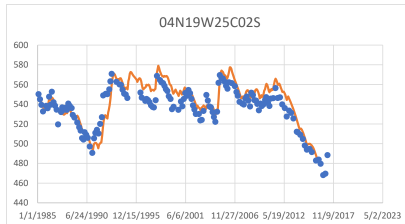
		140	0	160	0	160
04N18W31D06S	5		5	-4.0	7.5	6.1
04N18W31D06S		7		-3.8	7.4	6.0
Aquifer B		G.S.	661.434	OBS #	97	



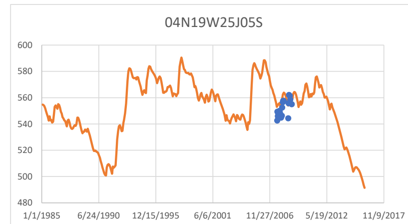
		50	0	70	0	70
04N18W31D07S	3		3	-3.9	7.7	6.2
04N18W31D07S		7		-3.6	7.6	6.1
Aquifer A		G.S.	601.054	OBS #	289	



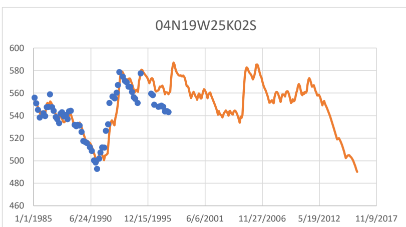
		267	0	460	0	460
04N19W25A02S	7		7	-6.4	6.7	6.4
04N19W25A02S		8		1.5	2.6	2.2
Aquifer B		G.S.	628.34	OBS #	17	



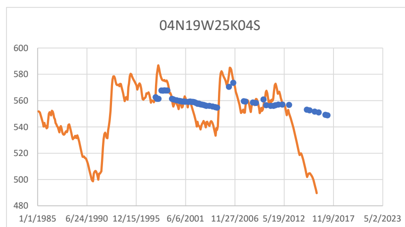
		265	0	504	0	504
04N19W25C02S	7		7	-4.8	10.3	8.8
04N19W25C02S		8		2.0	9.5	6.6
Aquifer B		G.S.	641.037	OBS #	149	



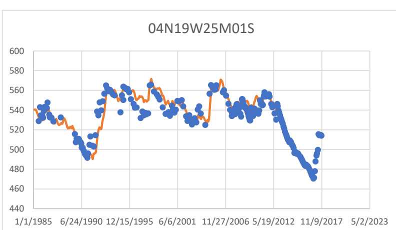
		180	0	380	0	400
04N19W25J05S	7		7	-6.3	7.0	6.5
04N19W25J05S		8		4.8	6.3	5.0
Aquifer B		G.S.	603.437	OBS #	26	



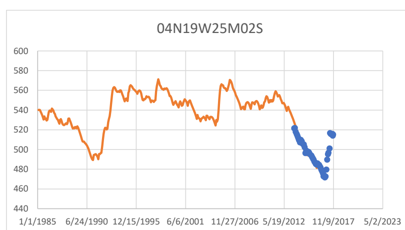
		120	0	290	0	302
04N19W25K02S	5		7	-1.3	9.9	7.5
04N19W25K02S		7		-1.2	9.9	7.4
Aquifer B		G.S.	603.563	OBS #	66	



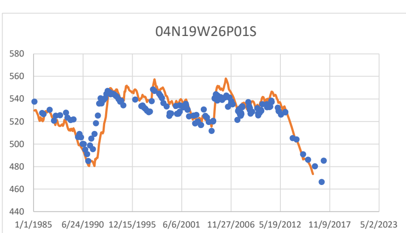
		220	0	370	0	380
04N19W25K04S	7		7	4.9	16.3	11.0
04N19W25K04S		3		5.0	16.3	11.0
Aquifer B		G.S.	602.712	OBS #	50	



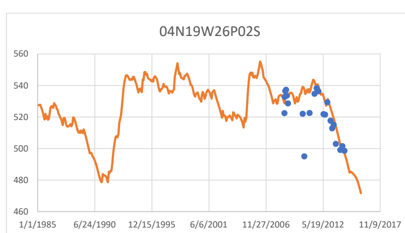
		0	0	0	0	0
04N19W25M01S	0		0	-2.3	7.0	5.2
04N19W25M01S		5		-1.8	7.0	5.0
unknown		G.S.	585.269	OBS #	232	



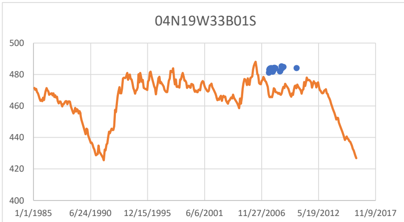
		526	0	626	0	634
04N19W25M02S	7		8	-0.9	2.5	2.0
04N19W25M02S		5		-0.5	2.5	2.0
Aquifer B+C		G.S.	585.335	OBS #	29	



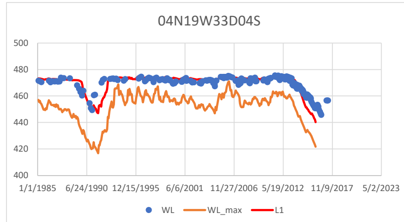
		212	0	268	0	280
04N19W26P01S	7		7	-1.5	9.7	7.5
04N19W26P01S		6		0.1	9.6	6.8
Aquifer B		G.S.	568.779	OBS #	152	



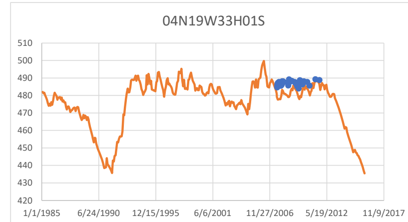
		0	0	0	256	-256
04N19W26P02S	7		7	-6.7	11.5	7.5
04N19W26P02S		10		-0.9	10.3	7.0
Aquifer B		G.S.	558.667	OBS #	22	



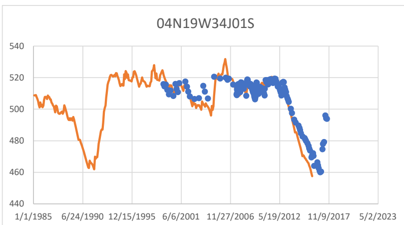
	206	0	306	0	306
04N19W33B01S	7	7	15.6	15.8	15.6
04N19W33B01S	3		5.2	5.7	5.2
Aquifer B	G.S.	493.295	OBS #	26	



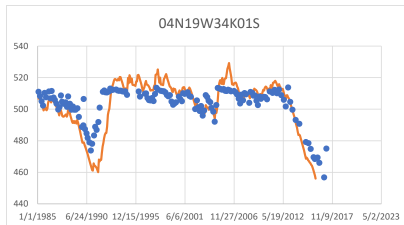
	140	0	486	0	496
04N19W33D04S	6	7	17.7	18.8	17.7
04N19W33D04S	1	474.31	0.4	4.0	2.6
Aquifer B	G.S.	474.31	OBS #	227	



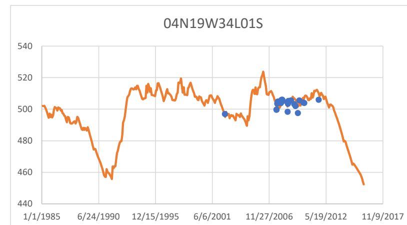
	237	0	362	0	370
04N19W33H01S	7	7	6.6	7.0	6.6
04N19W33H01S	5		0.9	2.7	2.3
Aquifer B	G.S.	501.471	OBS #	49	



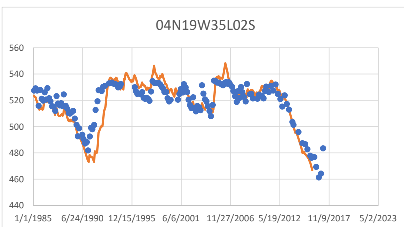
	72	0	120	0	138
04N19W34J01S	3	5	2.0	4.9	3.7
04N19W34J01S	7		1.4	4.8	3.7
Aquifer A+B	G.S.	528.394	OBS #	148	



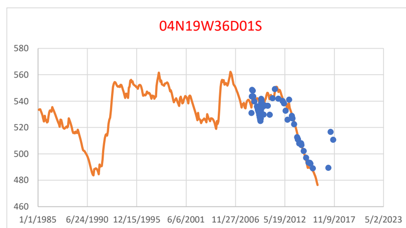
	5	0	120	0	130
04N19W34K01S	3	5	1.2	9.5	7.1
04N19W34K01S	3		1.2	9.5	7.1
Aquifer A+B	G.S.	526.533	OBS #	153	



	90	0	430	0	450
04N19W34L01S	3	7	-1.0	2.5	2.0
04N19W34L01S	3		-0.9	2.4	2.0
Aquifer A+B	G.S.	519.122	OBS #	21	

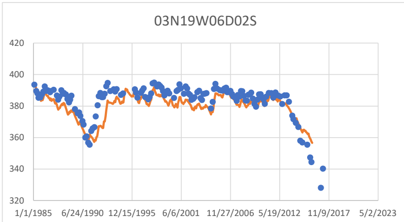


	0	0	0	0	0
04N19W35L02S	0	0	1.5	8.7	6.2
04N19W35L02S	5		1.9	8.8	6.1
unknown	G.S.	579.362	OBS #	153	

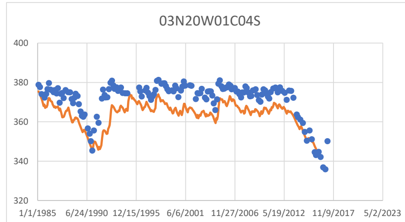


	18	0	73	0	73
04N19W36D01S	3	3	-2.4	5.5	4.4
04N19W36D01S	5		-2.4	5.4	4.3
Aquifer A	G.S.	560.409	OBS #	51	

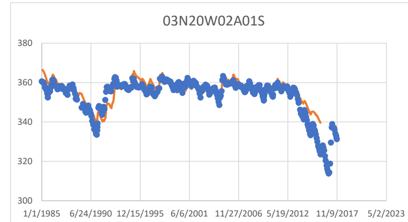
Well Hydrographs in Fillmore basin



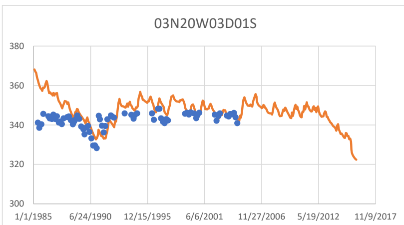
	216	0	405	0	405
03N19W06D02S	5	7	4.6	6.8	5.5
03N19W06D02S	7		4.6	6.8	5.5
Aquifer B	G.S.	433.237	OBS #	148	



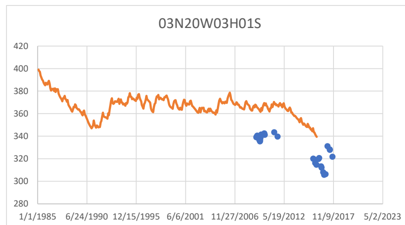
	49	0	218	0	234
03N20W01C04S	3	5	8.6	9.4	8.7
03N20W01C04S	8		2.4	5.2	4.1
Aquifer A+B	G.S.	403.611	OBS #	154	



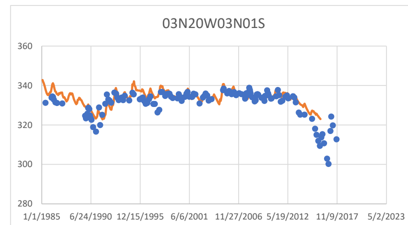
	0	0	0	92	-92
03N20W02A01S	1	3	-1.6	3.8	2.7
03N20W02A01S	7		0.6	3.5	2.5
Aquifer A	G.S.	381.101	OBS #	401	



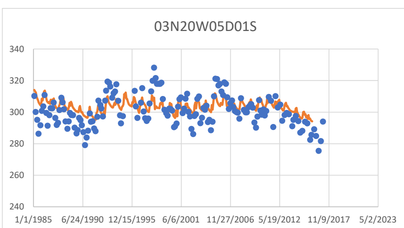
	0	0	0	575	-575
03N20W03D01S	7	8	-4.0	7.0	5.3
03N20W03D01S	8		-4.0	7.0	5.3
Aquifer B	G.S.	348.336	OBS #	74	



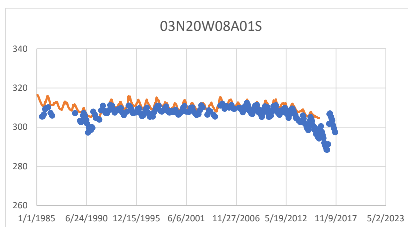
	0	0	0	0	0
03N20W03H01S	0	0	-25.3	25.3	25.3
03N20W03H01S	3		-5.8	7.0	5.8
unknown	G.S.	359.247	OBS #	25	



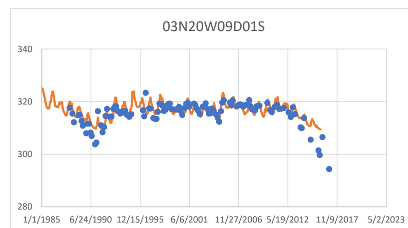
	120	0	172	0	184
03N20W03N01S	3	5	-1.8	3.6	2.5
03N20W03N01S	7		-1.7	3.5	2.5
Aquifer A+B	G.S.	343.712	OBS #	136	



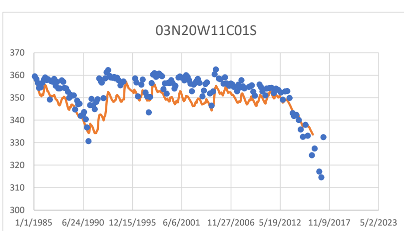
	215	0	315	0	357
03N20W05D01S	5	7	-2.3	7.6	6.2
03N20W05D01S	6		-1.9	7.6	6.2
Aquifer B	G.S.	446.014	OBS #	167	



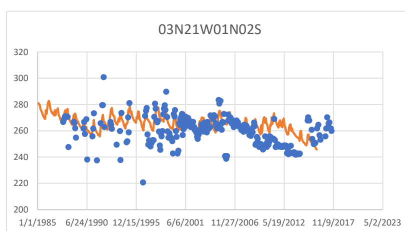
	0	0	0	0	0
03N20W08A01S	3	5	-2.9	3.5	3.0
03N20W08A01S	3		-2.8	3.4	2.9
Aquifer A+B	G.S.	315.416	OBS #	248	



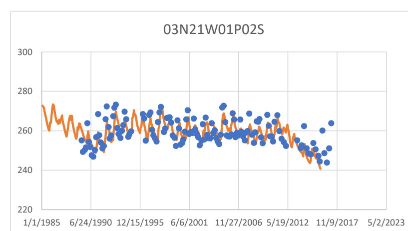
	0	0	0	0	0
03N20W09D01S	5	7	-1.2	2.5	1.8
03N20W09D01S	3		-0.6	2.4	1.7
Aquifer B	G.S.	323.108	OBS #	110	



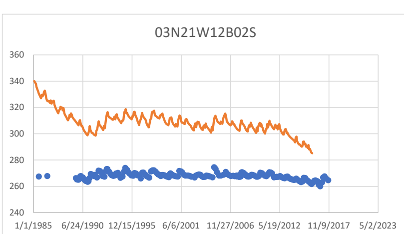
	0	0	0	180	-180
03N20W11C01S	1	5	5.4	6.7	5.9
03N20W11C01S	1	407.59	5.4	6.7	5.9
Aquifer A+B	G.S.	407.59	OBS #	154	



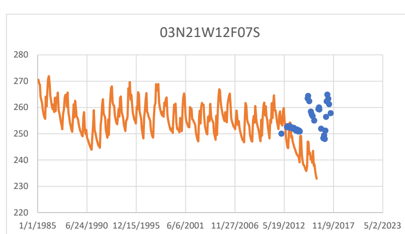
	200	0	400	0	400
03N21W01N02S	5	7	-6.0	11.4	9.0
03N21W01N02S	5		-3.1	10.3	8.1
Aquifer B	G.S.	325.736	OBS #	252	



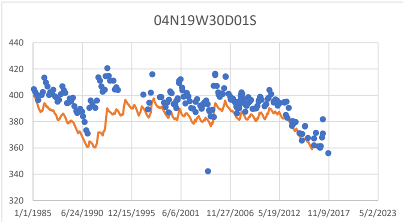
	0	0	0	232	-232
03N21W01P02S	3	3	0.7	4.2	3.5
03N21W01P02S	6		-0.1	3.5	2.8
Aquifer A	G.S.	301.883	OBS #	134	



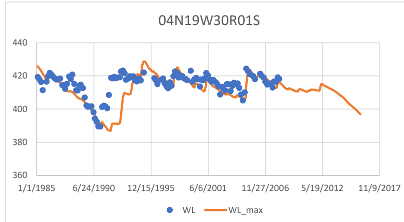
	0	0	0	0	0
03N21W12B02S	0	0	-38.3	38.7	38.3
03N21W12B02S	1		-2.8	3.0	2.9
unknown	G.S.	279.729	OBS #	203	



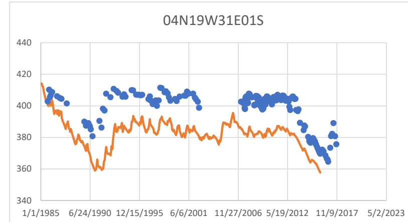
	120	0	400	0	400
03N21W12F07S	3	6	8.6	10.8	9.3
03N21W12F07S	7		5.2	8.3	6.5
Aquifer A+B	G.S.	289.768	OBS #	26	



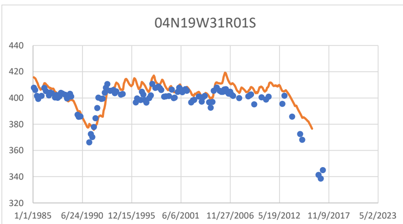
	60	0	380	0	402
04N19W30D01S	3	7	12.7	14.9	13.2
04N19W30D01S	2	467.517	10.3	13.0	11.0
Aquifer A+B	G.S.	467.517	OBS #	202	



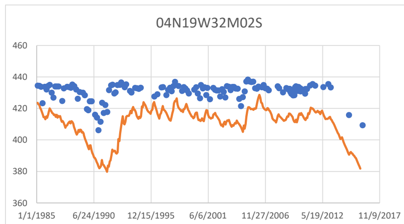
	173	0	300	0	305
04N19W30R01S	2	3	3.6	8.3	5.3
04N19W30R01S	2	459.475	3.6	8.3	5.3
Aquifer A	G.S.	459.475	OBS #	128	



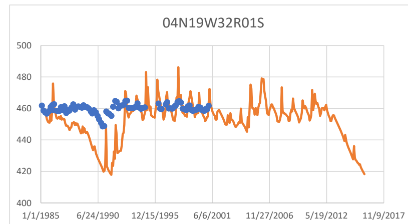
	0	0	0	0	0
04N19W31E01S	0	0	18.7	19.4	18.7
04N19W31E01S	7		20.0	20.5	20.0
unknown	G.S.	418.639	OBS #	181	



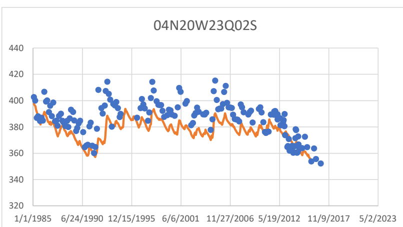
	60	0	137	0	140
04N19W31R01S	3	5	-4.3	7.3	6.1
04N19W31R01S	8		0.5	5.8	4.3
Aquifer A+B	G.S.	457.864	OBS #	102	



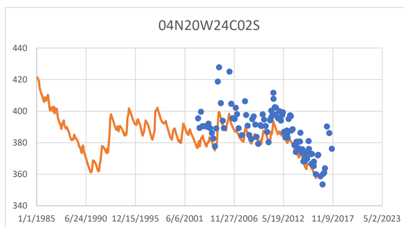
	180	0	300	0	348
04N19W32M02S	5	7	19.3	20.6	19.3
04N19W32M02S	2	446.906	12.8	14.2	12.8
Aquifer B	G.S.	446.906	OBS #	152	



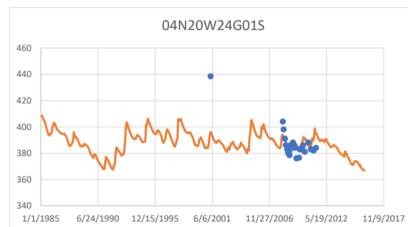
	30	0	90	0	90
04N19W32R01S	3	6	8.6	14.4	10.4
04N19W32R01S	3		8.6	14.4	10.4
Aquifer A+B	G.S.	539.7	OBS #	89	



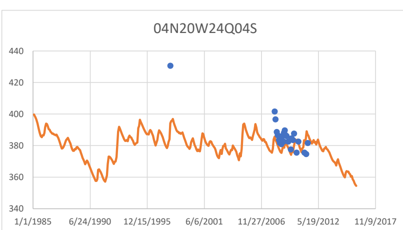
	327	0	567	0	567
04N20W23Q02S	7	7	9.8	12.5	10.9
04N20W23Q02S	8		5.6	10.4	8.5
Aquifer B	G.S.	555.567	OBS #	167	



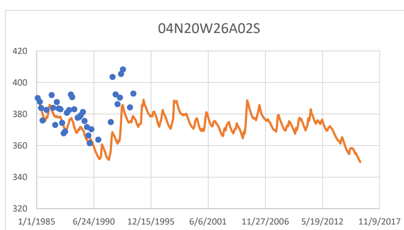
	0	0	0	0	0
04N20W24C02S	0	0	8.7	10.5	8.8
04N20W24C02S	3		9.0	10.8	9.0
unknown	G.S.	499.288	OBS #	92	



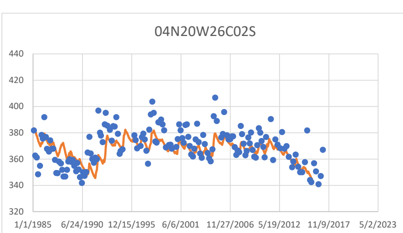
	100	0	260	0	270
04N20W24G01S	4	7	-1.1	10.1	6.0
04N20W24G01S	6		0.0	10.0	5.5
Aquifer B	G.S.	603.861	OBS #	25	



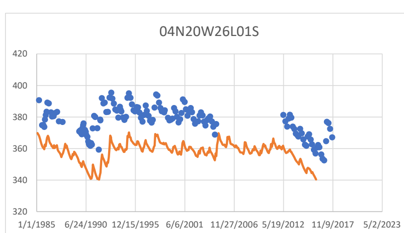
	90	0	300	0	305
04N20W24Q04S	3	7	5.7	10.5	8.2
04N20W24Q04S	9		4.6	10.5	6.9
Aquifer A+B	G.S.	463.028	OBS #	25	



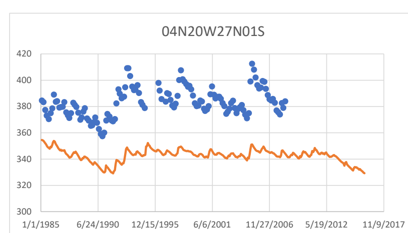
	40	0	254	0	261
04N20W26A02S	3	7	9.5	13.6	10.4
04N20W26A02S	8		3.7	13.1	10.1
Aquifer A+B	G.S.	455.255	OBS #	38	



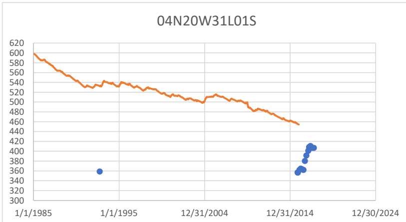
	155	0	255	0	267
04N20W26C02S	6	7	3.2	10.8	8.2
04N20W26C02S	5		2.0	10.8	8.2
Aquifer B	G.S.	495.236	OBS #	159	



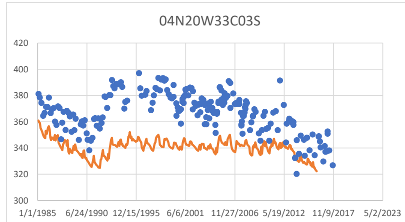
	110	0	397	0	404
04N20W26L01S	3	7	21.9	22.4	21.9
04N20W26L01S	10		5.4	9.9	8.3
Aquifer A+B	G.S.	432.3	OBS #	141	



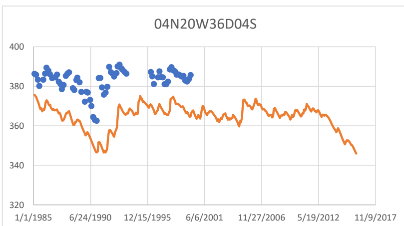
	0	0	0	470	-470
04N20W27N01S	7	7	39.8	40.7	39.8
04N20W27N01S	10		15.9	19.4	17.3
Aquifer B	G.S.	537.206	OBS #	133	



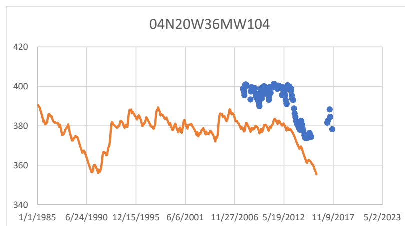
	633	0	1100	0	1100
04N20W31L01S	9	13	-123.5	128.4	123.5
04N20W31L01S	7		-58.7	58.8	58.7
Aquifer C	G.S.	609.389	OBS #	3	



	470	0	700	0	724
04N20W33C03S	7	8	27.6	29.8	27.7
04N20W33C03S	10		10.7	15.8	13.6
Aquifer B+C	G.S.	542.85	OBS #	209	

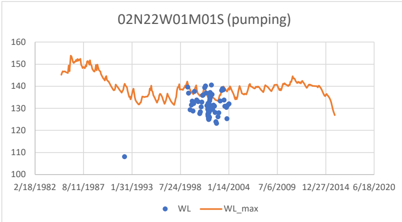


	34	0	68	0	70
04N20W36D04S	3	3	18.9	19.7	18.9
04N20W36D04S	10		4.3	11.2	8.9
Aquifer A	G.S.	397.386	OBS #	74	

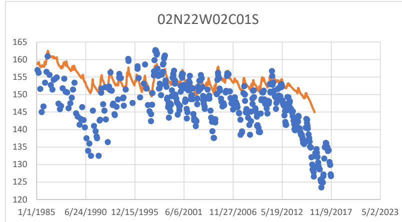


	10	0	40	0	40
04N20W36MW104	3	3	16.8	17.1	16.8
04N20W36MW104	9		16.3	16.5	16.3
Aquifer A	G.S.	411.029	OBS #	132	

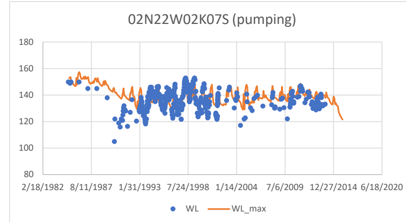
Well Hydrographs in Santa Paula basin



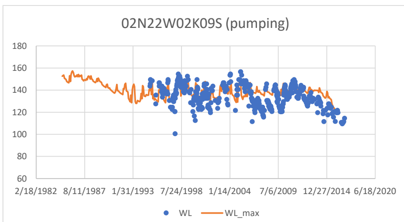
02N22W01M01S	70	0	107	0	116
02N22W01M01S	3	3	-4.7	6.4	5.1
02N22W01M01S	5		-4.7	6.3	5.0
Aquifer A	G.S.	146.425	OBS #	104	



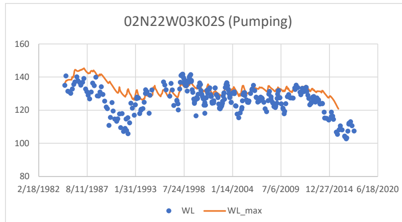
02N22W02C01S	190	0	225	0	226
02N22W02C01S	5	5	-5.8	7.3	6.2
02N22W02C01S	7		-4.0	5.3	4.3
Aquifer B	G.S.	197.832	OBS #	375	



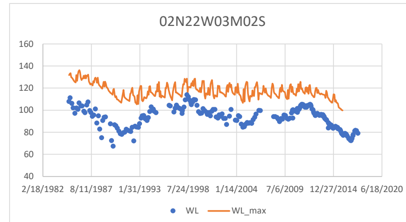
02N22W02K07S	168	0	698	0	698
02N22W02K07S	5	7	-2.4	7.1	5.5
02N22W02K07S	5		-0.6	6.9	5.5
Aquifer B	G.S.	153.877	OBS #	518	



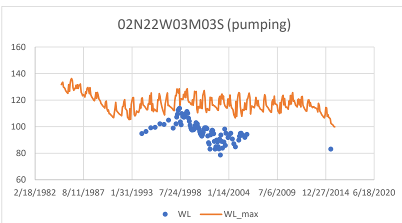
02N22W02K09S	300	0	400	0	420
02N22W02K09S	5	7	-4.0	9.1	7.4
02N22W02K09S	7		-0.4	8.7	6.6
Aquifer B	G.S.	167.74	OBS #	514	



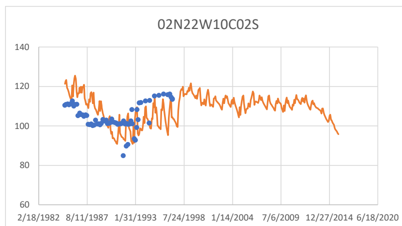
02N22W03K02S	0	115	164	0	164
02N22W03K02S	4	5	-5.7	8.2	6.5
02N22W03K02S	6		-0.3	5.4	4.2
Aquifer B	G.S.	246.669	OBS #	277	



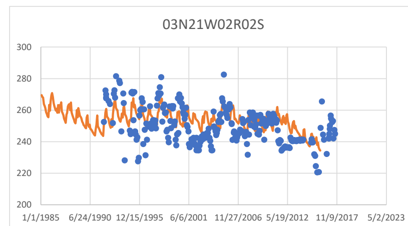
02N22W03M02S	468	0	528	0	544
02N22W03M02S	7	7	-22.1	23.2	22.1
02N22W03M02S	7		-22.1	23.2	22.1
Aquifer B	G.S.	298.269	OBS #	213	



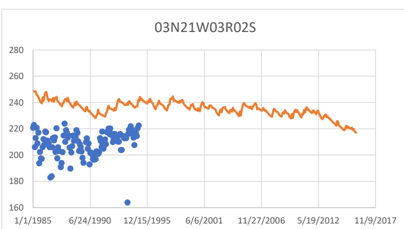
02N22W03M03S	354	0	568	0	604
02N22W03M03S	7	7	-21.7	22.9	21.7
02N22W03M03S	7		-21.7	22.9	21.7
Aquifer B	G.S.	298.267	OBS #	90	



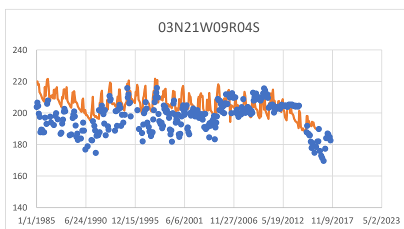
02N22W10C02S	279	0	575	0	575
02N22W10C02S	6	7	-1.4	9.5	8.2
02N22W10C02S	7		-1.3	9.5	8.2
Aquifer B	G.S.	245.011	OBS #	69	



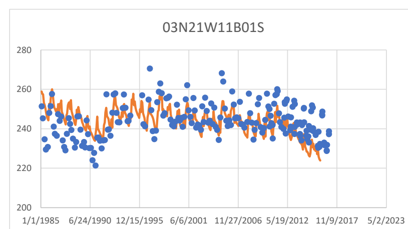
	202	0	360	0	377
03N21W02R02S	5	7	-4.2	10.7	8.8
03N21W02R02S	6		-3.5	10.5	8.6
Aquifer B	G.S.	324.079	OBS #	258	



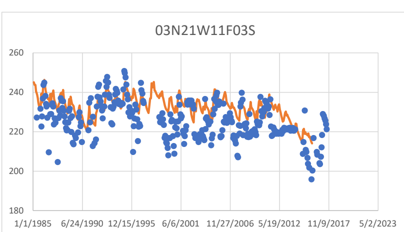
	238	0	524	0	560
03N21W03R02S	7	7	-29.3	30.8	29.3
03N21W03R02S	3		-27.0	28.6	27.0
Aquifer B	G.S.	398.699	OBS #	119	



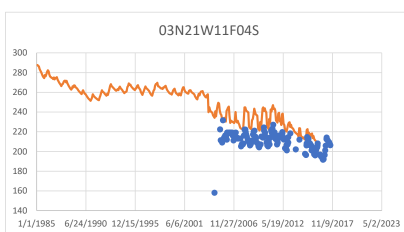
	360	0	756	0	780
03N21W09R04S	7	7	-7.0	11.4	9.5
03N21W09R04S	7		-7.0	11.4	9.5
Aquifer B	G.S.	286.374	OBS #	304	



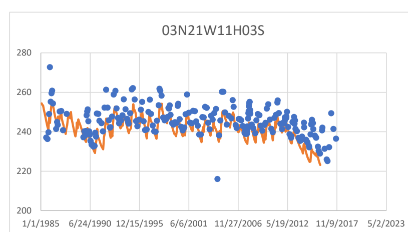
	0	0	0	0	0
03N21W11B01S	7	7	1.4	7.6	6.2
03N21W11B01S	6		1.6	7.5	6.2
Aquifer B	G.S.	331.275	OBS #	201	



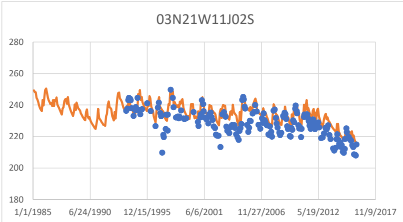
	153	0	518	0	540
03N21W11F03S	4	7	-7.3	10.2	8.5
03N21W11F03S	6		-6.1	9.5	7.8
Aquifer B	G.S.	313.881	OBS #	310	



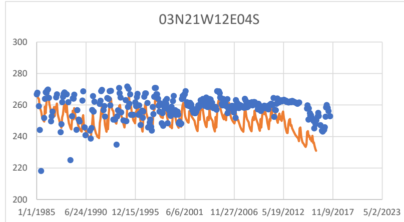
	570	0	850	0	860
03N21W11F04S	7	8	-18.8	20.2	18.8
03N21W11F04S	7		-15.8	16.9	15.8
Aquifer B+C	G.S.	311.227	OBS #	126	



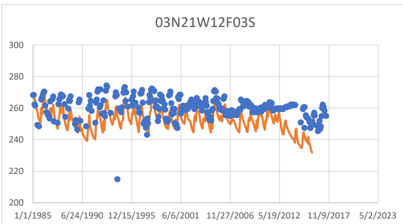
03N21W11H03S	0	0	0	230	-230
03N21W11H03S	1	5	5.0	6.7	5.5
03N21W11H03S	7		5.5	6.9	6.0
Aquifer A+B	G.S.	307.877	OBS #	234	



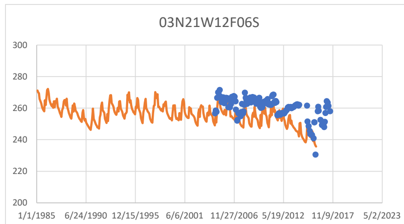
		260	0	700	0	1070
03N21W11J02S		5	7	-5.7	7.0	6.0
03N21W11J02S		6		-4.1	5.7	4.6
Aquifer	B	G.S.	286.964	OBS #	193	



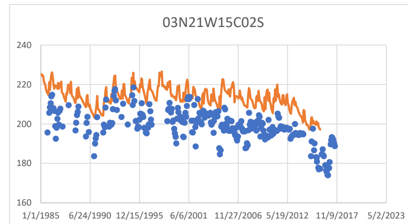
		120	0	284	0	300
03N21W12E04S		3	5	7.2	9.9	8.4
03N21W12E04S		7		4.1	8.5	6.8
Aquifer	A+B	G.S.	291.652	OBS #	304	



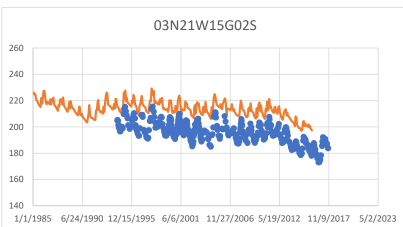
		120	0	284	0	302
03N21W12F03S		3	5	7.9	9.8	8.5
03N21W12F03S		7		4.6	7.7	6.2
Aquifer	A+B	G.S.	291.609	OBS #	299	



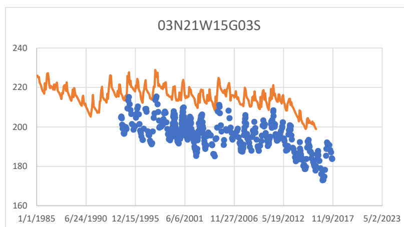
		120	0	395	0	400
03N21W12F06S		4	7	7.5	9.1	7.8
03N21W12F06S		7		7.5	9.1	7.8
Aquifer	B	G.S.	278.213	OBS #	126	



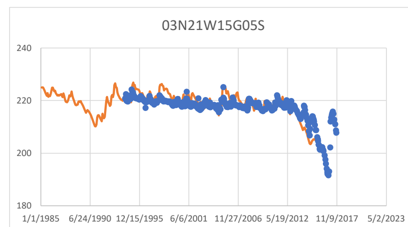
03N21W15C02S		176	0	322	0	350
03N21W15C02S		5	5	-13.6	14.5	13.6
03N21W15C02S		7		-12.0	13.1	12.1
Aquifer	B	G.S.	257.098	OBS #	270	



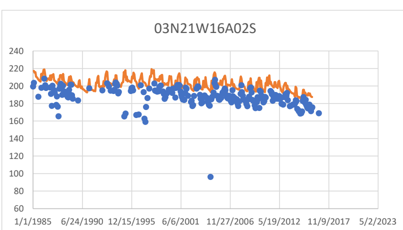
		520	0	540	0	540
03N21W15G02S		7	7	-16.4	16.7	16.4
03N21W15G02S		7		-16.4	16.7	16.4
Aquifer	B	G.S.	231.004	OBS #	405	



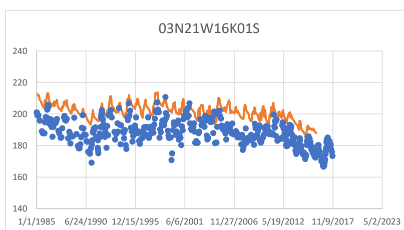
		370	0	390	0	390
03N21W15G03S		5	6	-18.0	18.3	18.0
03N21W15G03S		7		-16.3	16.6	16.3
Aquifer	B	G.S.	231.004	OBS #	414	



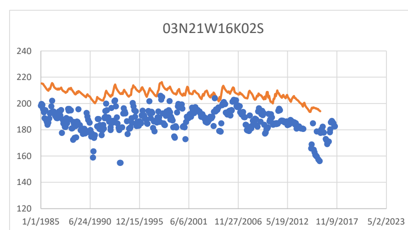
03N21W15G05S		60	0	80	0	80
03N21W15G05S		3	3	-0.6	2.7	2.0
03N21W15G05S		3		-0.6	2.7	2.0
Aquifer	A	G.S.	231.004	OBS #	418	



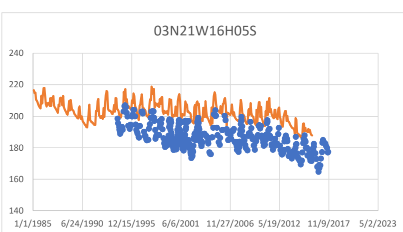
		430	0	580	0	600
03N21W16A02S		7	7	-14.4	16.7	14.4
03N21W16A02S		7		-14.4	16.7	14.4
Aquifer	B	G.S.	272.291	OBS #	229	



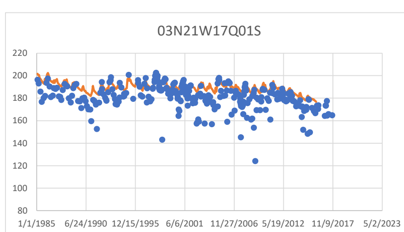
03N21W16K01S		119	0	214	0	216
03N21W16K01S		4	5	-12.2	13.2	12.3
03N21W16K01S		7		-10.0	11.2	10.2
Aquifer	B	G.S.	250.074	OBS #	472	



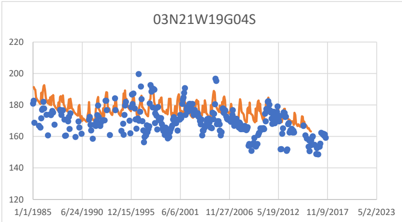
03N21W16K02S		92	0	243	0	243
03N21W16K02S		3	5	-19.9	21.0	19.9
03N21W16K02S		7		-13.0	14.8	13.1
Aquifer	A+B	G.S.	238.061	OBS #	359	



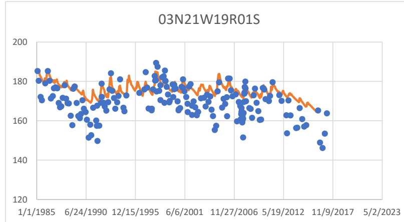
		530	0	550	0	550
03N21W16H05S		7	7	-15.3	15.9	15.3
03N21W16H05S		7		-15.3	15.9	15.3
Aquifer	B	G.S.	252.011	OBS #	411	



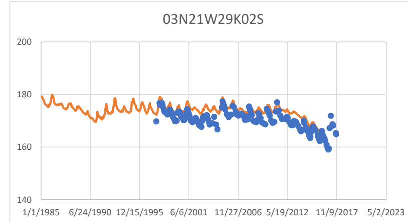
03N21W17Q01S		183	0	243	0	243
03N21W17Q01S		5	5	-8.7	12.2	8.8
03N21W17Q01S		5		-8.7	12.2	8.8
Aquifer	B	G.S.	289.727	OBS #	285	



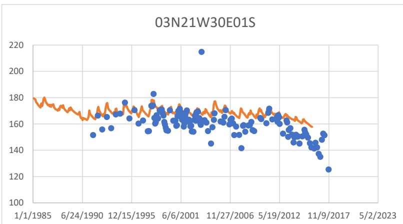
	450	0	720	0	720
03N21W19G04S	7	7	-7.6	10.6	8.8
03N21W19G04S	7		-7.6	10.6	8.8
Aquifer B	G.S.	257.226	OBS #	285	



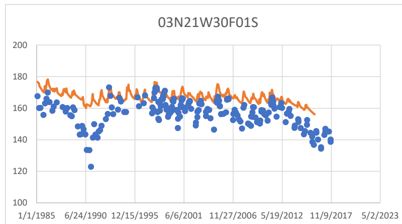
03N21W19R01S	160	0	205	0	210
03N21W19R01S	4	5	-6.1	8.0	6.6
03N21W19R01S	6		-4.4	6.5	5.2
Aquifer B	G.S.	243.186	OBS #	184	



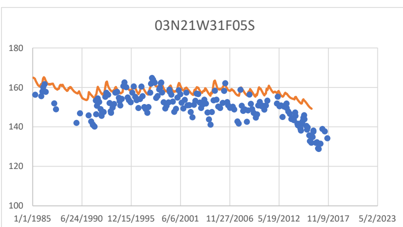
03N21W29K02S	30	0	60	0	70
03N21W29K02S	3	3	-2.9	3.2	2.9
03N21W29K02S	4		-2.9	3.1	2.9
Aquifer A	G.S.	185.625	OBS #	172	



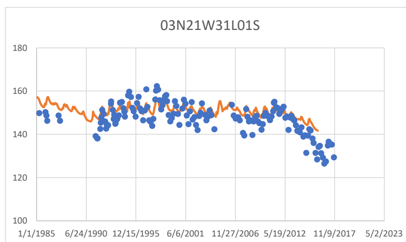
03N21W30E01S	160	0	240	0	240
03N21W30E01S	5	5	-7.4	10.0	8.2
03N21W30E01S	6		-6.9	9.5	7.7
Aquifer B	G.S.	245.739	OBS #	129	



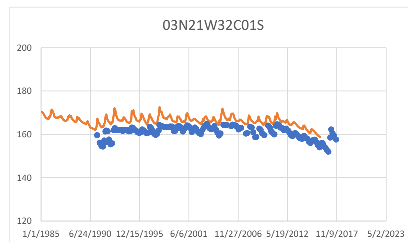
	260	0	424	0	440
03N21W30F01S	5	6	-10.2	11.6	10.3
03N21W30F01S	6		-9.2	10.5	9.2
Aquifer B	G.S.	225.522	OBS #	198	



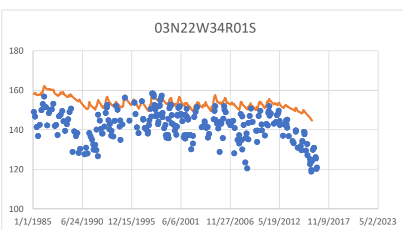
03N21W31F05S	92	0	102	0	102
03N21W31F05S	3	3	-7.2	8.2	7.3
03N21W31F05S	3		-7.2	8.2	7.3
Aquifer A	G.S.	176.04	OBS #	171	



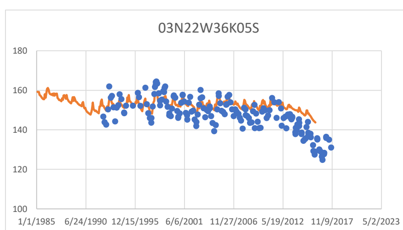
03N21W31L01S	137	0	157	0	157
03N21W31L01S	4	5	-2.4	4.4	3.6
03N21W31L01S	3		-2.0	4.3	3.4
Aquifer B	G.S.	155.798	OBS #	147	



03N21W32C01S	12	0	32	0	0
03N21W32C01S	3	3	-4.9	5.2	4.9
03N21W32C01S	3		-4.9	5.2	4.9
Aquifer A	G.S.	197.566	OBS #	148	



	300	0	343	0	354
03N22W34R01S	5	5	-11.1	12.7	11.1
03N22W34R01S	7		-4.9	7.2	5.5
Aquifer B	G.S.	263.998	OBS #	249	



03N22W36K05S	175	0	265	0	278
03N22W36K05S	5	5	-3.6	6.0	4.9
03N22W36K05S	5		-3.6	6.0	4.9
Aquifer B	G.S.	185.121	OBS #	164	

Appendix B – Monthly Flow Budgets

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Monthly Flow Budget for Aquifer A in Piru Basin

Date	Stress	days in month	STORAGE	SCR Underflow	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet									
1/31/1985	31	31	640	424	31	-209	354	-105	1	-1005	-2942	2811
2/28/1985	59	28	1028	383	12	-185	290	-140	0	-886	-2863	2361
3/31/1985	90	31	916	424	26	-265	343	-122	1	-990	-2972	2640
4/30/1985	120	30	2276	411	9	-276	364	-229	0	-937	-3297	1680
5/31/1985	151	31	2499	424	9	-318	368	-228	0	-953	-3276	1474
6/30/1985	181	30	2236	411	9	-306	764	-227	0	-895	-3191	1198
7/31/1985	212	31	1640	424	9	-312	2374	-343	0	-874	-3895	977
8/31/1985	243	31	2573	424	9	-293	473	-334	0	-842	-3259	1248
9/30/1985	273	30	-2393	411	9	-225	469	-336	0	-778	-5691	8535
10/31/1985	304	31	1726	424	9	-197	464	-339	0	-859	-3500	2271
11/30/1985	334	30	-1335	411	300	-144	1617	-53	4	-854	-1896	1951
12/31/1985	365	31	346	424	22	-126	369	-222	1	-881	-2840	2906
1/31/1986	396	31	-2424	424	244	-168	1313	-34	3	-892	-2267	3801
2/28/1986	424	28	-6420	383	611	-201	3113	-18	9	-862	-1666	5052
3/31/1986	455	31	-4201	424	310	-338	1748	-30	5	-1016	-2444	5543
4/30/1986	485	30	945	411	13	-379	401	-150	1	-975	-3309	3041
5/31/1986	516	31	2051	424	9	-417	407	-196	0	-997	-3629	2346
6/30/1986	546	30	2623	411	9	-318	680	-195	0	-950	-3586	1326
7/31/1986	577	31	-1814	424	9	-297	1540	-260	0	-880	-5289	6567
8/31/1986	608	31	574	424	9	-308	3530	-261	0	-978	-3759	769
9/30/1986	638	30	1766	411	16	-248	475	-151	1	-972	-2920	1622
10/31/1986	669	31	2223	424	9	-215	391	-260	0	-979	-3154	1561
11/30/1986	699	30	97	411	103	-155	755	-74	2	-960	-2445	2266
12/31/1986	730	31	1267	424	9	-127	346	-250	0	-957	-3267	2555
1/31/1987	761	31	554	424	55	-141	466	-105	1	-971	-2848	2564
2/28/1987	789	28	724	383	24	-139	369	-139	1	-844	-2755	2377
3/31/1987	820	31	430	424	67	-216	549	-97	1	-922	-2817	2581
4/30/1987	850	30	2101	411	9	-242	487	-273	0	-849	-3287	1644
5/31/1987	881	31	1833	424	9	-282	725	-270	0	-840	-3412	1811
6/30/1987	911	30	-2984	411	9	-276	1057	-270	0	-763	-5849	8665
7/31/1987	942	31	166	424	9	-296	649	-366	0	-817	-5042	5273
8/31/1987	973	31	1861	424	9	-288	587	-363	0	-856	-3930	2555
9/30/1987	1003	30	2083	411	9	-223	545	-358	0	-796	-3279	1608
10/31/1987	1034	31	411	424	60	-192	602	-132	2	-831	-2581	2239
11/30/1987	1064	30	16	411	134	-137	988	-98	3	-797	-2489	1969
12/31/1987	1095	31	-2532	424	213	-115	1284	-71	4	-836	-2645	4276
1/31/1988	1126	31	-1555	424	182	-149	1000	-42	3	-822	-2653	3611
2/29/1988	1155	29	-913	397	124	-167	727	-47	2	-762	-2557	3196
3/31/1988	1186	31	854	424	9	-263	323	-171	0	-816	-3563	3202
4/30/1988	1216	30	-952	411	160	-248	1072	-47	3	-768	-2703	3073
5/31/1988	1247	31	-2898	424	9	-330	409	-186	0	-797	-5639	9007
6/30/1988	1277	30	800	411	9	-286	405	-187	0	-821	-4198	3868
7/31/1988	1308	31	2349	424	9	-297	483	-243	0	-838	-3779	1892
8/31/1988	1339	31	2437	424	9	-285	483	-241	0	-812	-3641	1627
9/30/1988	1369	30	2001	411	9	-216	478	-241	0	-751	-3421	1730
10/31/1988	1400	31	1699	424	9	-182	473	-241	0	-747	-3504	2068
11/30/1988	1430	30	850	411	23	-125	418	-118	1	-716	-2965	2221
12/31/1988	1461	31	-3613	424	254	-106	1573	-42	5	-737	-3041	5283
1/31/1989	1492	31	858	424	11	-121	295	-115	1	-764	-3427	2837
2/28/1989	1520	28	-1256	383	164	-119	967	-36	2	-664	-2634	3192
3/31/1989	1551	31	615	424	20	-188	322	-89	1	-763	-3168	2827
4/30/1989	1581	30	1556	411	9	-214	391	-155	0	-716	-3468	2185
5/31/1989	1612	31	-755	424	9	-255	396	-155	0	-752	-4857	5945
6/30/1989	1642	30	1574	411	9	-253	391	-155	0	-740	-3128	1891
7/31/1989	1673	31	1870	424	9	-258	405	-183	0	-713	-3341	1787
8/31/1989	1704	31	2042	424	9	-235	405	-181	0	-708	-3117	1361
9/30/1989	1734	30	1575	411	9	-180	400	-179	0	-659	-2953	1575
10/31/1989	1765	31	1093	424	9	-157	395	-179	0	-661	-3164	2239
11/30/1989	1795	30	1203	411	9	-111	376	-170	0	-605	-3185	2073
12/31/1989	1826	31	1248	424	9	-92	367	-175	0	-601	-3214	2034
1/31/1990	1857	31	-567	424	128	-104	739	-43	2	-629	-2951	3002
2/28/1990	1885	28	-735	383	117	-103	809	-46	3	-553	-2976	3102
3/31/1990	1916	31	674	424	9	-163	508	-149	0	-607	-3340	2642
4/30/1990	1946	30	523	411	9	-189	1177	-148	0	-580	-3959	2757

Monthly Flow Budget for Aquifer A in Piru Basin

Date	Stress	days in month	STORAGE	SCR Underflow	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet									
5/31/1990	1977	31	1184	424	9	-225	459	-142	0	-587	-3019	1897
6/30/1990	2007	30	1256	411	9	-223	427	-148	0	-549	-2933	1749
7/31/1990	2038	31	1165	424	9	-237	473	-164	0	-551	-2805	1686
8/31/1990	2069	31	988	424	9	-231	443	-155	0	-532	-2896	1949
9/30/1990	2099	30	881	411	9	-180	442	-145	0	-490	-2823	1894
10/31/1990	2130	31	943	424	9	-157	437	-142	0	-483	-2857	1826
11/30/1990	2160	30	717	411	9	-111	442	-142	0	-443	-2983	2100
12/31/1990	2191	31	990	424	9	-92	437	-142	0	-437	-2969	1780
1/31/1991	2222	31	209	424	32	-104	444	-81	1	-425	-2691	2192
2/28/1991	2250	28	-253	383	95	-103	660	-50	2	-364	-2771	2402
3/31/1991	2281	31	-4906	424	791	-167	4194	-15	12	-433	-5561	5663
4/30/1991	2311	30	1452	411	9	-196	502	-173	1	-419	-3451	1865
5/31/1991	2342	31	861	424	9	-225	455	-175	0	-434	-3995	3080
6/30/1991	2372	30	1144	411	9	-223	466	-171	0	-413	-3248	2026
7/31/1991	2403	31	1062	424	9	-237	414	-167	0	-417	-2424	1336
8/31/1991	2434	31	1128	424	9	-231	411	-160	0	-410	-2178	1004
9/30/1991	2464	30	858	411	9	-180	406	-159	0	-381	-2071	1107
10/31/1991	2495	31	-3275	424	9	-157	399	-162	0	-503	-7948	11213
11/30/1991	2525	30	660	411	9	-111	395	-161	0	-529	-3659	2984
12/31/1991	2556	31	-1498	424	271	-92	1558	-28	4	-509	-2862	2732
1/31/1992	2587	31	-641	424	125	-104	1035	-41	2	-512	-3400	3112
2/29/1992	2616	29	-9309	397	701	-150	5107	-15	12	-494	-5701	9453
3/31/1992	2647	31	-6039	424	434	-241	3993	-19	7	-583	-3958	5981
4/30/1992	2677	30	-2461	411	9	-301	2487	-161	0	-591	-5367	5976
5/31/1992	2708	31	-201	424	9	-287	2789	-163	0	-664	-4920	3011
6/30/1992	2738	30	1342	411	9	-226	998	-164	0	-677	-3816	2123
7/31/1992	2769	31	2209	424	9	-237	420	-187	0	-720	-3491	1573
8/31/1992	2800	31	2397	424	9	-231	420	-188	0	-742	-3328	1238
9/30/1992	2830	30	-974	411	9	-180	417	-186	0	-723	-4325	5551
10/31/1992	2861	31	-4567	424	74	-166	1711	-62	1	-833	-6375	9791
11/30/1992	2891	30	-3150	411	9	-132	3349	-201	0	-819	-5815	6347
12/31/1992	2922	31	-2692	424	285	-115	1964	-35	5	-930	-2492	3586
1/31/1993	2953	31	-10991	424	821	-178	4767	-11	14	-1021	-1363	7536
2/28/1993	2981	28	-7905	383	578	-229	3390	-16	9	-1017	-3119	7927
3/31/1993	3012	31	-7427	424	220	-438	1205	-44	3	-1194	-4266	11517
4/30/1993	3042	30	-2464	411	9	-571	1706	-233	0	-1187	-5040	7372
5/31/1993	3073	31	-213	424	9	-655	3037	-236	0	-1241	-4745	3621
6/30/1993	3103	30	1004	411	9	-741	2038	-197	0	-1278	-4164	2919
7/31/1993	3134	31	1521	424	9	-800	2292	-241	0	-1458	-3653	1907
8/31/1993	3165	31	2316	424	9	-777	538	-241	0	-1489	-3634	2852
9/30/1993	3195	30	1182	411	9	-605	563	-241	0	-1455	-3994	4131
10/31/1993	3226	31	-231	424	9	-521	3376	-240	0	-1504	-4463	3150
11/30/1993	3256	30	318	411	9	-353	1881	-165	0	-1459	-3547	2905
12/31/1993	3287	31	-339	424	47	-307	1622	-88	1	-1542	-2879	3060
1/31/1994	3318	31	849	424	9	-347	866	-208	0	-1436	-3858	3701
2/28/1994	3346	28	-1645	383	314	-357	1917	-26	4	-1305	-2022	2739
3/31/1994	3377	31	404	424	93	-577	1002	-59	2	-1484	-2677	2871
4/30/1994	3407	30	1839	411	9	-652	418	-220	0	-1378	-3319	2892
5/31/1994	3438	31	1998	424	9	-742	414	-192	0	-1387	-3529	3005
6/30/1994	3468	30	2938	411	9	-630	367	-217	0	-1263	-3517	1903
7/31/1994	3499	31	3613	424	9	-548	358	-256	0	-1226	-3567	1192
8/31/1994	3530	31	2942	424	9	-435	365	-252	0	-1186	-3915	2049
9/30/1994	3560	30	-581	411	9	-283	354	-250	0	-1004	-4743	6088
10/31/1994	3591	31	-1193	424	34	-248	1396	-113	1	-1062	-4092	4854
11/30/1994	3621	30	-63	411	11	-184	1110	-182	1	-1071	-3787	3755
12/31/1994	3652	31	-2095	424	22	-176	1886	-128	1	-1248	-3832	5147
1/31/1995	3683	31	-10142	424	1177	-312	5709	-7	15	-1387	-550	5073
2/28/1995	3711	28	123	383	44	-294	1006	-82	2	-1126	-2796	2739
3/31/1995	3742	31	-5928	424	481	-578	2565	-14	6	-1348	-2665	7058
4/30/1995	3772	30	35	411	11	-715	1327	-138	1	-1349	-3477	3895
5/31/1995	3803	31	1564	424	10	-657	1955	-117	0	-1218	-3267	1307
6/30/1995	3833	30	1579	411	9	-749	1527	-185	0	-1239	-3587	2234
7/31/1995	3864	31	2809	424	9	-527	477	-209	0	-1052	-3719	1786

Monthly Flow Budget for Aquifer A in Piru Basin

Date	Stress	days in month	STORAGE	SCR Underflow	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet									
8/31/1995	3895	31	958	424	9	-490	1432	-209	0	-1068	-4093	3035
9/30/1995	3925	30	840	411	9	-355	1581	-208	0	-1037	-4003	2763
10/31/1995	3956	31	1167	424	9	-286	572	-209	0	-1079	-4024	3426
11/30/1995	3986	30	1196	411	9	-197	320	-208	0	-1040	-3622	3132
12/31/1995	4017	31	-401	424	101	-222	697	-60	2	-1252	-2433	3145
1/31/1996	4048	31	1182	424	16	-308	354	-107	1	-1384	-2964	2787
2/29/1996	4077	29	-3792	397	432	-358	2227	-23	6	-1399	-1748	4259
3/31/1996	4108	31	-1883	424	120	-583	1027	-49	3	-1557	-2902	5402
4/30/1996	4138	30	-425	411	9	-710	389	-147	1	-1475	-3753	5701
5/31/1996	4169	31	2435	424	9	-780	364	-189	0	-1432	-3815	2983
6/30/1996	4199	30	3926	411	9	-638	358	-189	0	-1294	-3489	907
7/31/1996	4230	31	4007	424	9	-571	501	-213	0	-1281	-3975	1097
8/31/1996	4261	31	3629	424	9	-480	508	-206	0	-1237	-4051	1403
9/30/1996	4291	30	875	411	9	-268	476	-198	0	-1008	-4777	4480
10/31/1996	4322	31	-2274	424	96	-240	629	-52	1	-1052	-3658	6126
11/30/1996	4352	30	295	411	125	-192	875	-50	2	-1085	-2865	2485
12/31/1996	4383	31	-3007	424	360	-215	1928	-28	4	-1335	-1910	3777
1/31/1997	4414	31	-3699	424	413	-310	2272	-20	5	-1376	-1914	4205
2/28/1997	4442	28	619	383	9	-319	448	-158	0	-1186	-3180	3384
3/31/1997	4473	31	-2309	424	9	-512	350	-162	0	-1348	-4031	7579
4/30/1997	4503	30	1812	411	9	-565	348	-164	0	-1250	-3687	3087
5/31/1997	4534	31	3509	424	9	-562	312	-163	0	-1253	-3492	1216
6/30/1997	4564	30	3452	411	9	-454	347	-158	0	-1186	-3311	890
7/31/1997	4595	31	2926	424	9	-417	605	-224	0	-1180	-3779	1635
8/31/1997	4626	31	-850	424	9	-342	723	-220	0	-1006	-5178	6440
9/30/1997	4656	30	612	411	9	-264	563	-220	0	-1004	-4594	4487
10/31/1997	4687	31	-72	424	9	-227	625	-220	0	-1046	-4675	5182
11/30/1997	4717	30	-408	411	115	-177	832	-60	2	-1110	-2523	2917
12/31/1997	4748	31	-2733	424	413	-191	2318	-28	7	-1309	-1795	2894
1/31/1998	4779	31	-1655	424	181	-264	1113	-45	3	-1396	-2403	4043
2/28/1998	4807	28	-12516	383	1206	-352	5831	-12	16	-1320	-1007	7772
3/31/1998	4838	31	-5160	424	245	-651	1425	-37	5	-1499	-2905	8156
4/30/1998	4868	30	-1365	411	81	-777	2336	-74	2	-1431	-3589	4410
5/31/1998	4899	31	-1802	424	275	-971	3708	-33	3	-1496	-2709	2602
6/30/1998	4929	30	2417	411	9	-868	2573	-219	0	-1312	-3333	323
7/31/1998	4960	31	4019	424	9	-709	446	-202	0	-1168	-2868	48
8/31/1998	4991	31	1498	424	9	-778	326	-204	0	-1271	-3501	3497
9/30/1998	5021	30	2141	411	9	-526	327	-202	0	-1175	-3726	2742
10/31/1998	5052	31	1394	424	9	-360	338	-200	0	-1070	-4073	3538
11/30/1998	5082	30	-231	411	33	-259	1042	-97	1	-1063	-3372	3537
12/31/1998	5113	31	-971	424	9	-225	1087	-190	0	-1076	-3972	4914
1/31/1999	5144	31	-1004	424	107	-320	833	-72	2	-1256	-2969	4255
2/28/1999	5172	28	378	383	21	-361	390	-162	1	-1285	-3176	3811
3/31/1999	5203	31	90	424	97	-581	617	-82	1	-1496	-3054	3983
4/30/1999	5233	30	-1798	411	83	-725	581	-95	2	-1489	-3364	6394
5/31/1999	5264	31	1354	424	9	-843	446	-287	0	-1520	-4043	4460
6/30/1999	5294	30	2623	411	9	-781	402	-287	0	-1378	-3951	2953
7/31/1999	5325	31	4969	424	9	-656	413	-229	0	-1323	-3423	-184
8/31/1999	5356	31	4145	424	9	-565	413	-228	0	-1274	-3359	435
9/30/1999	5386	30	-66	411	9	-333	406	-218	0	-1053	-4466	5311
10/31/1999	5417	31	997	424	9	-270	766	-218	0	-1080	-4217	3588
11/30/1999	5447	30	2074	411	9	-217	345	-174	0	-1174	-3097	1824
12/31/1999	5478	31	2229	424	9	-162	399	-219	0	-1205	-3260	1784
1/31/2000	5509	31	898	424	80	-168	631	-85	2	-1210	-2748	2177
2/29/2000	5538	29	-5250	397	408	-213	2208	-31	6	-1182	-1831	5489
3/31/2000	5569	31	-1986	424	119	-410	815	-70	3	-1258	-3316	5680
4/30/2000	5599	30	827	411	99	-452	727	-80	2	-1185	-2913	2564
5/31/2000	5630	31	1729	424	9	-466	507	-280	0	-1184	-4018	3279
6/30/2000	5660	30	152	411	9	-501	506	-276	0	-1140	-4352	5193
7/31/2000	5691	31	3261	424	9	-399	413	-199	0	-1125	-3709	1323
8/31/2000	5722	31	3288	424	9	-324	424	-197	0	-1095	-3549	1019
9/30/2000	5752	30	-2392	411	9	-236	419	-196	0	-964	-5474	8424
10/31/2000	5783	31	-1087	424	20	-222	431	-123	1	-1050	-4575	6182

Monthly Flow Budget for Aquifer A in Piru Basin

Date	Stress	days in month	STORAGE	SCR Underflow	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet									
11/30/2000	5813	30	892	411	9	-160	412	-199	0	-1044	-3708	3388
12/31/2000	5844	31	1973	424	9	-135	411	-200	0	-1155	-3146	1820
1/31/2001	5875	31	-2252	424	303	-169	1702	-37	4	-1209	-2030	3263
2/28/2001	5903	28	-4518	383	470	-209	2611	-27	8	-1135	-1284	3701
3/31/2001	5934	31	-3306	424	226	-425	1715	-51	3	-1263	-2901	5579
4/30/2001	5964	30	-240	411	57	-497	1858	-96	1	-1217	-3410	3134
5/31/2001	5995	31	2263	424	9	-495	955	-260	0	-1224	-3838	2165
6/30/2001	6025	30	2609	411	9	-398	466	-256	0	-1159	-3874	2193
7/31/2001	6056	31	3033	424	9	-378	410	-189	0	-1174	-3387	1251
8/31/2001	6087	31	3357	424	9	-333	416	-187	0	-1145	-3131	590
9/30/2001	6117	30	-2365	411	9	-250	410	-187	0	-990	-5301	8262
10/31/2001	6148	31	-594	424	9	-235	413	-192	0	-1058	-4733	5967
11/30/2001	6178	30	-1432	411	169	-185	1161	-48	3	-1071	-2383	3377
12/31/2001	6209	31	-58	424	41	-177	465	-87	1	-1257	-2450	3098
1/31/2002	6240	31	591	424	21	-187	337	-79	1	-1248	-2707	2848
2/28/2002	6268	28	1692	383	9	-166	296	-146	0	-1061	-2920	1913
3/31/2002	6299	31	1328	424	9	-244	412	-146	0	-1140	-3288	2644
4/30/2002	6329	30	1637	411	9	-275	457	-143	0	-1065	-3229	2197
5/31/2002	6360	31	2447	424	9	-316	492	-139	0	-1068	-3225	1376
6/30/2002	6390	30	2228	411	9	-304	487	-135	0	-997	-3067	1368
7/31/2002	6421	31	2533	424	9	-314	553	-176	0	-988	-3259	1217
8/31/2002	6452	31	3104	424	9	-293	579	-176	0	-953	-2978	284
9/30/2002	6482	30	-2598	411	9	-225	498	-177	0	-855	-5772	8710
10/31/2002	6513	31	2278	424	9	-197	485	-179	0	-953	-2882	1013
11/30/2002	6543	30	-710	411	239	-144	1550	-34	3	-931	-1957	1575
12/31/2002	6574	31	-2120	424	206	-130	1318	-40	3	-976	-2282	3598
1/31/2003	6605	31	1111	424	9	-141	364	-153	0	-979	-3323	2688
2/28/2003	6633	28	-3223	383	313	-142	1942	-24	6	-838	-2251	3835
3/31/2003	6664	31	-1570	424	161	-251	969	-38	3	-951	-2651	3905
4/30/2003	6694	30	-1811	411	37	-376	438	-77	1	-930	-3276	5583
5/31/2003	6725	31	817	424	58	-388	486	-60	1	-960	-3199	2820
6/30/2003	6755	30	1994	411	9	-294	409	-153	0	-912	-3428	1965
7/31/2003	6786	31	2507	424	9	-298	429	-176	0	-926	-3370	1400
8/31/2003	6817	31	2652	424	9	-288	427	-174	0	-906	-3194	1049
9/30/2003	6847	30	-3208	411	9	-225	446	-177	0	-832	-5863	9440
10/31/2003	6878	31	-66	424	9	-196	451	-182	0	-926	-4068	4555
11/30/2003	6908	30	463	411	33	-141	459	-81	1	-951	-2667	2474
12/31/2003	6939	31	-1045	424	97	-123	773	-56	2	-982	-2540	3451
1/31/2004	6970	31	-215	424	9	-141	335	-106	1	-984	-3442	4119
2/29/2004	6999	29	-4153	397	331	-160	1889	-24	5	-900	-2257	4874
3/31/2004	7030	31	142	424	9	-318	318	-147	0	-994	-3744	4310
4/30/2004	7060	30	2018	411	9	-283	331	-146	0	-933	-3440	2034
5/31/2004	7091	31	2036	424	9	-289	336	-146	0	-946	-3347	1922
6/30/2004	7121	30	1903	411	9	-279	353	-144	0	-897	-3159	1804
7/31/2004	7152	31	2588	424	9	-297	429	-200	0	-901	-3199	1148
8/31/2004	7183	31	2061	424	9	-286	433	-198	0	-875	-2987	1419
9/30/2004	7213	30	2006	411	9	-218	452	-198	0	-820	-2769	1127
10/31/2004	7244	31	-6709	424	335	-193	2061	-33	6	-867	-4328	9306
11/30/2004	7274	30	1254	411	9	-139	422	-201	0	-903	-3230	2377
12/31/2004	7305	31	-5215	424	411	-125	2337	-27	6	-953	-2353	5494
1/31/2005	7336	31	-13515	424	948	-230	4908	-13	15	-1050	-3039	11552
2/28/2005	7364	28	-10408	383	608	-254	4137	-18	11	-1045	-3504	10090
3/31/2005	7395	31	-4560	424	114	-530	740	-60	2	-1249	-4017	9137
4/30/2005	7425	30	-1801	411	10	-666	313	-167	1	-1251	-3700	6853
5/31/2005	7456	31	73	424	9	-782	360	-224	0	-1285	-4220	5645
6/30/2005	7486	30	2138	411	9	-642	881	-221	0	-1125	-3465	2016
7/31/2005	7517	31	863	424	9	-798	1675	-221	0	-1284	-3927	3259
8/31/2005	7548	31	2982	424	9	-742	394	-219	0	-1324	-3217	1694
9/30/2005	7578	30	482	411	9	-438	390	-219	0	-1038	-3960	4364
10/31/2005	7609	31	-636	424	57	-455	556	-97	2	-1206	-2994	4349
11/30/2005	7639	30	1340	411	9	-383	383	-220	0	-1378	-3233	3070
12/31/2005	7670	31	1538	424	9	-319	370	-214	0	-1468	-3411	3070
1/31/2006	7701	31	-2876	424	251	-376	1408	-80	3	-1579	-2992	5817

Monthly Flow Budget for Aquifer A in Piru Basin

Date	Stress	days in month	STORAGE	SCR Underflow	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet									
2/28/2006	7729	28	-2744	383	261	-391	1515	-73	4	-1516	-2488	5049
3/31/2006	7760	31	-3406	424	228	-654	1377	-87	4	-1740	-3139	6995
4/30/2006	7790	30	-2978	411	262	-775	1467	-76	4	-1710	-3223	6620
5/31/2006	7821	31	147	424	13	-927	1629	-273	1	-1707	-4017	4711
6/30/2006	7851	30	2361	411	9	-918	1426	-444	0	-1534	-4359	3049
7/31/2006	7882	31	4637	424	9	-871	347	-194	0	-1501	-3097	246
8/31/2006	7913	31	3805	424	9	-469	350	-192	0	-1080	-3247	398
9/30/2006	7943	30	1984	411	9	-342	343	-194	0	-1047	-3604	2440
10/31/2006	7974	31	996	424	9	-291	346	-196	0	-1089	-3756	3557
11/30/2006	8004	30	1620	411	9	-243	344	-195	0	-1155	-2942	2151
12/31/2006	8035	31	1811	424	9	-232	303	-168	1	-1333	-3020	2205
1/31/2007	8066	31	526	424	53	-280	423	-79	1	-1379	-2857	3168
2/28/2007	8094	28	404	383	36	-298	407	-98	1	-1231	-2805	3201
3/31/2007	8125	31	2158	424	9	-435	338	-190	0	-1300	-3518	2513
4/30/2007	8155	30	1831	411	9	-427	295	-133	0	-1227	-3209	2450
5/31/2007	8186	31	2708	424	9	-396	343	-190	0	-1212	-3420	1735
6/30/2007	8216	30	2943	411	9	-342	342	-190	0	-1131	-3255	1213
7/31/2007	8247	31	3419	424	9	-341	378	-217	0	-1080	-3522	930
8/31/2007	8278	31	-353	424	9	-303	391	-215	0	-982	-4761	5790
9/30/2007	8308	30	-707	411	9	-225	354	-208	0	-924	-4850	6141
10/31/2007	8339	31	-1090	424	9	-196	386	-220	0	-977	-4952	6615
11/30/2007	8369	30	1391	411	9	-145	377	-218	0	-978	-3525	2679
12/31/2007	8400	31	-1698	424	188	-136	1011	-48	2	-1056	-2547	3861
1/31/2008	8431	31	-8139	424	682	-200	3439	-22	10	-1148	-1760	6713
2/29/2008	8460	29	-2148	397	92	-241	597	-72	2	-1074	-3146	5594
3/31/2008	8491	31	102	424	9	-350	407	-228	0	-1115	-4316	5067
4/30/2008	8521	30	1371	411	9	-399	396	-227	0	-1092	-3981	3513
5/31/2008	8552	31	2329	424	9	-409	397	-227	0	-1128	-3939	2544
6/30/2008	8582	30	1671	411	9	-402	394	-227	0	-1084	-3758	2987
7/31/2008	8613	31	2386	424	9	-381	418	-214	0	-1101	-3820	2278
8/31/2008	8644	31	1663	424	9	-383	414	-213	0	-1078	-3817	2981
9/30/2008	8674	30	-3038	411	9	-241	394	-214	0	-941	-5935	9555
10/31/2008	8705	31	-1087	424	9	-208	389	-219	0	-1021	-5549	7260
11/30/2008	8735	30	-451	411	121	-170	791	-63	2	-1088	-2685	3133
12/31/2008	8766	31	-1112	424	117	-166	801	-61	3	-1223	-2762	3979
1/31/2009	8797	31	665	424	9	-204	264	-155	0	-1216	-3469	3681
2/28/2009	8825	28	-4879	383	331	-253	1731	-25	4	-1136	-2585	6428
3/31/2009	8856	31	-156	424	9	-428	263	-156	0	-1269	-3955	5267
4/30/2009	8886	30	1373	411	9	-466	270	-156	0	-1177	-3658	3394
5/31/2009	8917	31	2833	424	9	-448	283	-156	0	-1183	-3518	1756
6/30/2009	8947	30	2989	411	9	-356	287	-155	0	-1119	-3314	1248
7/31/2009	8978	31	3675	424	9	-346	380	-202	0	-1121	-3648	829
8/31/2009	9009	31	3326	424	9	-325	389	-201	0	-1091	-3509	977
9/30/2009	9039	30	-1505	411	9	-233	392	-200	0	-959	-5076	7161
10/31/2009	9070	31	-2916	424	154	-196	922	-56	2	-992	-3774	6432
11/30/2009	9100	30	992	411	9	-148	386	-203	0	-1015	-3696	3265
12/31/2009	9131	31	-2863	424	251	-142	1401	-39	4	-1139	-2568	4671
1/31/2010	9162	31	-4861	424	390	-220	2058	-30	6	-1226	-2351	5810
2/28/2010	9190	28	-2799	383	239	-256	1338	-42	4	-1123	-2534	4790
3/31/2010	9221	31	-2127	424	9	-422	333	-214	0	-1263	-4387	7648
4/30/2010	9251	30	-3526	411	75	-544	530	-79	1	-1238	-3878	8247
5/31/2010	9282	31	1616	424	9	-645	341	-222	0	-1287	-4219	3983
6/30/2010	9312	30	3562	411	9	-528	449	-219	0	-1214	-3685	1216
7/31/2010	9343	31	4596	424	9	-476	508	-235	0	-1213	-3828	215
8/31/2010	9374	31	4429	424	9	-398	507	-234	0	-1184	-3693	139
9/30/2010	9404	30	242	411	9	-265	493	-234	0	-1061	-4684	5088
10/31/2010	9435	31	-1599	424	72	-247	658	-92	1	-1062	-4349	6193
11/30/2010	9465	30	104	411	28	-175	479	-131	1	-1061	-3341	3685
12/31/2010	9496	31	-6409	424	580	-204	3042	-25	8	-1299	-1465	5347
1/31/2011	9527	31	1174	424	9	-275	346	-198	1	-1258	-3301	3079
2/28/2011	9555	28	-2343	383	210	-281	1165	-47	3	-1160	-2463	4533
3/31/2011	9586	31	-6832	424	369	-516	1989	-30	5	-1371	-2969	8931
4/30/2011	9616	30	-2600	411	9	-653	364	-213	0	-1341	-4558	8584

Monthly Flow Budget for Aquifer A in Piru Basin

Date	Stress	days in month	STORAGE	SCR Underflow	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet									
5/31/2011	9647	31	1712	424	10	-757	403	-160	0	-1338	-3720	3427
6/30/2011	9677	30	1684	411	9	-745	483	-215	0	-1335	-3723	3432
7/31/2011	9708	31	3999	424	9	-672	487	-217	0	-1332	-3544	845
8/31/2011	9739	31	3579	424	9	-567	481	-212	0	-1306	-3452	1044
9/30/2011	9769	30	784	411	9	-356	475	-207	0	-1108	-4538	4531
10/31/2011	9800	31	-947	424	46	-274	449	-85	1	-1079	-3788	5253
11/30/2011	9830	30	-7	411	66	-254	545	-73	1	-1217	-2619	3148
12/31/2011	9861	31	1229	424	9	-214	359	-209	0	-1309	-3356	3066
1/31/2012	9892	31	1463	424	51	-243	455	-105	1	-1281	-2837	2072
2/29/2012	9921	29	1711	397	9	-208	377	-235	0	-1147	-3300	2397
3/31/2012	9952	31	-1109	424	175	-318	1041	-55	3	-1244	-2743	3827
4/30/2012	9982	30	-1031	411	138	-445	838	-61	2	-1234	-2806	4188
5/31/2012	10013	31	2285	424	9	-445	444	-235	0	-1198	-3575	2291
6/30/2012	10043	30	3365	411	9	-341	501	-234	0	-1097	-3466	853
7/31/2012	10074	31	3207	424	9	-341	491	-228	0	-1110	-3319	866
8/31/2012	10105	31	3240	424	9	-321	492	-226	0	-1080	-3169	632
9/30/2012	10135	30	-1950	411	9	-229	475	-227	0	-932	-5160	7602
10/31/2012	10166	31	-701	424	9	-196	482	-232	0	-988	-4666	5868
11/30/2012	10196	30	860	411	37	-150	534	-108	1	-1044	-2416	1875
12/31/2012	10227	31	-11	424	75	-135	713	-74	1	-1115	-2303	2424
1/31/2013	10258	31	846	424	42	-152	510	-80	1	-1109	-2535	2054
2/28/2013	10286	28	1257	383	9	-147	321	-176	0	-953	-2850	2156
3/31/2013	10317	31	1176	424	10	-228	315	-133	1	-1028	-2916	2378
4/30/2013	10347	30	1609	411	9	-268	333	-174	0	-950	-3039	2068
5/31/2013	10378	31	2100	424	9	-290	407	-173	0	-949	-3123	1595
6/30/2013	10408	30	2457	411	9	-279	444	-170	0	-881	-2884	895
7/31/2013	10439	31	2293	424	9	-297	475	-178	0	-863	-2765	901
8/31/2013	10470	31	2209	424	9	-283	472	-178	0	-825	-2583	753
9/30/2013	10500	30	1719	411	9	-214	469	-178	0	-766	-2497	1047
10/31/2013	10531	31	1191	424	9	-179	476	-178	0	-777	-2638	1671
11/30/2013	10561	30	530	411	11	-120	422	-128	1	-745	-2695	2314
12/31/2013	10592	31	985	424	9	-94	467	-174	0	-751	-3100	2234
1/31/2014	10623	31	1089	424	9	-104	375	-212	0	-727	-3133	2279
2/28/2014	10651	28	-1150	383	200	-103	1084	-44	2	-622	-2784	3035
3/31/2014	10682	31	52	424	83	-162	590	-66	2	-711	-3090	2878
4/30/2014	10712	30	1419	411	9	-188	351	-208	0	-656	-2880	1742
5/31/2014	10743	31	1661	424	9	-225	383	-210	0	-667	-2686	1311
6/30/2014	10773	30	1130	411	9	-223	397	-208	0	-618	-2553	1655
7/31/2014	10804	31	1830	424	9	-237	370	-190	0	-641	-2425	859
8/31/2014	10835	31	1639	424	9	-228	364	-179	0	-615	-2059	643
9/30/2014	10865	30	1014	411	9	-180	373	-168	0	-564	-1763	869
10/31/2014	10896	31	690	424	9	-157	373	-174	0	-563	-1869	1266
11/30/2014	10926	30	248	411	9	-111	332	-150	0	-516	-2356	2132
12/31/2014	10957	31	-2179	424	280	-92	1635	-30	4	-535	-4486	4977
1/31/2015	10988	31	-505	424	48	-104	421	-64	1	-559	-3902	4240
2/28/2015	11016	28	474	383	9	-103	269	-119	1	-470	-2602	2159
3/31/2015	11047	31	366	424	9	-162	282	-114	0	-528	-2744	2466
4/30/2015	11077	30	1113	411	9	-188	329	-149	0	-492	-2639	1606
5/31/2015	11108	31	103	424	9	-225	321	-125	1	-504	-2797	2793
6/30/2015	11138	30	1215	411	9	-223	345	-148	0	-472	-2449	1314
7/31/2015	11169	31	749	424	21	-234	386	-95	1	-461	-1935	1145
8/31/2015	11200	31	1207	424	9	-231	374	-157	0	-444	-1938	756
9/30/2015	11230	30	378	411	9	-180	355	-126	1	-415	-1918	1486
10/31/2015	11261	31	686	424	9	-157	383	-152	0	-414	-2079	1298
11/30/2015	11291	30	569	411	9	-111	375	-145	0	-380	-2277	1549
12/31/2015	11322	31	423	424	9	-92	356	-137	0	-376	-2447	1839

Flow Budget for Aquifer B in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet					
			STORAGE	Mountain Front Recharge	Pumping from Wells	Piru A	Fillmore B	Piru C
1/31/1985	31	31	130	158	-474	2942	-2348	-407
2/28/1985	59	28	269	73	-670	2863	-2169	-366
3/31/1985	90	31	263	127	-560	2972	-2379	-423
4/30/1985	120	30	432	0	-1013	3297	-2313	-402
5/31/1985	151	31	544	0	-1017	3276	-2381	-422
6/30/1985	181	30	548	0	-1014	3191	-2316	-409
7/31/1985	212	31	355	0	-1457	3895	-2354	-439
8/31/1985	243	31	992	0	-1464	3259	-2349	-439
9/30/1985	273	30	-1448	0	-1464	5691	-2296	-482
10/31/1985	304	31	859	0	-1464	3500	-2406	-489
11/30/1985	334	30	-290	1526	-213	1896	-2364	-554
12/31/1985	365	31	784	54	-858	2840	-2399	-421
1/31/1986	396	31	-442	1229	-218	2267	-2283	-554
2/28/1986	424	28	-2084	3275	-113	1666	-2117	-628
3/31/1986	455	31	-1064	1714	-185	2444	-2317	-592
4/30/1986	485	30	235	75	-864	3309	-2239	-517
5/31/1986	516	31	426	0	-1207	3629	-2309	-538
6/30/1986	546	30	394	0	-1203	3586	-2243	-535
7/31/1986	577	31	-1239	0	-1162	5289	-2306	-583
8/31/1986	608	31	366	0	-1158	3759	-2386	-582
9/30/1986	638	30	624	90	-738	2920	-2339	-556
10/31/1986	669	31	912	0	-1147	3154	-2382	-537
11/30/1986	699	30	263	501	-322	2445	-2334	-554
12/31/1986	730	31	728	0	-1126	3267	-2357	-512
1/31/1987	761	31	203	281	-480	2848	-2339	-513
2/28/1987	789	28	347	125	-677	2755	-2119	-430
3/31/1987	820	31	106	312	-450	2817	-2297	-489
4/30/1987	850	30	645	0	-1289	3287	-2198	-445
5/31/1987	881	31	604	0	-1298	3412	-2251	-466
6/30/1987	911	30	-1835	0	-1303	5849	-2195	-516
7/31/1987	942	31	-462	0	-1671	5042	-2296	-613
8/31/1987	973	31	668	0	-1673	3930	-2321	-604
9/30/1987	1003	30	1206	0	-1670	3279	-2245	-570
10/31/1987	1034	31	569	352	-598	2581	-2320	-584
11/30/1987	1064	30	26	687	-410	2489	-2244	-549
12/31/1987	1095	31	-556	1093	-319	2645	-2302	-562
1/31/1988	1126	31	-358	825	-286	2653	-2228	-606
2/29/1988	1155	29	-161	584	-329	2557	-2091	-560
3/31/1988	1186	31	272	0	-1109	3563	-2185	-541
4/30/1988	1216	30	-492	858	-319	2703	-2136	-614
5/31/1988	1247	31	-1545	0	-1295	5639	-2191	-607

Flow Budget for Aquifer B in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet					
			STORAGE	Mountain Front Recharge	Pumping from Wells	Piru A	Fillmore B	Piru C
6/30/1988	1277	30	-87	0	-1305	4198	-2194	-612
7/31/1988	1308	31	752	0	-1619	3779	-2287	-626
8/31/1988	1339	31	892	0	-1615	3641	-2299	-618
9/30/1988	1369	30	1014	0	-1607	3421	-2232	-597
10/31/1988	1400	31	1000	0	-1604	3504	-2290	-610
11/30/1988	1430	30	545	113	-805	2965	-2216	-602
12/31/1988	1461	31	-1209	1451	-272	3041	-2260	-751
1/31/1989	1492	31	321	17	-886	3427	-2316	-563
2/28/1989	1520	28	-533	852	-277	2634	-2121	-555
3/31/1989	1551	31	266	73	-694	3168	-2308	-505
4/30/1989	1581	30	457	0	-1216	3468	-2241	-467
5/31/1989	1612	31	-747	0	-1224	4857	-2345	-541
6/30/1989	1642	30	901	0	-1220	3128	-2288	-520
7/31/1989	1673	31	903	0	-1260	3341	-2499	-486
8/31/1989	1704	31	1098	0	-1257	3117	-2488	-471
9/30/1989	1734	30	1144	0	-1254	2953	-2393	-450
10/31/1989	1765	31	993	0	-1255	3164	-2443	-460
11/30/1989	1795	30	793	0	-1192	3185	-2345	-442
12/31/1989	1826	31	894	0	-1260	3214	-2391	-457
1/31/1990	1857	31	-413	592	-309	2951	-2285	-536
2/28/1990	1885	28	-748	650	-333	2976	-2080	-464
3/31/1990	1916	31	584	0	-1167	3340	-2314	-443
4/30/1990	1946	30	-87	0	-1172	3959	-2271	-429
5/31/1990	1977	31	831	0	-1071	3019	-2335	-445
6/30/1990	2007	30	949	0	-1171	2933	-2272	-439
7/31/1990	2038	31	1349	0	-1442	2805	-2147	-564
8/31/1990	2069	31	1289	0	-1456	2896	-2131	-598
9/30/1990	2099	30	1296	0	-1467	2823	-2060	-593
10/31/1990	2130	31	1332	0	-1472	2857	-2103	-614
11/30/1990	2160	30	1117	0	-1471	2983	-2028	-600
12/31/1990	2191	31	1191	0	-1474	2969	-2067	-618
1/31/1991	2222	31	577	171	-776	2691	-2059	-604
2/28/1991	2250	28	-388	506	-476	2771	-1851	-562
3/31/1991	2281	31	-6698	4089	-125	5561	-2029	-798
4/30/1991	2311	30	615	0	-1523	3451	-1989	-554
5/31/1991	2342	31	152	0	-1531	3995	-2055	-561
6/30/1991	2372	30	841	0	-1532	3248	-2003	-555
7/31/1991	2403	31	1599	0	-1397	2424	-2098	-528
8/31/1991	2434	31	1836	0	-1399	2178	-2098	-516
9/30/1991	2464	30	1861	0	-1395	2071	-2035	-502

Flow Budget for Aquifer B in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet					
			STORAGE	Mountain Front Recharge	Pumping from Wells	Piru A	Fillmore B	Piru C
10/31/1991	2495	31	-3781	0	-1405	7948	-2162	-601
11/30/1991	2525	30	482	0	-1404	3659	-2147	-590
12/31/1991	2556	31	-1180	1416	-222	2862	-2184	-693
1/31/1992	2587	31	-1009	640	-317	3400	-2146	-568
2/29/1992	2616	29	-6621	3756	-122	5701	-2029	-684
3/31/1992	2647	31	-3260	2259	-160	3958	-2179	-618
4/30/1992	2677	30	-1438	0	-1227	5367	-2185	-517
5/31/1992	2708	31	-820	0	-1238	4920	-2319	-543
6/30/1992	2738	30	264	0	-1232	3816	-2315	-533
7/31/1992	2769	31	941	0	-1359	3491	-2530	-544
8/31/1992	2800	31	1126	0	-1351	3328	-2567	-536
9/30/1992	2830	30	61	0	-1344	4325	-2519	-524
10/31/1992	2861	31	-2952	316	-439	6375	-2610	-690
11/30/1992	2891	30	-1246	0	-1346	5815	-2597	-626
12/31/1992	2922	31	-481	1608	-237	2492	-2614	-769
1/31/1993	2953	31	-2235	4502	-126	1363	-2640	-863
2/28/1993	2981	28	-2751	2962	-146	3119	-2440	-745
3/31/1993	3012	31	-1646	1099	-274	4266	-2675	-770
4/30/1993	3042	30	-339	0	-1126	5040	-2859	-716
5/31/1993	3073	31	56	0	-1119	4745	-2992	-690
6/30/1993	3103	30	319	0	-953	4164	-2907	-623
7/31/1993	3134	31	573	0	-1088	3653	-2490	-648
8/31/1993	3165	31	548	0	-1084	3634	-2467	-632
9/30/1993	3195	30	70	0	-1079	3994	-2379	-606
10/31/1993	3226	31	-305	0	-1085	4463	-2446	-628
11/30/1993	3256	30	192	4	-803	3547	-2332	-607
12/31/1993	3287	31	357	230	-440	2879	-2380	-646
1/31/1994	3318	31	362	0	-983	3858	-2571	-666
2/28/1994	3346	28	-398	1642	-176	2022	-2338	-752
3/31/1994	3377	31	408	466	-313	2677	-2537	-702
4/30/1994	3407	30	746	0	-1004	3319	-2440	-621
5/31/1994	3438	31	541	0	-939	3529	-2507	-624
6/30/1994	3468	30	518	0	-1009	3517	-2416	-611
7/31/1994	3499	31	730	0	-1127	3567	-2629	-541
8/31/1994	3530	31	368	0	-1126	3915	-2632	-526
9/30/1994	3560	30	-605	0	-1129	4743	-2483	-527
10/31/1994	3591	31	-482	69	-528	4092	-2583	-568
11/30/1994	3621	30	89	34	-816	3787	-2550	-543
12/31/1994	3652	31	-33	92	-645	3832	-2669	-576
1/31/1995	3683	31	-2808	5915	-103	550	-2550	-1004

Flow Budget for Aquifer B in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet					
			STORAGE	Mountain Front Recharge	Pumping from Wells	Piru A	Fillmore B	Piru C
2/28/1995	3711	28	235	214	-431	2796	-2236	-579
3/31/1995	3742	31	-1721	2456	-135	2665	-2521	-744
4/30/1995	3772	30	258	17	-699	3477	-2461	-593
5/31/1995	3803	31	362	21	-669	3267	-2431	-550
6/30/1995	3833	30	363	0	-931	3587	-2479	-540
7/31/1995	3864	31	336	0	-1075	3719	-2460	-519
8/31/1995	3895	31	26	0	-1076	4093	-2511	-532
9/30/1995	3925	30	58	0	-1075	4003	-2460	-526
10/31/1995	3956	31	148	0	-1077	4024	-2544	-550
11/30/1995	3986	30	463	0	-1075	3622	-2479	-531
12/31/1995	4017	31	602	559	-325	2433	-2663	-606
1/31/1996	4048	31	828	75	-697	2964	-2636	-534
2/29/1996	4077	29	-819	2367	-141	1748	-2498	-656
3/31/1996	4108	31	-62	652	-309	2902	-2602	-582
4/30/1996	4138	30	160	11	-906	3753	-2504	-513
5/31/1996	4169	31	446	0	-1169	3815	-2576	-516
6/30/1996	4199	30	678	0	-1162	3489	-2506	-500
7/31/1996	4230	31	755	0	-1742	3975	-2409	-578
8/31/1996	4261	31	693	0	-1751	4051	-2406	-587
9/30/1996	4291	30	-215	0	-1758	4777	-2223	-582
10/31/1996	4322	31	-502	398	-493	3658	-2392	-670
11/30/1996	4352	30	-54	620	-435	2865	-2352	-644
12/31/1996	4383	31	-398	1940	-234	1910	-2501	-718
1/31/1997	4414	31	-615	2064	-128	1914	-2566	-669
2/28/1997	4442	28	466	0	-852	3180	-2317	-477
3/31/1997	4473	31	-41	0	-921	4031	-2557	-512
4/30/1997	4503	30	213	0	-916	3687	-2477	-506
5/31/1997	4534	31	492	0	-912	3492	-2554	-518
6/30/1997	4564	30	575	0	-908	3311	-2487	-491
7/31/1997	4595	31	607	0	-1324	3779	-2489	-573
8/31/1997	4626	31	-809	0	-1337	5178	-2408	-625
9/30/1997	4656	30	-231	0	-1337	4594	-2389	-636
10/31/1997	4687	31	-184	0	-1341	4675	-2478	-672
11/30/1997	4717	30	417	603	-371	2523	-2467	-704
12/31/1997	4748	31	-567	2265	-162	1795	-2556	-775
1/31/1998	4779	31	111	943	-265	2403	-2496	-695
2/28/1998	4807	28	-4119	6416	-100	1007	-2256	-948
3/31/1998	4838	31	-838	1428	-236	2905	-2478	-780
4/30/1998	4868	30	-497	419	-403	3589	-2416	-691
5/31/1998	4899	31	-467	1223	-220	2709	-2498	-747

Flow Budget for Aquifer B in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet					
			STORAGE	Mountain Front Recharge	Pumping from Wells	Piru A	Fillmore B	Piru C
6/30/1998	4929	30	845	0	-1143	3333	-2428	-607
7/31/1998	4960	31	1154	0	-1005	2868	-2502	-516
8/31/1998	4991	31	657	0	-1005	3501	-2628	-525
9/30/1998	5021	30	271	0	-1001	3726	-2487	-510
10/31/1998	5052	31	-37	0	-1004	4073	-2498	-534
11/30/1998	5082	30	-68	158	-468	3372	-2447	-547
12/31/1998	5113	31	-42	0	-872	3972	-2517	-541
1/31/1999	5144	31	192	490	-357	2969	-2671	-623
2/28/1999	5172	28	483	85	-722	3176	-2495	-527
3/31/1999	5203	31	160	491	-376	3054	-2718	-610
4/30/1999	5233	30	-156	422	-428	3364	-2615	-586
5/31/1999	5264	31	485	0	-1272	4043	-2690	-565
6/30/1999	5294	30	477	0	-1274	3951	-2614	-540
7/31/1999	5325	31	760	0	-1061	3423	-2508	-613
8/31/1999	5356	31	812	0	-1058	3359	-2504	-610
9/30/1999	5386	30	-468	0	-1067	4466	-2326	-605
10/31/1999	5417	31	-45	0	-1073	4217	-2443	-656
11/30/1999	5447	30	835	0	-866	3097	-2447	-618
12/31/1999	5478	31	930	0	-1067	3260	-2502	-620
1/31/2000	5509	31	456	439	-458	2748	-2608	-578
2/29/2000	5538	29	-936	2381	-171	1831	-2466	-640
3/31/2000	5569	31	-370	632	-419	3316	-2577	-581
4/30/2000	5599	30	36	501	-430	2913	-2486	-533
5/31/2000	5630	31	597	0	-1534	4018	-2582	-500
6/30/2000	5660	30	227	0	-1548	4352	-2544	-487
7/31/2000	5691	31	409	0	-1095	3709	-2476	-547
8/31/2000	5722	31	547	0	-1091	3549	-2457	-548
9/30/2000	5752	30	-1454	0	-1095	5474	-2343	-582
10/31/2000	5783	31	-864	110	-694	4575	-2460	-668
11/30/2000	5813	30	418	0	-1092	3708	-2414	-620
12/31/2000	5844	31	1068	0	-1091	3146	-2519	-605
1/31/2001	5875	31	-273	1688	-232	2030	-2496	-716
2/28/2001	5903	28	-867	2683	-168	1284	-2270	-662
3/31/2001	5934	31	-663	1140	-285	2901	-2456	-637
4/30/2001	5964	30	-273	329	-521	3410	-2373	-573
5/31/2001	5995	31	500	0	-1322	3838	-2472	-544
6/30/2001	6025	30	398	0	-1324	3874	-2431	-518
7/31/2001	6056	31	678	0	-1004	3387	-2582	-480
8/31/2001	6087	31	880	0	-997	3131	-2563	-452
9/30/2001	6117	30	-1392	0	-1000	5301	-2430	-478

Flow Budget for Aquifer B in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet					
			STORAGE	Mountain Front Recharge	Pumping from Wells	Piru A	Fillmore B	Piru C
10/31/2001	6148	31	-647	0	-1006	4733	-2543	-536
11/30/2001	6178	30	4	973	-253	2383	-2492	-616
12/31/2001	6209	31	901	214	-436	2450	-2596	-533
1/31/2002	6240	31	639	96	-480	2707	-2415	-548
2/28/2002	6268	28	565	0	-811	2920	-2169	-505
3/31/2002	6299	31	467	0	-824	3288	-2366	-565
4/30/2002	6329	30	428	0	-824	3229	-2279	-554
5/31/2002	6360	31	507	0	-829	3225	-2332	-571
6/30/2002	6390	30	560	0	-828	3067	-2249	-550
7/31/2002	6421	31	798	0	-1132	3259	-2371	-554
8/31/2002	6452	31	1057	0	-1130	2978	-2361	-545
9/30/2002	6482	30	-1766	0	-1136	5772	-2285	-586
10/31/2002	6513	31	1260	0	-1139	2882	-2402	-600
11/30/2002	6543	30	-50	1289	-224	1957	-2310	-661
12/31/2002	6574	31	-164	1102	-251	2282	-2357	-612
1/31/2003	6605	31	689	0	-1183	3323	-2275	-553
2/28/2003	6633	28	-1162	1805	-212	2251	-2061	-621
3/31/2003	6664	31	-370	909	-329	2651	-2249	-613
4/30/2003	6694	30	-122	203	-618	3276	-2184	-555
5/31/2003	6725	31	-147	264	-499	3199	-2239	-578
6/30/2003	6755	30	481	0	-1196	3428	-2181	-531
7/31/2003	6786	31	572	0	-1106	3370	-2308	-528
8/31/2003	6817	31	747	0	-1099	3194	-2314	-528
9/30/2003	6847	30	-1929	0	-1101	5863	-2257	-576
10/31/2003	6878	31	44	0	-1111	4068	-2375	-626
11/30/2003	6908	30	671	148	-576	2667	-2308	-602
12/31/2003	6939	31	257	516	-349	2540	-2345	-620
1/31/2004	6970	31	130	9	-744	3442	-2275	-561
2/29/2004	6999	29	-1172	1918	-190	2257	-2134	-679
3/31/2004	7030	31	124	0	-994	3744	-2274	-601
4/30/2004	7060	30	301	0	-992	3440	-2202	-548
5/31/2004	7091	31	477	0	-992	3347	-2271	-561
6/30/2004	7121	30	576	0	-984	3159	-2204	-547
7/31/2004	7152	31	765	0	-1131	3199	-2301	-533
8/31/2004	7183	31	956	0	-1124	2987	-2296	-524
9/30/2004	7213	30	1071	0	-1115	2769	-2221	-504
10/31/2004	7244	31	-3030	1960	-206	4328	-2319	-733
11/30/2004	7274	30	710	0	-1123	3230	-2259	-559
12/31/2004	7305	31	-1278	2110	-177	2353	-2328	-679
1/31/2005	7336	31	-4843	5156	-157	3039	-2296	-899

Flow Budget for Aquifer B in Piru Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	Pumping from Wells	Piru A	Fillmore B	Piru C
			influx(+) outflux(-); units in Acre-feet					
2/28/2005	7364	28	-3564	3153	-174	3504	-2132	-787
3/31/2005	7395	31	-1035	576	-368	4017	-2378	-812
4/30/2005	7425	30	198	13	-826	3700	-2339	-747
5/31/2005	7456	31	12	0	-1095	4220	-2425	-712
6/30/2005	7486	30	555	0	-1081	3465	-2285	-654
7/31/2005	7517	31	206	0	-988	3927	-2490	-654
8/31/2005	7548	31	860	0	-982	3217	-2471	-624
9/30/2005	7578	30	-137	0	-975	3960	-2257	-591
10/31/2005	7609	31	256	252	-409	2994	-2434	-658
11/30/2005	7639	30	785	0	-976	3233	-2453	-589
12/31/2005	7670	31	678	0	-965	3411	-2528	-596
1/31/2006	7701	31	-644	1280	-339	2992	-2578	-712
2/28/2006	7729	28	-555	1316	-297	2488	-2335	-617
3/31/2006	7760	31	-776	1203	-357	3139	-2548	-660
4/30/2006	7790	30	-1233	1467	-324	3223	-2479	-654
5/31/2006	7821	31	177	61	-1116	4017	-2534	-605
6/30/2006	7851	30	440	0	-1774	4359	-2459	-567
7/31/2006	7882	31	941	0	-989	3097	-2451	-599
8/31/2006	7913	31	499	0	-973	3247	-2211	-563
9/30/2006	7943	30	136	0	-971	3604	-2204	-565
10/31/2006	7974	31	112	0	-977	3756	-2292	-600
11/30/2006	8004	30	933	0	-976	2942	-2310	-588
12/31/2006	8035	31	865	1	-854	3020	-2437	-595
1/31/2007	8066	31	404	267	-468	2857	-2413	-648
2/28/2007	8094	28	278	192	-535	2805	-2167	-572
3/31/2007	8125	31	527	0	-1106	3518	-2355	-583
4/30/2007	8155	30	467	3	-848	3209	-2277	-553
5/31/2007	8186	31	579	0	-1106	3420	-2325	-569
6/30/2007	8216	30	642	0	-1103	3255	-2247	-547
7/31/2007	8247	31	799	0	-1233	3522	-2581	-507
8/31/2007	8278	31	-474	0	-1236	4761	-2533	-518
9/30/2007	8308	30	-723	0	-1101	4850	-2482	-543
10/31/2007	8339	31	-539	0	-1246	4952	-2575	-592
11/30/2007	8369	30	826	0	-1244	3525	-2542	-565
12/31/2007	8400	31	117	880	-274	2547	-2633	-638
1/31/2008	8431	31	-1775	3566	-118	1760	-2662	-770
2/29/2008	8460	29	-205	443	-344	3146	-2477	-564
3/31/2008	8491	31	33	0	-1150	4316	-2626	-572
4/30/2008	8521	30	286	0	-1149	3981	-2576	-543
5/31/2008	8552	31	442	0	-1150	3939	-2669	-562

Flow Budget for Aquifer B in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet					
			STORAGE	Mountain Front Recharge	Pumping from Wells	Piru A	Fillmore B	Piru C
6/30/2008	8582	30	516	0	-1146	3758	-2590	-538
7/31/2008	8613	31	572	0	-1275	3820	-2548	-569
8/31/2008	8644	31	561	0	-1277	3817	-2530	-571
9/30/2008	8674	30	-1644	0	-1281	5935	-2401	-609
10/31/2008	8705	31	-1060	0	-1287	5549	-2525	-676
11/30/2008	8735	30	378	547	-363	2685	-2541	-706
12/31/2008	8766	31	269	617	-358	2762	-2618	-671
1/31/2009	8797	31	560	0	-919	3469	-2528	-581
2/28/2009	8825	28	-1085	1670	-181	2585	-2326	-663
3/31/2009	8856	31	106	0	-932	3955	-2510	-619
4/30/2009	8886	30	259	0	-932	3658	-2433	-553
5/31/2009	8917	31	476	0	-929	3518	-2505	-561
6/30/2009	8947	30	576	0	-920	3314	-2435	-535
7/31/2009	8978	31	754	0	-1293	3648	-2563	-547
8/31/2009	9009	31	880	0	-1291	3509	-2561	-537
9/30/2009	9039	30	-802	0	-1289	5076	-2441	-544
10/31/2009	9070	31	-970	751	-363	3774	-2530	-662
11/30/2009	9100	30	664	0	-1294	3696	-2495	-571
12/31/2009	9131	31	-353	1314	-265	2568	-2599	-666
1/31/2010	9162	31	-951	2026	-182	2351	-2587	-657
2/28/2010	9190	28	-688	1312	-237	2534	-2357	-564
3/31/2010	9221	31	-86	0	-1150	4387	-2584	-566
4/30/2010	9251	30	-708	367	-411	3878	-2529	-597
5/31/2010	9282	31	125	0	-1143	4219	-2621	-579
6/30/2010	9312	30	563	0	-1134	3685	-2573	-542
7/31/2010	9343	31	758	0	-1406	3828	-2623	-557
8/31/2010	9374	31	860	0	-1403	3693	-2611	-540
9/30/2010	9404	30	-277	0	-1398	4684	-2486	-522
10/31/2010	9435	31	-1027	360	-495	4349	-2559	-629
11/30/2010	9465	30	344	133	-750	3341	-2508	-559
12/31/2010	9496	31	-976	3086	-168	1465	-2660	-746
1/31/2011	9527	31	824	0	-1023	3301	-2510	-592
2/28/2011	9555	28	-383	1069	-250	2463	-2304	-595
3/31/2011	9586	31	-1439	1880	-171	2969	-2513	-726
4/30/2011	9616	30	-406	0	-1078	4558	-2416	-658
5/31/2011	9647	31	221	13	-817	3720	-2503	-634
6/30/2011	9677	30	411	0	-1072	3723	-2460	-602
7/31/2011	9708	31	628	0	-1060	3544	-2536	-575
8/31/2011	9739	31	685	0	-1061	3452	-2531	-545
9/30/2011	9769	30	-579	0	-1062	4538	-2368	-529

Flow Budget for Aquifer B in Piru Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	Pumping from Wells	Piru A	Fillmore B	Piru C
			influx(+) outflux(-); units in Acre-feet					
10/31/2011	9800	31	-534	202	-426	3788	-2435	-595
11/30/2011	9830	30	465	328	-371	2619	-2467	-575
12/31/2011	9861	31	771	0	-1062	3356	-2530	-535
1/31/2012	9892	31	480	202	-458	2837	-2510	-551
2/29/2012	9921	29	664	0	-1156	3300	-2330	-478
3/31/2012	9952	31	-183	809	-273	2743	-2495	-600
4/30/2012	9982	30	-147	606	-295	2806	-2408	-562
5/31/2012	10013	31	526	0	-1161	3575	-2426	-513
6/30/2012	10043	30	534	0	-1160	3466	-2351	-489
7/31/2012	10074	31	644	0	-1086	3319	-2386	-490
8/31/2012	10105	31	774	0	-1085	3169	-2375	-483
9/30/2012	10135	30	-1307	0	-1086	5160	-2258	-509
10/31/2012	10166	31	-631	0	-1096	4666	-2365	-575
11/30/2012	10196	30	864	212	-576	2416	-2358	-558
12/31/2012	10227	31	554	460	-340	2303	-2422	-555
1/31/2013	10258	31	513	213	-437	2535	-2273	-552
2/28/2013	10286	28	627	0	-976	2850	-2022	-478
3/31/2013	10317	31	544	16	-744	2916	-2211	-522
4/30/2013	10347	30	570	0	-982	3039	-2118	-509
5/31/2013	10378	31	561	0	-984	3123	-2169	-531
6/30/2013	10408	30	702	0	-980	2884	-2088	-519
7/31/2013	10439	31	1043	0	-1069	2765	-2233	-506
8/31/2013	10470	31	1198	0	-1064	2583	-2220	-497
9/30/2013	10500	30	1182	0	-1058	2497	-2141	-480
10/31/2013	10531	31	1100	0	-1060	2638	-2187	-492
11/30/2013	10561	30	634	23	-775	2695	-2113	-464
12/31/2013	10592	31	591	0	-1064	3100	-2142	-484
1/31/2014	10623	31	761	0	-1309	3133	-2085	-500
2/28/2014	10651	28	-1002	979	-298	2784	-1912	-552
3/31/2014	10682	31	-435	419	-455	3090	-2083	-536
4/30/2014	10712	30	803	0	-1242	2880	-1986	-455
5/31/2014	10743	31	1142	0	-1312	2686	-2037	-479
6/30/2014	10773	30	1197	0	-1310	2553	-1968	-472
7/31/2014	10804	31	1290	0	-1199	2425	-2064	-451
8/31/2014	10835	31	1634	0	-1206	2059	-2046	-440
9/30/2014	10865	30	1846	0	-1212	1763	-1971	-426
10/31/2014	10896	31	1785	0	-1207	1869	-2011	-435
11/30/2014	10926	30	1043	0	-1046	2356	-1937	-415
12/31/2014	10957	31	-3282	1591	-221	4486	-1999	-575
1/31/2015	10988	31	-1308	241	-496	3902	-1826	-513

Flow Budget for Aquifer B in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet					
			STORAGE	Mountain Front Recharge	Pumping from Wells	Piru A	Fillmore B	Piru C
2/28/2015	11016	28	293	12	-843	2602	-1632	-432
3/31/2015	11047	31	417	3	-892	2744	-1792	-480
4/30/2015	11077	30	715	0	-1136	2639	-1729	-489
5/31/2015	11108	31	472	2	-977	2797	-1785	-509
6/30/2015	11138	30	922	0	-1137	2449	-1725	-509
7/31/2015	11169	31	1274	69	-864	1935	-1939	-476
8/31/2015	11200	31	1687	0	-1235	1938	-1924	-466
9/30/2015	11230	30	1345	11	-957	1918	-1869	-448
10/31/2015	11261	31	1541	0	-1240	2079	-1909	-470
11/30/2015	11291	30	1268	0	-1246	2277	-1840	-460
12/31/2015	11322	31	1159	0	-1258	2447	-1876	-471

Flow Budget for Aquifer C in Piru Basin

Date	Stress	days in month	STORAGE	Pumping From Wells	Piru B	Fillmore C
			influx(+) outflux(-); units in Acre-feet			
1/31/1985	31	31	-4	1	407	-405
2/28/1985	59	28	44	-38	366	-371
3/31/1985	90	31	6	-13	423	-416
4/30/1985	120	30	80	-73	402	-409
5/31/1985	151	31	74	-71	422	-426
6/30/1985	181	30	79	-75	409	-413
7/31/1985	212	31	91	-107	439	-423
8/31/1985	243	31	90	-108	439	-422
9/30/1985	273	30	32	-102	482	-412
10/31/1985	304	31	45	-101	489	-433
11/30/1985	334	30	-171	33	554	-416
12/31/1985	365	31	54	-44	421	-430
1/31/1986	396	31	-86	23	554	-491
2/28/1986	424	28	-227	44	628	-445
3/31/1986	455	31	-149	47	592	-489
4/30/1986	485	30	25	-52	517	-489
5/31/1986	516	31	86	-106	538	-518
6/30/1986	546	30	84	-109	535	-511
7/31/1986	577	31	19	-118	583	-484
8/31/1986	608	31	28	-121	582	-489
9/30/1986	638	30	-21	-62	556	-473
10/31/1986	669	31	84	-132	537	-489
11/30/1986	699	30	-93	10	554	-471
12/31/1986	730	31	112	-138	512	-486
1/31/1987	761	31	-42	-8	513	-462
2/28/1987	789	28	44	-59	430	-415
3/31/1987	820	31	-25	-8	489	-456
4/30/1987	850	30	133	-136	445	-443
5/31/1987	881	31	119	-127	466	-458
6/30/1987	911	30	51	-121	516	-446
7/31/1987	942	31	49	-192	613	-471
8/31/1987	973	31	62	-193	604	-473
9/30/1987	1003	30	85	-198	570	-457
10/31/1987	1034	31	-94	-24	584	-466
11/30/1987	1064	30	-96	-3	549	-450
12/31/1987	1095	31	-107	9	562	-464
1/31/1988	1126	31	-55	37	606	-588
2/29/1988	1155	29	-25	30	560	-565
3/31/1988	1186	31	82	-25	541	-598
4/30/1988	1216	30	-74	41	614	-582
5/31/1988	1247	31	39	-37	607	-609
6/30/1988	1277	30	26	-31	612	-607
7/31/1988	1308	31	83	-79	626	-629
8/31/1988	1339	31	92	-82	618	-628
9/30/1988	1369	30	102	-87	597	-611
10/31/1988	1400	31	102	-87	610	-626
11/30/1988	1430	30	13	-11	602	-604
12/31/1988	1461	31	-183	46	751	-614
1/31/1989	1492	31	-16	-8	563	-538
2/28/1989	1520	28	-107	39	555	-487
3/31/1989	1551	31	29	1	505	-534
4/30/1989	1581	30	100	-46	467	-521
5/31/1989	1612	31	39	-37	541	-543

Flow Budget for Aquifer C in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet			
			STORAGE	Pumping From Wells	Piru B	Fillmore C
6/30/1989	1642	30	50	-42	520	-529
7/31/1989	1673	31	54	-44	486	-495
8/31/1989	1704	31	67	-47	471	-490
9/30/1989	1734	30	72	-51	450	-471
10/31/1989	1765	31	71	-50	460	-481
11/30/1989	1795	30	66	-44	442	-463
12/31/1989	1826	31	68	-49	457	-476
1/31/1990	1857	31	-101	26	536	-461
2/28/1990	1885	28	-66	15	464	-412
3/31/1990	1916	31	84	-68	443	-459
4/30/1990	1946	30	79	-62	429	-446
5/31/1990	1977	31	60	-45	445	-460
6/30/1990	2007	30	71	-64	439	-446
7/31/1990	2038	31	133	-174	564	-524
8/31/1990	2069	31	93	-168	598	-522
9/30/1990	2099	30	81	-169	593	-506
10/31/1990	2130	31	69	-165	614	-518
11/30/1990	2160	30	67	-166	600	-501
12/31/1990	2191	31	57	-163	618	-513
1/31/1991	2222	31	-50	-50	604	-504
2/28/1991	2250	28	-90	-17	562	-454
3/31/1991	2281	31	-375	54	798	-478
4/30/1991	2311	30	112	-194	554	-472
5/31/1991	2342	31	114	-173	561	-502
6/30/1991	2372	30	104	-163	555	-496
7/31/1991	2403	31	41	-100	528	-470
8/31/1991	2434	31	54	-105	516	-466
9/30/1991	2464	30	57	-109	502	-450
10/31/1991	2495	31	-30	-97	601	-474
11/30/1991	2525	30	-23	-98	590	-470
12/31/1991	2556	31	-260	42	693	-475
1/31/1992	2587	31	-137	30	568	-461
2/29/1992	2616	29	-326	64	684	-422
3/31/1992	2647	31	-233	64	618	-448
4/30/1992	2677	30	-13	-43	517	-461
5/31/1992	2708	31	-4	-39	543	-500
6/30/1992	2738	30	10	-46	533	-497
7/31/1992	2769	31	35	-59	544	-519
8/31/1992	2800	31	49	-64	536	-521
9/30/1992	2830	30	50	-68	524	-505
10/31/1992	2861	31	-190	35	690	-535
11/30/1992	2891	30	-41	-57	626	-528
12/31/1992	2922	31	-286	63	769	-546
1/31/1993	2953	31	-403	77	863	-537
2/28/1993	2981	28	-340	75	745	-480
3/31/1993	3012	31	-316	87	770	-541
4/30/1993	3042	30	-166	1	716	-551
5/31/1993	3073	31	-102	-2	690	-586
6/30/1993	3103	30	-40	-5	623	-578
7/31/1993	3134	31	9	-67	648	-589
8/31/1993	3165	31	26	-72	632	-586
9/30/1993	3195	30	35	-77	606	-564
10/31/1993	3226	31	25	-72	628	-581

Flow Budget for Aquifer C in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet			
			STORAGE	Pumping From Wells	Piru B	Fillmore C
11/30/1993	3256	30	-8	-38	607	-560
12/31/1993	3287	31	-85	18	646	-579
1/31/1994	3318	31	73	-60	666	-679
2/28/1994	3346	28	-179	53	752	-626
3/31/1994	3377	31	-52	32	702	-682
4/30/1994	3407	30	108	-67	621	-662
5/31/1994	3438	31	98	-45	624	-677
6/30/1994	3468	30	109	-64	611	-655
7/31/1994	3499	31	84	-58	541	-567
8/31/1994	3530	31	97	-62	526	-560
9/30/1994	3560	30	71	-62	527	-536
10/31/1994	3591	31	-25	10	568	-553
11/30/1994	3621	30	18	-23	543	-538
12/31/1994	3652	31	-18	-2	576	-557
1/31/1995	3683	31	-476	75	1004	-603
2/28/1995	3711	28	-76	34	579	-537
3/31/1995	3742	31	-213	68	744	-599
4/30/1995	3772	30	-17	21	593	-597
5/31/1995	3803	31	47	16	550	-613
6/30/1995	3833	30	65	-1	540	-604
7/31/1995	3864	31	74	-34	519	-560
8/31/1995	3895	31	60	-33	532	-559
9/30/1995	3925	30	50	-34	526	-542
10/31/1995	3956	31	43	-31	550	-561
11/30/1995	3986	30	46	-34	531	-543
12/31/1995	4017	31	-75	37	606	-569
1/31/1996	4048	31	46	-9	534	-572
2/29/1996	4077	29	-177	49	656	-529
3/31/1996	4108	31	-56	40	582	-566
4/30/1996	4138	30	51	-14	513	-551
5/31/1996	4169	31	92	-37	516	-571
6/30/1996	4199	30	96	-45	500	-552
7/31/1996	4230	31	163	-123	578	-619
8/31/1996	4261	31	153	-121	587	-618
9/30/1996	4291	30	133	-122	582	-592
10/31/1996	4322	31	-76	16	670	-610
11/30/1996	4352	30	-69	19	644	-593
12/31/1996	4383	31	-145	41	718	-614
1/31/1997	4414	31	-170	56	669	-554
2/28/1997	4442	28	45	-23	477	-499
3/31/1997	4473	31	61	-16	512	-557
4/30/1997	4503	30	53	-19	506	-541
5/31/1997	4534	31	66	-25	518	-559
6/30/1997	4564	30	83	-33	491	-540
7/31/1997	4595	31	144	-75	573	-641
8/31/1997	4626	31	83	-66	625	-642
9/30/1997	4656	30	60	-66	636	-631
10/31/1997	4687	31	42	-62	672	-653
11/30/1997	4717	30	-106	33	704	-631
12/31/1997	4748	31	-184	55	775	-645
1/31/1998	4779	31	-78	49	695	-667
2/28/1998	4807	28	-412	70	948	-606
3/31/1998	4838	31	-203	77	780	-655

Flow Budget for Aquifer C in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet			
			STORAGE	Pumping From Wells	Piru B	Fillmore C
4/30/1998	4868	30	-95	54	691	-651
5/31/1998	4899	31	-124	60	747	-683
6/30/1998	4929	30	68	-13	607	-662
7/31/1998	4960	31	101	-30	516	-586
8/31/1998	4991	31	93	-28	525	-589
9/30/1998	5021	30	89	-34	510	-566
10/31/1998	5052	31	73	-33	534	-574
11/30/1998	5082	30	-7	19	547	-559
12/31/1998	5113	31	59	-23	541	-578
1/31/1999	5144	31	-79	29	623	-573
2/28/1999	5172	28	28	-33	527	-522
3/31/1999	5203	31	-56	24	610	-579
4/30/1999	5233	30	-46	21	586	-561
5/31/1999	5264	31	89	-78	565	-576
6/30/1999	5294	30	90	-77	540	-552
7/31/1999	5325	31	112	-56	613	-669
8/31/1999	5356	31	123	-61	610	-672
9/30/1999	5386	30	102	-61	605	-646
10/31/1999	5417	31	67	-55	656	-667
11/30/1999	5447	30	76	-40	618	-654
12/31/1999	5478	31	110	-61	620	-670
1/31/2000	5509	31	-37	21	578	-563
2/29/2000	5538	29	-166	42	640	-516
3/31/2000	5569	31	-65	32	581	-548
4/30/2000	5599	30	-27	25	533	-531
5/31/2000	5630	31	126	-75	500	-550
6/30/2000	5660	30	112	-65	487	-534
7/31/2000	5691	31	96	-21	547	-622
8/31/2000	5722	31	102	-26	548	-624
9/30/2000	5752	30	47	-23	582	-606
10/31/2000	5783	31	-56	18	668	-630
11/30/2000	5813	30	18	-22	620	-615
12/31/2000	5844	31	54	-23	605	-636
1/31/2001	5875	31	-179	88	716	-625
2/28/2001	5903	28	-181	79	662	-560
3/31/2001	5934	31	-114	87	637	-610
4/30/2001	5964	30	-39	62	573	-596
5/31/2001	5995	31	76	1	544	-621
6/30/2001	6025	30	89	0	518	-607
7/31/2001	6056	31	62	23	480	-565
8/31/2001	6087	31	92	14	452	-558
9/30/2001	6117	30	42	16	478	-536
10/31/2001	6148	31	0	24	536	-560
11/30/2001	6178	30	-143	72	616	-545
12/31/2001	6209	31	-25	55	533	-564
1/31/2002	6240	31	87	16	548	-651
2/28/2002	6268	28	143	-52	505	-597
3/31/2002	6299	31	123	-39	565	-649
4/30/2002	6329	30	115	-42	554	-628
5/31/2002	6360	31	113	-41	571	-643
6/30/2002	6390	30	118	-46	550	-622
7/31/2002	6421	31	79	-24	554	-609
8/31/2002	6452	31	87	-26	545	-605

Flow Budget for Aquifer C in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet STORAGE	Pumping From Wells	Piru B	Fillmore C
9/30/2002	6482	30	23	-20	586	-588
10/31/2002	6513	31	28	-17	600	-611
11/30/2002	6543	30	-147	75	661	-588
12/31/2002	6574	31	-78	67	612	-601
1/31/2003	6605	31	118	-41	553	-630
2/28/2003	6633	28	-126	82	621	-576
3/31/2003	6664	31	-57	72	613	-628
4/30/2003	6694	30	15	42	555	-611
5/31/2003	6725	31	-6	57	578	-629
6/30/2003	6755	30	119	-36	531	-614
7/31/2003	6786	31	104	-50	528	-582
8/31/2003	6817	31	105	-55	528	-578
9/30/2003	6847	30	38	-50	576	-564
10/31/2003	6878	31	6	-42	626	-590
11/30/2003	6908	30	-53	22	602	-571
12/31/2003	6939	31	-92	57	620	-585
1/31/2004	6970	31	42	22	561	-625
2/29/2004	6999	29	-180	90	679	-589
3/31/2004	7030	31	23	0	601	-624
4/30/2004	7060	30	64	-4	548	-608
5/31/2004	7091	31	68	-3	561	-626
6/30/2004	7121	30	71	-9	547	-608
7/31/2004	7152	31	81	-45	533	-569
8/31/2004	7183	31	90	-50	524	-564
9/30/2004	7213	30	94	-55	504	-543
10/31/2004	7244	31	-253	84	733	-564
11/30/2004	7274	30	37	-49	559	-547
12/31/2004	7305	31	-203	85	679	-561
1/31/2005	7336	31	-431	117	899	-584
2/28/2005	7364	28	-362	107	787	-532
3/31/2005	7395	31	-294	89	812	-606
4/30/2005	7425	30	-117	-19	747	-611
5/31/2005	7456	31	-7	-61	712	-644
6/30/2005	7486	30	34	-62	654	-626
7/31/2005	7517	31	-24	-2	654	-629
8/31/2005	7548	31	13	-8	624	-629
9/30/2005	7578	30	19	-17	591	-594
10/31/2005	7609	31	-98	63	658	-623
11/30/2005	7639	30	38	-13	589	-613
12/31/2005	7670	31	44	-7	596	-633
1/31/2006	7701	31	-173	65	712	-604
2/28/2006	7729	28	-126	54	617	-545
3/31/2006	7760	31	-116	59	660	-604
4/30/2006	7790	30	-128	60	654	-585
5/31/2006	7821	31	71	-79	605	-597
6/30/2006	7851	30	115	-109	567	-573
7/31/2006	7882	31	82	-8	599	-672
8/31/2006	7913	31	115	-27	563	-651
9/30/2006	7943	30	98	-27	565	-636
10/31/2006	7974	31	78	-21	600	-657
11/30/2006	8004	30	77	-21	588	-644
12/31/2006	8035	31	66	6	595	-667
1/31/2007	8066	31	-18	27	648	-657

Flow Budget for Aquifer C in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet STORAGE	Pumping From Wells	Piru B	Fillmore C
2/28/2007	8094	28	14	10	572	-596
3/31/2007	8125	31	121	-56	583	-649
4/30/2007	8155	30	96	-22	553	-626
5/31/2007	8186	31	128	-56	569	-641
6/30/2007	8216	30	132	-59	547	-620
7/31/2007	8247	31	120	-69	507	-558
8/31/2007	8278	31	98	-67	518	-548
9/30/2007	8308	30	31	-43	543	-532
10/31/2007	8339	31	19	-58	592	-553
11/30/2007	8369	30	33	-60	565	-538
12/31/2007	8400	31	-128	47	638	-556
1/31/2008	8431	31	-284	63	770	-548
2/29/2008	8460	29	-85	30	564	-509
3/31/2008	8491	31	32	-60	572	-544
4/30/2008	8521	30	49	-60	543	-531
5/31/2008	8552	31	50	-59	562	-552
6/30/2008	8582	30	60	-63	538	-535
7/31/2008	8613	31	94	-64	569	-599
8/31/2008	8644	31	92	-64	571	-600
9/30/2008	8674	30	33	-61	609	-580
10/31/2008	8705	31	-16	-53	676	-607
11/30/2008	8735	30	-160	49	706	-595
12/31/2008	8766	31	-101	44	671	-614
1/31/2009	8797	31	30	15	581	-626
2/28/2009	8825	28	-185	93	663	-571
3/31/2009	8856	31	-15	21	619	-625
4/30/2009	8886	30	38	16	553	-608
5/31/2009	8917	31	54	13	561	-628
6/30/2009	8947	30	68	5	535	-608
7/31/2009	8978	31	113	-61	547	-599
8/31/2009	9009	31	119	-62	537	-594
9/30/2009	9039	30	89	-62	544	-571
10/31/2009	9070	31	-138	69	662	-592
11/30/2009	9100	30	64	-60	571	-576
12/31/2009	9131	31	-150	81	666	-597
1/31/2010	9162	31	-176	86	657	-567
2/28/2010	9190	28	-127	73	564	-511
3/31/2010	9221	31	6	-6	566	-566
4/30/2010	9251	30	-124	80	597	-554
5/31/2010	9282	31	1	-5	579	-576
6/30/2010	9312	30	35	-16	542	-560
7/31/2010	9343	31	84	-37	557	-604
8/31/2010	9374	31	106	-42	540	-604
9/30/2010	9404	30	104	-46	522	-580
10/31/2010	9435	31	-84	55	629	-600
11/30/2010	9465	30	1	22	559	-581
12/31/2010	9496	31	-233	87	746	-601
1/31/2011	9527	31	59	-26	592	-625
2/28/2011	9555	28	-73	53	595	-576
3/31/2011	9586	31	-166	74	726	-634
4/30/2011	9616	30	-25	-18	658	-615
5/31/2011	9647	31	-5	10	634	-640
6/30/2011	9677	30	43	-21	602	-624

Flow Budget for Aquifer C in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet			
			STORAGE	Pumping From Wells	Piru B	Fillmore C
7/31/2011	9708	31	51	-38	575	-588
8/31/2011	9739	31	79	-43	545	-582
9/30/2011	9769	30	72	-48	529	-554
10/31/2011	9800	31	-52	28	595	-571
11/30/2011	9830	30	-40	27	575	-561
12/31/2011	9861	31	88	-45	535	-577
1/31/2012	9892	31	15	22	551	-588
2/29/2012	9921	29	122	-54	478	-545
3/31/2012	9952	31	-60	44	600	-584
4/30/2012	9982	30	-34	36	562	-564
5/31/2012	10013	31	113	-50	513	-576
6/30/2012	10043	30	116	-50	489	-556
7/31/2012	10074	31	116	-45	490	-561
8/31/2012	10105	31	122	-47	483	-557
9/30/2012	10135	30	72	-44	509	-537
10/31/2012	10166	31	22	-36	575	-561
11/30/2012	10196	30	-27	14	558	-545
12/31/2012	10227	31	-26	31	555	-560
1/31/2013	10258	31	34	48	552	-634
2/28/2013	10286	28	111	-11	478	-578
3/31/2013	10317	31	84	25	522	-631
4/30/2013	10347	30	104	-4	509	-609
5/31/2013	10378	31	94	-1	531	-624
6/30/2013	10408	30	90	-5	519	-604
7/31/2013	10439	31	95	-31	506	-571
8/31/2013	10470	31	99	-32	497	-565
9/30/2013	10500	30	98	-35	480	-543
10/31/2013	10531	31	97	-33	492	-556
11/30/2013	10561	30	72	-1	464	-536
12/31/2013	10592	31	94	-32	484	-547
1/31/2014	10623	31	82	-25	500	-558
2/28/2014	10651	28	-114	68	552	-506
3/31/2014	10682	31	-43	58	536	-552
4/30/2014	10712	30	107	-29	455	-533
5/31/2014	10743	31	95	-24	479	-549
6/30/2014	10773	30	87	-28	472	-531
7/31/2014	10804	31	66	-21	451	-496
8/31/2014	10835	31	74	-25	440	-489
9/30/2014	10865	30	74	-30	426	-470
10/31/2014	10896	31	75	-28	435	-482
11/30/2014	10926	30	62	-16	415	-462
12/31/2014	10957	31	-181	76	575	-470
1/31/2015	10988	31	-18	49	513	-544
2/28/2015	11016	28	65	5	432	-503
3/31/2015	11047	31	61	10	480	-551
4/30/2015	11077	30	67	-21	489	-535
5/31/2015	11108	31	39	4	509	-551
6/30/2015	11138	30	47	-21	509	-535
7/31/2015	11169	31	28	-31	476	-472
8/31/2015	11200	31	85	-82	466	-469
9/30/2015	11230	30	41	-35	448	-454
10/31/2015	11261	31	80	-83	470	-467
11/30/2015	11291	30	74	-84	460	-450

Flow Budget for Aquifer C in Piru Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet			
			STORAGE	Pumping From Wells	Piru B	Fillmore C
12/31/2015	11322	31	71	-79	471	-462

Flow Budget for Aquifer A in Fillmore Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	Outside	Piru A	Santa Paula	Fillmore B	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet									
1/31/1985	31	31	225	52	-297	1358	-217	15	1005	-285	1357	-3609
2/28/1985	59	28	505	40	-294	1276	-275	18	886	-255	921	-3207
3/31/1985	90	31	496	47	-458	1288	-303	18	990	-280	1120	-3358
4/30/1985	120	30	1813	23	-517	1353	-643	14	937	-273	-100	-3041
5/31/1985	151	31	1696	23	-569	1359	-644	11	953	-284	-135	-2863
6/30/1985	181	30	1678	23	-531	1353	-645	9	895	-276	-290	-2652
7/31/1985	212	31	2098	23	-541	1534	-874	6	874	-283	-848	-2434
8/31/1985	243	31	1883	23	-512	1534	-870	5	842	-283	-930	-2127
9/30/1985	273	30	825	23	-384	1528	-865	2	778	-273	-1092	-951
10/31/1985	304	31	1446	23	-349	1534	-863	0	859	-286	-1161	-1613
11/30/1985	334	30	-2686	335	-256	2841	-95	-13	854	-281	649	-1784
12/31/1985	365	31	497	30	-222	1378	-560	-3	881	-295	-108	-1982
1/31/1986	396	31	-2703	291	-257	2784	-67	-8	892	-296	846	-1894
2/28/1986	424	28	-5291	611	-297	4902	-17	-43	862	-272	142	-1056
3/31/1986	455	31	-2465	320	-483	2961	-58	-41	1016	-298	850	-2225
4/30/1986	485	30	895	38	-555	1283	-344	-8	975	-289	481	-2821
5/31/1986	516	31	2266	23	-619	1382	-687	2	997	-293	-602	-2804
6/30/1986	546	30	2239	23	-554	1376	-686	9	950	-281	-720	-2664
7/31/1986	577	31	1246	23	-530	1389	-692	13	880	-282	-656	-1694
8/31/1986	608	31	1744	23	-531	1389	-687	9	978	-284	-691	-2202
9/30/1986	638	30	631	26	-413	1280	-443	3	972	-278	-17	-1972
10/31/1986	669	31	1310	23	-360	1389	-684	2	979	-290	-729	-1848
11/30/1986	699	30	-957	96	-259	1522	-178	0	960	-281	730	-1830
12/31/1986	730	31	1271	23	-218	1389	-683	4	957	-292	-756	-1886
1/31/1987	761	31	-450	75	-246	1368	-256	1	971	-290	515	-1875
2/28/1987	789	28	146	42	-247	1253	-341	1	844	-262	156	-1754
3/31/1987	820	31	-764	116	-391	1618	-195	1	922	-289	665	-1862
4/30/1987	850	30	2073	23	-444	1445	-797	4	849	-279	-1372	-1661
5/31/1987	881	31	1911	23	-507	1451	-797	3	840	-285	-1447	-1348
6/30/1987	911	30	803	23	-469	1445	-795	-1	763	-272	-1574	-69
7/31/1987	942	31	1560	23	-495	1513	-877	-4	817	-274	-1851	-558
8/31/1987	973	31	1972	23	-482	1513	-876	-5	856	-277	-1807	-1061
9/30/1987	1003	30	1928	23	-368	1507	-874	-5	796	-272	-1902	-966
10/31/1987	1034	31	-632	78	-327	1373	-300	-7	831	-285	127	-998
11/30/1987	1064	30	-989	93	-241	1489	-254	-7	797	-279	247	-988
12/31/1987	1095	31	-2467	228	-211	2555	-105	-11	836	-291	436	-1172
1/31/1988	1126	31	-1943	205	-250	2280	-110	-14	822	-291	459	-1320
2/29/1988	1155	29	-1467	196	-261	2043	-140	-11	762	-271	217	-1207
3/31/1988	1186	31	599	34	-399	1364	-472	-5	816	-287	-719	-1055
4/30/1988	1216	30	-1444	206	-452	2374	-109	-5	768	-274	285	-1524
5/31/1988	1247	31	1525	23	-502	1485	-686	-2	797	-276	-1490	-994
6/30/1988	1277	30	1813	23	-493	1479	-682	-5	821	-260	-1706	-1102
7/31/1988	1308	31	2334	23	-510	1662	-834	-5	838	-272	-2138	-1210
8/31/1988	1339	31	2220	23	-473	1662	-833	-6	812	-278	-2202	-1038
9/30/1988	1369	30	2072	23	-359	1656	-831	-6	751	-273	-2306	-832
10/31/1988	1400	31	1836	23	-302	1662	-830	-6	747	-285	-2331	-621
11/30/1988	1430	30	-301	42	-217	1421	-376	-8	716	-277	-612	-492
12/31/1988	1461	31	-2788	243	-197	2735	-95	-16	737	-289	95	-603
1/31/1989	1492	31	697	23	-229	1225	-487	-11	764	-286	-874	-929
2/28/1989	1520	28	-2118	166	-230	2156	-89	-12	664	-256	123	-529
3/31/1989	1551	31	130	30	-364	1238	-340	-11	763	-280	-313	-956
4/30/1989	1581	30	1267	23	-410	1325	-565	-5	716	-266	-1324	-857
5/31/1989	1612	31	611	23	-458	1331	-565	0	752	-268	-1303	-222
6/30/1989	1642	30	1176	23	-456	1325	-563	-4	740	-259	-1391	-685
7/31/1989	1673	31	1823	23	-461	1599	-697	-4	713	-274	-2027	-791
8/31/1989	1704	31	1843	23	-430	1599	-696	-5	708	-278	-1989	-871
9/30/1989	1734	30	1807	23	-327	1593	-694	-5	659	-271	-2041	-833
10/31/1989	1765	31	1176	23	-284	1478	-569	-5	661	-282	-1446	-843
11/30/1989	1795	30	1737	23	-198	1585	-682	-4	605	-275	-2062	-816
12/31/1989	1826	31	1739	23	-159	1599	-691	-4	601	-285	-2096	-817
1/31/1990	1857	31	-1836	207	-191	2174	-133	-10	629	-285	-113	-572
2/28/1990	1885	28	-1526	162	-206	1907	-153	-11	553	-258	-209	-371
3/31/1990	1916	31	1658	23	-316	1452	-685	-3	607	-279	-2002	-546
4/30/1990	1946	30	1915	23	-333	1445	-685	0	580	-265	-2068	-698
5/31/1990	1977	31	1596	23	-373	1364	-589	0	587	-273	-1638	-785
6/30/1990	2007	30	1889	23	-345	1446	-683	0	549	-263	-2018	-682
7/31/1990	2038	31	1839	23	-340	1424	-759	-2	551	-276	-1920	-626
8/31/1990	2069	31	1784	23	-310	1424	-755	-4	532	-281	-1927	-572
9/30/1990	2099	30	1765	23	-232	1418	-750	-4	490	-274	-1998	-519
10/31/1990	2130	31	1705	23	-196	1424	-749	-4	483	-285	-1991	-494
11/30/1990	2160	30	1710	23	-135	1418	-745	-4	443	-277	-2067	-445
12/31/1990	2191	31	1674	23	-110	1424	-744	-3	437	-287	-2063	-433
1/31/1991	2222	31	107	44	-128	1332	-339	-3	425	-286	-903	-335
2/28/1991	2250	28	-1468	182	-140	2080	-148	-7	364	-258	-531	-181

Flow Budget for Aquifer A in Fillmore Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet									
			STORAGE	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	Outside	Piru A	Santa Paula	Fillmore B	Net Stream Percolation
3/31/1991	2281	31	-8118	835	-266	6648	-14	-60	433	-292	-1914	2299
4/30/1991	2311	30	1378	23	-332	1495	-703	-27	419	-275	-2850	750
5/31/1991	2342	31	1512	23	-346	1501	-704	1	434	-276	-2669	431
6/30/1991	2372	30	1734	23	-313	1495	-702	2	413	-263	-2580	105
7/31/1991	2403	31	1968	23	-305	1477	-722	2	417	-272	-2350	-326
8/31/1991	2434	31	1958	23	-280	1477	-720	1	410	-272	-2225	-458
9/30/1991	2464	30	1914	23	-210	1471	-719	0	381	-263	-2268	-412
10/31/1991	2495	31	-1267	23	-184	1468	-711	-5	503	-271	-2466	2824
11/30/1991	2525	30	1201	23	-143	1471	-710	-8	529	-262	-2444	264
12/31/1991	2556	31	-2670	276	-123	2766	-74	-16	509	-275	-427	-128
1/31/1992	2587	31	-1950	116	-155	1617	-119	-15	512	-275	-243	415
2/29/1992	2616	29	-8714	744	-204	6023	0	-53	494	-264	-1754	3305
3/31/1992	2647	31	-5622	449	-385	4037	-15	-66	583	-283	-804	1787
4/30/1992	2677	30	675	23	-437	1320	-536	-19	591	-253	-2058	596
5/31/1992	2708	31	768	23	-476	1326	-535	2	664	-245	-1886	265
6/30/1992	2738	30	892	23	-437	1320	-533	1	677	-234	-1812	11
7/31/1992	2769	31	1436	23	-426	1561	-724	-1	720	-259	-2437	14
8/31/1992	2800	31	1572	23	-386	1561	-724	6	742	-272	-2376	-237
9/30/1992	2830	30	658	23	-284	1555	-723	7	723	-267	-2422	645
10/31/1992	2861	31	-3936	134	-307	1625	-179	-5	833	-274	-307	2323
11/30/1992	2891	30	-367	23	-217	1555	-712	-5	819	-264	-2521	1607
12/31/1992	2922	31	-3976	333	-194	2978	-48	-21	930	-274	-241	307
1/31/1993	2953	31	-8790	851	-256	6238	13	-81	1021	-278	-1451	2294
2/28/1993	2981	28	-7341	659	-292	5180	-3	-90	1017	-255	-1308	2044
3/31/1993	3012	31	-3030	266	-478	2620	-66	-45	1194	-277	-73	-353
4/30/1993	3042	30	2075	23	-543	1573	-663	-5	1187	-254	-2165	-1332
5/31/1993	3073	31	2150	23	-548	1579	-671	6	1241	-250	-1968	-1665
6/30/1993	3103	30	1043	23	-566	1386	-543	12	1278	-240	-1180	-1310
7/31/1993	3134	31	1334	23	-543	1006	-711	6	1458	-257	-1064	-1349
8/31/1993	3165	31	1160	23	-517	1006	-707	2	1489	-262	-1005	-1283
9/30/1993	3195	30	1030	23	-415	1000	-705	-1	1455	-257	-1091	-1129
10/31/1993	3226	31	825	23	-363	1006	-702	1	1504	-269	-1062	-1053
11/30/1993	3256	30	-348	32	-259	852	-428	-1	1459	-263	-31	-1097
12/31/1993	3287	31	-1288	59	-228	896	-235	-4	1542	-273	739	-1298
1/31/1994	3318	31	260	23	-268	1266	-580	-3	1436	-264	-766	-1189
2/28/1994	3346	28	-3903	371	-279	3418	-36	-12	1305	-243	153	-1004
3/31/1994	3377	31	-1437	121	-451	1722	-129	-8	1484	-271	673	-1808
4/30/1994	3407	30	1284	23	-515	1287	-626	3	1378	-252	-964	-1702
5/31/1994	3438	31	636	23	-594	1199	-511	5	1387	-253	-433	-1544
6/30/1994	3468	30	1382	23	-571	1287	-635	8	1263	-242	-994	-1599
7/31/1994	3499	31	1895	23	-580	1479	-854	11	1226	-256	-1572	-1452
8/31/1994	3530	31	1654	23	-557	1479	-857	15	1186	-260	-1574	-1188
9/30/1994	3560	30	726	23	-367	1473	-855	15	1004	-251	-1722	-121
10/31/1994	3591	31	-905	57	-316	1310	-395	14	1062	-262	-65	-577
11/30/1994	3621	30	203	23	-240	1314	-556	19	1071	-254	-673	-981
12/31/1994	3652	31	-582	46	-227	1308	-387	18	1248	-266	-72	-1165
1/31/1995	3683	31	-11808	1303	-293	9781	-11	-88	1387	-282	-2072	1483
2/28/1995	3711	28	378	96	-277	1319	-246	-26	1126	-248	100	-2442
3/31/1995	3742	31	-4845	555	-472	4586	-40	-15	1348	-269	48	-1241
4/30/1995	3772	30	2268	23	-547	1210	-626	3	1349	-258	-879	-2642
5/31/1995	3803	31	1792	32	-543	1188	-449	17	1218	-255	41	-3139
6/30/1995	3833	30	1784	23	-584	1254	-657	17	1239	-245	-902	-2017
7/31/1995	3864	31	1909	23	-515	1336	-718	18	1052	-255	-928	-2014
8/31/1995	3895	31	1546	23	-495	1336	-714	26	1068	-256	-981	-1642
9/30/1995	3925	30	1278	23	-382	1330	-710	18	1037	-248	-1088	-1342
10/31/1995	3956	31	956	23	-333	1336	-711	16	1079	-258	-1074	-1118
11/30/1995	3986	30	1067	23	-231	1330	-709	22	1040	-252	-1163	-1206
12/31/1995	4017	31	-586	72	-221	1305	-284	12	1252	-260	128	-1501
1/31/1996	4048	31	-29	23	-266	1147	-417	10	1384	-262	-106	-1567
2/29/1996	4077	29	-3921	517	-292	3230	-47	-14	1399	-251	297	-1145
3/31/1996	4108	31	-698	99	-460	1308	-195	-5	1557	-270	489	-1914
4/30/1996	4138	30	1247	23	-510	1184	-586	12	1475	-261	-684	-1976
5/31/1996	4169	31	1539	23	-576	1240	-622	6	1432	-268	-847	-2007
6/30/1996	4199	30	1601	23	-549	1234	-623	12	1294	-258	-896	-1912
7/31/1996	4230	31	2355	23	-560	1472	-856	17	1281	-283	-1732	-1793
8/31/1996	4261	31	2201	23	-524	1472	-853	14	1237	-294	-1771	-1580
9/30/1996	4291	30	1323	23	-357	1466	-849	16	1008	-287	-1984	-429
10/31/1996	4322	31	-1658	160	-314	1660	-206	8	1052	-285	198	-696
11/30/1996	4352	30	-1109	125	-243	1484	-233	5	1085	-267	61	-986
12/31/1996	4383	31	-4001	451	-244	2886	-76	-15	1335	-276	71	-338
1/31/1997	4414	31	-2998	402	-290	2584	-44	-34	1376	-275	384	-1256
2/28/1997	4442	28	1662	21	-286	1142	-550	-7	1186	-245	-1058	-1936
3/31/1997	4473	31	1060	23	-428	1160	-552	7	1348	-268	-837	-1589
4/30/1997	4503	30	1366	23	-476	1154	-552	13	1250	-259	-836	-1755

Flow Budget for Aquifer A in Fillmore Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet									
			STORAGE	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	Outside	Piru A	Santa Paula	Fillmore B	Net Stream Percolation
5/31/1997	4534	31	1409	23	-549	1160	-551	11	1253	-268	-733	-1828
6/30/1997	4564	30	1423	23	-524	1154	-550	14	1186	-260	-770	-1765
7/31/1997	4595	31	1872	23	-531	1414	-729	13	1180	-267	-1476	-1571
8/31/1997	4626	31	964	23	-449	1414	-727	10	1006	-263	-1644	-403
9/30/1997	4656	30	1130	23	-355	1408	-724	9	1004	-254	-1787	-519
10/31/1997	4687	31	895	23	-309	1414	-723	8	1046	-263	-1800	-359
11/30/1997	4717	30	-1072	119	-237	1476	-197	4	1110	-257	-9	-1013
12/31/1997	4748	31	-3415	393	-231	2667	-66	-15	1309	-271	236	-756
1/31/1998	4779	31	-1831	161	-273	1619	-138	-16	1396	-272	109	-848
2/28/1998	4807	28	-9582	1266	-300	6612	1	-110	1320	-253	-1580	2181
3/31/1998	4838	31	-1413	241	-477	2010	-106	-56	1499	-276	320	-1917
4/30/1998	4868	30	334	74	-549	1294	-244	-5	1431	-256	-108	-2057
5/31/1998	4899	31	-1578	352	-649	2321	-88	-6	1496	-260	632	-2358
6/30/1998	4929	30	3234	23	-611	1400	-570	6	1312	-245	-1729	-2900
7/31/1998	4960	31	2457	23	-527	1361	-696	13	1168	-253	-1076	-2552
8/31/1998	4991	31	1654	23	-574	1358	-690	19	1271	-256	-1083	-1801
9/30/1998	5021	30	1346	23	-419	1347	-684	19	1175	-250	-1135	-1496
10/31/1998	5052	31	1168	23	-337	1351	-681	13	1070	-255	-1179	-1247
11/30/1998	5082	30	325	24	-238	1263	-457	11	1063	-244	-576	-1243
12/31/1998	5113	31	1080	23	-196	1346	-676	12	1076	-253	-1244	-1240
1/31/1999	5144	31	-992	100	-256	1406	-223	12	1256	-252	290	-1418
2/28/1999	5172	28	129	34	-268	1262	-439	13	1285	-230	-470	-1383
3/31/1999	5203	31	-826	88	-421	1379	-236	14	1496	-256	348	-1661
4/30/1999	5233	30	-920	95	-493	1369	-234	7	1489	-249	219	-1355
5/31/1999	5264	31	1482	23	-575	1393	-754	12	1520	-260	-1317	-1592
6/30/1999	5294	30	1725	23	-544	1389	-753	14	1378	-251	-1398	-1646
7/31/1999	5325	31	1598	23	-557	1360	-643	10	1323	-258	-1209	-1715
8/31/1999	5356	31	1534	23	-527	1358	-641	6	1274	-259	-1252	-1582
9/30/1999	5386	30	646	23	-372	1350	-638	2	1053	-250	-1405	-472
10/31/1999	5417	31	1053	23	-322	1353	-635	1	1080	-258	-1428	-933
11/30/1999	5447	30	961	23	-251	1277	-548	2	1174	-251	-1157	-1290
12/31/1999	5478	31	1129	23	-216	1355	-634	2	1205	-263	-1512	-1152
1/31/2000	5509	31	-526	59	-243	1296	-277	0	1210	-265	-265	-1055
2/29/2000	5538	29	-3850	436	-270	2939	-59	-22	1182	-253	7	-291
3/31/2000	5569	31	-1235	139	-433	1559	-188	-19	1258	-269	-15	-871
4/30/2000	5599	30	-596	91	-493	1401	-226	0	1185	-255	-95	-1083
5/31/2000	5630	31	2076	23	-567	1469	-754	8	1184	-258	-2031	-1217
6/30/2000	5660	30	1906	23	-532	1460	-749	6	1140	-250	-2129	-937
7/31/2000	5691	31	1651	23	-513	1374	-644	1	1125	-264	-1589	-1229
8/31/2000	5722	31	1461	23	-454	1371	-640	-2	1095	-266	-1568	-1083
9/30/2000	5752	30	-228	23	-357	1366	-636	-4	964	-256	-1738	804
10/31/2000	5783	31	-1138	43	-324	1244	-305	-7	1050	-262	-260	-108
11/30/2000	5813	30	1062	23	-229	1363	-631	-5	1044	-252	-1758	-679
12/31/2000	5844	31	1125	23	-197	1368	-632	-5	1155	-262	-1740	-896
1/31/2001	5875	31	-4192	363	-251	3790	-45	-21	1209	-268	56	-861
2/28/2001	5903	28	-5217	522	-279	4451	-33	-48	1135	-247	-384	-177
3/31/2001	5934	31	-3268	250	-468	2793	-89	-40	1263	-273	-133	-222
4/30/2001	5964	30	336	84	-532	1395	-314	-10	1217	-259	15	-2012
5/31/2001	5995	31	2761	23	-600	1581	-877	4	1224	-262	-2044	-1886
6/30/2001	6025	30	2499	23	-543	1570	-869	12	1159	-250	-2161	-1511
7/31/2001	6056	31	1575	23	-525	1410	-732	13	1174	-262	-1399	-1348
8/31/2001	6087	31	1409	23	-481	1410	-728	12	1145	-266	-1360	-1235
9/30/2001	6117	30	-119	23	-370	1398	-721	7	990	-257	-1515	497
10/31/2001	6148	31	362	23	-327	1407	-718	4	1058	-262	-1506	-108
11/30/2001	6178	30	-2222	184	-244	2273	-108	-2	1071	-252	383	-1182
12/31/2001	6209	31	-609	53	-234	1316	-259	0	1257	-262	251	-1585
1/31/2002	6240	31	-161	33	-267	1096	-299	-1	1248	-261	210	-1666
2/28/2002	6268	28	1176	21	-261	1135	-557	1	1061	-233	-963	-1439
3/31/2002	6299	31	982	23	-388	1135	-537	2	1140	-258	-788	-1376
4/30/2002	6329	30	1039	23	-415	1146	-557	5	1065	-250	-910	-1207
5/31/2002	6360	31	1012	23	-464	1152	-557	3	1068	-260	-867	-1174
6/30/2002	6390	30	1071	23	-450	1149	-557	-1	997	-252	-939	-1102
7/31/2002	6421	31	1675	23	-471	1352	-734	-3	988	-257	-1626	-1010
8/31/2002	6452	31	1538	23	-447	1350	-729	-4	953	-256	-1671	-820
9/30/2002	6482	30	-263	23	-353	1340	-719	-6	855	-248	-1867	1178
10/31/2002	6513	31	1369	23	-313	1347	-717	-8	953	-258	-1818	-638
11/30/2002	6543	30	-2648	220	-233	2566	-80	-14	931	-261	212	-814
12/31/2002	6574	31	-2398	207	-205	2438	-88	-18	976	-276	278	-1034
1/31/2003	6605	31	1579	23	-232	1330	-621	-9	979	-267	-1687	-1163
2/28/2003	6633	28	-2619	273	-234	2669	-67	-14	838	-245	-135	-618
3/31/2003	6664	31	-1829	209	-382	2193	-97	-17	951	-273	164	-1031
4/30/2003	6694	30	-123	53	-445	1222	-270	-9	930	-260	-244	-925
5/31/2003	6725	31	-494	94	-525	1358	-196	-7	960	-265	8	-1008
6/30/2003	6755	30	2045	23	-496	1330	-631	-3	912	-245	-1718	-1281

Flow Budget for Aquifer A in Fillmore Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet									
			STORAGE	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	Outside	Piru A	Santa Paula	Fillmore B	Net Stream Percolation
7/31/2003	6786	31	1952	23	-495	1307	-691	-2	926	-242	-1715	-1128
8/31/2003	6817	31	1716	23	-460	1306	-688	-4	906	-239	-1684	-940
9/30/2003	6847	30	-68	23	-358	1296	-683	-8	832	-229	-1816	950
10/31/2003	6878	31	1047	23	-314	1301	-681	-11	926	-237	-1800	-318
11/30/2003	6908	30	-1074	94	-234	1455	-192	-10	951	-243	72	-887
12/31/2003	6939	31	-1207	102	-202	1474	-192	-10	982	-259	173	-934
1/31/2004	6970	31	453	23	-230	1049	-445	-8	984	-260	-684	-946
2/29/2004	6999	29	-3592	367	-248	3265	-30	-22	900	-252	-155	-451
3/31/2004	7030	31	1188	23	-390	1152	-528	-10	994	-264	-1140	-1094
4/30/2004	7060	30	1282	23	-420	1146	-526	-3	933	-249	-1143	-1105
5/31/2004	7091	31	1165	23	-474	1153	-525	-4	946	-256	-1089	-1003
6/30/2004	7121	30	1127	23	-453	1146	-522	-5	897	-248	-1147	-879
7/31/2004	7152	31	1724	23	-469	1273	-678	-4	901	-262	-1756	-815
8/31/2004	7183	31	1571	23	-443	1273	-674	-6	875	-266	-1769	-646
9/30/2004	7213	30	1597	23	-337	1264	-668	-7	820	-261	-1846	-645
10/31/2004	7244	31	-4545	368	-326	2926	-59	-23	867	-275	-170	1010
11/30/2004	7274	30	1502	23	-241	1265	-675	-14	903	-265	-1867	-698
12/31/2004	7305	31	-4503	400	-205	3691	-36	-25	953	-280	-326	55
1/31/2005	7336	31	-9391	1020	-271	7132	3	-97	1050	-288	-1883	2181
2/28/2005	7364	28	-5459	500	-291	4234	-16	-70	1045	-259	-613	570
3/31/2005	7395	31	-1101	152	-477	2020	-93	-17	1249	-278	463	-2125
4/30/2005	7425	30	1716	23	-528	1107	-393	4	1251	-257	-466	-2547
5/31/2005	7456	31	2060	23	-553	1207	-542	7	1285	-257	-966	-2354
6/30/2005	7486	30	1847	23	-484	1193	-536	7	1125	-240	-1008	-2010
7/31/2005	7517	31	1329	23	-573	1141	-552	13	1284	-245	-785	-1719
8/31/2005	7548	31	1169	23	-548	1135	-550	16	1324	-247	-679	-1725
9/30/2005	7578	30	763	23	-379	1131	-548	11	1038	-235	-889	-991
10/31/2005	7609	31	-194	36	-365	1074	-320	13	1206	-247	68	-1353
11/30/2005	7639	30	728	23	-279	1098	-504	12	1378	-244	-726	-1560
12/31/2005	7670	31	678	23	-229	1118	-535	7	1468	-256	-787	-1562
1/31/2006	7701	31	-2906	251	-274	2417	-110	2	1579	-267	221	-1080
2/28/2006	7729	28	-2620	265	-290	2519	-92	-14	1516	-250	229	-1406
3/31/2006	7760	31	-2493	230	-489	2434	-99	-17	1740	-279	335	-1524
4/30/2006	7790	30	-2862	272	-580	2471	-98	-18	1710	-270	140	-944
5/31/2006	7821	31	1656	28	-652	1305	-474	-3	1707	-275	-588	-2789
6/30/2006	7851	30	3063	23	-589	1531	-810	12	1534	-265	-2233	-2341
7/31/2006	7882	31	1684	23	-594	1209	-535	14	1501	-282	-741	-2356
8/31/2006	7913	31	1569	23	-480	1199	-533	13	1080	-282	-794	-1868
9/30/2006	7943	30	1175	23	-375	1182	-533	10	1047	-273	-966	-1360
10/31/2006	7974	31	914	23	-328	1187	-531	8	1089	-282	-979	-1173
11/30/2006	8004	30	1129	23	-248	1169	-532	5	1155	-276	-1059	-1433
12/31/2006	8035	31	580	23	-225	1062	-454	1	1333	-286	-569	-1534
1/31/2007	8066	31	-1046	75	-259	1237	-146	-4	1379	-280	602	-1632
2/28/2007	8094	28	63	41	-261	1059	-277	-1	1231	-255	-103	-1562
3/31/2007	8125	31	1348	23	-401	1158	-521	-1	1300	-289	-1076	-1608
4/30/2007	8155	30	380	24	-456	1037	-314	-2	1227	-279	-217	-1463
5/31/2007	8186	31	1426	23	-523	1158	-520	-3	1212	-290	-1121	-1426
6/30/2007	8216	30	1370	23	-476	1152	-519	-4	1131	-284	-1224	-1230
7/31/2007	8247	31	1498	23	-505	1411	-562	-4	1080	-305	-1520	-1179
8/31/2007	8278	31	582	23	-456	1411	-558	-5	982	-312	-1595	-135
9/30/2007	8308	30	439	23	-357	1386	-545	-7	924	-302	-1664	45
10/31/2007	8339	31	346	23	-313	1411	-550	-10	977	-312	-1748	114
11/30/2007	8369	30	1164	23	-223	1405	-546	-11	978	-303	-1789	-756
12/31/2007	8400	31	-2260	194	-210	2321	-78	-19	1056	-299	156	-958
1/31/2008	8431	31	-6828	599	-275	5456	-3	-42	1148	-292	-857	713
2/29/2008	8460	29	-1021	104	-298	1615	-133	-28	1074	-267	-108	-1020
3/31/2008	8491	31	1693	23	-423	1381	-553	-5	1115	-277	-1499	-1526
4/30/2008	8521	30	1441	23	-469	1375	-551	6	1092	-265	-1464	-1255
5/31/2008	8552	31	1420	23	-535	1381	-548	8	1128	-274	-1394	-1277
6/30/2008	8582	30	1361	23	-513	1375	-545	3	1084	-266	-1429	-1157
7/31/2008	8613	31	1683	23	-513	1452	-614	0	1101	-283	-1817	-1097
8/31/2008	8644	31	1504	23	-485	1452	-609	-1	1078	-289	-1853	-884
9/30/2008	8674	30	-134	23	-358	1446	-602	-5	941	-280	-2046	953
10/31/2008	8705	31	220	23	-318	1452	-598	-8	1021	-288	-2053	486
11/30/2008	8735	30	-1606	133	-250	1891	-121	-10	1088	-276	45	-973
12/31/2008	8766	31	-1703	141	-226	1866	-121	-13	1223	-285	193	-1156
1/31/2009	8797	31	545	23	-254	1175	-416	-12	1216	-293	-839	-1209
2/28/2009	8825	28	-3527	281	-264	3076	-29	-17	1136	-263	-64	-509
3/31/2009	8856	31	545	23	-419	1180	-382	-13	1269	-292	-680	-1298
4/30/2009	8886	30	1245	23	-464	1266	-487	-11	1177	-287	-1221	-1303
5/31/2009	8917	31	1278	23	-531	1273	-486	-9	1183	-297	-1163	-1336
6/30/2009	8947	30	1192	23	-502	1252	-484	-9	1119	-288	-1224	-1141
7/31/2009	8978	31	1739	23	-501	1488	-603	-9	1121	-305	-1927	-1088
8/31/2009	9009	31	1608	23	-457	1425	-599	-9	1091	-311	-1980	-853

Flow Budget for Aquifer A in Fillmore Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	Outside	Piru A	Santa Paula	Fillmore B	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet									
9/30/2009	9039	30	244	23	-350	1472	-595	-10	959	-302	-2148	648
10/31/2009	9070	31	-2627	233	-317	2300	-94	-19	992	-296	-93	-192
11/30/2009	9100	30	1475	23	-229	1458	-596	-14	1015	-293	-2101	-800
12/31/2009	9131	31	-2509	251	-221	2430	-76	-20	1139	-297	-19	-814
1/31/2010	9162	31	-4097	369	-268	3433	3	-38	1226	-291	-30	-519
2/28/2010	9190	28	-2250	227	-279	2322	-45	-34	1123	-262	-2	-933
3/31/2010	9221	31	1304	23	-429	1294	-481	-10	1263	-294	-1409	-1334
4/30/2010	9251	30	-814	85	-484	1395	-126	-5	1238	-279	163	-1248
5/31/2010	9282	31	1356	23	-566	1294	-481	-7	1287	-290	-1240	-1446
6/30/2010	9312	30	1564	23	-539	1291	-479	-6	1214	-282	-1292	-1558
7/31/2010	9343	31	1808	23	-543	1462	-569	-7	1213	-305	-1778	-1371
8/31/2010	9374	31	1639	23	-497	1462	-565	-7	1184	-315	-1827	-1163
9/30/2010	9404	30	634	23	-370	1459	-561	-9	1061	-308	-1983	-8
10/31/2010	9435	31	-1646	83	-321	1479	-152	-13	1062	-299	-14	-250
11/30/2010	9465	30	-352	56	-235	1324	-243	-13	1061	-284	-370	-1010
12/31/2010	9496	31	-5443	595	-239	4805	13	-43	1299	-291	-510	-535
1/31/2011	9527	31	1501	23	-275	1238	-425	-26	1258	-291	-1256	-1822
2/28/2011	9555	28	-2191	250	-271	2307	-38	-16	1160	-259	53	-1132
3/31/2011	9586	31	-4190	404	-445	3575	8	-36	1371	-287	-243	-418
4/30/2011	9616	30	1410	23	-513	1235	-439	-21	1341	-282	-1254	-1577
5/31/2011	9647	31	944	23	-582	1132	-293	-8	1338	-287	-280	-2064
6/30/2011	9677	30	1308	23	-561	1235	-435	-3	1335	-277	-1048	-1649
7/31/2011	9708	31	1672	23	-577	1219	-463	-1	1332	-292	-1177	-1809
8/31/2011	9739	31	1460	23	-542	1219	-460	6	1306	-295	-1152	-1635
9/30/2011	9769	30	530	23	-391	1216	-459	2	1108	-287	-1299	-510
10/31/2011	9800	31	-770	55	-333	1166	-142	-3	1079	-284	257	-1096
11/30/2011	9830	30	-841	84	-274	1354	-94	-6	1217	-272	449	-1688
12/31/2011	9861	31	1229	23	-232	1219	-456	-8	1309	-291	-1200	-1659
1/31/2012	9892	31	-137	46	-259	1146	-178	-11	1281	-293	57	-1721
2/29/2012	9921	29	1330	22	-266	1251	-466	-10	1147	-281	-1569	-1219
3/31/2012	9952	31	-1874	208	-418	1954	-61	-6	1244	-296	324	-1162
4/30/2012	9982	30	-1354	166	-497	1780	-69	-4	1234	-283	374	-1422
5/31/2012	10013	31	1913	23	-569	1264	-470	2	1198	-300	-1376	-1749
6/30/2012	10043	30	1815	23	-514	1260	-472	-1	1097	-294	-1527	-1448
7/31/2012	10074	31	1736	23	-484	1205	-575	-3	1110	-270	-1514	-1290
8/31/2012	10105	31	1546	23	-457	1204	-569	-6	1080	-252	-1524	-1108
9/30/2012	10135	30	65	23	-354	1198	-564	-8	932	-240	-1695	586
10/31/2012	10166	31	451	23	-313	1202	-557	-11	988	-242	-1681	79
11/30/2012	10196	30	-628	62	-227	1154	-175	-12	1044	-249	-1	-1031
12/31/2012	10227	31	-923	57	-199	1270	-136	-14	1115	-271	323	-1288
1/31/2013	10258	31	-608	62	-227	1106	-160	-16	1109	-263	315	-1382
2/28/2013	10286	28	1296	21	-222	1071	-510	-13	953	-207	-1334	-1109
3/31/2013	10317	31	744	23	-338	982	-402	-13	1028	-224	-823	-1035
4/30/2013	10347	30	1210	23	-381	1086	-506	-11	950	-210	-1327	-890
5/31/2013	10378	31	1197	23	-442	1093	-502	-11	949	-212	-1310	-843
6/30/2013	10408	30	1219	23	-426	1089	-500	-12	881	-204	-1376	-750
7/31/2013	10439	31	1237	23	-441	1161	-478	-12	863	-217	-1505	-688
8/31/2013	10470	31	1234	23	-418	1161	-475	-12	825	-222	-1538	-636
9/30/2013	10500	30	1247	23	-317	1155	-474	-12	766	-215	-1630	-597
10/31/2013	10531	31	1173	23	-272	1159	-472	-12	777	-225	-1640	-569
11/30/2013	10561	30	824	23	-192	1059	-405	-11	745	-221	-1356	-519
12/31/2013	10592	31	1108	23	-159	1158	-470	-10	751	-230	-1719	-510
1/31/2014	10623	31	1789	23	-171	1300	-664	-8	727	-231	-2351	-470
2/28/2014	10651	28	-2118	229	-180	2154	-85	-13	622	-234	-297	-182
3/31/2014	10682	31	-1331	112	-314	1380	-176	-13	711	-273	-405	235
4/30/2014	10712	30	1776	23	-338	1295	-670	-9	656	-240	-2348	-202
5/31/2014	10743	31	1870	23	-365	1301	-666	-9	667	-233	-2349	-297
6/30/2014	10773	30	2048	23	-333	1294	-662	-8	618	-223	-2370	-441
7/31/2014	10804	31	1723	23	-327	1208	-580	-9	641	-236	-2070	-431
8/31/2014	10835	31	1686	23	-294	1208	-577	-9	615	-241	-2067	-403
9/30/2014	10865	30	1691	23	-216	1201	-576	-8	564	-233	-2119	-381
10/31/2014	10896	31	1610	23	-178	1206	-574	-8	563	-242	-2146	-311
11/30/2014	10926	30	1095	23	-123	1074	-449	-7	516	-243	-1705	-234
12/31/2014	10957	31	-2609	198	-120	2241	-54	-11	535	-274	-360	329
1/31/2015	10988	31	-1094	64	-158	1108	-136	-9	559	-278	-266	143
2/28/2015	11016	28	541	21	-153	971	-353	-6	470	-229	-1315	-1
3/31/2015	11047	31	187	24	-229	979	-292	-5	528	-249	-1018	17
4/30/2015	11077	30	1352	23	-247	1089	-469	-5	492	-227	-1976	-88
5/31/2015	11108	31	704	23	-280	985	-325	-5	504	-239	-1237	-188
6/30/2015	11138	30	1590	23	-262	1087	-466	-6	472	-223	-1941	-330
7/31/2015	11169	31	-137	51	-275	1114	-185	-7	461	-246	-470	-364
8/31/2015	11200	31	1717	23	-260	1189	-553	-7	444	-229	-2002	-377
9/30/2015	11230	30	1296	23	-196	1084	-455	-7	415	-219	-1709	-287
10/31/2015	11261	31	1639	23	-164	1186	-548	-7	414	-218	-2115	-266

Flow Budget for Aquifer A in Fillmore Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet									
			STORAGE	Mountain Front Recharge	ET	RECHARGE	Pumping from Wells	Outside	Piru A	Santa Paula	Fillmore B	Net Stream Percolation
11/30/2015	11291	30	1604	23	-109	1182	-545	-6	380	-203	-2219	-161
12/31/2015	11322	31	1548	23	-85	1187	-542	-6	376	-210	-2235	-111

Flow Budget for Aquifer B in Fillmore Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Santa Paula B	Fillmore C
			influx(+) outflux(-); units in Acre-feet								
1/31/1985	31	31	270	207	42	-1942	163	-1357	2348	-864	1410
2/28/1985	59	28	269	178	33	-2198	122	-921	2169	-783	1401
3/31/1985	90	31	247	185	30	-2282	118	-1120	2379	-862	1618
4/30/1985	120	30	564	156	7	-3678	101	100	2313	-859	1612
5/31/1985	151	31	457	161	7	-3677	94	135	2381	-891	1665
6/30/1985	181	30	450	156	7	-3682	86	290	2316	-869	1570
7/31/1985	212	31	571	161	8	-4379	82	848	2354	-912	1598
8/31/1985	243	31	541	161	8	-4385	76	930	2349	-923	1566
9/30/1985	273	30	518	156	8	-4397	67	1092	2296	-896	1460
10/31/1985	304	31	393	161	8	-4397	66	1161	2406	-938	1443
11/30/1985	334	30	-1116	631	244	-1395	56	-649	2364	-859	1038
12/31/1985	365	31	278	172	11	-3092	63	108	2399	-933	1271
1/31/1986	396	31	-1013	598	231	-1021	59	-846	2283	-889	893
2/28/1986	424	28	-2221	1218	476	-834	55	-142	2117	-787	423
3/31/1986	455	31	-1050	687	265	-993	73	-850	2317	-868	718
4/30/1986	485	30	310	178	36	-2122	79	-481	2239	-857	865
5/31/1986	516	31	761	161	6	-3677	86	602	2309	-898	888
6/30/1986	546	30	735	156	6	-3688	87	720	2243	-873	831
7/31/1986	577	31	733	161	7	-3801	87	656	2306	-888	947
8/31/1986	608	31	608	161	7	-3802	80	691	2386	-898	926
9/30/1986	638	30	378	169	20	-2838	68	17	2339	-873	843
10/31/1986	669	31	634	161	7	-3802	68	729	2382	-914	852
11/30/1986	699	30	-77	224	64	-1630	60	-730	2334	-862	725
12/31/1986	730	31	655	161	7	-3803	68	756	2357	-918	821
1/31/1987	761	31	39	209	59	-1972	62	-515	2339	-885	766
2/28/1987	789	28	265	177	34	-2315	56	-156	2119	-807	713
3/31/1987	820	31	-59	246	83	-1689	59	-665	2297	-876	697
4/30/1987	850	30	803	156	6	-4411	66	1372	2198	-868	759
5/31/1987	881	31	707	161	6	-4415	67	1447	2251	-895	749
6/30/1987	911	30	665	156	6	-4423	58	1574	2195	-861	702
7/31/1987	942	31	640	161	7	-4745	55	1851	2296	-890	697
8/31/1987	973	31	679	161	7	-4747	55	1807	2321	-901	686
9/30/1987	1003	30	686	156	7	-4752	53	1902	2245	-884	650
10/31/1987	1034	31	10	208	52	-2150	47	-127	2320	-897	602
11/30/1987	1064	30	-64	224	68	-1892	42	-247	2244	-877	564
12/31/1987	1095	31	-787	549	225	-1289	45	-436	2302	-885	398
1/31/1988	1126	31	-468	386	141	-1158	46	-459	2228	-877	248
2/29/1988	1155	29	-341	309	109	-1287	44	-217	2091	-816	178
3/31/1988	1186	31	318	170	11	-2805	49	719	2185	-874	285
4/30/1988	1216	30	-586	463	180	-1146	48	-285	2136	-828	119
5/31/1988	1247	31	808	161	7	-4080	52	1490	2191	-846	274
6/30/1988	1277	30	599	156	7	-4094	48	1706	2194	-811	248
7/31/1988	1308	31	762	161	5	-4762	51	2138	2287	-870	279
8/31/1988	1339	31	694	161	5	-4763	50	2202	2299	-882	284
9/30/1988	1369	30	672	156	5	-4768	47	2306	2232	-864	261
10/31/1988	1400	31	613	161	5	-4767	48	2331	2290	-900	267
11/30/1988	1430	30	72	183	26	-2459	40	612	2216	-866	222
12/31/1988	1461	31	-865	582	225	-1124	33	-95	2260	-879	-28
1/31/1989	1492	31	509	161	5	-3293	37	874	2316	-877	315
2/28/1989	1520	28	-568	391	150	-1305	30	-123	2121	-781	154
3/31/1989	1551	31	294	177	9	-2583	38	313	2308	-866	357
4/30/1989	1581	30	509	156	6	-3778	50	1324	2241	-827	365
5/31/1989	1612	31	443	161	6	-3780	54	1303	2345	-844	357
6/30/1989	1642	30	414	156	6	-3785	48	1391	2288	-818	344
7/31/1989	1673	31	542	161	9	-4823	50	2027	2499	-864	444
8/31/1989	1704	31	578	161	9	-4820	48	1989	2488	-872	461
9/30/1989	1734	30	591	156	9	-4795	46	2041	2393	-850	446
10/31/1989	1765	31	451	161	9	-4111	46	1446	2443	-885	476
11/30/1989	1795	30	592	156	9	-4763	45	2062	2345	-863	457
12/31/1989	1826	31	588	161	9	-4817	47	2096	2391	-896	462
1/31/1990	1857	31	-591	397	149	-1654	35	113	2285	-887	227
2/28/1990	1885	28	-369	330	121	-1777	32	209	2080	-798	232
3/31/1990	1916	31	641	161	8	-4669	46	2002	2314	-878	417
4/30/1990	1946	30	570	156	8	-4671	50	2068	2271	-845	434
5/31/1990	1977	31	540	161	6	-4266	52	1638	2335	-873	448

Flow Budget for Aquifer B in Fillmore Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Santa Paula B	Fillmore C
			influx(+) outflux(-); units in Acre-feet								
6/30/1990	2007	30	621	156	8	-4681	50	2018	2272	-846	442
7/31/1990	2038	31	494	161	4	-4170	45	1920	2147	-903	340
8/31/1990	2069	31	548	161	4	-4177	43	1927	2131	-911	313
9/30/1990	2099	30	560	156	4	-4185	41	1998	2060	-888	293
10/31/1990	2130	31	544	161	4	-4186	42	1991	2103	-923	303
11/30/1990	2160	30	549	156	4	-4192	41	2067	2028	-900	283
12/31/1990	2191	31	540	161	4	-4193	44	2063	2067	-934	286
1/31/1991	2222	31	104	187	36	-2606	43	903	2059	-912	225
2/28/1991	2250	28	-508	337	132	-1495	31	531	1851	-816	-1
3/31/1991	2281	31	-3681	1759	729	-827	37	1914	2029	-879	-787
4/30/1991	2311	30	531	156	8	-4595	57	2850	1989	-860	-58
5/31/1991	2342	31	560	161	8	-4600	59	2669	2055	-877	14
6/30/1991	2372	30	582	156	8	-4605	54	2580	2003	-847	115
7/31/1991	2403	31	599	161	9	-4630	52	2350	2098	-869	277
8/31/1991	2434	31	670	161	9	-4626	51	2225	2098	-870	329
9/30/1991	2464	30	674	156	9	-4629	48	2268	2035	-844	327
10/31/1991	2495	31	344	161	9	-4591	38	2466	2162	-870	326
11/30/1991	2525	30	410	156	9	-4636	33	2444	2147	-841	321
12/31/1991	2556	31	-1138	583	223	-1261	26	427	2184	-872	-61
1/31/1992	2587	31	-431	269	91	-1584	24	243	2146	-874	169
2/29/1992	2616	29	-3547	1636	682	-889	25	1754	2029	-800	-615
3/31/1992	2647	31	-2038	992	396	-981	39	804	2179	-855	-308
4/30/1992	2677	30	513	156	7	-4196	51	2058	2185	-798	82
5/31/1992	2708	31	478	161	7	-4200	58	1886	2319	-810	158
6/30/1992	2738	30	465	156	7	-4203	55	1812	2315	-782	229
7/31/1992	2769	31	485	161	5	-5057	55	2437	2530	-877	315
8/31/1992	2800	31	472	161	5	-5055	61	2376	2567	-890	356
9/30/1992	2830	30	474	156	5	-5058	62	2422	2519	-869	339
10/31/1992	2861	31	-540	239	61	-2009	37	307	2610	-865	213
11/30/1992	2891	30	315	156	5	-5061	42	2521	2597	-861	334
12/31/1992	2922	31	-1464	695	272	-1344	31	241	2614	-846	-55
1/31/1993	2953	31	-3617	1679	671	-1096	35	1451	2640	-835	-637
2/28/1993	2981	28	-3070	1378	570	-1149	50	1308	2440	-752	-515
3/31/1993	3012	31	-931	558	216	-1554	66	73	2675	-833	-82
4/30/1993	3042	30	710	156	6	-5214	80	2165	2859	-794	99
5/31/1993	3073	31	679	161	6	-5208	85	1968	2992	-806	188
6/30/1993	3103	30	542	156	5	-4290	81	1180	2907	-783	264
7/31/1993	3134	31	486	161	10	-3725	71	1064	2490	-823	327
8/31/1993	3165	31	516	161	10	-3724	65	1005	2467	-830	388
9/30/1993	3195	30	486	156	10	-3726	59	1091	2379	-811	410
10/31/1993	3226	31	451	161	10	-3725	64	1062	2446	-845	432
11/30/1993	3256	30	136	170	13	-2279	59	31	2332	-830	419
12/31/1993	3287	31	-69	203	47	-1355	56	-739	2380	-855	385
1/31/1994	3318	31	432	161	6	-3379	65	766	2571	-848	277
2/28/1994	3346	28	-1487	825	334	-745	61	-153	2338	-757	-255
3/31/1994	3377	31	-227	285	102	-1181	73	-673	2537	-842	-11
4/30/1994	3407	30	588	156	6	-3512	77	964	2440	-805	136
5/31/1994	3438	31	367	162	7	-2868	84	433	2507	-829	188
6/30/1994	3468	30	495	156	6	-3507	87	994	2416	-800	200
7/31/1994	3499	31	568	161	11	-4530	96	1572	2629	-841	383
8/31/1994	3530	31	521	161	11	-4524	101	1574	2632	-848	420
9/30/1994	3560	30	504	156	11	-4529	99	1722	2483	-818	417
10/31/1994	3591	31	-7	185	18	-2453	95	65	2583	-851	410
11/30/1994	3621	30	185	167	19	-3227	95	673	2550	-818	398
12/31/1994	3652	31	-28	184	32	-2501	94	72	2669	-855	378
1/31/1995	3683	31	-5631	2771	1116	-650	100	2072	2550	-826	-1136
2/28/1995	3711	28	210	190	63	-1678	112	-100	2236	-773	-80
3/31/1995	3742	31	-2036	1217	490	-768	119	-48	2521	-807	-446
4/30/1995	3772	30	731	156	7	-3457	117	879	2461	-834	5
5/31/1995	3803	31	625	176	20	-2556	117	-41	2431	-822	115
6/30/1995	3833	30	711	156	7	-3681	111	902	2479	-815	189
7/31/1995	3864	31	799	161	5	-3932	109	928	2460	-829	357
8/31/1995	3895	31	645	161	5	-3932	107	981	2511	-830	408
9/30/1995	3925	30	570	156	5	-3938	98	1088	2460	-807	422
10/31/1995	3956	31	505	161	5	-3935	99	1074	2544	-837	436

Flow Budget for Aquifer B in Fillmore Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Santa Paula B	Fillmore C
			influx(+) outflux(-); units in Acre-feet								
11/30/1995	3986	30	472	156	5	-3938	98	1163	2479	-815	430
12/31/1995	4017	31	-20	208	45	-2349	91	-128	2663	-820	361
1/31/1996	4048	31	219	169	17	-2765	91	106	2636	-840	415
2/29/1996	4077	29	-1440	939	333	-1037	81	-297	2498	-763	-158
3/31/1996	4108	31	-4	235	56	-1808	90	-489	2602	-833	206
4/30/1996	4138	30	529	156	9	-3415	89	684	2504	-840	332
5/31/1996	4169	31	540	161	9	-3687	89	847	2576	-867	381
6/30/1996	4199	30	528	156	9	-3692	91	896	2506	-842	395
7/31/1996	4230	31	680	161	8	-4469	96	1732	2409	-894	325
8/31/1996	4261	31	690	161	8	-4478	95	1771	2406	-908	301
9/30/1996	4291	30	657	156	8	-4486	92	1984	2223	-885	295
10/31/1996	4322	31	-205	260	78	-1637	78	-198	2392	-866	146
11/30/1996	4352	30	-157	245	73	-1811	70	-61	2352	-825	160
12/31/1996	4383	31	-1396	805	287	-991	74	-71	2501	-840	-226
1/31/1997	4414	31	-995	648	225	-1108	75	-384	2566	-832	-87
2/28/1997	4442	28	465	145	6	-3481	76	1058	2317	-784	243
3/31/1997	4473	31	432	161	6	-3477	87	837	2557	-867	312
4/30/1997	4503	30	461	156	6	-3480	85	836	2477	-844	349
5/31/1997	4534	31	451	161	6	-3479	87	733	2554	-872	404
6/30/1997	4564	30	462	156	6	-3483	86	770	2487	-846	405
7/31/1997	4595	31	649	161	7	-4220	89	1476	2489	-882	274
8/31/1997	4626	31	615	161	7	-4231	84	1644	2408	-875	230
9/30/1997	4656	30	515	156	7	-4239	78	1787	2389	-849	195
10/31/1997	4687	31	444	161	7	-4239	78	1800	2478	-879	191
11/30/1997	4717	30	-244	240	77	-1788	64	9	2467	-824	46
12/31/1997	4748	31	-1026	659	230	-1070	65	-236	2556	-841	-230
1/31/1998	4779	31	-326	295	98	-1523	63	-109	2496	-864	-71
2/28/1998	4807	28	-4174	2180	797	-613	63	1580	2256	-724	-1086
3/31/1998	4838	31	-183	417	143	-1295	97	-320	2478	-829	-372
4/30/1998	4868	30	201	197	47	-2118	96	108	2416	-807	-85
5/31/1998	4899	31	-528	523	191	-1092	95	-632	2498	-796	-159
6/30/1998	4929	30	921	156	7	-4537	101	1729	2428	-868	101
7/31/1998	4960	31	704	161	6	-3980	106	1076	2502	-832	310
8/31/1998	4991	31	531	161	6	-3981	105	1083	2628	-838	356
9/30/1998	5021	30	578	156	6	-3973	99	1135	2487	-812	375
10/31/1998	5052	31	518	161	6	-3987	96	1179	2498	-839	415
11/30/1998	5082	30	311	164	17	-3161	90	576	2447	-793	394
12/31/1998	5113	31	418	161	6	-3990	95	1244	2517	-837	432
1/31/1999	5144	31	-196	232	59	-2061	88	-290	2671	-795	339
2/28/1999	5172	28	165	171	18	-2995	83	470	2495	-741	375
3/31/1999	5203	31	-107	230	66	-2133	87	-348	2718	-807	339
4/30/1999	5233	30	-115	217	58	-2130	79	-219	2615	-783	321
5/31/1999	5264	31	508	161	7	-4338	90	1317	2690	-845	452
6/30/1999	5294	30	500	156	7	-4347	91	1398	2614	-823	444
7/31/1999	5325	31	487	161	7	-3869	89	1209	2508	-844	292
8/31/1999	5356	31	510	161	7	-3877	83	1252	2504	-849	251
9/30/1999	5386	30	544	156	7	-3884	74	1405	2326	-822	234
10/31/1999	5417	31	440	161	7	-3887	71	1428	2443	-847	224
11/30/1999	5447	30	333	156	6	-3506	69	1157	2447	-818	195
12/31/1999	5478	31	336	161	7	-3888	72	1512	2502	-864	201
1/31/2000	5509	31	-14	210	36	-2572	66	265	2608	-854	295
2/29/2000	5538	29	-1234	800	271	-1261	57	-7	2466	-780	-186
3/31/2000	5569	31	-232	260	74	-2012	64	15	2577	-842	139
4/30/2000	5599	30	-83	227	64	-2220	66	95	2486	-804	210
5/31/2000	5630	31	583	161	8	-4886	77	2031	2582	-874	358
6/30/2000	5660	30	515	156	8	-4900	74	2129	2544	-855	368
7/31/2000	5691	31	390	161	6	-4083	69	1589	2476	-853	284
8/31/2000	5722	31	460	161	6	-4089	65	1568	2457	-855	267
9/30/2000	5752	30	412	156	6	-4097	57	1738	2343	-825	247
10/31/2000	5783	31	-42	188	39	-2256	50	260	2460	-835	178
11/30/2000	5813	30	335	156	6	-4099	53	1758	2414	-813	229
12/31/2000	5844	31	280	161	6	-4099	57	1740	2519	-849	224
1/31/2001	5875	31	-1573	910	360	-834	46	-56	2496	-836	-357
2/28/2001	5903	28	-1991	1127	445	-783	42	384	2270	-749	-549
3/31/2001	5934	31	-1325	686	277	-1021	58	133	2456	-827	-303

Flow Budget for Aquifer B in Fillmore Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Santa Paula B	Fillmore C
			influx(+) outflux(-); units in Acre-feet								
4/30/2001	5964	30	98	219	60	-1943	66	-15	2373	-809	4
5/31/2001	5995	31	841	161	8	-4821	82	2044	2472	-863	127
6/30/2001	6025	30	712	156	8	-4837	85	2161	2431	-838	170
7/31/2001	6056	31	424	161	6	-4061	84	1399	2582	-871	323
8/31/2001	6087	31	443	161	6	-4058	83	1360	2563	-878	366
9/30/2001	6117	30	406	156	6	-4067	75	1515	2430	-847	371
10/31/2001	6148	31	313	161	6	-4067	70	1506	2543	-868	380
11/30/2001	6178	30	-646	412	141	-1329	56	-383	2492	-798	125
12/31/2001	6209	31	-45	197	43	-2001	57	-251	2596	-843	294
1/31/2002	6240	31	68	182	18	-1858	59	-210	2415	-852	223
2/28/2002	6268	28	365	145	5	-3059	59	963	2169	-791	182
3/31/2002	6299	31	320	161	5	-2995	68	788	2366	-874	203
4/30/2002	6329	30	332	156	5	-3058	69	910	2279	-850	196
5/31/2002	6360	31	340	161	5	-3056	69	867	2332	-879	201
6/30/2002	6390	30	355	156	5	-3060	62	939	2249	-855	187
7/31/2002	6421	31	485	161	6	-4025	61	1626	2371	-880	234
8/31/2002	6452	31	467	161	6	-4031	58	1671	2361	-890	235
9/30/2002	6482	30	371	156	6	-4046	51	1867	2285	-865	214
10/31/2002	6513	31	336	161	6	-4045	50	1818	2402	-901	212
11/30/2002	6543	30	-804	556	201	-989	40	-212	2310	-842	-170
12/31/2002	6574	31	-701	517	191	-1035	39	-278	2357	-870	-131
1/31/2003	6605	31	708	161	5	-3985	47	1687	2275	-914	58
2/28/2003	6633	28	-1029	608	229	-839	40	135	2061	-778	-316
3/31/2003	6664	31	-596	444	158	-1024	45	-164	2249	-857	-176
4/30/2003	6694	30	81	189	43	-1886	41	244	2184	-838	-13
5/31/2003	6725	31	-108	213	60	-1515	41	-8	2239	-859	-16
6/30/2003	6755	30	675	156	5	-3984	53	1718	2181	-852	90
7/31/2003	6786	31	441	161	6	-4010	57	1715	2308	-829	194
8/31/2003	6817	31	441	161	6	-4010	54	1684	2314	-833	225
9/30/2003	6847	30	371	156	6	-4018	44	1816	2257	-804	211
10/31/2003	6878	31	293	161	6	-4018	40	1800	2375	-831	214
11/30/2003	6908	30	-299	213	75	-1491	34	-72	2308	-812	86
12/31/2003	6939	31	-218	216	73	-1485	35	-173	2345	-847	99
1/31/2004	6970	31	242	161	5	-2639	44	684	2275	-878	146
2/29/2004	6999	29	-1468	854	330	-627	38	155	2134	-792	-468
3/31/2004	7030	31	438	161	5	-3127	50	1140	2274	-871	-25
4/30/2004	7060	30	413	156	5	-3137	54	1143	2202	-843	50
5/31/2004	7091	31	373	161	5	-3135	55	1089	2271	-871	95
6/30/2004	7121	30	356	156	5	-3141	52	1147	2204	-846	108
7/31/2004	7152	31	439	161	6	-3984	54	1756	2301	-903	211
8/31/2004	7183	31	425	161	6	-3986	52	1769	2296	-914	233
9/30/2004	7213	30	428	156	6	-3996	49	1846	2221	-897	226
10/31/2004	7244	31	-1382	810	297	-870	37	170	2319	-872	-346
11/30/2004	7274	30	498	156	6	-3983	40	1867	2259	-897	97
12/31/2004	7305	31	-1773	980	382	-762	39	326	2328	-877	-444
1/31/2005	7336	31	-4420	2267	858	-492	54	1883	2296	-853	-1256
2/28/2005	7364	28	-2159	1226	467	-591	71	613	2132	-762	-744
3/31/2005	7395	31	-249	345	122	-994	90	-463	2378	-846	-208
4/30/2005	7425	30	571	159	6	-2688	88	466	2339	-833	-40
5/31/2005	7456	31	718	161	5	-3485	91	966	2425	-864	48
6/30/2005	7486	30	728	156	5	-3493	88	1008	2285	-823	108
7/31/2005	7517	31	485	161	6	-3291	90	785	2490	-835	170
8/31/2005	7548	31	546	161	6	-3286	90	679	2471	-844	236
9/30/2005	7578	30	510	156	6	-3291	83	889	2257	-812	256
10/31/2005	7609	31	98	180	28	-2093	83	-68	2434	-828	221
11/30/2005	7639	30	342	156	5	-3135	81	726	2453	-827	250
12/31/2005	7670	31	329	161	6	-3225	81	787	2528	-867	252
1/31/2006	7701	31	-969	576	208	-1234	73	-221	2578	-854	-32
2/28/2006	7729	28	-804	537	201	-1154	61	-229	2335	-780	-57
3/31/2006	7760	31	-829	558	205	-1201	68	-335	2548	-859	-33
4/30/2006	7790	30	-983	586	218	-1201	67	-140	2479	-825	-66
5/31/2006	7821	31	477	182	23	-3215	76	588	2534	-862	254
6/30/2006	7851	30	872	156	8	-5175	84	2233	2459	-870	285
7/31/2006	7882	31	497	161	6	-3165	88	741	2451	-937	211
8/31/2006	7913	31	649	161	6	-3165	87	794	2211	-929	239

Flow Budget for Aquifer B in Fillmore Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Santa Paula B	Fillmore C
			influx(+) outflux(-); units in Acre-feet								
9/30/2006	7943	30	503	156	6	-3173	79	966	2204	-900	208
10/31/2006	7974	31	415	161	6	-3172	78	979	2292	-927	218
11/30/2006	8004	30	336	156	6	-3176	71	1059	2310	-907	191
12/31/2006	8035	31	240	161	4	-2707	69	569	2437	-923	196
1/31/2007	8066	31	-136	226	62	-1218	59	-602	2413	-877	121
2/28/2007	8094	28	136	168	32	-1935	56	103	2167	-824	138
3/31/2007	8125	31	454	161	6	-3347	65	1076	2355	-939	212
4/30/2007	8155	30	208	166	8	-2205	62	217	2277	-891	199
5/31/2007	8186	31	446	161	6	-3350	62	1121	2325	-943	214
6/30/2007	8216	30	432	156	6	-3359	59	1224	2247	-919	195
7/31/2007	8247	31	475	161	6	-4091	61	1520	2581	-995	323
8/31/2007	8278	31	439	161	6	-4093	57	1595	2533	-1001	344
9/30/2007	8308	30	342	156	6	-4012	49	1664	2482	-971	322
10/31/2007	8339	31	286	161	6	-4102	45	1748	2575	-1001	322
11/30/2007	8369	30	288	156	6	-4110	41	1789	2542	-979	304
12/31/2007	8400	31	-688	434	146	-1471	33	-156	2633	-909	44
1/31/2008	8431	31	-2723	1484	569	-1124	46	857	2662	-871	-639
2/29/2008	8460	29	-288	239	73	-1752	52	108	2477	-827	-30
3/31/2008	8491	31	517	161	5	-4081	64	1499	2626	-897	156
4/30/2008	8521	30	466	156	5	-4067	69	1464	2576	-868	246
5/31/2008	8552	31	450	161	5	-4089	74	1394	2669	-898	280
6/30/2008	8582	30	454	156	5	-4071	68	1429	2590	-873	286
7/31/2008	8613	31	450	161	6	-4291	67	1817	2548	-959	244
8/31/2008	8644	31	461	161	6	-4299	65	1853	2530	-969	235
9/30/2008	8674	30	402	156	6	-4311	55	2046	2401	-939	226
10/31/2008	8705	31	300	161	6	-4313	51	2053	2525	-966	225
11/30/2008	8735	30	-488	291	101	-1547	37	-45	2541	-872	34
12/31/2008	8766	31	-394	295	100	-1549	35	-193	2618	-904	47
1/31/2009	8797	31	241	161	3	-3028	43	839	2528	-945	200
2/28/2009	8825	28	-1272	722	268	-929	39	64	2326	-799	-288
3/31/2009	8856	31	262	163	5	-2762	41	680	2510	-935	80
4/30/2009	8886	30	416	156	5	-3445	42	1221	2433	-928	143
5/31/2009	8917	31	380	161	5	-3445	48	1163	2505	-955	181
6/30/2009	8947	30	365	156	5	-3450	48	1224	2435	-926	186
7/31/2009	8978	31	487	161	7	-4395	50	1927	2563	-997	237
8/31/2009	9009	31	446	161	7	-4398	49	1980	2561	-1007	242
9/30/2009	9039	30	401	156	7	-4407	44	2148	2441	-982	232
10/31/2009	9070	31	-754	432	162	-1448	32	93	2530	-907	-58
11/30/2009	9100	30	455	156	7	-4401	34	2101	2495	-971	165
12/31/2009	9131	31	-897	525	194	-1344	32	19	2599	-907	-117
1/31/2010	9162	31	-1506	838	326	-924	28	30	2587	-884	-341
2/28/2010	9190	28	-843	505	190	-1172	31	2	2357	-800	-169
3/31/2010	9221	31	466	161	4	-3782	49	1409	2584	-936	93
4/30/2010	9251	30	-227	218	68	-1629	45	-163	2529	-867	77
5/31/2010	9282	31	502	161	4	-3785	48	1240	2621	-932	187
6/30/2010	9312	30	460	156	4	-3801	51	1292	2573	-904	213
7/31/2010	9343	31	495	161	7	-4266	53	1778	2623	-1002	196
8/31/2010	9374	31	483	161	7	-4277	53	1827	2611	-1015	193
9/30/2010	9404	30	462	156	7	-4291	48	1983	2486	-994	185
10/31/2010	9435	31	-235	231	71	-1794	35	14	2559	-918	81
11/30/2010	9465	30	-32	183	38	-2282	32	370	2508	-912	136
12/31/2010	9496	31	-2344	1306	511	-878	35	510	2660	-878	-675
1/31/2011	9527	31	478	161	5	-3363	45	1256	2510	-944	-99
2/28/2011	9555	28	-864	497	196	-955	39	-53	2304	-801	-258
3/31/2011	9586	31	-1795	929	376	-717	40	243	2513	-874	-527
4/30/2011	9616	30	499	156	5	-3361	45	1254	2416	-909	-51
5/31/2011	9647	31	382	168	7	-2448	53	280	2503	-917	26
6/30/2011	9677	30	520	156	5	-3367	58	1048	2460	-905	76
7/31/2011	9708	31	517	161	6	-3630	66	1177	2536	-957	175
8/31/2011	9739	31	500	161	6	-3629	74	1152	2531	-962	216
9/30/2011	9769	30	481	156	6	-3637	68	1299	2368	-934	239
10/31/2011	9800	31	-45	203	32	-1692	57	-257	2435	-899	212
11/30/2011	9830	30	-185	223	60	-1402	47	-449	2467	-870	154
12/31/2011	9861	31	435	161	6	-3628	51	1200	2530	-960	250
1/31/2012	9892	31	30	191	29	-1952	48	-57	2510	-941	187

Flow Budget for Aquifer B in Fillmore Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet								
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Piru B	Santa Paula B	Fillmore C
2/29/2012	9921	29	484	151	6	-3826	52	1569	2330	-931	206
3/31/2012	9952	31	-541	344	120	-1161	58	-324	2495	-919	-13
4/30/2012	9982	30	-355	302	98	-1213	57	-374	2408	-890	18
5/31/2012	10013	31	625	161	6	-3808	65	1376	2426	-989	179
6/30/2012	10043	30	527	156	6	-3823	64	1527	2351	-962	194
7/31/2012	10074	31	423	161	7	-3838	61	1514	2386	-902	228
8/31/2012	10105	31	427	161	7	-3845	57	1524	2375	-899	234
9/30/2012	10135	30	378	156	7	-3858	48	1695	2258	-870	225
10/31/2012	10166	31	282	161	7	-3860	43	1681	2365	-856	217
11/30/2012	10196	30	-187	201	47	-1692	35	1	2358	-856	133
12/31/2012	10227	31	-156	237	58	-1478	34	-323	2422	-891	139
1/31/2013	10258	31	-79	204	45	-1279	30	-315	2273	-869	31
2/28/2013	10286	28	421	145	6	-3240	32	1334	2022	-739	53
3/31/2013	10317	31	249	161	5	-2673	39	823	2211	-829	51
4/30/2013	10347	30	368	156	6	-3240	41	1327	2118	-787	46
5/31/2013	10378	31	360	161	6	-3241	43	1310	2169	-813	43
6/30/2013	10408	30	374	156	6	-3251	40	1376	2088	-787	34
7/31/2013	10439	31	406	161	5	-3591	41	1505	2233	-827	103
8/31/2013	10470	31	387	161	5	-3593	40	1538	2220	-835	114
9/30/2013	10500	30	373	156	5	-3603	39	1630	2141	-812	106
10/31/2013	10531	31	345	161	5	-3602	40	1640	2187	-847	107
11/30/2013	10561	30	271	156	5	-3174	38	1356	2113	-831	101
12/31/2013	10592	31	332	161	5	-3608	43	1719	2142	-860	101
1/31/2014	10623	31	416	161	7	-4219	46	2351	2085	-883	73
2/28/2014	10651	28	-650	449	162	-1039	33	297	1912	-819	-267
3/31/2014	10682	31	-260	235	78	-1497	32	405	2083	-916	-112
4/30/2014	10712	30	512	156	7	-4204	37	2348	1986	-860	54
5/31/2014	10743	31	484	161	7	-4213	40	2349	2037	-883	56
6/30/2014	10773	30	519	156	7	-4223	39	2370	1968	-857	56
7/31/2014	10804	31	522	161	7	-4059	40	2070	2064	-911	143
8/31/2014	10835	31	519	161	7	-4054	40	2067	2046	-917	167
9/30/2014	10865	30	529	156	7	-4058	40	2119	1971	-891	163
10/31/2014	10896	31	486	161	7	-4056	41	2146	2011	-925	167
11/30/2014	10926	30	400	156	5	-3464	41	1705	1937	-904	160
12/31/2014	10957	31	-823	530	179	-1031	33	360	1999	-937	-215
1/31/2015	10988	31	-89	215	51	-1267	31	266	1826	-929	-63
2/28/2015	11016	28	285	150	7	-2583	36	1315	1632	-811	5
3/31/2015	11047	31	172	171	9	-2272	43	1018	1792	-899	4
4/30/2015	11077	30	461	156	6	-3498	43	1976	1729	-839	3
5/31/2015	11108	31	260	167	7	-2565	44	1237	1785	-893	-5
6/30/2015	11138	30	513	156	6	-3503	40	1941	1725	-835	-6
7/31/2015	11169	31	-15	201	18	-1794	36	470	1939	-902	85
8/31/2015	11200	31	598	161	8	-3949	37	2002	1924	-857	112
9/30/2015	11230	30	420	156	5	-3418	37	1709	1869	-836	94
10/31/2015	11261	31	527	161	8	-3965	38	2115	1909	-847	91
11/30/2015	11291	30	491	156	8	-3977	38	2219	1840	-816	77
12/31/2015	11322	31	467	161	8	-3978	40	2235	1876	-846	74

Flow Budget for Aquifer C in Fillmore Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet							
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore B	Piru C	Santa Paula C
1/31/1985	31	31	1047	131	7	-220	429	-1410	405	-289
2/28/1985	59	28	1116	118	6	-215	361	-1401	371	-259
3/31/1985	90	31	1304	130	6	-224	375	-1618	416	-286
4/30/1985	120	30	1406	125	0	-310	346	-1612	409	-271
5/31/1985	151	31	1479	129	0	-311	340	-1665	426	-279
6/30/1985	181	30	1405	125	0	-304	314	-1570	413	-270
7/31/1985	212	31	1395	129	0	-266	310	-1598	423	-279
8/31/1985	243	31	1375	129	0	-264	297	-1566	422	-279
9/30/1985	273	30	1280	125	0	-257	276	-1460	412	-269
10/31/1985	304	31	1256	129	0	-259	273	-1443	433	-280
11/30/1985	334	30	514	389	23	-146	251	-1038	416	-286
12/31/1985	365	31	1075	129	0	-213	250	-1271	430	-295
1/31/1986	396	31	594	354	21	-393	244	-893	491	-301
2/28/1986	424	28	-194	708	43	-356	213	-423	445	-282
3/31/1986	455	31	390	410	25	-382	228	-718	489	-316
4/30/1986	485	30	917	126	7	-497	217	-865	489	-296
5/31/1986	516	31	1048	129	0	-644	223	-888	518	-290
6/30/1986	546	30	985	125	0	-633	213	-831	511	-277
7/31/1986	577	31	893	129	0	-385	211	-947	484	-291
8/31/1986	608	31	879	129	0	-389	205	-926	489	-294
9/30/1986	638	30	735	125	5	-307	191	-843	473	-291
10/31/1986	669	31	816	129	0	-392	194	-852	489	-296
11/30/1986	699	30	564	129	9	-241	179	-725	471	-298
12/31/1986	730	31	800	129	0	-392	184	-821	486	-300
1/31/1987	761	31	565	133	9	-180	175	-766	462	-310
2/28/1987	789	28	585	118	6	-207	155	-713	415	-282
3/31/1987	820	31	496	138	12	-169	167	-697	456	-317
4/30/1987	850	30	722	125	0	-321	162	-759	443	-295
5/31/1987	881	31	692	129	0	-317	165	-749	458	-301
6/30/1987	911	30	648	125	0	-312	157	-702	446	-289
7/31/1987	942	31	644	129	0	-335	159	-697	471	-296
8/31/1987	973	31	632	129	0	-335	157	-686	473	-297
9/30/1987	1003	30	606	125	0	-332	150	-650	457	-286
10/31/1987	1034	31	410	133	7	-179	148	-602	466	-309
11/30/1987	1064	30	389	130	9	-175	140	-564	450	-307
12/31/1987	1095	31	-4	326	21	-139	140	-398	464	-328
1/31/1988	1126	31	307	196	16	-598	144	-248	588	-328
2/29/1988	1155	29	274	154	14	-589	133	-178	565	-304
3/31/1988	1186	31	477	129	0	-678	142	-285	598	-317
4/30/1988	1216	30	82	265	21	-576	134	-119	582	-316
5/31/1988	1247	31	558	129	0	-785	141	-274	609	-312
6/30/1988	1277	30	512	125	0	-774	135	-248	607	-296
7/31/1988	1308	31	523	129	0	-770	137	-279	629	-308
8/31/1988	1339	31	531	129	0	-771	135	-284	628	-308
9/30/1988	1369	30	517	125	0	-767	130	-261	611	-296
10/31/1988	1400	31	514	129	0	-769	132	-267	626	-306
11/30/1988	1430	30	371	125	6	-643	123	-222	604	-306
12/31/1988	1461	31	-127	326	20	-584	123	28	614	-331
1/31/1989	1492	31	352	129	0	-440	121	-315	538	-326
2/28/1989	1520	28	22	191	16	-304	105	-154	487	-305
3/31/1989	1551	31	367	129	0	-397	116	-357	534	-336
4/30/1989	1581	30	443	125	0	-468	114	-365	521	-316

Flow Budget for Aquifer C in Fillmore Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore B	Piru C	Santa Paula C
			influx(+) outflux(-); units in Acre-feet							
5/31/1989	1612	31	414	129	0	-466	116	-357	543	-324
6/30/1989	1642	30	408	125	0	-464	111	-344	529	-314
7/31/1989	1673	31	383	129	0	-296	112	-444	495	-326
8/31/1989	1704	31	409	129	0	-298	111	-461	490	-327
9/30/1989	1734	30	404	125	0	-296	107	-446	471	-316
10/31/1989	1765	31	399	129	0	-263	108	-476	481	-328
11/30/1989	1795	30	423	125	0	-295	105	-457	463	-316
12/31/1989	1826	31	420	129	0	-296	108	-462	476	-326
1/31/1990	1857	31	-51	212	18	-118	103	-227	461	-342
2/28/1990	1885	28	27	174	16	-122	92	-232	412	-315
3/31/1990	1916	31	385	129	0	-276	105	-417	459	-336
4/30/1990	1946	30	394	125	0	-267	102	-434	446	-320
5/31/1990	1977	31	381	129	0	-245	104	-448	460	-334
6/30/1990	2007	30	402	125	0	-266	101	-442	446	-320
7/31/1990	2038	31	439	129	0	-484	106	-340	524	-328
8/31/1990	2069	31	409	129	0	-480	105	-313	522	-327
9/30/1990	2099	30	396	125	0	-477	101	-293	506	-315
10/31/1990	2130	31	399	129	0	-477	104	-303	518	-326
11/30/1990	2160	30	389	125	0	-474	100	-283	501	-315
12/31/1990	2191	31	385	129	0	-475	103	-286	513	-325
1/31/1991	2222	31	247	131	7	-383	101	-225	504	-336
2/28/1991	2250	28	-67	182	14	-317	89	1	454	-312
3/31/1991	2281	31	-1741	1113	68	-282	96	787	478	-363
4/30/1991	2311	30	149	125	0	-516	99	58	472	-341
5/31/1991	2342	31	176	129	0	-511	103	-14	502	-344
6/30/1991	2372	30	272	125	0	-508	100	-115	496	-330
7/31/1991	2403	31	261	129	0	-297	99	-277	470	-343
8/31/1991	2434	31	323	129	0	-303	98	-329	466	-343
9/30/1991	2464	30	329	125	0	-302	94	-327	450	-330
10/31/1991	2495	31	308	129	0	-301	96	-326	474	-341
11/30/1991	2525	30	309	125	0	-303	92	-321	470	-332
12/31/1991	2556	31	-400	333	20	-169	90	61	475	-361
1/31/1992	2587	31	45	148	11	-173	90	-169	461	-368
2/29/1992	2616	29	-1624	1061	66	-118	82	615	422	-357
3/31/1992	2647	31	-870	602	37	-129	87	308	448	-393
4/30/1992	2677	30	139	125	0	-324	89	-82	461	-367
5/31/1992	2708	31	170	129	0	-321	92	-158	500	-373
6/30/1992	2738	30	234	125	0	-320	90	-229	497	-359
7/31/1992	2769	31	280	129	0	-299	92	-315	519	-368
8/31/1992	2800	31	319	129	0	-301	92	-356	521	-366
9/30/1992	2830	30	309	125	0	-299	88	-339	505	-352
10/31/1992	2861	31	35	133	9	-165	86	-213	535	-378
11/30/1992	2891	30	299	125	0	-306	85	-334	528	-361
12/31/1992	2922	31	-544	430	26	-145	83	55	546	-390
1/31/1993	2953	31	-1698	1074	65	-141	83	637	537	-409
2/28/1993	2981	28	-1384	903	55	-134	75	515	480	-381
3/31/1993	3012	31	-423	337	21	-163	83	82	541	-424
4/30/1993	3042	30	151	125	0	-384	86	-99	551	-393
5/31/1993	3073	31	200	129	0	-382	90	-188	586	-398
6/30/1993	3103	30	228	125	0	-333	86	-264	578	-385
7/31/1993	3134	31	210	129	0	-255	86	-327	589	-397
8/31/1993	3165	31	280	129	0	-260	86	-388	586	-396

Flow Budget for Aquifer C in Fillmore Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet							
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore B	Piru C	Santa Paula C
9/30/1993	3195	30	314	125	0	-260	83	-410	564	-382
10/31/1993	3226	31	328	129	0	-263	86	-432	581	-393
11/30/1993	3256	30	261	125	0	-188	81	-419	560	-386
12/31/1993	3287	31	182	131	8	-155	82	-385	579	-405
1/31/1994	3318	31	445	129	0	-635	88	-277	679	-395
2/28/1994	3346	28	-587	506	31	-476	78	255	626	-366
3/31/1994	3377	31	19	151	12	-511	86	11	682	-409
4/30/1994	3407	30	307	125	0	-630	87	-136	662	-382
5/31/1994	3438	31	306	129	0	-589	89	-188	677	-390
6/30/1994	3468	30	364	125	0	-625	87	-200	655	-375
7/31/1994	3499	31	309	129	0	-293	87	-383	567	-384
8/31/1994	3530	31	354	129	0	-296	88	-420	560	-383
9/30/1994	3560	30	363	125	0	-293	85	-417	536	-368
10/31/1994	3591	31	238	129	0	-174	85	-410	553	-389
11/30/1994	3621	30	285	125	4	-226	83	-398	538	-379
12/31/1994	3652	31	207	130	6	-177	84	-378	557	-395
1/31/1995	3683	31	-2763	1759	109	-271	84	1136	603	-421
2/28/1995	3711	28	-71	121	11	-334	78	80	537	-382
3/31/1995	3742	31	-1128	760	47	-278	85	446	599	-429
4/30/1995	3772	30	119	125	0	-487	87	-5	597	-401
5/31/1995	3803	31	141	129	6	-418	90	-115	613	-410
6/30/1995	3833	30	281	125	0	-489	89	-189	604	-390
7/31/1995	3864	31	265	129	0	-258	90	-357	560	-398
8/31/1995	3895	31	319	129	0	-261	90	-408	559	-396
9/30/1995	3925	30	339	125	0	-260	87	-422	542	-380
10/31/1995	3956	31	341	129	0	-262	89	-436	561	-392
11/30/1995	3986	30	343	125	0	-260	86	-430	543	-378
12/31/1995	4017	31	152	133	6	-150	86	-361	569	-401
1/31/1996	4048	31	302	129	4	-247	86	-415	572	-399
2/29/1996	4077	29	-751	527	32	-114	78	158	529	-387
3/31/1996	4108	31	40	133	8	-175	84	-206	566	-415
4/30/1996	4138	30	280	125	0	-292	84	-332	551	-386
5/31/1996	4169	31	352	129	0	-339	89	-381	571	-392
6/30/1996	4199	30	367	125	0	-332	87	-395	552	-375
7/31/1996	4230	31	442	129	0	-548	92	-325	619	-379
8/31/1996	4261	31	408	129	0	-543	92	-301	618	-375
9/30/1996	4291	30	414	125	0	-539	90	-295	592	-359
10/31/1996	4322	31	67	136	11	-346	88	-146	610	-387
11/30/1996	4352	30	110	133	9	-358	85	-160	593	-380
12/31/1996	4383	31	-644	477	29	-321	86	226	614	-403
1/31/1997	4414	31	-501	334	20	-122	83	87	554	-412
2/28/1997	4442	28	210	116	0	-273	79	-243	499	-360
3/31/1997	4473	31	236	129	0	-275	87	-312	557	-393
4/30/1997	4503	30	276	125	0	-272	85	-349	541	-378
5/31/1997	4534	31	321	129	0	-275	87	-404	559	-389
6/30/1997	4564	30	329	125	0	-272	84	-405	540	-375
7/31/1997	4595	31	470	129	0	-655	93	-274	641	-376
8/31/1997	4626	31	409	129	0	-646	93	-230	642	-369
9/30/1997	4656	30	372	125	0	-641	90	-195	631	-355
10/31/1997	4687	31	353	129	0	-643	93	-191	653	-367
11/30/1997	4717	30	20	143	10	-444	85	-46	631	-370
12/31/1997	4748	31	-476	343	20	-410	85	230	645	-396

Flow Budget for Aquifer C in Fillmore Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore B	Piru C	Santa Paula C
			influx(+) outflux(-); units in Acre-feet							
1/31/1998	4779	31	-58	168	10	-512	86	71	667	-398
2/28/1998	4807	28	-2095	1247	76	-458	78	1086	606	-373
3/31/1998	4838	31	-390	219	13	-501	86	372	655	-415
4/30/1998	4868	30	4	129	7	-536	85	85	651	-394
5/31/1998	4899	31	-285	277	18	-495	87	159	683	-408
6/30/1998	4929	30	295	125	0	-663	89	-101	662	-380
7/31/1998	4960	31	201	129	0	-281	88	-310	586	-387
8/31/1998	4991	31	250	129	0	-287	89	-356	589	-387
9/30/1998	5021	30	283	125	0	-285	86	-375	566	-373
10/31/1998	5052	31	320	129	0	-288	89	-415	574	-382
11/30/1998	5082	30	266	126	3	-248	85	-394	559	-370
12/31/1998	5113	31	333	129	0	-290	88	-432	578	-380
1/31/1999	5144	31	100	133	8	-141	85	-339	573	-389
2/28/1999	5172	28	210	116	5	-177	77	-375	522	-353
3/31/1999	5203	31	109	134	9	-151	84	-339	579	-395
4/30/1999	5233	30	103	129	8	-149	81	-321	561	-383
5/31/1999	5264	31	323	129	0	-250	85	-452	576	-385
6/30/1999	5294	30	320	125	0	-242	83	-444	552	-369
7/31/1999	5325	31	413	129	0	-608	89	-292	669	-374
8/31/1999	5356	31	357	129	0	-602	89	-251	672	-369
9/30/1999	5386	30	352	125	0	-597	87	-234	646	-354
10/31/1999	5417	31	326	129	0	-598	89	-224	667	-365
11/30/1999	5447	30	289	125	0	-580	86	-195	654	-354
12/31/1999	5478	31	302	129	0	-598	88	-201	670	-365
1/31/2000	5509	31	84	131	5	-167	83	-295	563	-377
2/29/2000	5538	29	-707	436	27	-111	76	186	516	-368
3/31/2000	5569	31	-59	136	8	-152	81	-139	548	-394
4/30/2000	5599	30	24	130	8	-157	79	-210	531	-378
5/31/2000	5630	31	278	129	0	-282	85	-358	550	-377
6/30/2000	5660	30	284	125	0	-273	83	-368	534	-360
7/31/2000	5691	31	331	129	0	-488	87	-284	622	-372
8/31/2000	5722	31	307	129	0	-486	87	-267	624	-369
9/30/2000	5752	30	293	125	0	-482	84	-247	606	-355
10/31/2000	5783	31	141	131	8	-413	85	-178	630	-377
11/30/2000	5813	30	272	125	0	-485	83	-229	615	-358
12/31/2000	5844	31	252	129	0	-484	85	-224	636	-369
1/31/2001	5875	31	-874	530	34	-300	81	357	625	-390
2/28/2001	5903	28	-1144	661	41	-293	73	549	560	-365
3/31/2001	5934	31	-669	421	27	-312	81	303	610	-409
4/30/2001	5964	30	-35	128	10	-356	80	-4	596	-390
5/31/2001	5995	31	202	129	0	-500	86	-127	621	-386
6/30/2001	6025	30	235	125	0	-491	84	-170	607	-367
7/31/2001	6056	31	165	129	0	-213	83	-323	565	-382
8/31/2001	6087	31	223	129	0	-220	83	-366	558	-383
9/30/2001	6117	30	239	125	0	-218	80	-371	536	-368
10/31/2001	6148	31	235	129	0	-220	82	-380	560	-380
11/30/2001	6178	30	-180	194	15	-113	77	-125	545	-383
12/31/2001	6209	31	87	131	7	-150	79	-294	564	-397
1/31/2002	6240	31	271	129	4	-499	83	-223	651	-390
2/28/2002	6268	28	281	116	0	-524	76	-182	597	-343
3/31/2002	6299	31	270	129	0	-527	84	-203	649	-379
4/30/2002	6329	30	276	125	0	-526	81	-196	628	-365

Flow Budget for Aquifer C in Fillmore Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet							
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore B	Piru C	Santa Paula C
5/31/2002	6360	31	273	129	0	-528	84	-201	643	-377
6/30/2002	6390	30	269	125	0	-524	81	-187	622	-363
7/31/2002	6421	31	273	129	0	-466	83	-234	609	-372
8/31/2002	6452	31	277	129	0	-465	83	-235	605	-371
9/30/2002	6482	30	260	125	0	-460	80	-214	588	-357
10/31/2002	6513	31	245	129	0	-462	82	-212	611	-371
11/30/2002	6543	30	-397	288	18	-340	78	170	588	-376
12/31/2002	6574	31	-330	276	18	-349	80	131	601	-396
1/31/2003	6605	31	239	129	0	-620	84	-58	630	-380
2/28/2003	6633	28	-510	349	22	-437	75	316	576	-353
3/31/2003	6664	31	-241	227	16	-460	82	176	628	-397
4/30/2003	6694	30	71	127	9	-504	80	13	611	-380
5/31/2003	6725	31	32	133	10	-483	82	16	629	-392
6/30/2003	6755	30	269	125	0	-611	83	-90	614	-367
7/31/2003	6786	31	211	129	0	-414	83	-194	582	-374
8/31/2003	6817	31	249	129	0	-417	83	-225	578	-374
9/30/2003	6847	30	238	125	0	-414	80	-211	564	-359
10/31/2003	6878	31	225	129	0	-417	82	-214	590	-372
11/30/2003	6908	30	-2	129	13	-298	77	-86	571	-375
12/31/2003	6939	31	17	139	12	-313	79	-99	585	-391
1/31/2004	6970	31	259	129	0	-547	81	-146	625	-379
2/29/2004	6999	29	-834	520	32	-420	75	468	589	-369
3/31/2004	7030	31	105	129	0	-554	82	25	624	-385
4/30/2004	7060	30	172	125	0	-547	80	-50	608	-367
5/31/2004	7091	31	207	129	0	-549	82	-95	626	-378
6/30/2004	7121	30	227	125	0	-545	79	-108	608	-365
7/31/2004	7152	31	207	129	0	-376	80	-211	569	-375
8/31/2004	7183	31	236	129	0	-378	80	-233	564	-375
9/30/2004	7213	30	237	125	0	-374	78	-226	543	-362
10/31/2004	7244	31	-846	526	33	-242	78	346	564	-394
11/30/2004	7274	30	122	125	0	-380	77	-97	547	-371
12/31/2004	7305	31	-1050	646	41	-239	78	444	561	-401
1/31/2005	7336	31	-2561	1518	95	-344	79	1256	584	-420
2/28/2005	7364	28	-1337	775	49	-341	72	744	532	-388
3/31/2005	7395	31	-240	169	14	-378	80	208	606	-426
4/30/2005	7425	30	50	125	0	-483	79	40	611	-399
5/31/2005	7456	31	153	129	0	-534	83	-48	644	-403
6/30/2005	7486	30	216	125	0	-531	82	-108	626	-386
7/31/2005	7517	31	159	129	0	-409	83	-170	629	-397
8/31/2005	7548	31	232	129	0	-416	83	-236	629	-398
9/30/2005	7578	30	273	125	0	-413	80	-256	594	-381
10/31/2005	7609	31	153	130	6	-346	82	-221	623	-401
11/30/2005	7639	30	245	125	0	-407	79	-250	613	-383
12/31/2005	7670	31	245	129	0	-418	81	-252	633	-394
1/31/2006	7701	31	-467	358	24	-172	78	32	604	-413
2/28/2006	7729	28	-411	297	21	-164	70	57	545	-380
3/31/2006	7760	31	-424	336	22	-183	77	33	604	-425
4/30/2006	7790	30	-485	372	23	-177	74	66	585	-412
5/31/2006	7821	31	196	129	6	-312	79	-254	597	-413
6/30/2006	7851	30	335	125	0	-426	80	-285	573	-379
7/31/2006	7882	31	309	129	0	-566	84	-211	672	-394
8/31/2006	7913	31	354	129	0	-567	85	-239	651	-390

Flow Budget for Aquifer C in Fillmore Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore B	Piru C	Santa Paula C
			influx(+) outflux(-); units in Acre-feet							
9/30/2006	7943	30	320	125	0	-560	82	-208	636	-373
10/31/2006	7974	31	318	129	0	-562	84	-218	657	-384
11/30/2006	8004	30	292	125	0	-558	81	-191	644	-371
12/31/2006	8035	31	256	129	0	-526	82	-196	667	-390
1/31/2007	8066	31	98	132	10	-429	80	-121	657	-401
2/28/2007	8094	28	177	119	7	-451	73	-138	596	-359
3/31/2007	8125	31	295	129	0	-531	82	-212	649	-389
4/30/2007	8155	30	243	125	0	-473	78	-199	626	-379
5/31/2007	8186	31	299	129	0	-528	81	-214	641	-386
6/30/2007	8216	30	285	125	0	-521	79	-195	620	-372
7/31/2007	8247	31	242	129	0	-279	79	-323	558	-384
8/31/2007	8278	31	275	129	0	-282	80	-344	548	-384
9/30/2007	8308	30	256	125	0	-277	77	-322	532	-370
10/31/2007	8339	31	245	129	0	-280	79	-322	553	-384
11/30/2007	8369	30	233	125	0	-276	76	-304	538	-372
12/31/2007	8400	31	-226	202	19	-149	77	-44	556	-404
1/31/2008	8431	31	-1578	926	60	-133	76	639	548	-418
2/29/2008	8460	29	-177	133	10	-157	71	30	509	-391
3/31/2008	8491	31	95	129	0	-265	79	-156	544	-403
4/30/2008	8521	30	177	125	0	-257	77	-246	531	-386
5/31/2008	8552	31	201	129	0	-261	80	-280	552	-398
6/30/2008	8582	30	213	125	0	-258	77	-286	535	-384
7/31/2008	8613	31	288	129	0	-440	81	-244	599	-391
8/31/2008	8644	31	271	129	0	-435	81	-235	600	-389
9/30/2008	8674	30	267	125	0	-431	79	-226	580	-374
10/31/2008	8705	31	251	129	0	-434	81	-225	607	-387
11/30/2008	8735	30	-87	151	14	-296	76	-34	595	-392
12/31/2008	8766	31	-69	158	13	-308	78	-47	614	-410
1/31/2009	8797	31	226	129	0	-435	79	-200	626	-402
2/28/2009	8825	28	-644	427	28	-315	71	288	571	-375
3/31/2009	8856	31	95	129	0	-415	78	-80	625	-410
4/30/2009	8886	30	197	125	0	-456	77	-143	608	-387
5/31/2009	8917	31	222	129	0	-457	79	-181	628	-398
6/30/2009	8947	30	233	125	0	-453	77	-186	608	-383
7/31/2009	8978	31	245	129	0	-400	79	-237	599	-393
8/31/2009	9009	31	253	129	0	-400	79	-242	594	-392
9/30/2009	9039	30	252	125	0	-395	77	-232	571	-377
10/31/2009	9070	31	-300	239	23	-250	77	58	592	-408
11/30/2009	9100	30	193	125	0	-401	76	-165	576	-382
12/31/2009	9131	31	-429	310	21	-247	77	117	597	-413
1/31/2010	9162	31	-763	500	31	-280	76	341	567	-413
2/28/2010	9190	28	-392	293	18	-261	69	169	511	-375
3/31/2010	9221	31	159	129	0	-416	78	-93	566	-400
4/30/2010	9251	30	16	132	12	-291	75	-77	554	-395
5/31/2010	9282	31	237	129	0	-413	78	-187	576	-398
6/30/2010	9312	30	254	125	0	-399	76	-213	560	-382
7/31/2010	9343	31	319	129	0	-528	80	-196	604	-387
8/31/2010	9374	31	308	129	0	-521	80	-193	604	-385
9/30/2010	9404	30	303	125	0	-511	78	-185	580	-370
10/31/2010	9435	31	60	134	10	-378	78	-81	600	-398
11/30/2010	9465	30	152	126	10	-399	76	-136	581	-385
12/31/2010	9496	31	-1387	832	51	-333	77	675	601	-414

Flow Budget for Aquifer C in Fillmore Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore B	Piru C	Santa Paula C
			influx(+) outflux(-); units in Acre-feet							
1/31/2011	9527	31	88	129	0	-595	80	99	625	-402
2/28/2011	9555	28	-385	296	21	-434	72	258	576	-371
3/31/2011	9586	31	-935	598	37	-448	79	527	634	-421
4/30/2011	9616	30	130	125	0	-583	78	51	615	-393
5/31/2011	9647	31	144	129	0	-541	81	-26	640	-405
6/30/2011	9677	30	237	125	0	-582	80	-76	624	-386
7/31/2011	9708	31	201	129	0	-406	80	-175	588	-395
8/31/2011	9739	31	250	129	0	-410	80	-216	582	-394
9/30/2011	9769	30	284	125	0	-402	78	-239	554	-378
10/31/2011	9800	31	154	129	7	-302	79	-212	571	-403
11/30/2011	9830	30	85	129	9	-286	75	-154	561	-395
12/31/2011	9861	31	296	129	0	-414	79	-250	577	-396
1/31/2012	9892	31	176	130	5	-364	78	-187	588	-403
2/29/2012	9921	29	305	120	0	-454	75	-206	545	-366
3/31/2012	9952	31	-109	166	14	-313	79	13	584	-407
4/30/2012	9982	30	-37	143	13	-315	76	-18	564	-398
5/31/2012	10013	31	277	129	0	-467	81	-179	576	-394
6/30/2012	10043	30	282	125	0	-451	79	-194	556	-376
7/31/2012	10074	31	269	129	0	-405	81	-228	561	-386
8/31/2012	10105	31	278	129	0	-405	81	-234	557	-385
9/30/2012	10135	30	272	125	0	-396	78	-225	537	-370
10/31/2012	10166	31	251	129	0	-401	80	-217	561	-382
11/30/2012	10196	30	65	128	9	-281	76	-133	545	-384
12/31/2012	10227	31	76	132	9	-287	77	-139	560	-403
1/31/2013	10258	31	159	132	8	-556	80	-31	634	-401
2/28/2013	10286	28	274	116	0	-623	74	-53	578	-347
3/31/2013	10317	31	221	129	0	-603	81	-51	631	-387
4/30/2013	10347	30	251	125	0	-628	79	-46	609	-369
5/31/2013	10378	31	239	129	0	-630	82	-43	624	-380
6/30/2013	10408	30	236	125	0	-622	79	-34	604	-367
7/31/2013	10439	31	204	129	0	-480	79	-103	571	-379
8/31/2013	10470	31	223	129	0	-480	78	-114	565	-380
9/30/2013	10500	30	222	125	0	-472	74	-106	543	-366
10/31/2013	10531	31	221	129	0	-475	76	-107	556	-379
11/30/2013	10561	30	205	125	0	-449	72	-101	536	-367
12/31/2013	10592	31	222	129	0	-471	74	-101	547	-379
1/31/2014	10623	31	209	129	0	-503	75	-73	558	-375
2/28/2014	10651	28	-390	242	17	-326	66	267	506	-356
3/31/2014	10682	31	-100	147	13	-373	73	112	552	-397
4/30/2014	10712	30	223	125	0	-512	74	-54	533	-368
5/31/2014	10743	31	204	129	0	-507	77	-56	549	-376
6/30/2014	10773	30	209	125	0	-502	75	-56	531	-362
7/31/2014	10804	31	151	129	0	-311	75	-143	496	-377
8/31/2014	10835	31	190	129	0	-319	76	-167	489	-377
9/30/2014	10865	30	194	125	0	-316	74	-163	470	-363
10/31/2014	10896	31	195	129	0	-320	77	-167	482	-375
11/30/2014	10926	30	172	125	0	-287	74	-160	462	-367
12/31/2014	10957	31	-469	297	19	-180	75	215	470	-395
1/31/2015	10988	31	68	132	8	-474	77	63	544	-394
2/28/2015	11016	28	186	116	0	-510	71	-5	503	-344
3/31/2015	11047	31	153	129	0	-503	78	-4	551	-383
4/30/2015	11077	30	211	125	0	-563	76	-3	535	-363

Flow Budget for Aquifer C in Fillmore Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet							
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore B	Piru C	Santa Paula C
5/31/2015	11108	31	151	129	0	-513	78	5	551	-381
6/30/2015	11138	30	200	125	0	-561	76	6	535	-362
7/31/2015	11169	31	47	129	0	-230	75	-85	472	-388
8/31/2015	11200	31	238	129	0	-407	77	-112	469	-374
9/30/2015	11230	30	161	125	0	-338	75	-94	454	-363
10/31/2015	11261	31	201	129	0	-396	78	-91	467	-369
11/30/2015	11291	30	186	125	0	-388	76	-77	450	-354
12/31/2015	11322	31	178	129	0	-389	78	-74	462	-365

Flow Budget for Aquifer A in Santa Paula Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet										
			STORAGE	ET	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Mound L1	Santa Paula B	Mound L2 L3	Oxnard UAS	Net Stream Percolation
1/31/1985	31	31	-767.669	-304.624	761.267	-97.55	9.296	285.224	0	1188.338	-6.826	-133.471	-999
2/28/1985	59	28	-324.688	-309.207	718.499	-122.167	-2.066	254.704	0	770.114	-5.636	-114.554	-921
3/31/1985	90	31	-179.593	-482.616	751.405	-138.698	-5.775	279.698	0	836.732	-5.982	-127.215	-990
4/30/1985	120	30	773.954	-536.856	753.588	-288.091	-10.857	273.253	0	10.854	-5.056	-127.116	-899
5/31/1985	151	31	796.715	-568.553	769.44	-287.282	-12.822	283.853	0	-47.992	-4.67	-144.776	-840
6/30/1985	181	30	758.973	-502.095	758.048	-287.281	-13.005	276.003	0	-135.398	-4.281	-153.671	-750
7/31/1985	212	31	934.515	-482.598	831.723	-312.747	-14.772	282.658	0	-397.243	-3.823	-175.009	-716
8/31/1985	243	31	868.286	-421.464	831.803	-311.737	-14.994	282.939	0	-423.491	-3.421	-192.091	-668
9/30/1985	273	30	682.613	-304.276	818.591	-311.388	-32.569	272.833	0	-502.653	-3.168	-195.646	-473
10/31/1985	304	31	717.66	-258.004	829.141	-310.623	-27.911	286.467	0	-469.655	-3.229	-202.614	-610
11/30/1985	334	30	-1566.246	-207.348	1616.857	-36.204	3.152	281.495	0	764.64	-4.832	-204.099	-695
12/31/1985	365	31	208.955	-195.732	739.825	-235.355	-5.059	294.513	0	74.945	-4.549	-212.834	-716
1/31/1986	396	31	-1527.827	-239.91	1532.037	-31.313	6.308	295.717	0	888.133	-5.576	-215.208	-755
2/28/1986	424	28	-2666.1	-279.024	2863.259	-5.257	12.898	271.85	0.314	768.145	-7.564	-193.543	-815
3/31/1986	455	31	-1634.748	-475.133	1759.161	-22.314	18.626	298.191	0.042	1216.599	-8.083	-187.219	-1017
4/30/1986	485	30	1.803	-562.17	759.1	-123.7	8.264	289.248	0	709.232	-5.752	-125.01	-1007
5/31/1986	516	31	1081.732	-643.534	791.892	-261.516	-10.016	292.87	0	-226.586	-4.073	-85.177	-987
6/30/1986	546	30	1123.071	-577.352	782.754	-261.912	-17.332	280.673	0	-401.406	-3.002	-76.242	-896
7/31/1986	577	31	832.803	-547.973	809.63	-266.353	-37.192	281.738	0	-270.645	-3.287	-85.338	-757
8/31/1986	608	31	789.999	-487.682	809.83	-264.875	-23.452	284.402	0	-271.884	-3.596	-88.581	-786
9/30/1986	638	30	236.587	-375.331	772.826	-177.264	-13.231	277.784	0	107.601	-3.849	-114.105	-752
10/31/1986	669	31	634.025	-323.047	806.91	-265.082	-14.902	289.551	0	-272.337	-3.815	-144.717	-746
11/30/1986	699	30	-474.199	-237.598	788.555	-85.436	-7.532	280.503	0	592.187	-3.829	-162.484	-731
12/31/1986	730	31	559.275	-204.739	792.09	-266.188	-14.889	292.051	0	-258.775	-3.68	-185.99	-748
1/31/1987	761	31	-491.394	-231.386	876.676	-92.008	-9.474	289.84	0	580.613	-3.388	-204.996	-758
2/28/1987	789	28	-50.792	-237.474	746.008	-136.475	-8.809	261.68	0	279.951	-2.919	-197.836	-691
3/31/1987	820	31	-543.781	-378.162	954.366	-75.834	-5.454	288.52	0	691.068	-3.406	-226.944	-745
4/30/1987	850	30	970.524	-409.052	799.143	-295.682	-14.801	278.734	0	-471.026	-1.782	-217.001	-676
5/31/1987	881	31	980.19	-410.575	818.15	-294.932	-18.88	285.162	0	-552.168	-0.479	-221.987	-621
6/30/1987	911	30	847.54	-342.644	808.003	-294.721	-29.804	271.686	0	-632.482	-0.09	-211.432	-451
7/31/1987	942	31	851.842	-318.783	869.258	-323.863	-48.174	274.144	0	-697.942	-1.072	-204.574	-436
8/31/1987	973	31	863.936	-285.444	869.399	-323.021	-30	276.831	0	-697.371	-2.108	-193.164	-513
9/30/1987	1003	30	840.643	-208.946	855.652	-322.95	-21.683	272.119	0	-738.894	-2.211	-199.889	-506
10/31/1987	1034	31	-345.216	-188.044	825.019	-129.178	-10.238	284.79	0	282.902	-3.149	-227.42	-526
11/30/1987	1064	30	-140.068	-143.604	761.558	-146.838	-7.16	279.263	0	112.781	-3.214	-234.84	-515
12/31/1987	1095	31	-1545.38	-145.334	1570.151	-38.905	4.398	290.827	0	633.396	-4.457	-256.283	-558
1/31/1988	1126	31	-1088.701	-206.175	1182.435	-57.032	5.988	291.264	0	731.524	-5.05	-258.709	-641
2/29/1988	1155	29	-519.578	-231.045	808.863	-89.149	-2.856	270.972	0	556.743	-3.949	-238.393	-589
3/31/1988	1186	31	548.096	-339.542	755.398	-242.811	-22.922	287.063	0	-209.199	-2.937	-247.978	-562
4/30/1988	1216	30	-943.12	-385.79	1334.528	-50.159	-4.366	274.036	0	571.245	-3.349	-220.378	-616
5/31/1988	1247	31	839.861	-434.968	849.019	-289.47	-27.509	276.052	0	-494.476	-3.026	-201.864	-549
6/30/1988	1277	30	914.725	-358.539	838.291	-288.459	-39.938	259.989	0	-665.455	-1.945	-174.585	-516
7/31/1988	1308	31	1030.42	-328.135	899.322	-339.69	-26.409	272.472	0	-815.559	-0.657	-181.979	-542
8/31/1988	1339	31	959.383	-277.684	901.672	-338.658	-21.521	278.089	0	-831.763	-0.019	-198.966	-502
9/30/1988	1369	30	907.947	-198.534	888.479	-338.221	-19.294	273.255	0	-873.052	-0.067	-213.238	-457
10/31/1988	1400	31	839.04	-163.104	904.202	-337.725	-18.519	285.404	0	-854.04	-0.309	-239.523	-446
11/30/1988	1430	30	-86.922	-118.161	792.043	-163.19	-11.26	277.467	0	-31.729	-1.791	-248.853	-440
12/31/1988	1461	31	-1468.774	-119.468	1467.817	-41.887	6.069	288.961	0	557.715	-4.464	-277.742	-449
1/31/1989	1492	31	347.574	-143.011	747.977	-253.878	-4.37	285.854	0	-219.864	-3.064	-280.209	-511
2/28/1989	1520	28	-1203.341	-149.102	1307.187	-39.23	1.118	255.77	0	504.816	-3.337	-254.607	-457
3/31/1989	1551	31	0.388	-249.824	712.633	-164.72	-10.521	280.251	0	206.545	-3.614	-270.095	-536
4/30/1989	1581	30	568.954	-252.075	744.901	-255.659	-19.799	265.916	0	-344.407	-2.104	-248.534	-488
5/31/1989	1612	31	564.71	-255.622	760.857	-255.375	-29.558	268.32	0	-388.33	-1.6	-258.494	-436
6/30/1989	1642	30	582.831	-229.274	753.067	-255.196	-25.564	259.012	0	-435.72	-1.337	-258.347	-419
7/31/1989	1673	31	796.933	-223.62	844.397	-335.648	-24.531	273.602	0	-683.462	-0.069	-274.791	-402
8/31/1989	1704	31	761.725	-197.792	844.666	-334.403	-23.308	277.664	0	-699.983	0.557	-283.796	-374
9/30/1989	1734	30	737.695	-145.834	829.159	-333.969	-21.312	270.785	0	-738.629	0.42	-283.618	-342
10/31/1989	1765	31	681.66	-122.311	837.269	-333.493	-20.263	281.814	0	-716.04	0.148	-301.531	-335
11/30/1989	1795	30	643.901	-83.364	803.725	-323.203	-18.738	274.686	0	-706.621	-0.388	-298.167	-318
12/31/1989	1826	31	631.418	-66.488	816.59	-333.074	-18.773	285.106	0	-711.735	-0.428	-313.433	-316
1/31/1990	1857	31	-884.111	-79.558	1063.091	-77.83	-4.071	285.152	0	320.922	-2.658	-319.025	-333
2/28/1990	1885	28	-902.87	-92.476	1098.502	-78.545	1.068	257.822	0	307.968	-4.28	-288.466	-327
3/31/1990	1916	31	846.203	-136.07	922.106	-358.995	-14.722	279.348	0	-913.714	-2.826	-313.968	-336
4/30/1990	1946	30	969.885	-126.798	912.76	-358.764	-22.098	264.906	0	-1085.545	-0.831	-304.24	-275
5/31/1990	1977	31	516.199	-132.52	840.484	-269.442	-21.71	272.507	0	-656.549	-1.174	-318.824	-257
6/30/1990	2007	30	948.567	-120.5	917.926	-359.294	-21.861	262.976	0	-1120.974	-1.05	-312.457	-218
7/31/1990	2038	31	801.941	-116.539	855.585	-358.493	-23.126	276.444	0	-937.012	-0.529	-325.876	-198
8/31/1990	2069	31	756.011	-106.43	852.761	-357.276	-21.949	280.738	0	-913.893	-0.434	-329.673	-185
9/30/1990	2099	30	753.183	-79.097	838.727	-356.792	-20.193	273.772	0	-933.942	-0.41	-323.089	-176
10/31/1990	2130	31	713.575	-65.237	839.634	-356.23	-19.656	284.502	0	-905.308	0.568	-338.299	-178
11/30/1990	2160	30	720.274	-44.338	821.07	-355.444	-18.33	276.663	0	-924.96	0.649	-332.089	-167
12/31/1990	2191	31	692.929	-36.407	828.438	-355.77	-18.458	287.026	0	-903.073	0.346	-346.601	-173
1/31/1991	2222	31	-258.65	-40.679	748.414	-183.671	-11.646	285.737	0	-43.346	-1.703	-352.042	-171
2/28/1991	2250	28	-994.179	-41.085	1052.514	-80.997	-1.297	258.152	0	273.399	-4.004	-323.145	-163
3/31/1991	2281	31	-3532.168	-86.709	3965.445	-5.846	6.669	291.972	1.365	-106.298	-6.837	-349.537	-220
4/30/1991	2311	30	360.846	-121.969	802.926	-361.688	1.132	275.216	0.308	-481.2	-5.379	-287.612	-213
5/31/1991	2342	31	542.766	-121.63	826.437	-363.226	-21.393	275.553	0	-673.583	-2.682	-261.426	-228
6/30/1991	2372	30	650.676	-107.742	823.904	-364.254	-26.859	263.207	0	-787.442	-1.72	-246.115	-229
7/31/1991	2403	31	632.197	-105.33	842.686	-326.535	-25.875	271.907	0	-809.795	-0.893	-261.702	-242
8/31/1991	2434	31	633.345	-97.228	845.431	-326.803	-24.024	272.163	0	-829.258	-0.603	-273.926	-224
9/30/1991	2464	30	649.747	-73.228	835.63	-327.102	-22.162	263.431	0	-870.029	-0.69	-278.507	-201
10/31/1991	2495	31	309.393	-63.582	847.365	-326.878	-35.183	270.821	0	-880.519	-1.043	-298.876	154
11/30/1991	2525	30	584.212	-44.342	832.06	-326.969	-41.7	261.939	0	-910.867	-1.154	-297.405	-79
12/31/1991	2556	31	-1456.407	-38.587	1543.823	-45.191	-5.493	274.905	0	248.794	-3.737	-320.792	-227
1/31/1992	2587	31	-1076.882	-49.641	1025.015	-73.214	0.137	275.109	0	435.5	-5.912	-319.273	-240

Flow Budget for Aquifer A in Santa Paula Basin

Date	Stress	days in month	STORAGE	ET	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Mound L1	Santa Paula B	Mound L2 L3	Oxnard UAS	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet										
2/29/1992	2616	29	-3100.834	-79.291	3381.551	-8.454	5.149	264.005	0.275	31.977	-6.972	-283.267	-243
3/31/1992	2647	31	-2427.694	-203.131	2259.715	-18.194	8.713	282.784	0.03	588.831	-8.307	-252.866	-283
4/30/1992	2677	30	343.863	-234.057	756.016	-285.573	-21.852	252.588	0	-408.582	-5.514	-180.834	-248
5/31/1992	2708	31	613.054	-207.069	775.752	-288.147	-38.617	245.169	0	-618.165	-2.608	-168.343	-341
6/30/1992	2738	30	682.898	-171.155	775.104	-289.175	-33.442	233.507	0	-725.01	-1.762	-160.309	-339
7/31/1992	2769	31	951.119	-158.492	846.393	-321.203	-33.978	258.664	0	-1069.486	2.137	-173.667	-328
8/31/1992	2800	31	925.079	-135.555	854.452	-320.037	-30.612	271.805	0	-1094.394	3.398	-190.147	-310
9/30/1992	2830	30	843.068	-96.003	832.707	-319.467	-28.469	267.148	0	-1135.893	2.95	-205.035	-186
10/31/1992	2861	31	-816.415	-92.097	834.628	-107.228	-46.027	273.633	0	5.386	-1.182	-217.472	138
11/30/1992	2891	30	573.859	-67.866	817.365	-319.132	-59.793	264.394	0	-1075.451	-0.499	-177.233	20
12/31/1992	2922	31	-1603.528	-69.199	1714.833	-36.813	-23.643	273.536	0	186.59	-3.254	-156.612	-315
1/31/1993	2953	31	-2994.583	-134.045	3201.054	-10.598	5.361	277.72	0.206	151.486	-6.036	-155.165	-382
2/28/1993	2981	28	-2983.183	-208.525	3070.581	-9.868	11.241	254.61	0.71	306.149	-6.534	-138.049	-341
3/31/1993	3012	31	-1475.049	-393.478	1550.024	-47.533	5.467	277.378	0.117	687.894	-7.751	-148.838	-497
4/30/1993	3042	30	1061.946	-436.741	823.853	-338.337	-26.21	253.744	0	-806.794	-2.452	-114.223	-447
5/31/1993	3073	31	1142.246	-411.786	842.691	-340.805	-48.363	249.68	0	-1019.857	3.195	-77.92	-370
6/30/1993	3103	30	953.914	-328.927	767.381	-285.684	-38.267	239.649	0	-857.371	3.055	-95.374	-388
7/31/1993	3134	31	935.378	-292.324	857.927	-324.761	-30.11	257.363	0	-927.234	0.346	-121.054	-383
8/31/1993	3165	31	875.743	-239.89	848.855	-323.675	-27.181	262.214	0	-934.287	-1.342	-139.705	-348
9/30/1993	3195	30	812.07	-171.777	836.608	-323.204	-27.956	256.894	0	-972.567	-1.394	-135.142	-299
10/31/1993	3226	31	752.111	-138.848	836.827	-322.811	-29.111	268.639	0	-966.845	-1.371	-119.947	-305
11/30/1993	3256	30	209.76	-96.331	735.01	-217.913	-25.393	263.303	0	-452.99	-1.947	-105.877	-334
12/31/1993	3287	31	-521.857	-87.342	812.478	-114.522	-15.714	273.014	0	143.983	-2.97	-116.407	-399
1/31/1994	3318	31	384.081	-100.992	737.095	-254.833	-21.533	263.866	0	-536.328	-3.588	-124.754	-371
2/28/1994	3346	28	-1903.253	-119.813	2103.163	-21.235	0.862	242.745	0	158.849	-3.926	-123.14	-374
3/31/1994	3377	31	-1105.378	-239.967	1098.877	-55.329	4.04	271.316	0	604.541	-5.557	-146.776	-457
4/30/1994	3407	30	549.422	-260.93	751.01	-264.477	-15.337	252.233	0	-480.061	-4.796	-136.576	-419
5/31/1994	3438	31	623.08	-253.365	774.072	-265.283	-23.266	252.88	0	-594.864	-3.652	-131.344	-406
6/30/1994	3468	30	638.498	-215.478	764.276	-265.235	-24.964	242.155	0	-659.218	-2.93	-120.004	-383
7/31/1994	3499	31	824.941	-200.628	872.771	-330.073	-28.35	255.775	0	-902.199	-3.005	-133.504	-381
8/31/1994	3530	31	780.886	-174.481	878.219	-329.33	-29.637	260.213	0	-928.007	-3.033	-150.937	-329
9/30/1994	3560	30	598.68	-123.167	860.869	-328.849	-39.209	251.263	0	-979.732	-2.66	-164.075	-97
10/31/1994	3591	31	26.613	-104.25	768.698	-225.322	-50.047	262.008	0	-430.247	-2.629	-188.296	-83
11/30/1994	3621	30	-143.915	-77.2	773.268	-171.725	-39.745	254.385	0	-178.275	-3.28	-197.42	-241
12/31/1994	3652	31	-112.993	-70.021	761.623	-179.584	-22.866	265.946	0	-130.116	-4.059	-217.135	-318
1/31/1995	3683	31	-4802.07	-151.331	5655.98	8.173	9.347	281.768	3.345	-582.586	-5.761	-219.669	-277
2/28/1995	3711	28	-830.227	-231.579	685.059	-96.135	-27.183	248.219	1.385	369.374	-4.728	-161.059	9
3/31/1995	3742	31	-2651.37	-402.446	2998.781	-3.994	-13.139	268.542	0.636	412.126	-5.873	-145.245	-503
4/30/1995	3772	30	835.22	-482.043	699.029	-226.726	-17.558	257.565	0.062	-438.771	-2.35	-118.753	-540
5/31/1995	3803	31	199.385	-513.036	710.194	-132.114	-54.314	255.088	0	54.362	0.001	-93.55	-459
6/30/1995	3833	30	950.503	-446.293	720.025	-229.922	-40.135	245.167	0	-677.937	0.959	-95.259	-457
7/31/1995	3864	31	903.377	-395.935	805.919	-311.268	-45.984	254.513	0	-813.347	1.065	-103.446	-323
8/31/1995	3895	31	826.651	-333.594	802.31	-309.762	-55.621	255.538	0	-846.354	0.457	-110.919	-256
9/30/1995	3925	30	755.46	-237.557	787.514	-309.278	-56.472	248.29	0	-896.32	0.515	-108.168	-210
10/31/1995	3956	31	667.426	-196.902	787.376	-308.768	-60.849	257.899	0	-890.671	0.5	-105.331	-177
11/30/1995	3986	30	674.75	-134.116	766.736	-308.56	-58.176	251.574	0	-911.384	0.523	-93.021	-213
12/31/1995	4017	31	-707.676	-120.347	988.49	-87.476	-24.903	260.308	0	214.485	-1.502	-98.806	-449
1/31/1996	4048	31	-196.694	-150.932	724.878	-136.372	-12.984	261.578	0	48.797	-3.168	-107.67	-456
2/29/1996	4077	29	-2221.731	-195.198	2513.969	-13.184	10.974	251.058	0	226.451	-4.063	-103.888	-507
3/31/1996	4108	31	-677.623	-349.037	866.459	-70.599	15.118	270.247	0	585.873	-4.925	-91.298	-579
4/30/1996	4138	30	757.446	-377.63	729.998	-250.787	-6.207	261.252	0	-535.789	-3.539	-78.263	-525
5/31/1996	4169	31	932.699	-366.835	774.398	-262.346	-16.55	267.977	0	-767.822	-1.89	-83.446	-504
6/30/1996	4199	30	932.688	-299.491	764.193	-262.699	-20.666	258.312	0	-846.687	-0.394	-96.061	-455
7/31/1996	4230	31	1503.499	-261.776	918.682	-436.169	-26.511	282.544	0	-1470.794	0.953	-113.588	-422
8/31/1996	4261	31	1443.504	-201.466	916.441	-434.547	-28.088	293.637	0	-1514.314	1.903	-127.229	-375
9/30/1996	4291	30	1249.984	-128.246	900.835	-433.636	-37.19	286.909	0	-1561.907	2.305	-135.232	-168
10/31/1996	4322	31	-675.977	-113.289	930.537	-122.976	-37.559	285.282	0	-47.652	-0.088	-150.439	-96
11/30/1996	4352	30	-927.226	-97.692	1150.838	-99.617	-26.031	267.29	0	155.08	-2.141	-145.205	-301
12/31/1996	4383	31	-2045.847	-117.119	2175.557	-35.767	2.78	275.94	0	261.576	-4.011	-147.193	-413
1/31/1997	4414	31	-2066.2	-190.849	1986.072	-21.981	8.639	275.042	0	575.545	-5.201	-106.616	-500
2/28/1997	4442	28	577.735	-202.405	697.849	-281.245	-9.923	244.709	0	-486.259	-3.534	-62.543	-503
3/31/1997	4473	31	658.115	-262.537	729.649	-282.363	-20.325	268.441	0	-577.776	-1.152	-64.231	-476
4/30/1997	4503	30	723.192	-254.497	728.811	-283.055	-20.465	259.437	0	-655.357	0.195	-61.607	-463
5/31/1997	4534	31	716.056	-257.374	752.254	-283.474	-22.948	268.111	0	-666.951	0.394	-78.549	-455
6/30/1997	4564	30	712.164	-219.923	740.868	-283.512	-23.614	260.013	0	-711.987	0.463	-96.46	-404
7/31/1997	4595	31	1008.555	-201.141	875.5	-365.179	-27.628	266.933	0	-1105.198	-0.252	-120.378	-356
8/31/1997	4626	31	819.708	-166.622	875.468	-364.187	-45.395	263.386	0	-1157.517	-0.594	-140.721	-108
9/30/1997	4656	30	819.08	-118.65	861.312	-363.514	-54.661	254.089	0	-1199.758	-0.299	-155.657	-65
10/31/1997	4687	31	745.439	-95.617	863.701	-363.087	-59.025	263.018	0	-1188.857	-0.118	-176.314	-13
11/30/1997	4717	30	-756.112	-73.225	1057.414	-93.351	-27.099	257.494	0	74.947	-1.695	-181.212	-282
12/31/1997	4748	31	-2220.961	-90.831	2354.037	-27.594	5.074	271.193	0	255.404	-3.721	-198.3	-386
1/31/1998	4779	31	-1377.161	-139.548	1418.769	-60.587	10.392	271.859	0	458.41	-4.795	-179.969	-426
2/28/1998	4807	28	-5305.748	-228.155	6350.723	7.609	17.61	252.91	3.566	-512.125	-5.632	-136.139	-575
3/31/1998	4838	31	-1311.341	-440.836	1459.567	-48.477	23.817	275.553	2.5	935.443	-8.023	-120.224	-817
4/30/1998	4868	30	-315.765	-526.557	850.708	-111.998	2.362	255.733	0.023	575.58	-6.198	-70.335	-688
5/31/1998	4899	31	-1062.325	-640.659	1553.445	-44.999	5.789	260.045	0	760.82	-6.133	-52.186	-809
6/30/1998	4929	30	1542.862	-610.692	799.21	-350.628	-25.215	244.511	0	-870.725	-2.533	-37.281	-722
7/31/1998	4960	31	1070.518	-536.41	792.519	-280.078	-59.924	252.704	0	-526.914	-0.641	-42.7	-699
8/31/1998	4991	31	841.322	-454.02	790.492	-279.318	-36.547	255.891	0	-558.839	-1.489	-70.871	-516
9/30/1998	5021	30	633.285	-333.007	760.419	-273.287	-28.745	249.955	0	-532.59	-1.554	-78.363	-424
10/31/1998	5052	31	621.049	-279.318	781.538	-279.083	-54.789	254.867	0	-629.354	-1.623	-68.66	-373
11/30/1998	5082	30	71.087	-198.959	742.126	-184.355	-53.811	244.259	0	-205.211	-2.757	-37.289	-403
12/31/1998	5113	31	464.53	-164.947	744.265	-268.301	-57.763	253.167	0	-553.147	-3.198	-28.519	-414
1/31/1999	5144	31	-615.834	-193.57	985.578	-91.239	-27.738	251.553	0	278.964	-3.917	-36.052	-577
2/28/1999	5172	28	12.161	-203.83	733.722	-161.516	-11.545	229.915	0	-34.26	-3.032	-52.23	-537

Flow Budget for Aquifer A in Santa Paula Basin

Date	Stress	days in month	STORAGE	ET	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Mound L1	Santa Paula B	Mound L2 L3	Oxnard UAS	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet										
3/31/1999	5203	31	-809.536	-330.302	1268.454	-76.726	-0.595	256.426	0	358.571	-3.997	-70.534	-619
4/30/1999	5233	30	-645.634	-405.914	1085.806	-82.576	4.023	249.44	0	433.781	-5.04	-68.325	-594
5/31/1999	5264	31	1102.5	-445.106	821.818	-346.359	-10.751	259.601	0	-764.438	-2.733	-58.907	-584
6/30/1999	5294	30	1170.12	-354.98	807.719	-346.776	-19.176	250.964	0	-939.237	-0.149	-69.661	-525
7/31/1999	5325	31	1047.199	-313.523	816.571	-332.927	-23.757	257.736	0	-879.605	0.843	-94.019	-505
8/31/1999	5356	31	958.22	-264.704	813.111	-331.99	-24.678	258.64	0	-865.068	1.567	-115.801	-455
9/30/1999	5386	30	722.798	-188.373	799.428	-331.425	-36.509	250.474	0	-904.877	1.445	-128.45	-209
10/31/1999	5417	31	738.183	-155.506	808.255	-330.818	-53.821	257.862	0	-903.055	0.872	-137.948	-249
11/30/1999	5447	30	325.699	-107.605	753.61	-238.102	-30.179	251.228	0	-442.085	-0.459	-134.901	-402
12/31/1999	5478	31	755.657	-89.509	800.721	-331.253	-24.571	262.866	0	-844.607	-0.615	-151.201	-402
1/31/2000	5509	31	-438.363	-101.707	900.642	-118.955	-12.408	265.398	0	52.176	-1.12	-164.689	-408
2/29/2000	5538	29	-2248.383	-134.151	2671.128	-25.468	6.782	253.083	0.249	32.379	-3.454	-167.108	-422
3/31/2000	5569	31	-991.008	-247.025	1217.237	-83.007	7.659	268.537	0.049	463.863	-5.603	-160.695	-500
4/30/2000	5599	30	-927.608	-310.805	1351.164	-81.566	-0.051	255.061	0	342.395	-5.333	-114.948	-535
5/31/2000	5630	31	1292.087	-330.73	924.163	-381.893	-19.624	257.923	0	-1155.322	-1.496	-107.979	-504
6/30/2000	5660	30	1356.492	-258.727	916.689	-382.726	-25.353	249.834	0	-1379.004	2.905	-115.674	-389
7/31/2000	5691	31	871.742	-233.556	820.219	-324.299	-24.884	264.224	0	-838.122	1.522	-131.387	-431
8/31/2000	5722	31	800.362	-204.287	818.686	-323.503	-24.335	265.837	0	-805.841	-0.061	-148.891	-403
9/30/2000	5752	30	501.231	-149.106	798.178	-322.944	-40.337	255.754	0	-858.621	-0.294	-157.072	-51
10/31/2000	5783	31	-661.386	-137.859	826.212	-124.886	-58.993	262.464	0	63.654	-1.647	-153.686	-41
11/30/2000	5813	30	602.02	-101.305	780.128	-322.928	-57.309	251.728	0	-781.781	-2.004	-116.498	-276
12/31/2000	5844	31	716.638	-81.092	788.056	-323.244	-35.137	262.429	0	-823.699	-0.97	-117.722	-410
1/31/2001	5875	31	-2006.568	-110.94	2276.409	-16.543	1.933	268.076	0	132.807	-2.529	-141.776	-444
2/28/2001	5903	28	-2464.565	-160.008	2590.869	-10.336	10.519	246.716	0.118	304.202	-4.763	-139.966	-414
3/31/2001	5934	31	-2060.084	-346.293	2219.317	-19.487	8.977	273.023	0.089	488.135	-7.576	-138.804	-464
4/30/2001	5964	30	-231.965	-412.151	828.901	-103.356	-1.538	259.495	0	348.643	-5.694	-105.308	-610
5/31/2001	5995	31	1307.74	-416.891	878.031	-305.879	-21.61	262.241	0	-1071.82	-0.852	-97.425	-562
6/30/2001	6025	30	1361.74	-310.764	869.519	-305.493	-29.802	249.694	0	-1289.52	2.982	-100.83	-473
7/31/2001	6056	31	886.69	-275.679	769.483	-254.897	-29.605	262.09	0	-810.941	2.939	-120.795	-456
8/31/2001	6087	31	811.467	-239.258	769.473	-254.607	-27.575	266.332	0	-782.123	2.129	-138.485	-433
9/30/2001	6117	30	488.284	-176.154	754.045	-254.318	-45.375	256.787	0	-832.25	1.901	-142.42	-75
10/31/2001	6148	31	458.646	-153.538	759.207	-253.574	-71.79	262.401	0	-844.375	1.79	-125.183	-59
11/30/2001	6178	30	-1212.537	-123.109	1388.138	-40.748	-39.382	252.372	0	196.251	-1.151	-91.58	-353
12/31/2001	6209	31	-431.475	-123.023	753.839	-105.761	-19.323	262.098	0	224.276	-2.995	-101.243	-485
1/31/2002	6240	31	-283.046	-145.725	696.127	-110.137	-19.144	261.045	0	181.67	-3.351	-119.845	-485
2/28/2002	6268	28	513.975	-136.897	653.691	-211.273	-24.03	233.215	0	-504.361	-2.382	-120.297	-425
3/31/2002	6299	31	526.979	-189.946	692.826	-210.888	-28.409	257.791	0	-496.065	-1.231	-148.407	-428
4/30/2002	6329	30	547.004	-196.698	688.175	-210.845	-26.921	250.309	0	-530.244	-0.583	-157.158	-387
5/31/2002	6360	31	527.518	-210.332	706.394	-210.871	-27.034	259.728	0	-516.134	-0.324	-174.169	-380
6/30/2002	6390	30	520.305	-189.615	701.261	-210.996	-25.757	252.267	0	-544.98	-0.167	-179.451	-347
7/31/2002	6421	31	1008.152	-179.243	876.638	-343.557	-29.437	256.856	0	-1094.51	-0.801	-195.132	-322
8/31/2002	6452	31	1008.456	-147.803	863.515	-341.518	-30.09	256.446	0	-1128.63	-1.247	-203.931	-298
9/30/2002	6482	30	673.359	-105.272	853.894	-340.244	-45.223	247.948	0	-1179.02	-1.174	-205.587	80
10/31/2002	6513	31	971.656	-84.076	852.28	-339.252	-44.705	258.362	0	-1159.578	-0.928	-219.16	-257
11/30/2002	6543	30	-1510.855	-68.153	1753.687	-37.079	-3.64	261.195	0	114.482	-2.383	-219.649	-315
12/31/2002	6574	31	-1589.971	-82.594	1639.137	-42.547	6.486	276.239	0	369.813	-4.549	-227.558	-371
1/31/2003	6605	31	369.093	-99.33	755.436	-209.865	-10.632	266.742	0	-498.002	-4.922	-218.549	-376
2/28/2003	6633	28	-1525.974	-106.406	1692.582	-22.583	2.317	244.892	0	230.254	-4.39	-202.272	-336
3/31/2003	6664	31	-1485.216	-204.157	1513.585	-28.802	5.517	272.959	0	539.152	-6.638	-218.874	-412
4/30/2003	6694	30	-408.437	-251.385	746.75	-90.455	-5.418	260.115	0	306.51	-6.279	-211.307	-368
5/31/2003	6725	31	-496.466	-291.731	886.725	-75.399	-18.221	264.707	0	304.546	-5.939	-210.902	-384
6/30/2003	6755	30	687.559	-256.932	764.831	-214.177	-30.019	245.21	0	-623.302	-4.764	-194.536	-399
7/31/2003	6786	31	953.184	-230.427	838.671	-255.805	-34.994	242.286	0	-942.728	-1.941	-205.352	-385
8/31/2003	6817	31	943.296	-194.643	841.97	-254.114	-33.554	239.22	0	-987.973	0.022	-213.987	-362
9/30/2003	6847	30	632.097	-137.555	825.661	-252.94	-47.966	229.383	0	-1049.321	0.347	-216.523	-4
10/31/2003	6878	31	801.863	-111.694	827.492	-251.875	-61.799	236.5	0	-1051.022	0.222	-233.427	-178
11/30/2003	6908	30	-683.404	-83.798	1088.782	-61.265	-23.047	242.936	0	65.371	-2.876	-235.152	-328
12/31/2003	6939	31	-505.464	-83.288	849.779	-90.848	-13.565	259.05	0	159.007	-4.597	-253.972	-342
1/31/2004	6970	31	411.656	-95.792	702.08	-194.582	-20.428	259.882	0	-497.746	-2.486	-259.524	-327
2/29/2004	6999	29	-1874.359	-114.139	2216.828	-14.118	2.318	251.574	0	80.918	-3.827	-244.875	-337
3/31/2004	7030	31	52.758	-192.881	775.44	-157.377	-8.207	263.517	0	-131.908	-3.414	-253.684	-370
4/30/2004	7060	30	670.045	-194.352	739.728	-211.145	-23.048	249.087	0	-659.511	0.355	-232.21	-362
5/31/2004	7091	31	700.096	-195.619	766.659	-212.544	-27.968	256.145	0	-732.715	1.216	-235.591	-343
6/30/2004	7121	30	711.567	-168.073	755.974	-213.016	-27.389	248.096	0	-790.404	0.984	-232.564	-307
7/31/2004	7152	31	1109.503	-154.013	866.258	-312.449	-30.544	261.687	0	-1225.199	2.45	-246.263	-293
8/31/2004	7183	31	1067.838	-128.581	873.723	-309.818	-29.66	266.343	0	-1248.531	3.306	-252.923	-263
9/30/2004	7213	30	1050.041	-90.259	853.842	-308.686	-27.023	260.647	0	-1274.617	3.255	-251.488	-236
10/31/2004	7244	31	-1731.22	-93.575	1898.744	-29.576	-10.551	274.562	0	-9.947	-1.561	-271.6	-60
11/30/2004	7274	30	875.691	-73.076	827.336	-308.066	-19.012	265	0	-1049.777	-1.457	-259.291	-280
12/31/2004	7305	31	-1904.093	-71.941	2188.665	-19.591	3.245	279.828	0	70.446	-2.89	-273.353	-312
1/31/2005	7336	31	-3969.874	-154.16	4456.521	7.727	9.432	287.976	0.274	-156.795	-5.843	-261.592	-285
2/28/2005	7364	28	-2964.775	-223.35	3046.349	1.692	14.155	259.282	0.302	480.886	-7.225	-197.271	-441
3/31/2005	7395	31	-1276.652	-400.868	1375.193	-36.825	1.673	277.663	0.021	812.83	-8.81	-174.886	-604
4/30/2005	7425	30	459.519	-448.861	707.706	-166.204	-29.828	256.934	0	-124.182	-4.623	-117.108	-564
5/31/2005	7456	31	955.346	-464.681	763.77	-227.268	-57	257.002	0	-722.782	0.513	-82.455	-451
6/30/2005	7486	30	973.246	-366.76	748.846	-227.469	-87.683	239.997	0	-872.191	2.308	-60.531	-377
7/31/2005	7517	31	764.975	-338.821	806.517	-217.228	-59.884	245.41	0	-788.922	0.131	-69.419	-369
8/31/2005	7548	31	692.957	-296.692	810.764	-217.263	-35.208	247.017	0	-797.654	-1.858	-70.022	-358
9/30/2005	7578	30	527.647	-219.554	796.946	-216.991	-56.737	235.367	0	-871.187	-2.009	-78.383	-139
10/31/2005	7609	31	-85.47	-199.648	765.724	-119.561	-52.678	246.51	0	-189.892	-2.997	-72.57	-317
11/30/2005	7639	30	572.878	-143.733	745.779	-203.378	-29.114	243.849	0	-697.922	-3.09	-76.977	-433
12/31/2005	7670	31	648.825	-113.59	783.983	-217.224	-26.442	255.765	0	-826.628	-2.375	-102.957	-424
1/31/2006	7701	31	-1043.339	-137.175	1472.181	-56.137	-2.325	267.14	0	28.23	-3.603	-125.288	-430
2/28/2006	7729	28	-767.538	-159.863	1101.288	-67.748	5.991	249.579	0	151.031	-4.938	-116.749	-419
3/31/2006	7760	31	-1378.594	-287.358	1804.299	-42.77	7.914	279.248	0	225.433	-7.042	-123.486	-512

Flow Budget for Aquifer A in Santa Paula Basin

Date	Stress	days in month	STORAGE	ET	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Mound L1	Santa Paula B	Mound L2 L3	Oxnard UAS	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet										
4/30/2006	7790	30	-1224.082	-392.965	1667	-47.318	5.263	269.865	0	287.985	-7.526	-87.289	-505
5/31/2006	7821	31	74.258	-469.02	901.795	-142.908	-12.432	275.244	0	-0.524	-6.661	-51.934	-598
6/30/2006	7851	30	1648.768	-381.979	943.286	-349.021	-29.359	265.298	0	-1563.468	-2.483	-39.565	-517
7/31/2006	7882	31	876.432	-315.756	786.155	-250.968	-32.794	281.804	0	-840.366	-1.056	-58.234	-471
8/31/2006	7913	31	631.341	-272.256	785.223	-249.485	-51.671	282.114	0	-796.413	-2.086	-85.81	-266
9/30/2006	7943	30	567.277	-198.29	769.853	-249.063	-61.408	272.865	0	-829.402	-1.925	-100.229	-194
10/31/2006	7974	31	494.637	-168.624	774.889	-248.346	-69.376	282.131	0	-826.304	-1.933	-99.813	-162
11/30/2006	8004	30	676.56	-115.202	754.375	-248.283	-51.001	275.718	0	-844.836	-1.732	-88.618	-381
12/31/2006	8035	31	255.182	-96.2	719.924	-181.932	-29.57	285.826	0	-455.663	-2.575	-106.562	-414
1/31/2007	8066	31	-772.889	-117.568	995.937	-59.883	-11.7	280.186	0	220.197	-4.281	-124.949	-430
2/28/2007	8094	28	10.053	-122.836	704.287	-137.846	-14.141	255.21	0	-204.204	-3.831	-125.024	-386
3/31/2007	8125	31	599.051	-175.643	756.37	-227.194	-25.388	288.947	0	-688.825	-2.904	-146.467	-403
4/30/2007	8155	30	152.075	-184.385	725.232	-155.724	-24.238	278.919	0	-289.616	-3.162	-149.593	-373
5/31/2007	8186	31	630.098	-199.784	759.008	-227.557	-27.106	290.459	0	-714.311	-2.859	-164.538	-367
6/30/2007	8216	30	660.718	-173.489	753.559	-227.797	-27.572	283.67	0	-789.922	-1.512	-169.835	-331
7/31/2007	8247	31	837.798	-161.864	813.692	-283.611	-29.858	305.118	0	-1004.378	-0.546	-186.437	-313
8/31/2007	8278	31	659.957	-137.614	813.027	-282.307	-35.987	311.654	0	-1028.344	0.016	-198.34	-125
9/30/2007	8308	30	515.271	-102.234	794.717	-279.046	-55.42	301.741	0	-1052.854	-0.388	-199.748	56
10/31/2007	8339	31	480.757	-86.491	807.376	-280.369	-66.587	311.708	0	-1076.745	-0.492	-199.752	88
11/30/2007	8369	30	753.9	-57.128	800.714	-280.668	-50.471	303.493	0	-1087.853	-0.254	-181.289	-222
12/31/2007	8400	31	-1231.04	-53.87	1413.572	-42.467	-9.266	298.722	0	112.362	-2.973	-192.283	-313
1/31/2008	8431	31	-3078.26	-103.392	3456.396	0.444	7.273	291.596	0.011	-90.278	-6.329	-184.825	-328
2/29/2008	8460	29	-1023.654	-147.001	906.698	-59.543	-0.95	267.141	0	459.587	-6.616	-136.465	-289
3/31/2008	8491	31	332.365	-202.471	834.794	-210.553	-30.679	277.493	0	-523.3	-4.837	-96.623	-403
4/30/2008	8521	30	516.416	-206.923	834.772	-212.873	-32.45	264.814	0	-712.228	-2.577	-81.345	-392
5/31/2008	8552	31	561.007	-219.863	833.283	-213.739	-30.915	273.879	0	-743.162	-1.877	-100.615	-382
6/30/2008	8582	30	644.956	-191.326	762.412	-213.407	-28.05	265.902	0	-792.549	-1.551	-125.227	-345
7/31/2008	8613	31	967.282	-171.296	881.009	-282.98	-30.001	283.431	0	-1187.639	-0.866	-155.689	-326
8/31/2008	8644	31	978.906	-136.831	855.612	-281.675	-29.239	289.275	0	-1227.07	-0.483	-179.768	-291
9/30/2008	8674	30	608.55	-94.523	841.555	-280.303	-47.384	279.722	0	-1285.609	-0.377	-190.594	148
10/31/2008	8705	31	524.274	-80.388	891.024	-279.452	-72.084	288.202	0	-1304.25	-0.639	-191.831	203
11/30/2008	8735	30	-664.056	-59.518	1026.996	-62.812	-34.912	275.839	0	-34.918	-3.192	-160.5	-304
12/31/2008	8766	31	-906.46	-60.122	1083.932	-67.508	-10.084	284.907	0	177.149	-5.426	-178.148	-342
1/31/2009	8797	31	64.994	-73.122	659.598	-169.912	-17.205	292.759	0	-256.5	-5.16	-195.187	-325
2/28/2009	8825	28	-1707.706	-87.613	1866.842	-18.447	1.258	263.301	0	171.276	-5.309	-193.83	-318
3/31/2009	8856	31	36.45	-151.65	722.919	-169.026	-8.978	292.457	0	-186.18	-5.702	-220.917	-336
4/30/2009	8886	30	398.958	-153.966	759.883	-213.933	-22.624	287.266	0	-553.572	-4.255	-216.57	-304
5/31/2009	8917	31	393.793	-161.708	808.653	-214.544	-27.565	297.352	0	-588.942	-3.627	-229.355	-298
6/30/2009	8947	30	432.808	-144.851	781.533	-214.749	-27.286	287.711	0	-637.212	-3.124	-228.909	-268
7/31/2009	8978	31	941.132	-135.576	892.611	-286.131	-30.67	305.402	0	-1214.756	-0.254	-242.785	-251
8/31/2009	9009	31	940.1	-115.531	890.34	-285.092	-30.569	310.526	0	-1261.147	1.562	-249.919	-222
9/30/2009	9039	30	697.404	-85.411	871.884	-284.236	-37.774	301.793	0	-1305.157	1.6	-249.672	69
10/31/2009	9070	31	-1190.862	-81.687	1223.593	-55.697	-43.314	295.67	0	-37.175	-2.436	-265.607	136
11/30/2009	9100	30	865.323	-56.387	786.98	-282.378	-42.602	292.977	0	-1147.309	-1.569	-250.72	-187
12/31/2009	9131	31	-1172.314	-48.476	1406.507	-43.416	-8.244	296.996	0	74.768	-3.328	-257.423	-266
1/31/2010	9162	31	-2309.138	-87.55	2483.658	-14.295	5.9	290.814	0	180.969	-6.307	-241.053	-343
2/28/2010	9190	28	-1397.721	-123.799	1459.299	-43.281	6.345	261.562	0	359.482	-6.572	-200.719	-339
3/31/2010	9221	31	572.768	-185.343	750.937	-287.531	-11.344	293.832	0	-591.067	-5.461	-210.128	-353
4/30/2010	9251	30	-444.333	-188.299	802.973	-103.068	-12.625	279.185	0	183.451	-4.846	-204.947	-332
5/31/2010	9282	31	688.37	-202.565	782.75	-287.114	-22.206	289.943	0	-722.671	-3.794	-219.411	-329
6/30/2010	9312	30	787.26	-162.984	752.644	-281.528	-27.917	282.198	0	-854.523	-1.941	-219.588	-297
7/31/2010	9343	31	1066.405	-141.001	827.734	-297.351	-33.796	305.309	0	-1236.43	-2.2	-236.933	-274
8/31/2010	9374	31	1052.727	-117.116	823.706	-295.53	-33.194	314.585	0	-1272.11	-2.338	-247.514	-245
9/30/2010	9404	30	864.003	-80.877	806.092	-294.764	-35.412	307.749	0	-1319.456	-2.021	-249.822	-16
10/31/2010	9435	31	-956.233	-76.9	953.349	-67.318	-46.582	298.63	0	-21.77	-4.342	-266.882	166
11/30/2010	9465	30	-73.195	-58.83	755.252	-149.879	-46.346	283.799	0	-372.928	-4.324	-258.741	-99
12/31/2010	9496	31	-2613.662	-72.066	3049.387	-2.941	-1.193	291.461	0	-88.988	-6.208	-269.088	-323
1/31/2011	9527	31	278.256	-100.126	721.158	-182.592	-11.527	290.844	0	-465.276	-5.847	-236.607	-317
2/28/2011	9555	28	-1162.429	-103.206	1335.287	-24.744	-4.54	259.296	0	189.572	-4.989	-183.34	-325
3/31/2011	9586	31	-1983.284	-219.175	2092.151	-3.633	5.566	286.77	0	386.358	-6.029	-189.595	-410
4/30/2011	9616	30	457.114	-257.444	728.636	-185.065	-9.423	281.501	0	-490.683	-4.753	-163.216	-385
5/31/2011	9647	31	194.729	-254.707	702.398	-134.487	-24.499	286.653	0	-248.215	-4.015	-140.968	-403
6/30/2011	9677	30	620.722	-227.625	726.936	-188.184	-27.228	276.83	0	-695.657	-3.445	-145.06	-361
7/31/2011	9708	31	814.911	-211.739	800.9	-236.763	-30.135	292.115	0	-924.864	-2.397	-164.069	-361
8/31/2011	9739	31	800.302	-181.519	794.701	-235.248	-30.072	295.491	0	-946.888	-1.814	-181.743	-336
9/30/2011	9769	30	544.637	-129.726	769.386	-234.623	-39.468	286.585	0	-990.86	-1.453	-188.849	-38
10/31/2011	9800	31	-401.073	-117.012	741.418	-95.501	-59.186	283.922	0	-169.339	-2.791	-196.595	-9
11/30/2011	9830	30	-169.991	-88.828	726.527	-96.326	-33.63	271.813	0	-125.274	-3.573	-176.248	-329
12/31/2011	9861	31	686.109	-73.239	761.9	-236.202	-30.64	291.09	0	-899.352	-2.808	-185.264	-335
1/31/2012	9892	31	311.845	-74.941	718.904	-169.883	-27.135	292.915	0	-558.23	-2.949	-195.934	-319
2/29/2012	9921	29	735.513	-68.198	757.203	-242.808	-28.441	281.157	0	-988.025	-2.096	-193.48	-272
3/31/2012	9952	31	-766.323	-106.104	1120.779	-59.677	-15.25	296.017	0	30.675	-3.678	-221.142	-297
4/30/2012	9982	30	-699.036	-143.047	953.206	-61.799	-9.424	283.189	0	180.415	-4.139	-224.478	-299
5/31/2012	10013	31	662.985	-159.367	771.744	-241.112	-24.413	300.117	0	-802.302	-3.256	-232.87	-295
6/30/2012	10043	30	747.636	-129.796	763.146	-241.026	-29.871	294.32	0	-940.257	-2.292	-228.513	-255
7/31/2012	10074	31	956.924	-119.821	879.878	-248.45	-32.28	269.592	0	-1244.273	-0.632	-240.602	-240
8/31/2012	10105	31	990.518	-105.468	869.317	-247.643	-31.911	251.727	0	-1280.954	0.354	-244.004	-221
9/30/2012	10135	30	678.596	-79.439	845.448	-246.536	-44.66	240.061	0	-1331.986	0.398	-241.219	161
10/31/2012	10166	31	99.848	-70.506	741.516	-156.093	-63.897	242.032	0	-761.748	0.23	-252.258	202
11/30/2012	10196	30	-349.401	-50.145	804.728	-76.577	-34.11	248.534	0	-93.509	-2.465	-243.76	-224
12/31/2012	10227	31	-832.112	-44.793	1049.841	-56.163	-12.538	270.531	0	134.508	-4.77	-260.029	-265
1/31/2013	10258	31	-586.849	-55.746	797.787	-60.227	-12.029	263.441	0	175.384	-5.409	-267.136	-271
2/28/2013	10286	28	456.409	-54.809	788.306	-166.334	-21.617	206.599	0	-751.448	-3.58	-244.75	-224
3/31/2013	10317	31	86.773	-80.237	719.545	-111.021	-25.044	224.428	0	-319.795	-3.47	-274.767	-235
4/30/2013	10347	30	514.275	-86.676	795.812	-165.826	-25.575	210.047	0	-774.605	-2.656	-269.013	-212

Flow Budget for Aquifer A in Santa Paula Basin

Date	Stress	days in month	STORAGE	ET	RECHARGE	Pumping from Wells	OUTSIDE	Fillmore A	Mound L1	Santa Paula B	Mound L2 L3	Oxnard UAS	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet										
5/31/2013	10378	31	535.787	-97.603	815.557	-165.67	-26.754	212.071	0	-808.049	-2.036	-280.883	-199
6/30/2013	10408	30	533.233	-92.658	826.624	-165.7	-25.312	203.851	0	-838.938	-1.779	-274.719	-181
7/31/2013	10439	31	601.477	-94.841	837.68	-172.288	-26.268	216.842	0	-913.777	-2.595	-287.307	-175
8/31/2013	10470	31	607.247	-90.163	822.517	-171.994	-25.853	221.596	0	-919.753	-3.041	-290.968	-166
9/30/2013	10500	30	601.213	-69.655	822.827	-172.042	-24.571	215.253	0	-943.947	-2.807	-285.767	-156
10/31/2013	10531	31	571.274	-60.138	833.392	-171.505	-24.539	224.644	0	-927.881	-2.769	-300.156	-158
11/30/2013	10561	30	481.693	-42.003	776.838	-158.203	-22.695	221.316	0	-819.264	-2.724	-295.456	-155
12/31/2013	10592	31	565.958	-34.652	798.577	-170.925	-23.648	229.658	0	-911.824	-2.67	-309.411	-156
1/31/2014	10623	31	828.861	-38.529	898.789	-210.329	-25.419	230.629	0	-1240.726	-1.185	-312.055	-144
2/28/2014	10651	28	-1105.505	-39.284	1416.684	-27.709	-3.364	234.319	0	-44.77	-3.077	-287.764	-153
3/31/2014	10682	31	-536.306	-63.527	814.513	-67.743	-8.163	273.121	0	11.76	-4.001	-320.489	-121
4/30/2014	10712	30	737.93	-72.302	894.861	-210.996	-21.99	239.724	0	-1132.722	-1.707	-308.063	-141
5/31/2014	10743	31	845.286	-84.026	906.309	-210.313	-28.269	233.219	0	-1222.735	-0.419	-315.605	-138
6/30/2014	10773	30	884.688	-81.305	886.569	-210.089	-27.087	222.873	0	-1258.184	-0.068	-306.078	-125
7/31/2014	10804	31	783.568	-86.196	848.318	-187.792	-25.412	236.482	0	-1137.764	1	-316.628	-130
8/31/2014	10835	31	735.287	-83.691	856.547	-187.253	-23.679	240.855	0	-1108.925	1.569	-318.332	-127
9/30/2014	10865	30	743.214	-65.399	827.276	-187.348	-22.396	233.396	0	-1114.825	1.568	-310.43	-119
10/31/2014	10896	31	708.883	-57.047	835.387	-186.654	-22.429	242.357	0	-1095.457	1.469	-323.821	-117
11/30/2014	10926	30	234.485	-40.198	750.625	-129.967	-18.605	242.639	0	-627.113	0.104	-318.354	-109
12/31/2014	10957	31	-1392.118	-33.482	1529.218	-17.667	-1.449	273.736	0	78.584	-3.239	-340.665	-109
1/31/2015	10988	31	-853.681	-37.82	808.501	-32.413	-1.254	277.529	0	301.092	-4.744	-342.964	-137
2/28/2015	11016	28	219.294	-37.518	687.701	-112.841	-15.069	229.132	0	-564.671	-2.065	-305.444	-114
3/31/2015	11047	31	-10.979	-58.925	702.021	-86.778	-21.6	249.089	0	-338.385	-1.002	-334.838	-116
4/30/2015	11077	30	387.425	-68.374	762.337	-128.345	-24.356	227.082	0	-734.092	-0.305	-320.616	-116
5/31/2015	11108	31	325.042	-81.812	707.745	-108.092	-24.457	238.548	0	-638.409	0.248	-331.803	-104
6/30/2015	11138	30	459.704	-80.991	750.58	-129.235	-24.466	222.797	0	-784.424	0.385	-320.329	-109
7/31/2015	11169	31	289.782	-86.196	661.499	-87.269	-22.134	245.921	0	-589.559	2.632	-330.335	-102
8/31/2015	11200	31	679.642	-83.691	824.669	-159.479	-25.681	229.228	0	-1055.379	4.326	-329.81	-98
9/30/2015	11230	30	410.725	-65.399	714.474	-113.835	-23.578	218.786	0	-755.975	4.491	-321.122	-84
10/31/2015	11261	31	671.084	-57.047	810.233	-157.633	-25.248	217.985	0	-1053.314	4.313	-333.787	-90
11/30/2015	11291	30	679.733	-40.198	819.617	-156.919	-25.038	203.383	0	-1089.284	4.034	-324.654	-84
12/31/2015	11322	31	659.528	-33.482	825.36	-155.966	-24.633	209.784	0	-1077.088	3.993	-337.375	-84

Flow Budget for Aquifer B in Santa Paula Basin

			influx(+) outflux(-)												
Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula A	Fillmore B	Mound L2-4	Oxnard UAS	Santa Paula C	Mound L5	Oxnard LAS	Mound L6 L7
1/31/1985	31	31	470	63	134	-648	73	-1188	864	-1	0	440	-27	0	-180
2/28/1985	59	28	367	55	134	-885	55	-770	783	-1	0	449	-26	0	-161
3/31/1985	90	31	346	46	125	-907	46	-837	862	-1	0	529	-30	0	-178
4/30/1985	120	30	635	16	95	-2033	89	-11	859	-1	0	552	-27	0	-173
5/31/1985	151	31	550	16	95	-2028	85	48	891	-1	0	556	-29	0	-181
6/30/1985	181	30	516	16	95	-2035	83	135	869	-1	0	529	-29	0	-177
7/31/1985	212	31	498	16	114	-2359	101	397	912	-1	0	539	-31	0	-186
8/31/1985	243	31	483	16	114	-2361	99	423	923	-1	0	525	-31	0	-190
9/30/1985	273	30	469	16	114	-2369	92	503	896	-1	0	497	-31	0	-186
10/31/1985	304	31	452	16	114	-2359	98	470	938	-1	0	500	-32	-1	-194
11/30/1985	334	30	-933	364	636	-212	59	-765	859	-1	0	211	-38	-1	-185
12/31/1985	365	31	584	16	88	-1840	78	-75	933	-1	0	443	-35	-1	-189
1/31/1986	396	31	-739	337	567	-219	55	-888	889	-1	0	232	-41	-1	-192
2/28/1986	424	28	-1940	769	1296	-27	147	-768	787	-1	0	-60	-40	-1	-169
3/31/1986	455	31	-650	430	710	-166	138	-1217	868	-2	0	102	-42	-1	-182
4/30/1986	485	30	508	49	150	-1047	96	-709	857	-2	0	318	-37	0	-178
5/31/1986	516	31	796	16	101	-2324	120	227	898	-2	0	403	-36	0	-197
6/30/1986	546	30	661	16	101	-2328	108	401	873	-2	0	407	-35	0	-200
7/31/1986	577	31	511	16	100	-2037	79	271	888	-2	0	417	-39	0	-204
8/31/1986	608	31	491	16	100	-2039	89	272	898	-2	0	415	-39	0	-203
9/30/1986	638	30	259	33	115	-1385	65	-108	873	-2	0	384	-39	0	-196
10/31/1986	669	31	482	16	100	-2040	81	272	914	-2	0	413	-39	0	-201
11/30/1986	699	30	16	77	155	-648	24	-592	862	-2	0	341	-39	0	-194
12/31/1986	730	31	500	16	100	-2040	78	259	918	-2	0	407	-39	0	-200
1/31/1987	761	31	-76	93	203	-630	22	-581	885	-2	0	324	-40	-1	-198
2/28/1987	789	28	178	53	145	-1041	41	-280	807	-2	0	310	-36	0	-177
3/31/1987	820	31	-101	125	239	-517	25	-691	876	-2	0	285	-40	-1	-196
4/30/1987	850	30	616	16	99	-2300	90	471	868	-2	0	365	-35	-1	-189
5/31/1987	881	31	511	16	99	-2297	86	552	895	-2	0	371	-35	-1	-198
6/30/1987	911	30	487	16	99	-2304	82	632	861	-2	0	355	-34	-1	-194
7/31/1987	942	31	422	16	118	-2361	97	698	890	-2	0	365	-38	-1	-208
8/31/1987	973	31	415	16	118	-2364	105	697	901	-2	0	361	-38	-1	-212
9/30/1987	1003	30	404	16	118	-2370	103	739	884	-2	0	351	-37	-1	-209
10/31/1987	1034	31	-38	72	177	-886	36	-283	897	-2	0	283	-42	-1	-216
11/30/1987	1064	30	263	46	134	-1296	38	-113	877	-2	0	300	-40	-1	-208
12/31/1987	1095	31	-820	339	604	-211	54	-633	885	-2	0	51	-44	-1	-212
1/31/1988	1126	31	-257	203	344	-377	53	-732	877	-2	0	154	-45	-1	-212
2/29/1988	1155	29	99	99	192	-658	36	-557	816	-2	0	217	-41	-1	-201
3/31/1988	1186	31	489	16	88	-1818	73	209	874	-2	0	333	-42	-1	-220
4/30/1988	1216	30	-494	254	421	-322	46	-571	828	-2	0	98	-42	-1	-210
5/31/1988	1247	31	597	16	105	-2215	103	494	846	-2	0	316	-42	-1	-221
6/30/1988	1277	30	473	16	105	-2221	99	665	811	-2	0	310	-39	-1	-218
7/31/1988	1308	31	461	16	120	-2442	105	816	870	-2	0	314	-38	-1	-222
8/31/1988	1339	31	434	16	120	-2443	103	832	882	-2	0	318	-38	-1	-223
9/30/1988	1369	30	422	16	120	-2448	100	873	864	-2	0	308	-37	-1	-217
10/31/1988	1400	31	408	16	120	-2445	96	854	900	-2	0	316	-39	-1	-226
11/30/1988	1430	30	91	41	119	-1206	40	32	866	-2	0	281	-40	-1	-221
12/31/1988	1461	31	-701	321	548	-275	61	-558	879	-2	0	2	-44	-1	-226
1/31/1989	1492	31	520	16	87	-1814	82	220	877	-2	0	287	-42	-1	-229
2/28/1989	1520	28	-583	267	444	-227	42	-505	781	-2	0	38	-40	-1	-207
3/31/1989	1551	31	362	28	70	-1181	51	-207	866	-2	0	288	-44	-1	-230
4/30/1989	1581	30	454	16	87	-1819	66	344	827	-2	0	293	-40	-1	-226
5/31/1989	1612	31	391	16	87	-1816	62	388	844	-2	0	308	-41	-1	-236
6/30/1989	1642	30	375	16	87	-1821	65	436	818	-2	0	297	-40	-1	-231
7/31/1989	1673	31	398	16	116	-2185	83	683	864	-2	0	300	-38	-1	-237
8/31/1989	1704	31	380	16	116	-2187	83	700	872	-2	0	298	-39	-1	-237
9/30/1989	1734	30	373	16	116	-2192	82	739	850	-1	0	286	-38	-1	-231
10/31/1989	1765	31	364	16	116	-2189	79	716	885	-1	0	294	-40	-1	-240
11/30/1989	1795	30	370	16	114	-2158	78	707	863	-1	0	286	-39	-1	-235
12/31/1989	1826	31	369	16	116	-2191	76	712	896	-1	0	293	-40	-1	-244
1/31/1990	1857	31	-311	183	297	-578	23	-321	887	-1	0	113	-44	-1	-245
2/28/1990	1885	28	-289	178	321	-550	35	-308	798	-1	0	77	-41	-1	-220
3/31/1990	1916	31	695	16	114	-2692	90	914	878	-1	0	276	-40	-1	-247
4/30/1990	1946	30	555	16	114	-2696	83	1086	845	-1	0	282	-38	-1	-244
5/31/1990	1977	31	356	19	90	-2037	54	657	873	-1	0	289	-41	-1	-255
6/30/1990	2007	30	533	16	114	-2696	80	1121	846	-1	0	277	-38	-1	-249
7/31/1990	2038	31	351	16	115	-2388	85	937	903	-1	0	278	-39	-1	-255
8/31/1990	2069	31	368	16	115	-2390	84	914	911	-1	0	278	-39	-1	-254
9/30/1990	2099	30	377	16	115	-2395	84	934	888	-1	0	267	-38	-1	-246
10/31/1990	2130	31	375	16	115	-2393	82	905	923	-1	0	273	-39	-1	-255

Flow Budget for Aquifer B in Santa Paula Basin

			influx(+) outflux(-)												
Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula A	Fillmore B	Mound L2-4	Oxnard UAS	Santa Paula C	Mound L5	Oxnard LAS	Mound L6 L7
11/30/1990	2160	30	385	16	115	-2396	82	925	900	-1	0	263	-38	-1	-248
12/31/1990	2191	31	377	16	115	-2395	79	903	934	-1	0	270	-39	-1	-257
1/31/1991	2222	31	35	48	136	-1102	19	43	912	-1	0	220	-42	-1	-263
2/28/1991	2250	28	-384	193	323	-457	23	-273	816	-1	0	37	-39	-1	-235
3/31/1991	2281	31	-3274	1110	1962	-21	180	106	879	-1	0	-641	-43	-1	-250
4/30/1991	2311	30	970	16	99	-2302	146	481	860	-1	0	5	-32	-1	-239
5/31/1991	2342	31	693	16	99	-2294	102	674	877	-1	0	123	-31	-1	-253
6/30/1991	2372	30	561	16	99	-2295	83	787	847	-1	0	187	-31	-1	-248
7/31/1991	2403	31	473	16	112	-2284	77	810	869	-1	0	217	-34	-1	-252
8/31/1991	2434	31	442	16	112	-2283	76	829	870	-1	0	229	-37	-1	-250
9/30/1991	2464	30	423	16	112	-2286	75	870	844	-1	0	228	-37	-1	-242
10/31/1991	2495	31	384	16	112	-2283	67	881	870	-1	0	247	-38	-1	-251
11/30/1991	2525	30	381	16	112	-2286	70	911	841	-1	0	240	-37	-1	-244
12/31/1991	2556	31	-913	356	575	-265	54	-249	872	-1	0	-131	-42	-1	-251
1/31/1992	2587	31	-190	155	278	-486	41	-436	874	-1	0	59	-43	-1	-248
2/29/1992	2616	29	-2667	994	1628	-39	167	-32	800	-1	0	-576	-41	-1	-227
3/31/1992	2647	31	-1215	576	973	-118	170	-589	855	-1	0	-358	-42	-1	-235
4/30/1992	2677	30	976	16	85	-2201	137	409	798	-1	0	47	-35	-1	-226
5/31/1992	2708	31	718	16	85	-2193	98	618	810	-1	0	127	-36	-1	-239
6/30/1992	2738	30	593	16	85	-2193	85	725	782	-1	0	182	-35	-1	-233
7/31/1992	2769	31	552	16	100	-2676	106	1069	877	-1	0	214	-30	-1	-225
8/31/1992	2800	31	501	16	100	-2677	99	1094	890	-1	0	231	-30	-1	-222
9/30/1992	2830	30	481	16	100	-2680	95	1136	869	-1	0	228	-29	-1	-213
10/31/1992	2861	31	-135	77	157	-867	14	-5	865	0	0	170	-38	-1	-232
11/30/1992	2891	30	533	16	100	-2680	96	1075	861	0	0	244	-31	0	-212
12/31/1992	2922	31	-1096	418	655	-259	68	-187	846	0	0	-169	-40	-1	-230
1/31/1993	2953	31	-2394	936	1489	-84	186	-151	835	-1	0	-538	-42	-1	-225
2/28/1993	2981	28	-2133	896	1446	-105	212	-306	752	-1	0	-519	-38	0	-198
3/31/1993	3012	31	-393	356	620	-381	156	-688	833	-1	0	-237	-38	0	-214
4/30/1993	3042	30	1113	16	93	-2822	150	807	794	-1	0	63	-22	0	-186
5/31/1993	3073	31	844	16	93	-2813	118	1020	806	-1	0	135	-22	0	-192
6/30/1993	3103	30	621	16	81	-2409	97	857	783	-1	0	172	-24	0	-189
7/31/1993	3134	31	518	16	109	-2461	104	927	823	0	0	202	-30	0	-206
8/31/1993	3165	31	487	16	109	-2461	100	934	830	0	0	223	-30	0	-206
9/30/1993	3195	30	465	16	109	-2464	96	973	811	0	0	225	-28	0	-200
10/31/1993	3226	31	431	16	109	-2460	92	967	845	0	0	239	-29	0	-207
11/30/1993	3256	30	210	24	84	-1658	58	453	830	0	0	237	-29	0	-204
12/31/1993	3287	31	-109	76	169	-810	31	-144	855	0	0	184	-33	0	-214
1/31/1994	3318	31	428	16	82	-2010	74	536	848	0	0	271	-31	0	-210
2/28/1994	3346	28	-1520	542	916	-113	89	-159	757	0	0	-275	-31	0	-191
3/31/1994	3377	31	-171	179	297	-377	76	-605	842	0	0	4	-34	0	-206
4/30/1994	3407	30	587	16	85	-2043	101	480	805	0	0	198	-28	0	-195
5/31/1994	3438	31	428	16	85	-2039	82	595	829	0	0	239	-27	0	-204
6/30/1994	3468	30	385	16	85	-2041	77	659	800	0	0	247	-25	0	-197
7/31/1994	3499	31	401	16	114	-2383	98	902	841	0	0	255	-27	0	-214
8/31/1994	3530	31	378	16	114	-2384	97	928	848	0	0	255	-27	0	-220
9/30/1994	3560	30	367	16	114	-2388	92	980	818	0	0	247	-26	0	-216
10/31/1994	3591	31	156	22	84	-1584	46	430	851	0	0	257	-27	0	-227
11/30/1994	3621	30	13	43	119	-1193	51	178	818	0	0	226	-29	0	-220
12/31/1994	3652	31	103	35	117	-1259	49	130	855	0	0	231	-30	0	-225
1/31/1995	3683	31	-5133	1757	2939	0	293	583	826	-1	0	-986	-22	-1	-218
2/28/1995	3711	28	635	59	148	-1058	152	-369	773	-1	0	-146	-3	0	-184
3/31/1995	3742	31	-2009	843	1399	-83	197	-412	807	-1	0	-509	-10	0	-213
4/30/1995	3772	30	1073	16	79	-2442	178	439	834	-1	0	14	2	0	-185
5/31/1995	3803	31	493	37	103	-1340	91	-54	822	-1	0	63	-5	0	-202
6/30/1995	3833	30	736	16	79	-2398	130	678	815	-1	0	148	-5	0	-191
7/31/1995	3864	31	560	16	94	-2386	115	813	829	-1	0	179	-13	0	-204
8/31/1995	3895	31	498	16	94	-2386	111	846	830	-1	0	213	-17	0	-202
9/30/1995	3925	30	456	16	94	-2389	110	896	807	0	0	226	-18	0	-194
10/31/1995	3956	31	426	16	94	-2386	107	891	837	0	0	240	-21	0	-200
11/30/1995	3986	30	423	16	94	-2389	107	911	815	0	0	240	-20	0	-193
12/31/1995	4017	31	-345	137	268	-582	53	-214	820	0	0	103	-28	0	-208
1/31/1996	4048	31	148	42	120	-1158	75	-49	840	0	0	222	-29	0	-204
2/29/1996	4077	29	-1793	704	1147	-104	135	-226	763	0	0	-395	-30	0	-188
3/31/1996	4108	31	189	125	203	-649	105	-586	833	-1	0	8	-30	0	-193
4/30/1996	4138	30	611	16	87	-2193	131	536	840	-1	0	189	-25	0	-184
5/31/1996	4169	31	537	16	92	-2409	109	768	867	-1	0	236	-21	0	-190
6/30/1996	4199	30	484	16	92	-2411	98	847	842	0	0	240	-19	0	-184
7/31/1996	4230	31	611	16	124	-3295	136	1471	894	0	0	258	-18	0	-194
8/31/1996	4261	31	560	16	124	-3296	134	1514	908	0	0	259	-18	0	-198

Flow Budget for Aquifer B in Santa Paula Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula A	Fillmore B	Mound L2-4	Oxnard UAS	Santa Paula C	Mound L5	Oxnard LAS	Mound L6 L7
			influx(+) outflux(-)												
9/30/1996	4291	30	549	16	124	-3300	129	1562	885	0	0	250	-18	0	-194
10/31/1996	4322	31	-314	124	259	-865	20	48	866	0	0	102	-25	0	-209
11/30/1996	4352	30	-360	176	323	-682	50	-155	825	0	0	56	-29	0	-202
12/31/1996	4383	31	-1429	576	973	-223	111	-262	840	-1	0	-334	-33	0	-203
1/31/1997	4414	31	-1100	522	866	-139	134	-576	832	-1	0	-295	-34	0	-196
2/28/1997	4442	28	771	15	80	-2179	127	486	784	-1	0	103	-22	0	-160
3/31/1997	4473	31	541	16	80	-2167	102	578	867	-1	0	192	-22	0	-181
4/30/1997	4503	30	470	16	80	-2168	85	655	844	-1	0	220	-20	0	-176
5/31/1997	4534	31	419	16	80	-2164	77	667	872	0	0	243	-20	0	-183
6/30/1997	4564	30	402	16	80	-2166	75	712	846	0	0	237	-20	0	-176
7/31/1997	4595	31	454	16	110	-2712	111	1105	882	0	0	248	-22	0	-188
8/31/1997	4626	31	421	16	110	-2713	103	1158	875	0	0	247	-22	0	-190
9/30/1997	4656	30	412	16	110	-2717	104	1200	849	0	0	238	-22	0	-185
10/31/1997	4687	31	388	16	110	-2715	106	1189	879	0	0	247	-23	0	-192
11/30/1997	4717	30	-453	176	316	-630	37	-75	824	0	0	30	-28	0	-193
12/31/1997	4748	31	-1550	586	988	-153	113	-255	841	0	0	-324	-33	0	-196
1/31/1998	4779	31	-450	288	488	-503	112	-458	864	-1	0	-113	-33	0	-191
2/28/1998	4807	28	-5325	1918	3171	-28	329	512	724	-1	0	-1014	-23	0	-175
3/31/1998	4838	31	1	333	528	-455	227	-935	829	-1	0	-310	-12	0	-193
4/30/1998	4868	30	568	98	189	-949	142	-576	807	-1	0	-77	-10	0	-187
5/31/1998	4899	31	-302	354	519	-347	123	-761	796	-1	0	-165	-15	0	-198
6/30/1998	4929	30	1105	16	91	-3060	197	871	868	-1	0	104	-7	0	-177
7/31/1998	4960	31	624	16	91	-2127	106	527	832	-1	0	146	-15	0	-195
8/31/1998	4991	31	545	16	91	-2126	114	559	838	-1	0	180	-19	0	-194
9/30/1998	5021	30	453	16	85	-1992	96	533	812	-1	0	210	-20	0	-187
10/31/1998	5052	31	439	16	91	-2123	97	629	839	-1	0	234	-23	0	-194
11/30/1998	5082	30	191	33	115	-1389	71	205	793	-1	0	204	-27	0	-190
12/31/1998	5113	31	393	16	86	-2009	103	553	837	-1	0	246	-27	0	-194
1/31/1999	5144	31	-235	141	253	-606	55	-279	795	-1	0	106	-28	0	-196
2/28/1999	5172	28	196	47	119	-1207	79	34	741	-1	0	196	-22	0	-178
3/31/1999	5203	31	-409	209	367	-486	64	-359	807	-1	0	33	-28	0	-196
4/30/1999	5233	30	-176	153	274	-533	66	-434	783	-1	0	86	-27	0	-187
5/31/1999	5264	31	664	16	104	-2570	140	764	845	-1	0	253	-21	0	-190
6/30/1999	5294	30	524	16	104	-2573	123	939	823	-1	0	252	-19	0	-184
7/31/1999	5325	31	395	16	104	-2378	96	880	844	-1	0	255	-19	0	-188
8/31/1999	5356	31	408	16	104	-2379	96	865	849	-1	0	255	-20	0	-189
9/30/1999	5386	30	407	16	104	-2383	91	905	822	-1	0	247	-20	0	-184
10/31/1999	5417	31	382	16	104	-2381	89	903	847	-1	0	257	-22	0	-191
11/30/1999	5447	30	159	27	89	-1635	72	442	818	-1	0	247	-25	0	-187
12/31/1999	5478	31	416	16	104	-2381	98	845	864	-1	0	258	-24	0	-192
1/31/2000	5509	31	-134	98	197	-929	40	-52	854	-1	0	161	-28	0	-199
2/29/2000	5538	29	-1998	722	1269	-166	108	-32	780	-1	0	-461	-31	0	-182
3/31/2000	5569	31	-71	190	336	-639	98	-464	842	-1	0	-66	-32	0	-190
4/30/2000	5599	30	-292	212	405	-597	76	-342	804	-1	0	-43	-31	0	-187
5/31/2000	5630	31	920	16	116	-3197	153	1155	874	-1	0	184	-22	0	-193
6/30/2000	5660	30	704	16	116	-3198	138	1379	855	-1	0	208	-20	0	-194
7/31/2000	5691	31	397	16	103	-2275	81	838	853	-1	0	220	-24	0	-202
8/31/2000	5722	31	410	16	103	-2276	84	806	855	-1	0	236	-25	0	-203
9/30/2000	5752	30	392	16	103	-2279	79	859	825	-1	0	235	-24	0	-197
10/31/2000	5783	31	-150	70	167	-787	12	-64	835	-1	0	164	-31	0	-210
11/30/2000	5813	30	462	16	103	-2279	97	782	813	-1	0	238	-26	0	-199
12/31/2000	5844	31	376	16	103	-2276	99	824	849	-1	0	248	-26	0	-206
1/31/2001	5875	31	-1612	619	995	-187	103	-133	836	-1	0	-365	-34	0	-203
2/28/2001	5903	28	-1671	715	1149	-152	174	-304	749	-1	0	-436	-34	0	-175
3/31/2001	5934	31	-1252	582	1038	-208	161	-488	827	-1	0	-416	-39	0	-189
4/30/2001	5964	30	481	79	165	-1060	114	-349	809	-1	0	-13	-31	0	-188
5/31/2001	5995	31	960	16	111	-3088	167	1072	863	-1	0	126	-19	0	-203
6/30/2001	6025	30	730	16	111	-3090	149	1290	838	-1	0	178	-15	0	-201
7/31/2001	6056	31	449	16	89	-2306	95	811	871	-1	0	204	-17	0	-205
8/31/2001	6087	31	456	16	89	-2305	92	782	878	-1	0	221	-18	0	-203
9/30/2001	6117	30	436	16	89	-2308	83	832	847	-1	0	225	-17	0	-196
10/31/2001	6148	31	394	16	89	-2305	81	844	868	-1	0	241	-19	0	-203
11/30/2001	6178	30	-745	265	465	-336	45	-196	798	-1	0	-65	-30	0	-196
12/31/2001	6209	31	87	59	152	-902	60	-224	843	-1	0	163	-30	0	-200
1/31/2002	6240	31	116	40	92	-959	52	-182	852	-1	0	228	-31	0	-200
2/28/2002	6268	28	392	15	79	-1895	87	504	791	-1	0	233	-21	0	-178
3/31/2002	6299	31	312	16	79	-1886	76	496	874	-1	0	260	-22	0	-198
4/30/2002	6329	30	310	16	79	-1889	74	530	850	-1	0	249	-20	0	-191
5/31/2002	6360	31	295	16	79	-1886	70	516	879	-1	0	256	-21	0	-197
6/30/2002	6390	30	297	16	79	-1890	70	545	855	0	0	246	-20	0	-191

Flow Budget for Aquifer B in Santa Paula Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula A	Fillmore B	Mound L2-4	Oxnard UAS	Santa Paula C	Mound L5	Oxnard LAS	Mound L6 L7
			influx(+) outflux(-)												
7/31/2002	6421	31	415	16	121	-2654	117	1095	880	0	0	246	-24	0	-205
8/31/2002	6452	31	381	16	121	-2657	114	1129	890	0	0	245	-25	0	-209
9/30/2002	6482	30	371	16	121	-2662	107	1179	865	0	0	237	-24	0	-205
10/31/2002	6513	31	354	16	121	-2660	111	1160	901	0	0	243	-25	0	-214
11/30/2002	6543	30	-1143	399	709	-270	58	-114	842	0	0	-240	-32	0	-200
12/31/2002	6574	31	-808	343	626	-298	81	-370	870	-1	0	-201	-36	-1	-201
1/31/2003	6605	31	646	16	83	-2218	126	498	914	-1	0	187	-34	0	-210
2/28/2003	6633	28	-1028	410	691	-210	65	-230	778	-1	0	-247	-33	0	-187
3/31/2003	6664	31	-556	310	498	-278	80	-539	857	-1	0	-129	-38	-1	-202
4/30/2003	6694	30	252	59	131	-905	54	-307	838	-1	0	124	-34	0	-203
5/31/2003	6725	31	-40	93	213	-711	41	-305	859	-1	0	104	-35	0	-213
6/30/2003	6755	30	568	16	83	-2216	109	623	852	-1	0	215	-30	0	-212
7/31/2003	6786	31	464	16	113	-2446	106	943	829	-1	0	224	-25	0	-218
8/31/2003	6817	31	408	16	113	-2448	106	988	833	-1	0	232	-24	0	-218
9/30/2003	6847	30	385	16	113	-2452	100	1049	804	-1	0	227	-24	0	-212
10/31/2003	6878	31	354	16	113	-2450	101	1051	831	-1	0	235	-25	0	-220
11/30/2003	6908	30	-482	117	278	-509	21	-65	812	-1	0	75	-32	-1	-211
12/31/2003	6939	31	-95	92	213	-788	38	-159	847	-1	0	108	-34	-1	-216
1/31/2004	6970	31	410	16	82	-1959	82	498	878	-1	0	243	-27	-1	-215
2/29/2004	6999	29	-1605	577	1003	-125	78	-81	792	-1	0	-396	-33	-1	-194
3/31/2004	7030	31	436	31	94	-1514	103	132	871	-1	0	85	-29	-1	-202
4/30/2004	7060	30	560	16	89	-2217	90	660	843	-1	0	191	-24	0	-201
5/31/2004	7091	31	447	16	89	-2212	79	733	871	-1	0	220	-25	0	-211
6/30/2004	7121	30	405	16	89	-2214	78	790	846	-1	0	227	-24	0	-205
7/31/2004	7152	31	447	16	120	-2815	110	1225	903	-1	0	229	-21	0	-209
8/31/2004	7183	31	418	16	120	-2818	109	1249	914	-1	0	228	-21	-1	-210
9/30/2004	7213	30	414	16	120	-2823	108	1275	897	-1	0	224	-21	0	-204
10/31/2004	7244	31	-1359	490	811	-267	46	10	872	-1	0	-342	-36	-1	-210
11/30/2004	7274	30	701	16	120	-2825	134	1050	897	-1	0	133	-25	-1	-196
12/31/2004	7305	31	-1595	583	1012	-184	81	-70	877	-1	0	-441	-38	-1	-207
1/31/2005	7336	31	-3553	1331	2218	-41	230	157	853	-1	0	-923	-38	-1	-202
2/28/2005	7364	28	-1880	853	1430	-104	234	-481	762	-1	0	-611	-28	-1	-181
3/31/2005	7395	31	72	223	402	-452	157	-813	846	-1	0	-199	-26	-1	-204
4/30/2005	7425	30	957	18	70	-1923	132	124	833	-1	0	10	-11	0	-202
5/31/2005	7456	31	880	16	88	-2564	133	723	864	-1	0	90	-7	0	-215
6/30/2005	7486	30	727	16	88	-2563	115	872	823	-1	0	149	-8	0	-212
7/31/2005	7517	31	524	16	97	-2290	108	789	835	-1	0	167	-18	0	-221
8/31/2005	7548	31	470	16	97	-2290	109	798	844	-1	0	200	-21	0	-218
9/30/2005	7578	30	432	16	97	-2292	97	871	812	-1	0	205	-21	0	-210
10/31/2005	7609	31	53	41	126	-1214	54	190	828	-1	0	173	-28	0	-215
11/30/2005	7639	30	433	16	90	-2142	101	698	827	-1	0	214	-23	0	-207
12/31/2005	7670	31	392	16	97	-2287	100	827	867	0	0	230	-22	0	-215
1/31/2006	7701	31	-749	321	539	-584	61	-28	854	-1	0	-161	-30	0	-215
2/28/2006	7729	28	-180	224	338	-798	75	-151	780	0	0	-64	-29	0	-191
3/31/2006	7760	31	-906	359	681	-418	90	-225	859	-1	0	-190	-33	0	-209
4/30/2006	7790	30	-727	347	659	-461	91	-288	825	-1	0	-207	-32	0	-197
5/31/2006	7821	31	335	56	159	-1387	104	1	862	-1	0	111	-29	0	-204
6/30/2006	7851	30	935	16	140	-3688	185	1563	870	-1	0	211	-16	0	-210
7/31/2006	7882	31	326	16	96	-2286	98	840	937	-1	0	219	-20	0	-220
8/31/2006	7913	31	372	16	96	-2287	89	796	929	-1	0	234	-20	0	-219
9/30/2006	7943	30	363	16	96	-2290	92	829	900	-1	0	231	-20	0	-212
10/31/2006	7974	31	335	16	96	-2287	94	826	927	-1	0	240	-21	0	-220
11/30/2006	8004	30	327	16	96	-2290	102	845	907	-1	0	236	-20	0	-214
12/31/2006	8035	31	162	20	79	-1706	69	456	923	-1	0	247	-23	0	-218
1/31/2007	8066	31	-383	144	277	-554	31	-220	877	-1	0	75	-28	0	-214
2/28/2007	8094	28	161	40	138	-1385	67	204	824	-1	0	171	-22	0	-191
3/31/2007	8125	31	405	16	94	-2246	97	689	939	-1	0	250	-22	0	-214
4/30/2007	8155	30	96	29	79	-1440	55	290	891	-1	0	237	-25	0	-205
5/31/2007	8186	31	384	16	94	-2246	89	714	943	-1	0	249	-23	0	-213
6/30/2007	8216	30	341	16	94	-2250	86	790	919	-1	0	241	-21	0	-209
7/31/2007	8247	31	359	16	103	-2583	104	1004	995	-1	0	247	-21	0	-216
8/31/2007	8278	31	338	16	103	-2587	96	1028	1001	-1	0	249	-21	0	-217
9/30/2007	8308	30	317	16	101	-2551	91	1053	971	-1	0	243	-23	0	-212
10/31/2007	8339	31	302	16	103	-2589	92	1077	1001	-1	0	249	-23	0	-219
11/30/2007	8369	30	308	16	103	-2592	102	1088	979	-1	0	240	-23	0	-213
12/31/2007	8400	31	-818	238	433	-375	29	-112	909	-1	0	-49	-32	0	-218
1/31/2008	8431	31	-2809	997	1713	-46	151	90	871	-1	0	-716	-37	0	-208
2/29/2008	8460	29	200	98	209	-640	93	-460	827	-1	0	-99	-31	0	-190
3/31/2008	8491	31	703	16	85	-2204	113	523	897	-1	0	109	-25	0	-209
4/30/2008	8521	30	488	16	85	-2203	93	712	868	-1	0	180	-23	0	-207

Flow Budget for Aquifer B in Santa Paula Basin

Date	Stress	days in month	influx(+) outflux(-)												
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula A	Fillmore B	Mound L2-4	Oxnard UAS	Santa Paula C	Mound L5	Oxnard LAS	Mound L6 L7
5/31/2008	8552	31	414	16	85	-2198	83	743	898	-1	0	210	-26	0	-217
6/30/2008	8582	30	389	16	85	-2201	80	793	873	-1	0	209	-25	0	-211
7/31/2008	8613	31	459	16	112	-2826	113	1188	959	-1	0	228	-25	0	-217
8/31/2008	8644	31	413	16	112	-2829	110	1227	969	-1	0	232	-25	0	-218
9/30/2008	8674	30	398	16	112	-2834	101	1286	939	-1	0	225	-24	0	-213
10/31/2008	8705	31	350	16	112	-2832	97	1304	966	-1	0	239	-25	0	-221
11/30/2008	8735	30	-561	158	301	-612	23	35	872	-1	0	35	-32	0	-214
12/31/2008	8766	31	-354	149	286	-646	45	-177	904	-1	0	53	-35	0	-218
1/31/2009	8797	31	309	16	65	-1643	65	257	945	-1	0	247	-33	0	-220
2/28/2009	8825	28	-1203	459	734	-152	66	-171	799	-1	0	-297	-33	0	-194
3/31/2009	8856	31	503	16	65	-1694	82	186	935	-1	0	160	-32	0	-212
4/30/2009	8886	30	366	16	78	-1993	85	554	928	-1	0	216	-29	0	-212
5/31/2009	8917	31	292	16	78	-1989	73	589	955	-1	0	243	-29	-1	-220
6/30/2009	8947	30	278	16	78	-1992	72	637	926	-1	0	235	-28	-1	-213
7/31/2009	8978	31	420	16	116	-2864	113	1215	997	-1	0	234	-23	-1	-217
8/31/2009	9009	31	373	16	116	-2868	110	1261	1007	-1	0	232	-23	-1	-218
9/30/2009	9039	30	366	16	116	-2872	105	1305	982	-1	0	224	-23	-1	-212
10/31/2009	9070	31	-700	232	368	-555	11	37	907	-1	0	-42	-33	-1	-222
11/30/2009	9100	30	526	16	116	-2873	129	1147	971	-1	0	213	-26	-1	-212
12/31/2009	9131	31	-861	299	520	-426	46	-75	907	-1	0	-153	-35	-1	-221
1/31/2010	9162	31	-1577	584	1024	-134	101	-181	884	-1	0	-432	-39	-1	-212
2/28/2010	9190	28	-638	319	578	-322	89	-359	800	-1	0	-239	-36	0	-186
3/31/2010	9221	31	739	16	78	-2361	123	591	936	-1	0	120	-33	-1	-206
4/30/2010	9251	30	-119	105	212	-716	29	-183	867	-1	0	52	-34	-1	-206
5/31/2010	9282	31	587	16	80	-2394	98	723	932	-1	0	201	-31	-1	-212
6/30/2010	9312	30	473	16	80	-2402	89	855	904	-1	0	204	-28	-1	-207
7/31/2010	9343	31	460	16	118	-2928	130	1236	1002	-1	0	220	-30	-1	-218
8/31/2010	9374	31	414	16	118	-2932	126	1272	1015	-1	0	226	-30	-1	-220
9/30/2010	9404	30	397	16	118	-2935	122	1319	994	-1	0	218	-29	-1	-214
10/31/2010	9435	31	-404	138	245	-745	18	22	918	-1	0	70	-34	-1	-220
11/30/2010	9465	30	136	35	132	-1573	61	373	912	-1	0	176	-31	-1	-213
12/31/2010	9496	31	-2339	816	1394	-117	128	89	878	-1	0	-587	-37	-1	-212
1/31/2011	9527	31	781	16	81	-2204	141	465	944	-1	0	21	-33	-1	-204
2/28/2011	9555	28	-680	281	492	-340	48	-190	801	-1	0	-185	-33	0	-189
3/31/2011	9586	31	-1233	569	889	-145	102	-386	874	-1	0	-410	-39	-1	-206
4/30/2011	9616	30	719	16	81	-2203	132	491	909	-1	0	91	-33	0	-195
5/31/2011	9647	31	328	20	66	-1568	67	248	917	-1	0	172	-32	0	-208
6/30/2011	9677	30	458	16	81	-2197	92	696	905	-1	0	190	-29	0	-203
7/31/2011	9708	31	385	16	101	-2433	97	925	957	-1	0	194	-25	0	-209
8/31/2011	9739	31	342	16	101	-2435	96	947	962	-1	0	212	-25	0	-210
9/30/2011	9769	30	327	16	101	-2438	91	991	934	-1	0	212	-24	0	-203
10/31/2011	9800	31	-2	48	89	-1170	16	169	899	-1	0	201	-30	0	-211
11/30/2011	9830	30	62	60	118	-1201	41	125	870	-1	0	165	-29	0	-201
12/31/2011	9861	31	325	16	99	-2408	114	899	960	-1	0	235	-26	0	-207
1/31/2012	9892	31	198	18	94	-1849	65	558	941	-1	0	221	-30	0	-209
2/29/2012	9921	29	326	15	99	-2458	105	988	931	-1	0	222	-24	0	-196
3/31/2012	9952	31	-534	164	307	-612	18	-31	919	-1	0	16	-31	-1	-211
4/30/2012	9982	30	-278	118	246	-648	27	-180	890	-1	0	65	-31	-1	-201
5/31/2012	10013	31	448	16	99	-2455	110	802	989	-1	0	235	-27	0	-209
6/30/2012	10043	30	355	16	99	-2459	100	940	962	-1	0	226	-25	0	-205
7/31/2012	10074	31	359	16	136	-2758	122	1244	902	-1	0	223	-25	-1	-214
8/31/2012	10105	31	334	16	136	-2762	121	1281	899	-1	0	221	-25	-1	-216
9/30/2012	10135	30	325	16	136	-2767	115	1332	870	-1	0	213	-24	-1	-211
10/31/2012	10166	31	97	16	106	-1855	53	762	856	-1	0	217	-26	-1	-220
11/30/2012	10196	30	-193	85	172	-929	39	94	856	-1	0	130	-30	-1	-214
12/31/2012	10227	31	-363	152	260	-667	51	-135	891	-1	0	70	-34	-1	-218
1/31/2013	10258	31	-83	66	155	-763	36	-175	869	-1	0	156	-35	-1	-218
2/28/2013	10286	28	367	15	107	-2045	92	751	739	-1	0	202	-27	-1	-196
3/31/2013	10317	31	51	27	86	-1326	47	320	829	-1	0	221	-32	-1	-217
4/30/2013	10347	30	304	16	107	-2041	83	775	787	-1	0	213	-29	-1	-209
5/31/2013	10378	31	250	16	107	-2040	79	808	813	-1	0	218	-29	-1	-217
6/30/2013	10408	30	250	16	107	-2043	80	839	787	-1	0	210	-28	-1	-211
7/31/2013	10439	31	239	16	116	-2162	94	914	827	-1	0	215	-31	-1	-222
8/31/2013	10470	31	232	16	116	-2164	91	920	835	-1	0	215	-32	-1	-224
9/30/2013	10500	30	235	16	116	-2167	91	944	812	-1	0	207	-31	-1	-218
10/31/2013	10531	31	222	16	116	-2165	87	928	847	-1	0	214	-32	-1	-227
11/30/2013	10561	30	188	16	108	-1988	79	819	831	-1	0	208	-32	-1	-222
12/31/2013	10592	31	233	16	116	-2166	83	912	860	-1	0	215	-33	-1	-231
1/31/2014	10623	31	339	16	142	-2676	109	1241	883	-1	0	213	-30	-1	-233
2/28/2014	10651	28	-864	294	477	-417	38	45	819	-1	0	-151	-32	-1	-208

Flow Budget for Aquifer B in Santa Paula Basin

Date	Stress	days in month	influx(+) outflux(-)												
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula A	Fillmore B	Mound L2-4	Oxnard UAS	Santa Paula C	Mound L5	Oxnard LAS	Mound L6 L7
3/31/2014	10682	31	-10	81	198	-996	35	-12	916	-1	0	60	-35	-1	-229
4/30/2014	10712	30	467	16	142	-2676	122	1133	860	-1	0	198	-30	-1	-225
5/31/2014	10743	31	370	16	142	-2678	112	1223	883	-1	0	202	-31	-1	-235
6/30/2014	10773	30	368	16	142	-2681	110	1258	857	-1	0	194	-30	-1	-230
7/31/2014	10804	31	279	16	126	-2495	92	1138	911	-1	0	202	-28	-1	-234
8/31/2014	10835	31	301	16	126	-2494	91	1109	917	-1	0	203	-28	-1	-234
9/30/2014	10865	30	318	16	126	-2497	93	1115	891	-1	0	199	-27	-1	-227
10/31/2014	10896	31	311	16	126	-2501	90	1095	925	-1	0	208	-29	-1	-236
11/30/2014	10926	30	97	25	100	-1739	52	627	904	0	0	202	-31	-1	-229
12/31/2014	10957	31	-964	344	571	-338	29	-79	937	0	0	-228	-38	-1	-232
1/31/2015	10988	31	-96	90	162	-611	23	-301	929	-1	0	84	-38	-1	-231
2/28/2015	11016	28	377	15	94	-1869	63	565	811	0	0	189	-29	-1	-210
3/31/2015	11047	31	170	18	76	-1460	24	338	899	0	0	212	-33	-1	-236
4/30/2015	11077	30	301	16	105	-1994	61	734	839	0	0	201	-30	-1	-227
5/31/2015	11108	31	273	16	90	-1889	41	638	893	0	0	210	-31	-1	-235
6/30/2015	11138	30	255	16	105	-1993	62	784	835	0	0	200	-30	-1	-227
7/31/2015	11169	31	268	16	78	-1824	15	590	902	0	0	216	-25	-1	-226
8/31/2015	11200	31	292	16	127	-2382	83	1055	857	0	0	204	-24	-1	-223
9/30/2015	11230	30	226	16	93	-1922	40	756	836	0	0	199	-23	-1	-213
10/31/2015	11261	31	307	16	127	-2385	83	1053	847	0	0	201	-25	-1	-219
11/30/2015	11291	30	308	16	127	-2389	83	1089	816	0	0	192	-24	-1	-212
12/31/2015	11322	31	295	16	127	-2388	80	1077	846	0	0	197	-26	-1	-219

Flow Budget for Aquifer C in Santa Paula Basin

Date	Stress	days in month	influx(+) outflux(-)								
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula B	Fillmore C	Oxnard	Mound L8 L11
1/31/1985	31	31	597	0	22	-183	-9	-440	289	-2	-211
2/28/1985	59	28	605	0	19	-167	-8	-449	259	-1	-202
3/31/1985	90	31	715	0	17	-186	-9	-529	286	-2	-233
4/30/1985	120	30	771	0	0	-190	-8	-552	271	-1	-235
5/31/1985	151	31	790	0	0	-196	-8	-556	279	-2	-252
6/30/1985	181	30	761	0	0	-189	-8	-529	270	-2	-251
7/31/1985	212	31	787	0	0	-197	-8	-539	279	-2	-267
8/31/1985	243	31	779	0	0	-196	-8	-525	279	-2	-276
9/30/1985	273	30	748	0	0	-188	-8	-497	269	-2	-274
10/31/1985	304	31	759	0	0	-192	-8	-500	280	-2	-288
11/30/1985	334	30	306	1	118	-166	-9	-211	286	-2	-273
12/31/1985	365	31	668	0	0	-184	-8	-443	295	-2	-276
1/31/1986	396	31	332	1	100	-168	-9	-232	301	-2	-271
2/28/1986	424	28	-111	3	208	-146	-8	60	282	-1	-228
3/31/1986	455	31	109	2	132	-159	-8	-102	316	-2	-226
4/30/1986	485	30	435	0	22	-160	-7	-318	296	-1	-214
5/31/1986	516	31	588	0	0	-177	-7	-403	290	-1	-241
6/30/1986	546	30	605	0	0	-172	-7	-407	277	-1	-250
7/31/1986	577	31	620	0	0	-176	-7	-417	291	-1	-265
8/31/1986	608	31	618	0	0	-176	-7	-415	294	-1	-269
9/30/1986	638	30	556	0	15	-162	-8	-384	291	-1	-264
10/31/1986	669	31	623	0	0	-175	-7	-413	296	-1	-279
11/30/1986	699	30	495	0	30	-158	-8	-341	298	-1	-273
12/31/1986	730	31	616	0	0	-173	-7	-407	300	-2	-285
1/31/1987	761	31	475	0	36	-160	-8	-324	310	-2	-286
2/28/1987	789	28	460	0	18	-147	-7	-310	282	-1	-256
3/31/1987	820	31	416	0	43	-157	-8	-285	317	-2	-282
4/30/1987	850	30	562	0	0	-167	-6	-365	295	-2	-277
5/31/1987	881	31	582	0	0	-171	-7	-371	301	-2	-293
6/30/1987	911	30	567	0	0	-165	-6	-355	289	-2	-290
7/31/1987	942	31	588	0	0	-170	-7	-365	296	-2	-303
8/31/1987	973	31	585	0	0	-169	-7	-361	297	-2	-307
9/30/1987	1003	30	572	0	0	-163	-7	-351	286	-2	-300
10/31/1987	1034	31	452	0	26	-151	-8	-283	309	-2	-307
11/30/1987	1064	30	455	0	28	-152	-7	-300	307	-2	-293
12/31/1987	1095	31	103	1	102	-143	-8	-51	328	-2	-290
1/31/1988	1126	31	224	1	67	-143	-7	-154	328	-2	-273
2/29/1988	1155	29	299	0	47	-136	-6	-217	304	-2	-251
3/31/1988	1186	31	492	0	0	-155	-6	-333	317	-2	-277
4/30/1988	1216	30	127	1	102	-135	-7	-98	316	-2	-266
5/31/1988	1247	31	482	0	0	-159	-5	-316	312	-2	-275
6/30/1988	1277	30	485	0	0	-154	-6	-310	296	-1	-277
7/31/1988	1308	31	501	0	0	-161	-6	-314	308	-2	-292
8/31/1988	1339	31	509	0	0	-161	-6	-318	308	-2	-298
9/30/1988	1369	30	500	0	0	-157	-6	-308	296	-2	-293
10/31/1988	1400	31	517	0	0	-160	-6	-316	306	-2	-307
11/30/1988	1430	30	433	0	15	-136	-7	-281	306	-2	-297
12/31/1988	1461	31	34	1	103	-129	-7	-2	331	-2	-295
1/31/1989	1492	31	428	0	0	-139	-6	-287	326	-2	-288
2/28/1989	1520	28	69	1	74	-114	-6	-38	305	-2	-257
3/31/1989	1551	31	405	0	0	-132	-6	-288	336	-2	-281
4/30/1989	1581	30	427	0	0	-133	-5	-293	316	-2	-280
5/31/1989	1612	31	455	0	0	-136	-6	-308	324	-2	-298
6/30/1989	1642	30	444	0	0	-131	-6	-297	314	-2	-294
7/31/1989	1673	31	460	0	0	-140	-6	-300	326	-2	-309
8/31/1989	1704	31	459	0	0	-140	-6	-298	327	-2	-313

Flow Budget for Aquifer C in Santa Paula Basin

Date	Stress	days in month	influx(+) outflux(-)								
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula B	Fillmore C	Oxnard	Mound L8 L11
9/30/1989	1734	30	446	0	0	-135	-6	-286	316	-2	-306
10/31/1989	1765	31	458	0	0	-138	-6	-294	328	-2	-318
11/30/1989	1795	30	448	0	0	-134	-6	-286	316	-2	-310
12/31/1989	1826	31	461	0	0	-137	-6	-293	326	-2	-322
1/31/1990	1857	31	166	1	79	-120	-7	-113	342	-2	-317
2/28/1990	1885	28	110	1	70	-107	-6	-77	315	-2	-276
3/31/1990	1916	31	418	0	0	-138	-5	-276	336	-2	-306
4/30/1990	1946	30	430	0	0	-132	-5	-282	320	-2	-304
5/31/1990	1977	31	435	0	0	-129	-6	-289	334	-2	-318
6/30/1990	2007	30	434	0	0	-133	-5	-277	320	-2	-313
7/31/1990	2038	31	439	0	0	-133	-6	-278	328	-2	-325
8/31/1990	2069	31	439	0	0	-132	-6	-278	327	-2	-323
9/30/1990	2099	30	424	0	0	-128	-6	-267	315	-2	-314
10/31/1990	2130	31	435	0	0	-130	-6	-273	326	-2	-326
11/30/1990	2160	30	421	0	0	-126	-6	-263	315	-2	-317
12/31/1990	2191	31	432	0	0	-129	-6	-270	325	-2	-328
1/31/1991	2222	31	329	0	28	-114	-6	-220	336	-2	-327
2/28/1991	2250	28	90	1	51	-100	-6	-37	312	-2	-286
3/31/1991	2281	31	-912	4	327	-99	-7	641	363	-2	-280
4/30/1991	2311	30	56	0	0	-112	-5	-5	341	-2	-245
5/31/1991	2342	31	198	0	0	-118	-5	-123	344	-2	-269
6/30/1991	2372	30	275	0	0	-116	-5	-187	330	-2	-272
7/31/1991	2403	31	316	0	0	-121	-6	-217	343	-2	-291
8/31/1991	2434	31	334	0	0	-121	-6	-229	343	-2	-297
9/30/1991	2464	30	337	0	0	-118	-5	-228	330	-2	-292
10/31/1991	2495	31	363	0	0	-121	-6	-247	341	-2	-306
11/30/1991	2525	30	353	0	0	-118	-5	-240	332	-2	-299
12/31/1991	2556	31	-155	1	97	-104	-7	131	361	-2	-297
1/31/1992	2587	31	56	1	49	-102	-6	-59	368	-2	-280
2/29/1992	2616	29	-889	4	323	-90	-6	576	357	-2	-240
3/31/1992	2647	31	-572	2	179	-93	-6	358	393	-2	-224
4/30/1992	2677	30	28	0	0	-100	-5	-47	367	-2	-214
5/31/1992	2708	31	134	0	0	-106	-5	-127	373	-2	-242
6/30/1992	2738	30	208	0	0	-105	-5	-182	359	-1	-251
7/31/1992	2769	31	276	0	0	-127	-5	-214	368	-1	-274
8/31/1992	2800	31	308	0	0	-129	-5	-231	366	-1	-285
9/30/1992	2830	30	311	0	0	-125	-5	-228	352	-1	-282
10/31/1992	2861	31	197	0	28	-111	-6	-170	378	-2	-291
11/30/1992	2891	30	317	0	0	-125	-5	-244	361	-1	-281
12/31/1992	2922	31	-266	2	123	-104	-6	169	390	-1	-280
1/31/1993	2953	31	-874	4	316	-97	-6	538	409	-1	-251
2/28/1993	2981	28	-865	3	280	-83	-5	519	381	-1	-192
3/31/1993	3012	31	-451	1	104	-94	-5	237	424	-1	-179
4/30/1993	3042	30	9	0	0	-120	-4	-63	393	-1	-185
5/31/1993	3073	31	117	0	0	-126	-5	-135	398	-1	-221
6/30/1993	3103	30	170	0	0	-120	-5	-172	385	-1	-232
7/31/1993	3134	31	232	0	0	-142	-5	-202	397	-1	-254
8/31/1993	3165	31	268	0	0	-142	-5	-223	396	-1	-268
9/30/1993	3195	30	280	0	0	-139	-5	-225	382	-1	-268
10/31/1993	3226	31	302	0	0	-143	-5	-239	393	-1	-283
11/30/1993	3256	30	280	0	0	-122	-6	-237	386	-1	-277
12/31/1993	3287	31	188	0	25	-118	-6	-184	405	-1	-285
1/31/1994	3318	31	318	0	0	-127	-5	-271	395	-1	-285
2/28/1994	3346	28	-416	2	145	-95	-6	275	366	-1	-246
3/31/1994	3377	31	-64	1	50	-107	-6	-4	409	-1	-250
4/30/1994	3407	30	209	0	0	-123	-5	-198	382	-1	-241

Flow Budget for Aquifer C in Santa Paula Basin

Date	Stress	days in month	influx(+) outflux(-)								
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula B	Fillmore C	Oxnard	Mound L8 L11
5/31/1994	3438	31	262	0	0	-126	-5	-239	390	-1	-258
6/30/1994	3468	30	284	0	0	-123	-5	-247	375	-1	-260
7/31/1994	3499	31	297	0	0	-118	-5	-255	384	-1	-279
8/31/1994	3530	31	303	0	0	-117	-5	-255	383	-1	-286
9/30/1994	3560	30	300	0	0	-112	-5	-247	368	-1	-281
10/31/1994	3591	31	301	0	0	-111	-6	-257	389	-1	-295
11/30/1994	3621	30	254	0	11	-107	-6	-226	379	-1	-283
12/31/1994	3652	31	249	0	17	-110	-6	-231	395	-1	-291
1/31/1995	3683	31	-1586	7	572	-93	-7	986	421	-1	-255
2/28/1995	3711	28	-255	0	40	-88	-5	146	382	-1	-188
3/31/1995	3742	31	-855	3	242	-91	-6	509	429	-1	-195
4/30/1995	3772	30	-63	0	0	-111	-4	-14	401	-1	-180
5/31/1995	3803	31	-12	0	15	-106	-5	-63	410	-1	-212
6/30/1995	3833	30	129	0	0	-115	-5	-148	390	-1	-225
7/31/1995	3864	31	195	0	0	-134	-5	-179	398	-1	-249
8/31/1995	3895	31	243	0	0	-134	-5	-213	396	-1	-263
9/30/1995	3925	30	267	0	0	-130	-5	-226	380	-1	-263
10/31/1995	3956	31	288	0	0	-134	-5	-240	392	-1	-277
11/30/1995	3986	30	292	0	0	-130	-5	-240	378	-1	-273
12/31/1995	4017	31	87	0	34	-112	-6	-103	401	-1	-276
1/31/1996	4048	31	220	0	16	-114	-5	-222	399	-1	-269
2/29/1996	4077	29	-640	2	225	-95	-6	395	387	-1	-236
3/31/1996	4108	31	-73	0	40	-108	-6	-8	415	-1	-229
4/30/1996	4138	30	173	0	0	-117	-5	-189	386	-1	-225
5/31/1996	4169	31	242	0	0	-125	-5	-236	392	-1	-244
6/30/1996	4199	30	263	0	0	-121	-5	-240	375	-1	-250
7/31/1996	4230	31	299	0	0	-122	-5	-258	379	-1	-270
8/31/1996	4261	31	312	0	0	-121	-5	-259	375	-1	-279
9/30/1996	4291	30	312	0	0	-117	-5	-250	359	-1	-276
10/31/1996	4322	31	75	1	60	-108	-6	-102	387	-1	-281
11/30/1996	4352	30	18	1	54	-105	-6	-56	380	-1	-261
12/31/1996	4383	31	-559	2	209	-102	-6	334	403	-1	-249
1/31/1997	4414	31	-494	2	144	-99	-6	295	412	-1	-220
2/28/1997	4442	28	70	0	0	-108	-4	-103	360	-1	-190
3/31/1997	4473	31	171	0	0	-119	-5	-192	393	-1	-223
4/30/1997	4503	30	215	0	0	-117	-5	-220	378	-1	-229
5/31/1997	4534	31	252	0	0	-121	-5	-243	389	-1	-250
6/30/1997	4564	30	258	0	0	-118	-5	-237	375	-1	-251
7/31/1997	4595	31	294	0	0	-128	-5	-248	376	-1	-267
8/31/1997	4626	31	305	0	0	-127	-5	-247	369	-1	-273
9/30/1997	4656	30	299	0	0	-123	-5	-238	355	-1	-268
10/31/1997	4687	31	310	0	0	-125	-5	-247	367	-1	-277
11/30/1997	4717	30	-9	1	65	-105	-6	-30	370	-1	-263
12/31/1997	4748	31	-479	2	142	-102	-6	324	396	-1	-249
1/31/1998	4779	31	-226	1	74	-101	-6	113	398	-1	-226
2/28/1998	4807	28	-1666	6	560	-79	-6	1014	373	-1	-160
3/31/1998	4838	31	-590	1	100	-85	-5	310	415	-1	-106
4/30/1998	4868	30	-250	0	39	-92	-5	77	394	-1	-132
5/31/1998	4899	31	-391	1	113	-94	-5	165	408	-1	-165
6/30/1998	4929	30	47	0	0	-109	-4	-104	380	-1	-183
7/31/1998	4960	31	129	0	0	-125	-5	-146	387	-1	-214
8/31/1998	4991	31	180	0	0	-125	-5	-180	387	-1	-232
9/30/1998	5021	30	225	0	0	-122	-5	-210	373	-1	-237
10/31/1998	5052	31	260	0	0	-125	-5	-234	382	-1	-254
11/30/1998	5082	30	214	0	12	-115	-5	-204	370	-1	-248
12/31/1998	5113	31	278	0	0	-123	-5	-246	380	-1	-260

Flow Budget for Aquifer C in Santa Paula Basin

Date	Stress	days in month	influx(+) outflux(-) STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula B	Fillmore C	Oxnard	Mound L8 L11
1/31/1999	5144	31	67	0	49	-110	-6	-106	389	-1	-258
2/28/1999	5172	28	189	0	19	-103	-5	-196	353	-1	-234
3/31/1999	5203	31	-28	1	60	-109	-6	-33	395	-1	-253
4/30/1999	5233	30	34	0	41	-106	-5	-86	383	-1	-235
5/31/1999	5264	31	265	0	0	-121	-5	-253	385	-1	-247
6/30/1999	5294	30	276	0	0	-117	-5	-252	369	-1	-249
7/31/1999	5325	31	286	0	0	-115	-5	-255	374	-1	-262
8/31/1999	5356	31	295	0	0	-115	-5	-255	369	-1	-267
9/30/1999	5386	30	293	0	0	-111	-5	-247	354	-1	-263
10/31/1999	5417	31	308	0	0	-114	-5	-257	365	-1	-275
11/30/1999	5447	30	291	0	0	-107	-5	-247	354	-1	-265
12/31/1999	5478	31	308	0	0	-113	-5	-258	365	-1	-276
1/31/2000	5509	31	163	0	28	-108	-6	-161	377	-1	-272
2/29/2000	5538	29	-683	2	215	-94	-6	461	368	-1	-234
3/31/2000	5569	31	-148	1	48	-104	-6	66	394	-1	-223
4/30/2000	5599	30	-134	1	49	-100	-5	43	378	-1	-207
5/31/2000	5630	31	175	0	0	-115	-5	-184	377	-1	-224
6/30/2000	5660	30	224	0	0	-112	-5	-208	360	-1	-238
7/31/2000	5691	31	244	0	0	-113	-5	-220	372	-1	-257
8/31/2000	5722	31	271	0	0	-113	-5	-236	369	-1	-265
9/30/2000	5752	30	276	0	0	-109	-5	-235	355	-1	-262
10/31/2000	5783	31	157	0	35	-106	-6	-164	377	-1	-270
11/30/2000	5813	30	279	0	0	-109	-5	-238	358	-1	-264
12/31/2000	5844	31	292	0	0	-112	-5	-248	369	-1	-276
1/31/2001	5875	31	-542	2	179	-101	-6	365	390	-1	-259
2/28/2001	5903	28	-674	2	199	-88	-6	436	365	-1	-206
3/31/2001	5934	31	-665	2	167	-94	-6	416	409	-1	-196
4/30/2001	5964	30	-129	0	36	-99	-5	13	390	-1	-179
5/31/2001	5995	31	91	0	0	-112	-4	-126	386	-1	-211
6/30/2001	6025	30	173	0	0	-109	-5	-178	367	-1	-226
7/31/2001	6056	31	207	0	0	-113	-5	-204	382	-1	-244
8/31/2001	6087	31	234	0	0	-114	-5	-221	383	-1	-256
9/30/2001	6117	30	248	0	0	-110	-5	-225	368	-1	-256
10/31/2001	6148	31	271	0	0	-113	-5	-241	380	-1	-271
11/30/2001	6178	30	-137	1	69	-100	-6	65	383	-1	-252
12/31/2001	6209	31	128	0	23	-107	-6	-163	397	-1	-250
1/31/2002	6240	31	213	0	10	-108	-5	-228	390	-1	-251
2/28/2002	6268	28	249	0	0	-102	-4	-233	343	-1	-233
3/31/2002	6299	31	281	0	0	-112	-5	-260	379	-1	-263
4/30/2002	6329	30	276	0	0	-108	-5	-249	365	-1	-259
5/31/2002	6360	31	283	0	0	-111	-5	-256	377	-1	-268
6/30/2002	6390	30	276	0	0	-107	-5	-246	363	-1	-262
7/31/2002	6421	31	290	0	0	-116	-5	-246	372	-1	-276
8/31/2002	6452	31	294	0	0	-115	-5	-245	371	-1	-280
9/30/2002	6482	30	288	0	0	-111	-5	-237	357	-1	-274
10/31/2002	6513	31	296	0	0	-113	-5	-243	371	-1	-286
11/30/2002	6543	30	-333	1	100	-96	-6	240	376	-1	-261
12/31/2002	6574	31	-321	1	96	-99	-6	201	396	-1	-244
1/31/2003	6605	31	181	0	0	-107	-5	-187	380	-1	-241
2/28/2003	6633	28	-378	1	107	-89	-5	247	353	-1	-214
3/31/2003	6664	31	-255	1	76	-98	-6	129	397	-1	-220
4/30/2003	6694	30	51	0	33	-100	-5	-124	380	-1	-214
5/31/2003	6725	31	26	0	41	-102	-5	-104	392	-1	-227
6/30/2003	6755	30	213	0	0	-106	-4	-215	367	-1	-234
7/31/2003	6786	31	238	0	0	-107	-5	-224	374	-1	-256
8/31/2003	6817	31	254	0	0	-107	-5	-232	374	-1	-264

Flow Budget for Aquifer C in Santa Paula Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula B	Fillmore C	Oxnard	Mound L8 L11
			influx(+) outflux(-)								
9/30/2003	6847	30	254	0	0	-103	-5	-227	359	-1	-260
10/31/2003	6878	31	266	0	0	-106	-5	-235	372	-1	-274
11/30/2003	6908	30	38	0	44	-96	-6	-75	375	-1	-261
12/31/2003	6939	31	61	0	47	-100	-6	-108	391	-1	-264
1/31/2004	6970	31	263	0	0	-110	-5	-243	379	-1	-265
2/29/2004	6999	29	-582	2	171	-91	-6	396	369	-1	-236
3/31/2004	7030	31	69	0	0	-103	-5	-85	385	-1	-240
4/30/2004	7060	30	193	0	0	-107	-5	-191	367	-1	-240
5/31/2004	7091	31	232	0	0	-110	-5	-220	378	-1	-256
6/30/2004	7121	30	247	0	0	-107	-5	-227	365	-1	-257
7/31/2004	7152	31	257	0	0	-107	-5	-229	375	-1	-273
8/31/2004	7183	31	261	0	0	-106	-5	-228	375	-1	-278
9/30/2004	7213	30	260	0	0	-103	-5	-224	362	-1	-274
10/31/2004	7244	31	-523	2	179	-97	-7	342	394	-1	-267
11/30/2004	7274	30	138	0	0	-103	-5	-133	371	-1	-248
12/31/2004	7305	31	-678	2	203	-95	-6	441	401	-1	-243
1/31/2005	7336	31	-1541	6	526	-86	-6	923	420	-1	-198
2/28/2005	7364	28	-1009	3	250	-73	-5	611	388	-1	-126
3/31/2005	7395	31	-433	1	57	-86	-5	199	426	-1	-128
4/30/2005	7425	30	-96	0	0	-103	-4	-10	399	-1	-161
5/31/2005	7456	31	27	0	0	-105	-4	-90	403	-1	-208
6/30/2005	7486	30	125	0	0	-110	-4	-149	386	-1	-227
7/31/2005	7517	31	167	0	0	-122	-5	-167	397	-1	-248
8/31/2005	7548	31	210	0	0	-121	-5	-200	398	-1	-260
9/30/2005	7578	30	227	0	0	-117	-5	-205	381	-1	-260
10/31/2005	7609	31	160	0	19	-111	-6	-173	401	-1	-269
11/30/2005	7639	30	235	0	0	-115	-5	-214	383	-1	-264
12/31/2005	7670	31	261	0	0	-120	-5	-230	394	-1	-279
1/31/2006	7701	31	-290	1	118	-104	-6	161	413	-1	-268
2/28/2006	7729	28	-183	1	92	-99	-5	64	380	-1	-225
3/31/2006	7760	31	-350	1	105	-105	-6	190	425	-1	-233
4/30/2006	7790	30	-386	1	105	-100	-5	207	412	-1	-208
5/31/2006	7821	31	33	0	19	-113	-5	-111	413	-1	-211
6/30/2006	7851	30	208	0	0	-121	-4	-211	379	-1	-229
7/31/2006	7882	31	221	0	0	-118	-5	-219	394	-1	-253
8/31/2006	7913	31	250	0	0	-118	-5	-234	390	-1	-263
9/30/2006	7943	30	259	0	0	-114	-5	-231	373	-1	-262
10/31/2006	7974	31	274	0	0	-117	-5	-240	384	-1	-277
11/30/2006	8004	30	274	0	0	-113	-5	-236	371	-1	-272
12/31/2006	8035	31	276	0	0	-112	-6	-247	390	-1	-281
1/31/2007	8066	31	39	0	43	-107	-6	-75	401	-1	-273
2/28/2007	8094	28	158	0	23	-103	-5	-171	359	-1	-242
3/31/2007	8125	31	280	0	0	-122	-5	-250	389	-1	-272
4/30/2007	8155	30	255	0	0	-109	-5	-237	379	-1	-264
5/31/2007	8186	31	284	0	0	-120	-5	-249	386	-1	-276
6/30/2007	8216	30	281	0	0	-116	-5	-241	372	-1	-272
7/31/2007	8247	31	289	0	0	-118	-5	-247	384	-1	-284
8/31/2007	8278	31	290	0	0	-116	-5	-249	384	-1	-286
9/30/2007	8308	30	287	0	0	-112	-5	-243	370	-1	-279
10/31/2007	8339	31	293	0	0	-114	-5	-249	384	-1	-289
11/30/2007	8369	30	283	0	0	-111	-5	-240	372	-1	-282
12/31/2007	8400	31	-129	1	82	-99	-7	49	404	-1	-281
1/31/2008	8431	31	-1096	4	336	-93	-7	716	418	-1	-247
2/29/2008	8460	29	-199	0	32	-92	-5	99	391	-1	-202
3/31/2008	8491	31	68	0	0	-109	-5	-109	403	-1	-227
4/30/2008	8521	30	160	0	0	-107	-5	-180	386	-1	-236

Flow Budget for Aquifer C in Santa Paula Basin

Date	Stress	days in month	influx(+) outflux(-)								
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula B	Fillmore C	Oxnard	Mound L8 L11
5/31/2008	8552	31	203	0	0	-110	-5	-210	398	-1	-256
6/30/2008	8582	30	213	0	0	-107	-5	-209	384	-1	-257
7/31/2008	8613	31	248	0	0	-116	-5	-228	391	-1	-272
8/31/2008	8644	31	258	0	0	-114	-5	-232	389	-1	-277
9/30/2008	8674	30	256	0	0	-110	-5	-225	374	-1	-272
10/31/2008	8705	31	273	0	0	-113	-5	-239	387	-1	-285
11/30/2008	8735	30	-14	1	48	-97	-6	-35	392	-1	-270
12/31/2008	8766	31	-5	1	44	-102	-6	-53	410	-1	-268
1/31/2009	8797	31	241	0	0	-105	-5	-247	402	-1	-267
2/28/2009	8825	28	-466	2	138	-88	-6	297	375	-1	-232
3/31/2009	8856	31	130	0	0	-107	-5	-160	410	-1	-247
4/30/2009	8886	30	202	0	0	-105	-5	-216	387	-1	-246
5/31/2009	8917	31	240	0	0	-108	-5	-243	398	-1	-264
6/30/2009	8947	30	239	0	0	-104	-5	-235	383	-1	-262
7/31/2009	8978	31	257	0	0	-117	-5	-234	393	-1	-277
8/31/2009	9009	31	258	0	0	-114	-5	-232	392	-1	-281
9/30/2009	9039	30	254	0	0	-110	-5	-224	377	-1	-276
10/31/2009	9070	31	-153	1	104	-96	-7	42	408	-1	-279
11/30/2009	9100	30	234	0	0	-112	-5	-213	382	-1	-267
12/31/2009	9131	31	-279	1	100	-96	-6	153	413	-1	-266
1/31/2010	9162	31	-644	2	162	-93	-6	432	413	-1	-241
2/28/2010	9190	28	-399	1	91	-84	-5	239	375	-1	-197
3/31/2010	9221	31	72	0	0	-107	-5	-120	400	-1	-220
4/30/2010	9251	30	-52	0	50	-94	-5	-52	395	-1	-222
5/31/2010	9282	31	175	0	0	-110	-5	-201	398	-1	-239
6/30/2010	9312	30	195	0	0	-106	-5	-204	382	-1	-244
7/31/2010	9343	31	237	0	0	-120	-5	-220	387	-2	-261
8/31/2010	9374	31	250	0	0	-118	-5	-226	385	-2	-268
9/30/2010	9404	30	249	0	0	-114	-5	-218	370	-2	-265
10/31/2010	9435	31	27	0	39	-101	-6	-70	398	-2	-270
11/30/2010	9465	30	148	0	28	-104	-5	-176	385	-2	-257
12/31/2010	9496	31	-879	3	248	-92	-6	587	414	-2	-248
1/31/2011	9527	31	-24	0	0	-101	-5	-21	402	-1	-229
2/28/2011	9555	28	-338	1	98	-84	-5	185	371	-1	-207
3/31/2011	9586	31	-686	2	191	-91	-6	410	421	-1	-214
4/30/2011	9616	30	31	0	0	-101	-4	-91	393	-1	-205
5/31/2011	9647	31	120	0	0	-103	-5	-172	405	-1	-226
6/30/2011	9677	30	160	0	0	-102	-5	-190	386	-1	-232
7/31/2011	9708	31	181	0	0	-108	-5	-194	395	-1	-251
8/31/2011	9739	31	207	0	0	-107	-5	-212	394	-1	-259
9/30/2011	9769	30	215	0	0	-103	-5	-212	378	-1	-256
10/31/2011	9800	31	175	0	16	-104	-6	-201	403	-1	-265
11/30/2011	9830	30	124	0	26	-101	-5	-165	395	-1	-254
12/31/2011	9861	31	231	0	0	-104	-5	-235	396	-1	-265
1/31/2012	9892	31	198	0	14	-105	-6	-221	403	-1	-266
2/29/2012	9921	29	230	0	0	-101	-4	-222	366	-1	-253
3/31/2012	9952	31	-66	1	64	-98	-6	-16	407	-1	-266
4/30/2012	9982	30	-16	1	51	-96	-6	-65	398	-1	-247
5/31/2012	10013	31	229	0	0	-107	-5	-235	394	-1	-258
6/30/2012	10043	30	231	0	0	-102	-5	-226	376	-1	-258
7/31/2012	10074	31	250	0	0	-119	-5	-223	386	-1	-272
8/31/2012	10105	31	249	0	0	-115	-5	-221	385	-1	-276
9/30/2012	10135	30	247	0	0	-112	-5	-213	370	-1	-271
10/31/2012	10166	31	247	0	0	-110	-5	-217	382	-1	-282
11/30/2012	10196	30	104	0	31	-97	-6	-130	384	-1	-271
12/31/2012	10227	31	24	0	35	-99	-6	-70	403	-1	-271

Flow Budget for Aquifer C in Santa Paula Basin

Date	Stress	days in month	influx(+) outflux(-)								
			STORAGE	Mountain Front Recharge	RECHARGE	Pumping from Wells	Outside	Santa Paula B	Fillmore C	Oxnard	Mound L8 L11
1/31/2013	10258	31	117	0	22	-98	-5	-156	401	-1	-264
2/28/2013	10286	28	211	0	0	-98	-4	-202	347	-1	-242
3/31/2013	10317	31	223	0	0	-100	-5	-221	387	-1	-270
4/30/2013	10347	30	228	0	0	-102	-4	-213	369	-1	-264
5/31/2013	10378	31	236	0	0	-104	-5	-218	380	-1	-276
6/30/2013	10408	30	231	0	0	-100	-5	-210	367	-1	-270
7/31/2013	10439	31	247	0	0	-112	-5	-215	379	-2	-281
8/31/2013	10470	31	245	0	0	-109	-5	-215	380	-2	-283
9/30/2013	10500	30	239	0	0	-106	-5	-207	366	-1	-275
10/31/2013	10531	31	246	0	0	-108	-5	-214	379	-2	-286
11/30/2013	10561	30	238	0	0	-103	-5	-208	367	-1	-278
12/31/2013	10592	31	249	0	0	-107	-5	-215	379	-2	-288
1/31/2014	10623	31	255	0	0	-109	-5	-213	375	-2	-291
2/28/2014	10651	28	-241	1	84	-79	-6	151	356	-1	-251
3/31/2014	10682	31	-5	1	51	-95	-6	-60	397	-2	-266
4/30/2014	10712	30	221	0	0	-109	-4	-198	368	-2	-262
5/31/2014	10743	31	229	0	0	-108	-5	-202	376	-2	-278
6/30/2014	10773	30	227	0	0	-105	-5	-194	362	-2	-274
7/31/2014	10804	31	227	0	0	-99	-5	-202	377	-2	-286
8/31/2014	10835	31	231	0	0	-100	-5	-203	377	-2	-287
9/30/2014	10865	30	230	0	0	-97	-5	-199	363	-2	-280
10/31/2014	10896	31	236	0	0	-94	-5	-208	375	-2	-291
11/30/2014	10926	30	219	0	0	-86	-6	-202	367	-2	-281
12/31/2014	10957	31	-335	1	88	-79	-7	228	395	-2	-275
1/31/2015	10988	31	25	0	28	-82	-6	-84	394	-2	-260
2/28/2015	11016	28	180	0	0	-78	-4	-189	344	-1	-241
3/31/2015	11047	31	204	0	0	-83	-5	-212	383	-2	-275
4/30/2015	11077	30	209	0	0	-83	-5	-201	363	-2	-272
5/31/2015	11108	31	214	0	0	-85	-5	-210	381	-2	-284
6/30/2015	11138	30	214	0	0	-83	-5	-200	362	-2	-277
7/31/2015	11169	31	224	0	0	-93	-6	-216	388	-2	-287
8/31/2015	11200	31	233	0	0	-99	-4	-204	374	-2	-287
9/30/2015	11230	30	219	0	0	-90	-5	-199	363	-2	-277
10/31/2015	11261	31	232	0	0	-98	-5	-201	369	-2	-287
11/30/2015	11291	30	224	0	0	-94	-5	-192	354	-2	-279
12/31/2015	11322	31	230	0	0	-96	-5	-197	365	-2	-288

Flow Budget for Layer 1 in Mound Basin

Date	Stress	days in month	STORAGE	Tile Drains	ET	RECHARGE	Santa Paula A	Oxnard L1	Offshore	Mound L2-L4	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet								
1/31/1985	31	31	132.853	-21.088	-42.979	193.805	0	117.426	-30.351	-159.679	-190
2/28/1985	59	28	48.931	-13.46	-38.663	222.715	0	117.543	-18.346	-149.066	-170
3/31/1985	90	31	54.262	-10.858	-56.496	200.733	0	135.815	-16.62	-135.146	-172
4/30/1985	120	30	38.022	-7.895	-61.318	176.59	0	140.274	-11.956	-92.614	-181
5/31/1985	151	31	32.054	-6.484	-68.559	178.744	0	152.652	-9.7	-91.957	-187
6/30/1985	181	30	22.721	-5.045	-64.225	176.606	0	151.385	-8.883	-90.897	-182
7/31/1985	212	31	38.032	-4.097	-64.775	162.333	0	155.377	-8.896	-92.3	-186
8/31/1985	243	31	27.396	-3.214	-60.119	162.34	0	151.916	-9.509	-91.982	-177
9/30/1985	273	30	17.242	-2.689	-45.865	160.191	0	142.599	-9.467	-90.618	-171
10/31/1985	304	31	10.711	-2.804	-39.92	162.232	0	142.038	-12.172	-93.427	-167
11/30/1985	334	30	-164.307	-4.03	-30.062	477.606	0	130.446	-18.467	-234.519	-153
12/31/1985	365	31	13.749	-6.278	-27.317	159.59	0	127.298	-25.865	-107.724	-133
1/31/1986	396	31	-173.501	-7.757	-32.965	431.364	0	115.344	-32.361	-221.855	-75
2/28/1986	424	28	-473.782	-19.771	-43.634	784.221	-0.314	77.663	-60.073	-341.369	90
3/31/1986	455	31	-167.149	-31.6	-80.112	540.057	-0.042	83.853	-69.373	-273.106	3
4/30/1986	485	30	124.146	-24.947	-84.189	270.052	0	100.89	-42.161	-176.652	-167
5/31/1986	516	31	118.664	-14.89	-85.934	195.408	0	127.098	-28.962	-129.727	-182
6/30/1986	546	30	80.305	-8.987	-76.882	193.353	0	135.095	-24.712	-115.646	-183
7/31/1986	577	31	112.602	-6.307	-74.078	146.538	0	144.264	-18.168	-98.06	-207
8/31/1986	608	31	64.357	-5.285	-68.077	146.539	0	141.856	-22.418	-89.114	-168
9/30/1986	638	30	52.387	-4.746	-51.991	176.008	0	131.203	-21.506	-113.408	-168
10/31/1986	669	31	48.349	-4.83	-44.867	146.516	0	131.879	-22.942	-85.776	-168
11/30/1986	699	30	28.993	-5.052	-31.92	180.542	0	120.811	-23.727	-114.765	-155
12/31/1986	730	31	30.755	-5.874	-27.185	146.498	0	120.49	-26.278	-85.519	-153
1/31/1987	761	31	-0.639	-6.447	-31.421	245.496	0	118.708	-26.67	-142.866	-156
2/28/1987	789	28	10.119	-5.893	-31.26	221.844	0	107.995	-22.332	-131.484	-149
3/31/1987	820	31	1.367	-6.421	-49.03	254.687	0	120.123	-25.176	-142.331	-153
4/30/1987	850	30	34.648	-5.269	-54.789	172.777	0	124.15	-19.53	-85.063	-167
5/31/1987	881	31	32.015	-4.272	-62.327	174.904	0	135.283	-18.058	-88.63	-169
6/30/1987	911	30	28.963	-3.123	-58.959	172.799	0	133.745	-15.805	-88.268	-169
7/31/1987	942	31	29.022	-2.457	-60.671	178.693	0	138.532	-16.816	-95.983	-170
8/31/1987	973	31	30.874	-1.941	-57.979	178.703	0	137.767	-17.297	-97.608	-173
9/30/1987	1003	30	21.131	-1.788	-45.144	176.585	0	124.527	-18.675	-96.875	-160
10/31/1987	1034	31	4.657	-2.243	-39.801	223.276	0	122.595	-22.051	-137.394	-149
11/30/1987	1064	30	13.532	-2.715	-28.489	192.222	0	114.714	-21.916	-116.737	-151
12/31/1987	1095	31	-152.387	-5.353	-26.39	404.073	0	99.768	-38.322	-211.36	-67
1/31/1988	1126	31	0.626	-7.226	-32.686	277.021	0	92.609	-35.243	-171.226	-123
2/29/1988	1155	29	11.638	-6.317	-32.902	200.087	0	93.365	-28.441	-127.71	-110
3/31/1988	1186	31	47.685	-7.96	-52.534	168.995	0	101.331	-33.658	-97.348	-127
4/30/1988	1216	30	-63.561	-6.079	-57.376	379.705	0	99.615	-27.205	-199.372	-123
5/31/1988	1247	31	84.975	-5.013	-65.353	172.627	0	108.128	-21.184	-109.448	-165
6/30/1988	1277	30	52.864	-3.405	-60.119	170.414	0	111.946	-18.207	-99.191	-154
7/31/1988	1308	31	4.225	-2.789	-61.53	189.257	0	117.117	-22.906	-93.075	-130
8/31/1988	1339	31	17.648	-3.147	-60.922	189.26	0	111.939	-25.376	-94.009	-135
9/30/1988	1369	30	35.702	-2.098	-45.978	187.032	0	99.17	-19.072	-92.538	-162
10/31/1988	1400	31	20.236	-1.91	-39.758	189.235	0	97.716	-21.847	-95.948	-148
11/30/1988	1430	30	25.869	-1.773	-27.963	196.969	0	91.029	-20.738	-113.126	-150
12/31/1988	1461	31	-167.512	-4.769	-25.775	395.673	0	76.895	-44.001	-199.043	-29
1/31/1989	1492	31	86.755	-5.579	-30.66	157.001	0	83.173	-27.67	-101.051	-162
2/28/1989	1520	28	-58.908	-4.786	-29.772	331.077	0	80.456	-26.576	-179.835	-109
3/31/1989	1551	31	69.108	-4.701	-45.638	172.98	0	95.029	-24.87	-115.763	-146
4/30/1989	1581	30	64.019	-3.233	-49.85	154.709	0	99.979	-19.524	-90.932	-155
5/31/1989	1612	31	73.365	-1.884	-57.1	156.931	0	103.749	-16.957	-93.879	-164

Flow Budget for Layer 1 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet								
			STORAGE	Tile Drains	ET	RECHARGE	Santa Paula A	Oxnard L1	Offshore	Mound L2-L4	Net Stream Percolation
6/30/1989	1642	30	55.799	-0.949	-54.996	154.725	0	96.95	-18.493	-92.018	-141
7/31/1989	1673	31	33.328	-0.287	-57.385	190.043	0	94.344	-19.052	-94.722	-146
8/31/1989	1704	31	36.105	0	-54.624	190.041	0	88.594	-18.868	-95.566	-146
9/30/1989	1734	30	24.3	0	-42.101	187.81	0	79.915	-18.443	-94.047	-137
10/31/1989	1765	31	20.91	0	-36.61	190.024	0	76.536	-20.59	-97.316	-133
11/30/1989	1795	30	16.038	0	-25.882	187.221	0	68.61	-20.289	-95.059	-131
12/31/1989	1826	31	20.035	0	-21.624	190.051	0	66.948	-21.027	-98.896	-135
1/31/1990	1857	31	24.228	0	-24.623	228.06	0	63.448	-22.691	-143.207	-125
2/28/1990	1885	28	-9.55	-0.207	-24.909	211.433	0	59.539	-24.666	-131.862	-80
3/31/1990	1916	31	38.445	-0.069	-38.864	185.795	0	67.437	-21.866	-97.02	-134
4/30/1990	1946	30	35.134	0	-42.123	183.996	0	66.879	-18.405	-95.354	-130
5/31/1990	1977	31	53.11	0	-46.752	165.106	0	69.756	-18.226	-91.375	-132
6/30/1990	2007	30	31.533	0	-43.531	183.961	0	66.632	-17.95	-96.564	-124
7/31/1990	2038	31	43.453	0	-43.977	171.354	0	67.418	-18.558	-93.001	-127
8/31/1990	2069	31	39.753	0	-40.939	171.362	0	65.423	-18.966	-93.662	-123
9/30/1990	2099	30	32.537	0	-31.442	169.579	0	60.594	-18.393	-92.169	-121
10/31/1990	2130	31	33.057	0	-27.123	171.417	0	60.012	-19.013	-95.211	-123
11/30/1990	2160	30	22.577	0	-19.163	169.575	0	55.005	-18.888	-93.614	-115
12/31/1990	2191	31	28.844	0	-15.975	171.421	0	54.461	-18.952	-96.602	-123
1/31/1991	2222	31	41.332	0	-17.652	175.826	0	52.856	-19.418	-115.834	-117
2/28/1991	2250	28	-61.556	0	-17.773	308.925	0	42.199	-22.838	-170.855	-78
3/31/1991	2281	31	-806.199	-3.031	-40.941	1207.797	-1.365	35.004	-74.542	-468.672	155
4/30/1991	2311	30	239.854	-5.057	-56.373	163.158	-0.308	41.751	-38.59	-184.139	-160
5/31/1991	2342	31	149.079	-0.773	-53.589	164.499	0	58.689	-20.558	-139.611	-158
6/30/1991	2372	30	101.173	0	-46.322	163.124	0	58.151	-18.097	-117.738	-140
7/31/1991	2403	31	90.6	0	-44.667	146.766	0	58.206	-20.558	-100.231	-130
8/31/1991	2434	31	80.157	0	-40.071	146.77	0	56.175	-20.423	-91.58	-131
9/30/1991	2464	30	63.183	0	-29.675	145.389	0	52.272	-19.343	-86.284	-126
10/31/1991	2495	31	63.041	0	-24.67	146.772	0	52.138	-18.114	-87.886	-131
11/30/1991	2525	30	50.424	0	-16.859	145.409	0	48.148	-17.665	-85.991	-123
12/31/1991	2556	31	-158.794	0	-16.024	423.239	0	42.041	-35.02	-216.201	-37
1/31/1992	2587	31	-2.554	0	-21.326	255.764	0	36.924	-37.599	-163.156	-68
2/29/1992	2616	29	-646.23	-8.328	-37.727	863.788	-0.275	17.787	-93.039	-358.938	277
3/31/1992	2647	31	-237.185	-17.435	-68.427	521.143	-0.03	18.167	-90.591	-274.747	156
4/30/1992	2677	30	256.078	-15.261	-78.592	165.092	0	57.585	-52.297	-136.456	-196
5/31/1992	2708	31	123.046	-3.13	-62.455	166.581	0	78.005	-20.91	-118.052	-163
6/30/1992	2738	30	93.06	-0.799	-56.148	165.052	0	71.211	-20.998	-104.781	-147
7/31/1992	2769	31	89.546	-0.001	-54.185	163.142	0	69.418	-22.826	-105.807	-139
8/31/1992	2800	31	79.329	0	-48.502	163.137	0	65.747	-22.041	-100.661	-137
9/30/1992	2830	30	65.426	0	-35.987	161.691	0	60.777	-19.646	-97.183	-135
10/31/1992	2861	31	48.933	0	-30.407	187.045	0	58.58	-22.597	-126.293	-115
11/30/1992	2891	30	51.004	0	-21.825	161.656	0	53.808	-21.303	-95.109	-128
12/31/1992	2922	31	-185.603	-0.089	-20.683	457.302	0	51.67	-37.377	-229.951	-31
1/31/1993	2953	31	-677.488	-15.271	-45.835	799.357	-0.206	22.615	-115.928	-346.415	392
2/28/1993	2981	28	-855.098	-42.646	-75.743	804.676	-0.71	-5.172	-163.535	-343.832	696
3/31/1993	3012	31	-232.296	-70.836	-153.201	501.155	-0.117	9.072	-158.313	-257.207	367
4/30/1993	3042	30	251.694	-59.724	-160.953	175.722	0	54.687	-109.787	-145.681	-6
5/31/1993	3073	31	236.156	-30.021	-110.908	177.355	0	133.905	-63.378	-131.439	-212
6/30/1993	3103	30	72.738	-18.266	-93.389	171.096	0	116.519	-57.54	-117.604	-74
7/31/1993	3134	31	134.646	-13.646	-91.273	178.56	0	105.162	-49.951	-116.04	-147
8/31/1993	3165	31	128.474	-6.97	-75.989	178.557	0	107.268	-35.323	-111.132	-185
9/30/1993	3195	30	75.88	-5.187	-54.585	176.942	0	99.796	-30.041	-103.369	-159
10/31/1993	3226	31	64.648	-4.747	-45.903	178.542	0	99.158	-30.711	-101.218	-160

Flow Budget for Layer 1 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet STORAGE	Tile Drains	ET	RECHARGE	Santa Paula A	Oxnard L1	Offshore	Mound L2-L4	Net Stream Percolation
11/30/1993	3256	30	45.684	-4.487	-31.858	161.993	0	93.582	-30.819	-88.879	-145
12/31/1993	3287	31	24.459	-5.883	-27.657	207.222	0	88.049	-38.179	-121.4	-127
1/31/1994	3318	31	33.549	-6.415	-31.97	169.994	0	88.548	-36.033	-88.204	-129
2/28/1994	3346	28	-332.356	-11.392	-37.012	564.151	0	71.675	-57.98	-247.765	59
3/31/1994	3377	31	26.8	-19.187	-65.945	256.976	0	77.476	-60.004	-152.246	-64
4/30/1994	3407	30	95.15	-15.171	-72.98	169.589	0	85.967	-43.965	-94.721	-124
5/31/1994	3438	31	85.557	-9.163	-77.993	171.318	0	100.592	-33.996	-91.116	-145
6/30/1994	3468	30	93.53	-6.218	-70.012	169.601	0	105.618	-24.247	-86.865	-181
7/31/1994	3499	31	63.178	-4.672	-68.291	198.486	0	107.449	-22.894	-96.928	-176
8/31/1994	3530	31	63.942	-3.246	-61.851	198.49	0	104.277	-20.021	-98.488	-183
9/30/1994	3560	30	45.864	-2.354	-46.793	196.738	0	97.534	-19.47	-97.737	-174
10/31/1994	3591	31	39.113	-2.334	-40.563	187.652	0	96.043	-23.06	-95.908	-161
11/30/1994	3621	30	26.183	-2.734	-28.905	211.554	0	87.803	-24.587	-119.983	-149
12/31/1994	3652	31	-20.848	-4.622	-25.528	196.268	0	84.938	-36.226	-109.373	-85
1/31/1995	3683	31	-1565.612	-32.8	-62.296	1619.005	-3.345	54.159	-139.918	-547.601	537
2/28/1995	3711	28	313.634	-42.945	-70.402	190.493	-1.385	129.085	-84.256	-223.446	-211
3/31/1995	3742	31	-718.92	-46.585	-117.172	942.175	-0.636	128.222	-116.385	-342.558	287
4/30/1995	3772	30	224.082	-46.224	-132.574	185.959	-0.062	120.875	-87.896	-159.893	-104
5/31/1995	3803	31	356.34	-21.994	-98.371	197.757	0	196.73	-44.512	-145.793	-440
6/30/1995	3833	30	42.719	-9.722	-80.684	185.968	0	174.767	-40.256	-115.566	-157
7/31/1995	3864	31	100.401	-7.69	-79.858	200.873	0	157.748	-35.526	-114.666	-221
8/31/1995	3895	31	81.162	-6.38	-73.329	200.892	0	148.498	-31.853	-109.299	-210
9/30/1995	3925	30	63.235	-5.88	-56.246	199.22	0	137.776	-30.553	-103.159	-204
10/31/1995	3956	31	44.996	-6.55	-49.609	200.794	0	138.843	-35.349	-102.501	-191
11/30/1995	3986	30	10.74	-7.824	-36.818	199.117	0	128.345	-40.413	-97.412	-156
12/31/1995	4017	31	-47.046	-12.981	-33.808	292.753	0	118.723	-48.805	-147.387	-121
1/31/1996	4048	31	12.738	-17.131	-40.88	200.713	0	112.97	-51.58	-114.697	-102
2/29/1996	4077	29	-359.181	-23.733	-47.19	670.094	0	87.198	-59.719	-251.532	-6
3/31/1996	4108	31	70.56	-29.869	-76.563	208.281	0	94.63	-61.268	-130.6	-75
4/30/1996	4138	30	87.473	-24.674	-84.358	186.764	0	103.868	-51.037	-102.003	-116
5/31/1996	4169	31	120.72	-19.647	-92.959	178.211	0	127.387	-44.153	-90.666	-179
6/30/1996	4199	30	125.154	-12.362	-82.566	176.481	0	143.922	-33.417	-85.447	-232
7/31/1996	4230	31	63.117	-7.942	-79.566	216.068	0	156.44	-28.286	-95.303	-225
8/31/1996	4261	31	50.195	-6.525	-72.791	216.069	0	155.48	-25.768	-97.48	-219
9/30/1996	4291	30	37.567	-5.675	-55.061	214.306	0	147.974	-23.892	-97.266	-218
10/31/1996	4322	31	-20.221	-7.06	-49.961	208.803	0	141.261	-38.618	-113.696	-121
11/30/1996	4352	30	-52.24	-9.175	-38.05	328.609	0	135.478	-37.54	-148.053	-178
12/31/1996	4383	31	-330.511	-20.564	-37.634	595.916	0	116.914	-62.08	-233.239	-21
1/31/1997	4414	31	-240.739	-30.9	-50.027	542.516	0	115.46	-70.715	-215.898	-44
2/28/1997	4442	28	138.702	-29.263	-50.598	167.779	0	118.719	-50.935	-96.372	-198
3/31/1997	4473	31	34.348	-25.048	-72.224	173.19	0	128.398	-50.949	-94.912	-93
4/30/1997	4503	30	113.415	-20.575	-79.334	171.404	0	132.347	-41.68	-86.552	-189
5/31/1997	4534	31	131.547	-14.03	-85.008	173.204	0	154.638	-34.211	-85.327	-241
6/30/1997	4564	30	95.61	-8.341	-76.095	171.416	0	155.93	-26.709	-81.829	-230
7/31/1997	4595	31	59.417	-6.815	-75.969	208.583	0	158.952	-24.556	-93.994	-226
8/31/1997	4626	31	58.915	-5.81	-70.649	208.58	0	158.058	-23.014	-96.726	-229
9/30/1997	4656	30	43.559	-5.226	-53.932	206.782	0	149.303	-22.95	-96.522	-221
10/31/1997	4687	31	37.335	-5.521	-47.011	208.57	0	150.006	-25.595	-100.336	-217
11/30/1997	4717	30	-63.41	-6.541	-34.72	328.268	0	136.362	-31.506	-146.382	-182
12/31/1997	4748	31	-451.831	-17.889	-35.9	765.908	0	112.576	-59.467	-269.374	-35
1/31/1998	4779	31	-103.5	-27.493	-46.83	381.481	0	98.232	-62.54	-179.092	-57
2/28/1998	4807	28	-2054.347	-66.588	-85.104	1979.34	-3.566	37.63	-170.418	-513.916	655
3/31/1998	4838	31	269.024	-79.589	-150.345	362.14	-2.5	71.81	-123.616	-280.897	-64

Flow Budget for Layer 1 in Mound Basin

Date	Stress	days in month	STORAGE	Tile Drains	ET	RECHARGE	Santa Paula A	Oxnard L1	Offshore	Mound L2-L4	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet								
4/30/1998	4868	30	105.783	-68.371	-172.412	227.917	-0.023	85.769	-132.854	-188.463	143
5/31/1998	4899	31	196.573	-64.314	-195.174	282.828	0	101.649	-118.383	-181.569	-20
6/30/1998	4929	30	372.167	-38.57	-126.482	210.962	0	156.54	-67.186	-130.118	-377
7/31/1998	4960	31	271.301	-22.744	-104.173	163.228	0	188.548	-60.857	-115.063	-320
8/31/1998	4991	31	84.528	-15.2	-91.379	163.217	0	169.665	-52.856	-105.14	-153
9/30/1998	5021	30	132.613	-13.636	-69.297	160.751	0	152.706	-46.065	-95.253	-222
10/31/1998	5052	31	100.233	-13.053	-58.99	163.233	0	155.15	-47.283	-91.688	-208
11/30/1998	5082	30	33.201	-15.149	-43.041	176.02	0	141.555	-51.842	-99.666	-141
12/31/1998	5113	31	29.419	-21.802	-39.151	156.746	0	129.052	-57.747	-82.599	-114
1/31/1999	5144	31	-36.121	-25.6	-46.599	264.007	0	122.206	-61.819	-129.867	-86
2/28/1999	5172	28	42.693	-28.323	-49.88	166.904	0	108.476	-59.535	-87.839	-92
3/31/1999	5203	31	-64.388	-30.248	-77.373	357.762	0	126.624	-62.933	-148.111	-100
4/30/1999	5233	30	-27.474	-31.197	-91.763	281.028	0	113.984	-64.236	-128.126	-52
5/31/1999	5264	31	91.255	-29.774	-106.878	170.696	0	125.509	-59.739	-85.605	-105
6/30/1999	5294	30	134.087	-23.22	-98.206	168.815	0	140.578	-48.148	-82.803	-191
7/31/1999	5325	31	156.394	-15.907	-92.789	177.406	0	167.483	-38.798	-82.619	-271
8/31/1999	5356	31	100.078	-9.993	-81.296	177.422	0	175.111	-34.377	-83.562	-243
9/30/1999	5386	30	63.965	-7.97	-61.036	175.523	0	167.202	-30.411	-83.055	-224
10/31/1999	5417	31	63.61	-8.038	-52.497	177.404	0	171.781	-29.748	-86.328	-236
11/30/1999	5447	30	36.338	-8.431	-37.504	188.598	0	161.231	-31.883	-97.853	-210
12/31/1999	5478	31	39.214	-10.032	-32.022	177.383	0	163.115	-32.726	-87.283	-218
1/31/2000	5509	31	19.415	-11.105	-36.776	235.734	0	162.79	-32.478	-119.88	-218
2/29/2000	5538	29	-566.035	-19.642	-43.718	854.328	-0.249	128.075	-57.149	-273.908	-9
3/31/2000	5569	31	43.141	-30.858	-76.836	303.734	-0.049	133.119	-60.761	-166.566	-144
4/30/2000	5599	30	-22.768	-23.126	-81.96	391.005	0	140.627	-46.365	-163.418	-191
5/31/2000	5630	31	93.351	-19.457	-92.099	213.538	0	149.942	-43.046	-112.84	-189
6/30/2000	5660	30	-7.579	-18.786	-90.672	211.594	0	133.195	-49.403	-108.988	-69
7/31/2000	5691	31	170.281	-16.12	-92.23	182.135	0	154.032	-38.949	-96.483	-263
8/31/2000	5722	31	117.952	-9.415	-80.136	182.138	0	162.118	-31.902	-93.913	-247
9/30/2000	5752	30	86.105	-7.204	-59.29	180.165	0	154.523	-26.711	-91.019	-237
10/31/2000	5783	31	64.593	-7.352	-50.968	193.158	0	157.379	-30.882	-107.155	-219
11/30/2000	5813	30	39.79	-7.907	-36.76	180.155	0	148.451	-33.296	-89.577	-201
12/31/2000	5844	31	45.515	-8.832	-31.279	182.109	0	151.175	-33.423	-93.318	-212
1/31/2001	5875	31	-338.08	-15.631	-39.394	678.061	0	135.003	-49.298	-239.954	-123
2/28/2001	5903	28	-388.067	-22.348	-44.819	692.996	-0.118	114.524	-60.391	-240.964	-41
3/31/2001	5934	31	-320.812	-43.916	-101.193	677.399	-0.089	109.531	-93.38	-243.793	25
4/30/2001	5964	30	197.609	-31.886	-92.446	191.524	0	130.672	-56.587	-128.128	-211
5/31/2001	5995	31	160.394	-21.536	-96.418	192.023	0	150.06	-46.416	-109.486	-229
6/30/2001	6025	30	143.362	-13.645	-84.793	190.307	0	154.75	-36.523	-100.541	-253
7/31/2001	6056	31	137.538	-9.061	-82.295	164.715	0	164.422	-34.523	-94.401	-246
8/31/2001	6087	31	110.565	-7.4	-75.885	164.703	0	160.861	-32.092	-90.374	-230
9/30/2001	6117	30	98.789	-6.472	-57.332	162.989	0	152.609	-26.88	-86.755	-237
10/31/2001	6148	31	74.916	-6.537	-49.253	164.698	0	158.58	-29.617	-88.42	-224
11/30/2001	6178	30	-95.241	-8.325	-37.052	368.391	0	143.957	-39.691	-154.051	-176
12/31/2001	6209	31	39.825	-12.318	-33.241	187.078	0	140.284	-42.341	-105.261	-174
1/31/2002	6240	31	77.413	-13.163	-38.177	157.458	0	141.253	-38.3	-90.192	-196
2/28/2002	6268	28	78.806	-10.577	-37.021	133.965	0	133.952	-29.654	-69.169	-200
3/31/2002	6299	31	79.999	-9.56	-55.965	139.356	0	153.704	-30.031	-74.585	-203
4/30/2002	6329	30	80.619	-7.902	-62.42	137.553	0	152.377	-26.253	-72.321	-202
5/31/2002	6360	31	91.666	-6.856	-70.947	139.369	0	158.768	-23.655	-74.256	-214
6/30/2002	6390	30	78.178	-5.663	-67.21	137.577	0	151.462	-22.119	-72.908	-199
7/31/2002	6421	31	45.455	-5.159	-69.446	187.926	0	152.677	-22.784	-86.463	-202
8/31/2002	6452	31	52.83	-4.629	-65.714	187.949	0	149.238	-22.332	-89.467	-208

Flow Budget for Layer 1 in Mound Basin

Date	Stress	days in month	STORAGE	Tile Drains	ET	RECHARGE	Santa Paula A	Oxnard L1	Offshore	Mound L2-L4	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet								
9/30/2002	6482	30	41.931	-4.128	-50.315	186.152	0	140.677	-20.322	-89.545	-204
10/31/2002	6513	31	29.638	-4.622	-44.259	187.894	0	139.033	-25.139	-93.605	-189
11/30/2002	6543	30	-275.586	-7.656	-35.652	578.619	0	122.849	-39.391	-196.508	-141
12/31/2002	6574	31	-175.204	-13.783	-33.658	435.516	0	116.657	-48.161	-177.825	-99
1/31/2003	6605	31	124.018	-14.238	-38.648	154.11	0	130.213	-35.709	-98.896	-221
2/28/2003	6633	28	-284.129	-16.003	-40.375	544.923	0	106.041	-46.114	-199.243	-59
3/31/2003	6664	31	-81.672	-22.698	-68.492	393.896	0	115.263	-54.269	-169.17	-110
4/30/2003	6694	30	49.412	-22.512	-80.678	156.324	0	104.893	-53.489	-103.629	-50
5/31/2003	6725	31	139.672	-20.249	-93.317	196.855	0	123.95	-45.308	-108.872	-193
6/30/2003	6755	30	128.544	-10.122	-79.306	152.28	0	138.475	-29.621	-82.519	-218
7/31/2003	6786	31	106.165	-6.959	-76.324	165.354	0	143.979	-25.001	-88.386	-219
8/31/2003	6817	31	93.178	-5.559	-69.273	165.354	0	139.116	-23.954	-89.885	-209
9/30/2003	6847	30	73.313	-4.719	-52.168	163.489	0	128.893	-23.186	-89.013	-197
10/31/2003	6878	31	56.999	-4.92	-45.284	165.3	0	128.451	-27.276	-92.941	-180
11/30/2003	6908	30	0.033	-5.797	-33.261	238.202	0	117.726	-31.874	-122.662	-162
12/31/2003	6939	31	-1.77	-7.533	-29.327	194.811	0	115.444	-40.587	-111.656	-119
1/31/2004	6970	31	16.051	-9.182	-35.413	172.617	0	109.457	-40.255	-92.375	-121
2/29/2004	6999	29	-360.061	-14.092	-40.207	638.679	0	88.432	-51.688	-223.925	-29
3/31/2004	7030	31	96.57	-19.579	-65.845	161.187	0	96.675	-52.929	-105.433	-111
4/30/2004	7060	30	143.429	-10.767	-67.318	173.278	0	111.52	-30.561	-97.143	-222
5/31/2004	7091	31	104.935	-6.541	-70.547	175.324	0	119.464	-24.457	-97.035	-201
6/30/2004	7121	30	79.865	-4.73	-64.659	173.283	0	112.599	-23.273	-94.739	-178
7/31/2004	7152	31	85.079	-3.756	-65.232	182.679	0	113.805	-23.714	-105.498	-183
8/31/2004	7183	31	75.93	-3.016	-60.969	182.682	0	111.4	-24.534	-108.155	-173
9/30/2004	7213	30	64.573	-2.605	-46.997	180.658	0	103.649	-24.237	-107.46	-168
10/31/2004	7244	31	-236.278	-5.232	-45.595	498.601	0	94.383	-48.025	-202.712	-50
11/30/2004	7274	30	98.556	-6.312	-34.436	180.611	0	86.882	-33.998	-115.205	-176
12/31/2004	7305	31	-339.946	-10.027	-31.342	601.6	0	77.201	-58.718	-239.383	9
1/31/2005	7336	31	-1036.274	-65.819	-86.275	1033.396	-0.274	8.018	-196.304	-376.57	699
2/28/2005	7364	28	-763.008	-77.244	-89.359	858.823	-0.302	18.716	-184.524	-286.969	537
3/31/2005	7395	31	163.1	-85.33	-159.329	336.323	-0.021	65.095	-144.53	-196.398	24
4/30/2005	7425	30	338.159	-50.947	-132.433	167.16	0	119.636	-83.134	-133.298	-225
5/31/2005	7456	31	327.084	-29.611	-109.751	165.01	0	163.976	-60.818	-118.844	-337
6/30/2005	7486	30	328.395	-7.542	-74.281	163.274	0	206.687	-19.896	-107.279	-489
7/31/2005	7517	31	3.445	-4.96	-69.415	151.388	0	185.691	-42.729	-101.485	-122
8/31/2005	7548	31	82.713	-6.241	-72.508	151.333	0	145.418	-44.846	-95.519	-160
9/30/2005	7578	30	80.597	-6.443	-57.734	149.557	0	126.482	-41.861	-88.587	-162
10/31/2005	7609	31	6.803	-9.63	-54.462	178.69	0	107.98	-54.894	-102.585	-72
11/30/2005	7639	30	68.079	-13.144	-41.413	147.749	0	97.2	-50.508	-80.835	-127
12/31/2005	7670	31	73.055	-13.903	-34.749	149.276	0	103.492	-48.538	-81.257	-147
1/31/2006	7701	31	-144.328	-19.886	-42.779	351.489	0	81.516	-61.7	-144.339	-18
2/28/2006	7729	28	-93.642	-23.625	-46.45	315.745	0	62.97	-59.042	-131.101	-24
3/31/2006	7760	31	-126.238	-29.674	-76.677	421.436	0	74.093	-67.899	-156.382	-36
4/30/2006	7790	30	-211.674	-35.323	-104.129	486.648	0	72.83	-82.461	-171.067	50
5/31/2006	7821	31	148.412	-30.377	-108.145	213.588	0	105.861	-63.417	-112.883	-153
6/30/2006	7851	30	106.65	-20.303	-95.087	215.181	0	125.093	-49.492	-98.203	-184
7/31/2006	7882	31	107.783	-15.788	-93.07	157.456	0	140.323	-49.464	-83.264	-164
8/31/2006	7913	31	134.14	-10.288	-82.354	157.457	0	149.983	-38.566	-77.89	-232
9/30/2006	7943	30	83.867	-7.216	-59.408	155.791	0	148.291	-32.612	-74.479	-214
10/31/2006	7974	31	56.188	-7.253	-50.813	157.417	0	151.208	-33.861	-75.995	-197
11/30/2006	8004	30	27.532	-8.058	-36.974	155.807	0	141.584	-37.514	-74.133	-168
12/31/2006	8035	31	31.892	-9.291	-31.8	172.774	0	145.077	-37.747	-83.797	-187
1/31/2007	8066	31	-55.407	-11.152	-37.077	284.15	0	140.157	-39.862	-114.858	-166

Flow Budget for Layer 1 in Mound Basin

Date	Stress	days in month	STORAGE	Tile Drains	ET	RECHARGE	Santa Paula A	Oxnard L1	Offshore	Mound L2-L4	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet								
2/28/2007	8094	28	0.771	-11.674	-37.866	202.102	0	125.872	-36.701	-85.497	-157
3/31/2007	8125	31	20.26	-11.043	-57.778	215.302	0	149.863	-35.263	-81.781	-200
4/30/2007	8155	30	28.326	-8.601	-64.402	206.191	0	149.53	-32.531	-91.265	-187
5/31/2007	8186	31	29.61	-7.472	-73.472	215.322	0	157.979	-29.548	-81.468	-211
6/30/2007	8216	30	21.662	-6.036	-69.159	213.62	0	152.8	-26.731	-81.779	-204
7/31/2007	8247	31	76.423	-5.275	-70.684	166.418	0	154.601	-26.473	-83.241	-212
8/31/2007	8278	31	71.901	-4.579	-66.538	166.411	0	151.012	-25.414	-84.355	-208
9/30/2007	8308	30	54.133	-4.367	-51.573	164.267	0	140.991	-25.96	-83.902	-194
10/31/2007	8339	31	50.694	-4.881	-45.503	166.377	0	141.031	-28.483	-87.34	-192
11/30/2007	8369	30	44.198	-5.321	-32.733	164.691	0	131.324	-28.296	-86.341	-188
12/31/2007	8400	31	-64.325	-7.514	-29.455	276.844	0	124.142	-40.368	-132.051	-126
1/31/2008	8431	31	-672.177	-20.635	-44.314	854.21	-0.011	101.907	-79.337	-264.747	139
2/29/2008	8460	29	92.308	-32.827	-56.662	197.721	0	103.361	-71.811	-124.499	-108
3/31/2008	8491	31	180.761	-25.36	-72.97	146.86	0	139.649	-49.463	-93.375	-226
4/30/2008	8521	30	82.425	-15.745	-73.998	145.234	0	136.848	-41.39	-87.221	-146
5/31/2008	8552	31	134.248	-10.883	-80.703	146.884	0	144.821	-32.43	-86.15	-216
6/30/2008	8582	30	84.815	-7.447	-73.96	145.26	0	139.058	-29.75	-83.018	-175
7/31/2008	8613	31	78.958	-6.423	-74.628	171.987	0	142.896	-27.194	-88.359	-197
8/31/2008	8644	31	52.078	-5.769	-70.073	171.975	0	139.068	-29.514	-89.225	-169
9/30/2008	8674	30	63.532	-5.206	-53.685	170.318	0	127.405	-26.226	-88.125	-188
10/31/2008	8705	31	63.711	-5.035	-45.742	171.954	0	125.945	-26.357	-91.426	-193
11/30/2008	8735	30	-38.839	-6.251	-33.939	254.27	0	115.65	-35.808	-123.767	-131
12/31/2008	8766	31	-34.041	-8.994	-31.027	244.246	0	106.027	-42.816	-121.76	-112
1/31/2009	8797	31	69.396	-10.365	-36.358	134.747	0	107.427	-38.381	-81.513	-145
2/28/2009	8825	28	-306.265	-15.52	-40.092	516.136	0	79.527	-51.489	-176.098	-1
3/31/2009	8856	31	105.208	-21.184	-67.442	134.999	0	92.041	-52.345	-87.567	-104
4/30/2009	8886	30	125.539	-13.345	-70.477	136.722	0	107.388	-34.348	-78.919	-173
5/31/2009	8917	31	141.864	-7.831	-74.426	138.276	0	116.398	-25.325	-78.546	-210
6/30/2009	8947	30	109.663	-5.303	-66.388	136.722	0	111.387	-20.325	-75.938	-190
7/31/2009	8978	31	70.348	-4.037	-65.772	183.494	0	113.741	-20.233	-88.667	-189
8/31/2009	9009	31	61.251	-3.102	-60.924	183.488	0	111.064	-21.04	-91.495	-179
9/30/2009	9039	30	44.695	-2.597	-46.903	181.916	0	103.025	-21.277	-91.544	-167
10/31/2009	9070	31	11.891	-3.691	-42.273	198.929	0	97.357	-32.212	-114.39	-116
11/30/2009	9100	30	34.901	-4.118	-30.575	181.901	0	90.623	-27.283	-93.678	-152
12/31/2009	9131	31	-130.512	-7.001	-28.41	316.788	0	78.483	-48.079	-143.635	-37
1/31/2010	9162	31	-373.387	-15.232	-39.23	639.476	0	62.334	-61.162	-219.649	14
2/28/2010	9190	28	-197.421	-22.453	-45.247	477.201	0	52.16	-62.889	-174.262	-23
3/31/2010	9221	31	43.581	-23.726	-70.703	205.717	0	68.504	-59.399	-105.19	-59
4/30/2010	9251	30	30.391	-19.323	-78.219	210.877	0	67.013	-54.718	-114.215	-42
5/31/2010	9282	31	79.279	-15.487	-87.865	206.247	0	75.578	-47.777	-92.235	-118
6/30/2010	9312	30	109.468	-7.93	-75.644	204.746	0	92.266	-32.662	-87.355	-203
7/31/2010	9343	31	135.326	-4.842	-70.012	151.678	0	98.599	-25.918	-88.606	-196
8/31/2010	9374	31	117.589	-3.2	-62.611	151.704	0	96.068	-24.901	-90.322	-184
9/30/2010	9404	30	94.949	-2.251	-47.433	150.223	0	88.714	-24.32	-89.36	-171
10/31/2010	9435	31	17.461	-2.417	-41.289	261.12	0	84.711	-29.024	-129.179	-161
11/30/2010	9465	30	63.455	-3.126	-29.606	154.715	0	75.864	-32.577	-98.317	-130
12/31/2010	9496	31	-552.061	-8.985	-30.057	852.817	0	68.171	-63.37	-269.502	15
1/31/2011	9527	31	201.741	-11.955	-37.526	141.743	0	80.078	-43.693	-108.692	-222
2/28/2011	9555	28	-99.199	-8.872	-35.519	284.623	0	70.137	-45.67	-134.042	-29
3/31/2011	9586	31	-235.391	-18.395	-65.137	471.633	0	57.833	-71.143	-186.973	53
4/30/2011	9616	30	100.632	-21.842	-81.445	140.052	0	55.577	-62.312	-95.446	-35
5/31/2011	9647	31	139.119	-15.51	-88.184	136.491	0	82.404	-51.327	-88.312	-115
6/30/2011	9677	30	89.695	-10.651	-80.889	140.05	0	83.988	-45.637	-80.754	-96

Flow Budget for Layer 1 in Mound Basin

Date	Stress	days in month	STORAGE	Tile Drains	ET	RECHARGE	Santa Paula A	Oxnard L1	Offshore	Mound L2-L4	Net Stream Percolation
			influx(+) outflux(-); units in Acre-feet								
7/31/2011	9708	31	152.367	-6.721	-76.167	146.099	0	94.477	-30.86	-83.122	-196
8/31/2011	9739	31	108.462	-4.417	-65.767	146.059	0	97.472	-26.007	-82.531	-173
9/30/2011	9769	30	94.247	-3.046	-48.395	144.592	0	92.657	-22.105	-80.192	-178
10/31/2011	9800	31	48.856	-2.958	-41.705	176.707	0	95.103	-27.459	-98.858	-150
11/30/2011	9830	30	-1.352	-3.761	-30.002	197.594	0	89.761	-31.458	-99.358	-121
12/31/2011	9861	31	30.112	-4.873	-25.893	146.063	0	90.967	-33.378	-79.632	-123
1/31/2012	9892	31	27.594	-5.139	-29.604	205.091	0	89.337	-29.39	-100.281	-158
2/29/2012	9921	29	32.254	-4.637	-29.963	161.656	0	84.191	-25.918	-77.314	-140
3/31/2012	9952	31	-69.06	-6.135	-47.732	241.942	0	85.969	-41.036	-114.021	-50
4/30/2012	9982	30	-44.394	-8.101	-61.649	241.683	0	73.558	-43.683	-108.202	-49
5/31/2012	10013	31	106.186	-6.578	-69.867	164.772	0	86.632	-28.972	-81.284	-171
6/30/2012	10043	30	76.917	-3.918	-61.31	163.216	0	92.248	-19.563	-78.483	-169
7/31/2012	10074	31	71.152	-2.569	-61.864	163.871	0	97.677	-19.318	-85.821	-163
8/31/2012	10105	31	65.832	-1.641	-58.357	163.883	0	98.205	-18.98	-88.342	-161
9/30/2012	10135	30	52.198	-1.019	-44.759	162.318	0	93.217	-17.609	-88.139	-156
10/31/2012	10166	31	49.301	-0.946	-38.816	157.136	0	93.145	-19.861	-90.752	-149
11/30/2012	10196	30	28.42	-1.496	-27.742	171.49	0	83.645	-22.498	-98.991	-133
12/31/2012	10227	31	-39.521	-2.561	-23.722	273.081	0	79.33	-25.896	-127.753	-133
1/31/2013	10258	31	59.141	-3.03	-27.14	147.627	0	81.555	-24.042	-92.922	-141
2/28/2013	10286	28	43.084	-2.569	-26.781	134.904	0	76.416	-19.189	-75.616	-130
3/31/2013	10317	31	55.881	-2.409	-41.539	157.115	0	85.991	-19.977	-94.132	-141
4/30/2013	10347	30	63.034	-1.635	-47.247	138.127	0	85.293	-17.082	-80.658	-140
5/31/2013	10378	31	68.319	-0.803	-55.011	139.724	0	90.221	-16.183	-84.01	-142
6/30/2013	10408	30	62.851	-0.08	-52.003	138.141	0	87.17	-14.448	-82.756	-139
7/31/2013	10439	31	50.033	0	-52.786	158.082	0	89.11	-14.602	-91.168	-139
8/31/2013	10470	31	48.802	0	-49.411	158.072	0	87.115	-14.291	-93.121	-137
9/30/2013	10500	30	36.31	0	-38.233	156.487	0	80.643	-14.377	-92.493	-128
10/31/2013	10531	31	34.347	0	-33.497	158.061	0	79.033	-16.074	-96.533	-125
11/30/2013	10561	30	26.24	0	-24.108	153.558	0	71.627	-16.867	-94.923	-116
12/31/2013	10592	31	29.973	0	-20.475	158.051	0	70.11	-17.31	-98.977	-121
1/31/2014	10623	31	41.667	0	-22.94	155.596	0	69.715	-15.577	-101.117	-127
2/28/2014	10651	28	-184.019	-0.309	-23.909	419.336	0	59.498	-22.034	-166.158	-80
3/31/2014	10682	31	16.044	-3.462	-42.327	177.85	0	60.096	-37.741	-121.106	-49
4/30/2014	10712	30	84.35	-0.824	-44.14	154.112	0	68.448	-13.772	-102.357	-146
5/31/2014	10743	31	74.744	0	-47.381	155.608	0	74.669	-11.651	-105.4	-141
6/30/2014	10773	30	57.959	0	-43.209	154.137	0	71.75	-12.071	-103.525	-125
7/31/2014	10804	31	58.582	0	-42.74	162.696	0	73.954	-11.47	-102.554	-138
8/31/2014	10835	31	51.333	0	-38.73	162.665	0	73.592	-11.39	-103.398	-134
9/30/2014	10865	30	37.932	0	-29.189	161.215	0	68.547	-11.41	-101.375	-126
10/31/2014	10896	31	37.196	0	-24.975	162.718	0	67.561	-12.405	-104.944	-125
11/30/2014	10926	30	24.002	0	-17.641	177.759	0	58.547	-14.053	-116.253	-112
12/31/2014	10957	31	-223.164	0	-17.369	443.817	0	50.347	-32.863	-186.945	-31
1/31/2015	10988	31	61.738	0	-21.784	159.653	0	46.127	-26.99	-122.362	-96
2/28/2015	11016	28	81.533	0	-20.504	120.439	0	45.465	-14.278	-91.239	-121
3/31/2015	11047	31	88.265	0	-29.104	118.521	0	54.955	-13.263	-95.177	-124
4/30/2015	11077	30	77.17	0	-30.233	127.099	0	55.154	-10.498	-93.075	-126
5/31/2015	11108	31	68.11	0	-32.911	121.667	0	57.665	-12.328	-92.904	-109
6/30/2015	11138	30	70.203	0	-29.651	127.195	0	55.317	-9.815	-90.65	-123
7/31/2015	11169	31	60.34	0	-28.426	132.537	0	57.625	-9.598	-90.297	-122
8/31/2015	11200	31	44.201	0	-25.364	149.204	0	57.577	-9.239	-94.115	-122
9/30/2015	11230	30	47.935	0	-19.146	123.897	0	53.54	-9.788	-88.904	-108
10/31/2015	11261	31	33.837	0	-16.373	149.18	0	53.464	-9.561	-96.032	-115
11/30/2015	11291	30	26.395	0	-11.448	147.887	0	50.385	-8.957	-95.721	-109

Flow Budget for Layer 1 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet								
			STORAGE	Tile Drains	ET	RECHARGE	Santa Paula A	Oxnard L1	Offshore	Mound L2-L4	Net Stream Percolation
12/31/2015	11322	31	27.984	0	-9.453	149.191	0	50.429	-9.369	-99.806	-109

Flow Budget for Layers 2 to 4 in Mound Basin

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Santa Paula A	Mound L1	Santa Paula B	Oxnard UAS	Offshore	Mound L5
			influx(+) outflux(-); units in Acre-feet								
1/31/1985	31	31	-390	19	-3	7	160	1	153	1	53
2/28/1985	59	28	-432	23	-3	6	149	1	178	-1	78
3/31/1985	90	31	-408	20	-3	6	135	1	180	0	68
4/30/1985	120	30	-136	13	-6	5	93	1	81	6	-56
5/31/1985	151	31	64	13	-6	5	92	1	-5	6	-170
6/30/1985	181	30	209	13	-6	4	91	1	-63	7	-256
7/31/1985	212	31	277	12	-5	4	92	1	-65	2	-318
8/31/1985	243	31	302	12	-5	3	92	1	-82	2	-326
9/30/1985	273	30	313	12	-5	3	91	1	-89	3	-329
10/31/1985	304	31	292	12	-5	3	93	1	-83	4	-318
11/30/1985	334	30	11	37	-1	5	235	1	-33	-1	-255
12/31/1985	365	31	123	12	-5	5	108	1	-39	2	-207
1/31/1986	396	31	-100	35	-2	6	222	1	1	0	-164
2/28/1986	424	28	-301	64	-1	8	341	1	37	-2	-180
3/31/1986	455	31	-359	45	-1	8	273	2	82	-3	-49
4/30/1986	485	30	-384	25	-4	6	177	2	140	-1	40
5/31/1986	516	31	-271	13	-8	4	130	2	132	7	-10
6/30/1986	546	30	-85	13	-8	3	116	2	67	9	-117
7/31/1986	577	31	1	11	-3	3	98	2	34	6	-152
8/31/1986	608	31	5	11	-2	4	89	2	32	6	-147
9/30/1986	638	30	12	18	-1	4	113	2	20	2	-170
10/31/1986	669	31	142	11	-1	4	86	2	-33	6	-216
11/30/1986	699	30	87	19	-1	4	115	2	-24	2	-204
12/31/1986	730	31	137	11	-1	4	86	2	-46	6	-198
1/31/1987	761	31	-25	24	-2	3	143	2	-2	1	-144
2/28/1987	789	28	-90	23	-2	3	131	2	12	1	-79
3/31/1987	820	31	-158	24	-2	3	142	2	44	-1	-54
4/30/1987	850	30	-8	12	-6	2	85	2	-2	7	-91
5/31/1987	881	31	134	12	-6	0	89	2	-53	9	-187
6/30/1987	911	30	233	12	-6	0	88	2	-86	10	-253
7/31/1987	942	31	253	12	-5	1	96	2	-96	11	-273
8/31/1987	973	31	212	12	-5	2	98	2	-87	12	-245
9/30/1987	1003	30	229	11	-5	2	97	2	-97	12	-252
10/31/1987	1034	31	103	22	-3	3	137	2	-52	4	-216
11/30/1987	1064	30	93	18	-3	3	117	2	-54	5	-181
12/31/1987	1095	31	-60	33	-1	4	211	2	-24	2	-170
1/31/1988	1126	31	-142	26	-2	5	171	2	5	2	-68
2/29/1988	1155	29	-174	21	-3	4	128	2	31	5	-13
3/31/1988	1186	31	-90	12	-5	3	97	2	18	9	-46
4/30/1988	1216	30	-230	31	-2	3	199	2	59	1	-65
5/31/1988	1247	31	-64	12	-5	3	109	2	11	9	-76
6/30/1988	1277	30	-11	12	-5	2	99	2	2	10	-111
7/31/1988	1308	31	75	12	-6	1	93	2	-2	9	-184
8/31/1988	1339	31	152	12	-6	0	94	2	-32	10	-232
9/30/1988	1369	30	202	12	-5	0	93	2	-57	10	-256
10/31/1988	1400	31	227	12	-5	0	96	2	-70	11	-272
11/30/1988	1430	30	157	18	-5	2	113	2	-60	8	-235
12/31/1988	1461	31	-4	32	-3	4	199	2	-31	3	-204
1/31/1989	1492	31	110	12	-4	3	101	2	-69	10	-164
2/28/1989	1520	28	-58	29	-3	3	180	2	-19	3	-140
3/31/1989	1551	31	-40	17	-4	4	116	2	-26	8	-76
4/30/1989	1581	30	27	12	-4	2	91	2	-31	10	-108

Flow Budget for Layers 2 to 4 in Mound Basin

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Santa Paula A	Mound L1	Santa Paula B	Oxnard UAS	Offshore	Mound L5
			influx(+) outflux(-); units in Acre-feet								
5/31/1989	1612	31	82	12	-4	2	94	2	-45	11	-153
6/30/1989	1642	30	103	12	-4	1	92	2	-56	11	-161
7/31/1989	1673	31	146	12	-4	0	95	2	-54	12	-208
8/31/1989	1704	31	157	12	-4	-1	96	2	-58	12	-216
9/30/1989	1734	30	164	12	-3	0	94	1	-63	13	-218
10/31/1989	1765	31	167	12	-3	0	97	1	-66	13	-222
11/30/1989	1795	30	148	11	-3	0	95	1	-64	13	-203
12/31/1989	1826	31	141	12	-2	0	99	1	-66	14	-199
1/31/1990	1857	31	14	22	-2	3	143	1	-38	8	-151
2/28/1990	1885	28	-12	20	-2	4	132	1	-38	8	-114
3/31/1990	1916	31	67	10	-2	3	97	1	-56	14	-135
4/30/1990	1946	30	100	10	-2	1	95	1	-63	14	-157
5/31/1990	1977	31	107	10	-2	1	91	1	-67	15	-157
6/30/1990	2007	30	135	10	-2	1	97	1	-74	15	-183
7/31/1990	2038	31	151	10	-1	1	93	1	-74	15	-196
8/31/1990	2069	31	154	10	-1	0	94	1	-76	16	-197
9/30/1990	2099	30	155	10	-1	0	92	1	-78	16	-196
10/31/1990	2130	31	142	10	-1	-1	95	1	-77	16	-186
11/30/1990	2160	30	136	10	-1	-1	94	1	-77	17	-179
12/31/1990	2191	31	125	10	-1	0	97	1	-77	17	-171
1/31/1991	2222	31	66	14	0	2	116	1	-68	15	-145
2/28/1991	2250	28	-59	24	0	4	171	1	-23	9	-126
3/31/1991	2281	31	-285	96	0	7	469	1	-3	7	-417
4/30/1991	2311	30	-134	8	-1	5	184	1	-26	15	-52
5/31/1991	2342	31	-155	8	-1	3	140	1	18	16	-29
6/30/1991	2372	30	-55	8	-1	2	118	1	-7	15	-80
7/31/1991	2403	31	34	8	-2	1	100	1	-20	16	-138
8/31/1991	2434	31	84	8	-2	1	92	1	-37	16	-162
9/30/1991	2464	30	112	8	-1	1	86	1	-50	16	-172
10/31/1991	2495	31	118	8	-1	1	88	1	-56	16	-174
11/30/1991	2525	30	97	8	-1	1	86	1	-55	16	-152
12/31/1991	2556	31	-121	32	-1	4	216	1	2	9	-143
1/31/1992	2587	31	-104	23	-1	6	163	1	-7	9	-90
2/29/1992	2616	29	-329	70	-1	7	359	1	41	6	-224
3/31/1992	2647	31	-496	44	-2	8	275	1	153	6	9
4/30/1992	2677	30	-368	8	-3	6	136	1	185	15	20
5/31/1992	2708	31	-229	9	-4	3	118	1	152	15	-63
6/30/1992	2738	30	-128	8	-4	2	105	1	93	14	-91
7/31/1992	2769	31	-30	8	-4	-2	106	1	56	12	-146
8/31/1992	2800	31	43	8	-4	-3	101	1	18	12	-176
9/30/1992	2830	30	86	8	-4	-3	97	1	-11	12	-185
10/31/1992	2861	31	-40	20	-4	1	126	0	1	11	-115
11/30/1992	2891	30	-192	8	-4	0	95	0	102	11	-21
12/31/1992	2922	31	-508	35	-4	3	230	0	241	3	-3
1/31/1993	2953	31	-642	62	-3	6	346	1	308	0	-100
2/28/1993	2981	28	-662	63	-2	7	344	1	330	-1	-134
3/31/1993	3012	31	-627	40	-3	8	257	1	357	-2	-33
4/30/1993	3042	30	-382	9	-8	2	146	1	281	7	-55
5/31/1993	3073	31	-452	9	-8	-3	131	1	319	7	-4
6/30/1993	3103	30	-237	9	-9	-3	118	1	223	7	-109
7/31/1993	3134	31	-56	9	-9	0	116	0	124	5	-190
8/31/1993	3165	31	65	9	-8	1	111	0	38	6	-222

Flow Budget for Layers 2 to 4 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet								
			STORAGE	RECHARGE	Pumping from Wells	Santa Paula A	Mound L1	Santa Paula B	Oxnard UAS	Offshore	Mound L5
9/30/1993	3195	30	13	9	-8	1	103	0	35	6	-160
10/31/1993	3226	31	-199	9	-8	1	101	0	126	6	-37
11/30/1993	3256	30	-359	9	-6	2	89	0	213	5	48
12/31/1993	3287	31	-462	18	-4	3	121	0	260	-2	65
1/31/1994	3318	31	-277	10	-8	4	88	0	174	5	4
2/28/1994	3346	28	-431	46	-2	4	248	0	191	-4	-54
3/31/1994	3377	31	-337	23	-3	6	152	0	175	-4	-12
4/30/1994	3407	30	-93	9	-8	5	95	0	74	5	-87
5/31/1994	3438	31	-5	10	-8	4	91	0	42	5	-139
6/30/1994	3468	30	98	9	-8	3	87	0	2	6	-198
7/31/1994	3499	31	209	10	-8	3	97	0	-27	5	-290
8/31/1994	3530	31	291	10	-8	3	98	0	-58	5	-343
9/30/1994	3560	30	274	10	-7	3	98	0	-63	6	-320
10/31/1994	3591	31	147	10	-8	3	96	0	-30	6	-225
11/30/1994	3621	30	-107	19	-4	3	120	0	54	0	-86
12/31/1994	3652	31	-142	16	-5	4	109	0	86	0	-69
1/31/1995	3683	31	-610	131	-1	6	548	1	180	-6	-385
2/28/1995	3711	28	-667	17	-6	5	223	1	281	-2	149
3/31/1995	3742	31	-823	77	-2	6	343	1	338	-7	20
4/30/1995	3772	30	-407	9	-10	2	160	1	239	1	5
5/31/1995	3803	31	-497	16	-8	0	146	1	298	-1	45
6/30/1995	3833	30	-216	9	-11	-1	116	1	185	1	-84
7/31/1995	3864	31	-266	9	-6	-1	115	1	207	0	-58
8/31/1995	3895	31	-314	9	-6	0	109	1	237	-1	-35
9/30/1995	3925	30	-258	9	-6	-1	103	0	213	-1	-61
10/31/1995	3956	31	-215	9	-6	-1	103	0	200	-1	-89
11/30/1995	3986	30	-162	9	-5	-1	97	0	174	-1	-111
12/31/1995	4017	31	-296	25	-2	2	147	0	211	-7	-80
1/31/1996	4048	31	-230	19	-4	3	115	0	179	-7	-76
2/29/1996	4077	29	-370	51	-1	4	252	0	180	-9	-109
3/31/1996	4108	31	-378	20	-3	5	131	1	235	-8	-2
4/30/1996	4138	30	-244	13	-5	4	102	1	181	-3	-49
5/31/1996	4169	31	-3	9	-7	2	91	1	87	-3	-177
6/30/1996	4199	30	184	9	-7	0	85	0	1	-2	-272
7/31/1996	4230	31	374	9	-7	-1	95	0	-63	-2	-406
8/31/1996	4261	31	468	9	-7	-2	97	0	-102	-2	-463
9/30/1996	4291	30	484	9	-7	-2	97	0	-120	-1	-461
10/31/1996	4322	31	372	18	-4	0	114	0	-87	-4	-410
11/30/1996	4352	30	107	26	-2	2	148	0	-9	-6	-267
12/31/1996	4383	31	-243	46	-1	4	233	1	100	-8	-135
1/31/1997	4414	31	-570	44	-1	5	216	1	265	-8	47
2/28/1997	4442	28	-440	8	-5	4	96	1	275	-3	64
3/31/1997	4473	31	-329	9	-5	1	95	1	252	-3	-20
4/30/1997	4503	30	-127	9	-5	0	87	1	157	-3	-117
5/31/1997	4534	31	106	9	-5	0	85	0	48	-3	-240
6/30/1997	4564	30	267	9	-5	0	82	0	-30	-2	-319
7/31/1997	4595	31	415	10	-6	0	94	0	-109	1	-405
8/31/1997	4626	31	479	10	-6	1	97	0	-139	2	-443
9/30/1997	4656	30	418	9	-6	0	97	0	-125	2	-397
10/31/1997	4687	31	340	10	-6	0	100	0	-99	2	-348
11/30/1997	4717	30	124	27	-2	2	146	0	-29	-4	-265
12/31/1997	4748	31	-103	56	-1	4	269	0	15	-7	-235

Flow Budget for Layers 2 to 4 in Mound Basin

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Santa Paula A	Mound L1	Santa Paula B	Oxnard UAS	Offshore	Mound L5
			influx(+) outflux(-); units in Acre-feet								
1/31/1998	4779	31	-194	28	-3	5	179	1	69	-4	-84
2/28/1998	4807	28	-721	153	-1	6	514	1	224	-7	-299
3/31/1998	4838	31	-637	30	-3	8	281	1	260	-5	64
4/30/1998	4868	30	-800	20	-5	6	188	1	391	-3	202
5/31/1998	4899	31	-799	24	-3	6	182	1	420	-5	174
6/30/1998	4929	30	-387	9	-12	3	130	1	237	7	12
7/31/1998	4960	31	-283	8	-2	1	115	1	226	-6	-59
8/31/1998	4991	31	-76	8	-1	1	105	1	131	-7	-163
9/30/1998	5021	30	66	8	-1	2	95	1	62	-6	-227
10/31/1998	5052	31	30	8	0	2	92	1	83	-6	-209
11/30/1998	5082	30	-219	15	0	3	100	1	182	-8	-74
12/31/1998	5113	31	-359	8	0	3	83	1	273	-8	0
1/31/1999	5144	31	-418	24	0	4	130	1	266	-9	3
2/28/1999	5172	28	-141	14	0	3	88	1	131	-4	-92
3/31/1999	5203	31	-187	29	0	4	148	1	145	-10	-130
4/30/1999	5233	30	-166	24	0	5	128	1	134	-10	-116
5/31/1999	5264	31	21	9	0	3	86	1	76	-6	-190
6/30/1999	5294	30	236	9	0	0	83	1	-21	-4	-303
7/31/1999	5325	31	360	9	0	-1	83	1	-69	-4	-377
8/31/1999	5356	31	440	9	0	-2	84	1	-106	-4	-421
9/30/1999	5386	30	463	9	0	-1	83	1	-121	-3	-429
10/31/1999	5417	31	406	9	0	-1	86	1	-104	-3	-394
11/30/1999	5447	30	270	15	0	0	98	1	-62	-4	-318
12/31/1999	5478	31	352	9	0	1	87	1	-90	-2	-357
1/31/2000	5509	31	279	21	0	1	120	1	-73	-4	-345
2/29/2000	5538	29	-5	68	0	3	274	1	-23	-7	-353
3/31/2000	5569	31	-113	25	0	6	167	1	48	-6	-127
4/30/2000	5599	30	-373	30	0	5	163	1	170	-6	9
5/31/2000	5630	31	-182	9	0	1	113	1	134	0	-77
6/30/2000	5660	30	105	9	0	-3	109	1	19	1	-241
7/31/2000	5691	31	269	9	0	-2	96	1	-47	0	-326
8/31/2000	5722	31	347	9	0	0	94	1	-83	1	-368
9/30/2000	5752	30	333	9	0	0	91	1	-86	2	-348
10/31/2000	5783	31	104	18	0	2	107	1	-11	-2	-219
11/30/2000	5813	30	-28	9	0	2	90	1	50	1	-124
12/31/2000	5844	31	14	9	0	1	93	1	48	1	-167
1/31/2001	5875	31	-141	53	0	3	240	1	63	-6	-214
2/28/2001	5903	28	-300	52	0	5	241	1	109	-6	-103
3/31/2001	5934	31	-648	53	0	8	244	1	278	-8	70
4/30/2001	5964	30	-632	17	0	6	128	1	341	-4	144
5/31/2001	5995	31	-370	8	0	1	109	1	260	-1	-8
6/30/2001	6025	30	-23	8	0	-3	101	1	100	0	-183
7/31/2001	6056	31	198	8	0	-3	94	1	-6	-1	-290
8/31/2001	6087	31	324	8	0	-2	90	1	-66	-1	-354
9/30/2001	6117	30	340	8	0	-2	87	1	-80	0	-353
10/31/2001	6148	31	145	8	0	-2	88	1	-4	0	-236
11/30/2001	6178	30	-282	30	0	1	154	1	157	-6	-56
12/31/2001	6209	31	-356	17	0	3	105	1	219	-6	17
1/31/2002	6240	31	-306	15	0	3	90	1	205	-6	-1
2/28/2002	6268	28	-91	7	0	2	69	1	108	-4	-93
3/31/2002	6299	31	78	8	0	1	75	1	37	-4	-195
4/30/2002	6329	30	232	8	0	1	72	1	-34	-4	-276

Flow Budget for Layers 2 to 4 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet								
			STORAGE	RECHARGE	Pumping from Wells	Santa Paula A	Mound L1	Santa Paula B	Oxnard UAS	Offshore	Mound L5
5/31/2002	6360	31	327	8	0	0	74	1	-73	-3	-334
6/30/2002	6390	30	361	8	0	0	73	0	-91	-2	-349
7/31/2002	6421	31	412	8	0	1	86	0	-110	0	-398
8/31/2002	6452	31	420	8	0	1	89	0	-115	1	-405
9/30/2002	6482	30	374	8	0	1	90	0	-103	1	-371
10/31/2002	6513	31	285	8	0	1	94	0	-75	2	-314
11/30/2002	6543	30	80	44	0	2	197	0	-29	-4	-292
12/31/2002	6574	31	31	33	0	5	178	1	-10	-5	-234
1/31/2003	6605	31	130	8	0	5	99	1	-19	1	-225
2/28/2003	6633	28	-71	41	0	4	199	1	17	-4	-190
3/31/2003	6664	31	-187	30	0	7	169	1	66	-5	-84
4/30/2003	6694	30	-141	14	0	6	104	1	80	-1	-63
5/31/2003	6725	31	-238	18	0	6	109	1	127	-4	-19
6/30/2003	6755	30	-102	8	0	5	83	1	93	0	-87
7/31/2003	6786	31	133	8	0	2	88	1	23	0	-256
8/31/2003	6817	31	290	8	0	0	90	1	-38	1	-351
9/30/2003	6847	30	356	8	0	0	89	1	-63	2	-392
10/31/2003	6878	31	354	8	0	0	93	1	-70	2	-387
11/30/2003	6908	30	150	23	0	3	123	1	-39	-1	-259
12/31/2003	6939	31	119	18	0	5	112	1	-25	-2	-227
1/31/2004	6970	31	201	9	0	2	92	1	-20	2	-287
2/29/2004	6999	29	-119	49	0	4	224	1	19	-3	-177
3/31/2004	7030	31	-9	9	0	3	105	1	48	0	-158
4/30/2004	7060	30	11	9	0	0	97	1	65	2	-184
5/31/2004	7091	31	127	9	0	-1	97	1	20	2	-255
6/30/2004	7121	30	203	9	0	-1	95	1	-12	3	-298
7/31/2004	7152	31	257	9	0	-2	105	1	-57	5	-319
8/31/2004	7183	31	299	9	0	-3	108	1	-75	6	-345
9/30/2004	7213	30	300	9	0	-3	107	1	-83	7	-337
10/31/2004	7244	31	39	44	0	2	203	1	-39	0	-252
11/30/2004	7274	30	163	9	0	1	115	1	-52	6	-243
12/31/2004	7305	31	-75	51	0	3	239	1	-8	0	-213
1/31/2005	7336	31	-344	81	0	6	377	1	72	-2	-317
2/28/2005	7364	28	-563	64	0	7	287	1	193	-3	-51
3/31/2005	7395	31	-772	28	0	9	196	1	365	-3	174
4/30/2005	7425	30	-826	13	0	5	133	1	448	-1	228
5/31/2005	7456	31	-812	8	0	-1	119	1	467	1	217
6/30/2005	7486	30	-768	8	0	-2	107	1	473	1	181
7/31/2005	7517	31	-454	8	0	0	101	1	334	-3	13
8/31/2005	7548	31	-315	8	0	2	96	1	264	-4	-51
9/30/2005	7578	30	-227	8	0	2	89	1	218	-4	-86
10/31/2005	7609	31	-379	16	0	3	103	1	277	-6	-13
11/30/2005	7639	30	-256	8	0	3	81	1	240	-5	-71
12/31/2005	7670	31	-110	8	0	2	81	0	172	-5	-149
1/31/2006	7701	31	-165	27	0	4	144	1	151	-7	-157
2/28/2006	7729	28	-185	24	0	5	131	0	149	-6	-120
3/31/2006	7760	31	-334	30	0	7	156	1	217	-8	-71
4/30/2006	7790	30	-646	36	0	8	171	1	356	-9	81
5/31/2006	7821	31	-493	18	0	7	113	1	334	-6	27
6/30/2006	7851	30	-99	7	0	2	98	1	200	0	-210
7/31/2006	7882	31	32	7	0	1	83	1	128	-5	-247
8/31/2006	7913	31	168	7	0	2	78	1	60	-5	-311

Flow Budget for Layers 2 to 4 in Mound Basin

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Santa Paula A	Mound L1	Santa Paula B	Oxnard UAS	Offshore	Mound L5
			influx(+) outflux(-); units in Acre-feet								
9/30/2006	7943	30	226	7	0	2	74	1	27	-5	-333
10/31/2006	7974	31	169	7	0	2	76	1	55	-5	-305
11/30/2006	8004	30	146	7	0	2	74	1	65	-4	-290
12/31/2006	8035	31	132	13	0	3	84	1	58	-5	-286
1/31/2007	8066	31	64	22	0	4	115	1	62	-8	-260
2/28/2007	8094	28	122	14	0	4	85	1	45	-5	-266
3/31/2007	8125	31	178	8	0	3	82	1	46	-3	-314
4/30/2007	8155	30	196	15	0	3	91	1	17	-6	-316
5/31/2007	8186	31	376	8	0	3	81	1	-41	-2	-426
6/30/2007	8216	30	477	7	0	2	82	1	-81	-1	-486
7/31/2007	8247	31	523	8	0	1	83	1	-108	-1	-506
8/31/2007	8278	31	536	8	0	0	84	1	-117	-1	-511
9/30/2007	8308	30	458	8	0	0	84	1	-98	0	-453
10/31/2007	8339	31	312	8	0	0	87	1	-49	0	-360
11/30/2007	8369	30	235	8	0	0	86	1	-19	1	-312
12/31/2007	8400	31	114	25	0	3	132	1	1	-3	-273
1/31/2008	8431	31	-117	68	0	6	265	1	38	-5	-345
2/29/2008	8460	29	-203	18	0	7	124	1	119	-4	-62
3/31/2008	8491	31	-313	7	0	5	93	1	219	0	-13
4/30/2008	8521	30	-265	7	0	3	87	1	218	1	-52
5/31/2008	8552	31	-57	7	0	2	86	1	132	0	-171
6/30/2008	8582	30	147	7	0	2	83	1	33	1	-273
7/31/2008	8613	31	270	8	0	1	88	1	-15	0	-353
8/31/2008	8644	31	366	8	0	0	89	1	-53	1	-412
9/30/2008	8674	30	382	7	0	0	88	1	-64	2	-416
10/31/2008	8705	31	298	8	0	1	91	1	-42	2	-359
11/30/2008	8735	30	-2	21	0	3	124	1	38	-2	-184
12/31/2008	8766	31	-58	22	0	5	122	1	57	-3	-147
1/31/2009	8797	31	-19	7	0	5	82	1	49	-1	-124
2/28/2009	8825	28	-168	38	0	5	176	1	72	-4	-122
3/31/2009	8856	31	-124	7	0	6	88	1	93	-2	-68
4/30/2009	8886	30	-38	7	0	4	79	1	65	-1	-117
5/31/2009	8917	31	98	7	0	4	79	1	12	-1	-199
6/30/2009	8947	30	210	7	0	3	76	1	-31	-1	-266
7/31/2009	8978	31	382	7	0	0	89	1	-54	1	-427
8/31/2009	9009	31	406	7	0	-2	91	1	-67	3	-439
9/30/2009	9039	30	393	7	0	-2	92	1	-74	3	-420
10/31/2009	9070	31	245	19	0	2	114	1	-67	1	-315
11/30/2009	9100	30	301	7	0	2	94	1	-56	4	-353
12/31/2009	9131	31	92	26	0	3	144	1	-30	0	-237
1/31/2010	9162	31	-82	47	0	6	220	1	12	-1	-204
2/28/2010	9190	28	-151	32	0	7	174	1	49	-1	-113
3/31/2010	9221	31	-105	7	0	5	105	1	101	3	-118
4/30/2010	9251	30	-214	18	0	5	114	1	131	0	-56
5/31/2010	9282	31	-49	7	0	4	92	1	104	2	-160
6/30/2010	9312	30	58	6	0	2	87	1	56	3	-214
7/31/2010	9343	31	165	7	0	2	89	1	-13	4	-254
8/31/2010	9374	31	226	7	0	2	90	1	-44	5	-287
9/30/2010	9404	30	250	7	0	2	89	1	-60	5	-294
10/31/2010	9435	31	63	21	0	4	129	1	-24	1	-195
11/30/2010	9465	30	-1	13	0	4	98	1	2	2	-120
12/31/2010	9496	31	-277	63	0	6	270	1	77	-2	-166

Flow Budget for Layers 2 to 4 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet								
			STORAGE	RECHARGE	Pumping from Wells	Santa Paula A	Mound L1	Santa Paula B	Oxnard UAS	Offshore	Mound L5
1/31/2011	9527	31	-205	7	0	6	109	1	132	1	-50
2/28/2011	9555	28	-382	25	0	5	134	1	185	-2	33
3/31/2011	9586	31	-574	36	0	6	187	1	287	-4	59
4/30/2011	9616	30	-533	6	0	5	95	1	333	-1	93
5/31/2011	9647	31	-540	7	0	4	88	1	354	-1	87
6/30/2011	9677	30	-202	6	0	3	81	1	198	-1	-87
7/31/2011	9708	31	-59	7	0	2	83	1	111	-1	-144
8/31/2011	9739	31	83	7	0	2	83	1	40	-1	-214
9/30/2011	9769	30	165	6	0	1	80	1	-4	0	-249
10/31/2011	9800	31	22	16	0	3	99	1	27	-3	-164
11/30/2011	9830	30	-165	18	0	4	99	1	100	-4	-52
12/31/2011	9861	31	-84	7	0	3	80	1	97	-2	-101
1/31/2012	9892	31	-78	17	0	3	100	1	90	-4	-129
2/29/2012	9921	29	100	7	0	2	77	1	43	-2	-228
3/31/2012	9952	31	26	21	0	4	114	1	32	-4	-193
4/30/2012	9982	30	18	21	0	4	108	1	27	-5	-175
5/31/2012	10013	31	109	7	0	3	81	1	29	-2	-228
6/30/2012	10043	30	202	7	0	2	78	1	-1	-1	-288
7/31/2012	10074	31	284	7	0	1	86	1	-44	0	-335
8/31/2012	10105	31	329	7	0	0	88	1	-66	1	-360
9/30/2012	10135	30	337	7	0	0	88	1	-75	2	-360
10/31/2012	10166	31	281	7	0	0	91	1	-67	2	-315
11/30/2012	10196	30	110	15	0	2	99	1	-24	0	-204
12/31/2012	10227	31	55	25	0	5	128	1	-16	-2	-195
1/31/2013	10258	31	62	13	0	5	93	1	-8	-1	-165
2/28/2013	10286	28	119	7	0	4	76	1	-18	1	-188
3/31/2013	10317	31	104	13	0	3	94	1	-18	-1	-197
4/30/2013	10347	30	155	7	0	3	81	1	-33	1	-214
5/31/2013	10378	31	176	7	0	2	84	1	-43	2	-229
6/30/2013	10408	30	188	7	0	2	83	1	-49	2	-233
7/31/2013	10439	31	243	7	0	3	91	1	-57	4	-291
8/31/2013	10470	31	231	7	0	3	93	1	-58	4	-282
9/30/2013	10500	30	220	7	0	3	92	1	-59	5	-270
10/31/2013	10531	31	214	7	0	3	97	1	-62	5	-265
11/30/2013	10561	30	210	7	0	3	95	1	-62	6	-259
12/31/2013	10592	31	212	7	0	3	99	1	-63	6	-265
1/31/2014	10623	31	192	7	0	1	101	1	-67	6	-242
2/28/2014	10651	28	33	30	0	3	166	1	-40	2	-197
3/31/2014	10682	31	65	17	0	4	121	1	-44	4	-168
4/30/2014	10712	30	113	7	0	2	102	1	-46	6	-185
5/31/2014	10743	31	138	7	0	0	105	1	-52	7	-207
6/30/2014	10773	30	154	7	0	0	104	1	-57	7	-216
7/31/2014	10804	31	175	7	0	-1	103	1	-62	9	-232
8/31/2014	10835	31	174	7	0	-2	103	1	-61	10	-232
9/30/2014	10865	30	160	7	0	-2	101	1	-59	10	-218
10/31/2014	10896	31	148	7	0	-1	105	1	-59	11	-211
11/30/2014	10926	30	91	15	0	0	116	0	-50	8	-180
12/31/2014	10957	31	-1	32	0	3	187	0	-33	5	-196
1/31/2015	10988	31	15	15	0	5	122	1	-29	5	-133
2/28/2015	11016	28	67	5	0	2	91	0	-34	8	-140
3/31/2015	11047	31	79	6	0	1	95	0	-36	9	-154
4/30/2015	11077	30	88	6	0	0	93	0	-37	9	-160

Flow Budget for Layers 2 to 4 in Mound Basin

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Santa Paula A	Mound L1	Santa Paula B	Oxnard UAS	Offshore	Mound L5
			influx(+) outflux(-); units in Acre-feet								
5/31/2015	11108	31	99	6	0	0	93	0	-40	9	-168
6/30/2015	11138	30	104	6	0	0	91	0	-41	9	-168
7/31/2015	11169	31	117	6	0	-3	90	0	-51	10	-171
8/31/2015	11200	31	121	6	0	-4	94	0	-54	10	-173
9/30/2015	11230	30	110	6	0	-4	89	0	-53	10	-157
10/31/2015	11261	31	120	6	0	-4	96	0	-58	10	-171
11/30/2015	11291	30	115	6	0	-4	96	0	-57	10	-166
12/31/2015	11322	31	111	6	0	-4	100	0	-58	11	-166

Flow Budget for Layer 5 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet STORAGE	Pumping from Wells	Santa Paula B	Mound L2-L4	Oxnard UAS	Offshore	Mound L6-L7
1/31/1985	31	31	-27	-112	27	-53	205	-12	-28
2/28/1985	59	28	-96	-63	26	-78	252	-28	-12
3/31/1985	90	31	-88	-98	30	-68	246	-23	0
4/30/1985	120	30	-4	-199	27	56	80	24	16
5/31/1985	151	31	30	-200	29	170	-74	27	17
6/30/1985	181	30	69	-200	29	256	-206	35	18
7/31/1985	212	31	67	-184	31	318	-251	5	13
8/31/1985	243	31	110	-184	31	326	-308	10	14
9/30/1985	273	30	130	-185	31	329	-338	20	13
10/31/1985	304	31	148	-185	32	318	-350	25	12
11/30/1985	334	30	43	-26	38	255	-245	-31	-33
12/31/1985	365	31	139	-178	35	207	-233	18	13
1/31/1986	396	31	12	-48	41	164	-126	-21	-24
2/28/1986	424	28	-103	-20	40	180	-8	-33	-56
3/31/1986	455	31	-78	-32	42	49	89	-38	-33
4/30/1986	485	30	-72	-71	37	-40	179	-20	-12
5/31/1986	516	31	21	-267	36	10	126	63	11
6/30/1986	546	30	48	-269	35	117	-13	74	8
7/31/1986	577	31	16	-139	39	152	-95	25	4
8/31/1986	608	31	26	-139	39	147	-100	21	6
9/30/1986	638	30	-16	-75	39	170	-106	-8	-4
10/31/1986	669	31	45	-138	39	216	-193	21	10
11/30/1986	699	30	10	-68	39	204	-178	-6	-2
12/31/1986	730	31	65	-138	39	198	-201	24	12
1/31/1987	761	31	-13	-54	40	144	-93	-16	-9
2/28/1987	789	28	-16	-68	36	79	-16	-8	-7
3/31/1987	820	31	-70	-53	40	54	59	-25	-7
4/30/1987	850	30	28	-180	35	91	-30	41	15
5/31/1987	881	31	76	-181	35	187	-177	50	11
6/30/1987	911	30	133	-182	34	253	-305	59	8
7/31/1987	942	31	173	-184	38	273	-373	67	6
8/31/1987	973	31	205	-184	38	245	-382	74	4
9/30/1987	1003	30	210	-184	37	252	-397	81	2
10/31/1987	1034	31	126	-68	42	216	-314	16	-19
11/30/1987	1064	30	138	-103	40	181	-274	28	-10
12/31/1987	1095	31	47	-36	44	170	-189	2	-37
1/31/1988	1126	31	-2	-45	45	68	-49	4	-21
2/29/1988	1155	29	-50	-82	41	13	63	24	-9
3/31/1988	1186	31	-35	-155	42	46	41	59	3
4/30/1988	1216	30	-124	-33	42	65	95	-6	-40
5/31/1988	1247	31	10	-157	42	76	-22	55	-3
6/30/1988	1277	30	24	-159	39	111	-75	65	-5
7/31/1988	1308	31	73	-245	38	184	-118	77	-9
8/31/1988	1339	31	110	-246	38	232	-203	81	-11
9/30/1988	1369	30	148	-247	37	256	-269	87	-12
10/31/1988	1400	31	179	-247	39	272	-320	92	-14

Flow Budget for Layer 5 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet						
			STORAGE	Pumping from Wells	Santa Paula B	Mound L2-L4	Oxnard UAS	Offshore	Mound L6-L7
11/30/1988	1430	30	153	-177	40	235	-301	71	-22
12/31/1988	1461	31	80	-50	44	204	-244	16	-49
1/31/1989	1492	31	165	-158	42	164	-275	73	-11
2/28/1989	1520	28	31	-37	40	140	-150	20	-43
3/31/1989	1551	31	59	-117	44	76	-102	58	-17
4/30/1989	1581	30	75	-159	40	108	-131	77	-10
5/31/1989	1612	31	98	-160	41	153	-200	82	-15
6/30/1989	1642	30	120	-161	40	161	-228	85	-17
7/31/1989	1673	31	175	-275	38	208	-239	110	-18
8/31/1989	1704	31	187	-275	39	216	-261	114	-20
9/30/1989	1734	30	195	-275	38	218	-274	118	-20
10/31/1989	1765	31	206	-276	40	222	-293	123	-22
11/30/1989	1795	30	210	-274	39	203	-283	127	-22
12/31/1989	1826	31	218	-272	40	199	-292	132	-24
1/31/1990	1857	31	128	-100	44	151	-253	73	-43
2/28/1990	1885	28	103	-109	41	114	-193	77	-33
3/31/1990	1916	31	144	-244	40	135	-192	133	-17
4/30/1990	1946	30	133	-242	38	157	-199	137	-24
5/31/1990	1977	31	141	-209	41	157	-233	135	-31
6/30/1990	2007	30	167	-241	38	183	-258	143	-34
7/31/1990	2038	31	188	-237	39	196	-294	147	-39
8/31/1990	2069	31	197	-235	39	197	-310	151	-38
9/30/1990	2099	30	197	-234	38	196	-313	153	-36
10/31/1990	2130	31	208	-234	39	186	-320	159	-38
11/30/1990	2160	30	206	-234	38	179	-313	161	-36
12/31/1990	2191	31	219	-234	39	171	-325	168	-38
1/31/1991	2222	31	182	-139	42	145	-328	142	-45
2/28/1991	2250	28	87	-44	39	126	-238	87	-57
3/31/1991	2281	31	-237	-15	43	417	-140	78	-145
4/30/1991	2311	30	-31	-177	32	52	30	145	-54
5/31/1991	2342	31	-101	-177	31	29	114	149	-47
6/30/1991	2372	30	-14	-177	31	80	-23	145	-45
7/31/1991	2403	31	26	-208	34	138	-105	153	-38
8/31/1991	2434	31	56	-208	37	162	-168	155	-34
9/30/1991	2464	30	79	-207	37	172	-210	155	-25
10/31/1991	2495	31	89	-208	38	174	-233	160	-22
11/30/1991	2525	30	81	-207	37	152	-202	159	-21
12/31/1991	2556	31	-52	-39	42	143	-120	90	-64
1/31/1992	2587	31	-34	-58	43	90	-93	98	-45
2/29/1992	2616	29	-298	-18	41	224	83	74	-106
3/31/1992	2647	31	-422	-29	42	-9	425	76	-84
4/30/1992	2677	30	-421	-190	35	-20	502	134	-40
5/31/1992	2708	31	-349	-191	36	63	343	131	-33
6/30/1992	2738	30	-212	-191	35	91	180	125	-30
7/31/1992	2769	31	-156	-147	30	146	55	104	-31
8/31/1992	2800	31	-88	-148	30	176	-44	105	-30

Flow Budget for Layer 5 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet						
			STORAGE	Pumping from Wells	Santa Paula B	Mound L2-L4	Oxnard UAS	Offshore	Mound L6-L7
9/30/1992	2830	30	-31	-149	29	185	-112	105	-28
10/31/1992	2861	31	-75	-77	38	115	-52	89	-37
11/30/1992	2891	30	-215	-148	31	21	237	97	-24
12/31/1992	2922	31	-458	-34	40	3	486	35	-72
1/31/1993	2953	31	-599	-37	42	100	592	18	-117
2/28/1993	2981	28	-621	-47	38	134	607	7	-118
3/31/1993	3012	31	-515	-74	38	33	624	2	-109
4/30/1993	3042	30	-292	-246	22	55	467	56	-63
5/31/1993	3073	31	-251	-260	22	4	485	48	-48
6/30/1993	3103	30	-218	-245	24	109	330	42	-41
7/31/1993	3134	31	-180	-200	30	190	171	31	-41
8/31/1993	3165	31	-73	-190	30	222	20	32	-41
9/30/1993	3195	30	-8	-190	28	160	16	34	-40
10/31/1993	3226	31	-48	-190	29	37	186	29	-44
11/30/1993	3256	30	-116	-178	29	-48	335	21	-44
12/31/1993	3287	31	-202	-71	33	-65	404	-28	-70
1/31/1994	3318	31	-103	-151	31	-4	271	12	-56
2/28/1994	3346	28	-195	-18	31	54	289	-50	-111
3/31/1994	3377	31	-121	-40	34	12	264	-51	-99
4/30/1994	3407	30	-12	-150	28	87	105	1	-60
5/31/1994	3438	31	1	-151	27	139	37	-1	-51
6/30/1994	3468	30	29	-152	25	198	-58	3	-45
7/31/1994	3499	31	61	-198	27	290	-139	9	-50
8/31/1994	3530	31	76	-199	27	343	-207	16	-57
9/30/1994	3560	30	96	-199	26	320	-209	25	-60
10/31/1994	3591	31	89	-199	27	225	-102	25	-64
11/30/1994	3621	30	-15	-87	29	86	93	-22	-84
12/31/1994	3652	31	-38	-113	30	69	161	-21	-88
1/31/1995	3683	31	-431	-8	22	385	307	-68	-207
2/28/1995	3711	28	-43	-98	3	-149	443	-31	-125
3/31/1995	3742	31	-215	-13	10	-20	497	-79	-180
4/30/1995	3772	30	1	-198	-2	-5	332	-18	-111
5/31/1995	3803	31	-49	-133	5	-45	381	-41	-117
6/30/1995	3833	30	-2	-198	5	84	231	-23	-97
7/31/1995	3864	31	-20	-191	13	58	269	-31	-98
8/31/1995	3895	31	-44	-191	17	35	324	-37	-103
9/30/1995	3925	30	-42	-191	18	61	294	-37	-104
10/31/1995	3956	31	-42	-191	21	89	276	-42	-110
11/30/1995	3986	30	-33	-191	20	111	239	-40	-107
12/31/1995	4017	31	-111	-52	28	80	286	-93	-138
1/31/1996	4048	31	-68	-60	29	76	239	-88	-128
2/29/1996	4077	29	-101	-12	30	109	240	-107	-159
3/31/1996	4108	31	-55	-51	30	2	303	-102	-127
4/30/1996	4138	30	-17	-108	25	49	225	-74	-99
5/31/1996	4169	31	3	-139	21	177	100	-73	-89
6/30/1996	4199	30	22	-140	19	272	-22	-67	-83

Flow Budget for Layer 5 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet						
			STORAGE	Pumping from Wells	Santa Paula B	Mound L2-L4	Oxnard UAS	Offshore	Mound L6-L7
7/31/1996	4230	31	62	-214	18	406	-135	-54	-84
8/31/1996	4261	31	78	-214	18	463	-213	-44	-87
9/30/1996	4291	30	112	-215	18	461	-257	-32	-87
10/31/1996	4322	31	62	-104	25	410	-220	-70	-104
11/30/1996	4352	30	33	-49	29	267	-85	-83	-112
12/31/1996	4383	31	-24	-22	33	135	115	-100	-136
1/31/1997	4414	31	-80	-17	34	-47	347	-108	-129
2/28/1997	4442	28	-20	-155	22	-64	338	-52	-69
3/31/1997	4473	31	-50	-157	22	20	297	-66	-66
4/30/1997	4503	30	-30	-157	20	117	175	-64	-61
5/31/1997	4534	31	1	-157	20	240	23	-67	-61
6/30/1997	4564	30	36	-157	20	319	-104	-59	-56
7/31/1997	4595	31	82	-167	22	405	-247	-40	-55
8/31/1997	4626	31	102	-168	22	443	-313	-32	-54
9/30/1997	4656	30	112	-168	22	397	-287	-23	-51
10/31/1997	4687	31	107	-168	23	348	-233	-24	-53
11/30/1997	4717	30	15	-39	28	265	-113	-81	-76
12/31/1997	4748	31	-27	-11	33	235	-23	-98	-109
1/31/1998	4779	31	-9	-42	33	84	93	-82	-77
2/28/1998	4807	28	-354	-3	23	299	307	-98	-174
3/31/1998	4838	31	-56	-44	12	-64	343	-94	-98
4/30/1998	4868	30	-61	-73	10	-202	483	-84	-73
5/31/1998	4899	31	-110	-59	15	-174	506	-102	-77
6/30/1998	4929	30	16	-211	7	-12	282	-26	-55
7/31/1998	4960	31	-36	-159	15	59	277	-91	-64
8/31/1998	4991	31	-6	-158	19	163	141	-93	-66
9/30/1998	5021	30	9	-158	20	227	51	-86	-63
10/31/1998	5052	31	10	-158	23	209	70	-90	-64
11/30/1998	5082	30	-31	-88	27	74	193	-107	-68
12/31/1998	5113	31	-28	-149	27	0	311	-102	-58
1/31/1999	5144	31	-91	-31	28	-3	311	-134	-80
2/28/1999	5172	28	-17	-96	22	92	150	-94	-57
3/31/1999	5203	31	-79	-24	28	130	180	-146	-89
4/30/1999	5233	30	-52	-28	27	116	157	-141	-79
5/31/1999	5264	31	18	-116	21	190	56	-111	-57
6/30/1999	5294	30	31	-117	19	303	-77	-102	-57
7/31/1999	5325	31	48	-131	19	377	-154	-98	-61
8/31/1999	5356	31	60	-131	20	421	-219	-91	-60
9/30/1999	5386	30	70	-131	20	429	-252	-80	-57
10/31/1999	5417	31	87	-131	22	394	-236	-78	-58
11/30/1999	5447	30	63	-78	25	318	-175	-91	-62
12/31/1999	5478	31	98	-130	24	357	-226	-71	-52
1/31/2000	5509	31	60	-74	28	345	-206	-90	-64
2/29/2000	5538	29	-34	-16	31	353	-110	-104	-121
3/31/2000	5569	31	40	-50	32	127	30	-101	-79
4/30/2000	5599	30	-19	-39	31	-9	214	-103	-76

Flow Budget for Layer 5 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet						
			STORAGE	Pumping from Wells	Santa Paula B	Mound L2-L4	Oxnard UAS	Offshore	Mound L6-L7
5/31/2000	5630	31	40	-198	22	77	155	-47	-48
6/30/2000	5660	30	51	-202	20	241	-18	-36	-55
7/31/2000	5691	31	57	-157	24	326	-143	-47	-61
8/31/2000	5722	31	78	-156	25	368	-215	-41	-59
9/30/2000	5752	30	92	-155	24	348	-223	-32	-55
10/31/2000	5783	31	46	-82	31	219	-90	-60	-63
11/30/2000	5813	30	62	-153	26	124	23	-31	-50
12/31/2000	5844	31	35	-155	26	167	15	-32	-56
1/31/2001	5875	31	-63	-25	34	214	42	-91	-111
2/28/2001	5903	28	-74	-22	34	103	147	-88	-101
3/31/2001	5934	31	-125	-22	39	-70	387	-106	-103
4/30/2001	5964	30	-74	-112	31	-144	433	-73	-61
5/31/2001	5995	31	-40	-195	19	8	306	-44	-54
6/30/2001	6025	30	-5	-197	15	183	101	-37	-60
7/31/2001	6056	31	8	-141	17	290	-52	-57	-66
8/31/2001	6087	31	43	-140	18	354	-159	-54	-62
9/30/2001	6117	30	62	-139	17	353	-191	-45	-57
10/31/2001	6148	31	58	-139	19	236	-71	-46	-57
11/30/2001	6178	30	-50	-34	30	56	181	-95	-87
12/31/2001	6209	31	-69	-67	30	-17	283	-94	-66
1/31/2002	6240	31	-77	-79	31	1	273	-91	-59
2/28/2002	6268	28	-27	-112	21	93	139	-67	-47
3/31/2002	6299	31	-9	-113	22	195	37	-77	-55
4/30/2002	6329	30	27	-113	20	276	-87	-70	-53
5/31/2002	6360	31	52	-114	21	334	-171	-68	-53
6/30/2002	6390	30	69	-113	20	349	-216	-59	-50
7/31/2002	6421	31	101	-174	24	398	-259	-38	-52
8/31/2002	6452	31	112	-175	25	405	-281	-31	-55
9/30/2002	6482	30	115	-175	24	371	-260	-20	-55
10/31/2002	6513	31	107	-175	25	314	-193	-19	-59
11/30/2002	6543	30	3	-26	32	292	-123	-75	-103
12/31/2002	6574	31	13	-33	36	234	-88	-76	-87
1/31/2003	6605	31	105	-229	34	225	-77	-12	-46
2/28/2003	6633	28	-29	-31	33	190	-14	-63	-86
3/31/2003	6664	31	-25	-45	38	84	96	-73	-75
4/30/2003	6694	30	23	-189	34	63	137	-26	-43
5/31/2003	6725	31	-57	-92	35	19	207	-61	-51
6/30/2003	6755	30	15	-229	30	87	153	-17	-39
7/31/2003	6786	31	40	-280	25	256	29	-23	-48
8/31/2003	6817	31	71	-280	24	351	-103	-14	-48
9/30/2003	6847	30	90	-277	24	392	-179	-4	-46
10/31/2003	6878	31	121	-280	25	387	-209	1	-47
11/30/2003	6908	30	52	-98	32	259	-153	-32	-61
12/31/2003	6939	31	55	-119	34	227	-112	-35	-49
1/31/2004	6970	31	140	-382	27	287	-66	21	-27
2/29/2004	6999	29	-58	-39	33	177	12	-43	-83

Flow Budget for Layer 5 in Mound Basin

Date	Stress	days in month	STORAGE	Pumping from Wells	Santa Paula B	Mound L2-L4	Oxnard UAS	Offshore	Mound L6-L7
			influx(+) outflux(-); units in Acre-feet						
3/31/2004	7030	31	71	-342	29	158	106	8	-29
4/30/2004	7060	30	39	-383	24	184	133	26	-23
5/31/2004	7091	31	71	-383	25	255	28	30	-25
6/30/2004	7121	30	111	-383	24	298	-64	38	-24
7/31/2004	7152	31	117	-285	21	319	-185	42	-28
8/31/2004	7183	31	153	-286	21	345	-252	48	-30
9/30/2004	7213	30	192	-286	21	337	-291	56	-29
10/31/2004	7244	31	70	-41	36	252	-225	-13	-80
11/30/2004	7274	30	176	-284	25	243	-183	50	-27
12/31/2004	7305	31	-6	-32	38	213	-116	-14	-84
1/31/2005	7336	31	-311	-11	38	317	118	-31	-121
2/28/2005	7364	28	-278	-12	28	51	347	-35	-101
3/31/2005	7395	31	-289	-40	26	-174	587	-40	-70
4/30/2005	7425	30	-229	-131	11	-228	652	-18	-58
5/31/2005	7456	31	-163	-189	7	-217	625	-2	-61
6/30/2005	7486	30	-171	-190	8	-181	608	-6	-67
7/31/2005	7517	31	-142	-184	18	-13	436	-36	-80
8/31/2005	7548	31	-104	-184	21	51	347	-45	-86
9/30/2005	7578	30	-80	-185	21	86	291	-47	-87
10/31/2005	7609	31	-122	-90	28	13	352	-78	-103
11/30/2005	7639	30	-70	-184	23	71	309	-59	-91
12/31/2005	7670	31	-59	-180	22	149	232	-64	-100
1/31/2006	7701	31	-84	-96	30	157	212	-90	-129
2/28/2006	7729	28	-61	-98	29	120	210	-83	-115
3/31/2006	7760	31	-86	-78	33	71	298	-105	-133
4/30/2006	7790	30	-96	-63	32	-81	454	-111	-135
5/31/2006	7821	31	-35	-170	29	-27	399	-88	-109
6/30/2006	7851	30	55	-401	16	210	243	-38	-85
7/31/2006	7882	31	-14	-226	20	247	158	-79	-107
8/31/2006	7913	31	6	-226	20	311	84	-81	-115
9/30/2006	7943	30	21	-225	20	333	38	-73	-114
10/31/2006	7974	31	23	-226	21	305	71	-74	-120
11/30/2006	8004	30	29	-225	20	290	71	-67	-117
12/31/2006	8035	31	12	-194	23	286	71	-74	-124
1/31/2007	8066	31	-27	-121	28	260	85	-93	-133
2/28/2007	8094	28	27	-236	22	266	76	-56	-100
3/31/2007	8125	31	67	-376	22	314	87	-25	-89
4/30/2007	8155	30	9	-213	25	316	25	-63	-98
5/31/2007	8186	31	99	-376	23	426	-73	-18	-81
6/30/2007	8216	30	105	-374	21	486	-160	-5	-74
7/31/2007	8247	31	83	-255	21	506	-238	-34	-82
8/31/2007	8278	31	109	-255	21	511	-277	-28	-81
9/30/2007	8308	30	120	-254	23	453	-248	-18	-74
10/31/2007	8339	31	109	-254	23	360	-147	-16	-76
11/30/2007	8369	30	94	-254	23	312	-93	-10	-72
12/31/2007	8400	31	7	-73	32	273	-84	-55	-100

Flow Budget for Layer 5 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet						
			STORAGE	Pumping from Wells	Santa Paula B	Mound L2-L4	Oxnard UAS	Offshore	Mound L6-L7
1/31/2008	8431	31	-119	-22	37	345	-20	-72	-148
2/29/2008	8460	29	32	-90	31	62	112	-53	-93
3/31/2008	8491	31	64	-243	25	13	232	-21	-71
4/30/2008	8521	30	-3	-245	23	52	254	-18	-64
5/31/2008	8552	31	-13	-246	26	171	149	-23	-65
6/30/2008	8582	30	16	-246	25	273	13	-19	-62
7/31/2008	8613	31	36	-255	25	353	-76	-13	-69
8/31/2008	8644	31	66	-256	25	412	-166	-8	-72
9/30/2008	8674	30	87	-256	24	416	-200	0	-71
10/31/2008	8705	31	111	-256	25	359	-166	3	-75
11/30/2008	8735	30	19	-76	32	184	-28	-38	-92
12/31/2008	8766	31	-4	-79	35	147	34	-43	-90
1/31/2009	8797	31	4	-133	33	124	65	-24	-69
2/28/2009	8825	28	-97	-21	33	122	118	-53	-102
3/31/2009	8856	31	-29	-132	32	68	166	-32	-73
4/30/2009	8886	30	-27	-133	29	117	113	-29	-70
5/31/2009	8917	31	3	-134	29	199	7	-30	-74
6/30/2009	8947	30	39	-134	28	266	-105	-23	-71
7/31/2009	8978	31	135	-346	23	427	-179	3	-64
8/31/2009	9009	31	166	-346	23	439	-234	14	-62
9/30/2009	9039	30	203	-345	23	420	-265	24	-58
10/31/2009	9070	31	147	-138	33	315	-286	-3	-68
11/30/2009	9100	30	233	-343	26	353	-253	32	-47
12/31/2009	9131	31	127	-84	35	237	-229	-13	-73
1/31/2010	9162	31	45	-45	39	204	-130	-23	-90
2/28/2010	9190	28	-8	-61	36	113	2	-18	-64
3/31/2010	9221	31	8	-364	33	118	180	52	-28
4/30/2010	9251	30	-124	-168	34	56	238	6	-42
5/31/2010	9282	31	-40	-365	31	160	195	45	-27
6/30/2010	9312	30	0	-364	28	214	101	52	-31
7/31/2010	9343	31	48	-255	30	254	-73	34	-37
8/31/2010	9374	31	111	-256	30	287	-174	40	-38
9/30/2010	9404	30	159	-256	29	294	-236	46	-36
10/31/2010	9435	31	61	-69	34	195	-161	-5	-56
11/30/2010	9465	30	57	-180	31	120	-7	17	-38
12/31/2010	9496	31	-202	-20	37	166	159	-27	-113
1/31/2011	9527	31	-63	-254	33	50	265	18	-50
2/28/2011	9555	28	-186	-62	33	-33	324	-20	-57
3/31/2011	9586	31	-308	-35	39	-59	476	-41	-71
4/30/2011	9616	30	-192	-254	33	-93	536	1	-31
5/31/2011	9647	31	-184	-255	32	-87	527	-2	-33
6/30/2011	9677	30	-116	-256	29	87	294	-3	-35
7/31/2011	9708	31	-93	-178	25	144	161	-17	-43
8/31/2011	9739	31	-38	-179	25	214	46	-19	-48
9/30/2011	9769	30	9	-180	24	249	-38	-16	-49
10/31/2011	9800	31	-30	-78	30	164	20	-44	-62

Flow Budget for Layer 5 in Mound Basin

Date	Stress	days in month	STORAGE	Pumping from Wells	Santa Paula B	Mound L2-L4	Oxnard UAS	Offshore	Mound L6-L7
			influx(+) outflux(-); units in Acre-feet						
11/30/2011	9830	30	-48	-67	29	52	148	-52	-63
12/31/2011	9861	31	-9	-179	26	101	141	-30	-50
1/31/2012	9892	31	-56	-114	30	129	136	-56	-67
2/29/2012	9921	29	32	-286	24	228	70	-17	-50
3/31/2012	9952	31	-44	-84	31	193	38	-56	-79
4/30/2012	9982	30	-22	-84	31	175	33	-57	-75
5/31/2012	10013	31	50	-286	27	228	53	-21	-52
6/30/2012	10043	30	52	-287	25	288	-15	-11	-52
7/31/2012	10074	31	56	-209	25	335	-134	-11	-61
8/31/2012	10105	31	106	-209	25	360	-214	-6	-62
9/30/2012	10135	30	136	-209	24	360	-253	3	-61
10/31/2012	10166	31	159	-209	26	315	-235	7	-62
11/30/2012	10196	30	90	-111	30	204	-126	-20	-67
12/31/2012	10227	31	50	-58	34	195	-111	-33	-77
1/31/2013	10258	31	56	-102	35	165	-75	-23	-56
2/28/2013	10286	28	71	-157	27	188	-86	-1	-43
3/31/2013	10317	31	50	-103	32	197	-102	-18	-55
4/30/2013	10347	30	102	-157	29	214	-143	2	-46
5/31/2013	10378	31	130	-158	29	229	-188	6	-48
6/30/2013	10408	30	144	-158	28	233	-214	12	-47
7/31/2013	10439	31	184	-247	31	291	-241	27	-46
8/31/2013	10470	31	197	-247	32	282	-254	35	-43
9/30/2013	10500	30	207	-246	31	270	-262	41	-41
10/31/2013	10531	31	231	-247	32	265	-287	47	-41
11/30/2013	10561	30	230	-246	32	259	-288	52	-39
12/31/2013	10592	31	234	-246	33	265	-302	58	-40
1/31/2014	10623	31	216	-187	30	242	-311	55	-44
2/28/2014	10651	28	100	-33	32	197	-244	16	-69
3/31/2014	10682	31	136	-94	35	168	-226	30	-49
4/30/2014	10712	30	145	-185	30	185	-194	56	-37
5/31/2014	10743	31	159	-186	31	207	-229	63	-43
6/30/2014	10773	30	177	-187	30	216	-257	67	-46
7/31/2014	10804	31	220	-240	28	232	-289	94	-45
8/31/2014	10835	31	212	-240	28	232	-290	100	-43
9/30/2014	10865	30	212	-239	27	218	-280	102	-41
10/31/2014	10896	31	217	-239	29	211	-282	107	-42
11/30/2014	10926	30	154	-134	31	180	-261	79	-49
12/31/2014	10957	31	53	-39	38	196	-227	49	-70
1/31/2015	10988	31	69	-72	38	133	-181	53	-41
2/28/2015	11016	28	95	-161	29	140	-150	73	-25
3/31/2015	11047	31	96	-163	33	154	-174	82	-29
4/30/2015	11077	30	103	-163	30	160	-181	83	-32
5/31/2015	11108	31	106	-163	31	168	-196	87	-33
6/30/2015	11138	30	110	-163	30	168	-200	88	-34
7/31/2015	11169	31	117	-148	25	171	-236	103	-31
8/31/2015	11200	31	119	-147	24	173	-240	104	-32

Flow Budget for Layer 5 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet						
			STORAGE	Pumping from Wells	Santa Paula B	Mound L2-L4	Oxnard UAS	Offshore	Mound L6-L7
9/30/2015	11230	30	105	-117	23	157	-235	96	-29
10/31/2015	11261	31	118	-145	25	171	-247	107	-28
11/30/2015	11291	30	118	-146	24	166	-242	107	-28
12/31/2015	11322	31	124	-146	26	166	-252	111	-29

Flow Budget for Layers 6 to 7 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet								
			STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Santa Paula B	Mound L5	Oxnard LAS	Offshore	Mound L8-L11
1/31/1985	31	31	364	34	41	-226	180	28	-340	-156	75
2/28/1985	59	28	82	59	58	-137	161	12	-310	-110	187
3/31/1985	90	31	100	36	47	-192	178	0	-386	-103	319
4/30/1985	120	30	349	0	15	-400	173	-16	-498	-67	444
5/31/1985	151	31	354	0	15	-399	181	-17	-518	-57	441
6/30/1985	181	30	353	0	15	-399	177	-18	-515	-49	436
7/31/1985	212	31	467	0	14	-607	186	-13	-483	-41	478
8/31/1985	243	31	460	0	14	-606	190	-14	-475	-37	468
9/30/1985	273	30	462	0	14	-606	186	-13	-466	-30	453
10/31/1985	304	31	459	0	14	-606	194	-12	-477	-28	456
11/30/1985	334	30	-234	380	136	-91	185	33	-294	-71	-47
12/31/1985	365	31	415	0	14	-575	189	-13	-439	-45	454
1/31/1986	396	31	-132	298	119	-161	192	24	-311	-71	40
2/28/1986	424	28	-785	777	267	-73	169	56	-253	-79	-58
3/31/1986	455	31	-420	481	170	-118	182	33	-283	-90	43
4/30/1986	485	30	114	63	68	-283	178	12	-335	-74	256
5/31/1986	516	31	721	0	18	-934	197	-11	-535	-15	558
6/30/1986	546	30	693	0	18	-932	200	-8	-523	11	543
7/31/1986	577	31	246	0	17	-408	204	-4	-445	-17	406
8/31/1986	608	31	252	0	17	-409	203	-6	-452	-28	423
9/30/1986	638	30	40	19	43	-206	196	4	-353	-48	305
10/31/1986	669	31	267	0	17	-410	201	-10	-459	-37	430
11/30/1986	699	30	52	52	45	-198	194	2	-359	-49	261
12/31/1986	730	31	284	0	17	-410	200	-12	-459	-35	417
1/31/1987	761	31	6	91	63	-205	198	9	-314	-54	205
2/28/1987	789	28	31	63	60	-225	177	7	-288	-49	224
3/31/1987	820	31	-17	106	65	-196	196	7	-296	-61	197
4/30/1987	850	30	451	0	9	-662	189	-15	-432	-15	475
5/31/1987	881	31	462	0	9	-661	198	-11	-447	0	449
6/30/1987	911	30	464	0	9	-661	194	-8	-447	8	441
7/31/1987	942	31	435	0	16	-584	208	-6	-516	10	437
8/31/1987	973	31	437	0	16	-584	212	-4	-531	11	442
9/30/1987	1003	30	444	0	15	-584	209	-2	-530	14	433
10/31/1987	1034	31	37	91	58	-220	216	19	-366	-27	193
11/30/1987	1064	30	155	55	42	-345	208	10	-397	-26	298
12/31/1987	1095	31	-185	312	116	-108	212	37	-308	-48	-28
1/31/1988	1126	31	-63	170	80	-193	212	21	-305	-51	130
2/29/1988	1155	29	105	94	56	-345	201	9	-343	-31	254
3/31/1988	1186	31	424	0	16	-700	220	-3	-448	2	489
4/30/1988	1216	30	-172	215	101	-138	210	40	-259	-30	33
5/31/1988	1247	31	405	0	16	-716	221	3	-436	3	505
6/30/1988	1277	30	420	0	15	-715	218	5	-430	22	465
7/31/1988	1308	31	365	0	16	-707	222	9	-395	31	459
8/31/1988	1339	31	360	0	16	-706	223	11	-398	32	463
9/30/1988	1369	30	365	0	16	-706	217	12	-396	35	457
10/31/1988	1400	31	353	0	16	-706	226	14	-407	36	466
11/30/1988	1430	30	146	17	38	-456	221	22	-350	19	342
12/31/1988	1461	31	-243	305	109	-139	226	49	-258	-20	-30
1/31/1989	1492	31	351	0	13	-548	229	11	-470	14	401
2/28/1989	1520	28	-173	219	96	-119	207	43	-256	-9	-8
3/31/1989	1551	31	175	0	14	-389	230	17	-410	6	357
4/30/1989	1581	30	338	0	13	-548	226	10	-455	30	387
5/31/1989	1612	31	329	0	13	-547	236	15	-464	40	378
6/30/1989	1642	30	330	0	13	-547	231	17	-458	44	370
7/31/1989	1673	31	327	0	13	-653	237	18	-402	53	407
8/31/1989	1704	31	317	0	13	-653	237	20	-396	54	408
9/30/1989	1734	30	321	0	13	-653	231	20	-389	56	402
10/31/1989	1765	31	309	0	13	-653	240	22	-397	59	406
11/30/1989	1795	30	315	0	12	-655	235	22	-390	62	400
12/31/1989	1826	31	301	0	13	-657	244	24	-397	65	408
1/31/1990	1857	31	-91	143	66	-258	245	43	-298	29	122
2/28/1990	1885	28	-39	146	64	-280	220	33	-291	22	125
3/31/1990	1916	31	470	0	10	-831	247	17	-453	68	471
4/30/1990	1946	30	483	0	10	-833	244	24	-448	87	432

Flow Budget for Layers 6 to 7 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet								
			STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Santa Paula B	Mound L5	Oxnard LAS	Offshore	Mound L8-L11
5/31/1990	1977	31	328	0	9	-653	255	31	-440	82	388
6/30/1990	2007	30	462	0	10	-835	249	34	-455	94	441
7/31/1990	2038	31	255	0	11	-644	255	39	-402	86	401
8/31/1990	2069	31	244	0	11	-645	254	38	-401	81	419
9/30/1990	2099	30	257	0	11	-647	246	36	-394	81	410
10/31/1990	2130	31	247	0	11	-647	255	38	-402	85	413
11/30/1990	2160	30	257	0	11	-648	248	36	-394	85	405
12/31/1990	2191	31	244	0	11	-648	257	38	-400	89	409
1/31/1991	2222	31	41	40	36	-443	263	45	-314	73	261
2/28/1991	2250	28	-229	181	83	-134	235	57	-215	32	-11
3/31/1991	2281	31	-1281	1294	436	-21	250	145	-203	11	-509
4/30/1991	2311	30	509	0	9	-612	239	54	-309	56	55
5/31/1991	2342	31	313	0	9	-612	253	47	-317	74	232
6/30/1991	2372	30	196	0	9	-612	248	45	-311	78	347
7/31/1991	2403	31	123	0	10	-603	252	38	-274	71	382
8/31/1991	2434	31	116	0	10	-603	250	34	-274	70	396
9/30/1991	2464	30	139	0	10	-604	242	25	-271	70	388
10/31/1991	2495	31	127	0	10	-604	251	22	-281	73	391
11/30/1991	2525	30	130	0	10	-604	244	21	-278	72	385
12/31/1991	2556	31	-381	362	123	-91	251	64	-215	34	-148
1/31/1992	2587	31	-245	159	75	-210	248	45	-194	25	96
2/29/1992	2616	29	-1019	963	309	-48	227	106	-168	10	-324
3/31/1992	2647	31	-574	534	180	-93	235	84	-167	7	-210
4/30/1992	2677	30	348	0	9	-794	226	40	-155	50	277
5/31/1992	2708	31	257	0	9	-792	239	33	-148	64	335
6/30/1992	2738	30	133	0	9	-792	233	30	-137	67	451
7/31/1992	2769	31	-10	0	10	-624	225	31	-137	64	425
8/31/1992	2800	31	-1	0	10	-622	222	30	-143	61	429
9/30/1992	2830	30	26	0	10	-622	213	28	-145	61	417
10/31/1992	2861	31	-224	69	57	-261	232	37	-169	38	220
11/30/1992	2891	30	53	0	10	-623	212	24	-159	53	418
12/31/1992	2922	31	-465	383	135	-74	230	72	-152	16	-147
1/31/1993	2953	31	-988	807	269	3	225	117	-151	-1	-272
2/28/1993	2981	28	-1015	841	278	12	198	118	-127	-7	-255
3/31/1993	3012	31	-656	457	161	10	214	109	-141	-10	-146
4/30/1993	3042	30	40	0	8	-244	186	63	-243	22	168
5/31/1993	3073	31	23	0	9	-230	192	48	-260	30	188
6/30/1993	3103	30	14	0	8	-234	189	41	-261	31	212
7/31/1993	3134	31	62	0	10	-492	206	41	-201	34	340
8/31/1993	3165	31	54	0	10	-503	206	41	-195	34	353
9/30/1993	3195	30	71	0	9	-504	200	40	-194	35	342
10/31/1993	3226	31	59	0	10	-504	207	44	-200	36	349
11/30/1993	3256	30	9	0	9	-445	204	44	-183	32	330
12/31/1993	3287	31	-232	58	49	-190	214	70	-157	4	183
1/31/1994	3318	31	1	0	9	-466	210	56	-178	21	346
2/28/1994	3346	28	-627	558	194	-52	191	111	-127	-9	-244
3/31/1994	3377	31	-218	119	65	-131	206	99	-135	-17	12
4/30/1994	3407	30	42	0	9	-467	195	60	-165	12	313
5/31/1994	3438	31	42	0	9	-465	204	51	-181	20	320
6/30/1994	3468	30	60	0	9	-465	197	45	-183	23	315
7/31/1994	3499	31	325	0	10	-779	214	50	-249	43	387
8/31/1994	3530	31	317	0	10	-779	220	57	-246	55	366
9/30/1994	3560	30	314	0	10	-779	216	60	-241	59	362
10/31/1994	3591	31	295	0	10	-778	227	64	-246	62	366
11/30/1994	3621	30	-96	10	44	-322	220	84	-176	27	209
12/31/1994	3652	31	-32	20	35	-435	225	88	-187	21	263
1/31/1995	3683	31	-1834	1870	608	-24	218	207	-128	-13	-624
2/28/1995	3711	28	206	61	44	-394	184	125	-165	4	-65
3/31/1995	3742	31	-1121	929	329	-46	213	180	-125	-21	-306
4/30/1995	3772	30	350	0	9	-735	185	111	-189	27	242
5/31/1995	3803	31	18	14	41	-419	202	117	-173	19	180
6/30/1995	3833	30	281	0	9	-734	191	97	-196	38	316
7/31/1995	3864	31	106	0	10	-574	204	98	-192	36	313
8/31/1995	3895	31	63	0	10	-575	202	103	-180	33	345

Flow Budget for Layers 6 to 7 in Mound Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Santa Paula B	Mound L5	Oxnard LAS	Offshore	Mound L8-L11
			influx(+) outflux(-); units in Acre-feet								
9/30/1995	3925	30	75	0	10	-575	194	104	-173	33	332
10/31/1995	3956	31	58	0	10	-575	200	110	-174	33	338
11/30/1995	3986	30	69	0	10	-576	193	107	-170	34	333
12/31/1995	4017	31	-343	154	84	-147	208	138	-120	-8	34
1/31/1996	4048	31	-222	24	46	-259	204	128	-129	-15	222
2/29/1996	4077	29	-900	713	227	-55	188	159	-95	-30	-215
3/31/1996	4108	31	-122	98	58	-260	193	127	-123	-25	54
4/30/1996	4138	30	59	0	12	-438	184	99	-158	-2	243
5/31/1996	4169	31	138	0	10	-595	190	89	-168	14	323
6/30/1996	4199	30	143	0	10	-594	184	83	-166	20	320
7/31/1996	4230	31	350	0	12	-857	194	84	-223	43	397
8/31/1996	4261	31	352	0	12	-856	198	87	-228	54	381
9/30/1996	4291	30	360	0	11	-856	194	87	-230	59	375
10/31/1996	4322	31	-76	98	53	-376	209	104	-175	24	138
11/30/1996	4352	30	-249	158	85	-192	202	112	-151	-7	41
12/31/1996	4383	31	-672	589	195	-94	203	136	-139	-27	-197
1/31/1997	4414	31	-678	536	179	-45	196	129	-132	-38	-151
2/28/1997	4442	28	140	0	9	-363	160	69	-182	-3	169
3/31/1997	4473	31	77	0	10	-361	181	66	-202	3	226
4/30/1997	4503	30	48	0	10	-361	176	61	-202	6	263
5/31/1997	4534	31	41	0	10	-361	183	61	-213	5	274
6/30/1997	4564	30	60	0	10	-361	176	56	-214	6	268
7/31/1997	4595	31	166	0	11	-448	188	55	-273	20	282
8/31/1997	4626	31	187	0	11	-448	190	54	-285	25	266
9/30/1997	4656	30	205	0	11	-448	185	51	-286	27	255
10/31/1997	4687	31	206	0	11	-448	192	53	-297	27	255
11/30/1997	4717	30	-179	188	90	-106	193	76	-201	-15	-47
12/31/1997	4748	31	-641	607	226	-37	196	109	-173	-40	-254
1/31/1998	4779	31	-225	278	105	-102	191	77	-208	-37	-81
2/28/1998	4807	28	-2155	2070	698	-15	175	174	-140	-46	-409
3/31/1998	4838	31	-297	309	110	-113	193	98	-206	-45	-48
4/30/1998	4868	30	1	89	58	-176	187	73	-228	-31	29
5/31/1998	4899	31	-243	225	81	-131	198	77	-198	-36	27
6/30/1998	4929	30	431	0	9	-499	177	55	-405	15	217
7/31/1998	4960	31	211	0	10	-444	195	64	-255	7	212
8/31/1998	4991	31	164	0	10	-445	194	66	-241	-1	253
9/30/1998	5021	30	123	0	9	-446	187	63	-238	0	302
10/31/1998	5052	31	123	0	10	-446	194	64	-244	0	300
11/30/1998	5082	30	-56	32	35	-256	190	68	-200	-17	204
12/31/1998	5113	31	76	0	9	-406	194	58	-217	-10	295
1/31/1999	5144	31	-207	125	74	-225	196	80	-116	-37	110
2/28/1999	5172	28	180	8	31	-700	178	57	-92	-14	353
3/31/1999	5203	31	-282	203	96	-183	196	89	-100	-40	21
4/30/1999	5233	30	-232	123	73	-219	187	79	-97	-45	130
5/31/1999	5264	31	274	0	10	-872	190	57	-84	-13	437
6/30/1999	5294	30	291	0	10	-871	184	57	-73	2	399
7/31/1999	5325	31	195	0	11	-650	188	61	-147	8	336
8/31/1999	5356	31	204	0	11	-650	189	60	-162	11	338
9/30/1999	5386	30	225	0	11	-651	184	57	-168	14	329
10/31/1999	5417	31	226	0	11	-651	191	58	-181	14	330
11/30/1999	5447	30	17	0	14	-372	187	62	-159	-4	255
12/31/1999	5478	31	228	0	11	-651	192	52	-192	7	353
1/31/2000	5509	31	-4	83	59	-388	199	64	-166	-11	163
2/29/2000	5538	29	-889	863	292	-79	182	121	-141	-34	-285
3/31/2000	5569	31	-14	153	77	-285	190	79	-160	-37	-3
4/30/2000	5599	30	-164	211	101	-235	187	76	-149	-37	9
5/31/2000	5630	31	649	0	12	-1175	193	48	-194	16	451
6/30/2000	5660	30	605	0	11	-1172	194	55	-182	42	448
7/31/2000	5691	31	244	0	11	-705	202	61	-192	32	346
8/31/2000	5722	31	232	0	11	-706	203	59	-197	26	372
9/30/2000	5752	30	249	0	11	-707	197	55	-198	27	365
10/31/2000	5783	31	-35	45	43	-368	210	63	-186	4	224
11/30/2000	5813	30	252	0	11	-708	199	50	-207	20	384
12/31/2000	5844	31	246	0	11	-707	206	56	-209	26	371

Flow Budget for Layers 6 to 7 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet								
			STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Santa Paula B	Mound L5	Oxnard LAS	Offshore	Mound L8-L11
1/31/2001	5875	31	-658	601	213	-98	203	111	-137	-19	-223
2/28/2001	5903	28	-730	618	219	-89	175	101	-121	-34	-147
3/31/2001	5934	31	-814	688	225	-99	189	103	-130	-45	-124
4/30/2001	5964	30	202	58	45	-654	188	61	-132	-17	249
5/31/2001	5995	31	536	0	11	-1136	203	54	-134	20	448
6/30/2001	6025	30	500	0	10	-1135	201	60	-128	35	456
7/31/2001	6056	31	104	0	10	-637	205	66	-141	17	376
8/31/2001	6087	31	103	0	10	-638	203	62	-152	11	400
9/30/2001	6117	30	136	0	10	-639	196	57	-156	10	386
10/31/2001	6148	31	141	0	10	-639	203	57	-167	10	384
11/30/2001	6178	30	-335	271	111	-118	196	87	-145	-22	-44
12/31/2001	6209	31	-141	65	47	-306	200	66	-143	-27	240
1/31/2002	6240	31	-105	10	32	-281	200	59	-166	-24	275
2/28/2002	6268	28	120	0	8	-502	178	47	-171	-6	326
3/31/2002	6299	31	106	0	9	-500	198	55	-188	-3	324
4/30/2002	6329	30	110	0	9	-501	191	53	-186	0	324
5/31/2002	6360	31	105	0	9	-500	197	53	-194	1	329
6/30/2002	6390	30	122	0	9	-501	191	50	-193	3	319
7/31/2002	6421	31	298	0	11	-747	205	52	-218	23	376
8/31/2002	6452	31	307	0	11	-747	209	55	-225	30	360
9/30/2002	6482	30	319	0	11	-747	205	55	-230	35	352
10/31/2002	6513	31	314	0	11	-746	214	59	-244	37	354
11/30/2002	6543	30	-460	500	178	-81	200	103	-183	-10	-250
12/31/2002	6574	31	-357	379	129	-114	201	87	-183	-28	-116
1/31/2003	6605	31	470	0	10	-721	210	46	-329	10	304
2/28/2003	6633	28	-474	448	163	-78	187	86	-162	-13	-161
3/31/2003	6664	31	-313	279	111	-122	202	75	-171	-30	-32
4/30/2003	6694	30	273	44	34	-554	203	43	-265	0	221
5/31/2003	6725	31	-52	73	48	-299	213	51	-203	-6	175
6/30/2003	6755	30	348	0	10	-722	212	39	-281	21	373
7/31/2003	6786	31	248	0	11	-794	218	48	-160	34	395
8/31/2003	6817	31	229	0	11	-794	218	48	-151	33	405
9/30/2003	6847	30	235	0	11	-797	212	46	-151	36	408
10/31/2003	6878	31	225	0	11	-794	220	47	-160	39	412
11/30/2003	6908	30	-179	105	74	-259	211	61	-148	8	127
12/31/2003	6939	31	-126	89	51	-329	216	49	-154	-1	206
1/31/2004	6970	31	161	0	10	-687	215	27	-154	15	413
2/29/2004	6999	29	-633	580	199	-61	194	83	-134	-13	-221
3/31/2004	7030	31	231	0	10	-615	202	29	-150	2	290
4/30/2004	7060	30	219	0	11	-701	201	23	-148	16	379
5/31/2004	7091	31	188	0	11	-700	211	25	-155	21	399
6/30/2004	7121	30	192	0	11	-700	205	24	-154	24	398
7/31/2004	7152	31	175	0	12	-487	209	28	-284	30	317
8/31/2004	7183	31	208	0	12	-488	210	30	-309	35	301
9/30/2004	7213	30	235	0	12	-488	204	29	-317	37	287
10/31/2004	7244	31	-478	542	181	-62	210	80	-218	-2	-256
11/30/2004	7274	30	315	0	12	-488	196	27	-313	17	234
12/31/2004	7305	31	-679	690	217	-46	207	84	-214	-11	-253
1/31/2005	7336	31	-1257	1255	377	-40	202	121	-191	-32	-286
2/28/2005	7364	28	-1002	860	286	-52	181	101	-165	-36	-123
3/31/2005	7395	31	-189	218	100	-171	204	70	-207	-34	9
4/30/2005	7425	30	346	0	11	-605	202	58	-278	0	266
5/31/2005	7456	31	532	0	9	-821	215	61	-354	36	321
6/30/2005	7486	30	519	0	9	-820	212	67	-346	50	309
7/31/2005	7517	31	197	0	11	-554	221	80	-276	35	286
8/31/2005	7548	31	138	0	11	-553	218	86	-263	28	335
9/30/2005	7578	30	150	0	11	-552	210	87	-255	28	322
10/31/2005	7609	31	-158	32	38	-264	215	103	-188	4	217
11/30/2005	7639	30	136	0	11	-535	207	91	-249	17	322
12/31/2005	7670	31	145	0	11	-547	215	100	-253	25	303
1/31/2006	7701	31	-308	332	106	-237	215	129	-175	2	-64
2/28/2006	7729	28	-199	206	84	-257	191	115	-158	-6	24
3/31/2006	7760	31	-401	321	115	-201	209	133	-147	-17	-13
4/30/2006	7790	30	-561	423	145	-159	197	135	-126	-25	-31

Flow Budget for Layers 6 to 7 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet								
			STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Santa Paula B	Mound L5	Oxnard LAS	Offshore	Mound L8-L11
5/31/2006	7821	31	111	22	48	-459	204	109	-229	-3	198
6/30/2006	7851	30	734	0	12	-1181	210	85	-367	62	445
7/31/2006	7882	31	204	0	11	-586	220	107	-264	51	259
8/31/2006	7913	31	156	0	11	-586	219	115	-254	39	299
9/30/2006	7943	30	172	0	10	-586	212	114	-253	38	292
10/31/2006	7974	31	156	0	11	-585	220	120	-257	39	298
11/30/2006	8004	30	166	0	10	-586	214	117	-255	39	295
12/31/2006	8035	31	-20	0	14	-433	218	124	-204	31	270
1/31/2007	8066	31	-321	126	73	-147	214	133	-135	-5	62
2/28/2007	8094	28	-39	40	39	-373	191	100	-169	5	205
3/31/2007	8125	31	207	0	12	-633	214	89	-243	38	306
4/30/2007	8155	30	-101	0	14	-290	205	98	-151	15	210
5/31/2007	8186	31	212	0	12	-633	213	81	-239	41	304
6/30/2007	8216	30	243	0	11	-636	209	74	-240	52	270
7/31/2007	8247	31	195	0	13	-586	216	82	-231	42	268
8/31/2007	8278	31	187	0	13	-586	217	81	-233	44	277
9/30/2007	8308	30	203	0	12	-586	212	74	-234	46	272
10/31/2007	8339	31	192	0	13	-586	219	76	-239	49	276
11/30/2007	8369	30	205	0	13	-587	213	72	-238	50	272
12/31/2007	8400	31	-302	205	92	-132	218	100	-136	16	-62
1/31/2008	8431	31	-1074	1017	309	-27	208	148	-112	-11	-383
2/29/2008	8460	29	-26	101	56	-179	190	93	-159	-9	-67
3/31/2008	8491	31	297	0	12	-511	209	71	-301	22	202
4/30/2008	8521	30	236	0	11	-511	207	64	-300	37	254
5/31/2008	8552	31	195	0	12	-510	217	65	-302	42	281
6/30/2008	8582	30	200	0	11	-509	211	62	-298	44	278
7/31/2008	8613	31	228	0	12	-579	217	69	-286	55	284
8/31/2008	8644	31	225	0	12	-578	218	72	-288	58	281
9/30/2008	8674	30	237	0	12	-578	213	71	-288	59	274
10/31/2008	8705	31	226	0	12	-578	221	75	-295	62	276
11/30/2008	8735	30	-242	127	71	-148	214	92	-166	22	29
12/31/2008	8766	31	-250	147	74	-166	218	90	-168	4	50
1/31/2009	8797	31	107	0	11	-471	220	69	-253	28	290
2/28/2009	8825	28	-480	428	150	-55	194	102	-115	-1	-225
3/31/2009	8856	31	164	0	11	-472	212	73	-241	23	230
4/30/2009	8886	30	125	0	10	-472	212	70	-236	36	255
5/31/2009	8917	31	102	0	11	-471	220	74	-236	40	261
6/30/2009	8947	30	113	0	10	-471	213	71	-233	42	255
7/31/2009	8978	31	186	0	12	-512	217	64	-278	60	251
8/31/2009	9009	31	206	0	12	-513	218	62	-289	66	238
9/30/2009	9039	30	227	0	12	-513	212	58	-295	68	230
10/31/2009	9070	31	-133	153	63	-205	222	68	-207	37	3
11/30/2009	9100	30	235	0	12	-514	212	47	-309	56	261
12/31/2009	9131	31	-249	297	102	-116	221	73	-185	20	-163
1/31/2010	9162	31	-626	581	197	-36	212	90	-155	-6	-262
2/28/2010	9190	28	-391	362	130	-55	186	64	-144	-11	-145
3/31/2010	9221	31	307	0	10	-486	206	28	-321	37	164
4/30/2010	9251	30	-103	103	60	-165	206	42	-214	17	54
5/31/2010	9282	31	175	0	10	-485	212	27	-311	46	270
6/30/2010	9312	30	185	0	10	-486	207	31	-309	56	246
7/31/2010	9343	31	187	0	11	-443	218	37	-307	45	251
8/31/2010	9374	31	183	0	11	-442	220	38	-314	49	255
9/30/2010	9404	30	199	0	11	-442	214	36	-317	51	247
10/31/2010	9435	31	-230	133	73	-111	220	56	-188	19	29
11/30/2010	9465	30	42	23	35	-321	213	38	-265	22	214
12/31/2010	9496	31	-919	865	281	-26	212	113	-145	-3	-361
1/31/2011	9527	31	237	0	9	-298	204	50	-272	13	57
2/28/2011	9555	28	-309	286	98	-70	189	57	-160	-1	-91
3/31/2011	9586	31	-594	471	150	-36	206	71	-139	-17	-115
4/30/2011	9616	30	158	0	9	-298	195	31	-259	7	157
5/31/2011	9647	31	73	0	9	-298	208	33	-276	19	233
6/30/2011	9677	30	64	0	9	-297	203	35	-276	22	239
7/31/2011	9708	31	92	0	11	-328	209	43	-307	28	252
8/31/2011	9739	31	95	0	11	-328	210	48	-307	30	240

Flow Budget for Layers 6 to 7 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Santa Paula B	Mound L5	Oxnard LAS	Offshore	Mound L8-L11
9/30/2011	9769	30	109	0	11	-328	203	49	-303	31	227
10/31/2011	9800	31	-146	19	42	-136	211	62	-216	9	155
11/30/2011	9830	30	-181	75	54	-118	201	63	-196	-5	107
12/31/2011	9861	31	98	0	11	-327	207	50	-298	16	242
1/31/2012	9892	31	-106	31	46	-191	209	67	-201	4	141
2/29/2012	9921	29	255	0	11	-494	196	50	-299	30	250
3/31/2012	9952	31	-206	165	75	-129	211	79	-173	8	-31
4/30/2012	9982	30	-203	113	72	-138	201	75	-166	-6	52
5/31/2012	10013	31	233	0	12	-494	209	52	-302	27	263
6/30/2012	10043	30	261	0	11	-494	205	52	-304	44	224
7/31/2012	10074	31	227	0	12	-497	214	61	-296	45	233
8/31/2012	10105	31	219	0	12	-497	216	62	-298	47	239
9/30/2012	10135	30	230	0	12	-497	211	61	-300	49	235
10/31/2012	10166	31	224	0	12	-497	220	62	-311	51	239
11/30/2012	10196	30	-39	51	42	-257	214	67	-226	29	117
12/31/2012	10227	31	-224	149	86	-123	218	77	-188	8	-3
1/31/2013	10258	31	-55	41	33	-254	218	56	-217	9	170
2/28/2013	10286	28	169	0	10	-422	196	43	-253	25	232
3/31/2013	10317	31	-20	0	12	-275	217	55	-221	22	209
4/30/2013	10347	30	144	0	10	-422	209	46	-261	30	242
5/31/2013	10378	31	144	0	10	-421	217	48	-269	37	233
6/30/2013	10408	30	154	0	10	-422	211	47	-267	40	226
7/31/2013	10439	31	135	0	12	-435	222	46	-258	43	235
8/31/2013	10470	31	148	0	12	-436	224	43	-270	45	233
9/30/2013	10500	30	170	0	12	-437	218	41	-276	46	226
10/31/2013	10531	31	173	0	12	-437	227	41	-292	47	228
11/30/2013	10561	30	189	0	11	-437	222	39	-294	47	222
12/31/2013	10592	31	187	0	12	-437	231	40	-306	49	224
1/31/2014	10623	31	290	0	11	-539	233	44	-340	53	247
2/28/2014	10651	28	-196	262	112	-81	208	69	-200	20	-193
3/31/2014	10682	31	3	89	53	-262	229	49	-273	18	95
4/30/2014	10712	30	285	0	11	-540	225	37	-324	42	264
5/31/2014	10743	31	273	0	11	-540	235	43	-334	55	255
6/30/2014	10773	30	272	0	11	-540	230	46	-330	60	251
7/31/2014	10804	31	187	0	9	-492	234	45	-294	62	249
8/31/2014	10835	31	190	0	9	-492	234	43	-302	61	257
9/30/2014	10865	30	206	0	9	-492	227	41	-302	60	251
10/31/2014	10896	31	202	0	9	-492	236	42	-313	63	253
11/30/2014	10926	30	30	0	13	-287	229	49	-281	46	202
12/31/2014	10957	31	-279	359	124	-70	232	70	-227	21	-232
1/31/2015	10988	31	-89	50	40	-180	231	41	-232	15	123
2/28/2015	11016	28	160	0	8	-419	210	25	-269	35	251
3/31/2015	11047	31	140	0	7	-418	236	29	-288	49	245
4/30/2015	11077	30	138	0	8	-419	227	32	-280	52	241
5/31/2015	11108	31	128	0	8	-418	235	33	-286	57	244
6/30/2015	11138	30	135	0	8	-418	227	34	-282	57	239
7/31/2015	11169	31	44	0	9	-357	226	31	-256	62	241
8/31/2015	11200	31	51	0	9	-357	223	32	-261	59	244
9/30/2015	11230	30	7	0	8	-276	213	29	-249	50	219
10/31/2015	11261	31	71	0	9	-349	219	28	-274	55	241
11/30/2015	11291	30	93	0	9	-358	212	28	-270	56	230
12/31/2015	11322	31	90	0	9	-358	219	29	-280	58	232

Flow Budget for Layers 8 to 11 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet						
			STORAGE	Mountain Front Recharge	Pumping from Wells	Santa Paula C	Oxnard LAS	Mouond L6-L7	Offshore
1/31/1985	31	31	68	34	-12	211	-132	-75	-94
2/28/1985	59	28	140	59	-10	202	-137	-187	-67
3/31/1985	90	31	282	36	-12	233	-155	-319	-65
4/30/1985	120	30	445	0	-22	235	-161	-444	-53
5/31/1985	151	31	434	0	-22	252	-173	-441	-50
6/30/1985	181	30	425	0	-22	251	-172	-436	-46
7/31/1985	212	31	445	0	-22	267	-167	-478	-45
8/31/1985	243	31	421	0	-22	276	-163	-468	-43
9/30/1985	273	30	399	0	-22	274	-158	-453	-40
10/31/1985	304	31	395	0	-22	288	-164	-456	-40
11/30/1985	334	30	-492	380	-5	273	-154	47	-48
12/31/1985	365	31	397	0	-21	276	-154	-454	-45
1/31/1986	396	31	-325	298	-7	271	-150	-40	-47
2/28/1986	424	28	-881	777	-5	228	-130	58	-47
3/31/1986	455	31	-465	481	-7	226	-139	-43	-53
4/30/1986	485	30	170	63	-12	214	-132	-256	-47
5/31/1986	516	31	517	0	-29	241	-138	-558	-33
6/30/1986	546	30	484	0	-28	250	-138	-543	-25
7/31/1986	577	31	342	0	-12	265	-156	-406	-33
8/31/1986	608	31	362	0	-13	269	-158	-423	-37
9/30/1986	638	30	219	19	-8	264	-150	-305	-40
10/31/1986	669	31	360	0	-13	279	-157	-430	-38
11/30/1986	699	30	132	52	-7	273	-150	-261	-38
12/31/1986	730	31	337	0	-13	285	-156	-417	-36
1/31/1987	761	31	23	91	-10	286	-146	-205	-39
2/28/1987	789	28	77	63	-10	256	-126	-224	-36
3/31/1987	820	31	-5	106	-10	282	-136	-197	-40
4/30/1987	850	30	382	0	-23	277	-133	-475	-29
5/31/1987	881	31	347	0	-23	293	-144	-449	-24
6/30/1987	911	30	341	0	-23	290	-144	-441	-22
7/31/1987	942	31	339	0	-13	303	-170	-437	-23
8/31/1987	973	31	349	0	-13	307	-178	-442	-23
9/30/1987	1003	30	346	0	-13	300	-178	-433	-22
10/31/1987	1034	31	5	91	-7	307	-172	-193	-32
11/30/1987	1064	30	151	55	-9	293	-161	-298	-32
12/31/1987	1095	31	-434	312	-5	290	-156	28	-36
1/31/1988	1126	31	-124	170	-8	273	-145	-130	-36
2/29/1988	1155	29	84	94	-13	251	-133	-254	-29
3/31/1988	1186	31	394	0	-19	277	-142	-489	-22
4/30/1988	1216	30	-285	215	-6	266	-131	-33	-27
5/31/1988	1247	31	409	0	-23	275	-135	-505	-22
6/30/1988	1277	30	360	0	-22	277	-134	-465	-15
7/31/1988	1308	31	332	0	-15	292	-137	-459	-14
8/31/1988	1339	31	332	0	-15	298	-138	-463	-14
9/30/1988	1369	30	328	0	-15	293	-136	-457	-13
10/31/1988	1400	31	331	0	-15	307	-143	-466	-13

Flow Budget for Layers 8 to 11 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet STORAGE	Mountain Front Recharge	Pumping from Wells	Santa Paula C	Oxnard LAS	Mouond L6-L7	Offshore
11/30/1988	1430	30	194	17	-9	297	-140	-342	-16
12/31/1988	1461	31	-462	305	-5	295	-138	30	-25
1/31/1989	1492	31	365	0	-18	288	-216	-401	-18
2/28/1989	1520	28	-314	219	-6	257	-146	8	-19
3/31/1989	1551	31	304	0	-13	281	-196	-357	-18
4/30/1989	1581	30	347	0	-18	280	-213	-387	-10
5/31/1989	1612	31	327	0	-17	298	-222	-378	-8
6/30/1989	1642	30	319	0	-17	294	-219	-370	-7
7/31/1989	1673	31	321	0	-17	309	-200	-407	-6
8/31/1989	1704	31	314	0	-17	313	-195	-408	-6
9/30/1989	1734	30	309	0	-17	306	-191	-402	-5
10/31/1989	1765	31	306	0	-17	318	-196	-406	-4
11/30/1989	1795	30	302	0	-17	310	-192	-400	-3
12/31/1989	1826	31	303	0	-17	322	-197	-408	-3
1/31/1990	1857	31	-151	143	-12	317	-165	-122	-10
2/28/1990	1885	28	-123	146	-12	276	-151	-125	-11
3/31/1990	1916	31	409	0	-34	306	-208	-471	-1
4/30/1990	1946	30	367	0	-33	304	-210	-432	5
5/31/1990	1977	31	306	0	-26	318	-214	-388	4
6/30/1990	2007	30	372	0	-33	313	-217	-441	6
7/31/1990	2038	31	282	0	-8	325	-203	-401	4
8/31/1990	2069	31	301	0	-8	323	-200	-419	3
9/30/1990	2099	30	296	0	-8	314	-195	-410	3
10/31/1990	2130	31	291	0	-8	326	-200	-413	4
11/30/1990	2160	30	286	0	-8	317	-195	-405	5
12/31/1990	2191	31	282	0	-8	328	-199	-409	6
1/31/1991	2222	31	109	40	-42	327	-176	-261	3
2/28/1991	2250	28	-324	181	-17	286	-133	11	-4
3/31/1991	2281	31	-1936	1294	-6	280	-130	509	-11
4/30/1991	2311	30	34	0	-69	245	-155	-55	-1
5/31/1991	2342	31	190	0	-68	269	-164	-232	5
6/30/1991	2372	30	299	0	-68	272	-162	-347	6
7/31/1991	2403	31	270	0	-17	291	-165	-382	5
8/31/1991	2434	31	277	0	-18	297	-164	-396	4
9/30/1991	2464	30	269	0	-17	292	-161	-388	5
10/31/1991	2495	31	264	0	-17	306	-167	-391	6
11/30/1991	2525	30	261	0	-17	299	-164	-385	6
12/31/1991	2556	31	-662	362	-5	297	-138	148	-2
1/31/1992	2587	31	-207	159	-7	280	-123	-96	-5
2/29/1992	2616	29	-1410	963	-4	240	-107	324	-7
3/31/1992	2647	31	-846	534	-5	224	-107	210	-9
4/30/1992	2677	30	178	0	-19	214	-97	-277	0
5/31/1992	2708	31	204	0	-19	242	-97	-335	4
6/30/1992	2738	30	305	0	-19	251	-92	-451	5
7/31/1992	2769	31	259	0	-16	274	-95	-425	4
8/31/1992	2800	31	255	0	-16	285	-98	-429	3

Flow Budget for Layers 8 to 11 in Mound Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	Pumping from Wells	Santa Paula C	Oxnard LAS	Mouond L6-L7	Offshore
			influx(+) outflux(-); units in Acre-feet						
9/30/1992	2830	30	244	0	-16	282	-97	-417	3
10/31/1992	2861	31	-24	69	-9	291	-107	-220	-1
11/30/1992	2891	30	253	0	-17	281	-101	-418	2
12/31/1992	2922	31	-700	383	-5	280	-101	147	-5
1/31/1993	2953	31	-1214	807	-5	251	-102	272	-10
2/28/1993	2981	28	-1185	841	-4	192	-88	255	-11
3/31/1993	3012	31	-663	457	-6	179	-99	146	-13
4/30/1993	3042	30	184	0	-22	185	-172	-168	-6
5/31/1993	3073	31	179	0	-22	221	-187	-188	-3
6/30/1993	3103	30	191	0	-20	232	-188	-212	-3
7/31/1993	3134	31	251	0	-17	254	-144	-340	-3
8/31/1993	3165	31	243	0	-17	268	-138	-353	-4
9/30/1993	3195	30	230	0	-17	268	-135	-342	-3
10/31/1993	3226	31	225	0	-17	283	-139	-349	-3
11/30/1993	3256	30	199	0	-14	277	-128	-330	-4
12/31/1993	3287	31	-29	58	-8	285	-112	-183	-10
1/31/1994	3318	31	207	0	-18	285	-121	-346	-7
2/28/1994	3346	28	-942	558	-4	246	-90	244	-11
3/31/1994	3377	31	-238	119	-7	250	-95	-12	-15
4/30/1994	3407	30	210	0	-18	241	-111	-313	-8
5/31/1994	3438	31	207	0	-18	258	-121	-320	-6
6/30/1994	3468	30	199	0	-17	260	-121	-315	-5
7/31/1994	3499	31	302	0	-18	279	-176	-387	0
8/31/1994	3530	31	275	0	-18	286	-180	-366	3
9/30/1994	3560	30	273	0	-17	281	-179	-362	3
10/31/1994	3591	31	269	0	-17	295	-184	-366	3
11/30/1994	3621	30	61	10	-8	283	-134	-209	-4
12/31/1994	3652	31	111	20	-11	291	-140	-263	-7
1/31/1995	3683	31	-2633	1870	-3	255	-98	624	-14
2/28/1995	3711	28	-168	61	-12	188	-122	65	-12
3/31/1995	3742	31	-1313	929	-4	195	-96	306	-18
4/30/1995	3772	30	238	0	-22	180	-144	-242	-9
5/31/1995	3803	31	109	14	-12	212	-133	-180	-9
6/30/1995	3833	30	270	0	-21	225	-152	-316	-6
7/31/1995	3864	31	237	0	-18	249	-148	-313	-6
8/31/1995	3895	31	251	0	-18	263	-143	-345	-8
9/30/1995	3925	30	233	0	-18	263	-138	-332	-7
10/31/1995	3956	31	226	0	-18	277	-139	-338	-8
11/30/1995	3986	30	220	0	-18	273	-136	-333	-7
12/31/1995	4017	31	-275	154	-6	276	-100	-34	-15
1/31/1996	4048	31	59	24	-11	269	-102	-222	-17
2/29/1996	4077	29	-1064	713	-5	236	-77	215	-19
3/31/1996	4108	31	-149	98	-12	229	-94	-54	-19
4/30/1996	4138	30	162	0	-15	225	-116	-243	-12
5/31/1996	4169	31	238	0	-22	244	-129	-323	-9
6/30/1996	4199	30	227	0	-22	250	-129	-320	-7

Flow Budget for Layers 8 to 11 in Mound Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	Pumping from Wells	Santa Paula C	Oxnard LAS	Mouond L6-L7	Offshore
			influx(+) outflux(-); units in Acre-feet						
7/31/1996	4230	31	320	0	-23	270	-168	-397	-2
8/31/1996	4261	31	298	0	-22	279	-174	-381	1
9/30/1996	4291	30	295	0	-22	276	-175	-375	2
10/31/1996	4322	31	-89	98	-10	281	-136	-138	-7
11/30/1996	4352	30	-244	158	-7	261	-112	-41	-15
12/31/1996	4383	31	-909	589	-5	249	-101	197	-20
1/31/1997	4414	31	-787	536	-5	220	-93	151	-23
2/28/1997	4442	28	145	0	-19	190	-133	-169	-14
3/31/1997	4473	31	184	0	-18	223	-151	-226	-12
4/30/1997	4503	30	214	0	-18	229	-150	-263	-12
5/31/1997	4534	31	211	0	-18	250	-157	-274	-12
6/30/1997	4564	30	203	0	-18	251	-156	-268	-12
7/31/1997	4595	31	260	0	-26	267	-209	-282	-9
8/31/1997	4626	31	244	0	-26	273	-218	-266	-8
9/30/1997	4656	30	239	0	-26	268	-218	-255	-7
10/31/1997	4687	31	238	0	-26	277	-226	-255	-8
11/30/1997	4717	30	-330	188	-8	263	-143	47	-17
12/31/1997	4748	31	-965	607	-5	249	-116	254	-24
1/31/1998	4779	31	-407	278	-7	226	-146	81	-24
2/28/1998	4807	28	-2514	2070	-3	160	-96	409	-25
3/31/1998	4838	31	-278	309	-8	106	-148	48	-29
4/30/1998	4868	30	15	89	-12	132	-173	-29	-24
5/31/1998	4899	31	-179	225	-8	165	-150	-27	-25
6/30/1998	4929	30	403	0	-27	183	-328	-217	-14
7/31/1998	4960	31	236	0	-14	214	-209	-212	-15
8/31/1998	4991	31	248	0	-15	232	-194	-253	-19
9/30/1998	5021	30	288	0	-15	237	-191	-302	-18
10/31/1998	5052	31	274	0	-15	254	-194	-300	-18
11/30/1998	5082	30	110	32	-9	248	-156	-204	-21
12/31/1998	5113	31	239	0	-13	260	-170	-295	-21
1/31/1999	5144	31	-148	125	-11	258	-90	-110	-25
2/28/1999	5172	28	224	8	-25	234	-69	-353	-19
3/31/1999	5203	31	-326	203	-9	253	-76	-21	-25
4/30/1999	5233	30	-121	123	-10	235	-71	-130	-26
5/31/1999	5264	31	307	0	-33	247	-64	-437	-19
6/30/1999	5294	30	256	0	-33	249	-59	-399	-14
7/31/1999	5325	31	225	0	-29	262	-111	-336	-13
8/31/1999	5356	31	231	0	-29	267	-120	-338	-12
9/30/1999	5386	30	228	0	-29	263	-122	-329	-11
10/31/1999	5417	31	225	0	-29	275	-130	-330	-11
11/30/1999	5447	30	134	0	-16	265	-112	-255	-15
12/31/1999	5478	31	253	0	-29	276	-133	-353	-14
1/31/2000	5509	31	-42	83	-16	272	-118	-163	-17
2/29/2000	5538	29	-1259	863	-5	234	-95	285	-22
3/31/2000	5569	31	-234	153	-12	223	-108	3	-25
4/30/2000	5599	30	-273	211	-11	207	-100	-9	-24

Flow Budget for Layers 8 to 11 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet						
			STORAGE	Mountain Front Recharge	Pumping from Wells	Santa Paula C	Oxnard LAS	Mouond L6-L7	Offshore
5/31/2000	5630	31	429	0	-43	224	-146	-451	-13
6/30/2000	5660	30	405	0	-42	238	-148	-448	-5
7/31/2000	5691	31	264	0	-24	257	-144	-346	-8
8/31/2000	5722	31	287	0	-25	265	-144	-372	-11
9/30/2000	5752	30	280	0	-25	262	-143	-365	-10
10/31/2000	5783	31	68	45	-13	270	-131	-224	-15
11/30/2000	5813	30	301	0	-25	264	-144	-384	-12
12/31/2000	5844	31	278	0	-25	276	-148	-371	-10
1/31/2001	5875	31	-960	601	-5	259	-99	223	-20
2/28/2001	5903	28	-859	618	-5	206	-84	147	-24
3/31/2001	5934	31	-886	688	-6	196	-88	124	-28
4/30/2001	5964	30	137	58	-16	179	-87	-249	-21
5/31/2001	5995	31	368	0	-27	211	-91	-448	-12
6/30/2001	6025	30	355	0	-27	226	-91	-456	-8
7/31/2001	6056	31	265	0	-24	244	-97	-376	-12
8/31/2001	6087	31	285	0	-24	256	-101	-400	-15
9/30/2001	6117	30	269	0	-24	256	-101	-386	-14
10/31/2001	6148	31	259	0	-24	271	-106	-384	-15
11/30/2001	6178	30	-441	271	-7	252	-98	44	-21
12/31/2001	6209	31	58	65	-14	250	-95	-240	-24
1/31/2002	6240	31	154	10	-10	251	-108	-275	-22
2/28/2002	6268	28	236	0	-17	233	-109	-326	-16
3/31/2002	6299	31	215	0	-17	263	-122	-324	-15
4/30/2002	6329	30	216	0	-17	259	-120	-324	-14
5/31/2002	6360	31	216	0	-17	268	-125	-329	-14
6/30/2002	6390	30	210	0	-17	262	-123	-319	-13
7/31/2002	6421	31	281	0	-26	276	-145	-376	-9
8/31/2002	6452	31	263	0	-26	280	-151	-360	-7
9/30/2002	6482	30	262	0	-26	274	-153	-352	-6
10/31/2002	6513	31	262	0	-26	286	-162	-354	-6
11/30/2002	6543	30	-867	500	-5	261	-122	250	-16
12/31/2002	6574	31	-591	379	-6	244	-119	116	-23
1/31/2003	6605	31	324	0	-26	241	-222	-304	-14
2/28/2003	6633	28	-687	448	-6	214	-116	161	-15
3/31/2003	6664	31	-381	279	-9	220	-118	32	-23
4/30/2003	6694	30	183	44	-20	214	-184	-221	-15
5/31/2003	6725	31	52	73	-13	227	-149	-175	-15
6/30/2003	6755	30	376	0	-25	234	-203	-373	-9
7/31/2003	6786	31	293	0	-24	256	-124	-395	-6
8/31/2003	6817	31	286	0	-24	264	-114	-405	-7
9/30/2003	6847	30	289	0	-24	260	-112	-408	-6
10/31/2003	6878	31	284	0	-24	274	-116	-412	-5
11/30/2003	6908	30	-114	105	-10	261	-104	-127	-11
12/31/2003	6939	31	-15	89	-13	264	-105	-206	-15
1/31/2004	6970	31	271	0	-11	265	-102	-413	-11
2/29/2004	6999	29	-928	580	-5	236	-89	221	-15

Flow Budget for Layers 8 to 11 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet						
			STORAGE	Mountain Front Recharge	Pumping from Wells	Santa Paula C	Oxnard LAS	Mouond L6-L7	Offshore
3/31/2004	7030	31	175	0	-10	240	-99	-290	-14
4/30/2004	7060	30	258	0	-10	240	-99	-379	-9
5/31/2004	7091	31	265	0	-10	256	-104	-399	-8
6/30/2004	7121	30	262	0	-10	257	-103	-398	-7
7/31/2004	7152	31	283	0	-39	273	-194	-317	-6
8/31/2004	7183	31	276	0	-38	278	-211	-301	-5
9/30/2004	7213	30	271	0	-38	274	-215	-287	-5
10/31/2004	7244	31	-900	542	-8	267	-144	256	-14
11/30/2004	7274	30	244	0	-39	248	-207	-234	-12
12/31/2004	7305	31	-1022	690	-7	243	-139	253	-17
1/31/2005	7336	31	-1586	1255	-7	198	-122	286	-25
2/28/2005	7364	28	-972	860	-7	126	-105	123	-25
3/31/2005	7395	31	-163	218	-11	128	-136	-9	-27
4/30/2005	7425	30	342	0	-25	161	-194	-266	-17
5/31/2005	7456	31	408	0	-30	208	-256	-321	-8
6/30/2005	7486	30	377	0	-29	227	-260	-309	-4
7/31/2005	7517	31	291	0	-18	248	-226	-286	-9
8/31/2005	7548	31	323	0	-19	260	-217	-335	-12
9/30/2005	7578	30	303	0	-19	260	-212	-322	-11
10/31/2005	7609	31	100	32	-12	269	-157	-217	-16
11/30/2005	7639	30	292	0	-19	264	-202	-322	-13
12/31/2005	7670	31	263	0	-19	279	-210	-303	-10
1/31/2006	7701	31	-494	332	-11	268	-145	64	-15
2/28/2006	7729	28	-252	206	-11	225	-128	-24	-16
3/31/2006	7760	31	-415	321	-11	233	-121	13	-20
4/30/2006	7790	30	-527	423	-10	208	-104	31	-21
5/31/2006	7821	31	176	22	-18	211	-176	-198	-16
6/30/2006	7851	30	545	0	-36	229	-294	-445	0
7/31/2006	7882	31	259	0	-21	253	-231	-259	-1
8/31/2006	7913	31	286	0	-22	263	-221	-299	-6
9/30/2006	7943	30	276	0	-22	262	-218	-292	-6
10/31/2006	7974	31	271	0	-22	277	-222	-298	-6
11/30/2006	8004	30	268	0	-22	272	-218	-295	-5
12/31/2006	8035	31	189	0	-16	281	-177	-270	-7
1/31/2007	8066	31	-189	126	-11	273	-121	-62	-15
2/28/2007	8094	28	103	40	-22	242	-145	-205	-12
3/31/2007	8125	31	280	0	-31	272	-209	-306	-6
4/30/2007	8155	30	110	0	-17	264	-139	-210	-8
5/31/2007	8186	31	268	0	-31	276	-205	-304	-4
6/30/2007	8216	30	237	0	-30	272	-209	-270	0
7/31/2007	8247	31	209	0	-24	284	-200	-268	-1
8/31/2007	8278	31	215	0	-24	286	-199	-277	0
9/30/2007	8308	30	215	0	-24	279	-198	-272	1
10/31/2007	8339	31	212	0	-24	289	-202	-276	1
11/30/2007	8369	30	212	0	-24	282	-200	-272	2
12/31/2007	8400	31	-417	205	-8	281	-117	62	-6

Flow Budget for Layers 8 to 11 in Mound Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet						
			STORAGE	Mountain Front Recharge	Pumping from Wells	Santa Paula C	Oxnard LAS	Mouond L6-L7	Offshore
1/31/2008	8431	31	-1540	1017	-7	247	-87	383	-14
2/29/2008	8460	29	-232	101	-13	202	-111	67	-13
3/31/2008	8491	31	216	0	-28	227	-207	-202	-6
4/30/2008	8521	30	261	0	-26	236	-215	-254	-1
5/31/2008	8552	31	272	0	-26	256	-221	-281	0
6/30/2008	8582	30	266	0	-26	257	-220	-278	0
7/31/2008	8613	31	276	0	-18	272	-247	-284	2
8/31/2008	8644	31	270	0	-18	277	-250	-281	3
9/30/2008	8674	30	265	0	-18	272	-249	-274	3
10/31/2008	8705	31	261	0	-18	285	-255	-276	3
11/30/2008	8735	30	-214	127	-7	270	-141	-29	-6
12/31/2008	8766	31	-210	147	-9	268	-135	-50	-11
1/31/2009	8797	31	251	0	-23	267	-199	-290	-6
2/28/2009	8825	28	-775	428	-6	232	-95	225	-9
3/31/2009	8856	31	203	0	-23	247	-190	-230	-7
4/30/2009	8886	30	227	0	-22	246	-194	-255	-1
5/31/2009	8917	31	217	0	-22	264	-197	-261	0
6/30/2009	8947	30	209	0	-22	262	-194	-255	0
7/31/2009	8978	31	253	0	-42	277	-241	-251	4
8/31/2009	9009	31	242	0	-41	281	-249	-238	6
9/30/2009	9039	30	240	0	-41	276	-251	-230	6
10/31/2009	9070	31	-242	153	-14	279	-171	-3	-1
11/30/2009	9100	30	283	0	-42	267	-249	-261	2
12/31/2009	9131	31	-564	297	-12	266	-145	163	-5
1/31/2010	9162	31	-954	581	-7	241	-110	262	-13
2/28/2010	9190	28	-583	362	-8	197	-101	145	-13
3/31/2010	9221	31	222	0	-27	220	-247	-164	-5
4/30/2010	9251	30	-85	103	-13	222	-168	-54	-6
5/31/2010	9282	31	309	0	-26	239	-249	-270	-2
6/30/2010	9312	30	279	0	-25	244	-254	-246	2
7/31/2010	9343	31	261	0	-21	261	-251	-251	0
8/31/2010	9374	31	261	0	-21	268	-254	-255	2
9/30/2010	9404	30	255	0	-21	265	-254	-247	2
10/31/2010	9435	31	-214	133	-8	270	-146	-29	-5
11/30/2010	9465	30	160	23	-18	257	-202	-214	-6
12/31/2010	9496	31	-1350	865	-5	248	-107	361	-11
1/31/2011	9527	31	64	0	-28	229	-199	-57	-9
2/28/2011	9555	28	-449	286	-9	207	-117	91	-9
3/31/2011	9586	31	-677	471	-8	214	-100	115	-15
4/30/2011	9616	30	181	0	-28	205	-191	-157	-10
5/31/2011	9647	31	247	0	-27	226	-208	-233	-6
6/30/2011	9677	30	247	0	-26	232	-208	-239	-5
7/31/2011	9708	31	266	0	-26	251	-236	-252	-4
8/31/2011	9739	31	249	0	-26	259	-239	-240	-3
9/30/2011	9769	30	236	0	-26	256	-236	-227	-3
10/31/2011	9800	31	59	19	-14	265	-165	-155	-8

Flow Budget for Layers 8 to 11 in Mound Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	Pumping from Wells	Santa Paula C	Oxnard LAS	Mouond L6-L7	Offshore
			influx(+) outflux(-); units in Acre-feet						
11/30/2011	9830	30	-52	75	-14	254	-144	-107	-12
12/31/2011	9861	31	237	0	-27	265	-226	-242	-7
1/31/2012	9892	31	24	31	-15	266	-157	-141	-8
2/29/2012	9921	29	267	0	-28	253	-239	-250	-3
3/31/2012	9952	31	-306	165	-10	266	-140	31	-6
4/30/2012	9982	30	-158	113	-12	247	-128	-52	-11
5/31/2012	10013	31	277	0	-29	258	-239	-263	-4
6/30/2012	10043	30	240	0	-27	258	-249	-224	2
7/31/2012	10074	31	221	0	-24	272	-238	-233	2
8/31/2012	10105	31	223	0	-24	276	-238	-239	2
9/30/2012	10135	30	224	0	-24	271	-238	-235	3
10/31/2012	10166	31	222	0	-24	282	-245	-239	3
11/30/2012	10196	30	-14	51	-13	271	-176	-117	-2
12/31/2012	10227	31	-266	149	-9	271	-140	3	-8
1/31/2013	10258	31	48	41	-10	264	-165	-170	-8
2/28/2013	10286	28	207	0	-14	242	-200	-232	-2
3/31/2013	10317	31	125	0	-11	270	-173	-209	-3
4/30/2013	10347	30	199	0	-14	264	-206	-242	-1
5/31/2013	10378	31	184	0	-14	276	-214	-233	1
6/30/2013	10408	30	181	0	-14	270	-212	-226	2
7/31/2013	10439	31	179	0	-22	281	-205	-235	2
8/31/2013	10470	31	180	0	-22	283	-210	-233	3
9/30/2013	10500	30	181	0	-22	275	-212	-226	3
10/31/2013	10531	31	181	0	-22	286	-221	-228	3
11/30/2013	10561	30	184	0	-22	278	-221	-222	3
12/31/2013	10592	31	183	0	-22	288	-228	-224	3
1/31/2014	10623	31	221	0	-25	291	-243	-247	4
2/28/2014	10651	28	-562	262	-6	251	-136	193	-3
3/31/2014	10682	31	-53	89	-16	266	-185	-95	-6
4/30/2014	10712	30	258	0	-26	262	-230	-264	1
5/31/2014	10743	31	237	0	-25	278	-240	-255	5
6/30/2014	10773	30	235	0	-25	274	-239	-251	6
7/31/2014	10804	31	204	0	-23	286	-223	-249	6
8/31/2014	10835	31	213	0	-24	287	-225	-257	5
9/30/2014	10865	30	213	0	-24	280	-224	-251	5
10/31/2014	10896	31	212	0	-24	291	-231	-253	5
11/30/2014	10926	30	133	0	-16	281	-199	-202	2
12/31/2014	10957	31	-706	359	-7	275	-149	232	-5
1/31/2015	10988	31	-14	50	-14	260	-152	-123	-7
2/28/2015	11016	28	224	0	-30	241	-184	-251	0
3/31/2015	11047	31	195	0	-29	275	-200	-245	4
4/30/2015	11077	30	189	0	-29	272	-196	-241	5
5/31/2015	11108	31	184	0	-29	284	-200	-244	6
6/30/2015	11138	30	181	0	-29	277	-197	-239	7
7/31/2015	11169	31	146	0	-20	287	-180	-241	7
8/31/2015	11200	31	151	0	-20	287	-180	-244	6

Flow Budget for Layers 8 to 11 in Mound Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	Pumping from Wells	Santa Paula C	Oxnard LAS	Mouond L6-L7	Offshore
			influx(+) outflux(-); units in Acre-feet						
9/30/2015	11230	30	121	0	-17	277	-167	-219	5
10/31/2015	11261	31	152	0	-20	287	-184	-241	6
11/30/2015	11291	30	147	0	-20	279	-182	-230	6
12/31/2015	11322	31	145	0	-20	288	-188	-232	7

Flow Budget for the Semi-Perched Aquifer in Oxnard Basin

influx(+) outflux(-); units in Acre-feet

Date	Stress	days in month	STORAGE	TILE DRAINS	ET	RECHARGE	Pumping from Wells	Mound	Pleasant Valley	West Las Posas	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Coastal Flux from South of Port Hueneme to Arnold Road	Coastal Flux from Arnold Road to Point Mugu	Oxnard Basin UAS	Partial Santa Clara River percolation	Calleguas Creek percolation
1/31/1985	31	31	-82.1	-746.8	-563.8	1584.6	-2.0	-117.4	183.1	-28.9	-112.3	-68.1	20.8	44.0	-552.7	116.9	324.6
2/28/1985	59	28	-241.1	-619.4	-555.9	1521.8	-1.7	-117.5	165.7	-22.7	-107.2	-61.2	18.3	39.5	-440.8	119.0	303.2
3/31/1985	90	31	34.6	-637.5	-824.1	1739.3	-2.3	-135.8	185.1	-23.8	-117.8	-67.0	22.8	54.1	-637.8	123.3	286.8
4/30/1985	120	30	357.8	-557.8	-841.3	1981.2	-3.2	-140.3	180.2	-15.8	-112.2	-64.9	23.8	62.6	-1132.7	137.4	125.1
5/31/1985	151	31	682.3	-501.3	-857.9	1890.8	-3.4	-152.7	186.6	-7.0	-115.0	-68.1	25.5	72.0	-1394.3	145.6	96.8
6/30/1985	181	30	717.8	-426.1	-747.0	1901.9	-3.5	-151.4	180.6	-2.3	-109.9	-66.4	24.3	71.4	-1567.6	146.8	31.4
7/31/1985	212	31	736.4	-410.9	-744.0	1899.9	-5.4	-155.4	185.5	-2.1	-110.9	-68.9	24.4	72.0	-1667.6	156.5	90.4
8/31/1985	243	31	750.8	-401.7	-704.4	1875.7	-5.6	-151.9	184.0	-3.5	-107.4	-68.8	23.3	69.8	-1700.9	154.0	86.6
9/30/1985	273	30	559.1	-397.6	-564.7	1898.3	-5.7	-142.6	175.8	-5.6	-103.5	-67.0	20.2	63.3	-1697.1	144.1	122.9
10/31/1985	304	31	635.9	-427.5	-520.0	1848.5	-5.8	-142.0	179.1	-6.0	-108.0	-69.9	18.6	61.2	-1780.4	143.3	173.0
11/30/1985	334	30	-1377.9	-506.3	-442.7	3381.5	-2.7	-130.4	174.1	-5.6	-107.1	-70.2	14.8	47.5	-1551.2	138.9	437.3
12/31/1985	365	31	357.9	-600.4	-430.3	1767.1	-5.0	-127.3	183.0	-4.4	-110.5	-68.8	14.9	42.1	-1446.4	138.8	289.2
1/31/1986	396	31	-984.8	-657.9	-536.3	2981.4	-3.0	-115.3	184.0	-4.2	-112.3	-69.3	15.2	40.5	-1316.5	94.2	484.4
2/28/1986	424	28	-3653.2	-827.2	-643.7	5421.7	-1.9	-77.7	175.3	-4.2	-97.3	-64.3	13.0	26.8	-1083.4	114.5	701.6
3/31/1986	455	31	-2008.6	-1163.3	-1119.6	4265.9	-1.9	-83.9	209.0	-11.1	-106.1	-68.8	17.5	33.6	-772.1	140.9	668.5
4/30/1986	485	30	635.3	-1038.0	-1190.4	1785.8	-3.2	-100.9	209.9	-28.8	-104.9	-62.5	21.6	49.2	-629.3	114.2	342.1
5/31/1986	516	31	520.9	-880.3	-1185.9	2352.3	-7.8	-127.1	218.1	-39.9	-111.2	-63.7	24.8	65.4	-1185.2	136.1	283.5
6/30/1986	546	30	582.7	-736.3	-1010.3	2263.8	-8.0	-135.1	211.7	-31.1	-110.1	-64.7	23.1	67.4	-1452.5	154.4	245.0
7/31/1986	577	31	983.5	-668.0	-958.4	1813.2	-7.1	-144.3	219.7	-22.2	-112.9	-68.6	23.2	71.0	-1500.1	149.0	222.0
8/31/1986	608	31	892.9	-598.4	-852.8	1777.7	-7.3	-141.9	219.2	-19.2	-108.3	-67.6	22.7	70.4	-1541.4	165.4	188.5
9/30/1986	638	30	710.8	-540.1	-663.3	1507.1	-4.9	-131.2	210.3	-7.2	-102.3	-65.0	20.1	62.2	-1399.4	145.2	257.8
10/31/1986	669	31	584.8	-549.6	-598.0	1764.3	-7.3	-131.9	213.9	-1.1	-104.7	-65.5	19.6	60.1	-1558.1	151.8	221.7
11/30/1986	699	30	428.5	-545.1	-458.9	1412.7	-4.9	-120.8	204.5	-4.6	-102.5	-63.9	16.8	51.1	-1304.8	127.7	364.1
12/31/1986	730	31	469.0	-580.5	-404.2	1759.0	-7.2	-120.5	208.5	-4.6	-106.4	-64.9	16.1	48.2	-1501.1	137.7	151.1
1/31/1987	761	31	174.2	-595.9	-477.2	1761.4	-4.0	-118.7	204.8	-6.6	-107.3	-66.1	15.6	47.3	-1296.0	141.6	327.0
2/28/1987	789	28	10.4	-554.1	-493.2	1689.9	-4.2	-108.0	184.7	-5.9	-95.4	-58.5	15.0	42.5	-1022.1	129.0	269.9
3/31/1987	820	31	82.8	-604.0	-757.2	1809.4	-3.8	-120.1	203.0	-6.1	-102.9	-62.6	19.6	53.6	-932.5	139.4	281.5
4/30/1987	850	30	170.8	-576.4	-810.2	2265.1	-8.6	-124.2	195.1	-4.2	-97.8	-58.5	21.3	61.4	-1368.6	146.8	187.9
5/31/1987	881	31	516.6	-574.5	-857.2	2236.3	-9.0	-135.3	199.8	-3.6	-102.5	-62.5	22.4	70.6	-1582.9	146.1	135.5
6/30/1987	911	30	559.2	-525.3	-757.7	2258.3	-9.1	-133.7	191.4	-3.1	-99.6	-62.6	20.9	70.2	-1737.4	141.7	87.0
7/31/1987	942	31	727.3	-512.0	-755.4	2221.9	-5.5	-138.5	194.9	-2.3	-103.5	-66.2	20.8	70.8	-1891.9	147.9	91.8
8/31/1987	973	31	735.0	-484.9	-716.8	2187.6	-5.5	-137.8	190.6	-1.5	-103.4	-67.0	19.8	68.6	-1962.2	146.0	131.5
9/30/1987	1003	30	688.4	-455.8	-562.1	2183.5	-5.4	-124.5	179.7	-1.9	-100.9	-65.7	16.9	62.1	-1994.9	119.8	60.8
10/31/1987	1034	31	683.6	-461.6	-539.0	1670.9	-3.3	-122.6	183.5	-2.0	-103.9	-68.4	15.3	57.8	-1857.7	136.4	411.2
11/30/1987	1064	30	359.0	-460.1	-433.7	1735.8	-3.7	-114.7	176.9	-1.4	-98.5	-64.2	13.4	46.9	-1615.6	139.4	320.5
12/31/1987	1095	31	-841.3	-569.0	-429.6	2868.1	-2.8	-99.8	182.7	-1.0	-101.6	-65.1	12.4	39.0	-1575.1	58.4	524.5
1/31/1988	1126	31	165.0	-630.7	-539.9	1779.4	-2.8	-92.6	186.4	-0.5	-100.1	-61.7	13.7	38.1	-1324.8	113.5	457.0
2/29/1988	1155	29	241.3	-578.0	-558.1	1571.8	-3.5	-93.4	175.1	-0.1	-93.8	-54.9	14.6	39.3	-1155.4	133.3	361.7
3/31/1988	1186	31	311.7	-587.7	-786.8	2045.4	-5.0	-101.3	185.8	0.0	-98.0	-57.6	18.3	53.6	-1400.7	144.2	278.1
4/30/1988	1216	30	341.1	-531.3	-838.7	1822.0	-2.8	-99.6	178.2	0.0	-94.5	-56.3	19.2	58.2	-1248.6	120.1	332.9
5/31/1988	1247	31	366.6	-509.1	-886.5	2143.8	-5.1	-108.1	183.7	0.0	-93.7	-55.5	21.9	68.0	-1388.5	128.9	133.7
6/30/1988	1277	30	346.5	-463.8	-774.1	2111.8	-5.3	-111.9	174.9	0.0	-92.1	-54.6	21.0	69.8	-1520.2	134.5	163.5
7/31/1988	1308	31	645.6	-444.8	-754.5	1897.5	-6.8	-117.1	177.0	0.0	-94.6	-57.5	21.0	70.6	-1600.7	165.9	98.5
8/31/1988	1339	31	704.9	-409.1	-688.8	1820.6	-6.8	-111.9	173.2	0.0	-92.1	-57.8	20.1	68.6	-1650.7	168.4	61.4
9/30/1988	1369	30	467.2	-386.1	-549.0	1857.8	-6.7	-99.2	164.1	0.0	-90.4	-56.4	17.4	61.9	-1676.0	98.3	197.2
10/31/1988	1400	31	592.1	-406.8	-511.4	1794.0	-6.8	-97.7	166.3	0.0	-95.1	-59.0	15.9	58.8	-1784.6	113.0	221.2
11/30/1988	1430	30	646.4	-393.0	-388.7	1493.6	-5.6	-91.0	157.4	0.0	-93.4	-57.6	13.1	49.9	-1661.1	114.9	215.1
12/31/1988	1461	31	-1014.2	-500.3	-391.2	3089.8	-3.2	-76.9	162.5	0.0	-95.3	-60.2	11.4	41.0	-1662.0	25.6	473.1
1/31/1989	1492	31	528.7	-539.3	-484.4	1626.6	-6.5	-83.2	165.7	0.0	-95.1	-56.9	12.8	41.1	-1537.0	132.5	295.0
2/28/1989	1520	28	-268.5	-490.5	-497.0	2130.2	-3.0	-80.5	150.4	0.0	-88.3	-51.2	12.7	38.3	-1374.1	100.7	420.8
3/31/1989	1551	31	649.4	-535.6	-760.5	1619.1	-5.7	-95.0	169.4	0.0	-95.4	-54.1	17.1	51.4	-1409.1	136.7	312.3
4/30/1989	1581	30	600.3	-467.5	-784.4	1806.1	-6.4	-100.0	162.5	0.0	-91.5	-51.5	18.8	60.3	-1500.2	126.6	226.9
5/31/1989	1612	31	774.9	-433.3	-819.5	1801.6	-6.7	-103.7	165.7	0.0	-93.4	-53.4	20.3	69.4	-1634.6	112.4	200.2
6/30/1989	1642	30	709.7	-376.6	-722.3	1761.2	-6.6	-97.0	158.7	0.0	-88.6	-51.9	19.5	69.1	-1647.4	83.9	188.3
7/31/1989	1673	31	846.4	-355.7	-700.0	1723.3	-6.3	-94.3	161.3	0.0	-89.4	-53.5	19.8	70.3	-1715.1	60.9	132.4
8/31/1989	1704	31	800.1	-336.8	-651.1	1695.0	-6.3	-88.6	158.6	0.0	-87.3	-53.0	19.2	68.9	-1742.1	32.1	191.4
9/30/1989	1734	30	668.7	-324.4	-527.2	1630.8	-6.2	-79.9	151.1	0.0	-84.0	-51.1	16.8	61.8	-1727.9	31.8	239.7
10/31/1989	1765	31	691.6	-341.9	-491.8	1627.6	-6.3	-76.5	153.9	0.0	-87.0	-52.8	15.5	58.6	-1808.5	45.5	272.2
11/30/1989	1795	30	604.5	-341.3	-372.4	1614.9	-6.2	-68.6	145.9	0.0	-84.8	-51.0	12.9	50.7	-1779.2	37.3	237.4
12/31/1989	1826	31	673.7	-363.9	-332.7	1637.5	-6.3	-66.9	146.7	0.0	-88.5	-52.7	11.5	47.4	-1873.7	25.5	242.3
1/31/1990	1857	31	542.3	-376.1	-408.6	1485.5	-8.3	-63.4	146.6	0.0	-87.1	-52.7	11.3	46.1	-1763.8	80.8	447.3
2/28/1990	1885	28	437.9	-346.1	-423.7	1422.9	-9.6	-59.5	133.8	0.0	-75.4	-45.4	11.2	41.0	-1509.1	104.5	317.3
3/31/1990	1916	31	740.2	-357.0	-607.6	1819.7	-17.4	-67.4	144.0	0.0	-81.6	-48.1	15.0	55.5	-1766.2	47.4	123.6
4/30/1990	1946	30	775.9	-311.7	-609.4	1776.0	-17.3	-66.9	134.0	0.0	-78.7	-46.2	16.0	63.4	-1792.5	5.8	151.5
5/31/1990	1977	31	972.9	-283.5	-630.1	1718.8	-17.2	-69.8	134.4	0.0	-79.6	-47.6	17.3	70.9	-1860.9	0.0	74.4
6/30/1990	2007	30	885.2	-235.9	-550.0	1758.5	-17.2	-66.6	127.0	0.0	-75.2	-45.5	16.6	69.7	-1879.8	0.0	13.3
7/31/1990	2038	31	1004.0	-212.0	-538.2	1682.2	-9.0	-67.4	126.5	0.0	-76.1	-46.4	16.9	70.8	-1951.1	0.0	0.0
8/31/1990	2069	31	959.2	-188.9	-497.0	1685.6	-9.0	-65.4	124.7	0.0	-74.4	-45.6	16.2	69.1	-1975.7	0.0	1.1
9/30/1990	2099	30	805.4	-173.3	-387.8	1692.5	-8.9	-60.6	115.9	0.0	-71.3	-43.4	14.0	63.0	-1945.6	0.0	0.0
10/31/1990	2130	31	788.2	-179.5	-350.9	1714.4	-9.0	-60.0	111.7	0.0	-73.5	-44.2	12.8	61.5	-2025.3	0.0	53.8
11/30/1990	2160	30	538.7	-188.2	-273.3	1666.0	-8.9	-55.0	103.7	0.0	-71.1	-42.0	10.5	54.3	-1967.6	0.0	232.9
12/31/1990	2191	31	640.1	-215.9	-252.5	1716.2	-9.0	-54.5	104.0	0.0	-73.6	-42.6	9.3	50.6	-2051.5	0.0	179.4
1/31/1991	2222	31	900.6	-216.8	-302.0	1362.1	-17.5	-52.9	102.0	0.0	-72.4	-41.9	9.2	50.4	-1970.5	0.0	249.9
2/28/1991	2250	28	197.7	-207.2	-327.4	1690.6	-6.2	-42.2	93.5	0.0	-62.9	-36.7	8.7	43.6	-1730.6	13.9	365.2
3/31/1991	2281	31	-3859.0	-394.9	-671.8	6257.9	-3.4	-35.0	111.8	0.0	-67.5	-41.7	9.9	40.5	-2315.0	169.1	799.1
4/30/1991	2311	30	958.0	-432.6	-793.2	1766.2	-20.9	-41.8	114.9	0.0	-64.1	-35.6	12.9	50.4	-1827.2	68.9	244.1
5/31/1991	2342	31	1183.2	-318.7	-734.3	1722.2	-21.0	-58.7	112.8	0.0	-70.5	-34.9	15.9	66.5	-1890.8	6.8	21.6
6/30/1991	2372	30	911.0	-227.6	-583.9	1718.3	-20.9	-58.2	107.9	0.0	-67.2	-33.2	15.7	68.9	-1838.1	0.0	7.2
7/31/1991	2403	31	850.7	-189.9	-547.4	1750.8	-7.2	-58.2	104.1	0.0	-67.2	-33.6	16.0	69.9	-1888.0	0.0	0.0
8/31/1991	2434	31	860.5	-164.1	-494.3	1688.4	-7.1	-56.2	92.9	0.0	-64.8	-33.1	15.3	67.9	-1905.4	0.0	0.0
9/30/1991	2464	30	736.7	-148.4	-379.7	1654.6	-7.0	-52.3	87.4	0.0	-61.7	-31.7	13.2	61.7	-1872.8	0.0	0.0
10/31/1991	2495	31	688.1	-151.7	-342.5	1659.2	-7.1	-52.1	87.0	0.0	-63.4	-32.4	12.0	59.9	-1947.6	0.0	90.5
11/30/1991	2525	30	608.8	-150.6	-254.1	1712.4	-7.0	-48.1	79.4	0.0	-61.2	-30.8	9.9	53.2	-1911.8	0.0	0.0
12/31/1991	2556	31	-1674.8	-242.8	-281.3	3666.0	-3.0	-42.0	81.4	0.0	-61.9	-33.1	7.6	42.9	-2091.4	63.4	568.9
1/31/1992	2587	31	284.4	-318.6	-396.7	1595.6	-3.8	-36.9	91.8	0.0	-57.1	-29.5	8.8	38.6	-1720.2	96.3	447.3
2/29/1992	2616	29	-5235.8	-606.1	-578.0	6677.8	-2.4	-17.8	108.7	0.0	-48.7	-29.0	6.9	20.2	-2041.3	229.2	1516.2

Flow Budget for the Semi-Perched Aquifer in Oxnard Basin

Date	Stress	days in month	STORAGE	TILE DRAINS	ET	RECHARGE	Pumping from Wells	Mound	Pleasant Valley	West Las Posas	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Coastal Flux from South of Port Hueneme to Arnold Road	Coastal Flux from Arnold Road to Point Mugu	Oxnard Basin UAS	Partial Santa Clara River percolation	Calleguas Creek percolation
			influx(+) outflux(-); units in Acre-feet														
3/31/1992	2647	31	-1339.0	-896.5	-1044.0	3805.7	-2.5	-18.2	148.1	0.0	-49.9	-29.1	10.1	20.9	-1800.4	271.7	923.2
4/30/1992	2677	30	1002.6	-722.7	-1099.7	1554.5	-7.2	-57.6	145.4	0.0	-51.8	-23.8	14.9	43.6	-1480.6	322.2	360.3
5/31/1992	2708	31	1003.3	-536.1	-1034.1	1613.5	-7.5	-78.0	141.9	0.0	-64.4	-23.9	18.1	64.0	-1507.7	102.4	308.4
6/30/1992	2738	30	675.9	-397.9	-837.0	1603.9	-7.5	-71.2	133.1	-0.2	-60.7	-22.9	18.1	67.3	-1448.7	69.5	278.1
7/31/1992	2769	31	611.6	-347.9	-766.2	1757.6	-11.9	-69.4	134.1	-0.4	-60.5	-23.6	18.7	69.6	-1533.5	42.7	179.1
8/31/1992	2800	31	596.8	-308.1	-667.0	1678.5	-12.0	-65.7	130.5	-0.7	-58.4	-23.9	18.0	68.7	-1551.4	15.3	179.5
9/30/1992	2830	30	413.6	-278.7	-503.7	1671.7	-12.0	-60.8	123.3	-0.8	-56.6	-23.6	15.7	62.0	-1537.0	10.0	176.9
10/31/1992	2861	31	237.9	-290.5	-466.0	1660.5	-9.4	-58.6	125.7	-0.3	-59.3	-25.3	14.4	57.9	-1526.7	55.8	283.7
11/30/1992	2891	30	59.8	-299.3	-357.4	1807.2	-12.0	-53.8	119.9	0.0	-57.0	-24.0	12.5	49.8	-1523.6	55.7	222.4
12/31/1992	2922	31	-1895.8	-413.1	-367.6	3565.4	-3.5	-51.7	125.8	-0.1	-58.6	-26.8	10.4	39.7	-1607.1	134.1	548.8
1/31/1993	2953	31	-5157.8	-814.9	-612.2	6383.8	-2.5	-22.6	152.9	-0.3	-47.1	-27.3	9.2	20.8	-1652.1	297.6	1472.6
2/28/1993	2981	28	-3925.9	-1096.1	-751.3	5153.0	-2.0	5.2	176.3	-2.2	-31.8	-24.1	9.3	5.9	-1306.3	594.5	1195.6
3/31/1993	3012	31	-895.2	-1146.7	-1193.5	2758.8	-2.7	-9.1	209.1	-7.4	-30.6	-23.5	15.3	21.4	-917.7	575.4	646.2
4/30/1993	3042	30	490.4	-877.6	-1214.2	1452.1	-11.0	-54.7	198.4	-20.4	-40.7	-19.9	19.7	48.0	-764.6	413.8	380.6
5/31/1993	3073	31	3.5	-691.0	-1163.6	1734.1	-11.1	-133.9	198.8	-36.8	-64.0	-21.9	22.6	66.8	-826.8	601.9	321.5
6/30/1993	3103	30	223.7	-548.5	-960.7	1712.5	-11.2	-116.5	187.7	-25.7	-65.0	-22.6	22.3	68.8	-896.7	159.3	272.6
7/31/1993	3134	31	382.8	-496.4	-909.3	1546.7	-5.3	-105.2	190.3	-11.9	-67.6	-24.5	22.9	69.8	-1012.8	160.1	260.4
8/31/1993	3165	31	49.9	-466.4	-827.9	1855.9	-5.4	-107.3	187.4	-6.7	-70.3	-25.8	22.2	67.5	-1044.4	123.5	247.8
9/30/1993	3195	30	-115.9	-449.7	-643.6	1790.0	-5.4	-99.8	178.5	-7.8	-69.4	-26.5	19.7	60.1	-971.0	116.3	224.5
10/31/1993	3226	31	-318.0	-480.5	-589.0	1829.9	-5.5	-99.2	182.6	-15.6	-73.8	-28.8	18.6	57.0	-898.0	118.6	301.9
11/30/1993	3256	30	-366.2	-483.1	-447.2	1547.1	-5.2	-93.6	176.3	-20.9	-73.1	-28.5	16.2	48.7	-705.2	129.3	305.3
12/31/1993	3287	31	-559.5	-517.4	-409.6	1448.1	-3.1	-88.0	182.7	-24.0	-75.1	-29.7	15.3	42.8	-488.9	120.5	386.0
1/31/1994	3318	31	-354.5	-524.6	-480.5	1577.2	-7.5	-88.5	182.3	-20.2	-75.1	-28.0	16.6	44.5	-642.1	117.7	282.6
2/28/1994	3346	28	-2883.5	-572.2	-526.9	3666.3	-2.1	-71.7	166.4	-19.1	-66.9	-28.7	14.6	36.5	-401.2	185.8	502.7
3/31/1994	3377	31	-812.7	-688.5	-857.2	1857.7	-2.9	-77.5	192.6	-20.0	-70.4	-30.0	19.3	47.0	-127.7	157.2	413.2
4/30/1994	3407	30	15.3	-591.7	-888.2	1535.4	-7.1	-86.0	188.4	-18.3	-70.7	-27.1	22.4	58.1	-496.9	114.9	251.4
5/31/1994	3438	31	40.7	-532.8	-916.1	1566.4	-7.2	-100.6	193.3	-20.2	-78.1	-29.9	24.9	69.0	-521.7	100.6	211.6
6/30/1994	3468	30	129.9	-458.6	-793.2	1467.8	-7.2	-105.6	186.0	-17.8	-77.1	-30.9	24.2	69.6	-647.9	122.7	138.3
7/31/1994	3499	31	186.7	-443.2	-765.1	1647.1	-10.7	-107.4	191.8	-9.2	-80.3	-33.9	24.8	71.8	-877.5	93.5	111.6
8/31/1994	3530	31	248.4	-430.6	-702.9	1690.7	-10.8	-104.3	191.6	-6.0	-81.2	-35.9	24.0	70.4	-1026.1	83.1	89.7
9/30/1994	3560	30	-33.9	-433.6	-572.9	1768.0	-10.9	-97.5	185.5	-7.3	-80.8	-36.8	21.2	63.3	-1075.3	64.8	246.3
10/31/1994	3591	31	-85.4	-486.8	-544.8	1861.4	-11.0	-96.0	192.0	-9.2	-86.0	-40.0	19.8	59.9	-1079.4	75.8	229.9
11/30/1994	3621	30	-246.5	-496.3	-420.3	1540.8	-5.9	-87.8	185.0	-9.9	-84.0	-40.1	16.9	50.8	-744.6	93.3	248.8
12/31/1994	3652	31	-294.4	-531.0	-385.8	1510.5	-6.6	-84.9	191.0	-8.6	-84.9	-40.8	16.3	46.2	-673.5	66.3	280.3
1/31/1995	3683	31	-10065.2	-1184.1	-688.9	10641.2	-1.6	-54.2	214.9	-8.8	-77.3	-50.3	11.5	16.1	-827.5	491.1	1583.1
2/28/1995	3711	28	-327.3	-1326.8	-805.6	1187.8	-4.6	-129.1	216.5	-11.3	-72.5	-42.6	12.5	13.1	-190.3	1108.5	371.8
3/31/1995	3742	31	-4662.3	-1488.1	-1264.1	5683.1	-1.3	-128.2	249.8	-31.6	-84.1	-47.3	18.0	26.4	220.5	421.1	1088.2
4/30/1995	3772	30	726.0	-1363.8	-1384.7	1471.9	-7.1	-120.9	255.3	-33.7	-81.6	-42.6	22.1	44.2	-277.2	364.3	427.8
5/31/1995	3803	31	54.6	-1084.8	-1353.2	1328.2	-5.4	-196.7	266.1	-39.4	-96.3	-43.8	26.1	64.8	-81.7	780.9	380.6
6/30/1995	3833	30	325.8	-855.6	-1117.7	1442.2	-7.3	-174.8	259.5	-40.8	-94.1	-43.0	25.8	67.8	-227.7	107.8	332.1
7/31/1995	3864	31	-223.7	-778.4	-1051.8	1590.9	-5.2	-157.7	267.8	-29.3	-95.5	-45.3	26.7	70.2	47.3	113.6	270.5
8/31/1995	3895	31	-595.1	-727.3	-946.0	1679.6	-5.2	-148.5	265.7	-26.8	-92.6	-45.3	26.4	68.9	197.3	106.9	241.8
9/30/1995	3925	30	-771.7	-692.0	-733.9	1652.4	-5.2	-137.8	254.5	-26.7	-89.1	-44.2	24.1	61.8	141.4	114.7	251.7
10/31/1995	3956	31	-828.5	-724.8	-663.7	1639.1	-5.3	-138.8	260.4	-30.2	-93.0	-46.5	23.3	58.9	149.4	136.6	263.2
11/30/1995	3986	30	-816.9	-721.6	-497.2	1525.6	-5.3	-128.3	249.4	-29.9	-91.4	-46.2	20.6	50.8	96.0	140.3	254.0
12/31/1995	4017	31	-1365.1	-786.5	-462.7	1446.6	-2.3	-118.7	257.3	-35.8	-94.4	-49.4	19.5	44.6	586.7	123.8	436.3
1/31/1996	4048	31	-865.1	-812.4	-562.4	1204.7	-2.1	-113.0	258.5	-31.2	-93.7	-49.2	20.3	43.5	501.2	111.4	389.6
2/29/1996	4077	29	-4334.3	-953.7	-653.8	4525.5	-1.0	-87.2	244.1	-35.2	-88.9	-48.6	18.8	34.2	774.7	33.7	571.6
3/31/1996	4108	31	-714.5	-1093.0	-1001.7	1258.4	-1.7	-94.6	266.3	-45.2	-94.7	-50.4	23.8	47.1	1082.5	43.4	374.4
4/30/1996	4138	30	-435.9	-928.7	-1021.8	1387.3	-3.0	-103.9	259.5	-34.2	-92.3	-47.8	26.8	59.6	611.0	41.1	282.0
5/31/1996	4169	31	-119.8	-870.1	-1066.0	1559.1	-3.5	-127.4	268.8	-23.9	-96.7	-50.3	29.6	70.0	120.0	77.5	232.5
6/30/1996	4199	30	206.3	-783.5	-947.6	1497.3	-3.6	-143.9	260.9	-12.1	-95.3	-50.1	28.7	70.1	-354.5	114.1	213.2
7/31/1996	4230	31	587.8	-772.7	-915.1	1772.6	-2.7	-156.4	270.3	-4.7	-99.7	-53.8	29.4	71.9	-883.6	94.5	62.1
8/31/1996	4261	31	682.2	-763.6	-859.1	1712.0	-2.8	-155.5	272.1	-4.5	-100.6	-56.5	28.3	70.6	-1134.0	75.5	235.9
9/30/1996	4291	30	589.0	-759.8	-695.4	1811.7	-2.9	-148.0	264.9	-6.2	-100.3	-57.5	24.9	63.0	-1263.9	67.5	213.1
10/31/1996	4322	31	193.2	-819.8	-659.4	1704.8	-2.1	-141.3	275.3	-14.1	-105.9	-62.3	23.2	58.8	-855.7	76.7	328.5
11/30/1996	4352	30	-931.1	-873.1	-533.2	2192.8	-1.5	-135.5	268.7	-18.5	-103.5	-62.4	20.0	47.6	-416.7	143.1	403.3
12/31/1996	4383	31	-3856.5	-1209.9	-565.3	4677.0	-1.1	-116.9	283.9	-27.3	-108.3	-68.3	17.3	31.9	162.2	80.4	700.9
1/31/1997	4414	31	-3148.8	-1529.2	-755.6	3765.0	-0.7	-115.5	294.2	-51.3	-110.7	-68.7	17.4	25.4	853.5	179.7	645.2
2/28/1997	4442	28	-157.6	-1355.2	-746.1	1417.9	-1.3	-118.7	270.9	-42.5	-101.9	-59.6	18.7	32.1	399.2	152.8	291.3
3/31/1997	4473	31	219.0	-1299.2	-1030.0	1554.8	-1.6	-128.4	300.3	-37.1	-115.5	-65.9	24.8	53.1	250.0	26.9	248.8
4/30/1997	4503	30	335.8	-1106.1	-1032.8	1583.7	-1.7	-132.3	291.6	-26.4	-109.9	-63.9	26.4	62.8	-117.2	78.9	211.1
5/31/1997	4534	31	938.5	-1007.4	-1050.2	1448.8	-1.8	-154.6	301.9	-14.6	-112.4	-66.3	28.9	72.1	-586.1	117.3	86.0
6/30/1997	4564	30	1017.7	-874.4	-911.0	1391.3	-1.8	-155.9	292.1	-4.8	-107.6	-64.7	28.1	72.1	-897.4	97.3	119.2
7/31/1997	4595	31	1067.2	-867.7	-925.3	1727.6	-2.2	-159.0	302.1	0.3	-111.2	-68.3	28.6	72.9	-1372.5	75.4	232.2
8/31/1997	4626	31	934.6	-874.7	-900.5	1991.7	-2.2	-158.1	302.3	-2.3	-113.1	-70.6	27.4	69.8	-1506.0	57.1	244.5
9/30/1997	4656	30	693.2	-872.5	-730.1	2019.3	-2.2	-149.3	291.9	-5.4	-112.1	-70.7	24.1	62.4	-1423.7	37.5	237.6
10/31/1997	4687	31	540.9	-934.4	-677.3	2082.4	-2.3	-150.0	300.2	-9.0	-119.0	-75.1	22.4	59.5	-1351.8	40.2	273.2
11/30/1997	4717	30	-318.6	-953.1	-539.7	2052.4	-1.5	-136.4	290.9	-13.2	-117.0	-74.9	18.8	48.4	-791.2	93.6	441.4
12/31/1997	4748	31	-3700.9	-1292.5	-577.0	5189.5	-1.2	-112.6	307.5	-15.1	-120.7	-80.0	16.4	33.0	-503.5	42.4	814.6
1/31/1998	4779	31	-594.8	-1476.7	-738.1	2307.0	-0.8	-98.2	316.3	-20.7	-122.3	-78.3	17.5	30.0	-100.2	22.1	537.2
2/28/1998	4807	28	-12470.3	-2355.6	-943.0	13671.6	-0.4	-37.6	316.0	-26.9	-104.7	-82.2	11.5	-3.2	-115.7	528.2	1612.4
3/31/1998	4838	31	858.7	-2895.7	-1600.1	2190.5	-0.2	-71.8	365.3	-41.5	-118.2	-85.8	18.5	9.8	458.1	254.0	658.6
4/30/1998	4868	30	273.2	-2146.8	-1620.2	1598.9	-0.2	-85.8	357.5	-58.0	-110.9	-78.0	25.6	43.9	925.8	366.4	508.7
5/31/1998	4899	31	-653.0	-1807.6	-1649.2	1977.0	-0.2	-101.6	373.8	-62.2	-110.1	-79.9	30.0	62.8	1279.5	241.0	499.7
6/30/1998	4929	30	22.0	-1508.2	-1383.2	1892.5	-0.3	-156.5	364.0	-56.9	-118.0	-76.5	30.2	67.8	394.8	177.9	350.5
7/31/1998	4960	31	99.7	-1378.5	-1282.6	1527.2	-0.5	-188.5	376.2	-44.1	-124.7	-79.9	31.1	71.8	426.5	240.8	325.6
8/31/1998	4991	31	294.3	-1265.3	-1142.4	1613.9	-0.6	-169.7	374.3	-25.2	-120.7	-79.5	30.7	70.5	101.8	20.8	297.1
9/30/1998	5021	30	239.1	-1180.1	-876.2	1546.9	-0.7	-152.7	360.3	-17.1	-115.7	-77.2	27.8	63.0	-156.8	43.6	295.7
10/31/1998	5052	31	-53.8	-1200.0	-778.6	1568.0	-0.8	-155.2	369.7	-34.7	-120.7	-81.0	26.6	59.9	50.5	65.6	284.3
11/30/1998	5082	30	-694.5	-1158.3	-583.2	1345.7	-0.7	-141.6	355.6	-53.4	-117.4	-80.8	23.3	50.4	639.9	87.6	327.6
12/31/1998	5113	31	-872.6	-1201.0	-525.8	1346.4	-0.7	-129.1	364.9	-51.6	-121.1	-84.6	22.3	45.1	833.6	28.4	345.9
1/31/1999	5144	31	-1265.7	-1221.0	-625.9	1565.9	-0.6	-122.2	362.3	-38.6	-122.4	-85.3	22.7	44.5	1071.1	45.7	369.4
2/28/1999	5172	28	-309.1	-1125.0	-631.4	1321.2	-0.6	-108.5	327.1	-18.5	-108.2	-75.6	21.8	43.4	288.1	39.9	335.3
3/31/1999	5203	31	-1606.9	-1311.9	-991.7	2530.9	-0.6	-126.6	361.4	-27.3	-121.1	-85.7	26.2	52.1	849.2	27.4	424.7
4/30/1999	5233	30	-855.0	-1297.4	-1112.1	1907.8	-0.4	-114.0	349.7	-33.7	-113.1	-81.3	28.3	56.7	912.8	2.0	349.9

Flow Budget for the Semi-Perched Aquifer in Oxnard Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet														
			STORAGE	TILE DRAINS	ET	RECHARGE	Pumping from Wells	Mound	Pleasant Valley	West Las Posas	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Coastal Flux from South of Port Hueneme to Arnold Road	Coastal Flux from Arnold Road to Point Mugu	Oxnard Basin UAS	Partial Santa Clara River percolation	Calleguas Creek percolation
5/31/1999	5264	31	406.5	-1276.3	-1202.7	1569.6	-0.5	-125.5	362.2	-23.9	-115.2	-81.7	32.4	68.4	123.5	-3.2	266.4
6/30/1999	5294	30	797.8	-1160.1	-1073.4	1524.1	-0.7	-140.6	352.0	-3.9	-113.2	-79.6	31.9	69.9	-454.6	13.7	236.8
7/31/1999	5325	31	1064.3	-1146.2	-1050.3	1602.1	-0.8	-167.5	362.6	3.5	-119.5	-83.3	32.6	72.0	-769.1	49.2	150.4
8/31/1999	5356	31	1299.4	-1107.7	-968.2	1539.3	-0.9	-175.1	360.4	3.1	-120.9	-84.3	31.6	71.4	-1081.0	61.0	171.9
9/30/1999	5386	30	1016.8	-1073.7	-778.3	1654.3	-1.0	-167.2	347.5	0.9	-118.8	-83.1	28.2	64.2	-1194.1	62.0	242.2
10/31/1999	5417	31	886.1	-1138.4	-719.5	1793.9	-1.2	-171.8	357.4	-5.0	-125.7	-87.8	26.5	60.8	-1169.8	75.1	219.3
11/30/1999	5447	30	744.4	-1108.3	-548.2	1379.4	-1.2	-161.2	344.4	-8.1	-124.7	-87.7	22.8	51.6	-875.0	79.0	292.7
12/31/1999	5478	31	955.2	-1153.3	-491.5	1577.8	-1.3	-163.1	353.5	-3.2	-131.5	-91.8	21.5	47.9	-1247.8	81.2	246.4
1/31/2000	5509	31	823.2	-1143.0	-579.6	1465.5	-1.2	-162.8	351.4	-6.9	-134.5	-94.7	21.0	47.1	-972.2	83.2	303.5
2/29/2000	5538	29	-2796.2	-1282.9	-681.1	4621.2	-0.8	-128.1	331.7	-10.3	-126.8	-92.4	18.9	36.3	-522.2	57.9	574.8
3/31/2000	5569	31	175.7	-1477.2	-1070.9	1852.5	-0.7	-133.1	359.1	-18.9	-131.9	-96.1	23.9	46.4	-16.6	93.8	394.3
4/30/2000	5599	30	-553.7	-1339.4	-1157.9	2092.6	-0.5	-140.6	349.6	-32.3	-128.3	-90.5	27.1	54.9	406.4	88.7	424.1
5/31/2000	5630	31	735.6	-1307.4	-1246.9	1852.4	-0.6	-149.9	363.2	-17.2	-130.6	-90.6	30.8	66.8	-443.0	50.6	286.9
6/30/2000	5660	30	1237.4	-1176.0	-1102.3	1693.4	-0.8	-133.2	352.1	-4.9	-124.3	-88.4	30.0	68.9	-1019.5	14.1	253.6
7/31/2000	5691	31	1509.2	-1120.0	-1077.3	1447.7	-0.9	-154.0	363.8	1.7	-128.3	-91.9	30.4	71.0	-1169.4	88.6	229.5
8/31/2000	5722	31	1537.9	-1035.2	-975.4	1418.1	-1.0	-162.1	362.3	0.0	-128.4	-91.3	29.6	70.1	-1254.2	69.4	160.2
9/30/2000	5752	30	1087.0	-970.2	-748.3	1546.4	-1.0	-154.5	348.5	-3.9	-124.7	-88.0	26.4	64.2	-1188.9	78.6	128.4
10/31/2000	5783	31	417.2	-1011.0	-691.8	1576.2	-1.1	-157.4	357.8	-14.6	-129.6	-92.1	24.8	60.5	-704.0	103.1	261.8
11/30/2000	5813	30	250.4	-1011.8	-530.1	1657.2	-1.1	-148.5	343.5	-21.8	-125.8	-89.8	21.7	52.2	-731.1	108.1	227.0
12/31/2000	5844	31	525.4	-1074.5	-477.3	1552.1	-1.2	-151.2	351.6	-15.8	-132.4	-93.5	20.2	48.5	-922.4	99.1	271.5
1/31/2001	5875	31	-2337.5	-1263.2	-626.9	4035.8	-1.0	-135.0	353.2	-11.8	-133.3	-97.7	18.5	39.8	-504.8	76.5	587.4
2/28/2001	5903	28	-3245.0	-1486.5	-746.1	4642.9	-0.6	-114.5	327.4	-12.1	-120.3	-90.0	16.3	26.8	-81.8	140.0	743.6
3/31/2001	5934	31	-2334.2	-1888.4	-1262.4	3717.9	-0.5	-109.5	375.0	-30.5	-123.9	-97.1	22.2	37.8	569.0	239.4	885.3
4/30/2001	5964	30	593.2	-1690.9	-1350.7	1435.7	-0.5	-130.7	367.0	-40.9	-125.2	-88.5	26.4	51.0	490.3	97.2	366.4
5/31/2001	5995	31	840.2	-1482.9	-1353.7	1710.9	-0.6	-150.1	377.7	-25.9	-130.5	-89.6	30.1	66.6	-193.0	92.2	308.6
6/30/2001	6025	30	1021.6	-1265.7	-1158.6	1658.7	-0.7	-154.8	366.3	-9.5	-126.7	-87.1	29.3	69.1	-686.6	81.4	263.1
7/31/2001	6056	31	1091.6	-1202.5	-1127.0	1640.5	-0.8	-164.4	379.6	-4.1	-128.9	-89.5	30.0	70.8	-855.5	91.9	268.2
8/31/2001	6087	31	1237.1	-1130.1	-1036.3	1578.8	-0.8	-160.9	379.5	-1.4	-125.4	-88.6	29.4	68.9	-1068.1	77.6	240.1
9/30/2001	6117	30	811.2	-1074.6	-812.5	1717.4	-0.9	-152.6	365.8	-6.5	-121.1	-85.9	26.2	61.8	-1054.5	88.6	237.6
10/31/2001	6148	31	355.1	-1123.4	-740.5	1749.8	-0.9	-158.6	375.7	-20.7	-126.8	-89.8	24.7	58.8	-679.0	109.2	266.3
11/30/2001	6178	30	-1495.8	-1169.5	-582.6	2511.7	-0.8	-144.0	360.8	-38.2	-123.4	-90.3	20.6	46.6	225.1	108.9	370.7
12/31/2001	6209	31	-577.1	-1264.5	-540.0	1573.6	-0.7	-140.3	369.9	-25.1	-126.4	-92.9	19.8	39.9	347.9	87.4	328.5
1/31/2002	6240	31	-15.4	-1220.6	-627.7	1087.8	0.0	-141.3	366.5	-16.3	-126.4	-90.6	21.2	43.1	300.0	92.9	326.8
2/28/2002	6268	28	253.6	-1070.9	-612.5	1291.4	0.0	-134.0	328.8	-6.6	-114.5	-80.3	20.6	44.0	-273.5	97.8	256.1
3/31/2002	6299	31	740.4	-1147.7	-904.3	1389.6	0.0	-153.7	362.4	-3.5	-125.6	-88.3	25.6	58.3	-519.0	98.4	267.4
4/30/2002	6329	30	1194.9	-1027.6	-931.1	1239.7	0.0	-152.4	349.5	-4.0	-118.5	-84.4	27.2	64.5	-767.4	98.0	111.6
5/31/2002	6360	31	1354.7	-960.4	-963.6	1234.5	0.0	-158.8	359.6	-5.0	-119.3	-86.4	29.7	73.2	-907.9	87.3	62.2
6/30/2002	6390	30	1294.4	-846.8	-850.5	1186.0	0.0	-151.5	344.7	-5.1	-113.2	-83.0	29.0	72.4	-949.4	72.9	0.0
7/31/2002	6421	31	1111.0	-847.4	-850.9	1618.0	0.0	-152.7	347.8	-5.0	-116.2	-85.6	29.6	73.5	-1165.5	43.2	0.0
8/31/2002	6452	31	1271.4	-846.6	-807.8	1648.6	0.0	-149.2	342.6	-5.8	-116.5	-85.6	28.5	71.7	-1350.1	-1.0	0.0
9/30/2002	6482	30	962.4	-828.7	-643.6	1767.7	0.0	-140.7	325.7	-6.4	-114.6	-84.4	24.9	65.1	-1344.8	17.3	0.0
10/31/2002	6513	31	1015.4	-866.1	-585.4	1729.7	0.0	-139.0	328.7	-7.4	-120.7	-89.2	23.1	63.2	-1361.0	8.8	0.0
11/30/2002	6543	30	-1234.5	-955.8	-493.5	3112.4	0.0	-122.8	314.5	-8.0	-119.6	-90.3	18.8	51.1	-1009.4	111.7	425.3
12/31/2002	6574	31	-769.4	-1168.5	-506.7	2722.5	0.0	-116.7	330.6	-6.7	-124.8	-93.6	17.3	41.2	-805.8	55.5	425.1
1/31/2003	6605	31	1169.8	-1161.4	-588.4	1322.0	0.0	-130.2	332.2	-3.4	-127.7	-90.3	18.6	44.8	-1016.4	101.3	129.2
2/28/2003	6633	28	-2588.6	-1214.3	-649.5	4384.7	0.0	-106.0	306.1	-3.9	-117.5	-86.2	16.1	36.3	-709.0	57.3	674.6
3/31/2003	6664	31	-376.2	-1494.0	-1082.2	2728.6	0.0	-115.3	349.6	-5.0	-126.8	-93.2	21.3	44.4	-406.3	86.9	468.2
4/30/2003	6694	30	1117.2	-1296.3	-1134.3	1323.0	0.0	-104.9	342.7	-3.5	-118.3	-84.8	25.0	55.8	-474.6	27.8	325.3
5/31/2003	6725	31	558.7	-1167.1	-1191.0	1464.1	0.0	-124.0	356.5	-4.0	-119.6	-86.2	28.4	66.0	-199.6	126.8	290.9
6/30/2003	6755	30	1012.1	-998.0	-1012.4	1403.8	0.0	-138.5	343.9	-2.9	-115.7	-80.5	28.4	68.8	-613.4	104.4	0.0
7/31/2003	6786	31	1105.3	-938.0	-946.7	1491.0	0.0	-144.0	348.1	-0.4	-118.5	-82.6	29.4	72.9	-897.4	80.8	0.0
8/31/2003	6817	31	1115.3	-878.1	-857.0	1458.6	0.0	-139.1	342.0	-0.8	-116.7	-82.9	28.7	71.9	-998.0	56.1	0.0
9/30/2003	6847	30	946.3	-819.1	-661.9	1498.7	0.0	-128.9	325.0	-2.0	-113.4	-81.4	25.5	65.2	-1117.4	63.2	0.0
10/31/2003	6878	31	875.7	-836.2	-592.1	1603.3	0.0	-128.5	329.0	-3.3	-118.6	-85.5	23.9	63.2	-1215.2	84.1	0.0
11/30/2003	6908	30	770.1	-794.9	-439.9	1307.2	0.0	-117.7	310.8	-3.4	-115.8	-84.1	20.3	55.0	-1011.7	104.1	0.0
12/31/2003	6939	31	447.9	-829.9	-402.7	1323.0	0.0	-115.4	316.7	-2.9	-119.2	-87.2	19.0	51.3	-877.8	86.0	191.2
1/31/2004	6970	31	815.3	-845.0	-477.6	1264.6	0.0	-109.5	319.4	-2.2	-117.3	-85.9	19.3	53.4	-1033.8	72.7	126.8
2/29/2004	6999	29	-1892.3	-958.9	-562.3	3560.7	0.0	-88.4	304.8	-1.6	-110.6	-82.7	17.4	44.6	-787.4	58.8	498.1
3/31/2004	7030	31	1038.8	-1085.8	-870.9	1326.2	0.0	-96.7	332.8	-1.2	-114.3	-85.1	21.9	53.7	-768.5	69.3	179.7
4/30/2004	7060	30	1117.1	-915.4	-870.7	1326.0	0.0	-111.5	322.4	-0.7	-112.2	-79.8	24.3	63.6	-847.9	84.9	0.0
5/31/2004	7091	31	1226.7	-825.6	-893.0	1328.1	0.0	-119.5	328.8	-0.5	-114.2	-81.4	26.6	72.6	-1013.1	64.6	0.0
6/30/2004	7121	30	1181.5	-712.7	-790.2	1261.2	0.0	-112.6	313.7	-0.5	-107.7	-78.1	25.8	71.8	-1099.5	47.2	0.0
7/31/2004	7152	31	987.6	-702.5	-792.6	1638.1	0.0	-113.8	319.3	-0.4	-110.2	-80.5	26.2	72.7	-1260.0	16.2	0.0
8/31/2004	7183	31	1148.5	-690.9	-751.8	1598.3	0.0	-111.4	313.9	-0.3	-110.1	-81.2	25.0	70.8	-1421.8	10.9	0.0
9/30/2004	7213	30	1085.6	-662.3	-596.0	1582.3	0.0	-103.6	297.4	-0.1	-107.4	-79.6	21.6	64.4	-1502.7	0.4	0.0
10/31/2004	7244	31	-1116.1	-827.5	-638.7	3322.1	0.0	-94.4	307.9	0.0	-111.0	-84.6	19.1	56.7	-1453.3	63.2	556.6
11/30/2004	7274	30	610.2	-919.7	-523.8	1789.4	0.0	-86.9	305.4	0.0	-106.6	-79.2	16.9	47.7	-1348.0	65.2	229.3
12/31/2004	7305	31	-1785.7	-1156.1	-532.2	3934.9	0.0	-77.2	325.5	0.0	-113.8	-85.5	14.3	38.5	-1395.3	41.7	790.9
1/31/2005	7336	31	-4682.9	-1687.2	-783.8	6222.5	0.0	-8.0	355.7	-0.4	-84.5	-87.4	13.0	21.0	-1309.1	633.2	1398.0
2/28/2005	7364	28	-4105.4	-2041.3	-911.0	5852.6	0.0	-18.7	354.6	-1.4	-82.5	-78.5	12.3	3.0	-876.8	671.3	1221.8
3/31/2005	7395	31	974.3	-2084.6	-1419.9	1670.1	0.0	-65.1	395.9	-13.3	-90.0	-81.2	19.6	22.2	-410.0	484.6	597.3
4/30/2005	7425	30	953.9	-1580.3	-1418.4	1401.6	0.0	-119.6	380.6	-34.9	-103.6	-74.0	23.9	49.3	-195.0	363.7	352.6
5/31/2005	7456	31	657.1	-1323.7	-1378.6	1460.1	0.0	-164.0	392.2	-52.7	-112.5	-74.6	27.1	68.5	-278.3	469.9	309.5
6/30/2005	7486	30	-63.3	-1093.5	-1139.7	1464.2	0.0	-206.7	379.3	-47.5	-115.5	-71.9	26.4	70.8	-273.5	829.0	241.9
7/31/2005	7517	31	438.3	-1018.5	-1075.8	1314.1	0.0	-185.7	390.3	-38.3	-112.6	-73.3	27.2	72.7	-76.2	92.4	245.4
8/31/2005	7548	31	283.1	-940.0	-940.5	1441.1	0.0	-145.4	384.6	-25.2	-102.5	-71.1	27.1	71.2	-92.0	109.5	0.0
9/30/2005	7578	30	-47.0	-865.7	-699.1	1388.8	0.0	-126.5	361.5	-22.4	-96.3	-67.9	24.6	65.0	-7.4	92.3	0.0
10/31/2005	7609	31	-847.5	-893.1	-652.7	1401.6	0.0	-108.0	367.3	-38.7	-97.3	-70.4	23.6	61.2	501.5	54.0	298.5
11/30/2005	7639	30	-308.1	-879.1	-487.5	1367.4	0.0	-97.2	354.7	-20.9	-93.8	-67.5	21.1	53.2	63.4	78.6	15.7
12/31/2005	7670	31	-73.5	-908.1	-417.7	1269.6	0.0	-103.5	362.3	-9.4	-100.9	-70.6	19.9	51.6	-97.7	77.9	0.0
1/31/2006	7701	31	-1319.3	-962.9	-522.1	1825.3	0.0	-81.5	360.7	-18.8	-100.9	-72.2	19.6	49.5	382.0	19.3	421.4
2/28/2006	7729	28	-1642.5	-994.6	-577.4	2251.3	0.0	-63.0	331.5	-21.3	-90.8	-65.6	18.4	41.3	438.5	12.5	361.8
3/31/2006	7760	31	-2187.7	-1234.4	-948.9	2811.5	0.0	-74.1	371.8	-31.2	-100.3	-71.9	23.4	49.3	919.3	35.2	438.2
4/30/2006	7790	30	-2683.6	-1276.2	-1103.2	2856.4	0.0	-72.8	366.4	-54.2	-92.7	-68.2	25.7	53.8	1465.4	111.7	471.7
5/31/2006	7821	31	-610.8	-1268.4	-1219.5	1581.1	0.0	-105.9	383.3	-59.1	-99.2	-68.3	29.5	64.4	934.0	111.5	327.7
6/30/2006	7851	30	157.5	-1120.9	-1036.3	1863.2	0.0	-125.1	370.2	-28.4	-101.2	-66.9	29.0	68.4	-116.1	106.3	0.0

Flow Budget for the Semi-Perched Aquifer in Oxnard Basin

influx(+) outflux(-); units in Acre-feet

Date	Stress	days in month	STORAGE	TILE DRAINS	ET	RECHARGE	Pumping from Wells	Mound	Pleasant Valley	West Las Posas	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Coastal Flux from South of Port Hueneme to Arnold Road	Coastal Flux from Arnold Road to Point Mugu	Oxnard Basin UAS	Partial Santa Clara River percolation	Calleguas Creek percolation
7/31/2006	7882	31	58.8	-1071.3	-971.2	1476.2	0.0	-140.3	376.8	-14.1	-105.5	-71.2	29.6	73.1	216.2	143.0	0.0
8/31/2006	7913	31	157.2	-1012.3	-883.2	1589.1	0.0	-150.0	371.7	-3.5	-104.4	-70.9	29.2	72.2	-114.8	119.7	0.0
9/30/2006	7943	30	267.9	-957.0	-686.3	1492.6	0.0	-148.3	355.1	-3.0	-102.1	-69.2	26.4	65.6	-355.2	113.6	0.0
10/31/2006	7974	31	-44.5	-982.4	-615.2	1655.5	0.0	-151.2	362.1	-14.2	-107.2	-72.9	25.1	63.6	-230.2	111.6	0.0
11/30/2006	8004	30	79.8	-958.7	-457.5	1507.0	0.0	-141.6	346.0	-13.6	-105.8	-72.2	21.8	56.4	-377.1	115.6	0.0
12/31/2006	8035	31	-75.3	-1001.1	-418.4	1298.5	0.0	-145.1	356.0	-8.3	-112.5	-77.0	20.3	52.2	-196.7	108.0	199.3
1/31/2007	8066	31	-845.7	-1047.3	-516.4	1797.8	0.0	-140.2	360.8	-11.4	-114.3	-78.3	20.6	50.4	211.8	85.6	226.6
2/28/2007	8094	28	-114.8	-977.7	-538.5	1232.9	0.0	-125.9	330.8	-4.4	-102.9	-69.9	19.9	45.8	-43.7	79.7	268.7
3/31/2007	8125	31	516.3	-1058.8	-797.4	1531.5	0.0	-149.9	369.5	-3.4	-114.3	-76.1	25.3	59.3	-407.2	105.1	0.0
4/30/2007	8155	30	606.2	-963.3	-828.4	1367.9	0.0	-149.5	361.4	-5.1	-109.6	-74.2	26.7	64.3	-399.6	103.3	0.0
5/31/2007	8186	31	1020.0	-937.8	-893.0	1476.3	0.0	-158.0	373.4	-2.1	-110.5	-75.2	29.6	72.5	-894.4	99.2	0.0
6/30/2007	8216	30	1328.1	-863.2	-810.2	1322.1	0.0	-152.8	357.6	-1.3	-106.9	-73.2	28.8	71.8	-1169.7	68.9	0.0
7/31/2007	8247	31	1401.1	-845.6	-816.3	1268.0	0.0	-154.6	365.4	-1.6	-110.3	-76.5	29.4	73.9	-1175.3	42.3	0.0
8/31/2007	8278	31	1278.4	-819.3	-774.0	1346.2	0.0	-151.0	360.6	-2.3	-109.9	-76.7	28.9	72.7	-1195.1	41.5	0.0
9/30/2007	8308	30	805.0	-808.7	-621.8	1584.2	0.0	-141.0	344.3	-4.3	-107.7	-75.1	25.9	66.4	-1110.7	43.5	0.0
10/31/2007	8339	31	539.9	-862.0	-570.5	1698.3	0.0	-141.0	351.6	-6.7	-113.5	-78.9	24.5	64.7	-970.8	64.4	0.0
11/30/2007	8369	30	633.4	-847.2	-427.6	1464.6	0.0	-131.3	337.6	-4.4	-112.4	-77.6	21.2	57.8	-971.0	57.1	0.0
12/31/2007	8400	31	353.4	-894.7	-390.7	1402.4	0.0	-124.1	347.5	-5.9	-117.9	-82.1	19.5	53.4	-784.8	82.6	141.4
1/31/2008	8431	31	-2901.4	-1133.4	-585.3	3974.2	0.0	-101.9	366.6	-9.6	-115.7	-85.0	18.6	43.6	-629.7	181.8	977.2
2/29/2008	8460	29	-193.9	-1225.2	-698.7	1658.2	0.0	-103.4	358.4	-22.3	-105.4	-78.6	18.4	34.0	-283.9	243.8	398.4
3/31/2008	8491	31	987.3	-1181.4	-943.7	1234.1	0.0	-139.6	383.0	-38.0	-117.8	-80.9	24.0	51.9	-428.1	195.0	54.4
4/30/2008	8521	30	647.1	-997.9	-915.2	1517.6	0.0	-136.8	374.9	-27.9	-115.3	-77.3	25.8	64.0	-449.4	90.4	0.0
5/31/2008	8552	31	717.3	-942.8	-946.0	1595.3	0.0	-144.8	384.2	-13.6	-116.5	-78.9	28.2	73.1	-657.5	101.8	0.0
6/30/2008	8582	30	770.5	-854.4	-842.4	1538.5	0.0	-139.1	365.6	-2.0	-109.5	-75.4	27.6	72.1	-840.4	89.0	0.0
7/31/2008	8613	31	856.8	-853.9	-842.9	1608.9	0.0	-142.9	372.4	1.0	-110.8	-77.6	28.1	73.7	-1012.8	99.9	0.0
8/31/2008	8644	31	1043.5	-830.6	-790.7	1526.6	0.0	-139.1	367.1	-2.8	-109.6	-77.9	27.1	72.1	-1180.6	94.8	0.0
9/30/2008	8674	30	769.3	-807.6	-627.5	1724.3	0.0	-127.4	350.0	-5.1	-106.9	-76.3	23.9	65.7	-1244.6	62.3	0.0
10/31/2008	8705	31	486.6	-866.3	-574.2	2010.9	0.0	-125.9	356.4	-7.3	-112.8	-80.1	22.3	63.9	-1233.5	60.2	0.0
11/30/2008	8735	30	-155.6	-884.8	-457.2	1872.4	0.0	-115.7	342.3	-8.3	-110.5	-79.4	18.8	53.5	-832.0	106.4	249.9
12/31/2008	8766	31	-60.5	-971.1	-447.3	1611.1	0.0	-106.0	359.3	-6.0	-113.1	-81.2	18.1	46.8	-691.9	64.1	377.8
1/31/2009	8797	31	644.6	-970.6	-523.8	1233.5	0.0	-107.4	362.3	-3.7	-112.4	-79.0	19.2	48.7	-730.5	87.0	132.0
2/28/2009	8825	28	-2438.4	-1041.7	-588.3	3781.5	0.0	-79.5	332.5	-5.0	-101.5	-74.0	16.9	38.5	-465.3	37.2	587.3
3/31/2009	8856	31	946.1	-1209.7	-935.5	1221.9	0.0	-92.0	374.6	-4.2	-109.3	-78.0	22.5	51.5	-486.9	65.8	233.2
4/30/2009	8886	30	861.6	-1020.7	-922.9	1369.0	0.0	-107.4	361.3	-3.4	-105.9	-72.9	25.0	62.5	-534.2	88.1	0.0
5/31/2009	8917	31	837.6	-956.4	-982.7	1258.6	0.0	-116.4	371.7	-3.4	-107.5	-74.1	27.7	71.5	-645.5	60.7	258.1
6/30/2009	8947	30	1067.1	-844.4	-870.0	1158.7	0.0	-111.4	361.5	-3.3	-101.3	-70.8	27.1	70.4	-715.2	31.4	0.0
7/31/2009	8978	31	823.8	-832.1	-862.0	1496.7	0.0	-113.7	370.2	-3.3	-103.4	-73.2	27.8	73.4	-986.8	7.3	175.3
8/31/2009	9009	31	1060.9	-822.0	-815.2	1404.5	0.0	-111.1	373.0	-3.4	-103.6	-74.2	26.8	72.3	-1174.5	6.7	159.7
9/30/2009	9039	30	932.0	-790.2	-643.8	1394.0	0.0	-103.0	362.3	-3.0	-101.4	-73.2	23.5	65.9	-1241.3	10.5	167.5
10/31/2009	9070	31	501.4	-855.1	-595.0	1745.9	0.0	-97.4	374.4	-2.3	-105.3	-77.0	21.8	62.5	-1219.0	87.8	157.5
11/30/2009	9100	30	697.6	-862.4	-441.0	1684.5	0.0	-90.6	360.3	-1.2	-102.5	-74.8	18.6	56.1	-1297.2	52.7	0.0
12/31/2009	9131	31	-283.0	-973.8	-425.6	2308.4	0.0	-78.5	368.8	-0.5	-107.4	-79.6	16.4	47.5	-1208.9	33.7	382.5
1/31/2010	9162	31	-2475.2	-1278.2	-626.5	4411.2	0.0	-62.3	380.6	-0.3	-105.6	-80.9	15.5	35.0	-1070.2	46.9	810.1
2/28/2010	9190	28	-909.7	-1368.4	-710.5	3003.6	0.0	-52.2	353.4	-0.3	-95.8	-71.7	15.1	28.5	-771.2	82.4	496.5
3/31/2010	9221	31	1535.2	-1375.3	-1004.7	1311.9	0.0	-68.5	391.7	-0.2	-105.7	-75.0	21.3	48.8	-820.3	57.9	82.7
4/30/2010	9251	30	777.4	-1127.1	-998.7	1421.6	0.0	-67.0	379.2	-0.1	-100.4	-71.5	23.4	59.0	-589.3	50.8	242.7
5/31/2010	9282	31	989.8	-1027.7	-1028.5	1479.9	0.0	-75.6	391.5	-0.2	-99.8	-71.0	26.5	70.0	-713.1	58.1	0.0
6/30/2010	9312	30	709.7	-907.3	-908.2	1362.7	0.0	-92.3	374.7	-0.2	-97.0	-67.7	25.9	70.9	-819.1	125.6	222.2
7/31/2010	9343	31	874.3	-893.2	-912.7	1482.4	0.0	-98.6	389.0	-0.2	-99.6	-69.9	26.5	72.7	-1001.6	25.5	205.4
8/31/2010	9374	31	1013.7	-852.2	-842.5	1388.7	0.0	-96.1	389.3	-0.1	-99.4	-70.4	25.6	71.5	-1120.4	10.5	181.8
9/30/2010	9404	30	799.8	-811.0	-661.7	1469.8	0.0	-88.7	375.8	0.0	-96.8	-68.9	22.4	65.1	-1203.0	4.2	193.1
10/31/2010	9435	31	83.7	-876.5	-627.0	1996.2	0.0	-84.7	386.8	0.0	-100.7	-72.6	20.6	59.0	-1086.0	45.6	255.5
11/30/2010	9465	30	481.3	-874.3	-467.1	1475.6	0.0	-75.9	372.2	0.0	-96.1	-68.6	18.3	51.9	-939.7	76.0	46.4
12/31/2010	9496	31	-4305.0	-1227.5	-485.6	6386.1	0.0	-68.2	384.5	-0.4	-102.7	-77.1	14.2	35.9	-1033.5	82.8	396.6
1/31/2011	9527	31	973.2	-1352.9	-625.2	1166.0	0.0	-80.1	390.6	-0.4	-104.1	-73.4	15.5	37.3	-793.5	116.7	330.2
2/28/2011	9555	28	-408.7	-1148.6	-646.2	1826.0	0.0	-70.1	359.8	-1.9	-94.3	-64.8	16.3	36.3	-450.7	50.0	597.0
3/31/2011	9586	31	-2830.1	-1532.7	-1150.9	4196.3	0.0	-57.8	419.7	-9.4	-96.3	-71.0	20.6	36.7	-307.4	64.7	1317.4
4/30/2011	9616	30	966.4	-1486.3	-1288.6	1455.4	0.0	-55.6	409.5	-16.0	-87.6	-64.4	23.8	45.8	-254.8	77.2	275.1
5/31/2011	9647	31	802.0	-1266.7	-1219.6	1519.1	0.0	-82.4	414.6	-25.1	-91.4	-65.2	27.0	65.5	-314.8	174.0	63.1
6/30/2011	9677	30	805.4	-1045.7	-988.5	1427.7	0.0	-84.0	397.6	-13.9	-86.8	-62.8	26.3	69.9	-517.4	72.2	0.0
7/31/2011	9708	31	440.6	-974.7	-954.7	1444.7	0.0	-94.5	405.6	-5.7	-90.3	-64.6	27.0	73.6	-546.3	113.7	225.6
8/31/2011	9739	31	495.7	-912.6	-876.4	1406.3	0.0	-97.5	405.5	-2.1	-89.4	-64.1	26.5	72.1	-627.2	95.2	168.1
9/30/2011	9769	30	399.1	-857.2	-672.4	1361.0	0.0	-92.7	391.1	-0.6	-87.0	-62.3	23.7	65.7	-674.7	69.5	136.8
10/31/2011	9800	31	93.8	-873.5	-592.4	1515.1	0.0	-95.1	399.8	-3.2	-90.8	-65.1	22.3	62.6	-493.5	120.0	0.0
11/30/2011	9830	30	-631.1	-872.3	-469.7	1520.2	0.0	-89.8	380.6	-7.6	-87.3	-63.3	19.4	52.0	-215.4	117.6	346.6
12/31/2011	9861	31	111.3	-924.8	-420.7	1347.5	0.0	-91.0	390.5	-4.8	-90.7	-64.3	19.1	49.6	-428.9	107.1	0.0
1/31/2012	9892	31	-439.5	-934.3	-500.3	1460.1	0.0	-89.3	385.3	-3.0	-92.2	-65.2	19.1	48.7	-201.3	104.8	307.1
2/29/2012	9921	29	204.2	-881.9	-515.0	1419.3	0.0	-84.2	360.5	-0.6	-85.6	-59.5	19.1	48.3	-507.5	82.9	0.0
3/31/2012	9952	31	-394.2	-956.7	-788.3	1652.0	0.0	-86.0	384.8	-2.2	-89.5	-63.8	22.9	56.8	-279.7	83.0	461.0
4/30/2012	9982	30	-149.3	-941.6	-924.4	1496.4	0.0	-73.6	379.3	-2.3	-80.9	-60.3	25.0	57.8	-176.0	55.9	393.9
5/31/2012	10013	31	589.2	-922.8	-978.5	1433.9	0.0	-86.6	391.3	-2.0	-83.4	-60.2	28.0	68.1	-465.5	88.4	0.0
6/30/2012	10043	30	591.1	-830.5	-848.8	1297.7	0.0	-92.2	373.7	-2.4	-82.0	-58.4	27.3	70.6	-618.3	28.1	144.1
7/31/2012	10074	31	770.5	-814.5	-829.0	1375.5	0.0	-97.7	387.9	-2.8	-85.8	-61.4	27.8	73.9	-796.5	13.8	38.4
8/31/2012	10105	31	940.9	-770.5	-756.8	1297.0	0.0	-98.2	387.9	-2.8	-86.9	-62.7	26.9	73.0	-948.2	0.3	0.0
9/30/2012	10135	30	673.6	-728.8	-589.3	1471.2	0.0	-93.2	378.0	-2.3	-86.0	-62.1	23.7	66.8	-1052.4	0.2	0.6
10/31/2012	10166	31	328.6	-788.0	-544.7	1803.1	0.0	-93.1	387.1	-1.7	-91.4	-65.8	22.1	65.1	-1156.2	10.0	124.9
11/30/2012	10196	30	571.0	-774.1	-406.7	1293.4	0.0	-83.6	369.4	-0.9	-90.3	-65.6	18.7	57.7	-933.5	44.6	0.0
12/31/2012	10227	31	25.2	-806.7	-383.0	1332.7	0.0	-79.3	375.1	-0.4	-94.1	-68.5	17.4	53.5	-822.1	79.7	370.6
1/31/2013	10258	31	264.9	-827.6	-471.8	1287.9	0.0	-81.6	374.4	-0.1	-94.1	-67.8	17.9	49.8	-718.9	74.1	192.7
2/28/2013	10286	28	454.5	-745.2	-460.0	1313.0	0.0	-76.4	334.5	0.0	-84.7	-59.9	17.2	48.4	-784.2	42.8	0.0
3/31/2013	10317	31	770.3	-773.3	-670.2	1235.9	0.0	-86.0	362.0	0.0	-92.8	-66.1	21.3	60.6	-805.7	44.0	0.0
4/30/2013	10347	30	698.2	-697.3	-718.6	1263.0	0.0	-85.3	345.2	0.0	-87.0	-62.5	23.0	65.8	-890.4	16.6	129.3
5/31/2013	10378	31	981.4	-675.0	-781.9	1185.0	0.0	-90.2	357.5	0.0	-87.6	-63.7	25.1	72.9	-979.8	0.3	56.2
6/30/2013	10408	30	890.7	-614.4	-721.0	1120.5	0.0	-87.2	346.2	0.0	-83.0	-61.4	24.4	71.5	-1005.7	0.0	119.4
7/31/2013	10439	31	895.6	-609.3	-724.7	1360.3	0.0	-89.1	356.1	0.0	-84.8	-63.4	25.1	73.5	-1139.2	0.0	0.0
8/31/2013	10470	31	935.0	-584.2	-674.1	1359.6	0.0	-87.1	349.8	0.0	-84.5	-63.8	24.3	72.4	-1247.5	0.0	0.0

Flow Budget for the Semi-Perched Aquifer in Oxnard Basin

Date	Stress	days in month	STORAGE	TILE DRAINS	ET	RECHARGE	Pumping from Wells	Mound	Pleasant Valley	West Las Posas	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Coastal Flux from South of Port Hueneme to Arnold Road	Coastal Flux from Arnold Road to Point Mugu	Oxnard Basin UAS	Partial Santa Clara River percolation	Calleguas Creek percolation
			influx(+) outflux(-); units in Acre-feet														
9/30/2013	10500	30	819.3	-554.9	-530.1	1363.2	0.0	-80.6	330.8	0.0	-82.4	-62.5	21.2	66.4	-1290.3	0.0	0.0
10/31/2013	10531	31	895.4	-569.2	-477.9	1366.8	0.0	-79.0	334.0	0.0	-86.3	-65.5	19.6	65.0	-1402.8	0.0	0.0
11/30/2013	10561	30	616.4	-569.3	-366.8	1360.4	0.0	-71.6	319.9	0.0	-84.9	-64.2	16.4	58.0	-1411.1	0.0	196.8
12/31/2013	10592	31	788.0	-622.1	-334.5	1377.4	0.0	-70.1	330.2	0.0	-89.3	-67.1	14.7	55.0	-1505.7	0.0	123.4
1/31/2014	10623	31	939.8	-617.4	-382.0	1465.8	0.0	-69.7	331.9	0.0	-89.9	-67.2	14.2	55.7	-1589.4	0.0	8.2
2/28/2014	10651	28	-591.0	-592.3	-402.4	2596.6	0.0	-59.5	297.0	0.0	-82.1	-62.4	12.4	47.5	-1416.1	38.6	213.8
3/31/2014	10682	31	709.9	-682.7	-683.8	1276.2	0.0	-60.1	331.4	0.0	-86.0	-66.1	16.8	56.7	-1339.8	78.8	448.8
4/30/2014	10712	30	1096.5	-604.3	-726.2	1454.4	0.0	-68.4	319.6	0.0	-82.4	-60.9	19.1	61.8	-1409.2	0.0	0.0
5/31/2014	10743	31	1168.3	-546.0	-734.4	1446.0	0.0	-74.7	319.1	0.0	-83.8	-61.9	20.9	71.1	-1524.7	0.0	0.0
6/30/2014	10773	30	1012.6	-473.1	-648.2	1455.2	0.0	-71.8	298.6	0.0	-79.1	-59.3	20.0	70.7	-1525.8	0.0	0.0
7/31/2014	10804	31	1088.1	-448.6	-641.4	1426.5	0.0	-74.0	296.2	0.0	-80.6	-61.0	20.3	72.8	-1598.4	0.0	0.0
8/31/2014	10835	31	1073.4	-415.7	-595.2	1409.7	0.0	-73.6	283.3	0.0	-80.3	-61.0	19.5	71.7	-1631.9	0.0	0.0
9/30/2014	10865	30	902.6	-384.6	-464.6	1412.9	0.0	-68.5	262.3	0.0	-77.4	-58.7	16.9	65.7	-1606.5	0.0	0.0
10/31/2014	10896	31	901.4	-387.6	-416.4	1434.5	0.0	-67.6	258.4	0.0	-79.9	-60.3	15.4	64.3	-1662.1	0.0	0.0
11/30/2014	10926	30	827.9	-377.4	-311.8	1236.7	0.0	-58.5	240.6	0.0	-76.3	-57.6	12.7	57.9	-1586.9	0.0	92.9
12/31/2014	10957	31	-1645.3	-535.4	-349.9	3427.8	0.0	-50.3	256.9	0.0	-78.0	-61.1	10.1	46.0	-1734.0	46.0	667.2
1/31/2015	10988	31	567.3	-642.7	-480.5	1417.1	0.0	-46.1	268.8	0.0	-75.8	-57.4	11.2	40.3	-1404.3	12.7	389.5
2/28/2015	11016	28	907.0	-530.9	-449.9	1213.8	0.0	-45.5	241.6	0.0	-67.6	-48.2	12.3	42.2	-1275.0	0.0	0.0
3/31/2015	11047	31	1284.2	-487.2	-605.5	1034.5	0.0	-55.0	260.2	0.0	-73.7	-52.1	16.3	59.1	-1397.7	0.0	16.8
4/30/2015	11077	30	1046.4	-396.4	-602.3	1167.7	0.0	-55.2	250.0	0.0	-68.4	-49.0	17.8	65.2	-1375.8	0.0	0.0
5/31/2015	11108	31	1057.0	-358.1	-628.6	1162.4	0.0	-57.7	247.6	0.0	-67.3	-49.4	19.5	72.2	-1446.8	49.1	0.0
6/30/2015	11138	30	933.3	-309.2	-558.2	1214.3	0.0	-55.3	229.3	0.0	-62.4	-46.7	19.0	70.8	-1434.9	0.0	0.0
7/31/2015	11169	31	903.7	-294.8	-554.9	1293.5	-0.4	-57.6	227.1	0.0	-62.8	-47.4	19.6	72.5	-1498.4	0.0	0.0
8/31/2015	11200	31	877.6	-277.1	-517.4	1303.1	-0.4	-57.6	217.5	0.0	-61.6	-46.8	19.1	71.3	-1527.8	0.0	0.0
9/30/2015	11230	30	775.2	-260.8	-406.4	1273.3	-0.4	-53.5	201.3	0.0	-58.5	-44.6	16.8	65.4	-1507.9	0.0	0.0
10/31/2015	11261	31	790.4	-266.2	-365.9	1295.9	-0.4	-53.5	199.5	0.0	-59.6	-45.3	15.6	64.1	-1574.5	0.0	0.0
11/30/2015	11291	30	670.7	-259.9	-272.2	1302.1	-0.4	-50.4	185.2	0.0	-57.6	-43.2	13.0	57.6	-1545.1	0.0	0.0
12/31/2015	11322	31	685.8	-274.4	-241.5	1328.9	-0.4	-50.4	187.8	0.0	-59.4	-44.0	11.7	55.6	-1609.5	0.0	9.7

Flow Budget for the UAS in Oxnard Basin

influx(+) outflux(-); units in Acre-feet

Date	Stress	days in month	STORAGE	Volcanic Outcrop Recharge	Tile DRAINS	ET	RECHARGE	Pumping from Wells	Oxnard Basin Semi-Perched Aquifer	Santa Paula	Mound	Pleasant Valley	Las Posas	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Coastal Flux from South of Port Hueneme to Arnold Road	Coastal Flux from Arnold Road to Point Mugu	Oxnard Basin LAS	Partial Santa Clara River percolation
1/31/1985	31	31	-2603.8	0.6	0.0	0.0	7776.6	-4214.0	552.7	133.5	-358.5	-104.6	-304.2	-26.1	-1.3	37.9	107.9	-1184.5	187.7
2/28/1985	59	28	-2570.2	0.7	0.0	0.0	6663.6	-3237.9	440.8	114.6	-430.6	-108.7	-198.7	-36.6	2.0	40.1	104.8	-997.3	213.3
3/31/1985	90	31	696.1	0.3	0.0	0.0	5186.7	-5220.3	637.8	127.3	-426.2	-103.1	-191.9	-20.3	9.5	59.9	139.3	-1114.4	219.2
4/30/1985	120	30	5562.1	0.0	0.0	0.0	2077.2	-8058.7	1132.7	127.2	-160.6	-65.1	-75.7	83.1	37.6	75.2	166.7	-1147.0	245.3
5/31/1985	151	31	5423.4	0.0	0.0	0.0	1577.7	-8094.3	1394.3	144.9	78.7	-30.5	31.1	116.5	62.9	89.1	195.9	-1248.2	258.6
6/30/1985	181	30	5627.8	0.0	0.0	0.0	854.9	-8097.9	1567.6	153.8	268.4	4.0	89.5	145.0	78.3	94.7	206.9	-1252.9	260.0
7/31/1985	212	31	4952.7	0.0	0.0	0.0	597.7	-7313.4	1667.6	175.1	315.4	5.8	159.2	96.2	87.7	113.7	258.3	-1388.7	272.8
8/31/1985	243	31	4726.4	0.0	0.0	0.0	689.4	-7326.8	1700.9	192.2	390.1	26.8	195.3	111.0	96.8	126.2	292.1	-1480.5	260.0
9/30/1985	273	30	2234.6	0.0	0.0	0.0	3214.0	-7333.2	1697.1	195.8	426.5	48.2	153.6	137.6	108.1	132.0	305.4	-1550.3	230.7
10/31/1985	304	31	4289.7	0.0	0.0	0.0	1102.7	-7306.9	1780.4	202.7	432.4	71.2	109.3	161.0	124.6	143.4	332.4	-1673.1	230.1
11/30/1985	334	30	-2694.3	3.5	0.0	0.0	2569.0	-1280.6	1551.2	204.2	278.2	93.0	68.5	21.9	89.4	106.5	271.3	-1510.2	228.4
12/31/1985	365	31	328.3	0.0	0.0	0.0	4151.9	-5831.0	1446.4	212.9	272.6	42.3	71.0	100.1	80.6	97.7	244.0	-1446.9	230.0
1/31/1986	396	31	-3394.2	2.9	0.0	0.0	4343.6	-1852.6	1316.5	215.3	124.4	60.6	-15.9	26.6	69.2	83.8	214.7	-1345.0	150.0
2/28/1986	424	28	-5087.3	7.3	0.0	0.0	5555.0	-982.1	1083.4	193.6	-28.2	50.7	-84.9	-30.8	32.3	52.5	147.3	-1098.5	189.7
3/31/1986	455	31	-9984.9	6.1	0.0	0.0	11692.1	-1362.9	772.1	187.3	-171.3	26.7	-300.3	-55.1	13.2	41.9	124.8	-1234.4	244.7
4/30/1986	485	30	-6546.8	0.0	0.0	0.0	12735.7	-5134.0	629.3	125.1	-318.4	2.1	-480.1	-1.6	17.6	46.7	118.3	-1298.6	104.5
5/31/1986	516	31	2495.5	0.0	0.0	0.0	7935.9	-10067.3	1185.2	85.2	-258.1	45.1	-471.7	197.4	68.3	81.7	167.4	-1423.3	-41.8
6/30/1986	546	30	5743.6	0.0	0.0	0.0	3754.6	-10091.0	1452.5	76.3	-54.4	99.5	-267.7	254.4	108.8	104.2	205.7	-1417.4	28.7
7/31/1986	577	31	-1966.4	0.0	0.0	0.0	8769.2	-7402.5	1500.1	85.4	61.8	46.6	-194.0	164.0	110.8	111.1	247.1	-1580.8	47.5
8/31/1986	608	31	5421.1	0.0	0.0	0.0	1194.6	-7402.4	1541.4	88.7	67.9	24.6	-123.1	145.8	103.2	110.4	258.5	-1565.6	134.9
9/30/1986	638	30	2270.9	0.2	0.0	0.0	1079.6	-4350.7	1399.4	114.2	86.1	23.0	27.9	67.1	85.6	99.4	241.6	-1383.5	239.0
10/31/1986	669	31	4648.0	0.0	0.0	0.0	1269.3	-7391.0	1558.1	144.8	225.7	7.4	106.5	134.1	92.4	105.3	253.4	-1405.1	251.3
11/30/1986	699	30	256.6	0.9	0.0	0.0	2198.7	-3618.6	1304.8	162.6	201.7	36.1	75.1	78.6	85.5	96.1	236.1	-1318.3	204.2
12/31/1986	730	31	3021.4	0.0	0.0	0.0	2804.0	-7377.8	1501.1	186.1	247.0	11.7	131.5	142.4	92.1	101.8	245.1	-1332.6	226.1
1/31/1987	761	31	-2201.3	1.0	0.0	0.0	4151.7	-3054.2	1296.0	205.1	94.5	34.9	99.8	45.4	79.9	92.8	224.2	-1302.3	232.4
2/28/1987	789	28	-575.5	0.5	0.0	0.0	3074.0	-3218.4	1022.1	197.9	3.9	1.7	77.4	32.6	52.3	70.0	174.6	-1124.0	211.2
3/31/1987	820	31	-3530.0	1.1	0.0	0.0	6055.6	-2877.1	932.5	227.1	-103.0	-13.5	28.1	-6.9	43.5	69.4	179.0	-1229.5	223.8
4/30/1987	850	30	5130.0	0.0	0.0	0.0	2576.8	-8801.8	1368.6	217.1	31.6	-28.3	37.2	162.8	72.0	89.7	194.1	-1294.0	244.2
5/31/1987	881	31	5768.2	0.0	0.0	0.0	1585.5	-8862.9	1582.9	222.1	230.1	1.7	61.7	223.7	117.9	121.0	253.8	-1544.5	238.9
6/30/1987	911	30	3662.2	0.0	0.0	0.0	3430.2	-8875.8	1737.4	211.5	391.0	34.8	49.2	259.6	140.1	132.1	278.6	-1676.6	224.5
7/31/1987	942	31	1220.9	0.0	0.0	0.0	5423.8	-8411.8	1891.9	204.7	468.8	53.3	-24.7	282.9	161.5	146.0	339.3	-1990.5	234.0
8/31/1987	973	31	5421.0	0.0	0.0	0.0	1161.9	-8413.4	1962.2	193.3	469.1	69.9	-4.1	304.4	175.1	155.4	368.7	-2106.0	242.5
9/30/1987	1003	30	5430.4	0.0	0.0	0.0	864.6	-8409.6	1994.9	200.0	494.6	84.9	100.6	322.1	185.1	159.8	377.6	-2051.8	246.8
10/31/1987	1034	31	632.1	0.8	0.0	0.0	1128.1	-3460.5	1857.7	227.5	366.2	118.9	93.8	164.8	167.6	149.8	364.4	-2024.1	212.9
11/30/1987	1064	30	306.1	1.5	0.0	0.0	2236.4	-4095.0	1615.6	235.0	327.5	113.8	101.9	154.3	135.5	119.8	301.7	-1777.0	222.9
12/31/1987	1095	31	-3308.7	2.7	0.0	0.0	3870.8	-1813.3	1575.1	256.4	212.5	102.0	47.0	93.5	115.0	101.8	262.4	-1606.4	89.3
1/31/1988	1126	31	-6691.2	1.4	0.0	0.0	8073.7	-2312.5	1324.8	258.8	43.7	71.6	-7.3	77.2	93.2	88.4	219.8	-1418.1	176.4
2/29/1988	1155	29	-1562.7	0.7	0.0	0.0	5250.0	-4407.4	1155.4	238.5	-94.1	44.2	-55.8	126.3	87.6	84.4	192.6	-1267.6	207.8
3/31/1988	1186	31	-1691.6	0.0	0.0	0.0	8689.3	-7940.3	1400.7	248.1	-58.5	32.6	-77.3	218.9	114.8	106.2	221.8	-1491.8	225.8
4/30/1988	1216	30	-2608.2	1.2	0.0	0.0	4774.6	-2356.5	1248.6	220.5	-154.3	39.3	-267.7	61.0	94.5	93.1	216.6	-1548.5	185.9
5/31/1988	1247	31	-842.5	0.0	0.0	0.0	8335.5	-8047.6	1388.5	202.0	11.1	30.2	-264.0	204.3	106.9	103.9	222.5	-1651.5	199.2
6/30/1988	1277	30	3615.9	0.0	0.0	0.0	3628.5	-8072.9	1520.2	174.7	72.8	44.0	-223.9	253.4	135.3	119.5	246.9	-1726.7	209.3
7/31/1988	1308	31	5030.7	0.0	0.0	0.0	916.7	-7004.2	1600.7	182.1	120.0	23.5	-68.1	238.6	147.9	133.4	300.3	-1889.3	267.9
8/31/1988	1339	31	5457.4	0.0	0.0	0.0	205.4	-7019.7	1650.7	199.1	235.0	23.6	49.7	246.4	153.9	140.0	325.0	-1945.7	279.1
9/30/1988	1369	30	4987.5	0.0	0.0	0.0	495.1	-7023.2	1676.0	213.4	326.0	30.1	111.3	262.0	161.0	143.6	332.5	-1949.7	234.4
10/31/1988	1400	31	4760.6	0.0	0.0	0.0	557.3	-7043.5	1784.6	239.7	390.7	46.7	138.4	283.3	177.5	154.4	357.9	-2083.8	236.4
11/30/1988	1430	30	2075.5	0.4	0.0	0.0	879.6	-4577.0	1661.1	249.0	360.7	71.8	119.1	240.4	168.5	141.8	335.4	-1943.1	216.7
12/31/1988	1461	31	-1058.4	4.2	0.0	0.0	1325.4	-1614.4	1662.0	277.9	274.5	104.6	90.2	120.9	140.4	116.5	292.5	-1774.5	38.2
1/31/1989	1492	31	2197.4	0.0	0.0	0.0	1807.9	-5659.9	1537.0	280.4	343.8	67.4	106.3	270.7	145.5	105.5	250.4	-1659.4	205.2
2/28/1989	1520	28	-5859.0	2.3	0.0	0.0	6292.1	-1613.0	1374.1	254.7	168.3	76.1	23.1	134.6	122.0	89.5	212.9	-1431.4	153.8
3/31/1989	1551	31	-676.7	0.1	0.0	0.0	4205.2	-4678.3	1409.1	270.2	128.3	60.9	-65.6	236.7	134.5	98.3	223.3	-1564.8	218.7
4/30/1989	1581	30	3953.2	0.0	0.0	0.0	1052.4	-6265.7	1500.2	248.7	162.6	59.4	-71.8	285.3	151.5	109.9	235.4	-1645.5	224.4
5/31/1989	1612	31	2890.1	0.0	0.0	0.0	1868.8	-6300.5	1634.6	258.6	244.5	81.2	6.8	311.1	172.8	124.0	264.2	-1785.0	228.8
6/30/1989	1642	30	3804.8	0.0	0.0	0.0	815.8	-6292.0	1647.4	258.5	284.3	94.3	55.1	321.5	178.8	126.6	269.7	-1794.5	225.8
7/31/1989	1673	31	3762.2	0.0	0.0	0.0	315.8	-5738.4	1715.1	274.9	292.8	62.8	77.2	311.8	186.1	137.1	307.5	-1941.3	235.8
8/31/1989	1704	31	3738.0	0.0	0.0	0.0	289.0	-5748.9	1742.1	283.9	319.5	53.3	98.4	317.1	189.2	141.1	322.5	-1998.8	250.1
9/30/1989	1734	30	3461.6	0.0	0.0	0.0	542.0	-5739.1	1727.9	283.8	336.6	51.5	112.5	324.7	191.4	142.1	325.2	-1990.1	230.0
10/31/1989	1765	31	3289.9	0.0	0.0	0.0	666.6	-5759.2	1808.5	301.7	358.6	59.2	116.5	343.2	205.7	151.3	346.9	-2101.6	212.8
11/30/1989	1795	30	3111.7	0.0	0.0	0.0	719.1	-5643.8	1779.2	298.3	347.4	61.1	101.7	349.3	207.1	150.7	345.2	-2042.2	213.7
12/31/1989	1826	31	3248.1	0.0	0.0	0.0	598.6	-5758.5	1873.7	313.6	358.9	69.4	108.4	367.1	221.0	159.1	364.6	-2152.7	228.7
1/31/1990	1857	31	-1478.8	0.7	0.0	0.0	2004.1	-2179.7	1763.8	319.2	290.5	109.5	53.1	269.3	204.5	143.2	332.4	-2023.3	191.5
2/28/1990	1885	28	-1960.3	0.9	0.0	0.0	3085.7	-2545.2	1509.1	288.6	230.6	102.6	4.0	264.6	174.3	116.5	268.5	-1699.5	159.7
3/31/1990	1916	31	2522.8	0.0	0.0	0.0	1860.6	-5997.3	1766.2	314.1	247.4	68.0	6.8	379.7	208.1	136.1	294.8	-2020.5	213.1
4/30/1990	1946	30	3047.8	0.0	0.0	0.0	1413.9	-6025.8	1792.5	304.4	261.7	56.8	33.8	395.3	219.5	142.9	304.1	-2158.6	211.8
5/31/1990	1977	31	2965.8	0.0	0.0	0.0	901.7	-5484.5	1860.9	319.0	299.8	62.8	40.6	412.3	237.3	154.6	330.9	-2311.7	210.4
6/30/1990	2007	30	3876.3	0.0	0.0	0.0	566.6	-6048.5	1879.8	312.6	331.5	63.1	51.4	417.9	239.5	155.7	333.5	-2360.9	181.5
7/31/1990	2038	31	3256.8	0.0	0.0	0.0	415.3	-5346.8	1951.1	326.0	368.5	84.5	62.0	438.5	255.5	163.2	361.7	-2504.9	166.0
8/31/1990	2069	31	3354.5	0.0	0.0	0.0	243.8	-5351.6	1975.7	329.8	386.7	94.2	64.0	448.1	261.3	168.0	375.1	-2510.6	156.7
9/30/1990	2099	30	3346.2	0.0	0.0	0.0	219.3	-5340.7	1945.6	323.3	390.4	94.5	63.8	451.0	260.6	167.0	371.8	-2445.0	152.0
10/31/1990	2130	31	3286.0	0.0	0.0	0.0	200.7	-5354.9	2025.3	338.5	397.9	103.0	67.2	472.0	275.9	175.7	391.2	-2534.8	156.5
11/30/1990	2160	30	3235.1	0.0	0.0	0.0	196.1	-5299.3	1967.6	332.3	390.5	115.1	68.7	472.8	273.5	172.8	384.0	-2456.4	146.7
12/31/1990	2191	31	3169.1	0.0	0.0	0.0	197.5	-5347.5	2051.5	346.8	402.4	116.6	74.2	493.3	287.9	180.5	401.0	-2529.8	156.6
1/31/1991	2222	31	1952.4	0.4	0.0	0.0	204.8	-4158.3	1970.5	352.2	396.8	128.3	57.3	459.4	281.7	173.9	387.0	-2357.2	150.7
2/28/1991	2250	28	-1000.3	1.0	0.0	0.0	890.0	-1670.0	1730.6	323.3	261.3	127.1	23.8	311.0	232.0	140.1	319.0	-1841.5	152.4
3/31/1991	2281	31	-17226.0	8.3	0.0	0.0	15633.9	-603.9	2315.0	349.7	143.6	183.0	-117.0	281.3	226.4	132.1	307.8	-1900.2	266.0
4/30/1991	2311	30	-8366.9	0.0	0.0	0.0	13001.4	-5786.4	1827.2	287.8	-3.5	92.9	-353.8	434.4	229.9	130.5	280.0	-2015.2	241.8
5/31/1991	2342	31	1589.2	0.0	0.0	0.0	3333.2	-5836.6	1890.8	261.6	-132.1	59.3	-410.3	457.9	253.6	146.8	308.1	-2152.8	231.4
6/30/1991	2372	30	3392.0	0.0	0.0	0.0	1333.5	-5838.6	1838.1	246.2	30.3	43.5	-291.3	442.4	248.7	147.0	310.1	-2123.0	220.9
7/31/1991	2403	31	3160.8	0.0	0.0	0.0	828.3	-5342.6	1888.0	261.8	125.1	28.8	-184.0	453.3	262.5	157.9	349.1	-2208.0	217.4
8/31/1991	2434	31	3574.4	0.0	0.0	0.0	237.3	-5349.7	1905.4	274.1	205.0	22.0	-94.0	460.8	268.1	165.0	366.4	-2242.8	204.8
9/30/1991	2464	30	3206.6	0.0	0.0	0.0	499.2	-5347.7	1872.8	278.7	260.7	19.7	-33.2	461.6	266.9	165.5	367.5	-2209.2	185.8
10/31/1991	2495	31	998.0	0.0	0.0	0.0	2628.1	-5365.7	1947.6	299.0	289.3	22.4	-13.9	480.5	281.6	175.1	389.4	-2317.4	183.2
11/30/1991	2525	30	1673.3	0.0	0.0	0.0	2005.9	-5358.9	1911.8	297.6	257.1	20.9	-12.5	476.0	277.8	172.8	384.5	-2283.3	173.3
12/31/1991	2556	31	-2578.8	5.5	0.0	0.0	1967.8	-1058.0	2091.4	321.0	118.0	107.5	-55.2	319.4	255.7	158.2	360.6	-2109.9	97.1
1/31/1992	2587	31	-4748.7	1.6	0.0	0.0	5122.3	-1816.9	1720.2	319.4	99.9	108.9	-124.0	309.8	225.4	132.9	304.3	-1802.0	146.9
2/29/1992	2616	29	-16232.3	10.6	0.0	0.0	15173.6	-589.4	2041.3	283.4	-123.7	132.8	-244.2	233.8	188.3	107.5	246.8	-1593.0	364.4
3/31/1992	2647	31	-17809.1	5.8	0.0	0.0	18140.1	-913.5	1800.4	253.0	-577.9	122.3	-553.1	220.9	175.4	97.5	224.4	-1614.1	427.9
4/30/1992	2677	30	-4723.5	0.0	0.0	0.0	10096.9	-5561.2	1480.6	180.9	-686.4	45.6	-713.1	355.0	175.3	95.8	204.1	-1651.6	701.5

Flow Budget for the UAS in Oxnard Basin

influx(+) outflux(-); units in Acre-feet

Date	Stress	days in month	STORAGE	Volcanic Outcrop Recharge	Tile DRAINS	ET	RECHARGE	Pumping from Wells	Oxnard Basin Semi-Perched Aquifer	Santa Paula	Mound	Pleasant Valley	Las Posas	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Coastal Flux from South of Port Hueneme to Arnold Road	Coastal Flux from Arnold Road to Point Mugu	Oxnard Basin LAS	Partial Santa Clara River percolation
5/31/1992	2708	31	-806.2	0.0	0.0	0.0	6544.0	-5605.1	1507.7	168.4	-494.4	16.3	-668.3	358.0	187.5	107.3	222.5	-1757.8	220.0
6/30/1992	2738	30	2131.8	0.0	0.0	0.0	3274.7	-5605.5	1448.7	160.4	-273.2	4.0	-525.1	341.2	180.3	106.1	221.4	-1703.5	238.9
7/31/1992	2769	31	2976.2	0.0	0.0	0.0	2131.9	-5652.0	1533.5	173.8	-110.6	-38.2	-379.8	326.1	188.5	119.5	265.7	-1790.5	255.9
8/31/1992	2800	31	3881.6	0.0	0.0	0.0	900.5	-5663.5	1551.4	190.3	25.5	-42.7	-232.0	334.2	193.9	128.0	289.3	-1818.1	261.6
9/30/1992	2830	30	2541.1	0.0	0.0	0.0	2012.4	-5665.0	1537.0	205.1	123.0	-35.6	-111.4	341.0	195.0	129.9	295.4	-1805.9	238.0
10/31/1992	2861	31	-13675.3	0.2	0.0	0.0	16658.3	-3859.5	1526.7	217.6	51.3	-17.6	-206.0	329.4	201.2	133.8	306.2	-1919.1	252.7
11/30/1992	2891	30	-9378.3	0.0	0.0	0.0	15165.3	-5666.8	1523.6	177.3	-339.1	-35.1	-488.8	324.4	191.7	130.5	301.4	-2134.7	228.5
12/31/1992	2922	31	-7697.6	4.2	0.0	0.0	9525.8	-971.9	1607.1	156.7	-727.2	3.4	-707.4	118.3	154.0	114.3	273.5	-2058.8	205.7
1/31/1993	2953	31	-8379.9	10.6	0.0	0.0	9611.9	-637.4	1652.1	155.2	-900.4	9.2	-640.6	20.1	99.6	83.4	213.8	-1772.8	475.1
2/28/1993	2981	28	-4914.3	5.9	0.0	0.0	5761.3	-577.8	1306.3	138.1	-936.9	-31.1	-525.4	-29.4	57.0	57.4	153.5	-1421.0	956.4
3/31/1993	3012	31	-5663.9	2.3	0.0	0.0	7725.6	-1159.4	917.7	148.9	-980.8	-103.1	-543.7	-56.2	38.1	50.8	139.3	-1449.9	934.3
4/30/1993	3042	30	-8406.8	0.0	0.0	0.0	16074.8	-6046.8	764.6	114.3	-747.6	-161.3	-725.5	104.0	50.7	55.0	132.3	-1751.1	543.4
5/31/1993	3073	31	-565.0	0.0	0.0	0.0	8444.9	-6089.4	826.8	78.0	-804.3	-171.9	-723.5	121.8	68.2	68.2	154.6	-1875.4	467.1
6/30/1993	3103	30	3689.1	0.0	0.0	0.0	3313.1	-5742.8	896.7	95.4	-553.6	-164.4	-439.0	113.9	67.0	69.6	159.0	-1717.2	213.2
7/31/1993	3134	31	5036.1	0.0	0.0	0.0	1126.2	-5531.0	1012.8	121.1	-295.1	-149.9	-235.4	98.8	71.2	79.7	194.3	-1782.7	253.9
8/31/1993	3165	31	1029.1	0.0	0.0	0.0	4846.7	-5536.8	1044.4	139.8	-58.4	-125.0	-182.3	112.8	77.9	88.3	215.9	-1850.7	198.4
9/30/1993	3195	30	-5848.8	0.0	0.0	0.0	11979.2	-5542.1	971.0	135.2	-50.9	-103.4	-287.4	129.6	83.7	91.4	222.9	-1964.8	184.4
10/31/1993	3226	31	-6557.6	0.0	0.0	0.0	13462.1	-5559.6	898.0	120.0	-312.4	-105.4	-466.3	120.5	86.3	97.0	238.6	-2191.2	170.0
11/30/1993	3256	30	-2518.3	0.0	0.0	0.0	8994.0	-4694.4	705.2	105.9	-548.2	-109.0	-476.4	79.3	71.8	90.3	227.0	-2096.7	169.4
12/31/1993	3287	31	-1813.1	0.6	0.0	0.0	6409.4	-2415.9	488.9	116.5	-663.9	-122.3	-462.8	-60.8	39.4	76.8	205.8	-1990.4	191.7
1/31/1994	3318	31	199.7	0.0	0.0	0.0	6871.4	-5418.7	642.1	124.8	-445.2	-140.8	-379.3	31.1	36.5	68.9	177.4	-1952.2	184.2
2/28/1994	3346	28	-726.7	4.2	0.0	0.0	3140.6	-819.5	401.2	123.2	-479.0	-105.7	-315.7	-116.9	11.9	51.7	142.7	-1605.8	293.9
3/31/1994	3377	31	-1460.8	1.8	0.0	0.0	4886.7	-1477.7	127.7	146.8	-438.7	-132.7	-327.3	-150.5	-17.9	38.2	122.3	-1566.3	248.2
4/30/1994	3407	30	-92.7	0.0	0.0	0.0	6740.9	-5378.7	496.9	136.6	-179.3	-149.9	-308.9	5.5	1.9	41.8	112.3	-1611.2	185.0
5/31/1994	3438	31	1715.8	0.0	0.0	0.0	5003.3	-5423.7	521.7	131.4	-79.5	-142.1	-331.6	40.0	24.9	54.8	131.4	-1808.6	162.1
6/30/1994	3468	30	4501.7	0.0	0.0	0.0	1723.1	-5423.0	647.9	120.1	55.8	-114.8	-255.2	63.2	35.9	58.5	136.9	-1767.5	217.4
7/31/1994	3499	31	4947.5	0.0	0.0	0.0	985.8	-5645.9	877.5	133.6	166.3	-132.9	-103.6	84.0	49.2	69.0	165.7	-1848.7	252.3
8/31/1994	3530	31	4493.2	0.0	0.0	0.0	1098.4	-5661.4	1026.1	151.0	264.9	-118.4	-14.7	107.5	62.3	79.0	188.2	-1917.8	241.8
9/30/1994	3560	30	365.7	0.0	0.0	0.0	5058.3	-5666.4	1075.3	164.2	272.0	-97.9	29.8	131.2	74.1	84.7	200.0	-1930.2	239.0
10/31/1994	3591	31	-1482.1	0.0	0.0	0.0	7169.0	-5687.3	1079.4	188.4	132.2	-93.2	20.4	132.7	83.1	93.0	220.3	-2083.7	227.8
11/30/1994	3621	30	-2478.3	0.3	0.0	0.0	5742.7	-2512.3	744.6	197.5	-146.7	-79.0	-78.4	7.2	58.2	82.7	206.6	-1953.2	208.0
12/31/1994	3652	31	-247.9	0.3	0.0	0.0	4777.9	-3385.9	673.5	217.2	-246.8	-91.5	-122.0	-35.4	34.2	72.2	192.6	-1938.3	99.7
1/31/1995	3683	31	-6803.1	15.2	0.0	0.0	7802.0	-427.7	827.5	219.8	-487.2	-7.1	-208.9	-157.4	0.2	52.7	156.0	-1785.9	804.1
2/28/1995	3711	28	-10272.4	0.6	-0.1	0.0	13875.7	-3281.2	190.3	161.1	-723.5	-44.4	-364.8	-79.0	-8.2	36.7	110.8	-1674.9	2073.3
3/31/1995	3742	31	-4540.1	8.0	-1.8	0.0	7805.8	-587.8	-220.5	145.3	-835.5	-61.5	-597.9	-199.2	-33.2	29.2	98.0	-1746.9	738.1
4/30/1995	3772	30	369.5	0.0	-3.7	0.0	6702.1	-5378.5	277.2	118.8	-571.5	-85.8	-483.9	-56.9	-25.3	28.8	84.3	-1612.5	637.4
5/31/1995	3803	31	-4758.5	0.0	-16.2	0.0	10491.8	-4158.1	81.7	93.6	-678.3	-94.6	-509.3	-75.8	-12.5	40.6	100.9	-1778.6	1273.1
6/30/1995	3833	30	-1133.5	0.0	-5.5	0.0	8914.1	-5490.3	227.7	95.3	-416.6	-90.4	-480.0	-32.9	-5.7	42.2	102.9	-1770.0	42.6
7/31/1995	3864	31	-2009.1	0.0	-11.5	-5.3	8806.7	-4230.3	-47.3	103.5	-475.6	-112.2	-384.9	-73.1	-15.1	46.2	121.2	-1833.6	120.5
8/31/1995	3895	31	-1158.0	0.0	-34.2	-23.3	8308.5	-4241.7	-197.3	111.0	-560.1	-130.8	-373.7	-107.4	-30.4	46.3	128.6	-1902.0	164.7
9/30/1995	3925	30	-836.6	0.0	-50.5	-22.9	7956.0	-4242.9	-141.4	108.2	-507.7	-133.7	-381.7	-115.0	-35.2	46.1	130.8	-1935.0	161.5
10/31/1995	3956	31	-1481.7	0.0	-64.9	-22.9	8881.0	-4256.1	-149.4	105.4	-475.9	-139.8	-437.6	-131.0	-39.9	48.5	139.5	-2099.0	123.8
11/30/1995	3986	30	52.5	0.0	-72.1	-16.6	7239.7	-4251.5	-96.0	93.1	-412.7	-135.6	-430.9	-126.6	-40.3	47.6	138.1	-2057.8	69.2
12/31/1995	4017	31	-791.0	1.4	-88.2	-14.9	5916.8	-1481.0	-586.7	98.9	-496.6	-125.6	-454.2	-242.6	-62.0	37.8	123.6	-1924.3	88.5
1/31/1996	4048	31	1016.7	0.4	-101.4	-16.1	4493.3	-2263.9	-501.2	107.7	-418.8	-140.9	-382.0	-240.3	-79.1	23.9	92.8	-1712.4	121.4
2/29/1996	4077	29	-6065.3	5.7	-111.3	-19.0	10205.5	-554.6	-774.7	103.9	-420.1	-113.2	-420.7	-284.2	-90.8	9.5	63.1	-1558.8	24.8
3/31/1996	4108	31	-2688.5	0.7	-138.2	-39.4	9075.6	-1957.7	-1082.5	91.3	-537.1	-153.5	-540.4	-272.2	-106.4	3.9	48.6	-1593.8	-110.3
4/30/1996	4138	30	1822.6	0.0	-144.4	-54.8	5967.8	-4039.9	-611.0	78.3	-406.4	-176.6	-442.0	-180.9	-93.2	7.3	47.1	-1557.0	-216.9
5/31/1996	4169	31	5403.0	0.0	-146.6	-57.8	1914.0	-4427.8	-120.0	83.5	-186.8	-177.2	-302.7	-163.3	-85.0	14.8	58.8	-1614.5	-192.4
6/30/1996	4199	30	4964.5	0.0	-129.3	-16.8	955.1	-4437.5	354.5	96.1	21.0	-150.6	-129.1	-136.0	-71.0	21.5	69.8	-1562.3	150.2
7/31/1996	4230	31	4770.0	0.0	-109.5	0.0	929.4	-5079.7	883.6	113.6	198.2	-166.8	-23.5	-101.4	-55.4	34.7	103.3	-1746.0	248.2
8/31/1996	4261	31	4497.6	0.0	-80.9	0.0	783.7	-5104.8	1134.0	127.3	314.8	-144.9	41.6	-65.6	-33.8	49.8	133.8	-1899.5	244.8
9/30/1996	4291	30	3644.5	0.0	-51.9	0.0	1341.2	-5108.8	1263.9	135.3	376.7	-115.1	72.0	-28.0	-13.6	59.3	151.5	-1958.3	228.2
10/31/1996	4322	31	-168.1	0.3	-36.0	0.0	3473.4	-2702.7	855.7	150.5	306.4	-74.3	-9.5	-115.5	-16.8	61.8	160.4	-2033.3	147.8
11/30/1996	4352	30	-3491.3	2.4	-29.4	0.0	5890.0	-1357.0	416.7	145.3	93.5	-34.6	-102.4	-158.8	-32.8	44.8	130.8	-1802.3	285.1
12/31/1996	4383	31	-8947.7	6.4	-40.1	0.0	12029.5	-716.6	-162.2	147.3	-214.6	-16.2	-305.5	-216.8	-59.1	25.3	96.4	-1775.2	149.2
1/31/1997	4414	31	-8797.3	5.6	-69.3	-0.3	13604.1	-797.0	-853.5	106.7	-611.2	-33.5	-602.6	-256.9	-85.0	7.7	59.7	-1770.8	93.8
2/28/1997	4442	28	-616.3	0.0	-81.0	-6.3	9293.9	-4951.3	-399.2	62.6	-612.5	-89.1	-543.7	-132.5	-71.5	10.9	48.5	-1548.5	-364.1
3/31/1997	4473	31	596.7	0.0	-99.6	-13.9	7956.6	-5016.9	-250.0	64.3	-549.1	-116.5	-502.5	-147.7	-67.2	25.1	74.9	-1784.8	-169.4
4/30/1997	4503	30	5312.7	0.0	-101.7	-4.4	2543.6	-5016.3	117.2	61.6	-332.1	-109.1	-356.4	-139.9	-60.9	29.7	85.2	-1745.5	-283.6
5/31/1997	4534	31	5678.6	0.0	-97.0	0.0	931.8	-5028.5	586.1	78.6	-71.2	-94.0	-175.1	-135.9	-55.8	35.5	98.8	-1759.9	8.0
6/30/1997	4564	30	4997.2	0.0	-76.4	0.0	509.8	-5023.5	897.4	96.5	133.9	-70.3	-17.9	-107.9	-44.1	38.9	104.5	-1663.0	225.0
7/31/1997	4595	31	5591.2	0.0	-55.4	0.0	558.1	-6567.1	1372.5	120.4	356.5	-57.6	91.0	-17.0	-20.2	51.3	131.7	-1797.5	242.0
8/31/1997	4626	31	3944.9	0.0	-39.1	0.0	1874.4	-6596.0	1506.0	140.8	451.9	-33.4	148.8	20.6	2.4	64.1	157.5	-1883.4	240.5
9/30/1997	4656	30	1678.2	0.0	-27.4	0.0	4165.0	-6598.0	1423.7	155.7	412.4	-15.2	157.3	48.0	18.4	70.8	171.2	-1898.4	236.8
10/31/1997	4687	31	1710.3	0.0	-17.4	0.0	4439.1	-6620.7	1351.8	176.4	331.9	-3.5	109.8	52.6	28.4	79.2	191.4	-2059.0	228.7
11/30/1997	4717	30	480.9	1.8	-8.7	0.0	1845.6	-1946.9	791.2	181.3	141.7	32.9	15.0	-105.9	1.9	63.3	169.3	-1862.1	198.7
12/31/1997	4748	31	-5782.9	7.1	-8.1	0.0	7520.4	-759.6	503.5	198.4	8.1	61.9	-76.1	-183.8	-33.9	39.3	129.0	-1706.9	83.6
1/31/1998	4779	31	-6358.0	2.6	-10.4	0.0	10086.4	-1906.8	100.2	180.1	-162.6	41.5	-288.3	-168.8	-52.2	24.1	91.4	-1628.3	49.6
2/28/1998	4807	28	-3851.3	20.6	-34.4	0.0	5381.9	-408.5	115.7	136.2	-531.5	80.7	-329.3	-214.0	-66.4	9.0	55.7	-1356.5	992.3
3/31/1998	4838	31	-11913.2	2.5	-60.0	0.0	16680.2	-1951.9	-458.1	120.3	-602.8	32.8	-493.1	-213.6	-88.7	-0.8	32.7	-1481.9	395.6
4/30/1998	4868	30	-5243.3	0.9	-84.5	-3.8	12982.6	-3330.6	-925.8	70.4	-873.8	-20.1	-695.8	-193.7	-90.9	-2.5	21.4	-1463.3	-147.2
5/31/1998	4899	31	-3518.9	1.6	-124.7	-43.9	11369.7	-2080.1	-1279.5	52.2	-926.4	-38.9	-749.3	-243.2	-105.9	-5.7	15.8	-1450.5	-872.3
6/30/1998	4929	30	2130.6	0.0	-142.7	-51.8	12238.1	-8685.5	-394.8	37.3	-519.3	-45.4	-678.4	-58.3	-80.9	8.7	28.5	-1528.5	-2358.8
7/31/1998	4960	31	1426.3	0.0	-173.1	-63.0	9122.0	-4753.1	-426.5	42.7	-502.4	-22.6	-539.9	-162.5	-72.8	19.8	55.1	-1652.4	-2297.7
8/31/1998	4991	31	4691.3	0.0	-158.0	-45.2	2952.4	-4744.2	-101.8	70.9	-272.2	-17.7	-302.3	-176.7	-79.9	19.1	63.2	-1571.3	-327.8
9/30/1998	5021	30	666.6	0.0	-145.9	-16.5	6084.4	-4677.3	156.8	78.4	-113.7	-5.6	-170.0	-159.4	-74.6	21.4	69.4	-1517.8	-196.2
10/31/1998	5052	31	-4699.0	0.0	-146.8	-14.7	12421.9	-4765.7	-50.5	68.7	-153.1	2.7	-347.2	-161.5	-74.1	24.7	78.6	-1807.7	-376.4
11/30/1998	5082	30	-4747.3	0.1	-150.4	-36.5	12411.6	-3151.5	-639.9	37.3	-375.8	-5.1	-536.4	-209.7	-81.5	20.1	73.4	-1799.2	-809.1
12/31/1998	5113	31	-2117.9	0.0	-174.8	-56.5	10995.3	-4084.4	-833.6	28.5	-583.6	-24.1	-537.1	-226.3	-96.2	12.2	63.0	-1768.9	-595.6
1/31/1999	5144	31	2410.5	1.2	-199.7	-58.5	4453.9	-2013.0	-1071.1	36.1	-576.8	-38.5	-397.1	-305.1	-119.1	0.9	43.8	-1541.3	-626.0
2/28/1999	5172	28	1723.2	0.0	-189.2	-50.0	6422.1	-5147.7	-288.1	52.3	-281.9	-36.7	-190.6	-197.2	-105.8	2.5	36.0	-1283.1	-465.8
3/31/1999	5203	31	157.3	2.7	-219.0	-78.9	5152.4	-1424.2	-849.2	70.6	-325.3	-40.1	-239.0	-333.6	-130.1	-2.5	36.5	-1410.4	-367.1
4/30/1999	5233	30	-2785.7	1.4	-218.1	-90.6	8186.7	-1640.7	-912.8	68.4	-291.1	-48.6	-308.9	-332.2	-143.6	-16.6	9.6	-1301.7	-175.3
5/31/1999	5264	31	5645.3	0.0	-218.7	-95.5	3224.3	-6076.0	-123.5	58.9	-132.0	-44.9	-237.6	-236.3	-134.6	-10.2	12.3	-1299.3	-332.2
6/30/1999	5294	30	6115.5	0.0	-193.7	-47.6	1398.2	-6107.4	454.6	69.7	97.6	-18.9	-30.7	-192.5	-110.6	3.4	33.3	-1225.6	-245.3
7/31/1999	5325	31	4988.8	0.0	-175.8	-5.3	475.2	-5059.2	769.1	94.1	223.5	-40.2	94.7	-173.3	-99.3	12.7	60.9	-1346.6	180.7
8/31/1999	5356	31	4537.6	0.0	-148.1	0.0	364.6	-5070.0	1081.0	115.9	325.2	-27.7	154.1	-146.5	-84.0	22.1	82.4	-1466.6	260.0

Flow Budget for the UAS in Oxnard Basin

influx(+) outflux(-); units in Acre-feet

Date	Stress	days in month	STORAGE	Volcanic Outcrop Recharge	Tile DRAINS	ET	RECHARGE	Pumping from Wells	Oxnard Basin Semi-Perched Aquifer	Santa Paula	Mound	Pleasant Valley	Las Posas	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Coastal Flux from South of Port Hueneme to Arnold Road	Coastal Flux from Arnold Road to Point Mugu	Oxnard Basin LAS	Partial Santa Clara River percolation
9/30/1999	5386	30	1944.8	0.0	-115.7	0.0	2779.3	-5079.8	1194.1	128.5	373.0	-9.3	159.3	-112.4	-65.5	30.6	99.2	-1533.8	207.7
10/31/1999	5417	31	540.0	0.0	-96.0	0.0	4405.7	-5102.4	1169.8	138.0	339.9	6.7	97.5	-100.6	-54.7	39.0	118.9	-1728.0	226.0
11/30/1999	5447	30	2672.8	0.1	-77.7	0.0	693.2	-3125.5	875.0	135.0	236.5	25.1	45.8	-139.2	-53.8	37.0	117.6	-1657.6	215.6
12/31/1999	5478	31	4167.2	0.0	-61.0	0.0	534.6	-5087.8	1247.8	151.3	316.0	29.7	130.5	-87.4	-47.2	40.8	126.4	-1675.4	214.5
1/31/2000	5509	31	1053.6	0.9	-47.6	0.0	1228.3	-2439.5	972.2	164.8	279.0	78.3	116.9	-138.9	-46.1	38.3	117.2	-1591.4	214.1
2/29/2000	5538	29	-3856.5	5.8	-43.1	0.0	5006.9	-726.7	522.2	167.2	132.9	103.0	40.1	-188.8	-60.3	19.9	80.8	-1330.3	127.0
3/31/2000	5569	31	-9264.3	1.3	-52.6	0.0	12583.3	-1824.7	16.6	160.8	-77.3	82.0	-184.8	-192.6	-78.2	8.9	57.9	-1470.8	234.6
4/30/2000	5599	30	-3661.6	1.5	-66.1	0.0	7833.1	-1625.7	-406.4	115.0	-383.7	48.2	-366.1	-202.6	-85.3	2.3	40.0	-1381.1	138.3
5/31/2000	5630	31	4571.9	0.0	-77.1	0.0	3446.6	-6628.2	443.0	108.0	-289.2	36.5	-213.0	-66.7	-67.4	13.7	49.8	-1417.4	89.5
6/30/2000	5660	30	6231.6	0.0	-60.7	0.0	720.9	-6659.3	1019.5	115.7	-1.1	55.4	-40.2	-20.2	-36.6	31.3	76.9	-1475.4	42.2
7/31/2000	5691	31	4280.4	0.0	-47.1	0.0	433.2	-5043.7	1169.4	131.5	190.1	67.4	73.7	-47.4	-29.4	38.2	100.2	-1565.1	248.7
8/31/2000	5722	31	4032.3	0.0	-39.5	0.0	372.7	-5045.9	1254.2	149.0	298.4	79.4	128.1	-31.9	-21.6	42.8	113.3	-1583.4	252.2
9/30/2000	5752	30	-453.3	0.0	-29.8	0.0	4892.4	-5047.6	1188.9	157.2	309.0	89.1	108.8	-7.0	-9.4	47.4	122.1	-1595.6	228.1
10/31/2000	5783	31	-7580.1	0.0	-23.2	0.0	11575.5	-3355.7	704.0	153.8	101.0	94.2	-148.4	-59.2	-11.0	49.7	130.5	-1859.8	228.6
11/30/2000	5813	30	97.4	0.0	-19.5	0.0	5902.8	-5053.4	731.1	116.6	-72.9	82.0	-271.4	-16.9	-9.4	48.9	129.5	-1860.6	196.0
12/31/2000	5844	31	5181.7	0.0	-19.5	0.0	436.6	-5066.1	922.4	117.8	-63.1	84.5	-140.1	-15.9	-4.7	54.3	141.7	-1842.0	212.3
1/31/2001	5875	31	-2108.8	4.9	-21.3	0.0	3925.4	-917.2	504.8	141.8	-105.2	127.6	-69.4	-161.3	-29.9	39.6	120.2	-1616.9	165.8
2/28/2001	5903	28	-5969.7	6.0	-24.7	0.0	7993.2	-813.9	81.8	140.0	-255.8	114.4	-119.1	-185.7	-55.7	15.2	70.4	-1293.1	296.5
3/31/2001	5934	31	-11073.6	5.1	-48.4	0.0	14771.0	-999.0	-569.0	138.9	-665.1	96.7	-386.1	-243.5	-84.9	2.8	46.2	-1460.9	469.7
4/30/2001	5964	30	-2891.2	0.1	-67.4	-0.5	10084.2	-3815.3	-490.3	105.4	-774.2	69.2	-511.8	-159.9	-79.0	8.0	41.5	-1441.8	-77.1
5/31/2001	5995	31	4146.1	0.0	-84.0	-1.4	5209.2	-6940.7	193.0	97.5	-565.4	70.3	-381.2	-64.4	-54.4	22.8	62.9	-1544.6	-165.5
6/30/2001	6025	30	6326.4	0.0	-80.3	0.0	1547.8	-6951.8	686.6	100.9	-201.5	85.8	-155.9	-32.5	-33.6	31.0	75.2	-1522.9	124.8
7/31/2001	6056	31	4952.9	0.0	-69.7	0.0	539.4	-5171.1	855.5	120.9	57.9	73.2	-33.5	-71.6	-31.4	36.3	89.5	-1596.6	248.3
8/31/2001	6087	31	4594.3	0.0	-52.6	0.0	386.4	-5184.2	1068.1	138.6	225.0	89.0	47.1	-61.0	-25.7	42.7	104.6	-1638.6	266.3
9/30/2001	6117	30	-2429.4	0.0	-39.0	0.0	7428.9	-5191.3	1054.5	142.5	271.0	102.1	-2.6	-33.2	-13.1	48.5	116.0	-1695.4	240.5
10/31/2001	6148	31	-7446.6	0.0	-33.9	0.0	13741.6	-5219.5	679.0	125.2	74.1	108.3	-283.9	-30.6	-6.8	54.9	131.7	-2069.7	176.0
11/30/2001	6178	30	-3447.4	2.4	-37.1	0.0	7460.8	-1274.4	-225.1	91.6	-337.4	102.1	-449.6	-171.5	-35.9	39.0	113.4	-1857.8	27.0
12/31/2001	6209	31	-174.3	1.0	-61.0	-0.4	5274.1	-2388.8	-347.9	101.3	-501.9	71.6	-303.1	-200.9	-67.7	18.8	79.7	-1610.2	109.8
1/31/2002	6240	31	1280.7	0.4	-82.6	-2.8	3650.7	-2553.7	-300.0	119.9	-477.8	33.4	-196.7	-193.6	-76.5	13.9	61.8	-1481.9	204.9
2/28/2002	6268	28	3261.3	0.0	-81.5	-0.2	2248.2	-4246.0	273.5	120.4	-247.2	9.2	-84.6	-127.8	-61.2	16.1	53.9	-1351.4	217.3
3/31/2002	6299	31	4450.6	0.0	-82.6	0.0	716.2	-4275.7	519.0	148.5	-73.8	15.8	-13.0	-133.9	-58.3	22.4	64.8	-1509.9	209.7
4/30/2002	6329	30	4119.6	0.0	-64.2	0.0	415.9	-4271.8	767.4	157.2	121.2	29.0	43.1	-108.8	-48.6	24.4	66.1	-1455.0	204.5
5/31/2002	6360	31	3740.2	0.0	-45.1	0.0	417.3	-4278.9	907.9	174.2	244.8	47.4	79.9	-93.2	-40.6	28.2	72.6	-1492.2	237.4
6/30/2002	6390	30	3354.6	0.0	-29.2	0.0	549.2	-4273.0	949.4	179.5	307.4	60.5	92.5	-65.2	-29.4	30.2	74.4	-1430.8	229.9
7/31/2002	6421	31	4158.3	0.0	-20.7	0.0	618.2	-5404.8	1165.5	195.2	369.3	53.4	125.1	-22.6	-15.3	42.6	97.2	-1601.2	238.3
8/31/2002	6452	31	3929.2	0.0	-9.6	0.0	677.3	-5437.2	1350.1	204.0	396.7	70.0	135.4	2.1	4.0	59.2	132.1	-1786.2	270.7
9/30/2002	6482	30	92.2	0.0	-0.6	0.0	4606.7	-5452.1	1344.8	205.7	363.8	83.2	118.5	30.6	21.6	69.0	152.8	-1882.3	243.5
10/31/2002	6513	31	3614.2	0.0	0.0	0.0	1345.1	-5478.3	1361.0	219.3	268.2	94.6	76.4	39.6	34.5	79.8	178.0	-2083.4	248.5
11/30/2002	6543	30	-1304.2	3.9	0.0	0.0	2338.2	-1055.3	1009.4	219.7	151.7	155.0	-15.1	-97.6	11.6	64.5	161.4	-1882.4	239.1
12/31/2002	6574	31	-3422.1	2.7	0.0	0.0	4911.9	-1127.0	805.8	227.7	97.9	157.2	-83.6	-125.9	-16.1	42.9	125.2	-1700.2	103.8
1/31/2003	6605	31	3940.4	0.0	0.0	0.0	2242.2	-6450.0	1016.4	218.7	95.3	144.2	-24.9	30.1	3.8	45.7	111.9	-1581.2	205.2
2/28/2003	6633	28	-4287.3	5.8	0.0	0.0	5328.0	-873.0	709.0	202.4	-3.5	155.1	-51.8	-93.4	-7.5	34.1	91.1	-1316.8	107.9
3/31/2003	6664	31	-4276.6	2.4	0.0	0.0	6267.0	-1270.4	406.3	219.0	-162.8	149.7	-125.1	-144.0	-39.0	18.5	67.8	-1282.5	169.9
4/30/2003	6694	30	22.0	0.0	0.0	0.0	4851.4	-4223.5	474.6	211.4	-217.1	114.7	-112.3	-39.2	-29.9	21.4	58.7	-1186.6	54.5
5/31/2003	6725	31	-4013.3	0.8	0.0	0.0	7872.1	-2827.6	199.6	211.0	-334.3	114.2	-158.1	-106.8	-34.7	21.3	60.8	-1250.5	245.4
6/30/2003	6755	30	4065.6	0.0	0.0	0.0	2788.4	-6412.4	613.4	194.6	-245.7	109.8	-129.1	-13.3	-24.3	24.1	57.9	-1251.4	219.9
7/31/2003	6786	31	5210.0	0.0	0.0	0.0	242.6	-5575.3	897.4	205.5	-52.2	79.2	-35.4	-4.4	-6.6	34.5	77.9	-1311.0	238.0
8/31/2003	6817	31	4874.1	0.0	0.0	0.0	173.5	-5582.0	998.0	214.1	141.6	85.1	26.8	23.6	8.1	42.5	97.3	-1358.0	254.9
9/30/2003	6847	30	3832.2	0.0	0.0	0.0	910.7	-5584.2	1117.4	216.6	242.2	97.6	67.4	56.9	24.2	49.4	111.6	-1367.4	224.2
10/31/2003	6878	31	2275.5	0.0	0.0	0.0	2364.6	-5600.0	1215.2	233.5	279.2	116.6	85.6	78.0	38.6	57.9	130.5	-1476.2	199.8
11/30/2003	6908	30	534.2	0.5	0.0	0.0	1630.5	-2823.9	1011.7	235.3	191.2	152.8	31.1	15.9	34.3	55.0	128.5	-1398.6	201.6
12/31/2003	6939	31	210.6	0.6	0.0	0.0	1896.8	-2528.6	877.8	254.1	137.9	163.0	25.2	-17.8	19.2	47.6	119.5	-1343.3	137.4
1/31/2004	6970	31	681.7	0.0	0.0	0.0	3429.7	-4755.2	1033.8	259.6	85.8	169.0	44.4	55.8	29.9	51.5	115.0	-1318.7	117.7
2/29/2004	6999	29	-4280.6	4.4	0.0	0.0	4934.4	-786.4	787.4	245.0	-31.1	195.9	-66.6	-59.6	12.3	37.8	95.4	-1184.1	95.7
3/31/2004	7030	31	-2786.8	0.0	0.0	0.0	6835.3	-4036.2	768.5	253.8	-154.7	161.7	-80.5	3.3	6.1	33.0	83.3	-1204.1	117.2
4/30/2004	7060	30	3361.4	0.0	0.0	0.0	1514.0	-4975.9	847.9	232.3	-198.1	143.3	-116.3	49.4	25.7	43.8	90.2	-1238.5	220.8
5/31/2004	7091	31	4297.5	0.0	0.0	0.0	197.5	-4983.5	1013.1	235.7	-48.1	164.3	-67.2	67.2	40.8	53.8	105.5	-1306.7	230.0
6/30/2004	7121	30	3945.4	0.0	0.0	0.0	165.2	-4976.4	1099.5	232.7	76.2	174.8	12.4	92.2	52.3	57.4	110.6	-1264.0	221.8
7/31/2004	7152	31	4341.5	0.0	0.0	0.0	280.7	-5833.4	1260.0	246.4	242.0	167.3	49.7	166.1	76.9	68.2	130.5	-1444.5	247.5
8/31/2004	7183	31	4310.2	0.0	0.0	0.0	172.6	-5869.5	1421.8	253.0	327.3	177.4	66.3	201.9	100.4	83.5	160.4	-1639.3	232.6
9/30/2004	7213	30	4196.3	0.0	0.0	0.0	163.7	-5881.8	1502.7	251.6	373.9	187.9	84.3	227.6	116.6	92.9	180.7	-1725.9	227.2
10/31/2004	7244	31	-4098.2	4.9	0.0	0.0	4130.1	-1161.8	1453.3	271.7	263.2	278.5	28.7	61.5	91.6	82.7	181.7	-1685.3	97.5
11/30/2004	7274	30	2511.5	0.0	0.0	0.0	2139.1	-5853.7	1348.0	259.4	235.5	214.0	33.3	192.7	93.6	78.2	163.5	-1611.0	194.3
12/31/2004	7305	31	-1811.0	6.0	0.0	0.0	1890.1	-965.9	1395.3	273.5	123.8	284.5	-36.9	47.1	81.9	74.8	168.0	-1597.0	65.8
1/31/2005	7336	31	-14439.3	8.9	0.0	0.0	13700.7	-602.4	1309.1	261.7	-190.6	311.6	-159.9	-33.0	36.8	48.0	125.3	-1447.9	1071.0
2/28/2005	7364	28	-10267.0	8.6	0.0	0.0	10479.0	-604.7	876.8	197.4	-539.6	263.9	-399.2	-63.9	7.9	27.5	80.4	-1261.6	1194.5
3/31/2005	7395	31	-14062.3	1.3	0.0	0.0	16808.9	-1546.8	410.0	175.0	-952.4	226.1	-637.7	-83.0	-9.1	21.8	65.3	-1367.4	950.4
4/30/2005	7425	30	-8337.2	0.1	0.0	0.0	14820.4	-4014.2	195.0	117.2	-1100.0	170.7	-779.5	-19.2	-2.3	24.1	59.0	-1482.3	348.3
5/31/2005	7456	31	-3732.9	0.0	0.0	0.0	12526.0	-5737.1	278.3	82.5	-1091.3	158.5	-793.5	50.0	20.3	35.9	72.2	-1652.7	-216.1
6/30/2005	7486	30	-2382.8	0.0	0.0	0.0	11074.4	-5720.7	273.5	60.6	-1080.4	146.1	-698.4	53.0	30.7	42.7	81.9	-1720.5	-160.0
7/31/2005	7517	31	-1742.5	0.0	0.0	0.0	9517.8	-4687.7	76.2	69.5	-770.6	142.7	-642.5	-39.0	13.3	44.1	92.7	-1849.6	-224.4
8/31/2005	7548	31	2965.8	0.0	-1.3	0.0	4355.8	-4669.0	92.0	70.1	-610.8	130.1	-455.1	-77.3	-5.3	42.9	98.6	-1793.0	-143.7
9/30/2005	7578	30	-4945.6	0.0	-15.8	0.0	12168.5	-4692.3	7.4	78.4	-509.3	119.9	-402.6	-82.5	-10.5	42.6	100.8	-1798.8	-60.2
10/31/2005	7609	31	-1826.3	0.4	-39.6	-2.7	8113.3	-2708.5	-501.5	72.6	-628.8	111.1	-554.1	-158.2	-29.4	38.6	100.9	-1865.5	-122.3
11/30/2005	7639	30	3354.3	0.0	-59.7	-6.7	3977.7	-4648.9	-63.4	77.0	-548.7	96.6	-352.2	-120.7	-33.5	35.2	93.0	-1695.6	-104.4
12/31/2005	7670	31	2373.2	0.0	-74.2	-7.0	4271.0	-4657.7	97.7	103.0	-403.8	99.5	-181.8	-120.5	-30.8	39.4	101.0	-1710.4	101.4
1/31/2006	7701	31	-2560.5	1.9	-85.6	-11.7	7422.6	-2296.5	-382.0	125.3	-362.8	110.3	-239.3	-191.6	-49.3	31.2	91.2	-1637.1	33.8
2/28/2006	7729	28	381.3	2.5	-91.7	-14.1	4137.5	-2055.3	-438.5	116.8	-359.0	97.0	-256.6	-191.8	-62.5	15.2	60.0	-1362.9	22.1
3/31/2006	7760	31	-8796.8	2.9	-117.7	-27.5	13950.4	-1656.5	-919.3	123.5	-515.2	92.6	-390.5	-256.8	-88.6	4.3	42.2	-1487.0	40.0
4/30/2006	7790	30	-6618.8	2.3	-142.0	-50.9	13165.4	-1534.4	-1465.4	87.3	-810.5	62.5	-659.2	-283.3	-105.7	-5.8	20.8	-1504.2	-158.0
5/31/2006	7821	31	-1214.2	0.7	-168.3	-141.1	11156.0	-4424.9	-934.0	52.0	-732.6	52.5	-744.2	-187.0	-92.8	1.3	22.3	-1573.8	-1072.0
6/30/2006	7851	30	4327.0	0.0	-169.2	-117.5	7427.9	-7939.9	116.1	39.6	-442.7	73.6	-487.8	-48.1	-47.5	23.2	47.8	-1601.9	-1216.7
7/31/2006	7882	31	4319.6	0.0	-172.5	-93.0	3872.1	-4647.0	-216.2	58.3	-285.4	82.2	-287.4	-139.6	-48.8	32.5	73.5	-1677.8	-870.5
8/31/2006	7913	31	5291.0	0.0	-169.1	-71.5	1556.9	-4643.0	114.8	85.9	-144.5	92.8	-103.6	-165.0	-61.6	32.2	82.7	-1645.5	-252.3
9/30/2006	7943	30	-272.0	0.0	-152.1	-44.2	6294.2	-4652.0	355.2	100.3	-65.7	108.9	-60.2	-146.9	-55.3	35.3	89.7	-1643.8	108.7
10/31/2006	7974	31	-1295.2	0.0	-148.2	-29.7	7894.0	-4687.8	230.2	99.9	-126.2	124.9	-199.6	-147.1	-52.8	39.4	100.6	-1850.7	48.5
11/30/2006	8004	30	3327.6	0.0	-134.4	-10.4	2997.3	-4661.5	377.1	88.7	-135.8	131.9	-192.8	-130.7	-46.5	40.6	103.0	-1776.5	22.4
12/31/2006	8035	31	1563.3	0.4	-131.8	-6.4	3273.4	-3339.8	196.7	106.6	-129.1	143.4	-93.6	-160.4	-54.9	35.0	99.2	-1682.1	180.0

Flow Budget for the UAS in Oxnard Basin

influx(+) outflux(-); units in Acre-feet

Date	Stress	days in month	STORAGE	Volcanic Outcrop Recharge	Tile DRAINS	ET	RECHARGE	Pumping from Wells	Oxnard Basin Semi-Perched Aquifer	Santa Paula	Mound	Pleasant Valley	Las Posas	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Coastal Flux from South of Port Hueneme to Arnold Road	Coastal Flux from Arnold Road to Point Mugu	Oxnard Basin LAS	Partial Santa Clara River percolation
1/31/2007	8066	31	1597.8	1.4	-131.6	-3.9	2199.7	-1948.9	-211.8	125.0	-147.0	135.2	-83.4	-243.0	-81.0	18.2	71.9	-1466.2	167.5
2/28/2007	8094	28	-405.4	0.2	-116.2	-5.2	5574.3	-3934.1	43.7	125.1	-120.8	108.9	-8.4	-196.4	-81.8	10.3	48.6	-1203.8	160.9
3/31/2007	8125	31	4272.0	0.0	-122.7	-5.1	2793.2	-6231.9	407.2	146.5	-133.3	122.0	6.7	-144.3	-75.5	21.6	62.8	-1335.3	216.2
4/30/2007	8155	30	2699.0	0.0	-104.3	0.0	1595.7	-3584.5	399.6	149.7	-41.7	130.7	15.6	-206.5	-75.4	19.0	62.2	-1266.2	207.1
5/31/2007	8186	31	5422.5	0.0	-86.2	0.0	592.1	-6220.2	894.4	164.6	113.9	152.4	96.7	-122.1	-66.7	23.9	65.8	-1263.0	232.0
6/30/2007	8216	30	4853.6	0.0	-55.3	0.0	510.6	-6220.5	1169.7	169.9	241.3	179.1	145.4	-74.3	-42.6	34.1	79.5	-1229.6	238.8
7/31/2007	8247	31	4544.8	0.0	-39.2	0.0	270.5	-5784.4	1175.3	186.5	346.5	178.6	172.9	-68.2	-34.2	35.4	87.1	-1324.4	252.7
8/31/2007	8278	31	4036.0	0.0	-27.0	0.0	692.8	-5804.4	1195.1	198.4	394.7	182.6	194.6	-45.2	-25.9	37.5	92.2	-1356.6	235.0
9/30/2007	8308	30	-986.3	0.0	-14.0	0.0	5848.2	-5798.8	1110.7	199.8	345.9	184.3	162.6	-16.5	-13.2	41.7	98.8	-1380.6	216.9
10/31/2007	8339	31	-1494.4	0.0	-3.5	0.0	6957.3	-5838.4	970.8	199.9	195.5	194.7	26.5	-9.5	-5.8	47.0	110.8	-1565.3	214.6
11/30/2007	8369	30	3999.2	0.0	0.0	0.0	1582.9	-5838.4	971.0	181.4	111.7	191.4	-32.7	1.4	0.0	48.6	113.8	-1541.0	210.8
12/31/2007	8400	31	-1094.7	1.0	0.0	0.0	3142.6	-1978.3	784.8	192.4	82.8	226.1	-73.0	-97.1	-10.7	45.9	115.3	-1479.1	142.2
1/31/2008	8431	31	-5348.3	6.5	0.0	0.0	6417.6	-779.5	629.7	184.9	-17.3	274.7	-199.5	-150.0	-32.3	28.7	89.6	-1419.3	314.3
2/29/2008	8460	29	-9926.9	1.8	0.0	0.0	13045.8	-2100.5	283.9	136.5	-230.9	243.7	-401.9	-121.2	-39.7	15.9	58.2	-1370.5	405.7
3/31/2008	8491	31	-5624.6	0.0	0.0	0.0	13561.3	-6071.8	428.1	96.7	-450.8	226.0	-555.1	-31.0	-25.9	26.0	64.3	-1565.6	-77.5
4/30/2008	8521	30	3595.3	0.0	-1.8	0.0	4088.9	-6062.3	449.4	81.4	-472.1	200.2	-387.9	-19.3	-13.2	35.0	76.0	-1534.2	-35.5
5/31/2008	8552	31	5450.5	0.0	-8.2	0.0	1377.0	-6060.6	657.5	100.7	-281.1	205.1	-148.6	-33.2	-12.5	39.4	85.2	-1529.8	158.7
6/30/2008	8582	30	5645.6	0.0	-9.1	0.0	468.3	-6052.0	840.4	125.3	-45.8	206.5	12.8	-23.9	-7.7	41.0	87.4	-1457.9	169.1
7/31/2008	8613	31	5587.1	0.0	-4.8	0.0	191.1	-6121.9	1012.8	155.8	91.5	207.0	78.0	-3.6	4.1	52.8	104.9	-1556.4	201.6
8/31/2008	8644	31	5283.1	0.0	0.0	0.0	178.0	-6141.6	1180.6	179.9	219.1	219.7	114.2	19.8	18.2	62.5	125.8	-1630.0	170.3
9/30/2008	8674	30	2551.1	0.0	0.0	0.0	2721.5	-6149.7	1244.6	190.7	263.5	227.7	118.5	46.0	31.3	68.6	138.9	-1654.3	200.4
10/31/2008	8705	31	-5794.2	0.0	0.0	0.0	11615.5	-6219.2	1233.5	191.9	208.2	247.8	-69.0	59.3	42.9	76.6	157.5	-1968.6	217.7
11/30/2008	8735	30	503.1	1.1	0.0	0.0	1901.9	-1966.6	832.0	160.6	-9.8	255.7	-263.0	-43.2	23.2	58.9	139.3	-1769.3	176.1
12/31/2008	8766	31	-1257.0	1.3	0.0	0.0	3506.1	-1852.2	691.9	178.2	-91.4	251.7	-119.8	-78.8	-2.1	41.7	111.3	-1485.5	104.7
1/31/2009	8797	31	1575.8	0.0	0.0	0.0	3468.4	-4972.2	730.5	195.3	-114.6	244.6	-23.7	-28.0	3.8	42.1	100.1	-1366.5	144.4
2/28/2009	8825	28	-3594.8	4.6	0.0	0.0	4752.1	-686.3	465.3	193.9	-190.1	230.6	-55.5	-110.6	-13.4	27.5	75.6	-1159.7	60.7
3/31/2009	8856	31	73.7	0.0	0.0	0.0	5357.7	-4949.8	486.9	221.0	-259.0	225.9	-56.2	-67.5	-20.1	26.7	67.0	-1216.6	110.4
4/30/2009	8886	30	3664.6	0.0	0.0	0.0	1576.1	-4954.8	534.2	216.7	-178.9	212.4	-49.8	-46.1	-7.6	33.9	72.0	-1219.8	147.0
5/31/2009	8917	31	4537.1	0.0	0.0	0.0	296.8	-4959.9	645.5	229.5	-19.1	232.8	-3.6	-39.1	-2.7	37.4	77.1	-1254.2	222.5
6/30/2009	8947	30	4246.1	0.0	0.0	0.0	191.8	-4952.3	715.2	229.0	135.2	244.1	48.0	-13.8	6.1	38.6	76.9	-1196.8	231.7
7/31/2009	8978	31	5023.4	0.0	0.0	0.0	187.4	-6153.0	986.8	242.9	232.0	235.9	88.3	52.7	28.1	49.3	92.2	-1318.1	250.1
8/31/2009	9009	31	4782.5	0.0	0.0	0.0	189.0	-6175.2	1174.5	250.0	301.4	251.5	105.6	91.6	51.6	61.5	114.9	-1432.9	231.5
9/30/2009	9039	30	4666.0	0.0	0.0	0.0	188.4	-6179.8	1241.3	249.8	339.3	263.4	103.2	121.8	68.3	68.9	129.6	-1475.7	210.4
10/31/2009	9070	31	-864.6	0.4	0.0	0.0	2663.0	-3026.4	1219.0	265.7	353.0	312.8	45.9	84.9	71.3	74.6	145.4	-1506.3	161.1
11/30/2009	9100	30	3638.5	0.0	0.0	0.0	1254.7	-6190.4	1297.2	250.8	308.3	299.0	28.2	142.7	80.8	76.0	147.9	-1523.9	184.6
12/31/2009	9131	31	-3883.4	2.7	0.0	0.0	4650.8	-1636.2	1208.9	257.5	259.0	352.8	-56.0	44.8	67.5	65.2	141.4	-1526.3	51.2
1/31/2010	9162	31	-4512.3	6.2	0.0	0.0	4744.9	-746.0	1070.2	241.2	118.3	365.6	-196.4	-15.4	32.8	40.9	102.4	-1326.3	73.9
2/28/2010	9190	28	-7421.7	3.6	0.0	0.0	8198.6	-958.7	771.2	200.8	-51.2	317.3	-219.3	-26.5	13.8	25.5	67.4	-1052.2	131.4
3/31/2010	9221	31	-2177.1	0.0	0.0	0.0	7719.5	-5562.0	820.3	210.2	-281.4	327.4	-225.9	63.8	32.2	39.3	77.1	-1135.5	92.0
4/30/2010	9251	30	-450.6	0.6	0.0	0.0	3539.2	-2732.9	589.3	205.1	-369.6	297.3	-211.5	1.2	27.1	36.9	77.8	-1089.9	80.0
5/31/2010	9282	31	2999.9	0.0	0.0	0.0	2568.7	-5552.1	713.1	219.5	-298.5	304.3	-123.2	33.7	26.9	40.6	78.5	-1101.7	90.4
6/30/2010	9312	30	4681.8	0.0	0.0	0.0	409.7	-5556.6	819.1	219.7	-157.0	308.1	-58.4	55.3	40.9	49.7	91.1	-1118.8	215.4
7/31/2010	9343	31	4784.9	0.0	0.0	0.0	325.0	-6041.7	1001.6	237.1	85.9	286.0	8.2	123.9	61.6	56.9	106.6	-1292.9	254.3
8/31/2010	9374	31	4664.6	0.0	0.0	0.0	189.9	-6055.3	1120.4	247.6	217.7	289.8	39.5	160.0	80.1	65.1	124.8	-1402.1	254.5
9/30/2010	9404	30	4330.8	0.0	0.0	0.0	312.2	-6039.2	1203.0	249.9	296.1	294.3	73.1	184.2	92.9	71.0	138.0	-1433.7	227.0
10/31/2010	9435	31	-6592.4	1.7	0.0	0.0	7490.9	-1959.5	1086.0	267.0	184.4	343.5	34.1	58.4	72.5	61.5	135.3	-1396.7	213.4
11/30/2010	9465	30	-1432.4	0.0	0.0	0.0	5037.9	-4281.2	939.7	258.9	5.0	291.7	-37.8	96.2	59.4	53.9	118.4	-1313.4	203.7
12/31/2010	9496	31	-8335.1	8.1	0.0	0.0	8685.5	-579.6	1033.5	269.2	-235.8	346.4	-144.7	-35.2	32.9	43.6	110.6	-1328.2	128.9
1/31/2011	9527	31	-7466.2	0.0	0.0	0.0	12282.9	-4519.2	793.5	236.7	-396.7	332.7	-368.2	28.9	25.1	34.9	85.5	-1397.6	327.8
2/28/2011	9555	28	-5725.2	2.0	0.0	0.0	8291.1	-1380.9	450.7	183.4	-508.4	284.4	-505.7	-35.8	14.8	29.5	71.8	-1248.6	77.1
3/31/2011	9586	31	-7796.9	5.6	0.0	0.0	10200.9	-745.4	307.4	189.7	-762.9	299.2	-529.8	-111.4	-17.2	17.2	56.0	-1215.3	102.8
4/30/2011	9616	30	-8260.1	0.0	0.0	0.0	14989.8	-4802.7	254.8	163.3	-869.0	262.5	-584.0	-31.1	-9.8	24.7	54.0	-1313.7	121.2
5/31/2011	9647	31	4008.8	0.0	0.0	0.0	2583.4	-4747.8	314.8	141.0	-881.1	261.0	-580.2	-22.6	6.9	42.1	81.7	-1477.7	269.9
6/30/2011	9677	30	2971.9	0.0	0.0	0.0	2892.7	-4805.0	517.4	145.1	-492.8	259.2	-307.2	-21.5	10.8	46.9	92.4	-1421.3	111.2
7/31/2011	9708	31	3480.8	0.0	0.0	0.0	1606.3	-4467.1	546.3	164.2	-272.1	258.4	-158.1	-20.6	12.7	52.9	106.1	-1536.8	227.1
8/31/2011	9739	31	4356.2	0.0	0.0	0.0	371.7	-4464.8	627.2	181.8	-85.5	263.1	-83.2	-18.6	13.3	54.5	113.2	-1551.2	222.2
9/30/2011	9769	30	1180.8	0.0	0.0	0.0	3242.7	-4463.7	674.7	188.9	41.8	266.4	-39.8	0.1	19.5	55.9	116.2	-1521.2	237.7
10/31/2011	9800	31	-6108.3	0.0	0.0	0.0	9693.3	-3016.6	493.5	196.7	-47.2	275.2	-190.4	-54.8	12.1	55.3	121.2	-1624.9	194.9
11/30/2011	9830	30	-1802.0	0.9	0.0	0.0	5287.0	-2314.6	215.4	176.3	-247.6	253.1	-303.1	-94.7	-10.3	36.9	97.5	-1480.3	185.5
12/31/2011	9861	31	2638.2	0.0	0.0	0.0	2601.9	-4448.2	428.9	185.4	-237.7	246.3	-193.0	-46.8	-10.0	37.7	90.4	-1459.5	166.7
1/31/2012	9892	31	960.4	0.7	0.0	0.0	2343.5	-2391.2	201.3	196.0	-225.7	249.1	-148.5	-127.1	-23.5	32.0	87.3	-1372.9	218.5
2/29/2012	9921	29	3417.9	0.0	0.0	0.0	1669.1	-4746.5	507.5	193.6	-112.2	233.6	-67.6	-75.2	-25.6	30.8	76.3	-1296.4	194.5
3/31/2012	9952	31	808.9	1.6	0.0	0.0	1564.0	-1746.6	279.7	221.2	-69.9	258.3	-83.2	-131.9	-30.2	29.0	78.4	-1305.8	126.5
4/30/2012	9982	30	-1567.7	1.0	0.0	0.0	4327.4	-2101.9	176.0	224.6	-60.2	241.7	-69.2	-138.3	-42.4	17.5	54.9	-1148.2	84.9
5/31/2012	10013	31	3670.7	0.0	0.0	0.0	1348.2	-4743.1	465.5	233.0	-82.8	247.9	-48.7	-82.5	-35.0	25.6	61.6	-1256.9	196.5
6/30/2012	10043	30	4521.7	0.0	0.0	0.0	170.2	-4754.8	618.3	228.6	15.5	257.2	-14.0	-50.1	-16.5	36.4	78.7	-1321.5	230.3
7/31/2012	10074	31	4235.3	0.0	0.0	0.0	742.1	-5355.8	796.5	240.7	178.5	242.8	8.3	-3.0	0.3	46.7	96.9	-1466.5	235.8
8/31/2012	10105	31	4248.2	0.0	0.0	0.0	482.1	-5377.0	948.2	244.1	279.6	255.0	22.6	26.7	17.0	55.4	116.2	-1559.6	239.7
9/30/2012	10135	30	3307.4	0.0	0.0	0.0	1242.3	-5378.4	1052.4	241.3	327.8	263.3	25.2	53.8	31.6	61.8	130.1	-1586.5	225.4
10/31/2012	10166	31	-1908.3	0.0	0.0	0.0	6498.9	-5412.0	1156.2	252.4	302.1	287.6	7.5	71.4	45.2	70.3	149.4	-1741.7	219.2
11/30/2012	10196	30	2249.9	0.0	0.0	0.0	229.8	-2854.7	933.5	243.9	149.9	287.4	-74.6	12.5	38.4	65.9	148.6	-1628.4	198.1
12/31/2012	10227	31	-644.8	0.9	0.0	0.0	2152.7	-1853.0	822.1	260.2	127.1	308.4	-60.2	-23.0	24.7	56.0	138.9	-1502.2	192.2
1/31/2013	10258	31	507.9	0.4	0.0	0.0	1453.6	-2293.0	718.9	267.3	83.7	293.6	-45.8	-22.6	15.3	46.1	117.4	-1348.5	205.8
2/28/2013	10286	28	2271.5	0.0	0.0	0.0	1162.7	-3938.6	784.2	244.9	104.1	244.2	-14.2	21.5	19.9	47.6	104.3	-1247.0	194.3
3/31/2013	10317	31	1819.6	0.0	0.0	0.0	445.1	-2735.4	805.7	274.9	120.7	278.1	-25.1	-3.3	25.1	52.9	119.4	-1382.0	204.2
4/30/2013	10347	30	3129.5	0.0	0.0	0.0	138.2	-3959.0	890.4	269.1	176.8	264.5	-3.5	33.7	29.1	54.4	116.4	-1350.1	210.4
5/31/2013	10378	31	2978.6	0.0	0.0	0.0	146.6	-3976.7	979.8	281.0	231.0	283.4	10.8	54.6	42.2	63.0	131.2	-1443.6	217.7
6/30/2013	10408	30	2873.7	0.0	0.0	0.0	152.2	-3975.0	1005.7	274.9	262.2	283.4	26.2	72.1	50.2	65.3	134.6	-1429.3	202.9
7/31/2013	10439	31	3337.8	0.0	0.0	0.0	155.9	-4624.3	1139.2	287.4	298.1	282.1	61.2	108.3	65.9	74.2	154.1	-1538.6	198.5
8/31/2013	10470	31	3259.1	0.0	0.0	0.0	152.6	-4645.1	1247.5	291.1	312.4	289.3	72.1	131.8	81.8	83.9	176.3	-1645.2	192.3
9/30/2013	10500	30	3222.4	0.0	0.0	0.0	153.4	-4652.1	1290.3	285.9	320.6	288.1	73.3	150.4	93.0	89.4	188.0	-1684.8	182.1
10/31/2013	10531	31	3132.0	0.0	0.0	0.0	146.7	-4671.6	1402.8	300.3	349.2	309.9	75.6	170.4	108.3	98.9	209.0	-1813.1	181.6
11/30/2013	10561	30	3048.4	0.0	0.0	0.0	144.0	-4611.2	1411.1	295.6	349.6	307.1	68.9	183.5	115.5	101.4	214.1	-1802.5	174.5
12/31/2013	10592	31	3014.0	0.0	0.0	0.0	149.6	-4685.2	1505.7	309.6	365.5	326.8	74.8	201.5	129.1	109.4	231.7	-1911.3	178.9
1/31/2014	10623	31	3186.3	0.0	0.0	0.0	172.8	-4936.9	1589.4	312.2	378.2	337.5	64.6	216.6	140.4	114.9	239.1	-1985.2	170.1
2/28/2014	10651	28	-658.0	2.1	0.0	0.0	328.8	-1051.2	1416.1	287.9	283.9	347.0	24.8	125.7	117.6	90.7	200.8	-1650.0	133.7
3/31/2014	10682	31	-1050.4	0.4	0.0	0.0	2459.9	-2905.3	1339.8	320.6	269.5	362.0	29.4	159.4	116.8	87.9	195.4	-1650.9	265.4
4/30/2014	10712	30	2873.6	0.0	0.0	0.0	578.2	-4887.0	1409.2	308.2	240.2	318.4	34.0	208.3	125.5	95.7	196.0	-1669.6	169.4

Flow Budget for the UAS in Oxnard Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet																
			STORAGE	Volcanic Outcrop Recharge	Tile DRAINS	ET	RECHARGE	Pumping from Wells	Oxnard Basin Semi-Perched Aquifer	Santa Paula	Mound	Pleasant Valley	Las Posas	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Coastal Flux from South of Port Hueneme to Arnold Road	Coastal Flux from Arnold Road to Point Mugu	Oxnard Basin LAS	Partial Santa Clara River percolation
5/31/2014	10743	31	3172.9	0.0	0.0	0.0	242.2	-4920.8	1524.7	315.8	281.3	329.3	32.4	234.9	146.8	110.8	222.1	-1858.6	166.3
6/30/2014	10773	30	3241.0	0.0	0.0	0.0	174.6	-4923.0	1525.8	306.2	313.6	321.4	35.9	247.1	154.1	114.4	228.5	-1887.8	148.2
7/31/2014	10804	31	2583.4	0.0	0.0	0.0	152.9	-4416.0	1598.4	316.8	351.4	351.3	25.5	306.1	179.6	123.6	249.0	-1984.9	162.8
8/31/2014	10835	31	2559.8	0.0	0.0	0.0	148.8	-4420.7	1631.9	318.5	350.6	358.6	23.6	324.7	193.9	129.5	261.8	-2042.5	161.5
9/30/2014	10865	30	2593.6	0.0	0.0	0.0	148.8	-4415.2	1606.5	310.6	338.5	349.4	22.7	328.6	197.2	130.4	264.3	-2027.2	151.6
10/31/2014	10896	31	2517.0	0.0	0.0	0.0	147.2	-4429.1	1662.1	324.0	341.1	363.3	20.7	344.7	211.2	138.6	282.3	-2133.6	210.6
11/30/2014	10926	30	1820.4	0.0	0.0	0.0	136.8	-3596.4	1586.9	318.5	311.1	351.1	9.9	300.3	203.2	133.8	277.2	-2046.5	193.7
12/31/2014	10957	31	-1328.5	4.2	0.0	0.0	487.1	-852.4	1734.0	340.8	260.0	411.4	-10.6	218.0	182.9	118.1	261.8	-1897.0	70.2
1/31/2015	10988	31	-1505.4	1.3	0.0	0.0	1257.6	-1291.0	1404.3	343.1	210.0	378.9	-24.4	203.9	157.2	97.8	218.6	-1581.1	129.2
2/28/2015	11016	28	1612.8	0.0	0.0	0.0	762.4	-3831.6	1275.0	305.6	183.3	302.9	-18.1	241.7	150.1	95.2	192.9	-1412.0	139.9
3/31/2015	11047	31	1276.7	0.2	0.0	0.0	778.0	-3616.5	1397.7	335.0	210.8	350.5	-28.2	279.7	178.8	109.9	220.5	-1635.9	142.7
4/30/2015	11077	30	2051.5	0.0	0.0	0.0	261.6	-3856.8	1375.8	320.8	218.0	325.7	-28.9	279.5	177.3	109.9	215.6	-1606.4	156.5
5/31/2015	11108	31	2088.5	0.0	0.0	0.0	123.3	-3870.8	1446.8	332.0	235.7	335.9	-24.8	295.4	190.1	119.1	233.5	-1704.7	200.1
6/30/2015	11138	30	2083.2	0.0	0.0	0.0	124.8	-3868.3	1434.9	320.5	240.4	325.9	-16.4	297.0	190.0	119.1	233.5	-1685.2	200.8
7/31/2015	11169	31	1878.3	0.0	0.0	0.0	133.6	-3764.9	1498.4	330.5	286.7	338.0	-21.1	345.2	205.9	125.0	248.3	-1806.2	201.2
8/31/2015	11200	31	1889.1	0.0	0.0	0.0	134.1	-3779.6	1527.8	330.0	294.5	329.0	-20.6	354.4	213.3	130.1	259.9	-1862.7	200.9
9/30/2015	11230	30	1889.2	0.0	0.0	0.0	130.6	-3698.7	1507.9	321.3	287.9	312.0	-18.6	343.8	211.9	130.7	262.7	-1857.6	176.9
10/31/2015	11261	31	1897.9	0.0	0.0	0.0	133.3	-3788.1	1574.5	334.0	304.3	322.4	-18.1	366.5	224.7	138.8	280.9	-1959.2	188.3
11/30/2015	11291	30	1934.6	0.0	0.0	0.0	132.2	-3783.5	1545.1	324.8	299.1	311.6	-17.3	366.3	223.6	137.7	279.4	-1932.2	178.9
12/31/2015	11322	31	1887.7	0.0	0.0	0.0	132.6	-3793.0	1609.5	337.5	309.5	322.8	-20.6	382.0	236.0	145.1	295.5	-2024.6	179.8

Flow Budget for the LAS in Oxnard Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet												
			STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Oxnard Basin UAS	Santa Paula	Pleasant Valley	Las Posas	Mound	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Costal Flux from South of Port Hueneme to Arnold Road	Costal Flux from Arnold Road to Point Mugu
1/31/1985	31	31	-224.2	0.0	1.2	-1657.6	1184.5	2.0	-30.8	-36.0	471.7	110.5	92.7	40.8	45.2
2/28/1985	59	28	-145.8	0.0	1.3	-1518.0	997.3	1.8	-31.1	-35.7	446.7	111.4	91.1	42.3	38.6
3/31/1985	90	31	729.1	0.0	1.1	-2697.3	1114.4	2.0	-3.0	-24.9	541.2	125.2	102.1	60.7	49.3
4/30/1985	120	30	1287.7	0.0	0.8	-3539.3	1147.0	1.9	-15.3	36.0	658.3	169.0	124.9	69.8	59.2
5/31/1985	151	31	1002.2	0.0	0.8	-3503.4	1248.2	2.0	-22.4	77.3	691.3	208.8	144.8	78.8	71.8
6/30/1985	181	30	931.5	0.0	0.8	-3499.8	1252.9	1.9	-17.2	105.6	687.6	224.2	153.2	81.7	77.7
7/31/1985	212	31	1251.4	0.0	0.8	-4089.6	1388.7	2.0	34.6	149.1	650.1	245.1	164.4	95.0	108.3
8/31/1985	243	31	1059.3	0.0	0.8	-4076.0	1480.5	2.1	60.1	160.0	638.0	252.3	172.1	105.8	145.1
9/30/1985	273	30	953.4	0.0	0.8	-4069.6	1550.3	2.1	72.5	164.5	624.5	257.8	176.3	108.8	158.6
10/31/1985	304	31	699.8	0.0	0.7	-4016.8	1673.1	2.2	84.5	158.9	641.0	276.7	189.4	116.0	174.4
11/30/1985	334	30	-2247.4	0.1	4.1	-477.3	1510.2	2.1	64.2	102.6	448.4	206.6	149.0	87.8	149.6
12/31/1985	365	31	115.4	0.0	0.9	-2910.3	1446.9	2.2	32.9	145.0	592.5	213.0	153.7	81.5	126.4
1/31/1986	396	31	-1771.3	0.1	4.2	-640.1	1345.0	2.2	28.8	78.3	461.3	179.3	132.7	70.5	108.9
2/28/1986	424	28	-1665.9	0.2	8.5	-254.3	1098.5	2.0	17.6	66.0	383.3	125.3	99.0	47.8	72.0
3/31/1986	455	31	-1590.0	0.1	4.9	-407.2	1234.4	2.1	4.9	21.2	422.4	112.3	93.8	42.4	58.6
4/30/1986	485	30	163.0	0.0	1.0	-2251.1	1298.6	2.0	34.1	-37.0	467.3	123.1	103.0	46.6	49.5
5/31/1986	516	31	1592.6	0.0	0.9	-4229.4	1423.3	1.9	89.5	-44.1	672.5	199.8	150.3	77.6	65.1
6/30/1986	546	30	1395.2	0.0	0.9	-4205.5	1417.4	1.8	130.7	-8.4	661.6	252.0	174.9	95.8	83.6
7/31/1986	577	31	579.4	0.0	0.7	-3422.4	1580.8	1.9	68.2	-21.9	600.6	244.2	177.4	94.0	97.1
8/31/1986	608	31	633.1	0.0	0.7	-3422.3	1565.6	1.8	24.1	-20.0	610.9	233.2	177.2	91.4	104.3
9/30/1986	638	30	-325.2	0.0	1.0	-2110.1	1383.5	1.8	-2.2	8.3	502.3	200.9	153.9	82.9	102.7
10/31/1986	669	31	777.4	0.0	0.7	-3433.7	1405.1	1.9	-9.5	60.2	616.3	214.9	172.5	87.5	106.0
11/30/1986	699	30	-850.8	0.0	1.5	-1571.6	1318.3	1.9	4.0	52.8	509.0	197.6	154.5	80.4	102.3
12/31/1986	730	31	832.9	0.0	0.7	-3447.0	1332.6	2.0	0.2	91.5	615.7	211.5	170.7	85.0	103.0
1/31/1987	761	31	-883.0	0.0	1.4	-1497.7	1302.3	2.1	29.8	79.3	460.3	187.2	141.9	78.8	97.7
2/28/1987	789	28	-257.4	0.0	1.1	-1789.8	1124.0	1.9	16.7	79.0	414.1	151.9	121.0	63.2	74.1
3/31/1987	820	31	-742.8	0.0	1.6	-1423.4	1229.5	2.1	3.4	79.8	432.4	154.7	125.9	63.9	72.8
4/30/1987	850	30	2202.1	0.0	0.7	-4762.2	1294.0	2.1	77.5	114.7	564.6	192.5	159.6	82.9	71.5
5/31/1987	881	31	1710.7	0.0	0.7	-4700.6	1544.5	2.1	90.6	132.0	590.9	247.5	189.6	104.5	87.3
6/30/1987	911	30	1483.3	0.0	0.7	-4687.8	1676.6	2.1	104.5	141.0	591.5	272.6	205.0	112.0	98.5
7/31/1987	942	31	1406.1	0.0	0.7	-5178.0	1990.5	2.1	146.6	139.0	686.1	328.3	222.4	116.9	136.9
8/31/1987	973	31	1140.8	0.0	0.7	-5176.4	2106.0	2.1	184.4	144.2	708.6	349.5	235.8	124.4	177.4
9/30/1987	1003	30	1132.1	0.0	0.7	-5180.3	2051.8	2.1	197.8	170.1	707.7	356.5	241.3	126.8	188.9
10/31/1987	1034	31	-1583.0	0.0	1.3	-2116.9	2024.1	2.2	145.9	153.8	537.3	311.7	218.5	118.6	186.3
11/30/1987	1064	30	-1420.2	0.0	1.2	-1881.1	1777.0	2.1	114.5	149.4	557.5	265.3	189.5	94.0	150.6
12/31/1987	1095	31	-1966.3	0.1	3.6	-907.0	1606.4	2.2	66.7	123.8	463.9	231.7	170.3	79.1	125.4
1/31/1988	1126	31	-1381.3	0.1	2.5	-1162.1	1418.1	2.2	46.8	107.6	450.1	198.0	150.6	70.9	96.4
2/29/1988	1155	29	-323.7	0.0	1.3	-2057.4	1267.6	2.1	55.4	92.2	475.5	196.4	145.8	70.7	74.2
3/31/1988	1186	31	1281.3	0.0	0.6	-4167.3	1491.8	2.2	114.5	113.7	589.5	241.9	166.9	88.0	77.0
4/30/1988	1216	30	-1387.8	0.1	2.6	-1156.2	1548.5	2.1	49.7	47.1	390.1	207.3	147.1	75.7	73.9
5/31/1988	1247	31	1229.2	0.0	0.6	-4196.6	1651.5	2.1	108.2	56.3	570.8	243.9	169.1	87.3	77.5
6/30/1988	1277	30	1068.5	0.0	0.6	-4171.1	1726.7	2.0	126.3	47.8	564.0	272.8	179.4	97.4	83.4
7/31/1988	1308	31	1195.6	0.0	0.5	-4499.2	1889.3	2.1	56.3	103.0	532.1	298.5	194.5	109.5	117.8
8/31/1988	1339	31	1040.4	0.0	0.5	-4483.7	1945.7	2.1	33.2	136.5	536.4	313.0	205.3	117.0	153.6
9/30/1988	1369	30	989.1	0.0	0.5	-4480.3	1949.7	2.1	31.4	164.9	532.0	318.0	209.2	118.9	164.6
10/31/1988	1400	31	730.7	0.0	0.5	-4459.9	2083.8	2.2	33.7	191.0	549.7	339.2	224.0	126.0	178.9
11/30/1988	1430	30	-655.6	0.0	0.9	-2783.3	1943.1	2.2	35.9	156.8	489.6	315.9	213.3	113.9	167.1
12/31/1988	1461	31	-2377.3	0.1	3.1	-615.2	1774.5	2.3	11.4	125.3	396.0	260.1	186.5	91.4	141.9
1/31/1989	1492	31	309.5	0.0	0.5	-3486.7	1659.4	2.3	17.4	167.2	686.3	270.5	186.0	80.7	107.0
2/28/1989	1520	28	-1587.0	0.1	3.0	-881.4	1431.4	2.1	-4.9	109.0	402.1	224.4	154.6	67.5	79.1
3/31/1989	1551	31	348.6	0.0	0.8	-3257.5	1564.8	2.3	25.1	117.0	606.2	257.1	179.4	77.9	78.3
4/30/1989	1581	30	1103.2	0.0	0.5	-4245.9	1645.5	2.2	47.6	141.4	668.1	282.7	189.1	87.9	77.7
5/31/1989	1612	31	802.2	0.0	0.5	-4216.0	1785.0	2.3	60.5	166.9	685.3	318.3	208.5	99.4	87.1
6/30/1989	1642	30	754.7	0.0	0.5	-4212.4	1794.5	2.2	67.9	183.1	677.5	326.4	213.3	101.6	90.8
7/31/1989	1673	31	748.6	0.0	0.4	-4243.3	1941.3	2.3	-5.6	166.8	602.1	337.7	222.1	109.9	117.8
8/31/1989	1704	31	689.3	0.0	0.4	-4232.5	1998.8	2.4	-35.2	164.0	591.8	338.3	224.6	113.6	144.7
9/30/1989	1734	30	713.2	0.0	0.4	-4232.9	1990.1	2.3	-43.1	166.9	580.3	335.1	222.7	113.2	151.9
10/31/1989	1765	31	518.3	0.0	0.4	-4215.7	2101.6	2.4	-47.2	177.7	592.7	352.6	234.6	118.9	163.6
11/30/1989	1795	30	537.4	0.0	0.3	-4152.7	2042.2	2.4	-46.8	173.7	582.2	349.2	232.5	117.2	162.5
12/31/1989	1826	31	414.9	0.0	0.4	-4209.5	2152.7	2.5	-46.9	188.4	594.2	366.1	244.0	122.5	170.7
1/31/1990	1857	31	-1570.4	0.0	2.1	-1890.8	2023.3	2.5	2.1	158.2	463.1	327.4	223.6	109.2	149.7
2/28/1990	1885	28	-888.8	0.0	1.7	-2101.1	1699.5	2.2	34.3	132.0	441.9	283.5	199.0	87.9	107.6
3/31/1990	1916	31	1591.9	0.0	0.5	-5352.0	2020.5	2.5	91.9	195.4	661.3	345.3	230.2	104.4	108.1
4/30/1990	1946	30	1353.7	0.0	0.5	-5323.6	2158.6	2.4	108.0	211.9	658.2	376.2	239.1	110.2	104.7
5/31/1990	1977	31	827.4	0.0	0.4	-5036.8	2311.7	2.5	122.9	216.1	654.6	409.1	260.3	119.4	112.3
6/30/1990	2007	30	984.9	0.0	0.5	-5300.9	2360.9	2.5	130.4	239.9	671.7	412.8	263.1	120.4	113.8
7/31/1990	2038	31	366.5	0.0	0.3	-4819.6	2504.9	2.6	76.4	300.0	604.3	423.5	272.8	128.1	140.2
8/31/1990	2069	31	343.5	0.0	0.3	-4814.8	2510.6	2.6	66.9	299.1	600.6	415.8	273.4	132.9	169.2
9/30/1990	2099	30	451.2	0.0	0.3	-4825.8	2445.0	2.5	66.2	292.3	589.3	404.5	267.3	131.5	175.4
10/31/1990	2130	31	282.5	0.0	0.3	-4811.3	2534.8	2.6	70.2	298.0	601.5	420.0	278.1	136.8	186.4
11/30/1990	2160	30	227.6	0.0	0.3	-4669.8	2456.4	2.6	105.5	289.0	588.9	410.7	272.0	133.5	182.7
12/31/1990	2191	31	251.6	0.0	0.3	-4814.3	2529.8	2.7	98.4	296.5	599.1	425.7	282.2	138.1	190.0
1/31/1991	2222	31	-1354.0	0.0	0.7	-2736.5	2357.2	2.7	24.0	236.1	489.8	410.4	276.5	125.7	167.2

Flow Budget for the LAS in Oxnard Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Oxnard Basin UAS	Santa Paula	Pleasant Valley	Las Posas	Mound	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Costal Flux from South of Port Hueneme to Arnold Road	Costal Flux from Arnold Road to Point Mugu
			influx(+) outflux(-); units in Acre-feet												
2/28/1991	2250	28	-1968.0	0.0	2.3	-1122.6	1841.5	2.4	-12.7	152.4	347.4	318.0	225.1	95.6	118.7
3/31/1991	2281	31	-2926.3	0.2	10.8	-97.7	1900.2	2.7	-31.2	112.7	333.0	289.3	215.6	85.5	105.2
4/30/1991	2311	30	988.5	0.0	0.4	-4257.1	2015.2	2.4	-54.9	127.1	464.1	312.0	222.8	87.7	87.6
5/31/1991	2342	31	736.0	0.0	0.4	-4206.9	2152.8	2.4	-64.0	104.2	480.8	356.3	242.7	101.7	91.1
6/30/1991	2372	30	743.1	0.0	0.4	-4205.0	2123.0	2.3	-64.2	116.5	473.0	364.5	245.9	104.1	92.3
7/31/1991	2403	31	743.5	0.0	0.2	-4356.4	2208.0	2.4	-71.0	167.0	439.4	369.7	253.4	119.8	124.0
8/31/1991	2434	31	631.4	0.0	0.2	-4349.2	2242.8	2.4	-67.1	186.3	438.3	369.8	256.7	129.7	158.9
9/30/1991	2464	30	647.3	0.0	0.2	-4351.4	2209.2	2.3	-59.5	200.4	432.6	365.6	254.0	130.3	168.9
10/31/1991	2495	31	436.8	0.0	0.2	-4333.3	2317.4	2.4	-55.4	213.0	448.7	384.0	266.6	136.8	182.7
11/30/1991	2525	30	488.3	0.0	0.2	-4340.2	2283.3	2.4	-51.7	219.1	441.8	378.5	262.6	134.4	181.4
12/31/1991	2556	31	-3046.1	0.1	3.9	-356.7	2109.9	2.5	-26.0	102.0	352.4	338.7	241.8	114.1	163.4
1/31/1992	2587	31	-2212.5	0.0	1.7	-637.7	1802.0	2.5	-51.8	53.6	316.8	294.4	219.4	91.3	120.3
2/29/1992	2616	29	-2387.3	0.2	9.2	-12.6	1593.0	2.3	-47.8	3.3	274.8	232.1	176.9	69.7	86.3
3/31/1992	2647	31	-2073.2	0.1	5.3	-198.5	1614.1	2.3	-49.1	-90.0	273.8	214.1	167.2	62.3	71.4
4/30/1992	2677	30	398.7	0.0	0.2	-2671.3	1651.6	2.1	-85.8	-104.0	251.8	240.6	181.7	71.3	63.0
5/31/1992	2708	31	218.7	0.0	0.2	-2627.1	1757.8	2.1	-101.5	-117.5	244.4	270.4	195.8	85.5	71.1
6/30/1992	2738	30	253.3	0.0	0.2	-2626.7	1703.5	2.0	-96.6	-94.7	228.9	273.0	195.8	87.2	74.1
7/31/1992	2769	31	828.1	0.0	0.2	-3370.9	1790.5	2.0	-117.9	-31.1	232.4	276.2	199.2	97.6	93.6
8/31/1992	2800	31	704.3	0.0	0.2	-3359.5	1818.1	2.0	-114.3	2.6	240.9	278.7	203.1	105.0	118.9
9/30/1992	2830	30	661.2	0.0	0.2	-3357.9	1805.9	2.0	-108.5	38.6	241.7	278.1	202.9	106.5	129.2
10/31/1992	2861	31	-516.0	0.0	1.2	-2292.9	1919.1	2.1	-86.5	-28.9	276.2	275.9	202.8	108.3	138.7
11/30/1992	2891	30	349.1	0.0	0.2	-3356.0	2134.7	1.9	-97.5	-15.3	259.5	275.7	204.9	106.6	136.0
12/31/1992	2922	31	-2443.8	0.1	4.9	-289.1	2058.8	2.0	-55.4	-164.2	252.3	237.0	179.5	90.1	127.8
1/31/1993	2953	31	-2267.4	0.2	9.3	-45.9	1772.8	1.9	-50.7	-172.7	252.6	189.0	152.2	65.1	93.5
2/28/1993	2981	28	-1650.4	0.2	9.3	-146.1	1421.0	1.7	-59.7	-157.5	215.5	139.1	117.6	47.0	62.2
3/31/1993	3012	31	-1294.5	0.1	3.4	-472.7	1449.9	1.9	-93.6	-182.1	240.6	132.2	115.7	45.7	53.4
4/30/1993	3042	30	667.4	0.0	0.1	-2944.9	1751.1	1.7	-156.5	-156.4	414.4	177.3	139.5	57.0	49.1
5/31/1993	3073	31	454.2	0.0	0.1	-2902.1	1875.4	1.7	-175.5	-201.6	446.5	213.8	157.3	71.6	58.6
6/30/1993	3103	30	480.2	0.0	0.3	-2853.7	1717.2	1.6	-169.7	-146.0	448.6	222.1	161.4	74.8	63.3
7/31/1993	3134	31	755.0	0.0	0.2	-3257.8	1782.7	1.7	-96.6	-88.4	344.4	216.5	161.1	90.0	91.3
8/31/1993	3165	31	579.0	0.0	0.2	-3251.9	1850.7	1.7	-67.1	-59.4	333.0	220.4	165.7	100.9	126.8
9/30/1993	3195	30	426.9	0.0	0.2	-3246.6	1964.8	1.7	-49.4	-57.8	329.0	222.3	166.6	102.9	139.6
10/31/1993	3226	31	163.7	0.0	0.2	-3229.0	2191.2	1.7	-40.6	-98.4	339.2	234.7	175.6	108.4	153.3
11/30/1993	3256	30	-270.1	0.0	0.2	-2628.0	2096.7	1.6	-33.8	-126.2	311.3	226.0	171.3	102.8	148.1
12/31/1993	3287	31	-1374.5	0.0	1.1	-1253.5	1990.4	1.7	-38.5	-160.7	269.1	192.6	151.4	86.7	134.4
1/31/1994	3318	31	313.7	0.0	0.2	-3019.1	1952.2	1.7	-6.8	-114.8	298.8	210.9	163.3	84.1	107.4
2/28/1994	3346	28	-1856.4	0.1	6.1	-241.0	1605.8	1.5	-26.6	-116.5	217.5	152.8	120.2	60.1	76.3
3/31/1994	3377	31	-1271.1	0.1	2.3	-721.9	1566.3	1.7	-39.2	-129.5	230.4	131.7	113.7	51.4	64.1
4/30/1994	3407	30	871.2	0.0	0.2	-3061.1	1611.2	1.6	-29.6	-93.0	276.2	163.3	130.3	62.5	57.3
5/31/1994	3438	31	518.6	0.0	0.2	-3008.6	1808.6	1.7	-27.9	-95.7	302.0	201.0	149.6	77.1	65.0
6/30/1994	3468	30	519.3	0.0	0.2	-3016.6	1767.5	1.6	-17.8	-85.3	304.9	212.1	155.3	80.3	68.2
7/31/1994	3499	31	1273.2	0.0	0.2	-4063.4	1848.7	1.7	-37.0	-30.7	424.9	235.5	167.4	90.8	88.7
8/31/1994	3530	31	1049.3	0.0	0.2	-4047.7	1917.8	1.7	-6.1	6.7	426.1	257.9	177.9	100.5	115.8
9/30/1994	3560	30	956.6	0.0	0.2	-4042.8	1930.2	1.7	12.7	38.0	419.6	268.7	183.6	103.8	127.7
10/31/1994	3591	31	680.2	0.0	0.2	-4021.6	2083.7	1.8	26.5	57.7	430.4	289.8	197.9	111.2	142.2
11/30/1994	3621	30	-953.7	0.0	0.9	-2015.7	1953.2	1.8	34.6	14.3	310.0	247.5	176.7	96.7	133.9
12/31/1994	3652	31	-732.0	0.0	0.5	-2162.3	1938.3	1.9	11.4	23.5	326.7	219.9	163.9	85.6	122.6
1/31/1995	3683	31	-2573.2	0.4	15.8	80.8	1785.9	1.9	1.5	2.1	226.6	165.4	131.5	63.4	97.9
2/28/1995	3711	28	-694.3	0.0	0.6	-1620.7	1674.9	1.7	-4.6	-38.5	286.8	152.0	122.0	52.9	67.2
3/31/1995	3742	31	-2080.3	0.2	8.5	-80.0	1746.9	1.8	-24.6	-136.1	220.7	128.6	107.0	47.9	59.4
4/30/1995	3772	30	623.1	0.0	0.1	-2853.6	1612.5	1.6	-4.6	-117.6	333.1	164.1	130.8	58.7	51.7
5/31/1995	3803	31	-43.7	0.0	0.1	-2377.9	1778.6	1.6	7.6	-136.4	305.5	188.7	143.2	72.7	60.0
6/30/1995	3833	30	388.4	0.0	0.1	-2872.7	1770.0	1.5	13.5	-129.5	348.4	200.6	145.6	73.0	61.2
7/31/1995	3864	31	308.3	0.0	0.1	-2892.4	1833.6	1.6	-5.3	-91.3	340.0	200.4	145.3	79.8	79.7
8/31/1995	3895	31	241.8	0.0	0.1	-2880.9	1902.0	1.6	-20.9	-78.3	323.1	184.1	139.7	84.3	103.5
9/30/1995	3925	30	219.9	0.0	0.1	-2879.7	1935.0	1.5	-21.0	-73.1	310.1	176.3	135.2	83.9	111.8
10/31/1995	3956	31	33.7	0.0	0.1	-2866.5	2099.0	1.5	-19.9	-91.1	313.3	181.1	139.4	87.4	122.0
11/30/1995	3986	30	104.0	0.0	0.1	-2871.0	2057.8	1.5	-17.0	-100.7	305.3	177.0	136.2	85.3	121.3
12/31/1995	4017	31	-1500.0	0.0	1.9	-931.0	1924.3	1.5	-11.7	-156.2	220.3	144.0	119.9	73.1	113.9
1/31/1996	4048	31	-633.7	0.0	0.7	-1509.7	1712.4	1.5	-21.0	-144.8	230.9	113.8	103.5	60.8	85.5
2/29/1996	4077	29	-1664.1	0.2	7.6	-154.6	1558.8	1.4	-26.3	-140.8	171.8	75.1	74.3	40.0	56.6
3/31/1996	4108	31	-403.0	0.0	2.0	-1445.7	1593.8	1.5	-38.9	-183.0	217.0	79.8	84.0	44.8	47.6
4/30/1996	4138	30	469.2	0.0	0.2	-2380.3	1557.0	1.4	-58.9	-150.2	274.0	101.4	91.4	51.1	43.8
5/31/1996	4169	31	751.8	0.0	0.3	-2819.8	1614.5	1.4	-58.2	-128.0	296.8	127.6	103.1	62.1	48.4
6/30/1996	4199	30	701.6	0.0	0.3	-2810.0	1562.3	1.4	-44.0	-79.7	294.5	142.9	110.1	67.4	53.1
7/31/1996	4230	31	1739.4	0.0	0.4	-4322.3	1746.0	1.5	9.6	-17.1	390.8	167.2	127.9	80.0	76.4
8/31/1996	4261	31	1379.9	0.0	0.4	-4297.1	1899.5	1.5	46.7	18.5	401.8	200.8	146.3	94.2	107.4
9/30/1996	4291	30	1217.6	0.0	0.4	-4293.0	1958.3	1.5	64.0	44.8	405.7	220.5	158.5	100.4	121.3
10/31/1996	4322	31	-520.4	0.0	0.9	-2512.2	2033.3	1.6	65.2	13.1	310.5	215.1	163.2	100.3	129.3
11/30/1996	4352	30	-1663.2	0.0	2.2	-898.1	1802.3	1.6	37.9	-25.2	263.1	165.2	130.0	75.2	108.9
12/31/1996	4383	31	-2033.9	0.1	5.6	-300.7	1775.2	1.6	8.5	-65.0	239.4	125.3	105.6	53.4	84.8
1/31/1997	4414	31	-1835.5	0.1	4.9	-262.6	1770.8	1.6	-16.7	-157.0	224.3	87.9	84.2	38.4	59.6

Flow Budget for the LAS in Oxnard Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Oxnard Basin UAS	Santa Paula	Pleasant Valley	Las Posas	Mound	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Costal Flux from South of Port Hueneme to Arnold Road	Costal Flux from Arnold Road to Point Mugu
			influx(+) outflux(-); units in Acre-feet												
2/28/1997	4442	28	1062.7	0.0	0.4	-3070.8	1548.5	1.3	9.9	-160.5	315.2	97.5	100.9	49.2	45.7
3/31/1997	4473	31	643.8	0.0	0.4	-3004.9	1784.8	1.4	4.2	-165.3	352.9	133.1	122.7	70.0	57.0
4/30/1997	4503	30	617.8	0.0	0.4	-3005.5	1745.5	1.3	10.4	-129.6	352.3	143.0	128.5	73.7	62.1
5/31/1997	4534	31	494.0	0.0	0.4	-2993.1	1759.9	1.4	13.2	-91.9	369.5	157.6	138.9	79.6	70.5
6/30/1997	4564	30	534.0	0.0	0.4	-2998.1	1663.0	1.4	17.5	-44.8	370.9	161.8	141.0	80.0	73.0
7/31/1997	4595	31	1320.0	0.0	0.6	-4157.7	1797.5	1.5	-28.3	42.4	482.1	191.1	160.5	94.1	96.3
8/31/1997	4626	31	1057.9	0.0	0.6	-4128.8	1883.4	1.5	-9.8	76.2	502.4	213.6	172.4	105.5	125.3
9/30/1997	4656	30	971.2	0.0	0.6	-4126.8	1898.4	1.6	5.5	98.5	504.1	223.6	178.3	108.7	136.5
10/31/1997	4687	31	693.0	0.0	0.6	-4104.0	2059.0	1.7	17.2	109.7	522.9	242.3	191.5	115.8	150.4
11/30/1997	4717	30	-1880.0	0.0	2.1	-951.9	1862.1	1.7	20.5	35.7	344.5	193.2	149.7	89.3	133.2
12/31/1997	4748	31	-2229.3	0.1	7.2	-215.1	1706.9	1.8	7.7	4.4	289.6	142.0	119.7	62.0	103.1
1/31/1998	4779	31	-1535.6	0.1	3.5	-733.9	1628.3	1.7	-5.3	-57.8	353.9	111.9	106.7	52.1	74.4
2/28/1998	4807	28	-1781.7	0.5	20.3	6.4	1356.5	1.5	-23.3	-45.4	236.3	73.9	71.3	34.7	48.9
3/31/1998	4838	31	-1066.6	0.1	3.4	-853.0	1481.9	1.6	-24.1	-123.3	354.3	68.3	81.0	36.2	40.2
4/30/1998	4868	30	-528.2	0.0	1.1	-1319.9	1463.3	1.5	-31.9	-206.9	401.0	68.6	78.3	39.5	33.6
5/31/1998	4899	31	-755.3	0.1	4.0	-981.6	1450.5	1.4	-40.1	-235.1	347.7	64.0	71.4	40.6	32.5
6/30/1998	4929	30	1517.2	0.0	0.2	-3900.6	1528.5	1.3	-3.7	-223.2	733.3	112.2	126.7	68.6	39.4
7/31/1998	4960	31	384.6	0.0	0.5	-2722.8	1652.4	1.3	9.3	-164.0	463.7	127.4	105.4	78.6	63.6
8/31/1998	4991	31	436.3	0.0	0.5	-2731.6	1571.3	1.3	28.4	-121.5	435.1	117.1	103.4	76.2	83.7
9/30/1998	5021	30	398.0	0.0	0.3	-2689.5	1517.8	1.3	37.0	-78.9	429.2	115.3	102.6	75.7	91.2
10/31/1998	5052	31	99.8	0.0	0.5	-2710.0	1807.7	1.3	42.8	-90.2	438.4	122.5	107.8	79.2	100.3
11/30/1998	5082	30	-607.8	0.0	0.7	-1777.0	1799.2	1.3	29.6	-169.0	356.0	108.1	95.6	68.9	94.4
12/31/1998	5113	31	-414.6	0.0	0.5	-1929.7	1768.9	1.3	9.6	-160.4	387.0	101.6	89.0	60.3	86.6
1/31/1999	5144	31	-1097.2	0.0	1.6	-702.0	1541.3	1.3	-18.7	-195.0	205.9	75.9	69.0	48.3	69.5
2/28/1999	5172	28	680.6	0.0	0.7	-2220.8	1283.1	1.1	-14.3	-123.0	160.4	61.1	65.0	53.3	52.8
3/31/1999	5203	31	-1269.4	0.1	2.9	-356.5	1410.4	1.3	-47.3	-129.2	175.7	57.1	57.5	45.1	52.3
4/30/1999	5233	30	-913.9	0.0	2.0	-529.1	1301.7	1.3	-41.3	-136.0	168.6	34.1	43.2	30.0	39.3
5/31/1999	5264	31	831.2	0.0	0.2	-2287.1	1299.3	1.3	-38.5	-136.7	147.8	43.1	52.4	47.2	39.8
6/30/1999	5294	30	805.1	0.0	0.2	-2255.5	1225.6	1.2	-44.0	-96.1	131.9	64.1	61.3	59.7	46.5
7/31/1999	5325	31	1577.3	0.0	0.3	-3468.9	1346.6	1.3	-9.5	5.3	257.5	88.0	61.9	70.2	69.9
8/31/1999	5356	31	1265.6	0.0	0.3	-3457.9	1466.6	1.4	28.4	50.0	281.8	111.9	75.1	78.5	98.1
9/30/1999	5386	30	1093.9	0.0	0.3	-3448.0	1533.8	1.4	45.6	76.8	290.5	127.6	84.8	82.8	110.5
10/31/1999	5417	31	784.4	0.0	0.3	-3425.3	1728.0	1.5	57.0	83.7	310.2	147.5	98.3	89.9	124.5
11/30/1999	5447	30	-261.4	0.0	0.7	-2206.5	1657.6	1.5	50.9	46.5	271.4	140.8	98.4	80.1	119.9
12/31/1999	5478	31	825.8	0.0	0.3	-3439.8	1675.4	1.5	62.7	88.7	324.8	147.8	102.7	86.5	123.6
1/31/2000	5509	31	-1210.9	0.0	1.4	-1192.4	1591.4	1.6	48.3	38.7	284.1	148.2	103.3	74.7	111.6
2/29/2000	5538	29	-1689.4	0.2	6.8	-245.4	1330.3	1.5	18.3	22.7	235.8	110.9	84.2	48.5	75.8
3/31/2000	5569	31	-1068.2	0.0	2.1	-945.0	1470.8	1.6	17.3	-16.3	267.9	93.0	73.5	42.7	60.6
4/30/2000	5599	30	-895.5	0.0	2.0	-872.8	1381.1	1.5	1.2	-89.8	248.8	76.8	61.3	38.3	47.1
5/31/2000	5630	31	1565.5	0.0	0.4	-3600.1	1417.4	1.5	33.3	-48.0	339.6	111.3	68.2	60.5	50.4
6/30/2000	5660	30	1347.6	0.0	0.4	-3568.9	1475.4	1.4	40.5	-10.2	330.1	158.4	86.9	77.3	60.9
7/31/2000	5691	31	814.7	0.0	0.4	-3219.9	1565.1	1.5	20.9	31.6	335.9	175.3	102.9	84.3	87.2
8/31/2000	5722	31	708.3	0.0	0.4	-3217.6	1583.4	1.6	40.0	58.5	340.8	174.1	107.8	87.6	115.1
9/30/2000	5752	30	659.6	0.0	0.4	-3215.9	1595.6	1.5	46.7	73.9	340.9	174.7	109.6	88.6	124.3
10/31/2000	5783	31	-308.2	0.0	0.8	-2448.8	1859.8	1.6	51.6	16.4	317.3	175.6	116.1	87.9	129.8
11/30/2000	5813	30	445.6	0.0	0.4	-3210.0	1860.6	1.5	51.8	2.3	351.1	170.4	112.8	87.5	126.1
12/31/2000	5844	31	400.5	0.0	0.4	-3197.2	1842.0	1.5	53.3	5.5	357.5	185.5	120.4	93.8	136.8
1/31/2001	5875	31	-2125.7	0.1	6.4	-202.8	1616.9	1.6	45.5	-29.4	236.0	156.8	112.4	68.4	113.7
2/28/2001	5903	28	-1603.9	0.2	7.3	-201.8	1293.1	1.5	26.5	-17.1	205.3	100.0	81.1	40.7	67.3
3/31/2001	5934	31	-1529.6	0.1	4.7	-339.6	1460.9	1.6	11.9	-65.0	218.2	79.2	70.6	35.2	51.8
4/30/2001	5964	30	431.8	0.0	1.1	-2328.1	1441.8	1.5	76.4	-105.1	218.7	83.2	64.6	52.4	44.5
5/31/2001	5995	31	968.1	0.0	0.4	-3118.3	1544.6	1.4	93.4	-70.4	225.4	133.4	83.1	71.1	52.7
6/30/2001	6025	30	872.6	0.0	0.4	-3107.2	1522.9	1.4	95.9	-27.1	219.6	169.1	97.9	76.9	57.4
7/31/2001	6056	31	972.7	0.0	0.3	-3331.2	1596.6	1.5	74.1	-16.3	237.9	181.5	110.5	84.9	87.6
8/31/2001	6087	31	803.2	0.0	0.3	-3318.1	1638.6	1.5	96.6	12.3	252.3	181.2	115.6	91.4	125.2
9/30/2001	6117	30	691.4	0.0	0.3	-3311.0	1695.4	1.5	107.1	24.9	257.2	182.9	118.0	93.5	138.8
10/31/2001	6148	31	256.5	0.0	0.3	-3282.6	2069.7	1.5	116.7	-12.0	273.6	196.2	127.8	99.3	153.1
11/30/2001	6178	30	-2005.3	0.1	2.7	-540.7	1857.8	1.4	64.3	-95.4	243.7	156.9	113.9	72.7	127.9
12/31/2001	6209	31	-1072.0	0.0	0.7	-1098.7	1610.2	1.5	44.5	-90.7	238.8	123.0	95.2	53.3	94.0
1/31/2002	6240	31	-351.5	0.0	1.2	-1713.7	1481.9	1.5	47.2	-67.6	273.2	113.3	85.4	57.0	72.0
2/28/2002	6268	28	623.9	0.0	0.5	-2612.3	1351.4	1.3	63.8	-20.8	280.2	116.5	80.4	60.1	54.8
3/31/2002	6299	31	325.8	0.0	0.5	-2582.6	1509.9	1.5	63.3	-1.4	309.9	147.4	97.4	70.3	58.0
4/30/2002	6329	30	364.8	0.0	0.5	-2586.5	1455.0	1.5	62.0	19.1	305.7	152.1	99.4	70.1	56.2
5/31/2002	6360	31	264.2	0.0	0.5	-2579.4	1492.2	1.6	62.6	34.4	318.6	164.7	107.2	73.9	59.4
6/30/2002	6390	30	321.6	0.0	0.5	-2585.3	1430.8	1.6	62.5	47.3	315.4	165.9	107.3	73.3	59.1
7/31/2002	6421	31	1997.9	0.0	0.9	-4564.2	1601.2	1.7	25.9	95.2	363.1	188.8	120.0	86.2	83.2
8/31/2002	6452	31	1637.9	0.0	0.9	-4531.8	1786.2	1.7	34.7	120.7	376.1	218.2	137.5	100.1	117.8
9/30/2002	6482	30	1443.1	0.0	0.9	-4516.9	1882.3	1.7	44.9	136.7	382.2	236.7	149.3	106.2	132.9
10/31/2002	6513	31	1093.7	0.0	0.9	-4490.7	2083.4	1.8	57.2	150.4	405.4	264.5	168.1	115.6	149.6
11/30/2002	6543	30	-2356.5	0.1	6.9	-592.6	1882.4	1.8	57.4	95.7	305.2	223.7	156.1	88.8	131.0
12/31/2002	6574	31	-1850.1	0.1	5.8	-739.0	1700.2	1.9	39.6	65.8	302.1	173.2	132.2	66.2	101.9
1/31/2003	6605	31	164.0	0.0	0.8	-2879.3	1581.2	1.8	41.8	63.3	550.9	183.4	124.3	81.0	86.6

Flow Budget for the LAS in Oxnard Basin

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet												
			STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Oxnard Basin UAS	Santa Paula	Pleasant Valley	Las Posas	Mound	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Costal Flux from South of Port Hueneme to Arnold Road	Costal Flux from Arnold Road to Point Mugu
2/28/2003	6633	28	-1852.2	0.1	7.1	-157.9	1316.8	1.7	2.6	25.4	277.3	151.0	105.2	57.3	65.7
3/31/2003	6664	31	-1442.9	0.1	6.5	-463.1	1282.5	1.9	11.4	1.7	288.9	119.5	93.3	45.8	54.6
4/30/2003	6694	30	362.0	0.0	1.2	-2314.6	1186.6	1.8	-0.1	-3.2	449.1	122.1	85.1	60.1	49.9
5/31/2003	6725	31	-766.3	0.0	1.5	-1137.8	1250.5	1.8	-12.0	-16.5	352.1	129.6	88.4	57.5	51.0
6/30/2003	6755	30	824.4	0.0	0.8	-2916.9	1251.4	1.7	5.3	-0.7	484.5	142.9	88.9	67.4	50.3
7/31/2003	6786	31	1014.6	0.0	0.8	-3060.1	1311.0	1.8	-13.6	51.2	284.0	162.3	100.2	74.8	73.1
8/31/2003	6817	31	920.3	0.0	0.8	-3053.5	1358.0	1.8	-10.7	70.5	264.6	165.3	105.0	78.5	99.4
9/30/2003	6847	30	862.1	0.0	0.8	-3051.3	1367.4	1.8	-4.3	88.0	262.5	171.9	109.2	81.2	110.7
10/31/2003	6878	31	654.7	0.0	0.8	-3035.5	1476.2	1.9	0.6	103.2	275.9	189.9	120.9	87.4	123.9
11/30/2003	6908	30	-651.2	0.0	1.1	-1583.6	1398.6	1.9	21.7	63.2	251.4	178.2	120.1	81.0	117.6
12/31/2003	6939	31	-711.0	0.0	1.6	-1445.3	1343.3	2.0	34.2	59.9	258.6	161.6	115.8	71.6	107.7
1/31/2004	6970	31	253.0	0.0	0.7	-2338.8	1318.7	1.9	-11.5	67.7	256.1	171.8	116.8	75.5	88.0
2/29/2004	6999	29	-1611.1	0.1	8.9	-207.9	1184.1	1.9	0.1	31.4	222.5	147.0	105.8	55.3	62.0
3/31/2004	7030	31	194.6	0.0	0.6	-2026.3	1204.1	1.9	-17.6	36.5	249.6	146.0	102.5	54.9	53.1
4/30/2004	7060	30	623.0	0.0	0.7	-2508.1	1238.5	1.8	-25.2	30.0	246.8	164.7	108.3	69.8	49.7
5/31/2004	7091	31	458.6	0.0	0.7	-2500.6	1306.7	1.9	-14.0	37.1	259.1	189.5	123.9	82.0	55.2
6/30/2004	7121	30	472.8	0.0	0.7	-2507.7	1264.0	1.8	-5.9	52.3	256.8	196.3	127.9	83.7	57.3
7/31/2004	7152	31	2004.8	0.0	0.9	-4590.1	1444.5	1.9	-23.8	121.5	478.0	231.8	146.7	98.3	85.6
8/31/2004	7183	31	1577.4	0.0	0.9	-4554.0	1639.3	1.9	-6.3	151.6	519.4	265.6	167.0	113.5	123.7
9/30/2004	7213	30	1383.2	0.0	0.9	-4541.7	1725.9	1.9	8.4	169.3	531.8	282.5	178.4	119.4	140.1
10/31/2004	7244	31	-2347.2	0.1	7.1	-536.0	1685.3	2.0	59.6	106.5	361.1	255.4	175.4	97.0	133.6
11/30/2004	7274	30	1635.7	0.0	0.9	-4569.8	1611.0	1.9	22.0	155.2	520.0	240.5	161.3	99.3	121.9
12/31/2004	7305	31	-2295.8	0.1	8.4	-406.8	1597.0	2.1	53.1	89.9	353.6	229.4	161.6	86.8	120.6
1/31/2005	7336	31	-2318.4	0.3	16.7	-19.4	1447.9	2.1	59.5	58.2	312.8	167.3	129.4	58.3	85.3
2/28/2005	7364	28	-1787.6	0.2	13.1	-87.5	1261.6	1.8	39.1	-13.8	270.3	114.9	93.7	40.0	54.3
3/31/2005	7395	31	-1174.7	0.1	4.5	-776.2	1367.4	1.9	32.9	-87.0	343.4	109.9	88.3	43.8	45.7
4/30/2005	7425	30	27.8	0.0	1.1	-2188.1	1482.3	1.6	30.7	-136.8	471.2	131.0	86.6	53.5	39.2
5/31/2005	7456	31	661.8	0.0	1.0	-3195.9	1652.7	1.5	23.4	-168.3	609.7	191.7	106.6	72.4	43.5
6/30/2005	7486	30	518.8	0.0	1.0	-3186.8	1720.5	1.4	21.7	-158.6	606.4	226.0	120.9	80.9	47.9
7/31/2005	7517	31	116.4	0.0	0.7	-2875.3	1849.6	1.4	59.9	-161.9	502.9	222.5	130.7	85.0	68.1
8/31/2005	7548	31	166.5	0.0	0.7	-2893.9	1793.0	1.4	82.3	-137.2	480.5	201.0	127.1	87.2	91.4
9/30/2005	7578	30	122.3	0.0	0.7	-2870.6	1798.8	1.3	87.3	-103.0	467.1	189.5	122.0	86.3	98.4
10/31/2005	7609	31	-844.7	0.0	1.2	-1770.3	1865.5	1.4	79.6	-153.4	344.5	172.2	119.5	82.1	102.4
11/30/2005	7639	30	325.7	0.0	0.7	-2911.4	1695.6	1.3	91.1	-102.4	450.8	159.9	110.3	79.9	98.7
12/31/2005	7670	31	215.4	0.0	0.7	-2905.2	1710.4	1.4	90.4	-60.0	462.8	176.2	116.7	85.6	105.6
1/31/2006	7701	31	-1225.9	0.1	4.6	-1164.5	1637.1	1.4	72.5	-67.0	320.3	153.7	108.5	70.7	88.7
2/28/2006	7729	28	-957.2	0.1	5.0	-994.5	1362.9	1.3	55.9	-59.9	286.6	111.8	83.6	48.5	55.9
3/31/2006	7760	31	-1248.5	0.1	6.1	-730.0	1487.0	1.5	45.9	-91.3	267.2	96.9	77.1	42.0	46.2
4/30/2006	7790	30	-1095.9	0.1	5.4	-716.6	1504.2	1.4	35.7	-159.6	229.5	67.6	59.8	34.1	34.3
5/31/2006	7821	31	343.1	0.0	1.9	-2421.3	1573.8	1.3	49.5	-194.7	405.9	89.7	64.9	51.6	34.4
6/30/2006	7851	30	1830.9	0.0	1.6	-4480.1	1601.9	1.2	107.1	-108.0	660.8	162.0	88.6	75.8	41.8
7/31/2006	7882	31	519.0	0.0	0.8	-3205.5	1677.8	1.2	144.4	-87.0	495.5	193.7	108.9	86.5	64.7
8/31/2006	7913	31	499.5	0.0	0.8	-3209.5	1645.5	1.3	160.7	-38.1	475.2	177.4	108.4	89.4	89.3
9/30/2006	7943	30	459.7	0.0	0.8	-3200.4	1643.8	1.3	165.7	-7.7	470.8	171.8	107.0	89.4	97.8
10/31/2006	7974	31	184.0	0.0	0.8	-3164.7	1850.7	1.3	173.9	-19.5	479.2	180.2	113.3	93.5	107.2
11/30/2006	8004	30	306.1	0.0	0.8	-3191.0	1776.5	1.3	174.9	-30.8	473.3	177.9	112.1	91.8	107.0
12/31/2006	8035	31	-671.3	0.0	0.9	-1984.1	1682.1	1.4	145.2	-24.7	381.4	170.6	111.8	82.5	104.3
1/31/2007	8066	31	-1435.6	0.0	3.3	-696.9	1466.2	1.4	89.1	-39.6	256.3	122.8	92.6	59.6	80.7
2/28/2007	8094	28	-212.2	0.0	0.9	-1604.5	1203.8	1.3	67.0	-23.4	313.8	85.5	68.1	46.5	53.2
3/31/2007	8125	31	527.2	0.0	0.7	-2679.4	1335.3	1.5	78.2	-15.8	451.2	107.9	75.7	63.9	53.4
4/30/2007	8155	30	-390.2	0.0	0.5	-1481.5	1266.2	1.5	52.2	-23.9	290.3	103.7	74.5	57.6	49.2
5/31/2007	8186	31	604.8	0.0	0.7	-2691.1	1263.0	1.5	70.4	-0.3	444.3	113.0	77.6	65.6	50.4
6/30/2007	8216	30	569.4	0.0	0.7	-2690.9	1229.6	1.5	80.3	18.3	449.5	131.3	84.1	73.0	53.1
7/31/2007	8247	31	783.2	0.0	0.9	-3084.3	1324.4	1.6	97.8	65.8	431.2	144.4	91.8	77.1	66.1
8/31/2007	8278	31	683.5	0.0	0.9	-3064.4	1356.6	1.7	102.7	81.0	432.1	149.7	94.8	78.8	82.6
9/30/2007	8308	30	624.5	0.0	0.9	-3049.2	1380.6	1.7	103.9	86.2	431.8	153.8	96.7	79.6	89.5
10/31/2007	8339	31	366.3	0.0	0.9	-3008.2	1565.3	1.7	107.7	69.6	441.2	167.2	105.4	84.4	98.6
11/30/2007	8369	30	431.4	0.0	0.9	-3030.4	1541.0	1.7	107.0	53.0	437.6	168.4	106.3	83.9	99.2
12/31/2007	8400	31	-868.1	0.1	3.6	-1439.4	1479.1	1.7	125.2	7.7	253.1	155.5	108.0	75.6	97.8
1/31/2008	8431	31	-1785.6	0.2	13.3	-273.1	1419.3	1.7	89.7	-7.7	198.2	118.4	94.4	53.6	77.7
2/29/2008	8460	29	-885.1	0.0	2.0	-1066.4	1370.5	1.5	97.8	-49.8	270.1	92.5	75.4	39.0	52.5
3/31/2008	8491	31	697.6	0.0	0.9	-3148.3	1565.6	1.5	109.5	-46.8	508.3	120.8	83.8	57.8	49.4
4/30/2008	8521	30	647.5	0.0	0.9	-3157.9	1534.2	1.4	110.3	-15.3	515.0	149.1	94.7	69.6	50.5
5/31/2008	8552	31	535.1	0.0	0.9	-3159.6	1529.8	1.5	119.2	39.5	522.8	171.1	107.6	76.7	55.5
6/30/2008	8582	30	557.0	0.0	0.9	-3168.2	1457.9	1.5	121.8	90.8	517.9	176.0	110.5	77.2	56.6
7/31/2008	8613	31	1124.4	0.0	0.9	-3994.8	1556.4	1.6	119.4	182.6	533.4	193.4	120.3	88.5	74.0
8/31/2008	8644	31	947.9	0.0	0.9	-3975.1	1630.0	1.7	134.3	196.0	538.6	205.4	127.4	96.3	96.7
9/30/2008	8674	30	876.3	0.0	0.9	-3967.0	1654.3	1.7	140.9	209.0	537.2	210.7	131.1	98.6	106.4
10/31/2008	8705	31	440.4	0.0	0.9	-3897.6	1968.6	1.8	151.4	189.8	550.2	228.2	142.9	104.9	118.3
11/30/2008	8735	30	-1752.4	0.0	2.8	-984.8	1769.3	1.7	112.1	29.3	306.5	196.3	132.9	80.7	105.5
12/31/2008	8766	31	-1197.9	0.0	3.3	-1138.5	1485.5	1.7	100.7	13.7	303.0	158.9	117.5	64.5	87.5
1/31/2009	8797	31	7.8	0.0	0.7	-2448.9	1366.5	1.7	128.4	82.6	451.9	152.2	109.4	72.7	75.0

Flow Budget for the LAS in Oxnard Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Oxnard Basin UAS	Santa Paula	Pleasant Valley	Las Posas	Mound	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Costal Flux from South of Port Hueneme to Arnold Road	Costal Flux from Arnold Road to Point Mugu
			influx(+) outflux(-); units in Acre-feet												
2/28/2009	8825	28	-1584.2	0.1	9.3	-192.9	1159.7	1.6	65.9	11.0	209.8	121.8	91.7	50.9	55.3
3/31/2009	8856	31	299.0	0.0	0.7	-2471.4	1216.6	1.8	106.4	84.3	430.9	125.0	92.3	61.9	52.4
4/30/2009	8886	30	246.2	0.0	0.7	-2466.4	1219.8	1.8	115.6	97.0	430.9	138.0	94.4	70.8	51.2
5/31/2009	8917	31	157.2	0.0	0.7	-2461.2	1254.2	1.9	124.0	106.7	433.7	151.9	101.8	75.4	53.6
6/30/2009	8947	30	216.2	0.0	0.7	-2468.9	1196.8	1.8	126.2	116.9	427.6	153.6	101.6	74.7	52.8
7/31/2009	8978	31	1415.3	0.0	0.9	-3986.5	1318.1	1.9	112.9	188.6	518.7	175.8	111.1	80.2	62.9
8/31/2009	9009	31	1176.0	0.0	0.9	-3964.3	1432.9	2.0	110.9	210.3	538.6	201.7	123.9	87.6	79.6
9/30/2009	9039	30	1067.6	0.0	0.9	-3959.7	1475.7	1.9	113.5	225.3	546.1	215.9	132.4	91.6	88.8
10/31/2009	9070	31	-234.4	0.0	3.5	-2498.2	1506.3	2.0	158.2	127.1	377.6	218.3	144.1	97.4	98.1
11/30/2009	9100	30	953.3	0.0	0.9	-3949.1	1523.9	1.9	149.0	211.4	558.6	213.8	141.6	96.2	98.5
12/31/2009	9131	31	-1819.9	0.1	4.5	-759.6	1526.3	2.0	98.7	92.8	330.7	208.6	142.1	78.5	95.2
1/31/2010	9162	31	-1936.1	0.1	9.7	-167.7	1326.3	2.0	79.3	16.5	265.5	158.7	119.1	54.5	72.3
2/28/2010	9190	28	-1258.7	0.1	5.5	-380.0	1052.2	1.8	58.1	-12.6	244.6	111.1	88.8	39.9	49.2
3/31/2010	9221	31	634.7	0.0	0.7	-2860.5	1135.5	1.9	102.1	75.0	567.3	134.9	95.4	62.7	50.3
4/30/2010	9251	30	-711.8	0.0	1.7	-1195.4	1089.9	1.9	82.6	10.5	382.3	138.7	95.2	57.1	47.3
5/31/2010	9282	31	645.3	0.0	0.7	-2870.3	1101.7	2.0	110.3	88.6	560.2	147.5	97.9	67.6	48.5
6/30/2010	9312	30	551.6	0.0	0.7	-2865.9	1118.8	2.0	121.6	112.0	562.5	163.8	103.6	76.4	52.8
7/31/2010	9343	31	1204.8	0.0	0.9	-3775.2	1292.9	2.1	82.5	184.7	557.6	186.2	115.6	82.7	65.2
8/31/2010	9374	31	991.2	0.0	0.9	-3761.3	1402.1	2.2	87.2	211.7	567.5	203.5	125.4	88.1	81.5
9/30/2010	9404	30	906.6	0.0	0.9	-3761.9	1433.7	2.1	91.8	229.2	570.7	212.7	130.9	90.8	89.9
10/31/2010	9435	31	-1478.8	0.0	2.8	-957.7	1396.7	2.2	96.3	108.3	334.2	199.0	132.2	75.1	89.7
11/30/2010	9465	30	479.7	0.0	0.9	-2936.6	1313.4	2.1	85.8	145.4	467.6	173.1	118.2	71.2	79.1
12/31/2010	9496	31	-1988.5	0.2	14.9	-126.9	1328.2	2.2	82.1	36.6	252.1	154.0	112.2	57.9	75.1
1/31/2011	9527	31	-32.4	0.0	0.6	-2387.2	1397.6	2.0	127.4	50.4	471.2	148.8	102.7	55.8	63.2
2/28/2011	9555	28	-1145.8	0.0	4.2	-725.4	1248.6	1.7	81.7	-63.5	277.0	129.9	90.7	48.6	52.1
3/31/2011	9586	31	-1456.9	0.1	10.1	-243.1	1215.3	1.9	61.4	-106.1	238.5	106.3	84.8	40.7	47.0
4/30/2011	9616	30	1014.2	0.0	0.6	-3178.9	1313.7	1.7	140.9	-45.6	450.4	111.5	80.3	61.1	50.2
5/31/2011	9647	31	664.1	0.0	0.5	-3138.7	1477.7	1.7	170.2	-60.5	484.1	149.3	99.1	83.2	69.3
6/30/2011	9677	30	658.8	0.0	0.6	-3176.6	1421.3	1.6	183.4	-7.5	484.0	162.4	106.7	87.9	77.4
7/31/2011	9708	31	366.7	0.0	0.8	-3114.4	1536.8	1.7	140.4	56.5	543.0	179.0	117.1	88.1	84.5
8/31/2011	9739	31	334.3	0.0	0.8	-3116.8	1551.2	1.7	131.1	70.9	545.8	184.7	120.1	86.9	89.3
9/30/2011	9769	30	360.0	0.0	0.8	-3117.8	1521.2	1.7	128.9	85.4	539.5	184.5	119.2	86.0	90.6
10/31/2011	9800	31	-483.5	0.0	1.8	-2162.5	1624.9	1.8	139.1	21.5	381.1	175.2	121.8	85.2	93.5
11/30/2011	9830	30	-1262.0	0.0	2.1	-1023.5	1480.3	1.7	96.9	-23.7	339.7	141.2	105.3	62.7	79.2
12/31/2011	9861	31	541.6	0.0	0.8	-3071.3	1459.5	1.7	111.1	45.0	523.8	146.8	101.4	65.9	73.8
1/31/2012	9892	31	-886.4	0.0	1.4	-1310.1	1372.9	1.8	110.0	-17.0	357.5	141.1	98.9	60.2	69.5
2/29/2012	9921	29	962.6	0.0	0.6	-3348.8	1296.4	1.7	149.5	50.9	537.3	138.8	90.7	64.6	55.7
3/31/2012	9952	31	-1089.8	0.0	3.4	-989.2	1305.8	1.8	88.7	7.8	312.9	143.5	98.1	62.0	55.0
4/30/2012	9982	30	-629.3	0.0	2.2	-1201.2	1148.2	1.8	77.6	15.5	293.6	109.6	83.8	52.4	45.9
5/31/2012	10013	31	1017.1	0.0	0.6	-3352.2	1256.9	1.9	135.9	70.0	541.0	130.3	87.2	64.6	46.7
6/30/2012	10043	30	849.5	0.0	0.6	-3340.5	1321.5	1.8	143.1	89.4	552.3	161.5	97.2	73.1	50.3
7/31/2012	10074	31	1157.2	0.0	0.9	-3860.5	1466.5	1.9	95.6	170.4	533.7	182.0	110.8	80.1	61.4
8/31/2012	10105	31	984.4	0.0	0.9	-3839.3	1559.6	2.0	99.9	183.3	536.1	193.3	119.5	85.4	75.0
9/30/2012	10135	30	915.6	0.0	0.9	-3837.9	1586.5	1.9	103.9	193.0	538.4	201.8	125.1	88.1	82.7
10/31/2012	10166	31	648.0	0.0	0.9	-3804.3	1741.7	2.0	110.9	197.2	555.6	221.7	138.2	94.7	93.4
11/30/2012	10196	30	-485.4	0.0	1.6	-2251.7	1628.4	2.0	78.8	104.6	401.8	204.1	134.2	87.1	94.4
12/31/2012	10227	31	-1140.4	0.0	3.3	-1306.6	1502.2	2.0	69.8	63.6	327.8	179.9	127.8	75.4	95.0
1/31/2013	10258	31	-713.5	0.0	1.5	-1588.9	1348.5	2.0	74.3	70.2	382.3	159.2	115.4	66.6	82.2
2/28/2013	10286	28	858.8	0.0	0.7	-3172.0	1247.0	1.8	81.7	135.9	453.0	151.7	104.3	72.4	64.7
3/31/2013	10317	31	-363.8	0.0	0.4	-2049.9	1382.0	2.1	88.6	109.1	393.8	173.5	119.0	77.3	68.0
4/30/2013	10347	30	661.2	0.0	0.7	-3151.6	1350.1	2.0	91.4	145.8	466.6	172.4	116.7	80.2	64.6
5/31/2013	10378	31	467.6	0.0	0.7	-3134.0	1443.6	2.1	99.5	157.9	483.1	193.0	127.7	89.2	69.7
6/30/2013	10408	30	474.7	0.0	0.7	-3135.6	1429.3	2.0	101.0	162.1	479.0	197.3	129.6	89.6	70.4
7/31/2013	10439	31	1344.3	0.0	0.5	-4150.8	1538.6	2.1	105.8	162.3	463.6	217.0	141.8	92.3	82.5
8/31/2013	10470	31	1126.2	0.0	0.5	-4130.0	1645.2	2.1	112.9	177.1	479.6	236.2	154.3	98.2	97.6
9/30/2013	10500	30	1030.8	0.0	0.5	-4123.0	1684.8	2.1	116.0	189.0	487.9	246.0	160.9	101.2	103.8
10/31/2013	10531	31	776.8	0.0	0.5	-4103.5	1813.1	2.2	125.5	205.3	512.3	268.8	176.3	108.6	114.1
11/30/2013	10561	30	731.7	0.0	0.5	-4051.2	1802.5	2.1	124.4	201.8	514.3	271.5	178.5	108.6	115.3
12/31/2013	10592	31	569.8	0.0	0.5	-4089.9	1911.3	2.2	131.5	221.5	534.3	290.1	191.3	114.5	122.9
1/31/2014	10623	31	638.5	0.0	0.6	-4303.9	1985.2	2.2	100.9	253.6	583.1	303.1	199.7	119.4	117.5
2/28/2014	10651	28	-2137.9	0.1	5.9	-684.6	1650.0	2.1	80.3	133.6	336.0	257.3	176.5	88.5	92.3
3/31/2014	10682	31	-631.2	0.0	1.1	-2323.0	1650.9	2.3	80.3	158.8	457.7	250.7	176.9	86.6	89.0
4/30/2014	10712	30	1241.9	0.0	0.6	-4353.8	1669.6	2.2	63.3	216.8	554.4	253.6	172.3	97.7	81.4
5/31/2014	10743	31	896.1	0.0	0.6	-4320.0	1858.6	2.3	63.0	241.3	573.9	292.2	193.2	112.5	86.3
6/30/2014	10773	30	842.4	0.0	0.6	-4317.7	1887.8	2.2	62.9	247.8	568.6	303.4	199.3	115.0	87.7
7/31/2014	10804	31	731.7	0.0	1.0	-4353.2	1984.9	2.3	91.8	256.6	516.8	326.6	215.2	121.2	103.8
8/31/2014	10835	31	612.9	0.0	1.0	-4348.5	2042.5	2.3	100.9	258.3	526.7	335.8	221.5	124.3	120.5
9/30/2014	10865	30	635.4	0.0	1.0	-4354.0	2027.2	2.3	99.9	257.7	525.5	333.7	220.1	123.7	124.4
10/31/2014	10896	31	439.0	0.0	1.0	-4340.1	2133.6	2.3	104.7	265.4	544.4	352.1	232.6	129.5	132.9
11/30/2014	10926	30	-13.3	0.0	0.9	-3670.7	2046.5	2.3	108.9	232.1	479.6	335.4	225.7	121.8	129.3
12/31/2014	10957	31	-2827.8	0.1	6.9	-423.6	1897.0	2.4	88.4	136.1	375.9	308.0	216.4	100.3	120.1
1/31/2015	10988	31	-1771.3	0.0	3.0	-1007.7	1581.1	2.4	85.7	101.7	384.0	257.8	186.8	80.4	96.1

Flow Budget for the LAS in Oxnard Basin

Date	Stress	days in month	STORAGE	Mountain Front Recharge	Recharge	Pumping from Wells	Oxnard Basin UAS	Santa Paula	Pleasant Valley	Las Posas	Mound	Coastal Flux north to Channel Islands Horbor	Coastal flux from Channel Islands Harbor to South of Port Hueneme	Costal Flux from South of Port Hueneme to Arnold Road	Costal Flux from Arnold Road to Point Mugu
			influx(+) outflux(-); units in Acre-feet												
2/28/2015	11016	28	955.0	0.0	0.7	-3636.3	1412.0	2.1	99.9	170.1	452.8	228.8	159.1	79.5	76.2
3/31/2015	11047	31	-118.1	0.0	0.6	-2929.6	1635.9	2.4	105.3	186.3	488.4	274.6	182.9	90.6	80.8
4/30/2015	11077	30	598.6	0.0	0.7	-3611.1	1606.4	2.3	113.1	188.2	475.3	275.8	181.4	91.9	77.4
5/31/2015	11108	31	406.4	0.0	0.7	-3597.1	1704.7	2.4	130.0	195.5	486.6	294.3	193.7	99.9	82.8
6/30/2015	11138	30	435.0	0.0	0.7	-3599.6	1685.2	2.3	131.3	197.5	479.0	292.6	192.6	99.8	83.5
7/31/2015	11169	31	525.2	0.0	1.1	-3819.2	1806.2	2.4	114.9	218.5	435.5	307.8	203.2	105.4	99.0
8/31/2015	11200	31	533.4	0.0	0.8	-3893.4	1862.7	2.4	95.4	214.7	440.9	310.5	206.8	109.6	116.2
9/30/2015	11230	30	520.6	0.0	0.8	-3833.0	1857.6	2.3	85.3	212.2	416.5	302.6	204.0	109.5	121.3
10/31/2015	11261	31	381.1	0.0	0.8	-3883.5	1959.2	2.4	86.5	217.0	457.7	317.8	214.7	115.1	130.9
11/30/2015	11291	30	432.9	0.0	0.8	-3889.4	1932.2	2.4	82.6	215.5	452.3	314.9	211.6	113.3	130.2
12/31/2015	11322	31	271.6	0.0	0.8	-3880.0	2024.6	2.5	84.5	219.4	467.4	330.9	222.4	118.3	137.2

Flow Budget for the Semi-Perched Aquifer in Pleasant Valley

Date	Stress	days in month	STORAGE	TILE DRAINS	ET	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley UAS	Arroya Las Posas percolation	Conejo Creek Percolation	Calleguas Creek percolation
			influx(+) outflux(-); units in Acre-feet									
1/31/1985	31	31	-332.9	-38.6	0.0	407.6	-14.8	-183.1	-695.8	0.0	426.4	431.2
2/28/1985	59	28	-288.7	-34.0	0.0	388.5	-14.3	-165.7	-670.0	0.0	389.7	394.5
3/31/1985	90	31	-193.2	-37.0	0.0	435.6	-17.6	-185.1	-825.0	0.0	409.9	412.4
4/30/1985	120	30	96.4	-35.1	0.0	426.5	-19.9	-180.2	-1013.5	0.0	365.4	360.5
5/31/1985	151	31	225.5	-35.2	0.0	356.5	-22.8	-186.6	-1079.6	0.0	374.3	367.9
6/30/1985	181	30	268.9	-32.9	0.0	375.3	-23.6	-180.6	-1108.5	0.0	355.4	345.9
7/31/1985	212	31	302.2	-32.9	0.0	378.3	-26.5	-185.5	-1176.2	0.0	373.6	367.0
8/31/1985	243	31	358.6	-31.7	0.0	359.4	-28.5	-184.0	-1213.4	0.0	373.2	366.4
9/30/1985	273	30	356.7	-29.7	0.0	370.6	-29.2	-175.8	-1218.0	0.0	365.2	360.2
10/31/1985	304	31	404.4	-29.6	0.0	335.7	-31.4	-179.1	-1260.1	0.0	381.9	378.3
11/30/1985	334	30	-713.0	-29.2	0.0	835.4	-26.7	-174.1	-848.1	0.0	473.1	482.6
12/31/1985	365	31	73.6	-30.4	0.0	473.3	-25.8	-183.0	-1132.1	0.0	410.9	413.6
1/31/1986	396	31	-669.4	-30.8	0.0	677.4	-23.8	-184.0	-791.6	0.0	505.8	516.4
2/28/1986	424	28	-1827.9	-31.0	-0.4	1360.9	-17.3	-175.3	-762.5	251.6	588.7	613.3
3/31/1986	455	31	-1562.3	-42.0	-4.7	1160.2	-15.7	-209.0	-775.8	223.1	606.1	620.0
4/30/1986	485	30	-82.5	-41.0	-2.7	347.2	-17.0	-209.9	-851.9	0.0	425.8	431.9
5/31/1986	516	31	77.0	-39.3	0.0	398.1	-21.3	-218.1	-1015.8	0.0	408.5	410.9
6/30/1986	546	30	204.9	-35.9	0.0	338.2	-23.0	-211.7	-1040.8	0.0	384.0	384.2
7/31/1986	577	31	262.5	-35.0	0.0	430.4	-26.2	-219.7	-1183.7	0.0	386.9	384.8
8/31/1986	608	31	344.7	-33.5	0.0	396.8	-28.2	-219.2	-1224.2	0.0	383.4	380.2
9/30/1986	638	30	222.4	-31.6	0.0	366.0	-26.9	-210.3	-1098.3	0.0	388.8	389.9
10/31/1986	669	31	339.1	-31.9	0.0	391.7	-28.5	-213.9	-1228.0	0.0	386.8	384.7
11/30/1986	699	30	-69.8	-30.4	0.0	404.6	-26.0	-204.5	-953.3	0.0	436.3	443.2
12/31/1986	730	31	317.8	-31.0	0.0	383.8	-27.4	-208.5	-1190.0	0.0	379.7	375.5
1/31/1987	761	31	-37.2	-30.6	0.0	428.4	-26.2	-204.8	-989.6	0.0	427.5	432.4
2/28/1987	789	28	56.5	-27.4	0.0	386.5	-22.2	-184.7	-961.4	0.0	374.8	377.8
3/31/1987	820	31	-89.8	-30.2	0.0	440.8	-23.3	-203.0	-912.1	0.0	407.7	409.9
4/30/1987	850	30	281.5	-28.9	0.0	507.0	-25.4	-195.1	-1279.2	0.0	371.5	368.6
5/31/1987	881	31	429.6	-29.3	0.0	483.9	-31.0	-199.8	-1405.0	0.0	378.2	373.4
6/30/1987	911	30	486.8	-27.7	0.0	505.2	-32.9	-191.4	-1456.6	0.0	361.5	355.0
7/31/1987	942	31	485.0	-28.0	0.0	454.7	-36.0	-194.9	-1421.7	0.0	373.7	367.2
8/31/1987	973	31	519.2	-27.3	0.0	422.8	-37.2	-190.6	-1437.6	0.0	377.8	372.8
9/30/1987	1003	30	545.3	-25.6	0.0	417.2	-37.2	-179.7	-1429.6	0.0	358.7	350.9
10/31/1987	1034	31	96.6	-25.9	0.0	386.8	-36.2	-183.5	-1182.7	0.0	468.2	476.7
11/30/1987	1064	30	-76.7	-25.1	0.0	473.2	-30.7	-176.9	-999.9	0.0	415.6	420.5
12/31/1987	1095	31	-590.5	-26.7	0.0	625.5	-27.8	-182.7	-863.2	0.0	527.0	538.5
1/31/1988	1126	31	-316.6	-27.2	0.0	446.0	-24.9	-186.4	-883.9	0.0	491.6	501.5
2/29/1988	1155	29	-153.4	-25.4	0.0	391.5	-22.3	-175.1	-875.3	0.0	426.5	433.6
3/31/1988	1186	31	170.4	-27.0	0.0	428.3	-26.1	-185.8	-1174.4	0.0	406.3	408.3
4/30/1988	1216	30	-156.3	-26.3	0.0	446.2	-25.0	-178.2	-908.6	0.0	421.3	426.9
5/31/1988	1247	31	191.8	-27.3	0.0	498.9	-26.5	-183.7	-1204.4	0.0	378.0	373.1
6/30/1988	1277	30	273.0	-26.1	0.0	457.1	-28.5	-174.9	-1235.4	0.0	369.2	365.6
7/31/1988	1308	31	336.2	-26.3	0.0	429.2	-31.2	-177.0	-1273.5	0.0	374.4	368.1
8/31/1988	1339	31	408.6	-25.4	0.0	394.3	-32.6	-173.2	-1304.6	0.0	370.5	362.4
9/30/1988	1369	30	387.7	-23.7	0.0	398.3	-32.8	-164.1	-1307.6	0.0	372.4	369.8
10/31/1988	1400	31	416.8	-23.6	0.0	383.9	-35.0	-166.3	-1347.0	0.0	386.7	384.5
11/30/1988	1430	30	246.5	-22.3	0.0	360.9	-32.8	-157.4	-1141.9	0.0	374.5	372.5
12/31/1988	1461	31	-710.4	-24.2	0.0	829.3	-29.6	-162.5	-912.7	0.0	499.9	510.2
1/31/1989	1492	31	169.5	-24.4	0.0	304.2	-28.3	-165.7	-1085.0	0.0	413.3	416.4
2/28/1989	1520	28	-475.7	-22.1	0.0	567.2	-24.3	-150.4	-800.0	0.0	448.1	457.3
3/31/1989	1551	31	7.8	-24.8	0.0	412.9	-26.4	-169.4	-1045.9	0.0	420.8	424.9
4/30/1989	1581	30	170.7	-23.7	0.0	422.0	-27.6	-162.5	-1133.6	0.0	377.9	376.8
5/31/1989	1612	31	226.4	-24.2	0.0	416.9	-30.2	-165.7	-1189.2	0.0	384.5	381.7
6/30/1989	1642	30	292.6	-22.9	0.0	349.7	-30.4	-158.7	-1170.5	0.0	371.6	368.7
7/31/1989	1673	31	398.3	-22.9	0.0	454.7	-32.9	-161.3	-1386.7	0.0	377.9	373.0
8/31/1989	1704	31	409.7	-22.2	0.0	434.9	-34.2	-158.6	-1393.9	0.0	383.6	380.6
9/30/1989	1734	30	392.6	-20.8	0.0	420.4	-34.2	-151.1	-1370.9	0.0	382.2	382.0
10/31/1989	1765	31	403.7	-20.8	0.0	410.7	-36.3	-153.9	-1412.9	0.0	404.0	405.6
11/30/1989	1795	30	422.4	-19.5	0.0	411.3	-35.9	-145.9	-1394.7	0.0	381.4	381.0
12/31/1989	1826	31	439.5	-19.5	0.0	415.4	-37.8	-146.7	-1436.5	0.0	393.0	392.4
1/31/1990	1857	31	13.4	-19.3	0.0	379.9	-35.9	-146.6	-1174.1	0.0	486.6	496.2
2/28/1990	1885	28	-1.9	-17.6	0.0	384.8	-29.8	-133.8	-1000.0	0.0	396.3	401.9
3/31/1990	1916	31	387.8	-19.3	0.0	428.5	-33.9	-144.0	-1367.9	0.0	377.0	371.7
4/30/1990	1946	30	415.2	-18.1	0.0	416.0	-35.3	-134.0	-1375.8	0.0	368.0	364.0
5/31/1990	1977	31	464.8	-18.2	0.0	412.2	-38.1	-134.4	-1422.8	0.0	371.9	364.5
6/30/1990	2007	30	488.9	-17.0	0.0	423.0	-38.0	-127.0	-1425.6	0.0	353.4	342.4

Flow Budget for the Semi-Perched Aquifer in Pleasant Valley

Date	Stress	days in month	STORAGE	TILE DRAINS	ET	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley UAS	Arroya Las Posas percolation	Conejo Creek Percolation	Calleguas Creek percolation
			influx(+) outflux(-); units in Acre-feet									
7/31/1990	2038	31	580.7	-17.0	0.0	386.7	-39.6	-126.5	-1460.3	0.0	360.0	316.0
8/31/1990	2069	31	534.0	-16.3	0.0	384.6	-39.9	-124.7	-1452.5	0.0	363.6	351.0
9/30/1990	2099	30	530.6	-15.1	0.0	383.9	-39.0	-115.9	-1415.8	0.0	350.0	321.3
10/31/1990	2130	31	492.1	-14.8	0.0	390.4	-40.7	-111.7	-1446.1	0.0	369.7	361.1
11/30/1990	2160	30	384.5	-13.6	0.0	308.2	-39.4	-103.7	-1295.1	0.0	379.9	379.2
12/31/1990	2191	31	440.5	-13.3	0.0	383.1	-41.0	-104.0	-1426.9	0.0	382.5	379.1
1/31/1991	2222	31	267.4	-12.7	0.0	369.9	-39.6	-102.0	-1274.4	0.0	395.7	395.6
2/28/1991	2250	28	-65.6	-11.3	0.0	378.9	-33.2	-93.5	-1022.3	0.0	419.7	427.2
3/31/1991	2281	31	-1885.5	-15.7	0.0	1520.8	-31.7	-111.8	-1110.4	278.7	664.2	691.4
4/30/1991	2311	30	243.8	-16.5	0.0	452.4	-30.1	-114.9	-1302.1	0.0	383.7	383.8
5/31/1991	2342	31	406.4	-15.9	0.0	421.1	-34.1	-112.8	-1386.1	0.0	366.1	355.3
6/30/1991	2372	30	436.2	-14.7	0.0	400.5	-34.4	-107.9	-1373.5	0.0	352.6	341.1
7/31/1991	2403	31	453.7	-14.4	0.0	363.9	-36.5	-104.1	-1292.0	0.0	355.6	273.7
8/31/1991	2434	31	477.5	-13.6	0.0	367.2	-37.1	-92.9	-1308.1	0.0	353.5	253.7
9/30/1991	2464	30	372.4	-12.3	0.0	360.9	-36.8	-87.4	-1284.3	0.0	351.4	336.1
10/31/1991	2495	31	354.7	-11.8	0.0	365.6	-38.8	-87.0	-1323.3	0.0	373.6	367.0
11/30/1991	2525	30	445.9	-10.5	0.0	377.8	-37.9	-79.4	-1299.7	0.0	343.7	260.1
12/31/1991	2556	31	-1019.5	-12.3	0.0	1004.9	-35.4	-81.4	-1009.6	39.6	550.7	563.0
1/31/1992	2587	31	-333.3	-13.3	0.0	406.0	-30.5	-91.8	-919.8	0.0	486.5	496.2
2/29/1992	2616	29	-3151.6	-16.0	0.0	1840.6	-26.2	-108.7	-1089.5	466.0	951.9	1133.5
3/31/1992	2647	31	-1762.9	-21.0	0.0	1168.3	-24.4	-148.1	-1110.6	355.9	729.5	813.2
4/30/1992	2677	30	32.1	-20.5	0.0	336.3	-23.8	-145.4	-1063.6	0.0	438.8	446.0
5/31/1992	2708	31	121.0	-20.6	0.0	348.4	-26.0	-141.9	-1123.0	0.0	419.1	423.0
6/30/1992	2738	30	145.0	-19.9	0.0	333.9	-25.7	-133.1	-1096.5	0.0	396.9	399.4
7/31/1992	2769	31	187.2	-20.2	0.0	392.7	-28.3	-134.1	-1158.8	0.0	382.5	379.1
8/31/1992	2800	31	254.8	-19.6	0.0	336.6	-30.0	-130.5	-1172.9	0.0	382.5	379.1
9/30/1992	2830	30	264.8	-18.2	0.0	327.7	-30.1	-123.3	-1158.6	0.0	370.5	367.3
10/31/1992	2861	31	89.8	-18.5	0.0	415.8	-31.0	-125.7	-1150.1	0.0	408.6	411.0
11/30/1992	2891	30	182.4	-17.7	0.0	417.6	-30.3	-119.9	-1183.7	0.0	376.6	375.0
12/31/1992	2922	31	-979.2	-19.6	0.0	953.0	-28.4	-125.8	-1078.0	186.2	539.9	551.9
1/31/1993	2953	31	-3137.8	-24.2	-0.5	1918.5	-24.2	-152.9	-1121.1	443.9	977.1	1121.2
2/28/1993	2981	28	-2341.3	-32.5	-7.3	1292.5	-19.3	-176.3	-1046.3	442.6	855.9	1031.9
3/31/1993	3012	31	-771.3	-34.1	-6.9	560.5	-19.3	-209.1	-1055.8	305.5	591.3	639.3
4/30/1993	3042	30	31.8	-28.2	-0.5	272.5	-19.6	-198.4	-956.6	0.0	445.6	453.3
5/31/1993	3073	31	32.2	-28.5	0.0	401.2	-21.5	-198.8	-1039.1	0.0	425.0	429.6
6/30/1993	3103	30	51.0	-27.8	0.0	399.2	-21.4	-187.7	-1004.7	0.0	394.6	396.8
7/31/1993	3134	31	91.0	-28.3	0.0	285.8	-22.3	-190.3	-935.5	0.0	399.5	400.2
8/31/1993	3165	31	33.0	-28.0	0.0	387.4	-22.9	-187.4	-971.9	0.0	394.9	394.7
9/30/1993	3195	30	42.7	-26.8	0.0	371.0	-22.6	-178.5	-938.9	0.0	377.2	375.9
10/31/1993	3226	31	-24.2	-27.4	0.0	393.2	-23.8	-182.6	-971.3	0.0	416.3	419.8
11/30/1993	3256	30	-38.1	-26.1	0.0	323.9	-22.7	-176.3	-882.2	0.0	408.6	412.8
12/31/1993	3287	31	-239.9	-26.6	0.0	340.7	-21.8	-182.7	-788.4	0.0	455.6	463.2
1/31/1994	3318	31	-30.1	-26.4	0.0	342.0	-21.1	-182.3	-900.7	0.0	408.2	410.5
2/28/1994	3346	28	-1143.1	-25.1	0.0	898.2	-17.3	-166.4	-773.7	240.3	484.7	502.4
3/31/1994	3377	31	-659.3	-28.9	0.0	560.6	-16.3	-192.6	-741.8	131.3	469.2	477.8
4/30/1994	3407	30	-58.2	-27.6	0.0	302.5	-16.1	-188.4	-785.4	0.0	386.3	387.0
5/31/1994	3438	31	-15.1	-28.1	0.0	330.1	-18.0	-193.3	-844.2	0.0	385.5	383.0
6/30/1994	3468	30	53.8	-26.9	0.0	291.3	-18.1	-186.0	-843.2	0.0	366.7	362.3
7/31/1994	3499	31	134.6	-27.2	0.0	327.5	-20.4	-191.8	-968.5	0.0	375.8	370.0
8/31/1994	3530	31	182.2	-26.5	0.0	339.3	-22.2	-191.6	-1021.6	0.0	373.5	366.8
9/30/1994	3560	30	121.5	-25.3	0.0	385.4	-22.9	-185.5	-1042.5	0.0	384.5	384.8
10/31/1994	3591	31	131.7	-26.0	0.0	434.6	-24.6	-192.0	-1100.4	0.0	389.1	387.6
11/30/1994	3621	30	16.9	-25.1	0.0	376.6	-23.3	-185.0	-931.4	0.0	385.4	385.9
12/31/1994	3652	31	-9.6	-25.9	0.0	364.2	-22.6	-191.0	-931.8	0.0	407.2	409.3
1/31/1995	3683	31	-4186.6	-51.9	-9.7	2656.8	-19.2	-214.9	-863.2	487.1	1008.9	1192.6
2/28/1995	3711	28	-211.4	-55.5	-9.6	281.2	-13.8	-216.5	-657.1	0.0	437.1	445.7
3/31/1995	3742	31	-2357.6	-72.7	-20.6	1473.5	-14.2	-249.8	-806.7	427.1	731.8	889.2
4/30/1995	3772	30	-168.1	-70.5	-20.0	315.2	-12.5	-255.3	-749.6	0.0	475.6	485.2
5/31/1995	3803	31	-32.6	-60.2	-16.4	362.4	-14.1	-266.1	-886.2	0.0	453.0	460.3
6/30/1995	3833	30	43.7	-51.3	-12.7	316.8	-14.1	-259.5	-870.2	0.0	420.9	426.5
7/31/1995	3864	31	11.0	-47.9	-10.3	349.2	-14.6	-267.8	-827.6	0.0	403.3	404.8
8/31/1995	3895	31	11.3	-45.0	-7.9	372.5	-14.8	-265.7	-835.7	0.0	392.9	392.2
9/30/1995	3925	30	-1.0	-42.6	-5.5	360.1	-14.6	-254.5	-815.5	0.0	386.5	387.1
10/31/1995	3956	31	-9.2	-43.5	-4.6	352.2	-15.3	-260.4	-821.3	0.0	400.5	401.4
11/30/1995	3986	30	7.5	-41.6	-3.1	310.0	-14.9	-249.4	-784.0	0.0	387.3	388.2
12/31/1995	4017	31	-496.9	-45.6	-4.0	427.1	-14.3	-257.3	-580.2	0.0	480.9	490.2

Flow Budget for the Semi-Perched Aquifer in Pleasant Valley

Date	Stress	days in month	STORAGE	TILE DRAINS	ET	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley UAS	Arroya Las Posas percolation	Conejo Creek Percolation	Calleguas Creek percolation
			influx(+) outflux(-); units in Acre-feet									
1/31/1996	4048	31	-222.0	-47.8	-5.2	299.2	-13.3	-258.5	-674.9	0.0	457.4	465.1
2/29/1996	4077	29	-1574.6	-56.6	-8.5	1139.2	-10.8	-244.1	-577.1	263.5	520.5	548.6
3/31/1996	4108	31	-358.0	-65.5	-12.9	349.0	-9.9	-266.3	-615.6	72.3	449.9	457.1
4/30/1996	4138	30	-72.2	-58.5	-12.2	342.4	-10.7	-259.5	-729.3	0.0	398.5	401.3
5/31/1996	4169	31	18.4	-56.3	-12.0	360.1	-12.3	-268.8	-807.5	0.0	389.9	388.6
6/30/1996	4199	30	95.0	-51.5	-10.4	320.6	-13.0	-260.9	-825.7	0.0	374.0	371.8
7/31/1996	4230	31	181.2	-50.8	-9.4	376.2	-15.6	-270.3	-944.4	0.0	370.6	362.5
8/31/1996	4261	31	229.3	-50.2	-9.1	357.1	-17.8	-272.1	-1017.9	0.0	391.0	389.9
9/30/1996	4291	30	253.3	-48.7	-7.2	400.9	-18.8	-264.9	-1060.3	0.0	374.0	371.8
10/31/1996	4322	31	25.9	-52.8	-7.7	442.9	-19.4	-275.3	-974.8	0.0	428.2	433.2
11/30/1996	4352	30	-454.7	-57.5	-7.3	609.4	-16.4	-268.7	-724.8	0.0	455.8	464.2
12/31/1996	4383	31	-1635.1	-79.0	-10.2	1237.6	-13.5	-283.9	-745.4	298.7	594.3	636.5
1/31/1997	4414	31	-1510.6	-99.5	-14.7	1071.2	-10.3	-294.2	-609.7	286.8	573.7	607.3
2/28/1997	4442	28	-19.5	-90.4	-12.9	315.2	-10.2	-270.9	-685.0	0.0	384.7	389.0
3/31/1997	4473	31	97.9	-90.8	-16.4	370.3	-14.0	-300.3	-837.1	0.0	395.3	395.2
4/30/1997	4503	30	148.4	-81.2	-16.4	364.6	-14.9	-291.6	-854.3	0.0	373.8	371.5
5/31/1997	4534	31	236.5	-77.1	-16.9	335.9	-16.2	-301.9	-899.7	0.0	373.1	366.3
6/30/1997	4564	30	265.4	-68.9	-15.0	307.3	-16.3	-292.1	-904.9	0.0	364.8	359.7
7/31/1997	4595	31	334.9	-67.5	-15.2	337.0	-18.2	-302.1	-1047.2	0.0	389.8	388.5
8/31/1997	4626	31	315.0	-65.6	-14.4	398.4	-19.5	-302.3	-1098.7	0.0	393.8	393.4
9/30/1997	4656	30	315.9	-62.9	-11.3	417.8	-20.0	-291.9	-1110.1	0.0	381.4	381.1
10/31/1997	4687	31	312.4	-65.1	-10.1	434.9	-21.7	-300.2	-1160.6	0.0	404.4	406.0
11/30/1997	4717	30	-283.8	-68.0	-9.1	520.2	-19.2	-290.9	-863.5	54.3	475.2	484.8
12/31/1997	4748	31	-1781.7	-94.0	-12.7	1383.4	-15.8	-307.5	-835.4	328.3	634.9	700.5
1/31/1998	4779	31	-636.1	-107.5	-15.5	603.1	-12.6	-316.3	-858.8	278.1	518.8	546.7
2/28/1998	4807	28	-5371.8	-197.4	-45.9	3561.1	-9.7	-316.0	-537.8	574.4	1036.1	1307.1
3/31/1998	4838	31	-735.2	-257.3	-124.5	644.6	-6.8	-365.3	-720.0	324.3	576.1	664.1
4/30/1998	4868	30	-143.6	-209.7	-110.2	373.4	-7.4	-357.5	-833.5	252.7	505.9	530.0
5/31/1998	4899	31	-338.7	-192.7	-102.1	508.0	-7.0	-373.8	-794.1	277.3	497.9	525.2
6/30/1998	4929	30	197.8	-170.0	-72.8	390.7	-7.8	-364.0	-917.9	78.3	429.7	436.1
7/31/1998	4960	31	204.6	-160.2	-51.5	343.0	-9.5	-376.2	-808.8	0.0	426.8	431.7
8/31/1998	4991	31	181.4	-150.1	-36.4	389.2	-10.2	-374.3	-831.3	0.0	414.2	417.4
9/30/1998	5021	30	198.2	-139.5	-25.9	344.4	-10.5	-360.3	-818.9	0.0	404.4	408.0
10/31/1998	5052	31	227.5	-138.9	-22.0	340.8	-11.3	-369.7	-846.4	0.0	408.8	411.2
11/30/1998	5082	30	96.5	-131.6	-15.9	353.0	-10.9	-355.6	-778.5	0.0	418.8	424.1
12/31/1998	5113	31	122.6	-133.9	-13.5	293.3	-10.7	-364.9	-771.3	0.0	436.3	442.1
1/31/1999	5144	31	-231.4	-133.9	-15.5	455.1	-9.4	-362.3	-648.4	43.9	447.5	454.4
2/28/1999	5172	28	138.3	-121.6	-15.4	328.2	-9.2	-327.1	-809.5	0.0	405.0	411.3
3/31/1999	5203	31	-543.8	-139.5	-24.8	643.9	-9.4	-361.4	-691.2	167.3	475.0	483.9
4/30/1999	5233	30	-326.9	-137.5	-28.3	461.2	-6.8	-349.7	-721.2	246.4	427.1	435.8
5/31/1999	5264	31	138.4	-137.5	-30.9	399.2	-8.0	-362.2	-803.7	0.0	401.7	402.9
6/30/1999	5294	30	251.0	-127.7	-28.3	376.1	-9.7	-352.0	-871.4	0.0	381.1	380.7
7/31/1999	5325	31	314.8	-127.3	-27.9	369.3	-11.9	-362.6	-909.4	0.0	379.7	375.4
8/31/1999	5356	31	380.9	-122.8	-25.8	361.6	-13.8	-360.4	-979.6	0.0	381.8	378.2
9/30/1999	5386	30	323.9	-117.2	-20.5	430.3	-15.1	-347.5	-1020.1	0.0	383.0	383.0
10/31/1999	5417	31	358.7	-120.6	-17.9	478.9	-16.9	-357.4	-1094.9	0.0	386.3	384.0
11/30/1999	5447	30	309.9	-114.1	-13.3	333.0	-16.5	-344.4	-964.4	0.0	403.1	406.5
12/31/1999	5478	31	418.3	-114.1	-10.9	359.3	-17.5	-353.5	-1070.2	0.0	394.4	394.1
1/31/2000	5509	31	93.7	-110.0	-12.5	359.1	-15.9	-351.4	-800.6	0.0	417.0	420.6
2/29/2000	5538	29	-1286.8	-120.3	-16.5	1110.8	-11.4	-331.7	-682.8	288.4	499.9	550.3
3/31/2000	5569	31	-240.3	-138.4	-25.3	434.0	-9.6	-359.1	-725.4	136.7	459.7	467.6
4/30/2000	5599	30	-369.0	-131.4	-28.5	503.6	-8.5	-349.6	-718.5	160.2	466.3	475.4
5/31/2000	5630	31	105.0	-132.8	-31.0	405.1	-9.7	-363.2	-795.9	0.0	409.9	412.5
6/30/2000	5660	30	261.0	-122.2	-27.9	333.0	-11.7	-352.1	-855.2	0.0	387.2	388.0
7/31/2000	5691	31	429.8	-118.1	-27.3	306.3	-14.0	-363.8	-989.4	0.0	389.0	387.4
8/31/2000	5722	31	477.1	-109.6	-24.6	296.0	-15.0	-362.3	-1018.9	0.0	380.6	376.7
9/30/2000	5752	30	407.9	-101.5	-18.6	375.1	-15.4	-348.5	-1025.7	0.0	365.7	361.0
10/31/2000	5783	31	305.8	-104.2	-16.8	395.7	-16.2	-357.8	-1007.2	0.0	400.0	400.8
11/30/2000	5813	30	327.7	-100.7	-12.1	417.0	-16.1	-343.5	-1027.0	0.0	378.0	376.8
12/31/2000	5844	31	382.2	-103.1	-10.3	339.5	-17.4	-351.6	-1048.4	0.0	403.7	405.2
1/31/2001	5875	31	-1102.3	-118.3	-15.1	1015.8	-14.6	-353.2	-812.4	297.2	529.6	573.2
2/28/2001	5903	28	-1623.6	-138.8	-18.8	1257.4	-9.7	-327.4	-648.4	329.1	542.0	638.1
3/31/2001	5934	31	-1534.4	-187.3	-43.0	1018.2	-8.5	-375.0	-640.7	347.1	671.7	752.0
4/30/2001	5964	30	-12.6	-182.3	-54.3	423.2	-8.5	-367.0	-809.4	124.9	439.3	446.6
5/31/2001	5995	31	181.9	-168.6	-41.6	413.7	-10.5	-377.7	-839.5	0.0	419.2	423.1
6/30/2001	6025	30	279.1	-150.3	-33.2	362.1	-11.3	-366.3	-863.2	0.0	390.8	392.3

Flow Budget for the Semi-Perched Aquifer in Pleasant Valley

Date	Stress	days in month	STORAGE	TILE DRAINS	ET	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley UAS	Arroya Las Posas percolation	Conejo Creek Percolation	Calleguas Creek percolation
			influx(+) outflux(-); units in Acre-feet									
7/31/2001	6056	31	431.7	-144.1	-32.7	421.4	-12.2	-379.6	-1090.7	0.0	402.4	403.7
8/31/2001	6087	31	507.7	-133.9	-29.5	378.7	-12.9	-379.5	-1114.4	0.0	392.3	391.6
9/30/2001	6117	30	426.4	-124.2	-22.5	458.2	-13.4	-365.8	-1121.2	0.0	381.4	381.1
10/31/2001	6148	31	426.6	-125.9	-19.7	457.2	-14.6	-375.7	-1152.4	0.0	401.7	402.9
11/30/2001	6178	30	-315.4	-125.9	-15.4	614.3	-12.7	-360.8	-827.9	157.6	439.5	446.8
12/31/2001	6209	31	-25.3	-132.0	-13.3	390.9	-10.9	-369.9	-712.3	11.5	428.1	433.1
1/31/2002	6240	31	32.0	-128.2	-14.7	340.2	-10.2	-366.5	-740.7	28.4	427.4	432.3
2/28/2002	6268	28	168.0	-113.4	-14.1	395.2	-9.7	-328.8	-837.3	0.0	369.0	371.1
3/31/2002	6299	31	206.1	-122.9	-20.9	429.2	-11.5	-362.4	-923.1	0.0	402.1	403.3
4/30/2002	6329	30	352.6	-112.0	-21.9	332.1	-11.3	-349.5	-912.6	0.0	364.0	358.6
5/31/2002	6360	31	398.2	-106.2	-23.5	316.1	-11.9	-359.6	-946.2	0.0	370.6	362.5
6/30/2002	6390	30	579.9	-90.9	-17.7	306.6	-11.5	-344.7	-939.8	0.0	335.1	183.1
7/31/2002	6421	31	375.6	-82.7	-13.7	369.6	-13.8	-347.8	-923.5	0.0	356.3	279.9
8/31/2002	6452	31	493.8	-75.5	-10.7	380.8	-16.5	-342.6	-1018.0	0.0	351.7	237.0
9/30/2002	6482	30	612.5	-67.4	-6.7	427.8	-17.9	-325.7	-1058.6	0.0	326.1	109.8
10/31/2002	6513	31	626.7	-64.7	-4.3	408.9	-19.9	-328.7	-1112.9	0.0	341.9	153.0
11/30/2002	6543	30	-781.6	-70.4	-7.0	933.3	-17.2	-314.5	-933.3	254.6	460.2	476.1
12/31/2002	6574	31	-482.8	-87.5	-9.2	582.4	-14.4	-330.6	-875.5	272.0	461.2	484.2
1/31/2003	6605	31	174.1	-87.3	-9.8	333.8	-13.1	-332.2	-815.6	0.0	377.6	372.5
2/28/2003	6633	28	-1472.1	-96.2	-14.5	1158.5	-10.7	-306.1	-686.4	313.7	515.6	598.1
3/31/2003	6664	31	-669.5	-122.2	-24.8	642.6	-9.2	-349.6	-730.6	268.4	487.2	507.6
4/30/2003	6694	30	-18.8	-113.3	-25.7	318.3	-8.8	-342.7	-754.8	104.9	417.8	423.0
5/31/2003	6725	31	-143.7	-110.1	-27.7	397.4	-8.9	-356.5	-576.5	0.0	411.6	414.4
6/30/2003	6755	30	346.4	-95.5	-20.4	283.5	-8.2	-343.9	-671.7	0.0	334.2	175.7
7/31/2003	6786	31	412.7	-85.8	-14.9	378.2	-10.4	-348.1	-835.6	0.0	342.9	161.1
8/31/2003	6817	31	553.9	-76.1	-10.7	342.7	-12.2	-342.0	-897.6	0.0	335.9	106.0
9/30/2003	6847	30	530.6	-66.1	-6.3	363.3	-13.1	-325.0	-914.9	0.0	325.6	106.0
10/31/2003	6878	31	641.5	-63.0	-4.0	377.5	-14.6	-329.0	-968.9	0.0	325.7	34.8
11/30/2003	6908	30	282.4	-55.5	-2.0	348.2	-13.3	-310.8	-780.0	0.0	336.4	194.6
12/31/2003	6939	31	-5.3	-55.4	-3.2	379.8	-12.8	-316.7	-787.5	36.9	383.6	380.6
1/31/2004	6970	31	85.8	-60.2	-5.6	311.9	-13.7	-319.4	-748.3	0.0	377.3	372.2
2/29/2004	6999	29	-1106.3	-73.5	-10.2	934.8	-11.6	-304.8	-679.1	284.4	458.3	507.8
3/31/2004	7030	31	34.3	-86.6	-15.6	326.7	-11.7	-332.8	-675.9	0.0	382.5	379.1
4/30/2004	7060	30	290.1	-74.7	-12.6	299.6	-12.4	-322.4	-713.6	0.0	337.9	208.0
5/31/2004	7091	31	550.6	-65.2	-9.4	290.0	-13.2	-328.8	-766.6	0.0	323.2	19.3
6/30/2004	7121	30	344.4	-55.0	-5.7	259.2	-13.2	-313.7	-756.9	0.0	337.4	203.5
7/31/2004	7152	31	512.5	-51.8	-3.2	362.4	-15.2	-319.3	-980.6	0.0	341.9	153.2
8/31/2004	7183	31	624.4	-48.7	-0.8	362.2	-17.4	-313.9	-1050.7	0.0	336.3	108.6
9/30/2004	7213	30	617.3	-44.3	0.0	363.5	-18.7	-297.4	-1071.1	0.0	327.8	123.0
10/31/2004	7244	31	-1102.6	-54.5	-7.1	1059.5	-17.7	-307.9	-933.8	307.5	500.4	556.2
11/30/2004	7274	30	209.4	-61.7	-7.1	413.1	-17.2	-305.4	-987.5	0.0	378.7	377.7
12/31/2004	7305	31	-1549.5	-85.3	-11.2	1260.4	-17.4	-325.5	-901.4	359.6	583.4	686.8
1/31/2005	7336	31	-2914.9	-144.3	-27.8	1811.9	-14.2	-355.7	-825.4	534.3	836.1	1100.0
2/28/2005	7364	28	-2697.0	-214.2	-85.5	1691.5	-10.8	-354.6	-683.4	539.2	751.3	1063.4
3/31/2005	7395	31	-307.8	-235.5	-153.2	436.0	-9.5	-395.9	-769.8	306.3	515.7	613.7
4/30/2005	7425	30	116.0	-187.1	-125.6	339.1	-9.3	-380.6	-811.9	198.0	422.7	438.7
5/31/2005	7456	31	189.7	-167.2	-93.7	308.3	-10.1	-392.2	-793.4	115.5	419.6	423.6
6/30/2005	7486	30	207.4	-145.0	-60.8	305.2	-10.3	-379.3	-683.0	0.0	382.9	382.9
7/31/2005	7517	31	187.1	-138.8	-45.4	320.3	-10.7	-390.3	-710.1	0.0	394.1	393.7
8/31/2005	7548	31	357.6	-124.9	-27.4	365.6	-10.5	-384.6	-698.8	0.0	344.9	178.0
9/30/2005	7578	30	482.3	-105.3	-15.6	357.7	-10.1	-361.5	-665.0	0.0	310.8	6.6
10/31/2005	7609	31	-122.2	-104.8	-15.5	362.3	-10.4	-367.3	-624.7	49.7	414.8	418.1
11/30/2005	7639	30	62.9	-101.5	-11.7	315.2	-9.9	-354.7	-596.9	0.0	353.6	342.9
12/31/2005	7670	31	189.9	-98.8	-8.3	282.2	-10.3	-362.3	-608.8	0.0	354.4	262.1
1/31/2006	7701	31	-654.4	-104.1	-11.8	539.2	-9.6	-360.7	-607.5	256.8	470.0	482.1
2/28/2006	7729	28	-781.2	-111.0	-14.4	684.1	-7.3	-331.5	-511.8	234.1	413.6	425.4
3/31/2006	7760	31	-886.3	-139.1	-27.9	693.6	-6.6	-371.8	-492.3	266.7	472.4	491.2
4/30/2006	7790	30	-903.2	-146.6	-45.6	654.0	-5.2	-366.4	-430.1	261.6	480.1	501.3
5/31/2006	7821	31	-272.6	-153.7	-53.0	342.3	-4.9	-383.3	-335.3	0.0	427.8	432.7
6/30/2006	7851	30	345.4	-138.2	-32.0	307.8	-5.6	-370.2	-473.5	0.0	317.5	48.8
7/31/2006	7882	31	361.9	-127.6	-21.9	343.6	-7.0	-376.8	-519.9	0.0	323.9	23.7
8/31/2006	7913	31	252.9	-115.4	-17.7	365.9	-7.6	-371.7	-540.3	0.0	335.0	98.9
9/30/2006	7943	30	251.2	-102.9	-12.1	337.8	-7.8	-355.1	-542.5	0.0	325.5	105.9
10/31/2006	7974	31	246.1	-98.0	-9.4	330.7	-8.5	-362.1	-564.4	0.0	338.7	126.9
11/30/2006	8004	30	311.3	-88.0	-6.1	323.4	-8.5	-346.0	-561.3	0.0	318.7	56.4
12/31/2006	8035	31	-138.9	-90.4	-6.7	320.5	-8.7	-356.0	-485.8	0.0	384.4	381.6

Flow Budget for the Semi-Perched Aquifer in Pleasant Valley

Date	Stress	days in month	STORAGE	TILE DRAINS	ET	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley UAS	Arroya Las Posas percolation	Conejo Creek Percolation	Calleguas Creek percolation
			influx(+) outflux(-); units in Acre-feet									
1/31/2007	8066	31	-448.7	-99.9	-9.9	549.8	-7.6	-360.8	-397.4	0.0	388.2	386.4
2/28/2007	8094	28	-135.2	-98.7	-11.6	269.8	-6.6	-330.8	-455.5	17.1	374.3	377.2
3/31/2007	8125	31	73.0	-109.6	-15.7	352.1	-7.9	-369.5	-568.6	0.0	357.2	288.9
4/30/2007	8155	30	85.9	-103.0	-17.0	273.5	-7.9	-361.4	-543.7	0.0	350.2	323.4
5/31/2007	8186	31	351.7	-101.4	-17.4	302.4	-8.2	-373.4	-607.1	0.0	337.3	116.1
6/30/2007	8216	30	424.7	-89.6	-13.6	249.9	-8.5	-357.6	-630.8	0.0	324.8	100.5
7/31/2007	8247	31	430.2	-83.8	-11.8	283.4	-9.9	-365.4	-695.5	0.0	337.2	115.6
8/31/2007	8278	31	416.4	-77.0	-9.7	331.6	-10.9	-360.6	-737.8	0.0	336.6	111.3
9/30/2007	8308	30	253.5	-71.6	-7.0	428.3	-11.4	-344.3	-763.4	0.0	334.8	181.1
10/31/2007	8339	31	249.4	-71.5	-5.9	385.3	-12.5	-351.6	-800.0	0.0	353.4	253.3
11/30/2007	8369	30	343.9	-66.8	-4.2	337.3	-12.7	-337.6	-787.9	0.0	336.1	191.8
12/31/2007	8400	31	-67.4	-72.9	-5.3	400.2	-12.6	-347.5	-647.4	0.0	378.8	374.2
1/31/2008	8431	31	-2059.4	-111.1	-15.7	1295.3	-10.5	-366.6	-581.1	383.0	674.6	791.4
2/29/2008	8460	29	-462.2	-128.6	-17.9	483.5	-7.6	-358.4	-528.2	121.3	444.9	453.3
3/31/2008	8491	31	199.2	-130.4	-22.2	247.3	-8.7	-383.0	-633.0	0.0	369.7	361.2
4/30/2008	8521	30	176.9	-117.7	-22.1	330.6	-9.4	-374.9	-658.0	0.0	350.3	324.2
5/31/2008	8552	31	448.9	-111.6	-20.9	376.4	-9.9	-384.2	-687.7	0.0	329.5	59.5
6/30/2008	8582	30	313.0	-96.9	-16.3	356.1	-9.7	-365.6	-686.9	0.0	333.8	172.5
7/31/2008	8613	31	395.0	-91.7	-14.3	358.2	-11.4	-372.4	-776.1	0.0	343.9	169.0
8/31/2008	8644	31	493.6	-83.5	-11.7	313.7	-13.0	-367.1	-824.0	0.0	341.6	150.5
9/30/2008	8674	30	425.7	-75.4	-8.1	412.3	-13.9	-350.0	-854.5	0.0	329.2	134.6
10/31/2008	8705	31	339.5	-74.9	-6.6	459.5	-15.4	-356.4	-911.4	0.0	349.4	216.3
11/30/2008	8735	30	-109.9	-76.6	-7.2	476.9	-14.0	-342.3	-699.1	0.0	385.8	386.4
12/31/2008	8766	31	-285.5	-89.4	-9.2	435.4	-12.5	-359.3	-589.9	0.0	451.5	458.8
1/31/2009	8797	31	64.4	-92.6	-10.8	270.6	-11.3	-362.3	-608.7	0.0	377.8	372.9
2/28/2009	8825	28	-1327.7	-102.8	-15.0	952.3	-8.8	-332.5	-494.7	269.3	510.6	549.3
3/31/2009	8856	31	-2.8	-123.7	-22.5	262.7	-8.4	-374.6	-509.7	0.0	390.2	388.9
4/30/2009	8886	30	286.3	-107.8	-19.5	340.6	-8.3	-361.3	-537.8	0.0	322.8	85.2
5/31/2009	8917	31	-31.5	-104.5	-22.5	305.4	-8.8	-371.7	-564.2	0.0	398.6	399.2
6/30/2009	8947	30	464.5	-94.4	-18.8	248.3	-8.3	-361.5	-550.4	0.0	311.2	9.3
7/31/2009	8978	31	130.3	-93.0	-19.5	341.6	-10.3	-370.2	-739.5	0.0	382.1	378.6
8/31/2009	9009	31	260.7	-94.3	-20.8	310.0	-12.7	-373.0	-827.1	0.0	380.6	376.6
9/30/2009	9039	30	318.3	-91.6	-17.0	290.5	-13.9	-362.3	-859.6	0.0	369.6	366.1
10/31/2009	9070	31	40.4	-98.1	-15.8	502.6	-14.8	-374.4	-796.6	0.0	380.4	376.3
11/30/2009	9100	30	703.4	-93.6	-9.6	432.6	-14.9	-360.3	-892.6	0.0	235.0	0.0
12/31/2009	9131	31	-475.1	-101.7	-9.7	703.5	-14.3	-368.8	-815.0	165.9	453.9	461.3
1/31/2010	9162	31	-1598.8	-137.2	-17.6	1179.9	-11.0	-380.6	-689.9	351.6	606.0	697.6
2/28/2010	9190	28	-868.7	-147.5	-24.5	762.8	-7.7	-353.4	-588.4	266.0	461.8	499.8
3/31/2010	9221	31	223.8	-154.8	-33.0	273.6	-8.3	-391.7	-648.0	0.0	372.8	365.8
4/30/2010	9251	30	-19.5	-137.8	-27.2	369.4	-8.4	-379.2	-563.7	0.0	383.2	383.2
5/31/2010	9282	31	600.4	-129.0	-25.8	340.7	-8.2	-391.5	-655.9	0.0	269.3	0.0
6/30/2010	9312	30	136.6	-113.9	-24.0	294.7	-8.7	-374.7	-661.6	0.0	376.5	375.0
7/31/2010	9343	31	236.5	-115.0	-26.3	310.8	-10.9	-389.0	-773.3	0.0	385.0	382.3
8/31/2010	9374	31	346.6	-111.7	-25.2	258.9	-12.7	-389.3	-828.7	0.0	382.7	379.4
9/30/2010	9404	30	319.1	-106.1	-19.9	313.7	-13.6	-375.8	-858.7	0.0	372.0	369.3
10/31/2010	9435	31	-148.8	-113.4	-18.5	565.2	-13.1	-386.8	-680.3	0.0	397.7	398.1
11/30/2010	9465	30	246.4	-111.7	-13.2	340.3	-12.6	-372.2	-782.5	0.0	357.1	348.5
12/31/2010	9496	31	-1646.0	-141.1	-13.9	1678.6	-10.9	-384.5	-638.2	325.5	361.7	468.8
1/31/2011	9527	31	119.2	-153.5	-16.9	178.8	-9.4	-390.6	-590.5	0.0	428.9	434.0
2/28/2011	9555	28	-679.6	-142.0	-22.0	542.0	-9.0	-359.8	-666.4	253.7	528.5	554.7
3/31/2011	9586	31	-2225.7	-214.3	-112.4	1319.0	-9.0	-419.7	-621.7	349.0	928.2	1006.7
4/30/2011	9616	30	240.6	-215.9	-145.7	288.0	-7.6	-409.5	-537.5	0.0	385.1	402.5
5/31/2011	9647	31	279.3	-188.4	-95.3	305.6	-9.1	-414.6	-610.8	0.0	370.7	362.7
6/30/2011	9677	30	542.8	-156.7	-50.4	277.3	-9.2	-397.6	-616.6	0.0	323.0	87.3
7/31/2011	9708	31	209.0	-145.0	-37.9	297.2	-10.1	-405.6	-681.5	0.0	387.9	386.0
8/31/2011	9739	31	245.9	-137.6	-31.5	267.3	-10.5	-405.5	-687.2	0.0	381.4	377.7
9/30/2011	9769	30	214.8	-128.8	-22.8	290.9	-10.6	-391.1	-681.0	0.0	366.6	362.1
10/31/2011	9800	31	543.0	-125.1	-17.0	345.7	-10.8	-399.8	-687.1	0.0	324.5	26.8
11/30/2011	9830	30	-188.7	-119.2	-13.3	397.5	-9.8	-380.6	-547.9	0.0	427.8	434.0
12/31/2011	9861	31	273.6	-119.0	-10.0	285.9	-9.2	-390.5	-615.9	0.0	351.3	233.9
1/31/2012	9892	31	-174.7	-117.2	-12.1	400.0	-9.1	-385.3	-542.6	0.0	418.6	422.4
2/29/2012	9921	29	388.5	-108.4	-11.2	315.5	-8.3	-360.5	-573.7	0.0	307.5	50.8
3/31/2012	9952	31	-517.2	-120.2	-20.0	549.9	-8.9	-384.8	-662.6	166.5	493.6	503.6
4/30/2012	9982	30	-313.4	-126.2	-27.4	408.5	-7.4	-379.3	-549.5	84.5	451.0	459.1
5/31/2012	10013	31	396.3	-123.5	-25.1	338.6	-7.5	-391.3	-586.6	0.0	330.7	68.4
6/30/2012	10043	30	172.5	-109.7	-22.4	230.1	-8.5	-373.7	-618.6	0.0	367.3	363.1

Flow Budget for the Semi-Perched Aquifer in Pleasant Valley

Date	Stress	days in month	STORAGE	TILE DRAINS	ET	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley UAS	Arroya Las Posas percolation	Conejo Creek Percolation	Calleguas Creek percolation
			influx(+) outflux(-); units in Acre-feet									
7/31/2012	10074	31	292.1	-111.1	-24.2	294.9	-11.1	-387.9	-779.1	0.0	368.0	358.5
8/31/2012	10105	31	467.8	-104.5	-20.2	267.8	-13.1	-387.9	-851.7	0.0	356.8	285.0
9/30/2012	10135	30	369.2	-97.0	-15.8	332.2	-14.2	-378.0	-887.8	0.0	351.9	339.6
10/31/2012	10166	31	313.5	-104.2	-15.6	412.0	-16.2	-387.1	-951.5	0.0	377.1	371.9
11/30/2012	10196	30	669.6	-95.6	-9.6	248.5	-15.4	-369.4	-849.1	0.0	324.3	96.7
12/31/2012	10227	31	7.0	-95.9	-9.3	320.1	-14.6	-375.1	-735.4	0.0	448.1	455.0
1/31/2013	10258	31	127.2	-97.9	-11.4	336.8	-13.3	-374.4	-731.6	0.0	383.8	380.8
2/28/2013	10286	28	515.0	-84.3	-9.2	313.0	-12.2	-334.5	-732.7	0.0	296.7	48.1
3/31/2013	10317	31	556.0	-83.0	-10.5	265.4	-13.5	-362.0	-769.6	0.0	333.0	84.2
4/30/2013	10347	30	252.0	-75.4	-12.5	258.0	-13.4	-345.2	-790.3	0.0	365.8	361.1
5/31/2013	10378	31	334.7	-76.7	-16.3	237.8	-14.8	-357.5	-838.7	0.0	369.9	361.5
6/30/2013	10408	30	328.4	-72.8	-16.7	230.2	-15.1	-346.2	-832.3	0.0	364.8	359.7
7/31/2013	10439	31	522.1	-69.5	-14.0	303.1	-17.0	-356.1	-997.5	0.0	355.6	273.2
8/31/2013	10470	31	731.1	-61.1	-9.4	305.9	-18.7	-349.8	-1055.9	0.0	337.8	120.1
9/30/2013	10500	30	676.6	-53.0	-4.8	309.4	-19.4	-330.8	-1073.5	0.0	332.7	162.8
10/31/2013	10531	31	579.4	-51.0	-3.0	313.3	-21.2	-334.0	-1136.3	0.0	357.9	295.0
11/30/2013	10561	30	468.4	-49.6	-4.1	315.3	-22.0	-319.9	-1130.2	0.0	372.4	369.7
12/31/2013	10592	31	529.3	-55.0	-4.6	319.2	-23.9	-330.2	-1183.5	0.0	377.0	371.7
1/31/2014	10623	31	582.2	-55.0	-5.3	338.1	-24.6	-331.9	-1220.5	0.0	364.5	352.6
2/28/2014	10651	28	-62.5	-52.2	-6.0	600.5	-20.5	-297.0	-868.1	0.0	353.4	352.4
3/31/2014	10682	31	98.5	-63.9	-12.9	334.7	-21.1	-331.4	-1000.7	12.6	487.3	497.0
4/30/2014	10712	30	901.4	-54.4	-9.4	330.7	-21.2	-319.6	-1096.6	0.0	269.1	0.0
5/31/2014	10743	31	743.1	-47.0	-3.4	327.5	-23.2	-319.1	-1179.8	0.0	342.7	159.2
6/30/2014	10773	30	733.4	-39.8	0.0	333.7	-23.5	-298.6	-1184.3	0.0	330.9	148.3
7/31/2014	10804	31	760.8	-37.1	0.0	324.7	-24.7	-296.2	-1242.8	0.0	344.1	171.1
8/31/2014	10835	31	806.5	-34.0	0.0	317.8	-25.2	-283.3	-1212.3	0.0	334.6	95.9
9/30/2014	10865	30	838.2	-30.9	0.0	310.7	-25.0	-262.3	-1181.1	0.0	315.4	35.0
10/31/2014	10896	31	780.0	-30.9	0.0	314.8	-26.3	-258.4	-1217.3	0.0	335.5	102.5
11/30/2014	10926	30	455.7	-28.8	0.0	290.7	-26.2	-240.6	-1168.7	0.0	362.1	355.9
12/31/2014	10957	31	-915.9	-32.8	-1.2	914.6	-25.4	-256.9	-904.1	0.0	603.9	617.7
1/31/2015	10988	31	-149.8	-37.5	-2.9	398.9	-21.5	-268.8	-840.7	0.0	457.3	465.0
2/28/2015	11016	28	572.2	-32.4	-0.4	265.9	-19.1	-241.6	-843.4	0.0	290.4	8.5
3/31/2015	11047	31	227.4	-32.7	0.0	268.8	-21.3	-260.2	-901.8	0.0	365.5	354.4
4/30/2015	11077	30	489.1	-29.8	0.0	236.5	-20.8	-250.0	-916.5	0.0	332.3	159.3
5/31/2015	11108	31	549.2	-29.8	0.0	234.1	-22.2	-247.6	-966.4	0.0	340.6	142.2
6/30/2015	11138	30	454.9	-28.2	0.0	239.1	-21.9	-229.3	-959.7	0.0	337.8	207.2
7/31/2015	11169	31	747.7	-28.3	0.0	253.8	-23.2	-227.1	-1011.1	0.0	288.1	0.0
8/31/2015	11200	31	696.8	-27.3	0.0	280.7	-24.3	-217.5	-1068.0	0.0	325.6	34.0
9/30/2015	11230	30	460.7	-25.4	0.0	277.4	-24.4	-201.3	-1051.6	0.0	339.8	224.9
10/31/2015	11261	31	756.7	-25.3	0.0	280.0	-26.0	-199.5	-1089.3	0.0	303.4	0.0
11/30/2015	11291	30	676.7	-23.6	0.0	292.3	-25.7	-185.2	-1077.2	0.0	314.4	28.3
12/31/2015	11322	31	326.8	-23.5	0.0	309.0	-27.4	-187.8	-1114.7	0.0	364.7	352.9

Flow Budget for the UAS in Pleasant Valley

influx(+) outflux(-); units in Acre-feet

Date	Stress	days in month	STORAGE	Mountain Front Recharge	GW Flux from East Las Posas	ET	Recharge	Pumping from Wells	Pleasant Valley Semi-Perched Aquifer	Oxnard UAS	Los Posas	Pleasant Valley LAS	Arroyo Las Posas Percolation	Conejo Creek Percolation	Calleguas Creek percolation
1/31/1985	31	31	-133.0	80.4	17.6	-94.6	51.5	-427.6	695.8	104.6	-0.8	-429.3	10.5	124.9	0.0
2/28/1985	59	28	-306.7	79.2	15.3	-93.8	47.6	-405.6	670.0	108.7	0.0	-277.3	15.0	147.5	0.0
3/31/1985	90	31	-250.4	50.1	15.6	-147.3	43.2	-546.4	825.0	103.1	0.0	-308.0	10.5	204.7	0.0
4/30/1985	120	30	21.6	0.0	12.8	-169.3	24.8	-774.1	1013.5	65.1	0.0	-415.9	4.2	217.2	0.0
5/31/1985	151	31	113.7	0.0	11.7	-180.1	28.1	-823.7	1079.6	30.5	0.0	-503.5	3.7	240.2	0.0
6/30/1985	181	30	151.1	0.0	10.0	-166.4	32.4	-839.2	1108.5	-4.0	0.0	-530.3	4.2	233.7	0.0
7/31/1985	212	31	202.1	0.0	8.5	-173.5	31.4	-933.8	1176.2	-5.8	0.0	-558.1	4.9	248.2	0.0
8/31/1985	243	31	216.2	0.0	6.8	-166.3	32.7	-956.9	1213.4	-26.8	0.0	-572.1	4.3	248.7	0.0
9/30/1985	273	30	227.4	0.0	4.9	-135.9	28.8	-962.5	1218.0	-48.2	0.0	-572.5	4.2	235.9	0.0
10/31/1985	304	31	251.4	0.0	3.9	-123.6	27.1	-988.8	1260.1	-71.2	0.0	-605.1	5.5	240.6	0.0
11/30/1985	334	30	-492.2	471.2	25.9	-100.0	177.2	-461.7	848.1	-93.0	0.0	-750.0	144.0	230.5	0.0
12/31/1985	365	31	64.9	1.5	15.3	-83.7	27.2	-819.3	1132.1	-42.3	0.0	-501.0	11.1	194.2	0.0
1/31/1986	396	31	-479.5	380.5	40.4	-94.6	142.3	-400.4	791.6	-60.6	0.0	-878.5	379.4	179.3	0.0
2/28/1986	424	28	-1324.3	850.1	56.3	-93.8	277.5	-263.6	762.5	-50.7	0.0	-984.6	650.8	119.9	0.0
3/31/1986	455	31	-1346.7	713.9	73.9	-147.3	243.5	-257.6	775.8	-26.7	-0.8	-832.2	677.1	127.2	0.0
4/30/1986	485	30	96.0	6.7	58.6	-170.9	32.6	-538.6	851.9	-2.1	-1.0	-532.3	25.6	173.6	0.0
5/31/1986	516	31	58.0	0.0	52.6	-200.7	25.3	-663.5	1015.8	-45.1	0.0	-476.2	11.1	222.8	0.0
6/30/1986	546	30	74.6	0.0	49.3	-177.8	30.7	-684.9	1040.8	-99.5	0.0	-474.4	11.9	229.2	0.0
7/31/1986	577	31	100.3	0.0	51.4	-182.0	30.8	-913.6	1183.7	-46.6	0.0	-480.5	11.1	245.3	0.0
8/31/1986	608	31	91.2	0.0	50.8	-175.3	28.6	-963.3	1224.2	-24.6	0.0	-487.9	10.5	245.8	0.0
9/30/1986	638	30	-43.8	24.7	51.3	-143.3	39.2	-780.9	1098.3	-23.0	0.0	-482.9	22.0	238.3	0.0
10/31/1986	669	31	85.1	0.0	50.1	-129.8	25.7	-982.3	1228.0	-7.4	0.0	-517.0	12.9	234.8	0.0
11/30/1986	699	30	-226.8	117.0	59.7	-99.3	68.6	-587.0	953.3	-36.1	0.0	-518.1	53.6	215.1	0.0
12/31/1986	730	31	80.0	0.0	52.8	-83.2	21.7	-959.7	1190.0	-11.7	0.0	-500.3	14.1	196.2	0.0
1/31/1987	761	31	-188.9	119.0	55.0	-94.5	62.6	-627.0	989.6	-34.9	0.0	-513.3	33.2	199.2	0.0
2/28/1987	789	28	-97.8	53.7	48.1	-93.8	44.7	-678.4	961.4	-1.7	0.0	-445.4	25.0	184.2	0.0
3/31/1987	820	31	-219.7	126.1	55.4	-144.1	66.4	-590.5	912.1	13.5	0.0	-480.2	32.6	228.5	0.0
4/30/1987	850	30	139.6	0.0	50.3	-159.7	28.8	-1100.2	1279.2	28.3	0.0	-514.6	17.3	231.1	0.0
5/31/1987	881	31	239.8	0.0	51.4	-180.2	28.9	-1195.8	1405.0	-1.7	0.0	-611.6	18.4	245.6	0.0
6/30/1987	911	30	280.9	0.0	48.5	-170.9	33.7	-1229.9	1456.6	-34.8	0.0	-638.7	15.5	239.1	0.0
7/31/1987	942	31	322.2	0.0	50.7	-178.5	36.8	-1164.2	1421.7	-53.3	0.0	-702.7	17.2	250.2	0.0
8/31/1987	973	31	341.9	0.0	52.9	-171.3	30.0	-1172.1	1437.6	-69.9	0.0	-724.9	23.4	252.4	0.0
9/30/1987	1003	30	340.3	0.0	51.3	-138.2	31.3	-1167.9	1429.6	-84.9	0.0	-715.9	20.2	234.1	0.0
10/31/1987	1034	31	63.2	115.3	72.7	-134.0	63.8	-798.0	1182.7	-118.9	0.0	-912.8	194.3	271.8	0.0
11/30/1987	1064	30	-101.7	194.5	71.9	-99.5	91.3	-620.5	999.9	-113.8	0.0	-697.4	66.0	209.1	0.0
12/31/1987	1095	31	-354.2	342.2	87.0	-83.7	102.0	-535.9	863.2	-102.0	0.0	-1102.4	603.2	180.5	0.0
1/31/1988	1126	31	-292.1	178.8	90.9	-94.6	83.9	-512.5	883.9	-71.6	-0.3	-909.1	469.1	173.6	0.0
2/29/1988	1155	29	-254.9	88.6	86.0	-97.1	53.4	-541.9	875.3	-44.2	-1.8	-600.5	265.2	171.9	0.0
3/31/1988	1186	31	222.8	0.0	76.7	-147.3	28.3	-903.1	1174.4	-32.6	-1.2	-666.2	27.1	221.2	0.0
4/30/1988	1216	30	-330.1	125.6	86.3	-164.4	70.8	-548.8	908.6	-39.3	-1.6	-706.9	363.6	236.2	0.0
5/31/1988	1247	31	214.6	0.0	78.2	-186.0	33.7	-920.6	1204.4	-30.2	-1.6	-667.2	33.2	241.6	0.0
6/30/1988	1277	30	173.8	0.0	68.5	-174.7	34.5	-958.2	1235.4	-44.0	-0.1	-596.1	21.4	239.5	0.0
7/31/1988	1308	31	183.8	0.0	68.3	-181.1	34.7	-1014.7	1273.5	-23.5	0.0	-614.2	25.2	248.0	0.0
8/31/1988	1339	31	226.4	0.0	65.7	-174.6	33.6	-1051.9	1304.6	-23.6	0.0	-649.8	22.8	246.8	0.0
9/30/1988	1369	30	230.9	0.0	65.4	-141.8	33.6	-1061.3	1307.6	-30.1	0.0	-676.0	33.9	237.7	0.0
10/31/1988	1400	31	265.8	0.0	62.9	-129.6	33.6	-1096.8	1347.0	-46.7	0.0	-696.6	19.7	240.7	0.0
11/30/1988	1430	30	108.5	60.1	66.1	-97.7	50.3	-836.6	1141.9	-71.8	0.0	-680.9	41.7	218.4	0.0
12/31/1988	1461	31	-413.6	508.0	84.0	-83.7	177.1	-551.5	912.7	-104.6	0.0	-1113.2	420.0	164.7	0.0
1/31/1989	1492	31	162.9	0.0	70.2	-94.6	25.6	-796.2	1085.0	-67.4	0.0	-583.0	20.3	177.2	0.0
2/28/1989	1520	28	-341.8	299.2	76.6	-93.8	121.0	-440.9	800.0	-76.1	-0.1	-790.5	295.5	150.8	0.0
3/31/1989	1551	31	34.1	11.6	77.7	-147.3	37.8	-685.8	1045.9	-60.9	-0.1	-561.4	39.4	209.2	0.0
4/30/1989	1581	30	90.9	0.0	68.2	-163.0	33.1	-816.3	1133.6	-59.4	0.0	-536.2	22.0	227.1	0.0
5/31/1989	1612	31	141.3	0.0	68.5	-184.7	33.7	-859.5	1189.2	-81.2	0.0	-577.1	24.0	245.7	0.0
6/30/1989	1642	30	181.4	0.0	62.4	-174.9	36.0	-865.8	1170.5	-94.3	0.0	-570.4	14.3	240.8	0.0
7/31/1989	1673	31	232.0	0.0	62.0	-182.3	36.5	-1122.5	1386.7	-62.8	0.0	-614.5	15.4	249.4	0.0
8/31/1989	1704	31	276.0	0.0	59.3	-176.6	34.9	-1155.9	1393.9	-53.3	0.0	-643.9	13.5	252.0	0.0
9/30/1989	1734	30	285.8	0.0	55.9	-143.7	34.0	-1158.4	1370.9	-51.5	0.0	-651.6	17.3	241.3	0.0
10/31/1989	1765	31	309.4	0.0	56.6	-132.2	32.7	-1192.7	1412.9	-59.2	0.0	-694.3	19.7	247.1	0.0
11/30/1989	1795	30	309.0	0.0	55.1	-97.3	32.8	-1183.2	1394.7	-61.1	0.0	-694.9	25.0	220.0	0.0
12/31/1989	1826	31	333.8	0.0	55.8	-82.9	33.7	-1211.5	1436.5	-69.4	0.0	-727.4	24.0	207.5	0.0
1/31/1990	1857	31	130.1	112.4	80.8	-94.5	63.4	-841.0	1174.1	-109.5	0.0	-1011.4	289.0	206.8	0.0
2/28/1990	1885	28	44.2	124.0	82.8	-93.8	61.3	-690.9	1000.0	-102.6	0.0	-900.7	296.0	179.7	0.0
3/31/1990	1916	31	281.1	0.0	81.0	-142.0	23.8	-1144.1	1367.9	-68.0	0.0	-650.7	22.8	228.4	0.0
4/30/1990	1946	30	324.5	0.0	76.0	-158.7	24.4	-1178.3	1375.8	-56.8	0.0	-662.2	22.0	233.3	0.0
5/31/1990	1977	31	375.2	0.0	82.1	-179.7	24.6	-1221.0	1422.8	-62.8	0.0	-720.7	33.8	245.7	0.0
6/30/1990	2007	30	383.4	0.0	77.0	-171.2	28.1	-1229.4	1425.6	-63.1	0.0	-707.1	19.0	237.7	0.0
7/31/1990	2038	31	416.1	0.0	78.5	-174.9	27.6	-1250.3	1460.3	-84.5	0.0	-737.5	18.4	246.4	0.0
8/31/1990	2069	31	417.9	0.0	76.6	-166.7	27.9	-1239.9	1452.5	-94.2	0.0	-736.0	14.1	247.7	0.0
9/30/1990	2099	30	403.2	0.0	72.3	-135.8	27.7	-1217.7	1415.8	-94.5	0.0	-715.0	12.5	231.5	0.0
10/31/1990	2130	31	409.8	0.0	73.9	-126.4	29.9	-1237.1	1446.1	-103.0	0.0	-746.1	16.0	236.8	0.0
11/30/1990	2160	30	371.0	0.0	72.4	-96.6	24.5	-1076.3	1295.1	-115.1	0.0	-725.3	22.0	228.3	0.0
12/31/1990	2191	31	390.4	0.0	72.0	-82.6	26.2	-1217.7	1426.9	-116.6	0.0	-732.0	14.1	219.3	0.0
1/31/1991	2222	31	280.4	55.9	80.1	-93.4	46.7	-1000.3	1274.4	-128.3	0.0	-767.2	38.1	213.7	0.0
2/28/1991	2250	28	93.8	139.8	88.1	-93.6	66.1	-719.7	1022.3	-127.1	0.0	-930.6	271.6	189.3	0.0
3/31/1991	2281	31	-1149.7	1048.1	117.4	-147.3	338.3	-485.5	1110.4	-183.0	0.0	-1528.7	720.8	159.3	0.0
4/30/1991	2311	30	327.1	0.0	102.4	-167.8	19.6	-1088.3	1302.1	-92.9	0.0	-607.1	23.2	181.8	0.0
5/31/1991	2342	31	262.1	0.0	97.2	-186.6	22.3	-1161.0	1386.1	-59.3	0.0	-605.4	19.7	224.9	0.0

Flow Budget for the UAS in Pleasant Valley

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet												
			STORAGE	Mountain Front Recharge	GW Flux from East Las Posas	ET	Recharge	Pumping from Wells	Pleasant Valley Semi-Perched Aquifer	Oxnard UAS	Los Posas	Pleasant Valley LAS	Arroyo Las Posas Percolation	Conejo Creek Percolation	Calleguas Creek percolation
6/30/1991	2372	30	275.3	0.0	90.5	-175.2	21.1	-1175.5	1373.5	-43.5	0.0	-610.2	16.1	228.0	0.0
7/31/1991	2403	31	301.2	0.0	89.7	-181.4	22.2	-1099.7	1292.0	-28.8	0.0	-647.8	16.0	236.5	0.0
8/31/1991	2434	31	308.0	0.0	86.3	-174.7	21.6	-1116.7	1308.1	-22.0	0.0	-662.6	14.8	237.1	0.0
9/30/1991	2464	30	296.5	0.0	80.7	-141.4	20.6	-1107.2	1284.3	-19.7	0.0	-653.9	13.1	227.1	0.0
10/31/1991	2495	31	299.7	0.0	80.6	-129.4	21.4	-1135.3	1323.3	-22.4	0.0	-684.1	12.3	233.9	0.0
11/30/1991	2525	30	289.8	0.0	75.6	-96.4	21.1	-1119.7	1299.7	-20.9	0.0	-670.8	11.9	209.7	0.0
12/31/1991	2556	31	-520.7	622.5	101.3	-83.7	185.7	-599.0	1009.6	-107.5	0.0	-1392.9	613.4	171.3	0.0
1/31/1992	2587	31	-151.9	217.4	110.2	-94.6	84.2	-527.5	919.8	-108.9	-0.2	-1047.7	445.2	153.9	0.0
2/29/1992	2616	29	-2246.1	1341.8	136.7	-97.1	400.8	-348.6	1089.5	-132.8	-3.7	-1275.0	1066.0	68.5	0.0
3/31/1992	2647	31	-1420.7	689.3	159.6	-147.3	226.4	-330.6	1110.6	-122.3	-9.0	-1092.5	861.3	75.3	0.0
4/30/1992	2677	30	-33.6	0.0	149.1	-170.9	18.6	-645.4	1063.6	-45.6	-10.1	-622.1	156.5	139.8	0.0
5/31/1992	2708	31	3.9	0.0	144.2	-202.2	21.6	-684.3	1123.0	-16.3	-8.1	-643.2	65.8	195.7	0.0
6/30/1992	2738	30	-27.7	0.0	132.0	-186.9	21.6	-690.5	1096.5	-4.0	-5.8	-608.5	57.7	215.4	0.0
7/31/1992	2769	31	45.4	0.0	132.1	-192.3	23.8	-845.0	1158.8	38.2	-4.5	-654.9	62.7	235.6	0.0
8/31/1992	2800	31	89.9	0.0	127.7	-183.3	25.9	-884.9	1172.9	42.7	-3.4	-678.1	49.8	240.7	0.0
9/30/1992	2830	30	103.8	0.0	120.4	-148.6	23.4	-894.5	1158.6	35.6	-2.3	-667.2	44.0	226.6	0.0
10/31/1992	2861	31	-151.8	23.9	130.2	-134.5	36.9	-794.4	1150.1	17.6	-2.6	-645.0	144.5	225.1	0.0
11/30/1992	2891	30	61.1	0.0	118.9	-97.6	22.3	-895.7	1183.7	35.1	-2.3	-658.9	38.1	195.3	0.0
12/31/1992	2922	31	-1303.0	539.2	136.3	-83.7	175.5	-473.3	1078.0	-3.4	-4.0	-878.5	672.2	144.6	0.0
1/31/1993	2953	31	-2632.4	1248.1	165.6	-94.6	393.4	-336.1	1121.1	-9.2	-8.7	-960.4	1032.5	80.6	0.0
2/28/1993	2981	28	-2303.2	909.6	157.8	-101.4	299.3	-273.4	1046.3	31.1	-14.3	-771.6	1014.7	5.0	0.0
3/31/1993	3012	31	-1419.1	258.2	178.7	-154.2	89.6	-324.4	1055.8	103.1	-22.4	-616.1	767.2	83.5	0.0
4/30/1993	3042	30	-402.2	0.0	166.4	-170.9	22.3	-595.5	956.6	161.3	-22.2	-511.9	251.1	145.1	0.0
5/31/1993	3073	31	-365.6	0.0	165.5	-202.7	25.1	-641.9	1039.1	171.9	-21.3	-598.0	232.4	195.5	0.0
6/30/1993	3103	30	-310.3	0.0	156.1	-187.2	24.3	-656.9	1004.7	164.4	-19.4	-615.6	229.1	210.7	0.0
7/31/1993	3134	31	-172.7	0.0	156.2	-195.7	23.5	-634.4	935.5	149.9	-18.2	-661.9	181.4	236.3	0.0
8/31/1993	3165	31	-138.1	0.0	152.0	-188.5	25.1	-644.9	971.9	125.0	-16.1	-671.0	141.4	243.2	0.0
9/30/1993	3195	30	-76.2	0.0	143.6	-150.9	25.1	-643.1	938.9	103.4	-13.5	-664.6	116.6	220.7	0.0
10/31/1993	3226	31	-142.3	0.0	147.2	-134.6	26.0	-661.4	971.3	105.4	-12.9	-693.0	172.8	221.6	0.0
11/30/1993	3256	30	-122.6	0.0	140.8	-98.3	22.7	-578.2	882.2	109.0	-11.8	-681.1	146.4	190.9	0.0
12/31/1993	3287	31	-483.6	72.3	146.6	-83.7	47.2	-469.9	788.4	122.3	-13.1	-608.3	307.4	174.4	0.0
1/31/1994	3318	31	-336.3	0.0	148.3	-94.6	18.8	-623.9	900.7	140.8	-15.3	-642.1	319.1	184.5	0.0
2/28/1994	3346	28	-1345.1	501.9	140.1	-93.8	177.6	-318.0	773.7	105.7	-14.6	-698.1	633.2	137.4	0.0
3/31/1994	3377	31	-1020.6	237.8	157.3	-147.3	99.7	-335.0	741.8	132.7	-19.6	-648.6	626.3	175.5	0.0
4/30/1994	3407	30	-221.5	0.0	150.5	-167.2	19.6	-563.4	785.4	149.9	-19.6	-544.9	206.5	204.8	0.0
5/31/1994	3438	31	-193.1	0.0	154.5	-188.1	21.1	-601.5	844.2	142.1	-18.9	-609.1	209.1	239.8	0.0
6/30/1994	3468	30	-57.4	0.0	147.3	-182.9	24.0	-610.5	843.2	114.8	-16.3	-612.9	116.0	234.7	0.0
7/31/1994	3499	31	98.9	0.0	149.4	-188.4	25.9	-813.6	968.5	132.9	-14.2	-697.9	93.5	245.1	0.0
8/31/1994	3530	31	133.3	0.0	146.7	-181.3	28.0	-849.4	1021.6	118.4	-11.9	-729.4	79.3	244.8	0.0
9/30/1994	3560	30	138.2	0.0	139.5	-148.9	26.1	-860.2	1042.5	97.9	-9.8	-732.3	67.8	239.2	0.0
10/31/1994	3591	31	134.6	0.0	138.7	-133.6	25.7	-890.1	1100.4	93.2	-8.6	-740.3	46.1	233.8	0.0
11/30/1994	3621	30	-101.9	42.6	136.8	-98.0	43.4	-676.2	931.4	79.0	-7.4	-652.2	100.0	202.5	0.0
12/31/1994	3652	31	-190.9	33.2	144.9	-83.5	38.2	-681.1	931.8	91.5	-8.3	-676.6	218.3	182.6	0.0
1/31/1995	3683	31	-3086.8	1835.0	174.0	-96.0	557.8	-349.0	863.2	7.1	-9.3	-1079.1	1117.8	65.3	0.0
2/28/1995	3711	28	-297.1	67.0	156.0	-95.9	42.4	-434.7	657.1	44.4	-17.0	-567.6	382.6	62.5	0.0
3/31/1995	3742	31	-2343.6	1069.7	184.1	-157.9	342.8	-280.6	806.7	61.5	-20.4	-710.3	999.5	48.7	0.0
4/30/1995	3772	30	-381.4	0.0	174.0	-176.9	22.1	-485.6	749.6	85.8	-25.1	-579.4	494.5	122.4	0.0
5/31/1995	3803	31	-289.3	0.2	174.9	-204.4	24.7	-595.0	886.2	94.6	-26.4	-637.8	386.8	185.6	0.0
6/30/1995	3833	30	-185.7	0.0	165.7	-189.0	26.3	-599.3	870.2	90.4	-25.1	-633.9	276.1	204.4	0.0
7/31/1995	3864	31	-152.3	0.0	168.0	-196.3	29.8	-564.4	827.6	112.2	-23.6	-612.6	184.5	227.2	0.0
8/31/1995	3895	31	-186.4	0.0	165.2	-190.1	32.5	-582.7	835.7	130.8	-20.8	-582.0	162.3	235.4	0.0
9/30/1995	3925	30	-143.9	0.0	157.4	-151.4	32.0	-584.7	815.5	133.7	-17.8	-586.7	130.9	215.1	0.0
10/31/1995	3956	31	-100.3	0.0	159.7	-134.4	30.2	-601.8	821.3	139.8	-16.1	-614.1	103.9	212.0	0.0
11/30/1995	3986	30	-43.3	0.0	151.5	-97.9	24.7	-596.6	784.0	135.6	-13.5	-606.8	80.9	181.4	0.0
12/31/1995	4017	31	-613.7	170.5	160.1	-83.7	65.3	-377.1	580.2	125.6	-15.1	-627.0	448.9	166.0	0.0
1/31/1996	4048	31	-252.5	46.3	157.7	-94.6	41.6	-490.5	674.9	140.9	-16.6	-550.3	170.9	172.2	0.0
2/29/1996	4077	29	-1656.4	775.2	156.3	-97.1	260.6	-282.2	577.1	113.2	-16.1	-609.9	678.9	100.6	0.0
3/31/1996	4108	31	-781.1	95.4	167.8	-147.3	57.7	-407.7	615.6	153.5	-22.6	-505.5	618.2	156.1	0.0
4/30/1996	4138	30	-72.0	0.0	160.2	-170.9	27.9	-593.8	729.3	176.6	-22.3	-642.1	212.4	194.7	0.0
5/31/1996	4169	31	36.7	0.0	162.7	-190.0	31.6	-659.8	807.5	177.2	-20.5	-722.2	147.0	229.8	0.0
6/30/1996	4199	30	76.6	0.0	156.0	-184.1	31.6	-676.8	825.7	150.6	-17.4	-736.0	139.2	234.6	0.0
7/31/1996	4230	31	75.2	0.0	160.8	-191.3	32.7	-843.5	944.4	166.8	-16.3	-709.3	140.2	240.2	0.0
8/31/1996	4261	31	75.4	0.0	160.8	-184.3	32.5	-889.4	1017.9	144.9	-15.3	-735.2	143.3	249.5	0.0
9/30/1996	4291	30	79.0	0.0	156.1	-149.8	32.6	-907.0	1060.3	115.1	-14.4	-756.9	153.5	231.5	0.0
10/31/1996	4322	31	-267.2	45.4	164.5	-134.9	45.7	-730.9	974.8	74.3	-17.1	-770.2	384.3	231.5	0.0
11/30/1996	4352	30	-711.3	262.7	162.0	-100.3	102.0	-487.5	724.8	34.6	-20.1	-687.6	549.2	171.4	0.0
12/31/1996	4383	31	-1651.7	801.7	179.2	-83.7	244.8	-373.9	745.4	16.2	-24.8	-709.6	755.0	101.7	0.0
1/31/1997	4414	31	-1470.4	656.7	181.4	-94.6	206.4	-265.5	609.7	33.5	-31.1	-638.2	734.4	77.6	0.0
2/28/1997	4442	28	-12.2	0.0	157.8	-93.8	22.4	-557.1	685.0	89.1	-30.2	-625.4	261.6	102.8	0.0
3/31/1997	4473	31	12.2	0.0	168.5	-147.3	28.2	-628.1	837.1	116.5	-30.0	-747.4	218.9	171.3	0.0
4/30/1997	4503	30	55.1	0.0	158.5	-170.9	28.8	-643.8	854.3	109.1	-25.9	-760.0	196.4	198.4	0.0
5/31/1997	4534	31	76.6	0.0	160.8	-193.1	28.5	-670.8	899.7	94.0	-24.6	-801.3	198.6	231.6	0.0
6/30/1997	4564	30	87.3	0.0	153.7	-182.0	30.0	-671.5	904.9	70.3	-22.6	-799.9	197.6	232.2	0.0
7/31/1997	4595	31	154.7	0.0	156.8	-188.7	30.9	-822.8	1047.2	57.6	-21.9	-836.6	174.0	248.8	0.0
8/31/1997	4626	31	159.6	0.0	155.1	-182.9	33.1	-843.5	1098.7	33.4	-20.4	-848.0	164.2	250.7	0.0
9/30/1997	4656	30	139.5	0.0	148.9	-148.9	33.6	-847.1	1110.1	15.2	-18.8	-842.6	174.9	235.1	0.0
10/31/1997	4687	31	45.0	0.0	154.6	-134.0	35.2	-871.8	1160.6	3.5	-20.3	-885.9	281.6	231.4	0.0

Flow Budget for the UAS in Pleasant Valley

Date	Stress	days in month	STORAGE	Mountain Front Recharge	GW Flux from East Las Posas	ET	Recharge	Pumping from Wells	Pleasant Valley Semi-Perched Aquifer	Oxnard UAS	Los Posas	Pleasant Valley LAS	Arroyo Las Posas Percolation	Conejo Creek Percolation	Calleguas Creek percolation
			influx(+) outflux(-); units in Acre-feet												
11/30/1997	4717	30	-701.8	226.5	151.5	-100.3	91.5	-493.6	863.5	-32.9	-22.5	-765.7	596.0	187.8	0.0
12/31/1997	4748	31	-1705.6	824.3	172.2	-83.7	255.8	-346.6	835.4	-61.9	-29.5	-780.2	809.1	110.6	0.0
1/31/1998	4779	31	-1047.6	317.5	176.8	-94.6	117.8	-383.6	858.8	-41.5	-40.6	-690.1	719.9	107.2	0.0
2/28/1998	4807	28	-3523.7	2285.8	168.5	-109.3	707.1	-239.7	537.8	-80.7	-67.2	-887.1	1276.6	-68.1	0.0
3/31/1998	4838	31	-877.4	330.2	190.3	-180.1	122.7	-318.5	720.0	-32.8	-101.6	-665.9	801.6	11.5	0.0
4/30/1998	4868	30	-656.6	107.8	181.6	-172.5	58.0	-378.5	833.5	20.1	-94.1	-665.3	671.6	94.5	0.0
5/31/1998	4899	31	-877.0	198.9	187.3	-204.5	87.5	-325.9	794.1	38.9	-94.9	-666.2	718.6	143.2	0.0
6/30/1998	4929	30	-180.4	0.0	177.1	-193.7	35.3	-615.7	917.9	45.4	-89.1	-865.9	599.5	169.6	0.0
7/31/1998	4960	31	-68.6	0.0	178.0	-197.6	29.5	-530.3	808.8	22.6	-84.5	-824.1	464.8	201.4	0.0
8/31/1998	4991	31	-54.1	0.0	173.8	-190.8	31.3	-543.2	831.3	17.7	-81.3	-793.6	395.4	213.7	0.0
9/30/1998	5021	30	-102.4	0.0	165.2	-152.1	27.8	-544.8	818.9	5.6	-76.9	-784.0	445.7	197.2	0.0
10/31/1998	5052	31	3.2	0.0	167.7	-134.8	29.0	-560.8	846.4	-2.7	-77.0	-806.6	341.3	194.3	0.0
11/30/1998	5082	30	-246.1	10.1	160.8	-98.8	34.8	-491.2	778.5	5.1	-73.5	-765.9	521.8	164.3	0.0
12/31/1998	5113	31	-49.7	0.0	164.2	-83.7	24.3	-516.9	771.3	24.1	-75.4	-801.2	383.1	159.9	0.0
1/31/1999	5144	31	-552.4	144.6	162.3	-94.6	65.3	-392.1	648.4	38.5	-76.1	-716.7	614.1	158.8	0.0
2/28/1999	5172	28	-176.3	0.4	144.8	-93.8	22.6	-658.7	809.5	36.7	-70.2	-706.8	533.7	158.2	0.0
3/31/1999	5203	31	-868.6	319.6	161.6	-147.3	113.6	-358.3	691.2	40.1	-78.9	-725.6	669.0	183.7	0.0
4/30/1999	5233	30	-750.8	139.1	158.5	-166.3	67.7	-352.6	721.2	48.6	-80.7	-644.6	663.6	196.2	0.0
5/31/1999	5264	31	25.9	0.0	161.9	-188.5	31.0	-658.1	803.7	44.9	-82.4	-779.5	413.2	227.9	0.0
6/30/1999	5294	30	153.6	0.0	154.4	-184.1	31.8	-684.5	871.4	18.9	-72.3	-812.7	290.4	233.0	0.0
7/31/1999	5325	31	129.0	0.0	157.1	-191.9	30.5	-739.3	909.4	40.2	-65.3	-765.7	252.7	243.2	0.0
8/31/1999	5356	31	108.8	0.0	155.1	-183.9	31.8	-785.2	979.6	27.7	-59.1	-779.5	260.1	244.4	0.0
9/30/1999	5386	30	104.8	0.0	148.2	-149.8	29.5	-803.2	1020.1	9.3	-54.1	-792.1	258.2	229.1	0.0
10/31/1999	5417	31	165.8	0.0	150.6	-133.6	34.8	-837.2	1094.9	-6.7	-50.0	-837.8	201.1	218.2	0.0
11/30/1999	5447	30	-50.4	15.9	145.1	-98.2	36.6	-692.2	964.4	-25.1	-49.8	-784.7	347.5	190.8	0.0
12/31/1999	5478	31	101.9	0.0	149.0	-83.2	29.0	-833.4	1070.2	-29.7	-57.0	-839.7	317.9	175.0	0.0
1/31/2000	5509	31	-260.4	119.5	147.7	-94.4	64.6	-485.6	800.6	-78.3	-61.1	-819.2	493.1	173.4	0.0
2/29/2000	5538	29	-1313.5	759.6	148.8	-97.1	235.1	-322.6	682.8	-103.0	-65.7	-758.7	722.4	111.8	0.0
3/31/2000	5569	31	-532.2	156.7	157.8	-147.3	68.9	-361.9	725.4	-82.0	-77.7	-695.9	627.0	161.4	0.0
4/30/2000	5599	30	-651.7	182.8	151.3	-168.8	79.9	-327.3	718.5	-48.2	-76.5	-663.6	618.1	185.5	0.0
5/31/2000	5630	31	168.6	0.0	153.0	-189.2	33.5	-568.7	795.9	-36.5	-74.6	-814.1	314.2	218.0	0.0
6/30/2000	5660	30	270.7	0.0	145.2	-184.2	35.2	-605.3	855.2	-55.4	-60.1	-867.0	238.6	227.1	0.0
7/31/2000	5691	31	188.7	0.0	156.2	-191.3	23.6	-742.6	989.4	-67.4	-52.2	-790.2	242.3	243.6	0.0
8/31/2000	5722	31	147.9	0.0	159.8	-182.8	24.4	-759.0	1018.9	-79.4	-47.9	-769.4	244.7	242.8	0.0
9/30/2000	5752	30	118.1	0.0	156.1	-147.9	22.6	-760.0	1025.7	-89.1	-45.0	-758.9	255.3	223.2	0.0
10/31/2000	5783	31	-7.0	1.7	162.2	-133.8	20.1	-717.0	1007.2	-94.2	-50.7	-760.1	350.5	221.0	0.0
11/30/2000	5813	30	109.3	0.0	156.4	-97.5	21.2	-763.8	1027.0	-82.0	-50.0	-760.4	248.7	191.0	0.0
12/31/2000	5844	31	117.9	0.0	160.9	-83.2	20.0	-785.7	1048.4	-84.5	-49.1	-798.0	271.8	181.6	0.0
1/31/2001	5875	31	-1286.7	628.2	172.3	-94.6	192.8	-363.1	812.4	-127.6	-57.5	-769.5	752.3	141.0	0.0
2/28/2001	5903	28	-1479.5	745.2	167.6	-93.8	254.8	-268.7	648.4	-114.4	-68.6	-665.6	792.6	82.0	0.0
3/31/2001	5934	31	-1261.6	577.2	191.3	-147.3	157.7	-272.5	640.7	-96.7	-92.3	-665.8	844.6	124.8	0.0
4/30/2001	5964	30	-434.6	26.7	181.3	-170.9	36.3	-450.4	809.4	-69.2	-92.1	-597.0	605.8	154.7	0.0
5/31/2001	5995	31	-191.7	0.0	183.0	-200.8	25.1	-570.1	839.5	-70.3	-90.0	-691.4	566.3	200.4	0.0
6/30/2001	6025	30	-26.4	0.0	174.0	-186.3	26.0	-588.4	863.2	-85.8	-82.1	-706.5	399.9	212.6	0.0
7/31/2001	6056	31	78.2	0.0	172.2	-194.2	33.5	-830.1	1090.7	-73.2	-79.5	-817.7	384.3	235.7	0.0
8/31/2001	6087	31	123.4	0.0	167.1	-185.9	33.3	-849.1	1114.4	-89.0	-74.0	-855.1	375.7	239.2	0.0
9/30/2001	6117	30	133.3	0.0	158.6	-150.2	30.5	-852.9	1121.2	-102.1	-67.4	-860.3	373.7	215.7	0.0
10/31/2001	6148	31	92.9	0.0	162.2	-134.1	31.9	-874.5	1152.4	-108.3	-66.5	-910.2	441.5	212.6	0.0
11/30/2001	6178	30	-650.7	264.2	157.7	-100.1	99.2	-440.4	827.9	-102.1	-64.9	-768.4	610.0	167.5	0.0
12/31/2001	6209	31	-320.2	114.6	162.6	-83.7	52.4	-491.9	712.3	-71.6	-70.3	-759.7	608.9	146.8	0.0
1/31/2002	6240	31	-316.6	50.5	154.1	-94.6	39.0	-520.2	740.7	-33.4	-71.1	-721.2	611.7	161.1	0.0
2/28/2002	6268	28	-3.9	0.0	132.6	-93.8	22.9	-694.0	837.3	-9.2	-62.9	-730.4	442.1	159.4	0.0
3/31/2002	6299	31	10.9	0.0	143.0	-143.6	26.4	-745.2	923.1	-15.8	-66.3	-822.8	477.8	212.6	0.0
4/30/2002	6329	30	78.4	0.0	135.6	-159.7	26.3	-747.0	912.6	-29.0	-61.5	-799.7	417.7	226.3	0.0
5/31/2002	6360	31	136.6	0.0	138.1	-186.0	28.6	-765.1	946.2	-47.4	-61.2	-819.5	382.5	247.1	0.0
6/30/2002	6390	30	145.2	0.0	131.9	-177.9	29.0	-760.5	939.8	-60.5	-57.3	-795.0	367.7	237.6	0.0
7/31/2002	6421	31	275.3	0.0	148.6	-185.2	35.2	-775.3	923.5	-53.4	-56.7	-886.2	324.7	249.7	0.0
8/31/2002	6452	31	307.8	0.0	156.5	-180.1	35.2	-820.3	1018.0	-70.0	-54.0	-960.2	314.8	252.1	0.0
9/30/2002	6482	30	332.2	0.0	155.6	-146.4	37.0	-837.1	1058.6	-83.2	-49.6	-991.5	291.6	232.8	0.0
10/31/2002	6513	31	365.6	0.0	163.4	-133.2	34.3	-875.0	1112.9	-94.6	-49.2	-1061.1	302.5	234.2	0.0
11/30/2002	6543	30	-955.3	530.9	165.0	-100.5	178.6	-476.7	933.3	-155.0	-52.2	-909.0	674.3	166.5	0.0
12/31/2002	6574	31	-747.3	312.6	176.4	-83.7	99.5	-445.6	875.5	-157.2	-65.6	-805.2	710.2	130.5	0.0
1/31/2003	6605	31	206.8	0.0	174.7	-94.6	21.3	-540.7	815.6	-144.2	-68.4	-850.0	325.3	154.2	0.0
2/28/2003	6633	28	-1291.2	713.5	170.8	-93.8	217.3	-291.8	686.4	-155.1	-68.7	-753.3	763.2	102.7	0.0
3/31/2003	6664	31	-799.5	284.8	190.2	-147.3	110.1	-301.3	730.6	-149.7	-86.7	-681.0	704.6	145.3	0.0
4/30/2003	6694	30	-268.3	8.8	181.0	-170.9	33.1	-418.1	754.8	-114.7	-84.3	-708.5	603.2	183.9	0.0
5/31/2003	6725	31	-299.5	89.5	184.1	-195.3	51.4	-326.2	576.5	-114.2	-84.9	-703.1	600.7	220.9	0.0
6/30/2003	6755	30	195.0	0.0	175.4	-185.2	24.5	-454.8	671.7	-109.8	-77.2	-761.1	299.9	221.6	0.0
7/31/2003	6786	31	277.5	0.0	178.5	-191.4	28.1	-663.8	835.6	-79.2	-69.3	-825.0	266.2	242.7	0.0
8/31/2003	6817	31	277.9	0.0	176.2	-182.2	29.7	-707.0	897.6	-85.1	-61.1	-853.6	265.0	242.6	0.0
9/30/2003	6847	30	283.4	0.0	168.6	-147.4	27.4	-721.9	914.9	-97.6	-54.8	-860.4	263.6	224.2	0.0
10/31/2003	6878	31	312.5	0.0	172.2	-133.6	28.9	-750.5	968.9	-116.6	-53.0	-905.6	257.6	219.1	0.0
11/30/2003	6908	30	184.9	39.7	165.3	-97.9	36.2	-501.8	780.0	-152.8	-50.6	-878.9	285.0	190.7	0.0
12/31/2003	6939	31	-283.9	80.0	171.3	-83.6	49.1	-500.8	787.5	-163.0	-58.6	-789.7	613.0	178.7	0.0
1/31/2004	6970	31	133.6	0.0	169.9	-94.5	18.0	-511.3	748.3	-169.0	-65.0	-787.0	367.7	189.2	0.0
2/29/2004	6999	29	-1085.2	546.5	169.0	-97.1	172.9	-276.7	679.1	-195.9	-69.3	-703.2	715.1	144.8	0.0
3/31/2004	7030	31	164.5	0.0	178.2	-147.1	20.4	-479.4	675.9	-161.7	-78.7	-733.1	365.2	195.9	0.0

Flow Budget for the UAS in Pleasant Valley

influx(+) outflux(-); units in Acre-feet

Date	Stress	days in month	STORAGE	Mountain Front Recharge	GW Flux from East Las Posas	ET	Recharge	Pumping from Wells	Pleasant Valley Semi-Perched Aquifer	Oxnard UAS	Los Posas	Pleasant Valley LAS	Arroyo Las Posas Percolation	Conejo Creek Percolation	Calleguas Creek percolation
4/30/2004	7060	30	145.0	0.0	169.9	-160.9	25.0	-491.2	713.6	-143.3	-73.2	-743.7	341.6	217.4	0.0
5/31/2004	7091	31	249.5	0.0	173.0	-183.9	36.0	-511.7	766.6	-164.3	-66.3	-781.0	241.0	241.1	0.0
6/30/2004	7121	30	296.3	0.0	165.2	-175.6	28.5	-510.8	756.9	-174.8	-52.1	-770.6	192.8	244.1	0.0
7/31/2004	7152	31	373.0	0.0	169.1	-183.1	29.9	-770.1	980.6	-167.3	-45.2	-841.3	202.9	251.6	0.0
8/31/2004	7183	31	426.6	0.0	167.2	-176.9	30.7	-814.9	1050.7	-177.4	-38.4	-891.2	172.8	251.0	0.0
9/30/2004	7213	30	416.9	0.0	160.8	-143.5	29.5	-831.2	1071.1	-187.9	-33.5	-908.4	189.8	236.4	0.0
10/31/2004	7244	31	-1161.1	645.6	179.1	-140.5	216.0	-446.4	933.8	-278.5	-48.7	-879.4	770.8	209.4	0.0
11/30/2004	7274	30	354.7	0.0	170.6	-98.4	24.0	-783.5	987.5	-214.0	-58.9	-834.3	288.0	164.2	0.0
12/31/2004	7305	31	-1407.3	815.1	189.5	-83.7	248.0	-407.3	901.4	-284.5	-74.6	-865.5	868.5	100.5	0.0
1/31/2005	7336	31	-2246.9	1207.3	195.0	-94.6	417.4	-295.6	825.4	-311.6	-110.0	-821.6	1211.2	23.9	0.0
2/28/2005	7364	28	-2095.0	1145.5	178.7	-108.1	364.8	-226.4	683.4	-263.9	-133.6	-706.1	1206.6	-45.9	0.0
3/31/2005	7395	31	-686.9	194.0	198.7	-176.7	92.1	-266.9	769.8	-226.1	-137.8	-574.3	768.6	45.5	0.0
4/30/2005	7425	30	-446.6	15.0	188.4	-185.3	36.0	-328.0	811.9	-170.7	-113.8	-577.8	652.9	118.0	0.0
5/31/2005	7456	31	-212.6	0.0	190.4	-214.1	25.9	-405.7	793.4	-158.5	-104.7	-712.0	624.2	173.7	0.0
6/30/2005	7486	30	-6.6	0.0	180.9	-196.3	27.3	-416.5	683.0	-146.1	-92.0	-756.4	529.6	193.0	0.0
7/31/2005	7517	31	90.0	0.0	184.3	-200.7	28.2	-435.6	710.1	-142.7	-88.2	-793.0	428.0	219.7	0.0
8/31/2005	7548	31	94.7	0.0	182.2	-189.1	28.1	-441.3	698.8	-130.1	-83.6	-775.6	389.8	226.0	0.0
9/30/2005	7578	30	135.1	0.0	174.6	-150.0	25.9	-437.2	665.0	-119.9	-76.4	-742.2	321.3	203.8	0.0
10/31/2005	7609	31	-379.4	61.7	180.5	-136.3	54.7	-357.2	624.7	-111.1	-79.0	-678.6	614.9	205.0	0.0
11/30/2005	7639	30	-69.6	0.0	174.1	-98.4	23.7	-421.4	596.9	-96.6	-78.2	-702.9	496.9	175.6	0.0
12/31/2005	7670	31	14.2	0.0	179.2	-83.6	22.2	-438.1	608.8	-99.5	-79.4	-745.8	454.4	167.6	0.0
1/31/2006	7701	31	-738.9	266.8	182.2	-94.6	91.7	-280.3	607.5	-110.3	-82.2	-693.1	688.2	162.7	0.0
2/28/2006	7729	28	-779.7	312.5	166.8	-93.8	123.0	-232.5	511.8	-97.0	-79.2	-583.7	624.5	127.4	0.0
3/31/2006	7760	31	-898.4	381.0	187.5	-147.3	146.1	-229.1	492.3	-92.6	-92.9	-601.5	702.0	152.8	0.0
4/30/2006	7790	30	-848.3	353.4	183.8	-176.2	134.1	-211.0	430.1	-62.5	-94.3	-553.9	684.7	160.1	0.0
5/31/2006	7821	31	-204.5	68.3	187.8	-206.3	49.6	-267.9	335.3	-52.5	-95.9	-591.6	578.6	199.2	0.0
6/30/2006	7851	30	206.5	0.0	179.4	-189.5	31.1	-386.5	473.5	-73.6	-86.6	-747.4	385.6	207.5	0.0
7/31/2006	7882	31	196.1	0.0	183.0	-194.9	28.8	-413.1	519.9	-82.2	-82.0	-725.9	338.2	232.1	0.0
8/31/2006	7913	31	130.5	0.0	180.9	-185.1	29.4	-423.4	540.3	-92.8	-79.3	-699.2	360.3	238.3	0.0
9/30/2006	7943	30	170.1	0.0	173.0	-149.8	26.8	-423.6	542.5	-108.9	-73.8	-682.6	311.8	214.3	0.0
10/31/2006	7974	31	181.2	0.0	176.8	-134.3	27.5	-437.1	564.4	-124.9	-72.1	-702.7	311.1	210.0	0.0
11/30/2006	8004	30	155.9	0.0	169.5	-97.9	24.2	-433.5	561.3	-131.9	-68.1	-689.1	326.7	182.9	0.0
12/31/2006	8035	31	-98.1	56.0	174.4	-83.6	42.7	-343.2	485.8	-143.4	-72.4	-650.5	463.0	169.3	0.0
1/31/2007	8066	31	-384.6	187.8	174.2	-94.6	93.9	-292.4	397.4	-135.2	-77.1	-552.6	526.9	156.1	0.0
2/28/2007	8094	28	-225.3	35.8	157.6	-93.8	34.5	-364.5	455.5	-108.9	-73.3	-523.6	551.1	154.9	0.0
3/31/2007	8125	31	87.1	0.0	173.8	-145.6	22.9	-475.6	568.6	-122.0	-81.4	-625.7	389.8	208.1	0.0
4/30/2007	8155	30	-93.7	0.0	168.5	-160.8	21.2	-430.7	543.7	-130.7	-78.9	-609.3	545.7	225.0	0.0
5/31/2007	8186	31	135.0	0.0	173.6	-186.7	27.0	-485.2	607.1	-152.4	-81.4	-658.5	373.2	248.2	0.0
6/30/2007	8216	30	154.8	0.0	167.7	-178.8	27.0	-488.8	630.8	-179.1	-77.6	-660.2	363.0	241.3	0.0
7/31/2007	8247	31	302.8	0.0	172.7	-185.6	30.3	-567.1	695.5	-178.6	-77.8	-780.9	338.2	250.5	0.0
8/31/2007	8278	31	292.7	0.0	172.3	-179.7	28.8	-592.7	737.8	-182.6	-75.1	-828.6	375.7	251.3	0.0
9/30/2007	8308	30	139.9	0.0	167.0	-146.6	28.3	-599.6	763.4	-184.3	-71.9	-833.3	499.2	237.9	0.0
10/31/2007	8339	31	333.6	0.0	171.4	-133.5	30.2	-621.1	800.0	-194.7	-71.0	-865.4	319.1	231.3	0.0
11/30/2007	8369	30	367.8	0.0	164.7	-97.6	26.8	-618.9	787.9	-191.4	-62.4	-848.2	272.5	198.9	0.0
12/31/2007	8400	31	-202.1	133.5	170.6	-83.6	67.1	-452.0	647.4	-226.1	-66.1	-718.3	550.3	179.4	0.0
1/31/2008	8431	31	-1616.5	991.1	188.5	-94.9	309.1	-294.1	581.1	-274.7	-86.7	-725.5	913.5	109.1	0.0
2/29/2008	8460	29	-414.4	226.5	174.8	-97.9	90.3	-290.7	528.2	-243.7	-90.7	-566.5	585.7	98.4	0.0
3/31/2008	8491	31	293.9	0.0	181.6	-147.3	30.1	-463.9	633.0	-226.0	-91.1	-697.8	321.6	165.9	0.0
4/30/2008	8521	30	301.2	0.0	172.0	-170.9	34.1	-473.9	658.0	-200.2	-80.8	-743.5	308.2	195.7	0.0
5/31/2008	8552	31	339.1	0.0	175.1	-191.7	35.5	-494.0	687.7	-205.1	-76.5	-786.7	286.5	230.0	0.0
6/30/2008	8582	30	359.0	0.0	167.7	-180.8	35.6	-494.1	686.9	-206.5	-66.9	-787.1	251.1	235.2	0.0
7/31/2008	8613	31	498.6	0.0	171.3	-187.6	36.7	-610.0	776.1	-207.0	-60.1	-876.8	210.3	248.4	0.0
8/31/2008	8644	31	525.2	0.0	169.6	-181.2	35.5	-639.5	824.0	-219.7	-51.9	-913.1	202.3	248.7	0.0
9/30/2008	8674	30	506.7	0.0	163.0	-147.4	34.5	-647.6	854.5	-227.7	-46.0	-917.2	197.6	229.6	0.0
10/31/2008	8705	31	503.7	0.0	167.6	-133.7	36.6	-671.8	911.4	-247.8	-46.3	-962.0	219.5	222.7	0.0
11/30/2008	8735	30	-79.2	118.1	163.2	-99.3	72.4	-425.6	699.1	-255.7	-53.3	-759.0	430.2	189.2	0.0
12/31/2008	8766	31	-304.2	192.4	169.7	-83.7	85.1	-382.0	589.9	-251.7	-70.1	-679.0	574.9	158.7	0.0
1/31/2009	8797	31	288.2	0.0	168.5	-94.6	24.9	-369.0	608.7	-244.6	-71.8	-721.2	236.7	174.2	0.0
2/28/2009	8825	28	-1092.9	673.1	161.2	-93.8	216.9	-221.2	494.7	-230.6	-71.3	-630.0	681.2	112.8	0.0
3/31/2009	8856	31	265.0	0.0	176.2	-147.3	24.9	-330.3	509.7	-225.9	-86.7	-667.2	308.1	173.6	0.0
4/30/2009	8886	30	225.0	0.0	168.4	-166.4	27.7	-328.6	537.8	-212.4	-82.7	-685.0	314.8	201.4	0.0
5/31/2009	8917	31	387.4	0.0	170.4	-186.9	28.7	-338.0	564.2	-232.8	-72.3	-709.3	152.5	236.2	0.0
6/30/2009	8947	30	403.6	0.0	162.2	-176.4	26.1	-332.6	550.4	-244.1	-54.7	-696.2	129.1	232.6	0.0
7/31/2009	8978	31	480.3	0.0	165.9	-182.6	31.1	-557.6	739.5	-235.9	-48.3	-784.0	145.7	245.9	0.0
8/31/2009	9009	31	469.4	0.0	165.0	-176.3	35.4	-601.5	827.1	-251.5	-45.2	-837.4	169.7	245.3	0.0
9/30/2009	9039	30	403.0	0.0	160.1	-142.9	32.1	-619.6	859.6	-263.4	-47.7	-854.3	244.6	228.6	0.0
10/31/2009	9070	31	-79.6	73.1	166.8	-134.3	54.6	-480.0	796.6	-312.8	-61.5	-746.1	495.0	228.1	0.0
11/30/2009	9100	30	457.0	0.0	159.2	-97.5	30.6	-625.5	892.6	-299.0	-61.0	-811.4	164.8	190.3	0.0
12/31/2009	9131	31	-613.4	334.1	167.5	-83.7	115.3	-378.0	815.0	-352.8	-68.0	-745.5	645.1	164.5	0.0
1/31/2010	9162	31	-1209.4	676.5	185.0	-94.6	170.5	-275.4	689.9	-365.6	-92.2	-679.7	853.1	141.8	0.0
2/28/2010	9190	28	-816.6	446.3	170.7	-93.8	136.3	-225.5	588.4	-317.3	-98.6	-566.0	675.2	100.9	0.0
3/31/2010	9221	31	292.4	0.0	183.4	-147.3	27.4	-367.3	648.0	-327.4	-110.8	-730.4	368.9	163.0	0.0
4/30/2010	9251	30	-44.7	68.6	173.4	-169.4	45.5	-274.8	563.7	-297.3	-103.1	-654.0	496.9	195.3	0.0
5/31/2010	9282	31	188.3	0.0	176.2	-188.5	33.2	-363.7	655.9	-304.3	-105.8	-766.7	452.5	222.8	0.0
6/30/2010	9312	30	417.9	0.0	167.7	-177.4	31.8	-367.3	661.6	-308.1	-92.7	-803.6	242.2	227.9	0.0
7/31/2010	9343	31	540.0	0.0	170.3	-183.4	39.3	-540.2	773.3	-286.0	-80.4	-871.3	195.5	242.9	0.0
8/31/2010	9374	31	555.1	0.0	167.8	-176.8	39.4	-577.0	828.7	-289.8	-68.2	-902.9	179.5	244.0	0.0

Flow Budget for the UAS in Pleasant Valley

Date	Stress	days in month	STORAGE	Mountain Front Recharge	GW Flux from East Las Posas	ET	Recharge	Pumping from Wells	Pleasant Valley Semi-Perched Aquifer	Oxnard UAS	Los Posas	Pleasant Valley LAS	Arroyo Las Posas Percolation	Conejo Creek Percolation	Calleguas Creek percolation
			influx(+) outflux(-); units in Acre-feet												
9/30/2010	9404	30	515.1	0.0	161.3	-143.4	38.4	-590.6	858.7	-294.3	-60.7	-908.6	199.3	224.8	0.0
10/31/2010	9435	31	-99.7	225.4	167.6	-136.2	91.0	-371.5	680.3	-343.5	-72.1	-793.2	435.9	215.7	0.0
11/30/2010	9465	30	335.6	1.1	161.6	-97.0	26.2	-530.0	782.5	-291.7	-79.4	-757.7	275.5	173.2	0.0
12/31/2010	9496	31	-1505.8	1081.3	181.6	-83.7	346.5	-284.1	638.2	-346.4	-97.9	-795.4	803.9	61.7	0.0
1/31/2011	9527	31	223.1	0.0	178.8	-94.6	33.6	-329.7	590.5	-332.7	-110.0	-736.1	457.5	119.7	0.0
2/28/2011	9555	28	-692.5	295.8	164.0	-93.8	111.5	-227.2	666.4	-284.4	-103.7	-609.4	654.2	119.2	0.0
3/31/2011	9586	31	-1336.0	723.3	191.1	-152.3	223.4	-203.6	621.7	-299.2	-129.5	-634.7	848.2	147.8	0.0
4/30/2011	9616	30	103.9	0.0	180.3	-182.3	36.2	-292.1	537.5	-262.5	-128.5	-662.6	515.3	154.8	0.0
5/31/2011	9647	31	143.1	0.0	181.1	-215.1	37.3	-321.9	610.8	-261.0	-124.4	-746.2	493.1	203.2	0.0
6/30/2011	9677	30	346.7	0.0	170.7	-195.3	39.4	-330.6	616.6	-259.2	-108.7	-747.6	254.7	213.3	0.0
7/31/2011	9708	31	418.8	0.0	171.8	-195.4	35.7	-384.8	681.5	-258.4	-94.1	-790.0	183.2	231.7	0.0
8/31/2011	9739	31	448.2	0.0	167.6	-185.6	35.9	-390.3	687.2	-263.1	-76.7	-802.2	144.5	234.4	0.0
9/30/2011	9769	30	435.9	0.0	159.3	-148.9	33.6	-386.8	681.0	-266.4	-61.9	-792.1	131.5	214.6	0.0
10/31/2011	9800	31	149.9	3.7	165.2	-135.6	35.3	-374.8	687.1	-275.2	-70.0	-729.0	331.4	212.0	0.0
11/30/2011	9830	30	-319.1	139.8	161.4	-101.1	74.9	-283.6	547.9	-253.1	-84.3	-651.6	586.7	182.1	0.0
12/31/2011	9861	31	277.0	0.0	165.9	-84.2	29.4	-368.5	615.9	-246.3	-93.6	-746.0	285.9	164.4	0.0
1/31/2012	9892	31	-9.2	96.1	165.2	-94.7	66.3	-278.8	542.6	-249.1	-96.9	-679.3	368.3	169.6	0.0
2/29/2012	9921	29	415.1	0.0	153.1	-97.1	38.7	-349.5	573.7	-233.6	-83.4	-756.3	170.8	168.5	0.0
3/31/2012	9952	31	-551.7	233.9	166.9	-147.3	101.2	-269.0	662.6	-258.3	-90.3	-708.5	655.6	204.9	0.0
4/30/2012	9982	30	-323.8	111.7	162.5	-164.9	55.0	-244.8	549.5	-241.7	-100.5	-624.8	600.4	221.2	0.0
5/31/2012	10013	31	483.1	0.0	164.3	-188.4	41.5	-348.6	586.6	-247.9	-91.5	-778.0	143.3	235.6	0.0
6/30/2012	10043	30	531.4	0.0	156.1	-178.6	42.6	-368.8	618.6	-257.2	-67.8	-837.3	127.9	232.9	0.0
7/31/2012	10074	31	490.9	0.0	159.7	-181.9	34.5	-568.6	779.1	-242.8	-61.1	-798.6	148.2	240.6	0.0
8/31/2012	10105	31	485.1	0.0	157.5	-174.3	35.3	-606.8	851.7	-255.0	-56.6	-789.9	116.8	236.3	0.0
9/30/2012	10135	30	465.8	0.0	150.1	-140.7	34.9	-621.0	887.8	-263.3	-49.1	-785.1	96.4	224.3	0.0
10/31/2012	10166	31	455.8	0.0	153.8	-129.4	36.5	-649.5	951.5	-287.6	-47.1	-823.8	114.4	225.5	0.0
11/30/2012	10196	30	417.3	2.6	148.3	-97.2	29.2	-542.6	849.1	-287.4	-45.4	-806.9	135.7	197.3	0.0
12/31/2012	10227	31	105.2	132.3	155.5	-83.7	51.1	-433.5	735.4	-308.4	-61.0	-832.0	351.7	187.4	0.0
1/31/2013	10258	31	167.0	60.4	156.5	-94.6	45.4	-417.8	731.6	-293.6	-79.4	-785.8	333.3	177.0	0.0
2/28/2013	10286	28	420.7	0.0	139.5	-93.5	19.8	-499.6	732.7	-244.2	-69.1	-709.9	132.7	171.0	0.0
3/31/2013	10317	31	257.5	0.0	155.3	-141.1	20.0	-474.8	769.6	-278.1	-77.6	-776.8	324.0	222.0	0.0
4/30/2013	10347	30	435.6	0.0	148.2	-158.4	22.9	-530.6	790.3	-264.5	-71.1	-738.6	136.9	229.3	0.0
5/31/2013	10378	31	492.0	0.0	148.6	-178.8	23.9	-555.7	838.7	-283.4	-56.7	-741.1	70.7	241.7	0.0
6/30/2013	10408	30	484.2	0.0	138.2	-171.2	23.5	-554.5	832.3	-283.4	-41.1	-715.3	48.2	239.1	0.0
7/31/2013	10439	31	590.9	0.0	134.4	-178.3	28.1	-741.4	997.5	-282.1	-30.9	-789.0	30.1	240.7	0.0
8/31/2013	10470	31	610.2	0.0	129.0	-170.9	28.1	-775.2	1055.9	-289.3	-21.8	-827.3	28.3	233.3	0.0
9/30/2013	10500	30	586.0	0.0	121.1	-137.7	28.0	-784.6	1073.5	-288.1	-15.3	-831.1	27.4	220.9	0.0
10/31/2013	10531	31	590.2	0.0	122.9	-125.9	26.8	-815.5	1136.3	-309.9	-13.3	-871.4	31.4	228.3	0.0
11/30/2013	10561	30	552.8	0.0	122.3	-96.2	24.3	-811.8	1130.2	-307.1	-12.1	-866.3	50.6	213.1	0.0
12/31/2013	10592	31	604.0	0.0	118.9	-82.4	24.6	-835.7	1183.5	-326.8	-11.4	-896.5	24.6	197.2	0.0
1/31/2014	10623	31	420.0	0.0	131.0	-92.3	28.2	-851.6	1220.5	-337.5	-13.8	-897.1	194.3	198.3	0.0
2/28/2014	10651	28	55.8	268.8	116.3	-93.6	112.6	-478.7	868.1	-347.0	-14.0	-699.9	50.5	161.0	0.0
3/31/2014	10682	31	-224.8	62.5	137.7	-143.5	45.8	-591.3	1000.7	-362.0	-28.0	-728.6	609.1	222.3	0.0
4/30/2014	10712	30	133.6	0.0	137.1	-158.6	27.4	-772.4	1096.6	-318.4	-47.2	-816.5	498.6	219.9	0.0
5/31/2014	10743	31	656.2	0.0	132.6	-180.0	31.2	-826.3	1179.8	-329.3	-42.0	-892.5	41.2	229.2	0.0
6/30/2014	10773	30	651.3	0.0	121.9	-169.4	30.5	-835.4	1184.3	-321.4	-25.0	-897.8	36.3	224.8	0.0
7/31/2014	10804	31	635.3	0.0	125.1	-176.7	28.7	-851.9	1242.8	-351.3	-18.3	-915.5	45.5	236.2	0.0
8/31/2014	10835	31	653.4	0.0	121.4	-170.1	27.6	-832.4	1212.3	-358.6	-15.3	-906.9	36.3	232.4	0.0
9/30/2014	10865	30	644.4	0.0	114.4	-136.3	26.2	-823.0	1181.1	-349.4	-12.6	-890.7	31.5	214.4	0.0
10/31/2014	10896	31	652.9	0.0	118.3	-123.6	25.3	-845.6	1217.3	-363.3	-11.6	-928.4	38.7	219.9	0.0
11/30/2014	10926	30	571.0	0.0	117.1	-94.8	20.0	-807.6	1168.7	-351.1	-10.8	-880.5	49.4	218.6	0.0
12/31/2014	10957	31	-334.8	579.9	130.4	-83.7	188.3	-497.1	904.1	-411.4	-16.3	-858.9	230.0	169.8	0.0
1/31/2015	10988	31	-140.6	134.0	136.0	-94.6	73.7	-386.0	840.7	-378.9	-34.2	-692.4	388.6	153.7	0.0
2/28/2015	11016	28	111.3	0.0	125.9	-93.8	19.7	-511.3	843.4	-302.9	-47.5	-679.5	379.3	155.3	0.0
3/31/2015	11047	31	469.5	16.2	127.2	-147.3	33.2	-470.6	901.8	-350.5	-43.5	-778.9	29.5	213.4	0.0
4/30/2015	11077	30	526.1	0.0	116.8	-161.0	22.4	-557.1	916.5	-325.7	-24.9	-754.6	28.0	213.6	0.0
5/31/2015	11108	31	521.3	0.0	123.0	-175.5	21.9	-589.3	966.4	-335.9	-18.6	-789.5	47.3	228.7	0.0
6/30/2015	11138	30	526.9	0.0	112.8	-167.5	21.8	-589.5	959.7	-325.9	-14.5	-774.9	23.2	228.0	0.0
7/31/2015	11169	31	495.6	0.0	113.0	-177.5	18.4	-635.7	1011.1	-338.0	-12.4	-743.0	21.5	247.0	0.0
8/31/2015	11200	31	555.2	0.0	109.0	-168.7	23.2	-708.5	1068.0	-329.0	-11.2	-783.2	16.0	228.9	0.0
9/30/2015	11230	30	548.1	0.0	102.4	-136.2	22.6	-712.0	1051.6	-312.0	-9.8	-793.3	13.7	225.0	0.0
10/31/2015	11261	31	580.1	0.0	103.8	-122.0	22.4	-736.3	1089.3	-322.4	-9.4	-835.9	17.2	213.1	0.0
11/30/2015	11291	30	540.9	0.0	100.6	-91.2	23.4	-729.4	1077.2	-311.6	-8.6	-826.9	24.4	201.3	0.0
12/31/2015	11322	31	557.9	0.0	99.9	-81.7	23.9	-748.6	1114.7	-322.8	-8.6	-865.4	14.8	215.9	0.0

Flow Budget for the LAS in Pleasant Valley

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Pleasant Valley UAS	Oxnard Basin	Las Posas
			influx(+) outflux(-); units in Acre-feet					
1/31/1985	31	31	-34.0	18.0	-445.1	429.3	30.8	1.0
2/28/1985	59	28	77.0	17.4	-411.8	277.3	31.1	9.0
3/31/1985	90	31	270.2	15.0	-619.1	308.0	3.0	22.8
4/30/1985	120	30	722.5	7.8	-1208.4	415.9	15.3	46.8
5/31/1985	151	31	549.2	8.0	-1155.8	503.5	22.4	72.7
6/30/1985	181	30	499.1	8.5	-1139.6	530.3	17.2	84.5
7/31/1985	212	31	459.1	8.3	-1086.6	558.1	-34.6	95.7
8/31/1985	243	31	437.4	8.1	-1061.5	572.1	-60.1	104.0
9/30/1985	273	30	439.1	8.0	-1055.3	572.5	-72.5	108.2
10/31/1985	304	31	381.2	7.6	-1026.7	605.1	-84.5	117.4
11/30/1985	334	30	-1003.1	73.5	148.2	750.0	-64.2	95.5
12/31/1985	365	31	250.5	8.9	-805.9	501.0	-32.9	78.4
1/31/1986	396	31	-1057.7	59.3	89.3	878.5	-28.8	59.5
2/28/1986	424	28	-1229.1	112.2	131.4	984.6	-17.6	18.5
3/31/1986	455	31	-1007.1	97.8	91.7	832.2	-4.9	-9.7
4/30/1986	485	30	270.6	13.9	-765.2	532.3	-34.1	-17.5
5/31/1986	516	31	501.0	8.3	-896.9	476.2	-89.5	0.8
6/30/1986	546	30	500.2	8.2	-873.7	474.4	-130.7	21.6
7/31/1986	577	31	577.1	8.8	-1050.2	480.5	-68.2	52.1
8/31/1986	608	31	450.2	7.7	-998.4	487.9	-24.1	76.7
9/30/1986	638	30	65.2	12.3	-644.5	482.9	2.2	81.9
10/31/1986	669	31	357.9	7.7	-979.1	517.0	9.5	87.0
11/30/1986	699	30	-465.3	23.2	-146.7	518.1	-4.0	74.6
12/31/1986	730	31	423.0	7.6	-1002.9	500.3	-0.2	72.3
1/31/1987	761	31	-285.1	22.1	-294.7	513.3	-29.8	74.1
2/28/1987	789	28	97.9	16.3	-606.3	445.4	-16.7	63.5
3/31/1987	820	31	-300.9	24.8	-262.6	480.2	-3.4	61.9
4/30/1987	850	30	908.0	8.8	-1432.5	514.6	-77.5	78.5
5/31/1987	881	31	681.4	8.4	-1331.4	611.6	-90.6	120.5
6/30/1987	911	30	613.4	8.8	-1295.3	638.7	-104.5	139.0
7/31/1987	942	31	398.6	10.5	-1123.9	702.7	-146.6	158.7
8/31/1987	973	31	401.5	10.5	-1114.9	724.9	-184.4	162.4
9/30/1987	1003	30	430.1	10.0	-1119.1	715.9	-197.8	160.9
10/31/1987	1034	31	-747.0	22.8	-178.9	912.8	-145.9	136.2
11/30/1987	1064	30	-656.9	32.9	-46.2	697.4	-114.5	87.2
12/31/1987	1095	31	-1116.9	40.6	-9.5	1102.4	-66.7	50.2
1/31/1988	1126	31	-814.1	34.7	-95.7	909.1	-46.8	12.7
2/29/1988	1155	29	-204.9	21.1	-355.7	600.5	-55.4	-5.7
3/31/1988	1186	31	586.4	8.6	-1154.2	666.2	-114.5	7.5
4/30/1988	1216	30	-511.4	29.1	-186.0	706.9	-49.7	11.0
5/31/1988	1247	31	556.6	9.0	-1136.2	667.2	-108.2	11.7

Flow Budget for the LAS in Pleasant Valley

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Pleasant Valley UAS	Oxnard Basin	Las Posas
			influx(+) outflux(-); units in Acre-feet					
6/30/1988	1277	30	582.3	8.8	-1096.7	596.1	-126.3	35.8
7/31/1988	1308	31	645.8	8.6	-1278.4	614.2	-56.3	66.0
8/31/1988	1339	31	522.5	8.6	-1239.8	649.8	-33.2	92.1
9/30/1988	1369	30	472.1	8.7	-1230.1	676.0	-31.4	104.7
10/31/1988	1400	31	403.0	8.6	-1192.5	696.6	-33.7	118.0
11/30/1988	1430	30	-294.7	14.6	-466.7	680.9	-35.9	101.9
12/31/1988	1461	31	-1355.0	66.3	129.2	1113.2	-11.4	57.7
1/31/1989	1492	31	352.0	7.5	-967.5	583.0	-17.4	42.5
2/28/1989	1520	28	-835.7	43.6	-27.4	790.5	4.9	24.0
3/31/1989	1551	31	138.5	9.6	-699.0	561.4	-25.1	14.6
4/30/1989	1581	30	527.1	8.4	-1063.3	536.2	-47.6	39.3
5/31/1989	1612	31	430.0	8.3	-1017.5	577.1	-60.5	62.7
6/30/1989	1642	30	426.2	8.4	-1011.0	570.4	-67.9	73.9
7/31/1989	1673	31	612.8	7.9	-1329.6	614.5	5.6	86.9
8/31/1989	1704	31	506.4	7.8	-1295.0	643.9	35.2	99.0
9/30/1989	1734	30	479.8	8.0	-1292.5	651.6	43.1	105.3
10/31/1989	1765	31	388.5	7.8	-1256.1	694.3	47.2	114.6
11/30/1989	1795	30	396.6	7.8	-1265.9	694.9	46.8	114.3
12/31/1989	1826	31	329.6	8.2	-1235.8	727.4	46.9	119.5
1/31/1990	1857	31	-983.4	26.8	-144.0	1011.4	-2.1	91.3
2/28/1990	1885	28	-714.0	24.4	-221.4	900.7	-34.3	44.6
3/31/1990	1916	31	649.5	8.4	-1277.0	650.7	-91.9	60.3
4/30/1990	1946	30	587.1	8.5	-1241.5	662.2	-108.0	91.7
5/31/1990	1977	31	354.6	7.6	-1073.2	720.7	-122.9	113.1
6/30/1990	2007	30	483.5	9.2	-1187.6	707.1	-130.4	118.2
7/31/1990	2038	31	211.6	9.2	-1006.2	737.5	-76.4	124.3
8/31/1990	2069	31	216.7	9.2	-1016.4	736.0	-66.9	121.5
9/30/1990	2099	30	263.9	9.1	-1039.4	715.0	-66.2	117.7
10/31/1990	2130	31	211.7	9.7	-1018.4	746.1	-70.2	121.1
11/30/1990	2160	30	-4.5	8.3	-731.8	725.3	-105.5	108.3
12/31/1990	2191	31	285.1	8.4	-1037.4	732.0	-98.4	110.3
1/31/1991	2222	31	-313.3	15.5	-546.2	767.2	-24.0	100.8
2/28/1991	2250	28	-902.4	27.7	-125.6	930.6	12.7	57.0
3/31/1991	2281	31	-2014.1	131.5	313.8	1528.7	31.2	9.0
4/30/1991	2311	30	556.8	7.1	-1231.0	607.1	54.9	5.0
5/31/1991	2342	31	435.9	7.6	-1154.2	605.4	64.0	41.3
6/30/1991	2372	30	398.2	7.2	-1139.5	610.2	64.2	59.8
7/31/1991	2403	31	271.8	7.4	-1076.5	647.8	71.0	78.4
8/31/1991	2434	31	231.9	7.4	-1058.9	662.6	67.1	89.1
9/30/1991	2464	30	249.8	7.6	-1068.6	653.9	59.5	93.8

Flow Budget for the LAS in Pleasant Valley

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Pleasant Valley UAS	Oxnard Basin	Las Posas
			influx(+) outflux(-); units in Acre-feet					
10/31/1991	2495	31	188.5	7.3	-1038.5	684.1	55.4	101.4
11/30/1991	2525	30	219.2	7.3	-1055.1	670.8	51.7	101.3
12/31/1991	2556	31	-1873.1	69.2	326.9	1392.9	26.0	58.1
1/31/1992	2587	31	-1224.1	30.9	100.4	1047.7	51.8	-6.5
2/29/1992	2616	29	-1675.0	144.6	262.9	1275.0	47.8	-55.3
3/31/1992	2647	31	-1310.9	89.8	188.1	1092.5	49.1	-108.6
4/30/1992	2677	30	215.8	6.4	-829.3	622.1	85.8	-100.8
5/31/1992	2708	31	108.1	7.0	-788.1	643.2	101.5	-71.6
6/30/1992	2738	30	121.2	6.8	-782.2	608.5	96.6	-51.0
7/31/1992	2769	31	370.2	9.0	-1116.8	654.9	117.9	-35.2
8/31/1992	2800	31	290.2	9.5	-1075.2	678.1	114.3	-16.9
9/30/1992	2830	30	283.8	9.0	-1065.5	667.2	108.5	-2.9
10/31/1992	2861	31	-182.6	14.8	-557.7	645.0	86.5	-5.9
11/30/1992	2891	30	302.7	8.6	-1064.1	658.9	97.5	-3.6
12/31/1992	2922	31	-1160.4	64.2	191.6	878.5	55.4	-29.3
1/31/1993	2953	31	-1328.8	155.5	247.2	960.4	50.7	-84.9
2/28/1993	2981	28	-956.2	114.0	124.7	771.6	59.7	-113.9
3/31/1993	3012	31	-515.7	39.0	-81.8	616.1	93.6	-151.2
4/30/1993	3042	30	483.5	7.8	-1034.8	511.9	156.5	-125.0
5/31/1993	3073	31	301.2	8.0	-986.4	598.0	175.5	-96.3
6/30/1993	3103	30	255.1	6.6	-971.5	615.6	169.7	-75.5
7/31/1993	3134	31	80.9	9.2	-780.5	661.9	96.6	-68.1
8/31/1993	3165	31	83.4	9.3	-769.5	671.0	67.1	-61.3
9/30/1993	3195	30	97.4	9.3	-771.6	664.6	49.4	-49.1
10/31/1993	3226	31	54.1	9.4	-752.1	693.0	40.6	-45.0
11/30/1993	3256	30	-68.0	8.9	-609.6	681.1	33.8	-46.2
12/31/1993	3287	31	-420.5	17.6	-176.5	608.3	38.5	-67.4
1/31/1994	3318	31	93.2	6.8	-677.9	642.1	6.8	-71.0
2/28/1994	3346	28	-848.4	72.5	123.4	698.1	26.6	-72.2
3/31/1994	3377	31	-635.6	36.3	21.8	648.6	39.2	-110.2
4/30/1994	3407	30	307.0	6.8	-792.4	544.9	29.6	-95.9
5/31/1994	3438	31	180.5	6.9	-752.4	609.1	27.9	-72.0
6/30/1994	3468	30	159.4	7.4	-743.4	612.9	17.8	-54.1
7/31/1994	3499	31	281.0	9.6	-987.1	697.9	37.0	-38.5
8/31/1994	3530	31	227.2	9.9	-949.5	729.4	6.1	-23.2
9/30/1994	3560	30	217.9	9.6	-937.9	732.3	-12.7	-9.2
10/31/1994	3591	31	139.0	8.1	-861.5	740.3	-26.5	0.6
11/30/1994	3621	30	-274.1	13.6	-349.8	652.2	-34.6	-7.3
12/31/1994	3652	31	-151.1	14.1	-505.9	676.6	-11.4	-22.3
1/31/1995	3683	31	-1555.7	224.5	309.7	1079.1	-1.5	-56.1

Flow Budget for the LAS in Pleasant Valley

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Pleasant Valley UAS	Oxnard Basin	Las Posas
			influx(+) outflux(-); units in Acre-feet					
2/28/1995	3711	28	-273.8	16.2	-231.8	567.6	4.6	-82.8
3/31/1995	3742	31	-937.7	128.1	184.7	710.3	24.6	-110.0
4/30/1995	3772	30	28.3	8.2	-499.1	579.4	4.6	-121.4
5/31/1995	3803	31	86.6	9.2	-613.5	637.8	-7.6	-112.5
6/30/1995	3833	30	76.8	9.1	-609.2	633.9	-13.5	-97.1
7/31/1995	3864	31	96.5	12.0	-644.7	612.6	5.3	-81.7
8/31/1995	3895	31	76.9	12.2	-626.2	582.0	20.9	-65.7
9/30/1995	3925	30	57.3	12.4	-624.4	586.7	21.0	-52.9
10/31/1995	3956	31	7.7	11.8	-606.7	614.1	19.9	-46.9
11/30/1995	3986	30	15.8	11.2	-612.2	606.8	17.0	-38.6
12/31/1995	4017	31	-635.1	26.6	26.9	627.0	11.7	-57.1
1/31/1996	4048	31	-37.3	14.8	-475.8	550.3	21.0	-73.0
2/29/1996	4077	29	-762.0	101.5	101.6	609.9	26.3	-77.2
3/31/1996	4108	31	-174.0	24.3	-293.5	505.5	38.9	-101.2
4/30/1996	4138	30	336.9	10.9	-966.4	642.1	58.9	-82.3
5/31/1996	4169	31	242.4	11.7	-973.7	722.2	58.2	-60.8
6/30/1996	4199	30	206.8	11.6	-956.0	736.0	44.0	-42.3
7/31/1996	4230	31	397.4	12.6	-1091.4	709.3	-9.6	-18.2
8/31/1996	4261	31	337.9	12.6	-1043.3	735.2	-46.7	4.3
9/30/1996	4291	30	302.0	12.6	-1024.7	756.9	-64.0	17.2
10/31/1996	4322	31	-227.9	18.7	-503.2	770.2	-65.2	7.3
11/30/1996	4352	30	-681.2	34.2	25.0	687.6	-37.9	-27.6
12/31/1996	4383	31	-890.1	93.0	164.6	709.6	-8.5	-68.6
1/31/1997	4414	31	-701.6	79.7	70.3	638.2	16.7	-103.2
2/28/1997	4442	28	499.7	8.7	-1043.5	625.4	-9.9	-80.5
3/31/1997	4473	31	269.3	9.7	-968.7	747.4	-4.2	-53.5
4/30/1997	4503	30	225.2	9.7	-952.2	760.0	-10.4	-32.4
5/31/1997	4534	31	147.2	9.8	-923.8	801.3	-13.2	-21.2
6/30/1997	4564	30	143.0	10.3	-923.0	799.9	-17.5	-12.7
7/31/1997	4595	31	150.8	11.3	-1012.7	836.6	28.3	-14.3
8/31/1997	4626	31	129.7	11.5	-990.7	848.0	9.8	-8.3
9/30/1997	4656	30	140.4	11.6	-986.6	842.6	-5.5	-2.5
10/31/1997	4687	31	80.7	12.4	-960.3	885.9	-17.2	-1.5
11/30/1997	4717	30	-743.7	34.3	-13.7	765.7	-20.5	-22.1
12/31/1997	4748	31	-987.0	97.7	183.8	780.2	-7.7	-67.0
1/31/1998	4779	31	-640.7	48.1	0.2	690.1	5.3	-103.0
2/28/1998	4807	28	-1256.6	273.6	186.6	887.1	23.3	-114.1
3/31/1998	4838	31	-517.1	50.1	-74.0	665.9	24.1	-149.0
4/30/1998	4868	30	-179.6	22.0	-398.5	665.3	31.9	-141.1
5/31/1998	4899	31	-431.1	38.2	-174.5	666.2	40.1	-138.8

Flow Budget for the LAS in Pleasant Valley

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Pleasant Valley UAS	Oxnard Basin	Las Posas
			influx(+) outflux(-); units in Acre-feet					
6/30/1998	4929	30	399.4	12.9	-1154.5	865.9	3.7	-127.4
7/31/1998	4960	31	-27.8	10.2	-692.9	824.1	-9.3	-104.2
8/31/1998	4991	31	-9.4	11.2	-679.2	793.6	-28.4	-87.8
9/30/1998	5021	30	-3.6	10.4	-677.3	784.0	-37.0	-76.6
10/31/1998	5052	31	-40.3	10.0	-660.5	806.6	-42.8	-73.1
11/30/1998	5082	30	-197.7	14.7	-483.5	765.9	-29.6	-69.8
12/31/1998	5113	31	-98.2	9.4	-627.9	801.2	-9.6	-74.9
1/31/1999	5144	31	-496.3	24.1	-183.3	716.7	18.7	-80.0
2/28/1999	5172	28	308.7	8.6	-974.6	706.8	14.3	-63.8
3/31/1999	5203	31	-706.1	41.4	-40.0	725.6	47.3	-68.2
4/30/1999	5233	30	-438.9	26.4	-187.8	644.6	41.3	-85.6
5/31/1999	5264	31	321.3	10.1	-1066.3	779.5	38.5	-83.1
6/30/1999	5294	30	228.8	10.3	-1038.2	812.7	44.0	-57.5
7/31/1999	5325	31	324.3	9.3	-1078.9	765.7	9.5	-29.8
8/31/1999	5356	31	273.3	9.6	-1031.1	779.5	-28.4	-2.9
9/30/1999	5386	30	244.3	9.2	-1011.8	792.1	-45.6	11.9
10/31/1999	5417	31	162.1	10.9	-976.1	837.8	-57.0	22.3
11/30/1999	5447	30	-205.4	11.0	-556.0	784.7	-50.9	16.5
12/31/1999	5478	31	178.9	9.9	-979.2	839.7	-62.7	13.4
1/31/2000	5509	31	-647.9	22.8	-150.7	819.2	-48.3	4.8
2/29/2000	5538	29	-926.7	95.1	117.7	758.7	-18.3	-26.5
3/31/2000	5569	31	-465.9	29.3	-186.1	695.9	-17.3	-56.1
4/30/2000	5599	30	-415.2	30.8	-213.9	663.6	-1.2	-64.1
5/31/2000	5630	31	476.9	11.9	-1225.8	814.1	-33.3	-43.8
6/30/2000	5660	30	356.7	12.3	-1187.2	867.0	-40.5	-8.2
7/31/2000	5691	31	75.2	6.2	-850.7	790.2	-20.9	-0.1
8/31/2000	5722	31	94.8	6.3	-833.3	769.4	-40.0	2.8
9/30/2000	5752	30	106.7	5.9	-831.9	758.9	-46.7	7.2
10/31/2000	5783	31	-106.8	7.5	-612.7	760.1	-51.6	3.5
11/30/2000	5813	30	108.5	5.7	-827.4	760.4	-51.8	4.6
12/31/2000	5844	31	44.9	5.4	-804.2	798.0	-53.3	9.2
1/31/2001	5875	31	-966.1	75.0	179.0	769.5	-45.5	-12.0
2/28/2001	5903	28	-824.3	101.3	126.2	665.6	-26.5	-42.3
3/31/2001	5934	31	-673.9	55.0	37.7	665.8	-11.9	-72.7
4/30/2001	5964	30	56.1	14.8	-520.6	597.0	-76.4	-70.8
5/31/2001	5995	31	289.7	7.2	-849.2	691.4	-93.4	-45.8
6/30/2001	6025	30	235.3	7.2	-830.1	706.5	-95.9	-23.1
7/31/2001	6056	31	255.2	10.0	-996.1	817.7	-74.1	-12.7
8/31/2001	6087	31	212.0	10.2	-976.3	855.1	-96.6	-4.4
9/30/2001	6117	30	206.1	9.5	-972.0	860.3	-107.1	3.3

Flow Budget for the LAS in Pleasant Valley

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Pleasant Valley UAS	Oxnard Basin	Las Posas
			influx(+) outflux(-); units in Acre-feet					
10/31/2001	6148	31	136.8	10.5	-949.2	910.2	-116.7	8.5
11/30/2001	6178	30	-737.5	38.0	5.7	768.4	-64.3	-10.3
12/31/2001	6209	31	-360.8	17.9	-335.9	759.7	-44.5	-36.4
1/31/2002	6240	31	-283.4	12.5	-358.4	721.2	-47.2	-44.6
2/28/2002	6268	28	236.1	8.7	-885.0	730.4	-63.8	-26.2
3/31/2002	6299	31	76.6	9.2	-832.0	822.8	-63.3	-13.3
4/30/2002	6329	30	88.8	9.3	-830.4	799.7	-62.0	-5.5
5/31/2002	6360	31	46.6	9.7	-811.7	819.5	-62.6	-1.5
6/30/2002	6390	30	72.8	9.8	-816.8	795.0	-62.5	1.6
7/31/2002	6421	31	577.5	12.5	-1480.4	886.2	-25.9	28.3
8/31/2002	6452	31	431.6	13.3	-1432.7	960.2	-34.7	59.3
9/30/2002	6482	30	377.8	14.9	-1414.6	991.5	-44.9	75.4
10/31/2002	6513	31	269.3	13.6	-1374.6	1061.1	-57.2	87.9
11/30/2002	6543	30	-1095.1	68.3	127.0	909.0	-57.4	48.2
12/31/2002	6574	31	-704.3	41.6	-101.1	805.2	-39.6	-1.7
1/31/2003	6605	31	199.6	6.3	-1005.3	850.0	-41.8	-8.9
2/28/2003	6633	28	-920.6	80.2	114.3	753.3	-2.6	-24.5
3/31/2003	6664	31	-625.1	43.7	-25.8	681.0	-11.4	-62.4
4/30/2003	6694	30	221.9	12.4	-888.2	708.5	0.1	-54.7
5/31/2003	6725	31	-403.9	17.9	-271.8	703.1	12.0	-57.2
6/30/2003	6755	30	378.8	6.4	-1096.1	761.1	-5.3	-45.0
7/31/2003	6786	31	366.9	9.5	-1197.2	825.0	13.6	-17.8
8/31/2003	6817	31	274.4	9.8	-1152.1	853.6	10.7	3.7
9/30/2003	6847	30	245.3	9.3	-1136.4	860.4	4.3	17.1
10/31/2003	6878	31	165.8	9.7	-1106.3	905.6	-0.6	25.8
11/30/2003	6908	30	-376.1	14.1	-502.7	878.9	-21.7	7.5
12/31/2003	6939	31	-376.5	20.4	-381.9	789.7	-34.2	-17.5
1/31/2004	6970	31	50.2	6.7	-833.9	787.0	11.5	-21.5
2/29/2004	6999	29	-794.4	67.3	59.1	703.2	-0.1	-35.1
3/31/2004	7030	31	212.2	8.0	-923.0	733.1	17.6	-47.9
4/30/2004	7060	30	163.2	9.0	-910.5	743.7	25.2	-30.7
5/31/2004	7091	31	104.6	11.5	-889.2	781.0	14.0	-22.0
6/30/2004	7121	30	117.9	9.9	-890.2	770.6	5.9	-14.1
7/31/2004	7152	31	495.6	10.0	-1381.7	841.3	23.8	10.9
8/31/2004	7183	31	388.3	10.2	-1334.7	891.2	6.3	38.7
9/30/2004	7213	30	353.1	10.0	-1317.1	908.4	-8.4	54.1
10/31/2004	7244	31	-1074.7	77.2	153.1	879.4	-59.6	24.7
11/30/2004	7274	30	531.6	8.1	-1366.3	834.3	-22.0	14.4
12/31/2004	7305	31	-1050.1	89.0	148.7	865.5	-53.1	0.0
1/31/2005	7336	31	-1097.4	162.4	220.1	821.6	-59.5	-47.2

Flow Budget for the LAS in Pleasant Valley

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Pleasant Valley UAS	Oxnard Basin	Las Posas
			influx(+) outflux(-); units in Acre-feet					
2/28/2005	7364	28	-853.9	127.0	133.3	706.1	-39.1	-73.4
3/31/2005	7395	31	-391.0	36.9	-88.0	574.3	-32.9	-99.3
4/30/2005	7425	30	88.0	9.6	-558.4	577.8	-30.7	-86.3
5/31/2005	7456	31	314.2	8.3	-946.7	712.0	-23.4	-64.4
6/30/2005	7486	30	235.5	8.9	-935.7	756.4	-21.7	-43.3
7/31/2005	7517	31	-59.2	9.1	-638.7	793.0	-59.9	-44.4
8/31/2005	7548	31	-22.6	8.9	-633.1	775.6	-82.3	-46.5
9/30/2005	7578	30	17.4	8.5	-637.7	742.2	-87.3	-43.1
10/31/2005	7609	31	-355.6	17.1	-203.5	678.6	-79.6	-56.9
11/30/2005	7639	30	86.4	8.1	-651.1	702.9	-91.1	-55.3
12/31/2005	7670	31	23.3	7.7	-636.5	745.8	-90.4	-49.8
1/31/2006	7701	31	-445.7	37.2	-149.3	693.1	-72.5	-62.8
2/28/2006	7729	28	-381.0	47.1	-123.2	583.7	-55.9	-70.7
3/31/2006	7760	31	-450.6	55.2	-68.6	601.5	-45.9	-91.6
4/30/2006	7790	30	-355.0	52.4	-116.6	553.9	-35.7	-99.1
5/31/2006	7821	31	21.6	14.8	-478.6	591.6	-49.5	-99.9
6/30/2006	7851	30	549.0	10.6	-1137.2	747.4	-107.1	-62.7
7/31/2006	7882	31	48.0	10.3	-589.9	725.9	-144.4	-49.9
8/31/2006	7913	31	78.6	10.1	-579.0	699.2	-160.7	-48.1
9/30/2006	7943	30	93.7	9.7	-578.6	682.6	-165.7	-41.7
10/31/2006	7974	31	66.1	9.2	-564.4	702.7	-173.9	-39.7
11/30/2006	8004	30	80.5	8.7	-567.9	689.1	-174.9	-35.5
12/31/2006	8035	31	-227.6	10.9	-243.1	650.5	-145.2	-45.5
1/31/2007	8066	31	-398.5	30.2	-29.8	552.6	-89.1	-65.3
2/28/2007	8094	28	85.0	13.9	-492.6	523.6	-67.0	-63.0
3/31/2007	8125	31	199.4	8.2	-696.2	625.7	-78.2	-58.9
4/30/2007	8155	30	-8.5	6.9	-500.9	609.3	-52.2	-54.6
5/31/2007	8186	31	142.6	8.8	-686.3	658.5	-70.4	-53.2
6/30/2007	8216	30	137.8	8.9	-682.5	660.2	-80.3	-44.2
7/31/2007	8247	31	298.8	10.4	-958.3	780.9	-97.8	-33.9
8/31/2007	8278	31	218.8	9.8	-931.7	828.6	-102.7	-22.8
9/30/2007	8308	30	200.5	9.5	-924.3	833.3	-103.9	-15.1
10/31/2007	8339	31	146.0	10.0	-901.7	865.4	-107.7	-11.9
11/30/2007	8369	30	160.8	10.3	-903.7	848.2	-107.0	-8.5
12/31/2007	8400	31	-469.2	29.0	-128.4	718.3	-125.2	-24.5
1/31/2008	8431	31	-863.2	114.8	164.9	725.5	-89.7	-52.4
2/29/2008	8460	29	-305.9	30.1	-118.9	566.5	-97.8	-74.1
3/31/2008	8491	31	306.5	12.5	-830.5	697.8	-109.5	-76.9
4/30/2008	8521	30	235.6	13.7	-819.9	743.5	-110.3	-62.6
5/31/2008	8552	31	175.0	14.7	-799.2	786.7	-119.2	-58.0

Flow Budget for the LAS in Pleasant Valley

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Pleasant Valley UAS	Oxnard Basin	Las Posas
			influx(+) outflux(-); units in Acre-feet					
6/30/2008	8582	30	171.9	14.2	-799.2	787.1	-121.8	-52.2
7/31/2008	8613	31	337.1	15.6	-1051.5	876.8	-119.4	-58.6
8/31/2008	8644	31	279.9	15.3	-1020.4	913.1	-134.3	-53.6
9/30/2008	8674	30	266.0	14.8	-1011.5	917.2	-140.9	-45.6
10/31/2008	8705	31	203.0	14.9	-985.7	962.0	-151.4	-42.8
11/30/2008	8735	30	-545.5	27.9	-85.3	759.0	-112.1	-43.9
12/31/2008	8766	31	-456.8	32.0	-84.8	679.0	-100.7	-68.8
1/31/2009	8797	31	12.6	10.6	-522.0	721.2	-128.4	-94.0
2/28/2009	8825	28	-656.0	76.0	97.5	630.0	-65.9	-81.7
3/31/2009	8856	31	109.1	10.5	-563.6	667.2	-106.4	-116.8
4/30/2009	8886	30	95.2	11.2	-565.4	685.0	-115.6	-110.4
5/31/2009	8917	31	67.2	11.7	-555.5	709.3	-124.0	-108.7
6/30/2009	8947	30	81.2	11.1	-561.3	696.2	-126.2	-101.0
7/31/2009	8978	31	515.4	13.6	-1118.0	784.0	-112.9	-82.1
8/31/2009	9009	31	387.2	14.7	-1071.8	837.4	-110.9	-56.7
9/30/2009	9039	30	340.1	13.8	-1052.4	854.3	-113.5	-42.5
10/31/2009	9070	31	-291.8	23.8	-282.9	746.1	-158.2	-37.0
11/30/2009	9100	30	415.6	13.3	-1045.6	811.4	-149.0	-45.8
12/31/2009	9131	31	-644.0	36.9	6.7	745.5	-98.7	-46.5
1/31/2010	9162	31	-711.2	59.4	133.7	679.7	-79.3	-82.3
2/28/2010	9190	28	-473.2	44.5	25.8	566.0	-58.1	-104.9
3/31/2010	9221	31	258.1	11.9	-744.9	730.4	-102.1	-153.5
4/30/2010	9251	30	-186.7	16.2	-261.8	654.0	-82.6	-139.1
5/31/2010	9282	31	232.5	13.9	-748.6	766.7	-110.3	-154.3
6/30/2010	9312	30	194.2	13.1	-744.6	803.6	-121.6	-144.6
7/31/2010	9343	31	407.0	17.8	-1078.0	871.3	-82.5	-135.7
8/31/2010	9374	31	321.8	17.9	-1039.4	902.9	-87.2	-116.0
9/30/2010	9404	30	292.1	18.0	-1024.8	908.6	-91.8	-102.0
10/31/2010	9435	31	-530.9	31.1	-83.7	793.2	-96.3	-113.4
11/30/2010	9465	30	202.7	14.0	-765.3	757.7	-85.8	-123.4
12/31/2010	9496	31	-881.4	128.4	166.7	795.4	-82.1	-127.0
1/31/2011	9527	31	79.6	15.9	-545.6	736.1	-127.4	-158.6
2/28/2011	9555	28	-411.1	43.7	-17.1	609.4	-81.7	-143.3
3/31/2011	9586	31	-608.9	82.8	105.9	634.7	-61.4	-153.2
4/30/2011	9616	30	318.6	16.2	-682.4	662.6	-140.9	-174.1
5/31/2011	9647	31	220.8	15.5	-647.5	746.2	-170.2	-164.8
6/30/2011	9677	30	213.5	17.0	-642.3	747.6	-183.4	-152.3
7/31/2011	9708	31	189.1	15.6	-710.5	790.0	-140.4	-143.8
8/31/2011	9739	31	153.7	15.9	-704.7	802.2	-131.1	-136.2
9/30/2011	9769	30	155.6	15.3	-708.1	792.1	-128.9	-126.0

Flow Budget for the LAS in Pleasant Valley

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Pleasant Valley UAS	Oxnard Basin	Las Posas
			influx(+) outflux(-); units in Acre-feet					
10/31/2011	9800	31	-92.1	14.3	-379.7	729.0	-139.1	-132.4
11/30/2011	9830	30	-348.8	24.8	-89.0	651.6	-96.9	-141.6
12/31/2011	9861	31	228.3	14.0	-727.8	746.0	-111.1	-149.4
1/31/2012	9892	31	-251.1	21.1	-188.4	679.3	-110.0	-150.8
2/29/2012	9921	29	442.9	18.3	-925.8	756.3	-149.5	-142.2
3/31/2012	9952	31	-445.0	34.5	-61.7	708.5	-88.7	-147.6
4/30/2012	9982	30	-193.3	23.4	-214.7	624.8	-77.6	-162.6
5/31/2012	10013	31	429.3	19.3	-927.5	778.0	-135.9	-163.1
6/30/2012	10043	30	335.2	19.6	-906.4	837.3	-143.1	-142.6
7/31/2012	10074	31	356.0	15.5	-954.4	798.6	-95.6	-120.1
8/31/2012	10105	31	308.9	15.8	-914.2	789.9	-99.9	-100.5
9/30/2012	10135	30	288.0	15.7	-898.9	785.1	-103.9	-86.0
10/31/2012	10166	31	222.0	15.6	-868.4	823.8	-110.9	-82.2
11/30/2012	10196	30	-55.1	15.5	-597.4	806.9	-78.8	-91.2
12/31/2012	10227	31	-324.1	20.6	-343.6	832.0	-69.8	-115.1
1/31/2013	10258	31	-217.0	15.0	-381.8	785.8	-74.3	-127.6
2/28/2013	10286	28	282.3	8.1	-821.8	709.9	-81.7	-96.8
3/31/2013	10317	31	-46.5	8.5	-549.2	776.8	-88.6	-101.0
4/30/2013	10347	30	219.9	9.0	-789.5	738.6	-91.4	-86.5
5/31/2013	10378	31	168.4	9.7	-763.0	741.1	-99.5	-56.7
6/30/2013	10408	30	177.4	9.9	-763.9	715.3	-101.0	-37.7
7/31/2013	10439	31	458.4	12.1	-1121.9	789.0	-105.8	-32.0
8/31/2013	10470	31	373.5	12.1	-1086.3	827.3	-112.9	-13.8
9/30/2013	10500	30	348.7	12.2	-1076.2	831.1	-116.0	0.1
10/31/2013	10531	31	276.0	11.6	-1043.5	871.4	-125.5	10.0
11/30/2013	10561	30	274.7	10.4	-1042.3	866.3	-124.4	14.2
12/31/2013	10592	31	225.4	11.1	-1020.7	896.5	-131.5	19.3
1/31/2014	10623	31	394.5	11.8	-1225.8	897.1	-100.9	23.3
2/28/2014	10651	28	-717.0	42.2	52.4	699.9	-80.3	2.7
3/31/2014	10682	31	-144.2	19.2	-484.4	728.6	-80.3	-38.8
4/30/2014	10712	30	573.6	11.5	-1308.5	816.5	-63.3	-29.8
5/31/2014	10743	31	411.9	12.8	-1252.6	892.5	-63.0	-1.7
6/30/2014	10773	30	379.8	12.7	-1243.2	897.8	-62.9	15.8
7/31/2014	10804	31	220.8	13.0	-1068.7	915.5	-91.8	11.2
8/31/2014	10835	31	247.0	12.3	-1073.0	906.9	-100.9	7.7
9/30/2014	10865	30	270.2	11.6	-1082.5	890.7	-99.9	10.0
10/31/2014	10896	31	211.7	11.0	-1058.6	928.4	-104.7	12.2
11/30/2014	10926	30	94.7	8.5	-883.3	880.5	-108.9	8.5
12/31/2014	10957	31	-1058.6	69.8	239.4	858.9	-88.4	-21.1
1/31/2015	10988	31	-540.4	25.0	-14.9	692.4	-85.7	-76.6

Flow Budget for the LAS in Pleasant Valley

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Pleasant Valley UAS	Oxnard Basin	Las Posas
			influx(+) outflux(-); units in Acre-feet					
2/28/2015	11016	28	447.3	8.6	-956.0	679.5	-99.9	-79.5
3/31/2015	11047	31	84.5	11.1	-707.6	778.9	-105.3	-61.7
4/30/2015	11077	30	309.3	9.5	-908.4	754.6	-113.1	-51.9
5/31/2015	11108	31	249.5	8.9	-874.9	789.5	-130.0	-42.9
6/30/2015	11138	30	254.6	9.1	-875.0	774.9	-131.3	-32.3
7/31/2015	11169	31	202.8	7.7	-818.5	743.0	-114.9	-20.2
8/31/2015	11200	31	344.2	10.1	-1028.2	783.2	-95.4	-13.9
9/30/2015	11230	30	313.0	9.9	-1024.4	793.3	-85.3	-6.5
10/31/2015	11261	31	240.9	10.0	-998.7	835.9	-86.5	-1.6
11/30/2015	11291	30	249.8	10.5	-1005.8	826.9	-82.6	1.1
12/31/2015	11322	31	190.5	10.5	-984.9	865.4	-84.5	3.0

Flow Budget for the Shallow Aquifer in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley	Las Posas LAS
			influx(+) outflux(-); units in Acre-feet					
1/31/1985	31	31	-148.0	292.6	-21.9	333.2	0.8	-456.6
2/28/1985	59	28	-91.9	310.6	-16.3	221.4	0.0	-423.8
3/31/1985	90	31	-48.1	230.5	-21.7	215.6	0.0	-376.3
4/30/1985	120	30	96.3	209.0	-43.7	91.4	0.0	-353.0
5/31/1985	151	31	219.2	210.7	-43.7	-24.1	0.0	-362.1
6/30/1985	181	30	267.0	210.6	-43.7	-87.3	0.0	-346.7
7/31/1985	212	31	329.1	237.5	-40.7	-157.1	0.0	-368.9
8/31/1985	243	31	355.3	234.2	-40.7	-191.9	0.0	-356.9
9/30/1985	273	30	295.2	237.5	-40.7	-148.0	0.0	-344.0
10/31/1985	304	31	250.2	228.4	-40.3	-103.3	0.0	-334.9
11/30/1985	334	30	-0.7	1110.5	-6.3	-62.9	0.0	-1040.5
12/31/1985	365	31	217.8	196.2	-34.8	-66.6	0.0	-312.6
1/31/1986	396	31	-52.8	939.1	-9.6	20.1	0.0	-896.8
2/28/1986	424	28	-400.9	2026.1	-4.7	89.2	0.0	-1709.7
3/31/1986	455	31	-403.8	1341.5	-7.4	311.3	0.8	-1242.5
4/30/1986	485	30	-314.2	230.6	-37.0	508.9	1.0	-389.3
5/31/1986	516	31	-297.7	239.8	-58.7	511.6	0.0	-395.0
6/30/1986	546	30	-66.9	235.8	-58.7	298.8	0.0	-409.0
7/31/1986	577	31	24.8	273.3	-61.9	216.2	0.0	-452.3
8/31/1986	608	31	95.4	267.8	-61.9	142.2	0.0	-443.6
9/30/1986	638	30	218.7	257.3	-37.2	-20.7	0.0	-418.0
10/31/1986	669	31	310.8	263.5	-61.9	-105.3	0.0	-407.1
11/30/1986	699	30	196.3	392.8	-22.4	-70.4	0.0	-496.2
12/31/1986	730	31	294.2	262.5	-61.9	-126.8	0.0	-368.0
1/31/1987	761	31	194.2	336.2	-15.5	-93.2	0.0	-421.6
2/28/1987	789	28	157.2	291.3	-18.6	-71.5	0.0	-358.4
3/31/1987	820	31	91.4	415.6	-14.4	-22.0	0.0	-470.6
4/30/1987	850	30	145.7	301.4	-44.2	-33.0	0.0	-369.9
5/31/1987	881	31	184.9	293.8	-44.2	-58.1	0.0	-376.4
6/30/1987	911	30	171.5	295.3	-44.2	-46.1	0.0	-376.5
7/31/1987	942	31	109.0	309.4	-45.3	27.0	0.0	-400.1
8/31/1987	973	31	140.5	309.3	-45.3	5.6	0.0	-410.2
9/30/1987	1003	30	246.0	307.8	-45.3	-98.7	0.0	-409.8
10/31/1987	1034	31	202.4	367.9	-18.5	-91.8	0.0	-460.0
11/30/1987	1064	30	188.3	407.5	-21.2	-100.5	0.0	-474.1
12/31/1987	1095	31	30.5	876.4	-9.1	-46.0	0.0	-851.8
1/31/1988	1126	31	16.8	679.8	-8.3	7.8	0.3	-696.4
2/29/1988	1155	29	10.1	340.2	-14.9	55.8	1.8	-393.1
3/31/1988	1186	31	26.3	235.1	-32.5	77.3	1.2	-307.4
4/30/1988	1216	30	-235.0	612.7	-8.3	267.7	1.6	-638.7
5/31/1988	1247	31	-144.1	234.8	-32.5	264.0	1.6	-323.9
6/30/1988	1277	30	-85.6	233.9	-32.5	223.9	0.1	-339.8
7/31/1988	1308	31	76.3	317.1	-19.9	68.1	0.0	-441.6
8/31/1988	1339	31	202.5	320.0	-19.9	-49.7	0.0	-452.9
9/30/1988	1369	30	257.6	320.8	-19.9	-111.3	0.0	-447.2
10/31/1988	1400	31	286.3	320.6	-19.9	-138.4	0.0	-448.6
11/30/1988	1430	30	244.5	299.1	-11.0	-119.1	0.0	-413.4
12/31/1988	1461	31	91.7	973.2	-4.4	-90.2	0.0	-970.3
1/31/1989	1492	31	238.1	235.8	-20.7	-106.3	0.0	-346.8
2/28/1989	1520	28	23.4	799.3	-5.0	-23.1	0.1	-794.7
3/31/1989	1551	31	40.6	237.0	-14.3	65.6	0.1	-329.0
4/30/1989	1581	30	32.3	245.4	-21.7	71.8	0.0	-327.8
5/31/1989	1612	31	126.0	244.3	-21.7	-6.8	0.0	-341.8
6/30/1989	1642	30	174.4	244.6	-21.7	-55.1	0.0	-342.2
7/31/1989	1673	31	215.6	276.6	-37.0	-77.2	0.0	-378.0
8/31/1989	1704	31	237.0	277.3	-37.0	-98.4	0.0	-378.8
9/30/1989	1734	30	246.8	278.2	-37.0	-112.5	0.0	-375.5
10/31/1989	1765	31	253.9	277.4	-37.0	-116.5	0.0	-377.8
11/30/1989	1795	30	230.8	238.1	-31.8	-101.7	0.0	-335.3
12/31/1989	1826	31	239.3	281.6	-37.0	-108.4	0.0	-375.4
1/31/1990	1857	31	116.6	535.1	-10.2	-53.1	0.0	-588.3
2/28/1990	1885	28	57.0	441.5	-12.1	-4.0	0.0	-482.5
3/31/1990	1916	31	115.8	315.1	-36.6	-6.8	0.0	-387.6
4/30/1990	1946	30	156.8	314.5	-36.6	-33.8	0.0	-400.9

Flow Budget for the Shallow Aquifer in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley	Las Posas LAS
			influx(+) outflux(-); units in Acre-feet					
5/31/1990	1977	31	176.1	253.3	-29.2	-40.6	0.0	-359.6
6/30/1990	2007	30	186.4	320.6	-36.6	-51.4	0.0	-419.0
7/31/1990	2038	31	204.5	313.1	-25.1	-62.0	0.0	-430.5
8/31/1990	2069	31	201.5	313.3	-25.1	-64.0	0.0	-425.8
9/30/1990	2099	30	196.0	312.1	-25.1	-63.8	0.0	-419.1
10/31/1990	2130	31	205.7	315.7	-25.1	-67.2	0.0	-429.1
11/30/1990	2160	30	206.0	298.9	-23.7	-68.7	0.0	-412.5
12/31/1990	2191	31	213.4	305.7	-25.1	-74.2	0.0	-419.8
1/31/1991	2222	31	176.0	236.0	-11.9	-57.3	0.0	-342.8
2/28/1991	2250	28	66.7	519.9	-4.3	-23.8	0.0	-558.5
3/31/1991	2281	31	-460.9	2413.2	-1.1	117.0	0.0	-2068.1
4/30/1991	2311	30	-157.5	236.6	-17.0	353.8	0.0	-416.0
5/31/1991	2342	31	-266.5	239.5	-17.0	410.3	0.0	-366.4
6/30/1991	2372	30	-149.4	237.0	-17.0	291.3	0.0	-361.9
7/31/1991	2403	31	-18.1	279.7	-25.1	184.0	0.0	-420.5
8/31/1991	2434	31	75.9	279.4	-25.1	94.0	0.0	-424.2
9/30/1991	2464	30	129.8	282.2	-25.1	33.2	0.0	-420.1
10/31/1991	2495	31	153.4	279.2	-25.1	13.9	0.0	-421.5
11/30/1991	2525	30	148.5	278.9	-25.1	12.5	0.0	-414.8
12/31/1991	2556	31	-48.3	1093.9	-3.9	55.2	0.0	-1096.9
1/31/1992	2587	31	-25.8	459.4	-3.8	124.0	0.2	-554.1
2/29/1992	2616	29	-541.5	2207.2	-0.9	244.2	3.7	-1912.7
3/31/1992	2647	31	-625.5	1497.2	-1.5	553.1	9.0	-1432.3
4/30/1992	2677	30	-493.2	218.0	-12.4	713.1	10.1	-435.6
5/31/1992	2708	31	-463.4	224.5	-12.4	668.3	8.1	-425.2
6/30/1992	2738	30	-319.4	220.9	-12.4	525.3	5.8	-420.1
7/31/1992	2769	31	-149.9	276.0	-18.9	380.2	4.5	-491.9
8/31/1992	2800	31	5.8	280.1	-18.9	232.7	3.4	-503.0
9/30/1992	2830	30	114.1	277.1	-18.9	112.1	2.3	-486.7
10/31/1992	2861	31	-4.1	328.6	-8.6	206.2	2.6	-524.7
11/30/1992	2891	30	-291.0	274.5	-18.9	488.8	2.3	-455.6
12/31/1992	2922	31	-652.5	1168.1	-2.5	707.5	4.0	-1224.6
1/31/1993	2953	31	-833.3	2462.0	-1.0	640.9	8.7	-2277.2
2/28/1993	2981	28	-623.0	2036.8	-1.0	527.6	14.3	-1954.6
3/31/1993	3012	31	-272.5	816.6	-2.6	551.1	22.4	-1115.0
4/30/1993	3042	30	-372.7	225.5	-13.7	745.9	22.2	-607.2
5/31/1993	3073	31	-380.7	223.7	-13.7	760.3	21.3	-611.0
6/30/1993	3103	30	-94.5	195.8	-12.8	464.7	19.4	-572.6
7/31/1993	3134	31	112.3	265.5	-19.6	247.4	18.2	-623.7
8/31/1993	3165	31	141.2	266.2	-19.6	189.1	16.1	-592.8
9/30/1993	3195	30	2.8	266.1	-19.6	295.3	13.5	-558.0
10/31/1993	3226	31	-172.3	266.5	-19.6	481.9	12.9	-569.3
11/30/1993	3256	30	-180.8	248.8	-16.6	497.3	11.8	-560.5
12/31/1993	3287	31	-170.8	316.4	-8.3	486.7	13.1	-637.2
1/31/1994	3318	31	-71.3	203.4	-13.5	399.4	15.3	-533.3
2/28/1994	3346	28	-263.3	1380.0	-1.6	334.8	14.6	-1464.5
3/31/1994	3377	31	-70.5	619.3	-3.1	347.3	19.6	-912.6
4/30/1994	3407	30	-24.6	209.1	-13.5	327.3	19.6	-517.8
5/31/1994	3438	31	-44.4	205.7	-13.5	351.7	18.9	-518.3
6/30/1994	3468	30	17.8	208.6	-13.5	273.0	16.3	-502.1
7/31/1994	3499	31	181.4	242.9	-20.9	112.8	14.2	-530.4
8/31/1994	3530	31	253.6	245.1	-20.9	20.7	11.9	-510.4
9/30/1994	3560	30	265.3	243.0	-20.9	-22.5	9.8	-474.6
10/31/1994	3591	31	245.5	205.3	-20.9	-11.2	8.6	-427.3
11/30/1994	3621	30	112.2	253.6	-8.7	88.3	7.4	-452.7
12/31/1994	3652	31	77.7	219.0	-14.0	130.6	8.3	-421.5
1/31/1995	3683	31	-815.7	3923.6	-0.4	217.7	9.3	-3334.5
2/28/1995	3711	28	2.6	171.7	-6.3	376.1	17.0	-561.0
3/31/1995	3742	31	-752.5	2088.8	-0.8	629.5	20.4	-1985.4
4/30/1995	3772	30	-121.1	143.4	-9.5	517.5	25.1	-555.5
5/31/1995	3803	31	-203.0	129.3	-8.3	548.7	26.4	-493.0
6/30/1995	3833	30	-198.6	154.0	-10.3	520.7	25.1	-490.9
7/31/1995	3864	31	-70.7	238.7	-23.8	414.2	23.6	-582.0
8/31/1995	3895	31	-54.2	233.8	-23.8	400.5	20.8	-577.2

Flow Budget for the Shallow Aquifer in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley	Las Posas LAS
			influx(+) outflux(-); units in Acre-feet					
9/30/1995	3925	30	-73.3	234.9	-23.8	408.4	17.8	-564.1
10/31/1995	3956	31	-117.9	237.1	-23.8	467.8	16.1	-579.5
11/30/1995	3986	30	-118.2	238.4	-23.8	460.8	13.5	-570.6
12/31/1995	4017	31	-189.1	479.3	-6.7	490.0	15.1	-788.6
1/31/1996	4048	31	-90.6	217.8	-7.0	413.2	16.6	-550.0
2/29/1996	4077	29	-476.8	1798.1	-1.1	455.9	16.1	-1792.2
3/31/1996	4108	31	-247.5	515.6	-4.2	585.6	22.6	-872.1
4/30/1996	4138	30	-134.6	185.8	-12.8	476.1	22.3	-536.9
5/31/1996	4169	31	26.5	193.7	-13.0	326.5	20.5	-554.3
6/30/1996	4199	30	184.9	190.6	-13.0	141.2	17.4	-521.2
7/31/1996	4230	31	301.8	270.9	-37.5	28.2	16.3	-579.7
8/31/1996	4261	31	350.8	270.9	-37.5	-37.1	15.3	-562.4
9/30/1996	4291	30	345.3	270.8	-37.5	-65.9	14.4	-527.1
10/31/1996	4322	31	230.9	279.5	-22.3	23.6	17.1	-528.9
11/30/1996	4352	30	53.9	522.5	-9.1	120.9	20.1	-708.3
12/31/1996	4383	31	-332.9	1410.6	-4.3	332.8	24.8	-1431.0
1/31/1997	4414	31	-601.7	1347.1	-4.0	653.9	31.1	-1426.3
2/28/1997	4442	28	-268.2	206.2	-30.5	586.2	30.2	-523.9
3/31/1997	4473	31	-200.2	206.3	-30.5	539.6	30.0	-545.3
4/30/1997	4503	30	-46.7	207.5	-30.5	382.8	25.9	-539.1
5/31/1997	4534	31	145.8	206.7	-30.5	189.7	24.6	-536.4
6/30/1997	4564	30	279.3	206.8	-30.5	22.7	22.6	-500.9
7/31/1997	4595	31	383.7	282.5	-45.6	-91.3	21.9	-551.3
8/31/1997	4626	31	417.2	282.8	-45.6	-146.5	20.4	-528.4
9/30/1997	4656	30	397.5	282.7	-45.6	-151.9	18.8	-501.5
10/31/1997	4687	31	343.2	295.6	-45.6	-100.7	20.3	-512.7
11/30/1997	4717	30	158.0	572.3	-12.7	-1.9	22.5	-738.2
12/31/1997	4748	31	-222.7	1698.5	-4.1	91.1	29.5	-1592.4
1/31/1998	4779	31	-220.8	913.6	-5.1	309.1	40.6	-1037.4
2/28/1998	4807	28	-1367.5	4811.0	-0.8	356.2	67.2	-3866.0
3/31/1998	4838	31	-336.5	871.1	-5.1	534.7	101.6	-1165.7
4/30/1998	4868	30	-475.2	301.2	-10.6	753.8	94.1	-663.3
5/31/1998	4899	31	-675.4	825.0	-4.9	811.5	94.9	-1051.1
6/30/1998	4929	30	-396.9	173.6	-26.2	735.3	89.1	-574.9
7/31/1998	4960	31	-232.9	211.1	-35.2	584.0	84.5	-611.5
8/31/1998	4991	31	9.1	223.1	-35.2	327.5	81.3	-605.7
9/30/1998	5021	30	121.9	216.8	-35.2	187.1	76.9	-567.5
10/31/1998	5052	31	-74.3	210.9	-35.2	381.9	77.0	-560.3
11/30/1998	5082	30	-298.6	198.2	-21.2	589.8	73.5	-541.7
12/31/1998	5113	31	-254.7	211.4	-35.2	588.7	75.4	-585.7
1/31/1999	5144	31	-164.1	406.2	-10.6	435.7	76.1	-743.4
2/28/1999	5172	28	58.1	229.4	-28.3	209.1	70.2	-538.5
3/31/1999	5203	31	-114.5	732.4	-7.6	266.3	78.9	-955.5
4/30/1999	5233	30	-184.5	521.5	-9.0	342.6	80.7	-751.2
5/31/1999	5264	31	3.3	204.2	-34.5	261.6	82.4	-517.0
6/30/1999	5294	30	231.3	204.4	-34.5	34.7	72.3	-508.2
7/31/1999	5325	31	359.4	234.4	-25.2	-98.2	65.3	-535.7
8/31/1999	5356	31	406.1	234.5	-25.2	-157.2	59.1	-517.2
9/30/1999	5386	30	381.7	234.4	-25.2	-160.2	54.1	-484.7
10/31/1999	5417	31	315.3	247.8	-25.2	-92.5	50.0	-495.4
11/30/1999	5447	30	222.9	245.2	-15.3	-37.7	49.8	-465.0
12/31/1999	5478	31	317.3	244.4	-25.2	-127.3	57.0	-466.2
1/31/2000	5509	31	224.5	391.4	-10.0	-110.0	61.1	-556.9
2/29/2000	5538	29	-179.3	1665.6	-2.7	-29.8	65.7	-1519.5
3/31/2000	5569	31	-126.2	578.8	-7.8	203.7	77.7	-726.3
4/30/2000	5599	30	-342.3	515.1	-7.4	398.4	76.5	-640.3
5/31/2000	5630	31	-77.7	265.2	-28.3	230.2	74.6	-464.1
6/30/2000	5660	30	133.0	266.5	-28.3	45.2	60.1	-476.5
7/31/2000	5691	31	268.9	235.4	-21.5	-75.4	52.2	-459.7
8/31/2000	5722	31	306.2	234.9	-21.5	-128.1	47.9	-439.3
9/30/2000	5752	30	264.3	234.0	-21.5	-104.9	45.0	-416.8
10/31/2000	5783	31	-17.5	231.2	-12.8	162.9	50.7	-414.6
11/30/2000	5813	30	-136.1	234.2	-21.5	293.3	50.0	-419.8
12/31/2000	5844	31	34.5	231.9	-21.5	156.0	49.1	-450.0

Flow Budget for the Shallow Aquifer in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley	Las Posas LAS
			influx(+) outflux(-); units in Acre-feet					
1/31/2001	5875	31	-158.7	1452.3	-7.6	81.2	57.5	-1424.7
2/28/2001	5903	28	-365.2	1897.8	-6.2	131.3	68.6	-1726.3
3/31/2001	5934	31	-408.8	1048.1	-9.0	416.6	92.3	-1139.2
4/30/2001	5964	30	-357.8	281.3	-23.0	552.7	92.1	-545.2
5/31/2001	5995	31	-176.8	219.1	-46.2	407.1	90.0	-493.2
6/30/2001	6025	30	67.3	219.3	-46.3	165.4	82.1	-487.9
7/31/2001	6056	31	235.5	207.6	-84.6	37.5	79.5	-475.5
8/31/2001	6087	31	300.1	207.7	-84.4	-45.7	74.0	-451.7
9/30/2001	6117	30	216.0	207.5	-84.4	9.1	67.4	-415.5
10/31/2001	6148	31	-80.0	220.3	-84.9	304.6	66.5	-426.6
11/30/2001	6178	30	-387.2	745.0	-21.9	487.8	64.9	-888.6
12/31/2001	6209	31	-98.5	239.6	-49.7	328.2	70.3	-489.9
1/31/2002	6240	31	-7.1	235.6	-25.8	213.0	71.1	-486.7
2/28/2002	6268	28	111.2	193.8	-47.7	91.2	62.9	-411.4
3/31/2002	6299	31	200.0	194.1	-48.0	16.5	66.3	-428.9
4/30/2002	6329	30	236.8	194.1	-47.9	-39.2	61.5	-405.4
5/31/2002	6360	31	265.7	194.4	-47.9	-74.9	61.2	-398.5
6/30/2002	6390	30	259.6	194.6	-47.8	-87.4	57.3	-376.3
7/31/2002	6421	31	308.7	268.9	-74.4	-120.1	56.7	-439.8
8/31/2002	6452	31	317.5	281.0	-74.5	-129.6	54.0	-448.3
9/30/2002	6482	30	294.1	300.2	-74.4	-112.0	49.6	-457.6
10/31/2002	6513	31	261.6	290.3	-74.5	-69.0	49.2	-457.6
11/30/2002	6543	30	-60.1	1151.2	-13.2	23.1	52.2	-1153.2
12/31/2002	6574	31	-73.1	850.3	-15.5	90.3	65.6	-917.6
1/31/2003	6605	31	122.0	171.5	-37.4	28.3	68.4	-352.8
2/28/2003	6633	28	-195.4	1238.7	-6.3	55.7	68.7	-1161.3
3/31/2003	6664	31	-174.4	970.9	-7.6	130.0	86.7	-1005.7
4/30/2003	6694	30	5.0	189.3	-20.1	115.8	84.3	-374.3
5/31/2003	6725	31	-73.9	273.0	-17.2	162.0	84.9	-428.9
6/30/2003	6755	30	-2.4	171.7	-37.4	132.0	77.2	-341.2
7/31/2003	6786	31	127.9	237.1	-66.2	35.8	69.3	-403.9
8/31/2003	6817	31	196.0	237.6	-66.3	-26.0	61.1	-402.3
9/30/2003	6847	30	232.3	236.0	-66.2	-65.5	54.8	-391.4
10/31/2003	6878	31	253.3	236.8	-66.3	-82.3	53.0	-394.5
11/30/2003	6908	30	152.7	227.6	-31.7	-27.7	50.6	-371.5
12/31/2003	6939	31	121.8	316.6	-30.0	-22.3	58.6	-444.7
1/31/2004	6970	31	154.8	167.2	-36.4	-42.2	65.0	-308.5
2/29/2004	6999	29	-207.8	1309.1	-5.8	68.3	69.3	-1233.1
3/31/2004	7030	31	59.0	196.8	-35.7	81.6	78.7	-380.4
4/30/2004	7060	30	-4.7	200.6	-36.6	117.0	73.2	-349.5
5/31/2004	7091	31	59.2	207.5	-36.8	67.7	66.3	-363.9
6/30/2004	7121	30	147.6	201.3	-36.7	-11.9	52.1	-352.3
7/31/2004	7152	31	192.9	241.2	-39.1	-49.3	45.2	-390.9
8/31/2004	7183	31	222.1	241.5	-39.2	-65.9	38.4	-396.9
9/30/2004	7213	30	242.3	241.2	-39.2	-84.3	33.5	-393.5
10/31/2004	7244	31	-40.5	1217.9	-7.4	-28.7	48.7	-1190.1
11/30/2004	7274	30	182.5	233.7	-38.6	-33.3	58.9	-403.3
12/31/2004	7305	31	-174.0	1383.3	-6.5	36.9	74.6	-1314.2
1/31/2005	7336	31	-723.4	2997.4	-2.0	160.3	110.0	-2542.4
2/28/2005	7364	28	-777.3	2104.1	-2.2	400.6	133.6	-1858.8
3/31/2005	7395	31	-576.8	733.9	-4.6	651.0	137.8	-941.2
4/30/2005	7425	30	-603.4	193.4	-11.7	814.3	113.8	-506.4
5/31/2005	7456	31	-580.8	203.8	-14.7	846.1	104.7	-559.2
6/30/2005	7486	30	-448.7	208.0	-15.0	745.9	92.0	-582.2
7/31/2005	7517	31	-347.0	214.1	-11.5	680.8	88.2	-624.6
8/31/2005	7548	31	-136.5	213.2	-11.3	480.3	83.6	-629.2
9/30/2005	7578	30	-100.0	212.6	-11.5	425.0	76.4	-602.4
10/31/2005	7609	31	-269.0	239.6	-7.6	592.9	79.0	-634.8
11/30/2005	7639	30	-55.9	214.6	-11.1	373.0	78.2	-598.8
12/31/2005	7670	31	126.8	208.7	-11.3	191.2	79.4	-594.8
1/31/2006	7701	31	-48.8	697.7	-7.6	258.1	82.2	-981.6
2/28/2006	7729	28	-154.4	833.2	-6.6	277.9	79.2	-1029.3
3/31/2006	7760	31	-303.7	896.6	-6.4	421.7	92.9	-1101.1
4/30/2006	7790	30	-583.0	826.9	-6.4	713.5	94.3	-1045.2

Flow Budget for the Shallow Aquifer in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley	Las Posas LAS
			influx(+) outflux(-); units in Acre-feet					
5/31/2006	7821	31	-515.0	287.2	-11.0	803.3	95.9	-660.4
6/30/2006	7851	30	-191.1	243.4	-20.8	516.1	86.6	-634.3
7/31/2006	7882	31	69.6	213.2	-24.8	301.5	82.0	-641.5
8/31/2006	7913	31	240.1	210.4	-24.7	107.1	79.3	-612.3
9/30/2006	7943	30	245.9	206.5	-24.7	63.1	73.8	-564.6
10/31/2006	7974	31	92.0	204.3	-25.0	213.8	72.1	-557.2
11/30/2006	8004	30	85.1	201.7	-24.6	206.4	68.1	-536.8
12/31/2006	8035	31	181.9	181.3	-17.8	101.8	72.4	-519.6
1/31/2007	8066	31	105.9	490.6	-15.4	94.8	77.1	-753.0
2/28/2007	8094	28	206.0	207.3	-38.0	12.8	73.3	-461.4
3/31/2007	8125	31	248.5	221.8	-50.1	-3.3	81.4	-498.3
4/30/2007	8155	30	229.4	183.5	-37.5	-10.5	78.9	-443.7
5/31/2007	8186	31	313.2	220.6	-50.0	-94.6	81.4	-470.8
6/30/2007	8216	30	336.0	221.0	-49.9	-144.2	77.6	-440.5
7/31/2007	8247	31	337.5	238.8	-23.4	-171.3	77.8	-459.4
8/31/2007	8278	31	354.3	238.3	-23.5	-192.3	75.1	-451.9
9/30/2007	8308	30	307.2	237.7	-23.4	-158.2	71.9	-435.2
10/31/2007	8339	31	172.0	245.2	-23.5	-19.8	71.0	-444.9
11/30/2007	8369	30	119.0	254.5	-23.4	37.2	62.4	-449.7
12/31/2007	8400	31	16.3	610.8	-8.2	78.9	66.1	-764.0
1/31/2008	8431	31	-472.5	1965.7	-5.4	209.1	86.7	-1783.6
2/29/2008	8460	29	-271.5	373.7	-16.2	424.2	90.7	-601.0
3/31/2008	8491	31	-355.0	231.8	-42.9	593.1	91.1	-518.1
4/30/2008	8521	30	-126.4	242.2	-43.3	415.8	80.8	-569.1
5/31/2008	8552	31	154.1	257.2	-43.4	162.2	76.5	-606.6
6/30/2008	8582	30	306.7	246.0	-43.3	-10.8	66.9	-565.5
7/31/2008	8613	31	383.2	300.8	-45.7	-79.0	60.1	-619.3
8/31/2008	8644	31	410.6	298.3	-45.8	-111.4	51.9	-603.7
9/30/2008	8674	30	392.4	297.5	-45.6	-113.4	46.0	-576.8
10/31/2008	8705	31	197.7	299.6	-45.8	76.2	46.3	-574.0
11/30/2008	8735	30	-105.3	485.6	-16.2	271.3	53.3	-688.7
12/31/2008	8766	31	-12.9	595.1	-13.8	125.8	70.1	-764.4
1/31/2009	8797	31	180.3	213.3	-31.4	27.4	71.8	-461.4
2/28/2009	8825	28	-144.1	1224.8	-5.6	60.4	71.3	-1206.9
3/31/2009	8856	31	152.2	211.5	-31.1	60.4	86.7	-479.8
4/30/2009	8886	30	140.2	218.0	-31.5	53.2	82.7	-462.7
5/31/2009	8917	31	199.6	221.3	-31.6	7.0	72.3	-468.6
6/30/2009	8947	30	254.8	218.7	-31.5	-44.7	54.7	-451.9
7/31/2009	8978	31	302.1	285.3	-32.2	-85.0	48.3	-518.6
8/31/2009	9009	31	322.5	281.9	-32.4	-102.2	45.2	-515.0
9/30/2009	9039	30	305.3	281.2	-32.3	-100.3	47.7	-501.6
10/31/2009	9070	31	157.2	508.8	-11.6	-43.6	61.5	-672.3
11/30/2009	9100	30	183.2	283.1	-31.6	-27.0	61.0	-468.9
12/31/2009	9131	31	-17.3	792.9	-10.0	56.5	68.0	-890.1
1/31/2010	9162	31	-368.8	1403.1	-8.7	196.7	92.2	-1314.6
2/28/2010	9190	28	-286.9	927.5	-12.5	219.6	98.6	-946.3
3/31/2010	9221	31	-15.9	229.4	-64.1	226.0	110.8	-486.4
4/30/2010	9251	30	-74.6	294.4	-29.5	211.6	103.1	-505.0
5/31/2010	9282	31	82.8	243.6	-64.4	123.4	105.8	-491.3
6/30/2010	9312	30	168.3	233.9	-64.6	58.6	92.7	-489.0
7/31/2010	9343	31	228.1	310.0	-37.8	-8.0	80.4	-572.7
8/31/2010	9374	31	277.0	308.5	-38.1	-39.4	68.2	-576.2
9/30/2010	9404	30	308.2	315.1	-38.0	-73.1	60.7	-572.9
10/31/2010	9435	31	192.9	531.0	-13.3	-34.1	72.1	-748.5
11/30/2010	9465	30	127.8	252.0	-25.3	37.8	79.4	-471.7
12/31/2010	9496	31	-457.6	2158.9	-4.3	145.2	97.9	-1940.1
1/31/2011	9527	31	-113.0	224.5	-64.4	368.6	110.0	-525.7
2/28/2011	9555	28	-439.5	629.8	-17.1	507.6	103.7	-784.5
3/31/2011	9586	31	-716.9	1478.2	-8.7	539.2	129.5	-1421.3
4/30/2011	9616	30	-338.8	223.5	-65.2	600.0	128.5	-548.0
5/31/2011	9647	31	-301.0	206.1	-62.6	605.3	124.4	-572.2
6/30/2011	9677	30	7.7	223.9	-65.9	321.1	108.7	-595.5
7/31/2011	9708	31	146.7	277.2	-26.9	163.8	94.1	-654.9
8/31/2011	9739	31	220.1	282.2	-26.9	85.3	76.7	-637.3

Flow Budget for the Shallow Aquifer in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	RECHARGE	Pumping from Wells	Oxnard Basin	Pleasant Valley	Las Posas LAS
			influx(+) outflux(-); units in Acre-feet					
9/30/2011	9769	30	242.9	278.6	-26.8	40.4	61.9	-597.0
10/31/2011	9800	31	59.3	311.5	-16.8	193.6	70.0	-617.6
11/30/2011	9830	30	-120.4	384.7	-13.1	310.7	84.3	-646.3
12/31/2011	9861	31	21.3	275.9	-26.5	197.8	93.6	-562.2
1/31/2012	9892	31	73.9	301.6	-45.4	151.5	96.9	-578.5
2/29/2012	9921	29	175.7	293.6	-87.1	68.2	83.4	-533.8
3/31/2012	9952	31	89.3	539.4	-31.3	85.4	90.3	-773.1
4/30/2012	9982	30	87.2	373.7	-41.2	71.6	100.5	-591.7
5/31/2012	10013	31	172.9	298.2	-87.0	50.7	91.5	-526.4
6/30/2012	10043	30	243.3	296.2	-87.2	16.4	67.8	-536.4
7/31/2012	10074	31	282.9	328.6	-74.3	-5.6	61.1	-592.7
8/31/2012	10105	31	297.8	328.7	-74.4	-19.9	56.6	-588.9
9/30/2012	10135	30	292.7	327.4	-74.2	-23.0	49.1	-572.1
10/31/2012	10166	31	282.5	352.1	-74.3	-5.8	47.1	-601.7
11/30/2012	10196	30	156.0	334.9	-39.6	75.5	45.4	-572.2
12/31/2012	10227	31	101.7	542.8	-22.6	60.6	61.0	-743.5
1/31/2013	10258	31	109.1	279.9	-28.0	45.9	79.4	-486.2
2/28/2013	10286	28	144.5	229.2	-55.4	14.2	69.1	-401.6
3/31/2013	10317	31	129.9	188.8	-38.5	25.1	77.6	-382.9
4/30/2013	10347	30	148.1	233.8	-55.7	3.5	71.1	-400.9
5/31/2013	10378	31	145.9	238.8	-55.9	-10.8	56.7	-374.7
6/30/2013	10408	30	156.9	240.1	-55.9	-26.2	41.1	-356.0
7/31/2013	10439	31	210.8	280.1	-40.4	-61.2	30.9	-420.3
8/31/2013	10470	31	240.3	281.1	-40.3	-72.1	21.8	-430.8
9/30/2013	10500	30	245.5	281.4	-40.2	-73.3	15.3	-428.7
10/31/2013	10531	31	257.5	277.8	-40.3	-75.6	13.3	-432.6
11/30/2013	10561	30	246.0	246.5	-36.2	-68.9	12.1	-399.4
12/31/2013	10592	31	257.6	272.8	-40.2	-74.8	11.4	-426.8
1/31/2014	10623	31	252.2	274.1	-47.4	-64.6	13.8	-428.2
2/28/2014	10651	28	5.7	948.4	-9.7	-24.8	14.0	-933.5
3/31/2014	10682	31	151.3	269.8	-27.2	-29.4	28.0	-392.4
4/30/2014	10712	30	149.2	273.4	-46.8	-34.0	47.2	-389.0
5/31/2014	10743	31	172.7	279.8	-47.3	-32.4	42.0	-414.9
6/30/2014	10773	30	196.7	277.2	-47.3	-35.9	25.0	-415.7
7/31/2014	10804	31	207.2	271.9	-47.0	-25.5	18.3	-424.8
8/31/2014	10835	31	207.4	267.9	-47.0	-23.6	15.3	-419.8
9/30/2014	10865	30	205.8	261.4	-47.0	-22.7	12.6	-410.1
10/31/2014	10896	31	213.4	258.0	-47.1	-20.7	11.6	-415.2
11/30/2014	10926	30	185.2	214.0	-37.4	-9.9	10.8	-362.7
12/31/2014	10957	31	-53.5	1066.5	-8.5	10.6	16.3	-1031.4
1/31/2015	10988	31	11.6	530.3	-12.1	24.4	34.2	-588.3
2/28/2015	11016	28	79.3	207.5	-42.5	18.1	47.5	-309.8
3/31/2015	11047	31	89.0	195.1	-42.8	28.2	43.5	-312.9
4/30/2015	11077	30	110.3	210.6	-43.2	28.9	24.9	-331.5
5/31/2015	11108	31	132.0	200.5	-43.4	24.8	18.6	-332.4
6/30/2015	11138	30	141.5	209.8	-43.4	16.4	14.5	-338.8
7/31/2015	11169	31	135.0	247.4	-54.7	21.1	12.4	-361.2
8/31/2015	11200	31	142.4	247.9	-54.7	20.6	11.2	-367.2
9/30/2015	11230	30	145.8	246.3	-54.7	18.6	9.8	-365.8
10/31/2015	11261	31	155.6	249.1	-54.8	18.1	9.4	-377.4
11/30/2015	11291	30	154.8	254.5	-54.7	17.3	8.6	-380.5
12/31/2015	11322	31	158.4	251.3	-54.8	20.6	8.6	-384.0

Flow Budget for the LAS in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	San Pedro Outcrop Recharge	RECHARGE	Pumping from Wells	Outside Area	Las Posas UAS	Oxnard Basin	Pleasant Valley
			influx(+) outflux(-); units in Acre-feet							
1/31/1985	31	31	-235.5	111.9	128.8	-513.5	16.7	456.6	36.0	-0.973
2/28/1985	59	28	-208.9	115.7	136.3	-505.6	12.1	423.8	35.7	-9.041
3/31/1985	90	31	133.1	61.5	96.1	-680.4	11.3	376.3	24.9	-22.78
4/30/1985	120	30	980.0	0.0	50.0	-1309.1	8.9	353.0	-36.0	-46.817
5/31/1985	151	31	1039.0	0.0	50.9	-1309.1	7.1	362.1	-77.3	-72.728
6/30/1985	181	30	1094.9	0.0	52.4	-1309.1	5.2	346.7	-105.6	-84.487
7/31/1985	212	31	1210.7	0.0	58.7	-1397.5	4.1	368.9	-149.1	-95.696
8/31/1985	243	31	1243.2	0.0	57.8	-1397.5	3.6	356.9	-160.0	-104.007
9/30/1985	273	30	1265.3	0.0	57.8	-1397.5	3.1	344.0	-164.5	-108.199
10/31/1985	304	31	1264.2	0.0	54.9	-1380.5	2.8	334.9	-158.9	-117.446
11/30/1985	334	30	-1674.3	524.7	501.4	-200.5	6.1	1040.5	-102.6	-95.486
12/31/1985	365	31	933.1	1.2	59.4	-1090.8	7.9	312.6	-145.0	-78.398
1/31/1986	396	31	-1411.5	475.8	420.4	-252.8	9.1	896.8	-78.3	-59.483
2/28/1986	424	28	-3609.1	1131.0	953.5	-115.4	14.9	1709.7	-66.0	-18.491
3/31/1986	455	31	-2307.3	620.0	603.1	-167.4	20.5	1242.5	-21.2	9.684
4/30/1986	485	30	524.9	27.6	80.9	-1093.7	16.5	389.3	37.0	17.47
5/31/1986	516	31	939.1	0.0	51.3	-1441.2	12.5	395.0	44.1	-0.834
6/30/1986	546	30	985.1	0.0	50.9	-1441.2	9.4	409.0	8.4	-21.624
7/31/1986	577	31	1092.3	0.0	61.2	-1583.4	7.8	452.3	21.9	-52.094
8/31/1986	608	31	1131.8	0.0	58.3	-1583.4	6.4	443.6	20.0	-76.747
9/30/1986	638	30	499.3	47.9	90.6	-971.4	5.7	418.0	-8.3	-81.887
10/31/1986	669	31	1261.4	0.0	56.7	-1583.4	5.4	407.1	-60.2	-87.001
11/30/1986	699	30	-172.4	148.6	167.2	-517.9	5.6	496.2	-52.8	-74.595
12/31/1986	730	31	1317.1	0.0	56.1	-1583.4	6.1	368.0	-91.5	-72.348
1/31/1987	761	31	138.2	109.0	140.9	-662.4	6.1	421.6	-79.3	-74.125
2/28/1987	789	28	377.3	79.3	112.0	-790.7	6.2	358.4	-79.0	-63.47
3/31/1987	820	31	-139.9	169.3	179.2	-544.9	7.4	470.6	-79.8	-61.853
4/30/1987	850	30	1474.6	0.0	60.6	-1719.1	7.2	369.9	-114.7	-78.52
5/31/1987	881	31	1529.9	0.0	59.2	-1719.1	6.3	376.4	-132.0	-120.544
6/30/1987	911	30	1557.0	0.0	60.6	-1719.1	5.0	376.5	-141.0	-138.958
7/31/1987	942	31	1719.3	0.0	71.8	-1897.7	4.3	400.1	-139.0	-158.718
8/31/1987	973	31	1718.5	0.0	72.0	-1897.7	3.6	410.2	-144.2	-162.386
9/30/1987	1003	30	1745.6	0.0	70.3	-1897.7	3.0	409.8	-170.1	-160.899
10/31/1987	1034	31	216.2	118.8	155.8	-664.7	3.8	460.0	-153.8	-136.194
11/30/1987	1064	30	51.0	136.7	178.9	-609.5	5.5	474.1	-149.4	-87.19
12/31/1987	1095	31	-1134.6	449.5	393.9	-395.0	8.5	851.8	-123.8	-50.171
1/31/1988	1126	31	-842.7	334.2	294.4	-372.7	10.6	696.4	-107.6	-12.736
2/29/1988	1155	29	1.2	139.1	156.7	-613.6	9.9	393.1	-92.2	5.704
3/31/1988	1186	31	1377.1	0.0	53.6	-1625.7	8.9	307.4	-113.7	-7.489
4/30/1988	1216	30	-776.6	320.4	278.3	-411.4	8.8	638.7	-47.1	-11.023
5/31/1988	1247	31	1305.8	0.0	55.3	-1625.7	8.8	323.9	-56.3	-11.692
6/30/1988	1277	30	1307.3	0.0	55.4	-1625.7	6.8	339.8	-47.8	-35.815
7/31/1988	1308	31	1552.8	0.0	67.7	-1899.3	6.2	441.6	-103.0	-66.005
8/31/1988	1339	31	1601.5	0.0	67.8	-1899.2	5.6	452.9	-136.5	-92.119
9/30/1988	1369	30	1648.8	0.0	68.2	-1899.2	4.7	447.2	-164.9	-104.743
10/31/1988	1400	31	1687.8	0.0	67.5	-1899.2	4.3	448.6	-191.0	-117.961
11/30/1988	1430	30	591.6	68.3	106.9	-925.7	4.2	413.4	-156.8	-101.916
12/31/1988	1461	31	-1421.0	510.0	444.0	-327.9	7.7	970.3	-125.3	-57.712
1/31/1989	1492	31	1212.8	0.0	50.1	-1408.6	8.6	346.8	-167.2	-42.458
2/28/1989	1520	28	-1105.4	398.0	338.2	-300.5	8.1	794.7	-109.0	-24.049
3/31/1989	1551	31	568.9	41.0	72.0	-888.6	9.2	329.0	-117.0	-14.559

Flow Budget for the LAS in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	San Pedro Outcrop Recharge	RECHARGE	Pumping from Wells	Outside Area	Las Posas UAS	Oxnard Basin	Pleasant Valley
			influx(+) outflux(-); units in Acre-feet							
4/30/1989	1581	30	1230.5	0.0	54.6	-1439.4	7.2	327.8	-141.4	-39.265
5/31/1989	1612	31	1266.7	0.0	54.1	-1439.3	6.2	341.8	-166.9	-62.746
6/30/1989	1642	30	1293.8	0.0	54.5	-1439.2	5.7	342.2	-183.1	-73.887
7/31/1989	1673	31	1470.3	0.0	57.6	-1657.3	5.1	378.0	-166.8	-86.857
8/31/1989	1704	31	1479.6	0.0	57.3	-1657.3	4.5	378.8	-164.0	-98.951
9/30/1989	1734	30	1492.2	0.0	57.8	-1657.3	3.9	375.5	-166.9	-105.261
10/31/1989	1765	31	1512.8	0.0	55.3	-1657.3	3.7	377.8	-177.7	-114.645
11/30/1989	1795	30	1332.0	0.0	49.7	-1432.3	3.3	335.3	-173.7	-114.325
12/31/1989	1826	31	1531.0	0.0	55.8	-1657.3	3.1	375.4	-188.4	-119.526
1/31/1990	1857	31	-329.9	251.6	232.9	-498.1	4.6	588.3	-158.2	-91.305
2/28/1990	1885	28	-159.6	214.9	199.7	-567.5	6.4	482.5	-132.0	-44.574
3/31/1990	1916	31	1628.2	0.0	55.9	-1822.9	6.9	387.6	-195.4	-60.317
4/30/1990	1946	30	1663.1	0.0	56.4	-1822.8	6.0	400.9	-211.9	-91.67
5/31/1990	1977	31	1362.6	0.0	48.2	-1446.7	5.4	359.6	-216.1	-113.098
6/30/1990	2007	30	1697.5	0.0	59.8	-1822.8	4.5	419.0	-239.9	-118.2
7/31/1990	2038	31	1683.0	0.0	67.1	-1760.5	4.2	430.5	-300.0	-124.282
8/31/1990	2069	31	1685.3	0.0	66.2	-1760.5	3.8	425.8	-299.1	-121.471
9/30/1990	2099	30	1682.4	0.0	65.6	-1760.5	3.3	419.1	-292.3	-117.698
10/31/1990	2130	31	1680.2	0.0	67.1	-1760.5	3.2	429.1	-298.0	-121.146
11/30/1990	2160	30	1634.9	0.0	60.7	-1713.8	2.9	412.5	-289.0	-108.252
12/31/1990	2191	31	1682.6	0.0	62.1	-1760.5	2.9	419.8	-296.5	-110.283
1/31/1991	2222	31	717.7	48.2	86.8	-861.8	3.3	342.8	-236.1	-100.777
2/28/1991	2250	28	-435.1	242.1	230.6	-391.4	4.7	558.5	-152.4	-56.972
3/31/1991	2281	31	-4446.5	1431.3	1146.7	-92.6	14.7	2068.1	-112.7	-9.006
4/30/1991	2311	30	1056.8	0.0	45.8	-1403.9	17.4	416.0	-127.1	-5.031
5/31/1991	2342	31	1121.4	0.0	47.5	-1403.9	14.2	366.4	-104.2	-41.327
6/30/1991	2372	30	1159.4	0.0	47.3	-1403.9	11.5	361.9	-116.5	-59.766
7/31/1991	2403	31	1342.6	0.0	59.8	-1587.8	10.3	420.5	-167.0	-78.384
8/31/1991	2434	31	1370.4	0.0	59.6	-1587.8	9.0	424.2	-186.3	-89.12
9/30/1991	2464	30	1393.6	0.0	60.5	-1587.7	7.8	420.1	-200.4	-93.829
10/31/1991	2495	31	1415.4	0.0	58.0	-1587.6	7.2	421.5	-213.0	-101.4
11/30/1991	2525	30	1428.8	0.0	57.6	-1587.6	6.8	414.8	-219.1	-101.316
12/31/1991	2556	31	-1711.4	515.3	485.6	-235.3	9.2	1096.9	-102.0	-58.137
1/31/1992	2587	31	-534.9	212.0	210.6	-406.7	12.1	554.1	-53.6	6.548
2/29/1992	2616	29	-4192.7	1264.8	1046.5	-101.4	18.1	1912.7	-3.3	55.311
3/31/1992	2647	31	-3031.4	817.8	705.1	-149.5	27.2	1432.3	90.0	108.603
4/30/1992	2677	30	703.8	0.0	46.8	-1416.3	25.2	435.6	104.0	100.835
5/31/1992	2708	31	731.7	0.0	48.6	-1416.3	21.7	425.2	117.5	71.63
6/30/1992	2738	30	782.2	0.0	50.2	-1416.3	18.0	420.1	94.7	51.018
7/31/1992	2769	31	1040.3	0.0	64.1	-1678.8	16.3	491.9	31.1	35.15
8/31/1992	2800	31	1081.7	0.0	65.2	-1678.8	14.5	503.0	-2.6	16.93
9/30/1992	2830	30	1151.9	0.0	63.3	-1678.8	12.5	486.7	-38.6	2.913
10/31/1992	2861	31	-173.6	130.6	142.0	-671.3	12.7	524.7	28.9	5.936
11/30/1992	2891	30	1131.6	0.0	60.8	-1678.7	11.8	455.6	15.3	3.581
12/31/1992	2922	31	-2305.3	589.9	527.7	-244.7	14.4	1224.6	164.2	29.32
1/31/1993	2953	31	-4937.9	1323.8	1149.6	-94.7	24.3	2277.2	172.7	84.893
2/28/1993	2981	28	-4212.7	1130.9	944.5	-119.6	31.1	1954.6	157.5	113.852
3/31/1993	3012	31	-1975.6	446.4	371.8	-326.9	36.1	1115.0	182.1	151.216
4/30/1993	3042	30	540.1	0.0	53.1	-1512.5	30.8	607.2	156.4	124.968
5/31/1993	3073	31	522.3	0.0	54.1	-1512.5	27.2	611.0	201.6	96.303
6/30/1993	3103	30	278.6	7.8	60.1	-1163.7	23.2	572.6	146.0	75.461

Flow Budget for the LAS in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	San Pedro Outcrop Recharge	RECHARGE	Pumping from Wells	Outside Area	Las Posas UAS	Oxnard Basin	Pleasant Valley
			influx(+) outflux(-); units in Acre-feet							
7/31/1993	3134	31	784.6	0.0	60.2	-1646.3	21.3	623.7	88.4	68.103
8/31/1993	3165	31	853.3	0.0	60.6	-1646.3	18.8	592.8	59.4	61.334
9/30/1993	3195	30	905.0	0.0	60.1	-1646.3	16.3	558.0	57.8	49.134
10/31/1993	3226	31	858.8	0.0	59.6	-1646.3	15.2	569.3	98.4	45.03
11/30/1993	3256	30	768.3	0.0	53.9	-1568.3	13.3	560.5	126.2	46.219
12/31/1993	3287	31	-467.0	108.7	133.3	-653.5	13.3	637.2	160.7	67.383
1/31/1994	3318	31	492.6	0.0	48.3	-1272.6	12.7	533.3	114.8	70.963
2/28/1994	3346	28	-2896.1	747.8	636.3	-155.6	14.4	1464.5	116.5	72.154
3/31/1994	3377	31	-1419.3	287.5	269.0	-308.9	19.4	912.6	129.5	110.247
4/30/1994	3407	30	537.4	0.0	48.6	-1309.8	17.2	517.8	93.0	95.854
5/31/1994	3438	31	531.2	0.0	48.7	-1281.3	15.4	518.3	95.7	71.984
6/30/1994	3468	30	604.7	0.0	50.5	-1309.8	13.2	502.1	85.3	54.119
7/31/1994	3499	31	851.6	0.0	60.6	-1524.0	12.2	530.4	30.7	38.517
8/31/1994	3530	31	925.4	0.0	60.7	-1523.9	11.0	510.4	-6.7	23.183
9/30/1994	3560	30	1009.0	0.0	59.4	-1523.9	9.7	474.6	-38.0	9.195
10/31/1994	3591	31	788.7	0.0	52.4	-1219.2	9.1	427.3	-57.7	-0.57
11/30/1994	3621	30	182.8	59.1	96.2	-792.6	8.7	452.7	-14.3	7.347
12/31/1994	3652	31	522.1	22.3	81.3	-1055.1	9.0	421.5	-23.5	22.29
1/31/1995	3683	31	-7568.7	2318.3	1876.0	-39.6	25.7	3334.5	-2.1	56.093
2/28/1995	3711	28	-207.2	42.0	82.9	-629.0	28.9	561.0	38.5	82.763
3/31/1995	3742	31	-4296.3	1134.0	974.1	-75.7	32.4	1985.4	136.1	109.953
4/30/1995	3772	30	71.1	0.0	37.1	-933.7	31.0	555.5	117.6	121.359
5/31/1995	3803	31	69.7	0.0	42.4	-880.8	26.8	493.0	136.4	112.45
6/30/1995	3833	30	203.5	0.0	42.9	-986.7	22.6	490.9	129.5	97.127
7/31/1995	3864	31	551.7	0.0	57.9	-1385.3	20.6	582.0	91.3	81.671
8/31/1995	3895	31	587.4	0.0	58.4	-1385.3	18.3	577.2	78.3	65.746
9/30/1995	3925	30	621.0	0.0	58.3	-1385.3	15.8	564.1	73.1	52.919
10/31/1995	3956	31	596.6	0.0	56.5	-1385.3	14.7	579.5	91.1	46.891
11/30/1995	3986	30	606.7	0.0	55.8	-1385.3	12.9	570.6	100.7	38.619
12/31/1995	4017	31	-1039.6	197.9	209.7	-383.3	13.4	788.6	156.2	57.065
1/31/1996	4048	31	-258.3	55.7	86.5	-665.3	13.5	550.0	144.8	72.98
2/29/1996	4077	29	-3794.9	1038.4	836.8	-108.5	18.0	1792.2	140.8	77.205
3/31/1996	4108	31	-1325.4	259.7	224.3	-338.1	23.2	872.1	183.0	101.235
4/30/1996	4138	30	344.4	0.0	43.9	-1177.8	20.1	536.9	150.2	82.3
5/31/1996	4169	31	405.7	0.0	46.7	-1213.3	17.9	554.3	128.0	60.779
6/30/1996	4199	30	508.0	0.0	46.9	-1213.3	15.2	521.2	79.7	42.335
7/31/1996	4230	31	948.5	0.0	60.7	-1638.2	14.0	579.7	17.1	18.201
8/31/1996	4261	31	1025.4	0.0	60.6	-1638.1	12.5	562.4	-18.5	-4.303
9/30/1996	4291	30	1101.5	0.0	60.4	-1638.0	10.9	527.1	-44.8	-17.229
10/31/1996	4322	31	220.9	91.5	119.4	-951.6	11.3	528.9	-13.1	-7.322
11/30/1996	4352	30	-797.5	235.8	226.7	-438.1	12.1	708.3	25.2	27.551
12/31/1996	4383	31	-2820.2	770.8	653.0	-185.4	17.1	1431.0	65.0	68.637
1/31/1997	4414	31	-2907.7	725.1	623.0	-149.9	23.0	1426.3	157.0	103.186
2/28/1997	4442	28	428.0	0.0	50.6	-1264.2	20.7	523.9	160.5	80.453
3/31/1997	4473	31	429.4	0.0	51.3	-1264.2	19.4	545.3	165.3	53.495
4/30/1997	4503	30	495.4	0.0	51.4	-1264.2	16.3	539.1	129.6	32.448
5/31/1997	4534	31	547.8	0.0	52.0	-1264.2	14.8	536.4	91.9	21.243
6/30/1997	4564	30	639.3	0.0	53.6	-1264.1	12.8	500.9	44.8	12.684
7/31/1997	4595	31	1076.3	0.0	58.7	-1670.1	11.9	551.3	-42.4	14.254
8/31/1997	4626	31	1138.2	0.0	60.6	-1670.0	10.7	528.4	-76.2	8.312
9/30/1997	4656	30	1195.1	0.0	60.1	-1670.0	9.4	501.5	-98.5	2.479

Flow Budget for the LAS in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	San Pedro Outcrop Recharge	RECHARGE	Pumping from Wells	Outside Area	Las Posas UAS	Oxnard Basin	Pleasant Valley
			influx(+) outflux(-); units in Acre-feet							
10/31/1997	4687	31	1194.6	0.0	61.8	-1670.0	9.1	512.7	-109.7	1.469
11/30/1997	4717	30	-796.1	241.4	242.3	-421.6	9.3	738.2	-35.7	22.114
12/31/1997	4748	31	-3104.0	832.3	762.4	-160.5	14.8	1592.4	-4.4	67.038
1/31/1998	4779	31	-1795.5	429.0	393.9	-244.6	19.0	1037.4	57.8	103.006
2/28/1998	4807	28	-8851.1	2610.2	2225.3	-44.1	34.1	3866.0	45.4	114.084
3/31/1998	4838	31	-2073.7	456.4	393.3	-258.9	44.9	1165.7	123.3	149
4/30/1998	4868	30	-790.2	122.1	143.0	-522.4	36.2	663.3	206.9	141.131
5/31/1998	4899	31	-2057.0	502.5	382.6	-288.4	35.3	1051.1	235.1	138.813
6/30/1998	4929	30	269.2	0.0	49.6	-1275.7	31.4	574.9	223.2	127.355
7/31/1998	4960	31	366.6	0.0	47.4	-1321.7	28.0	611.5	164.0	104.196
8/31/1998	4991	31	431.7	0.0	50.3	-1321.7	24.7	605.7	121.5	87.804
9/30/1998	5021	30	522.6	0.0	48.3	-1315.2	21.3	567.5	78.9	76.588
10/31/1998	5052	31	532.1	0.0	46.4	-1321.7	19.8	560.3	90.2	73.053
11/30/1998	5082	30	17.4	26.0	73.4	-914.9	17.6	541.7	169.0	69.813
12/31/1998	5113	31	436.8	0.0	45.1	-1319.5	16.7	585.7	160.4	74.946
1/31/1999	5144	31	-1015.9	190.9	185.7	-395.4	16.4	743.4	195.0	80.006
2/28/1999	5172	28	-78.6	70.7	92.3	-824.6	14.9	538.5	123.0	63.76
3/31/1999	5203	31	-1529.9	326.6	303.0	-269.6	17.1	955.5	129.2	68.153
4/30/1999	5233	30	-1120.7	241.0	227.0	-337.7	17.6	751.2	136.0	85.554
5/31/1999	5264	31	476.4	0.0	51.5	-1281.8	17.1	517.0	136.7	83.125
6/30/1999	5294	30	552.8	0.0	52.7	-1281.8	14.5	508.2	96.1	57.535
7/31/1999	5325	31	772.6	0.0	54.2	-1400.4	13.3	535.7	-5.3	29.788
8/31/1999	5356	31	863.8	0.0	54.5	-1400.4	12.0	517.2	-50.0	2.908
9/30/1999	5386	30	939.4	0.0	54.2	-1400.2	10.5	484.7	-76.8	-11.923
10/31/1999	5417	31	941.9	0.0	58.9	-1400.1	9.9	495.4	-83.7	-22.281
11/30/1999	5447	30	315.3	43.6	76.8	-846.7	9.1	465.0	-46.5	-16.541
12/31/1999	5478	31	971.0	0.0	55.8	-1400.1	9.2	466.2	-88.7	-13.442
1/31/2000	5509	31	-334.8	164.8	173.6	-526.1	9.1	556.9	-38.7	-4.825
2/29/2000	5538	29	-3057.8	908.8	766.3	-154.5	13.9	1519.5	-22.7	26.538
3/31/2000	5569	31	-946.9	283.3	255.7	-409.6	18.8	726.3	16.3	56.059
4/30/2000	5599	30	-843.5	237.5	233.5	-439.9	18.1	640.3	89.8	64.122
5/31/2000	5630	31	965.8	0.0	67.1	-1605.9	17.1	464.1	48.0	43.811
6/30/2000	5660	30	1027.7	0.0	68.6	-1605.6	14.4	476.5	10.2	8.182
7/31/2000	5691	31	799.9	0.0	53.8	-1294.9	13.1	459.7	-31.6	0.08
8/31/2000	5722	31	851.7	0.0	53.4	-1294.7	11.7	439.3	-58.5	-2.822
9/30/2000	5752	30	896.0	0.0	52.8	-1294.7	10.1	416.8	-73.9	-7.2
10/31/2000	5783	31	255.7	54.3	87.1	-801.7	10.0	414.6	-16.4	-3.532
11/30/2000	5813	30	817.5	0.0	55.1	-1294.7	9.2	419.8	-2.3	-4.577
12/31/2000	5844	31	797.1	0.0	53.4	-1294.7	8.9	450.0	-5.5	-9.178
1/31/2001	5875	31	-2846.2	830.8	677.9	-141.3	12.8	1424.7	29.4	11.95
2/28/2001	5903	28	-3655.6	1069.5	886.6	-106.1	19.9	1726.3	17.1	42.314
3/31/2001	5934	31	-2202.0	607.8	492.5	-202.0	26.9	1139.2	65.0	72.667
4/30/2001	5964	30	-412.1	115.6	128.5	-577.9	24.9	545.2	105.1	70.794
5/31/2001	5995	31	585.1	0.0	55.1	-1272.1	22.6	493.2	70.4	45.802
6/30/2001	6025	30	659.3	0.0	55.8	-1272.0	18.9	487.9	27.1	23.072
7/31/2001	6056	31	568.8	0.0	52.0	-1142.5	17.2	475.5	16.3	12.674
8/31/2001	6087	31	629.8	0.0	53.8	-1142.6	15.2	451.7	-12.3	4.359
9/30/2001	6117	30	689.6	0.0	52.4	-1142.7	13.2	415.5	-24.9	-3.25
10/31/2001	6148	31	643.8	0.0	56.0	-1142.2	12.3	426.6	12.0	-8.487
11/30/2001	6178	30	-1494.0	403.0	332.2	-248.7	13.2	888.6	95.4	10.28
12/31/2001	6209	31	-188.4	61.5	102.5	-607.4	14.7	489.9	90.7	36.409

Flow Budget for the LAS in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	San Pedro Outcrop Recharge	RECHARGE	Pumping from Wells	Outside Area	Las Posas UAS	Oxnard Basin	Pleasant Valley
			influx(+) outflux(-); units in Acre-feet							
1/31/2002	6240	31	-263.5	69.1	93.5	-511.7	13.8	486.7	67.6	44.561
2/28/2002	6268	28	566.8	0.0	47.3	-1083.9	11.5	411.4	20.8	26.215
3/31/2002	6299	31	581.2	0.0	47.4	-1083.5	11.3	428.9	1.4	13.275
4/30/2002	6329	30	634.3	0.0	47.8	-1083.6	9.8	405.4	-19.1	5.483
5/31/2002	6360	31	660.1	0.0	48.6	-1083.6	9.3	398.5	-34.4	1.532
6/30/2002	6390	30	698.7	0.0	49.3	-1083.8	8.5	376.3	-47.3	-1.606
7/31/2002	6421	31	1100.0	0.0	68.7	-1492.9	8.0	439.8	-95.2	-28.323
8/31/2002	6452	31	1145.4	0.0	71.7	-1492.8	7.4	448.3	-120.7	-59.3
9/30/2002	6482	30	1163.8	0.0	77.0	-1492.9	6.6	457.6	-136.7	-75.418
10/31/2002	6513	31	1193.7	0.0	73.4	-1492.8	6.3	457.6	-150.4	-87.852
11/30/2002	6543	30	-1892.2	573.2	513.8	-212.9	8.7	1153.2	-95.7	-48.179
12/31/2002	6574	31	-1419.4	478.8	384.7	-311.5	13.8	917.6	-65.8	1.74
1/31/2003	6605	31	678.5	0.0	45.9	-1036.8	14.0	352.8	-63.3	8.895
2/28/2003	6633	28	-2211.9	603.1	562.4	-128.1	14.0	1161.3	-25.4	24.513
3/31/2003	6664	31	-1830.0	496.8	420.6	-173.0	19.2	1005.7	-1.7	62.431
4/30/2003	6694	30	86.9	50.5	83.3	-671.2	18.2	374.3	3.2	54.728
5/31/2003	6725	31	-334.9	100.6	127.6	-413.2	17.2	428.9	16.5	57.234
6/30/2003	6755	30	588.9	0.0	45.9	-1036.9	15.1	341.2	0.7	45.029
7/31/2003	6786	31	866.4	0.0	55.8	-1306.5	13.7	403.9	-51.2	17.817
8/31/2003	6817	31	910.1	0.0	55.9	-1306.3	12.1	402.3	-70.5	-3.66
9/30/2003	6847	30	954.6	0.0	54.7	-1306.1	10.5	391.4	-88.0	-17.107
10/31/2003	6878	31	973.8	0.0	57.0	-1306.1	9.8	394.5	-103.2	-25.779
11/30/2003	6908	30	435.4	40.0	89.1	-874.3	9.0	371.5	-63.2	-7.524
12/31/2003	6939	31	-124.3	87.9	133.6	-509.0	9.5	444.7	-59.9	17.504
1/31/2004	6970	31	620.4	0.0	43.7	-935.9	9.5	308.5	-67.7	21.51
2/29/2004	6999	29	-2446.2	729.6	600.0	-131.9	11.8	1233.1	-31.4	35.05
3/31/2004	7030	31	624.2	0.0	48.2	-1078.7	14.5	380.4	-36.5	47.917
4/30/2004	7060	30	668.2	0.0	48.6	-1078.8	11.8	349.5	-30.0	30.683
5/31/2004	7091	31	667.0	0.0	51.9	-1078.3	10.7	363.9	-37.1	21.986
6/30/2004	7121	30	704.2	0.0	50.8	-1078.4	9.2	352.3	-52.3	14.123
7/31/2004	7152	31	973.7	0.0	58.6	-1299.6	8.9	390.9	-121.5	-10.944
8/31/2004	7183	31	1025.9	0.0	58.8	-1299.4	8.1	396.9	-151.6	-38.722
9/30/2004	7213	30	1063.9	0.0	58.2	-1299.4	7.2	393.5	-169.3	-54.052
10/31/2004	7244	31	-2036.7	593.3	542.8	-168.3	10.0	1190.1	-106.5	-24.744
11/30/2004	7274	30	1001.3	0.0	54.2	-1300.4	11.3	403.3	-155.2	-14.432
12/31/2004	7305	31	-2421.8	707.9	625.6	-150.6	14.5	1314.2	-89.9	0.033
1/31/2005	7336	31	-5571.8	1691.1	1384.6	-63.5	28.3	2542.4	-58.2	47.223
2/28/2005	7364	28	-4007.6	1139.0	979.0	-91.7	35.3	1858.8	13.8	73.383
3/31/2005	7395	31	-1545.2	344.5	301.3	-266.3	38.2	941.2	87.0	99.34
4/30/2005	7425	30	24.7	21.7	60.6	-868.5	31.9	506.4	136.8	86.348
5/31/2005	7456	31	395.6	0.0	46.1	-1261.8	28.3	559.2	168.3	64.363
6/30/2005	7486	30	405.1	0.0	48.4	-1261.6	23.9	582.2	158.6	43.336
7/31/2005	7517	31	268.8	0.0	52.0	-1173.6	21.9	624.6	161.9	44.407
8/31/2005	7548	31	290.1	0.0	51.4	-1173.8	19.3	629.2	137.2	46.509
9/30/2005	7578	30	357.6	0.0	50.7	-1173.6	16.7	602.4	103.0	43.138
10/31/2005	7609	31	-448.4	56.7	97.3	-566.7	16.0	634.8	153.4	56.913
11/30/2005	7639	30	350.7	0.0	51.7	-1173.3	14.4	598.8	102.4	55.264
12/31/2005	7670	31	405.5	0.0	50.4	-1173.8	13.4	594.8	60.0	49.844
1/31/2006	7701	31	-1501.3	371.8	318.9	-315.4	14.6	981.6	67.0	62.824
2/28/2006	7729	28	-1666.3	410.5	355.5	-275.4	15.9	1029.3	59.9	70.691
3/31/2006	7760	31	-1923.0	463.2	399.5	-243.8	20.1	1101.1	91.3	91.63

Flow Budget for the LAS in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	San Pedro Outcrop Recharge	RECHARGE	Pumping from Wells	Outside Area	Las Posas UAS	Oxnard Basin	Pleasant Valley
			influx(+) outflux(-); units in Acre-feet							
4/30/2006	7790	30	-1832.0	410.1	362.4	-265.6	21.3	1045.2	159.6	99.092
5/31/2006	7821	31	-635.2	84.0	110.0	-535.3	21.4	660.4	194.7	99.926
6/30/2006	7851	30	444.0	0.0	60.6	-1328.0	18.4	634.3	108.0	62.708
7/31/2006	7882	31	221.7	0.0	56.1	-1073.0	16.7	641.5	87.0	49.946
8/31/2006	7913	31	305.6	0.0	53.9	-1072.9	14.9	612.3	38.1	48.135
9/30/2006	7943	30	393.1	0.0	52.7	-1072.7	12.9	564.6	7.7	41.738
10/31/2006	7974	31	393.3	0.0	50.5	-1072.2	12.0	557.2	19.5	39.717
11/30/2006	8004	30	409.0	0.0	49.6	-1072.3	10.6	536.8	30.8	35.519
12/31/2006	8035	31	71.9	15.9	61.6	-749.4	10.2	519.6	24.7	45.536
1/31/2007	8066	31	-969.7	216.4	215.8	-331.3	10.8	753.0	39.6	65.309
2/28/2007	8094	28	226.8	22.0	79.4	-886.2	10.2	461.4	23.4	63.038
3/31/2007	8125	31	588.1	0.0	55.3	-1226.8	10.4	498.3	15.8	58.917
4/30/2007	8155	30	474.8	0.0	44.9	-1051.2	9.4	443.7	23.9	54.599
5/31/2007	8186	31	638.0	0.0	55.9	-1226.9	8.8	470.8	0.3	53.228
6/30/2007	8216	30	696.3	0.0	56.4	-1227.0	7.9	440.5	-18.3	44.198
7/31/2007	8247	31	885.1	0.0	63.7	-1383.8	7.5	459.4	-65.8	33.913
8/31/2007	8278	31	920.9	0.0	62.1	-1383.7	7.0	451.9	-81.0	22.751
9/30/2007	8308	30	952.7	0.0	60.8	-1383.9	6.3	435.2	-86.2	15.129
10/31/2007	8339	31	927.6	0.0	62.9	-1383.8	6.1	444.9	-69.6	11.911
11/30/2007	8369	30	908.4	0.0	64.7	-1383.8	5.5	449.7	-53.0	8.546
12/31/2007	8400	31	-1037.0	332.8	269.3	-352.8	7.0	764.0	-7.7	24.507
1/31/2008	8431	31	-3844.2	1171.9	921.9	-108.7	15.5	1783.6	7.7	52.357
2/29/2008	8460	29	-629.6	154.1	171.1	-439.0	18.5	601.0	49.8	74.064
3/31/2008	8491	31	652.1	0.0	66.3	-1377.3	17.2	518.1	46.8	76.855
4/30/2008	8521	30	646.9	0.0	68.9	-1377.0	14.1	569.1	15.3	62.552
5/31/2008	8552	31	666.8	0.0	72.2	-1376.8	12.8	606.6	-39.5	57.95
6/30/2008	8582	30	768.9	0.0	70.2	-1376.9	11.0	565.5	-90.8	52.185
7/31/2008	8613	31	1151.2	0.0	78.5	-1735.2	10.2	619.3	-182.6	58.613
8/31/2008	8644	31	1186.9	0.0	77.6	-1735.0	9.2	603.7	-196.0	53.584
9/30/2008	8674	30	1236.5	0.0	76.8	-1735.1	8.4	576.8	-209.0	45.591
10/31/2008	8705	31	1222.5	0.0	77.3	-1734.9	8.2	574.0	-189.8	42.787
11/30/2008	8735	30	-630.1	206.0	210.1	-497.4	8.1	688.7	-29.3	43.93
12/31/2008	8766	31	-904.1	250.1	247.7	-423.4	10.2	764.4	-13.7	68.8
1/31/2009	8797	31	722.7	0.0	53.5	-1259.2	10.1	461.4	-82.6	94.047
2/28/2009	8825	28	-2317.2	648.5	549.4	-169.6	11.5	1206.9	-11.0	81.652
3/31/2009	8856	31	715.4	0.0	53.4	-1295.2	14.1	479.8	-84.3	116.811
4/30/2009	8886	30	752.2	0.0	54.9	-1294.7	11.5	462.7	-97.0	110.428
5/31/2009	8917	31	756.9	0.0	56.4	-1294.4	10.5	468.6	-106.7	108.682
6/30/2009	8947	30	794.7	0.0	54.7	-1294.5	9.1	451.9	-116.9	101.044
7/31/2009	8978	31	1179.4	0.0	72.5	-1673.0	9.0	518.6	-188.6	82.053
8/31/2009	9009	31	1232.1	0.0	71.2	-1672.8	8.2	515.0	-210.3	56.677
9/30/2009	9039	30	1276.2	0.0	70.7	-1672.9	7.3	501.6	-225.3	42.468
10/31/2009	9070	31	-579.0	254.2	226.5	-492.0	8.1	672.3	-127.1	36.953
11/30/2009	9100	30	1292.4	0.0	69.7	-1673.7	8.4	468.9	-211.4	45.757
12/31/2009	9131	31	-1234.0	401.0	350.8	-371.7	10.1	890.1	-92.8	46.501
1/31/2010	9162	31	-2607.2	744.9	633.5	-167.0	15.3	1314.6	-16.5	82.311
2/28/2010	9190	28	-1671.6	438.8	403.5	-251.9	17.4	946.3	12.6	104.932
3/31/2010	9221	31	761.8	0.0	58.0	-1402.9	18.2	486.4	-75.0	153.48
4/30/2010	9251	30	-269.4	106.0	133.1	-619.1	15.8	505.0	-10.5	139.094
5/31/2010	9282	31	767.9	0.0	62.9	-1402.6	14.8	491.3	-88.6	154.264
6/30/2010	9312	30	806.5	0.0	61.6	-1402.3	12.6	489.0	-112.0	144.63

Flow Budget for the LAS in partial Las Posas Basin (West)

Date	Stress	days in month	STORAGE	San Pedro Outcrop Recharge	RECHARGE	Pumping from Wells	Outside Area	Las Posas UAS	Oxnard Basin	Pleasant Valley
			influx(+) outflux(-); units in Acre-feet							
7/31/2010	9343	31	1255.9	0.0	76.8	-1868.0	11.6	572.7	-184.7	135.686
8/31/2010	9374	31	1298.9	0.0	77.7	-1867.6	10.5	576.2	-211.7	115.959
9/30/2010	9404	30	1334.2	0.0	78.6	-1867.7	9.2	572.9	-229.2	101.987
10/31/2010	9435	31	-742.5	251.4	235.8	-508.6	10.3	748.5	-108.3	113.354
11/30/2010	9465	30	739.1	14.6	79.6	-1293.3	10.4	471.7	-145.4	123.36
12/31/2010	9496	31	-3949.8	1082.5	955.0	-134.5	16.4	1940.1	-36.6	126.979
1/31/2011	9527	31	762.1	0.0	57.4	-1472.7	19.2	525.7	-50.4	158.577
2/28/2011	9555	28	-1222.1	282.1	270.7	-338.3	16.2	784.5	63.5	143.324
3/31/2011	9586	31	-2904.8	715.3	651.3	-163.5	21.1	1421.3	106.1	153.206
4/30/2011	9616	30	644.2	0.0	58.5	-1490.9	20.6	548.0	45.6	174.101
5/31/2011	9647	31	487.6	0.0	54.2	-1357.3	18.0	572.2	60.5	164.81
6/30/2011	9677	30	660.3	0.0	59.4	-1490.3	15.3	595.5	7.5	152.331
7/31/2011	9708	31	869.7	0.0	72.8	-1698.8	14.0	654.9	-56.5	143.828
8/31/2011	9739	31	909.3	0.0	74.1	-1698.6	12.6	637.3	-70.9	136.154
9/30/2011	9769	30	977.7	0.0	72.3	-1698.6	11.0	597.0	-85.4	125.991
10/31/2011	9800	31	-179.8	102.5	124.7	-787.0	11.1	617.6	-21.5	132.419
11/30/2011	9830	30	-566.3	136.4	163.6	-556.5	11.3	646.3	23.7	141.646
12/31/2011	9861	31	951.8	0.0	69.3	-1698.9	11.2	562.2	-45.0	149.404
1/31/2012	9892	31	-114.8	54.7	109.2	-806.0	10.5	578.5	17.0	150.801
2/29/2012	9921	29	1270.1	0.0	75.8	-1980.6	9.6	533.8	-50.9	142.211
3/31/2012	9952	31	-804.1	186.0	210.6	-515.5	10.2	773.1	-7.8	147.605
4/30/2012	9982	30	-327.8	127.2	153.4	-702.5	10.8	591.7	-15.5	162.649
5/31/2012	10013	31	1271.8	0.0	78.5	-1980.8	11.0	526.4	-70.0	163.112
6/30/2012	10043	30	1302.2	0.0	79.2	-1980.5	9.5	536.4	-89.4	142.633
7/31/2012	10074	31	1299.7	0.0	79.4	-1930.3	8.8	592.7	-170.4	120.117
8/31/2012	10105	31	1336.3	0.0	79.8	-1930.2	8.0	588.9	-183.3	100.523
9/30/2012	10135	30	1378.8	0.0	79.4	-1930.3	7.1	572.1	-193.0	86.012
10/31/2012	10166	31	851.7	113.4	139.8	-1598.0	6.5	601.7	-197.2	82.159
11/30/2012	10196	30	259.0	118.5	141.1	-1084.4	7.0	572.2	-104.6	91.223
12/31/2012	10227	31	-688.6	273.5	237.3	-626.0	8.9	743.5	-63.6	115.091
1/31/2013	10258	31	-207.6	98.1	124.0	-568.0	9.9	486.2	-70.2	127.6
2/28/2013	10286	28	856.0	0.0	56.1	-1282.8	8.3	401.6	-135.9	96.807
3/31/2013	10317	31	642.4	0.0	48.9	-1074.5	8.4	382.9	-109.1	100.96
4/30/2013	10347	30	875.8	0.0	57.7	-1282.5	7.4	400.9	-145.8	86.542
5/31/2013	10378	31	941.7	0.0	60.0	-1282.2	6.9	374.7	-157.9	56.7
6/30/2013	10408	30	984.1	0.0	60.4	-1282.3	6.2	356.0	-162.1	37.698
7/31/2013	10439	31	1173.1	0.0	68.9	-1537.8	5.9	420.3	-162.3	31.951
8/31/2013	10470	31	1195.9	0.0	69.1	-1537.9	5.5	430.8	-177.1	13.823
9/30/2013	10500	30	1224.6	0.0	68.9	-1538.0	4.9	428.7	-189.0	-0.076
10/31/2013	10531	31	1248.5	0.0	67.5	-1537.9	4.6	432.6	-205.3	-10.03
11/30/2013	10561	30	1134.5	0.0	60.9	-1382.9	4.1	399.4	-201.8	-14.152
12/31/2013	10592	31	1280.7	0.0	67.4	-1538.0	3.9	426.8	-221.5	-19.279
1/31/2014	10623	31	1267.1	0.0	67.2	-1489.1	3.7	428.2	-253.6	-23.343
2/28/2014	10651	28	-1401.1	458.0	405.4	-264.9	5.4	933.5	-133.6	-2.714
3/31/2014	10682	31	301.9	67.9	116.3	-766.5	8.0	392.4	-158.8	38.797
4/30/2014	10712	30	1216.1	0.0	64.6	-1489.8	7.0	389.0	-216.8	29.77
5/31/2014	10743	31	1238.9	0.0	68.5	-1489.3	6.6	414.9	-241.3	1.67
6/30/2014	10773	30	1263.3	0.0	67.7	-1489.2	6.1	415.7	-247.8	-15.767
7/31/2014	10804	31	1233.8	0.0	67.6	-1464.1	5.8	424.8	-256.6	-11.187
8/31/2014	10835	31	1182.7	0.0	66.3	-1408.0	5.2	419.8	-258.3	-7.743
9/30/2014	10865	30	1196.9	0.0	64.3	-1408.1	4.6	410.1	-257.7	-10.01

Flow Budget for the LAS in partial Las Posas Basin (West)

Date	Stress	days in month	influx(+) outflux(-); units in Acre-feet							
			STORAGE	San Pedro Outcrop Recharge	RECHARGE	Pumping from Wells	Outside Area	Las Posas UAS	Oxnard Basin	Pleasant Valley
10/31/2014	10896	31	1203.1	0.0	62.9	-1408.0	4.4	415.2	-265.4	-12.189
11/30/2014	10926	30	901.2	6.0	61.8	-1095.2	4.1	362.7	-232.1	-8.484
12/31/2014	10957	31	-1663.0	488.3	461.3	-209.8	6.8	1031.4	-136.1	21.13
1/31/2015	10988	31	-710.8	217.0	212.6	-291.5	9.5	588.3	-101.7	76.553
2/28/2015	11016	28	893.9	0.0	51.4	-1172.7	8.1	309.8	-170.1	79.516
3/31/2015	11047	31	799.6	0.0	51.8	-1047.3	7.7	312.9	-186.3	61.71
4/30/2015	11077	30	916.2	0.0	54.6	-1172.9	6.9	331.5	-188.2	51.917
5/31/2015	11108	31	873.3	0.0	49.3	-1109.0	6.6	332.4	-195.5	42.885
6/30/2015	11138	30	941.1	0.0	52.1	-1172.8	5.8	338.8	-197.5	32.346
7/31/2015	11169	31	745.3	34.7	74.5	-1023.0	5.7	361.2	-218.5	20.162
8/31/2015	11200	31	1106.8	0.0	57.3	-1336.1	5.6	367.2	-214.7	13.928
9/30/2015	11230	30	1128.7	0.0	56.8	-1350.5	4.8	365.8	-212.2	6.542
10/31/2015	11261	31	1124.9	0.0	57.2	-1348.6	4.5	377.4	-217.0	1.637
11/30/2015	11291	30	1123.3	0.0	59.4	-1350.5	4.0	380.5	-215.5	-1.141
12/31/2015	11322	31	1126.5	0.0	58.5	-1350.4	3.8	384.0	-219.4	-3.029

Monthly Streamflow Budget
units in Acre-feet

Stress	Year	Month	days in month	Rising Groundwater: System A Rising Groundwater Piru	Fillmore	Santa Paula	System B Rising Groundwater Piru	Fillmore	Santa Paula	System C Rising Groundwater Piru	Fillmore	Santa Paula	Stream Percolation: System A Stream Percolation Piru	Fillmore	Santa Paula	System B Stream Percolation Piru	Fillmore	Santa Paula	System C Stream Percolation Piru	Fillmore	Santa Paula
1	1985	1	31	-2300.94	-4184.10	-996.51	0.00	-277.14	-161.39	0.00	-118.37	-65.19	5112.24	970.25	62.52	0.00	0.00	162.01	0.00	0.00	0.00
2	1985	2	28	-1897.30	-3720.34	-924.64	0.00	-269.58	-124.95	0.00	-116.28	-55.83	4258.11	899.02	59.65	0.00	0.00	124.34	0.00	0.00	0.00
3	1985	3	31	-2050.91	-3894.01	-985.96	0.00	-312.57	-124.98	0.00	-126.21	-60.45	4691.16	974.67	58.01	0.00	0.00	123.33	0.00	0.00	0.00
4	1985	4	30	-1905.28	-3545.87	-905.64	0.00	-316.12	-109.66	0.00	-117.35	-55.74	3585.25	938.07	61.97	0.00	0.00	109.60	0.00	0.00	0.00
5	1985	5	31	-2486.75	-3335.45	-850.11	0.00	-333.11	-106.48	0.00	-118.66	-55.50	3960.95	924.19	66.20	0.00	0.00	105.96	0.00	0.00	0.00
6	1985	6	30	-1765.90	-2981.11	-762.47	0.00	-322.89	-97.85	0.00	-112.67	-52.30	2964.16	764.89	65.18	0.00	0.00	97.05	0.00	0.00	0.00
7	1985	7	31	-2288.39	-2746.91	-730.29	0.00	-329.77	-97.69	0.00	-114.24	-52.75	3265.42	756.46	67.59	0.00	0.00	97.53	0.00	0.00	0.00
8	1985	8	31	-2267.27	-2433.25	-683.51	0.00	-322.51	-91.11	0.00	-112.08	-51.40	3515.60	740.96	67.68	0.00	0.00	90.65	0.00	0.00	0.00
9	1985	9	30	-2144.47	-2926.93	-744.46	0.00	-302.95	-85.01	0.00	-106.44	-48.44	10679.23	2385.20	320.12	0.00	0.00	84.54	0.00	0.00	0.00
10	1985	10	31	-1835.19	-2060.99	-633.56	0.00	-302.02	-83.78	0.00	-107.96	-48.73	4106.40	858.06	72.33	0.00	0.00	83.72	0.00	0.00	0.00
11	1985	11	30	-2433.60	-2428.29	-719.60	0.00	-313.34	-153.94	0.00	-123.81	-52.72	4384.92	1081.70	72.18	0.00	0.00	159.30	0.00	0.00	0.00
12	1985	12	31	-2620.99	-2576.90	-730.84	0.00	-277.26	-90.23	0.00	-105.52	-50.48	5527.27	977.49	66.13	0.00	0.00	89.11	0.00	0.00	0.00
13	1986	1	31	-2919.04	-2707.81	-765.26	0.00	-294.05	-149.93	0.00	-117.33	-53.06	6720.06	1225.31	62.90	0.00	0.00	150.83	0.00	0.00	0.00
14	1986	2	28	-3519.89	-2819.49	-858.89	0.00	-304.43	-250.14	0.00	-155.14	-58.27	8571.74	2222.79	93.91	0.00	0.00	257.99	0.00	0.00	0.00
15	1986	3	31	-3260.35	-3616.26	-1058.29	0.00	-298.57	-208.90	0.00	-125.31	-63.28	8803.63	1814.75	93.17	0.00	0.00	220.35	0.00	0.00	0.00
16	1986	4	30	-2750.72	-3736.98	-1030.10	0.00	-246.61	-113.29	0.00	-99.06	-52.00	5791.84	1261.86	79.09	0.00	0.00	108.82	0.00	0.00	0.00
17	1986	5	31	-2647.35	-3521.06	-1006.55	0.00	-238.46	-92.21	0.00	-96.50	-47.77	4993.40	1051.82	70.96	0.00	0.00	88.97	0.00	0.00	0.00
18	1986	6	30	-2210.20	-3532.45	-956.57	0.00	-216.35	-81.38	0.00	-91.42	-44.40	3535.75	1176.71	107.32	0.00	0.00	79.17	0.00	0.00	0.00
19	1986	7	31	-2452.60	-3426.91	-990.43	0.00	-209.29	-76.84	0.00	-92.81	-44.72	9019.40	2035.51	277.05	0.00	0.00	77.71	0.00	0.00	0.00
20	1986	8	31	-2638.73	-2566.15	-807.09	0.00	-160.59	-71.61	0.00	-91.15	-43.69	3407.85	616.23	62.93	0.00	0.00	73.71	0.00	0.00	0.00
21	1986	9	30	-1868.98	-2432.01	-768.40	0.00	-122.69	-66.78	0.00	-88.76	-42.35	3490.85	671.79	57.39	0.00	0.00	68.52	0.00	0.00	0.00
22	1986	10	31	-1891.73	-2384.50	-767.32	0.00	-118.26	-66.07	0.00	-88.30	-42.68	3452.64	743.08	60.74	0.00	0.00	68.85	0.00	0.00	0.00
23	1986	11	30	-1997.31	-2422.57	-749.44	0.00	-109.37	-64.75	0.00	-87.99	-41.84	4263.62	790.11	59.28	0.00	0.00	65.54	0.00	0.00	0.00
24	1986	12	31	-1930.98	-2436.88	-766.73	0.00	-104.21	-62.39	0.00	-85.63	-41.89	4486.12	740.43	57.58	0.00	0.00	65.40	0.00	0.00	0.00
25	1987	1	31	-1971.31	-2456.51	-777.75	0.00	-100.04	-70.06	0.00	-87.65	-42.48	4535.16	768.86	63.27	0.00	0.00	69.44	0.00	0.00	0.00
26	1987	2	28	-1744.58	-2274.59	-709.90	0.00	-84.79	-59.48	0.00	-77.09	-38.03	4121.12	682.97	56.57	0.00	0.00	60.25	0.00	0.00	0.00
27	1987	3	31	-1969.90	-2556.87	-774.60	0.00	-92.35	-74.82	0.00	-86.04	-42.46	4551.35	873.02	74.23	0.00	0.00	72.35	0.00	0.00	0.00
28	1987	4	30	-1733.79	-2245.43	-700.75	0.00	-80.64	-57.30	0.00	-77.06	-39.26	3377.33	742.32	61.69	0.00	0.00	59.90	0.00	0.00	0.00
29	1987	5	31	-1703.74	-1922.57	-644.61	0.00	-79.09	-53.30	0.00	-77.53	-39.14	3514.79	730.80	60.13	0.00	0.00	55.66	0.00	0.00	0.00
30	1987	6	30	-2474.02	-2331.82	-698.84	0.00	-72.80	-48.36	0.00	-73.64	-37.19	11138.85	2409.42	282.79	0.00	0.00	50.69	0.00	0.00	0.00
31	1987	7	31	-1996.98	-1895.18	-647.19	0.00	-71.72	-49.22	0.00	-74.69	-37.79	7270.35	1483.20	246.35	0.00	0.00	52.20	0.00	0.00	0.00
32	1987	8	31	-2295.78	-1395.54	-551.16	0.00	-68.48	-47.76	0.00	-73.32	-37.17	4850.72	476.42	72.11	0.00	0.00	50.61	0.00	0.00	0.00
33	1987	9	30	-1610.31	-1215.35	-528.25	0.00	-63.46	-45.71	0.00	-69.68	-35.38	3218.14	382.66	54.41	0.00	0.00	48.55	0.00	0.00	0.00
34	1987	10	31	-1750.02	-1334.66	-541.26	0.00	-64.89	-47.04	0.00	-74.05	-37.27	3988.55	476.02	51.79	0.00	0.00	47.49	0.00	0.00	0.00
35	1987	11	30	-1961.37	-1542.32	-533.33	0.00	-61.47	-37.10	0.00	-71.64	-36.33	3930.05	687.16	55.46	0.00	0.00	36.58	0.00	0.00	0.00
36	1987	12	31	-2422.34	-1755.67	-552.57	0.00	-121.57	-87.92	0.00	-80.87	-40.16	6698.29	785.97	44.15	0.00	0.00	78.60	0.00	0.00	0.00
37	1988	1	31	-2932.93	-2179.26	-666.39	0.00	-86.68	-76.74	0.00	-75.71	-40.35	6543.72	1021.93	70.84	0.00	0.00	71.92	0.00	0.00	0.00
38	1988	2	29	-2530.60	-2264.42	-647.17	0.00	-69.96	-56.20	0.00	-69.31	-36.90	5726.78	1196.51	95.57	0.00	0.00	55.87	0.00	0.00	0.00
39	1988	3	31	-2511.16	-2210.09	-631.44	0.00	-57.12	-41.32	0.00	-66.41	-36.56	5713.21	1278.56	106.27	0.00	0.00	41.46	0.00	0.00	0.00
40	1988	4	30	-2071.19	-2303.21	-652.79	0.00	-101.72	-76.35	0.00	-72.10	-38.48	5143.76	953.36	80.14	0.00	0.00	71.14	0.00	0.00	0.00
41	1988	5	31	-2802.26	-3132.85	-806.09	0.00	-55.69	-45.67	0.00	-64.88	-37.00	11809.11	2259.81	292.47	0.00	0.00	46.85	0.00	0.00	0.00
42	1988	6	30	-1887.50	-1894.40	-603.38	0.00	-52.19	-38.67	0.00	-60.78	-33.62	5755.54	905.32	119.30	0.00	0.00	39.91	0.00	0.00	0.00
43	1988	7	31	-1769.33	-1695.33	-566.78	0.00	-52.38	-40.58	0.00	-61.83	-33.90	3661.56	599.76	57.00	0.00	0.00	42.72	0.00	0.00	0.00
44	1988	8	31	-2228.29	-1435.82	-526.48	0.00	-50.93	-39.34	0.00	-60.87	-33.23	3855.40	509.74	55.95	0.00	0.00	41.36	0.00	0.00	0.00
45	1988	9	30	-2129.36	-1167.46	-480.42	0.00	-47.84	-37.55	0.00	-58.02	-31.57	3858.97	441.37	53.14	0.00	0.00	39.62	0.00	0.00	0.00
46	1988	10	31	-1599.95	-1031.41	-468.85	0.00	-48.14	-37.24	0.00	-59.06	-32.02	3668.22	517.82	53.42	0.00	0.00	39.02	0.00	0.00	0.00
47	1988	11	30	-1570.36	-1070.17	-463.79	0.00	-46.02	-31.56	0.00	-58.94	-31.36	3791.39	683.30	56.19	0.00	0.00	30.82	0.00	0.00	0.00
48	1988	12	31	-2601.84	-1246.94	-435.84	0.00	-108.77	-67.86	0.00	-69.71	-35.87	7884.78	822.43	27.61	0.00	0.00	63.39	0.00	0.00	0.00
49	1989	1	31	-1861.56	-1516.04	-533.32	0.00	-47.90	-36.21	0.00	-57.81	-33.22	4698.77	693.11	56.31	0.00	0.00	35.52	0.00	0.00	0.00
50	1989	2	28	-1874.86	-1440.00	-494.89	0.00	-68.06	-66.34	0.00	-57.57	-31.33	5066.83	1036.84	75.61	0.00	0.00	59.69	0.00	0.00	0.00
51	1989	3	31	-1758.32	-1657.63	-567.24	0.00	-46.96	-33.98	0.00	-56.25	-32.52	4585.22	804.60	66.20	0.00	0.00	32.00	0.00	0.00	0.00
52	1989	4	30	-1587.02	-1441.73	-515.31	0.00	-44.44	-27.90	0.00	-52.86	-29.69	3771.79	682.46	58.11	0.00	0.00	27.16	0.00	0.00	0.00
53	1989	5	31	-1665.89	-1715.87	-548.15	0.00	-44.98	-26.40	0.00	-53.88	-29.88	7610.81	1592.86	143.24	0.00	0.00	25.35	0.00	0.00	0.00
54	1989	6	30	-2169.76	-1153.85	-443.26	0.00	-42.70	-24.77	0.00	-51.44	-28.33	4060.43	562.90	53.79	0.00	0.00	23.79	0.00	0.00	0.00
55	1989	7	31	-1551.93	-1086.97	-428.78	0.00	-43.35	-28.58	0.00	-52.44	-28.79	3339.33	391.60	55.97	0.00	0.00	28.59	0.00	0.00	0.00
56	1989	8	31	-1505.69	-996.73	-406.63	0.00	-42.63	-28.48	0.00	-51.73	-28.31	2866.25	219.88	61.30	0.00	0.00	28.35	0.00	0.00	0.00
57	1989	9	30	-2048.70	-910.60	-372.25	0.00	-40.64	-27.59	0.00	-49.40	-26.93	3624.15	167.40	57.56	0.00	0.00	27.55	0.00	0.00	0.00
58	1989	10	31	-1569.82	-914.04	-361.41	0.00	-41.41	-27.31	0.00	-50.40	-27.35	3808.85	163.05	54.15	0.00	0.00	26.93	0.00	0.00	0.00
59	1989	11	30	-1543.58	-876.45	-347.22	0.00	-39.56	-26.38	0.00	-48.14	-26.02	3616.50	148.01	55.39	0.00	0.00	26.09	0.00	0.00	0.00
60	1989	12	31	-1580.17	-874.18	-350.70	0.00	-40.40	-26.14	0.00	-49.12	-26.42	3613.89	146.93	61.51	0.00	0.00	25.51	0.00	0.00	0.00
61	1990	1	31	-1849.89	-1083.10	-370.07	0.00	-72.98	-44.06	0.00	-56.82	-29.43	4852.16	641.20	68.15	0.00	0.00	42.82	0.00	0.00	0.00
62	1990	2	28	-1855.90	-1111.07	-354.61	0.00	-60.27	-51.38	0.00	-51.36	-27.78	4957.94	851.64	55.89	0.00	0.00	51.33	0.00	0.00	0.00
63	1990	3	31	-2321.00	-1098.36	-368.54	0.00	-41.51	-29.63	0.00	-48.54	-27.67	4963.18	642.57	61.18	0.00	0.00	28.77	0.00	0.00	0.00
64	1990	4	30	-2140.02	-888.99	-310.26	0.00	-39.64	-25.12	0.00	-45.59	-25.05	4897.36	276.39	60.99	0.00	0.00	24.39	0.00	0.00	0.00
65	1990	5	31	-1553.64	-846.87	-297.27	0.00	-40.45	-20.54	0.00	-46.55	-25.36	3451.10	148.44	68.30	0.00	0.00	18.03	0.00	0.00	0.00
66	1990	6	30	-1488.60	-737.53	-260.03	0.00	-38.71	-23.04	0.00	-44.51	-24.13	3238.01	139.16	66.69	0.00	0.00	22.09	0.00	0.00	0.00
67	1990	7	31	-2093.19	-683.14	-248.37	0.00	-39.58	-24.58	0.00	-45.45	-24.58	3778.81	142.32	75.98	0.00	0.00	23.61	0.00	0.00	0.00
68	1990	8	31	-1530.34	-628.98	-231.87	0.00	-39.19	-24.13	0.00	-44.92	-24.25	3479.38	141.48	72.02	0.00	0.00	23.05	0.00	0.00	0.00
69	1990	9	30	-2085.30	-574.78	-221.53	0.00	-37.59	-23.57	0.00	-42.97	-23.15	3979.59	135.99	69.37	0.00	0.00	22.64	0.00	0.00	0.00
70	1990	10	31	-1540.69	-564.02	-226.93	0.00	-38.53	-23.21	0.00	-43.90	-23.58	3366.64	152.74	73.38	0.00	0.00	21.94	0.00	0.00	0.00
71	1990	11	30	-1534.34	-514.12	-212.69	0.00	-37.00	-22.55	0.00	-42.01	-22.50	3634.04	147.88	69.19	0.00	0.00	21.44	0.00	0.00	0.00
72	1990	12	31	-1560.60	-511.40	-224.09	0.00	-37.97	-22.15	0.00	-42.92	-22.91	3340.15	159.22	75.66	0.00	0.00	20.68	0.00	0.00	0.00
73	1991	1	31	-1644.16	-547.76	-217.56	0.00	-38.86	-20.01	0.00	-45.75	-24.05	3835.84	297.46	75.14	0.00	0.00	15.49	0.00	0.00	0.00
74	1991	2	28	-1610.38	-631.70	-210.03	0.00	-62.17	-38.45	0.00	-44.57	-22.85	4012.37	557.82	70.67	0.00	0.00	37.39	0.00	0.00	0.00
75	1991	3	31	-4198.00	-979.65	-371.17	0.00	-292.20	-180.25	0.00	-156.63	-35.46	9860.75	3727.40	193.12	0.00	0.00	173.59	0.00	0.00	0.00
76	1991	4	30	-2101.48	-1007.03	-355.82	0.00	-78.31	-40.17	0.00	-44.52	-27.86	3966.69	1879.79	173.24	0.00	0.00	37.36	0.00	0.00	0.00
77	1991	5	31	-1590.05	-778.62	-335.60	0.00	-49.64	-21.70	0.00	-41.56	-24.31	4669.60	1300.73	134.79	0.00	0.00	18.58	0.00	0.00	0.00
78	1991	6	30	-1549.85	-652.05	-308.47	0.00	-46.66	-19.40	0.00	-39.80	-22.65	3575.80	843.86	104.82	0.00	0.00	16.50	0.00	0.00	0.00
79	1991	7	31	-2065.79	-611.31	-298.54	0.00	-46.98	-21.01	0.00	-40.72	-23.03	3401.45	372.67	81.88	0.00	0.00	18.64	0.00	0.00	0.00
80	1991	8	31	-1939.63	-555.01	-282.07	0.00	-45.86	-19.66	0.00	-40.31	-22.75	2944.04	182.85	82.97	0.00	0.00	17.24	0.00	0.00	0.00
81	1991	9	30	-1417.34	-487.81	-257.63	0.00	-43.42	-19.06	0.00	-38.63	-21.74	2524.59	157.54	80.54	0.00	0.00	16.87	0.00	0.00	0.00
82	1991	10	31	-1529.16	-760.92	-288.51	0.00	-43.98	-19.08	0.00	-39.55	-22.17	12742.65	3667.96	467.01	0.00	0.00	16.55	0.00	0.00	0.00
83	1991	11	30	-2160.23	-506.68	-245.21	0.00	-41.78	-18.44	0.00	-37.92	-21.16	5144.32	850.10	189.43	0.00	0.00	16.13	0.00	0.00	0.00
84	1991	12	31	-2255.04	-611.15	-244.32	0.00	-111.69	-64.47	0.00	-51.11	-25.40	4986.60	646.06	47.01	0.00	0.00	59.77	0.00	0.00	0.00
85	1992	1	31	-2132.14	-773.76	-287.92	0.00	-53.76	-38.85	0.00	-44.67	-25.15	5243.98	1286.99	77.09	0.00	0.00	35.33	0.00	0.00	0.00
86	1992	2	29	-4602.74	-1061.13	-390.35	0.00	-275.22	-179.40	0.00	-147.24	-33.36	14055.43	4788.33	186.21	0.00	0.00	174.36	0.00	0.00	0.00
87	1992	3	31	-3545.53	-1456.88	-499.17	0.00	-227.60	-157.10	0.00	-90.64	-36.43	9526.75	3562.34	269.28	0.00	0.00	140.47	0.00	0.00	0.00
88	1992	4	30	-2914.51	-1598.23	-584.36	0.00	-58.35	-31.69	0.00	-39.50	-27.61	8890.09	2291.98	368.31	0.00	0.00	26.90	0.00	0.00	0.00
89	1992	5	31	-2645.31	-1083.11	-436.75	0.00	-58.05	-18.23	0.00	-38.33	-24.92	5656.60	1444.06	125.73	0.00	0.00	13.14	0.00	0.00	0.00
90	1992	6	30	-1597.40	-958.75	-406.63	0.00	-54.21	-17.13	0.00	-36.75	-23.16	3720.81	1060.44	95.97	0.00	0.00	12.29	0.00	0.00	0.00
91	1992	7	31	-1536.61	-902.07	-388.89	0.00	-54.18	-19.26	0.00	-37.64	-23.32	3110.10	1007.62	87.41	0.00	0.00	16.46	0.00	0.00	0.00
92	1992	8	31	-1492.36	-821.56	-362.92	0.00	-52.53	-19.13	0.00	-37.29	-23.00	2729.93	674.29	78.93	0.00	0.00	16.31	0.00	0.00	0.00
93	1992	9	30	-1441.84	-918.96	-337.76	0.00	-49.42	-18.53	0.00	-35.77	-21.97	6993.33	1648.73	176.76	0.00	0.00	15.98	0.00	0.00	0.00
94	1992	10	31	-1776.36	-1273.95	-412.33	0.00	-51.35	-21.65	0.00	-40.68	-23.84	11567.44	3688.73	579.11	0.00	0.00	16.88	0.00	0.00	0.00
95	1992	11	30	-2422.83	-1169.91	-401.47	0.00	-46.72	-18.34	0.00	-35.66	-22.03	8770.28	2859.19	445.83	0.00	0.00	15.69	0.00	0.00	0.00
96	1992	12	31	-2755.16	-1227.40	-441.86	0.00	-143.98	-60.16	0.00	-61.51	-26.93	6341.45	1740.10	159.95	0.00	0.00	53.86	0.00	0.00	0.00
97	1993	1	31	-4782.79	-1911.91	-531.60	0.00	-290.69	-177.96	0.00	-148.08	-36.98	12318.77	4644.98	196.20	0.00	0.00	168.57	0.00	0.00	0.00
98	1993	2	28	-4200.21	-2596.44	-664.06	0.00	-259.93	-221.14	0.00	-127.93	-37.26	12127.12	5028.29	366.93	0.00	0.00	214.67	0.00	0.00	0.00
99	1993	3	31	-4934.59	-3295.58	-790.07	0.00	-188.57	-133.51	0.00	-53.43	-35.63	16451.97	3185.06	341.84	0.00	0.00	120.50	0.00	0.00	0.00
100	1993	4	30	-4532.41	-3042.47	-672.79	0.00	-67.30	-40.08	0.00	-36.31	-27.91	11904.33	1814.28	258.02	0.00	0.00	36.08	0.00	0.00	0.00
101	1993	5	31	-5772.15	-3087.29	-721.64	0.00	-66.48	-22.52	0.00	-36.13	-26.23	9393.57	1525.33	382.56	0.00	0.00	18.25	0.00	0.00	0.00
102	1993	6	30	-3885.56	-2143.87	-455.20	0.00	-61.64	-17.56	0.00	-34.67	-24.53	6804.61	930.21	96.82	0.00	0.00	12.89	0.00	0.01	0.00
103	1993	7	31	-3367.33	-2119.03	-455.70	0.00	-61.17	-19.13	0.00	-35.60	-24.79	5274.75	866.56	100.17	0.00	0.00	16.31	0.00	0.09	0.00
104	1993	8	31	-3288.93	-1990.02	-424.89	0.00	-58.85	-18.99	0.00	-35.41	-24.34	6141.23	801.18	104.16	0.00	0.00	16.14	0.00	0.21	0.00
105	1993	9	30	-3106.29	-1816.74	-397.86	0.00	-54.94	-18.43	0.00	-34.07	-23.16	7237.27	776.63	124.33	0.00	0.00	15.83	0.00	0.31	0.00
106	1993	10	31	-3692.59	-1777.60	-415.83	0.00	-54.89	-18.78	0.00	-35.00	-23.57	6842.52	814.18	137.18	0.00	0.00	15.86	0.00	0.43	0.00
107	1993	11	30	-2936.86	-1814.27	-424.93	0.00	-51.48	-17.64	0.00	-33.69	-22.48	5841.81	801.85	117.31	0.00	0.00	13.29	0.00	0.52	0.00
108	1993	12	31	-2819.06	-2010.19	-452.68	0.00	-53.15	-21.81	0.00	-37.40	-24.13	5879.15	802.92	82.02	0.00	0.00	17.12	0.00	0.02	0.00
109	1994	1	31	-2593.65	-2131.01	-436.60	0.00	-50.27	-17.16	0.00	-34.69	-23.13	6294.23	1026.00	93.58	0.00	0.00	12.34	0.00	0.57	0.00
110	1994	2	28	-3138.00	-2274.36	-461.59	0.00	-161.50	-67.65	0.00	-67.86	-25.83	5876.73	1500.08	127.33	0.00	0.00	53.35	0.00	0.01	0.00
111	1994	3	31	-3041.65	-2813.22	-510.08	0.00	-63.50	-43.33	0.00	-40.83	-28.07	5912.41	1110.05	84.32	0.00	0.00	40.11	0.00	0.00	0.00

Monthly Streamflow Budget
units in Acre-feet

Stress	Year	Month	days in month	Rising Groundwater: System A Rising Groundwater: Piru	Fillmore	Santa Paula	System B Rising Groundwater: Piru	Fillmore	Santa Paula	System C Rising Groundwater: Piru	Fillmore	Santa Paula	Stream Percolation: System A Stream Percolation: Piru	Fillmore	Santa Paula	System B Stream Percolation: Piru	Fillmore	Santa Paula	System C Stream Percolation: Piru	Fillmore	Santa Paula
112	1994	4	30	-3117.32	-2508.74	-458.77	0.00	-50.39	-18.49	0.00	-33.57	-23.79	6009.42	890.11	68.29	0.00	0.00	14.18	0.00	0.65	0.00
113	1994	5	31	-3027.96	-2384.43	-442.64	0.00	-50.62	-17.72	0.00	-34.13	-22.99	6032.65	924.00	64.38	0.00	0.00	13.09	0.00	1.02	0.00
114	1994	6	30	-2290.48	-2289.91	-438.14	0.00	-47.55	-17.08	0.00	-32.84	-21.65	4193.27	769.90	81.04	0.00	0.00	12.71	0.00	1.08	0.00
115	1994	7	31	-2806.57	-2124.60	-435.51	0.00	-47.87	-18.41	0.00	-33.73	-22.03	3998.79	752.56	79.78	0.00	0.00	15.11	0.00	1.20	0.00
116	1994	8	31	-2684.85	-1888.38	-410.14	0.00	-46.71	-18.23	0.00	-33.54	-21.73	4733.51	779.76	106.25	0.00	0.00	14.88	0.00	1.29	0.00
117	1994	9	30	-3318.10	-2516.49	-425.62	0.00	-44.21	-17.61	0.00	-32.28	-20.70	9405.66	2470.98	352.51	0.00	0.00	14.52	0.00	1.33	0.00
118	1994	10	31	-3264.96	-2559.25	-428.89	0.00	-44.76	-16.91	0.00	-33.18	-21.07	8118.90	2058.91	372.37	0.00	0.00	11.37	0.00	1.45	0.00
119	1994	11	30	-2371.58	-1933.76	-384.23	0.00	-42.75	-18.73	0.00	-33.25	-20.71	6126.55	1027.61	168.14	0.00	0.00	14.18	0.00	0.88	0.00
120	1994	12	31	-2142.07	-1713.13	-344.10	0.00	-43.94	-17.61	0.00	-34.94	-21.70	7289.01	626.66	53.30	0.00	0.00	12.10	0.00	0.60	0.00
121	1995	1	31	-5809.89	-3296.06	-644.62	0.00	-363.69	-283.49	0.00	-234.94	-42.99	10882.75	5377.96	447.42	0.00	0.00	246.23	0.00	0.01	0.00
122	1995	2	28	-4999.39	-4466.92	-943.93	0.00	-180.54	-64.72	0.00	-40.04	-32.39	7738.72	2245.77	990.81	0.00	0.00	59.12	0.00	0.00	0.00
123	1995	3	31	-4413.15	-3609.64	-781.76	0.00	-242.96	-197.10	0.00	-101.95	-35.86	11470.99	2713.36	323.75	0.00	0.00	187.95	0.00	0.00	0.00
124	1995	4	30	-4610.39	-4011.38	-763.17	0.00	-64.20	-44.10	0.00	-34.55	-28.76	8505.31	1467.15	257.49	0.00	0.00	38.38	0.00	0.87	0.00
125	1995	5	31	-6440.47	-4755.65	-1134.98	0.00	-63.88	-23.82	0.00	-35.18	-26.45	7747.70	1714.84	708.96	0.00	0.00	17.76	0.00	0.85	0.00
126	1995	6	30	-3578.54	-2817.32	-521.85	0.00	-59.10	-17.48	0.00	-32.40	-24.19	5812.78	890.04	94.74	0.00	0.00	11.80	0.00	1.52	0.00
127	1995	7	31	-6906.78	-4246.92	-676.25	0.00	-58.78	-18.56	0.00	-33.14	-24.01	8692.94	2323.19	381.36	0.00	0.00	14.92	0.00	1.78	0.00
128	1995	8	31	-5173.87	-3406.87	-597.55	0.00	-56.68	-18.42	0.00	-32.94	-23.50	8209.30	1852.71	368.84	0.00	0.00	14.77	0.00	1.85	0.00
129	1995	9	30	-4363.14	-3118.00	-550.34	0.00	-53.03	-17.85	0.00	-31.69	-22.32	7126.27	1859.14	366.37	0.00	0.00	14.49	0.00	1.86	0.00
130	1995	10	31	-4145.72	-3088.57	-552.49	0.00	-53.12	-18.18	0.00	-32.56	-22.71	7571.24	2053.86	401.82	0.00	0.00	14.50	0.00	1.99	0.00
131	1995	11	30	-3981.79	-2944.31	-533.93	0.00	-49.97	-17.60	0.00	-31.33	-21.67	7113.81	1817.28	345.61	0.00	0.00	14.19	0.00	1.98	0.00
132	1995	12	31	-2522.03	-2133.28	-487.44	0.00	-51.57	-27.92	0.00	-34.16	-23.66	5667.22	716.29	64.87	0.00	0.00	25.01	0.00	1.22	0.00
133	1996	1	31	-2351.83	-2250.53	-489.32	0.00	-49.07	-19.11	0.00	-33.48	-23.54	5138.66	764.56	61.89	0.00	0.00	13.60	0.00	1.44	0.00
134	1996	2	29	-3053.74	-2160.94	-517.01	0.00	-157.47	-94.58	0.00	-71.24	-30.35	7312.39	1244.39	52.62	0.00	0.00	82.60	0.00	0.06	0.00
135	1996	3	31	-2827.69	-2666.68	-588.57	0.00	-53.52	-33.99	0.00	-35.90	-29.48	8229.39	841.79	44.35	0.00	0.00	28.65	0.00	0.53	0.00
136	1996	4	30	-3128.38	-2526.01	-534.70	0.00	-48.86	-17.40	0.00	-31.19	-23.98	8829.17	627.79	38.22	0.00	0.00	12.81	0.00	2.00	0.00
137	1996	5	31	-2542.77	-2602.86	-530.90	0.00	-49.02	-17.60	0.00	-31.85	-23.08	5526.14	674.53	54.72	0.00	0.00	12.79	0.00	2.32	0.00
138	1996	6	30	-2520.25	-2490.71	-505.62	0.00	-46.22	-16.97	0.00	-30.66	-21.65	3427.29	653.03	76.42	0.00	0.00	12.45	0.00	2.30	0.00
139	1996	7	31	-2322.87	-2217.71	-472.10	0.00	-46.63	-18.32	0.00	-31.52	-21.94	3419.88	500.13	75.26	0.00	0.00	14.89	0.00	2.44	0.00
140	1996	8	31	-2737.57	-1904.01	-427.40	0.00	-45.59	-18.14	0.00	-31.35	-21.63	4140.74	398.34	77.56	0.00	0.00	14.68	0.00	2.49	0.00
141	1996	9	30	-3332.93	-2426.83	-436.49	0.00	-43.23	-17.53	0.00	-30.19	-20.64	7813.28	2069.00	292.67	0.00	0.00	14.34	0.00	2.47	0.00
142	1996	10	31	-3481.99	-2584.19	-440.28	0.00	-46.62	-27.24	0.00	-34.58	-23.96	9608.12	1968.12	372.44	0.00	0.00	23.19	0.00	0.97	0.00
143	1996	11	30	-2800.91	-2202.24	-469.77	0.00	-44.98	-30.63	0.00	-33.24	-24.16	5285.87	1293.22	194.47	0.00	0.00	28.70	0.00	0.90	0.00
144	1996	12	31	-3045.70	-2015.38	-476.45	0.00	-142.38	-91.75	0.00	-64.24	-31.51	6823.17	1884.45	110.53	0.00	0.00	75.92	0.00	0.04	0.00
145	1997	1	31	-3752.19	-2785.09	-643.13	0.00	-108.20	-118.81	0.00	-43.84	-32.35	7957.50	1680.80	188.68	0.00	0.00	105.29	0.00	0.00	0.00
146	1997	2	28	-2639.86	-2762.10	-604.54	0.00	-43.72	-24.77	0.00	-28.63	-23.87	6024.11	896.14	130.15	0.00	0.00	20.50	0.00	1.92	0.00
147	1997	3	31	-2760.26	-2217.13	-485.10	0.00	-47.18	-17.45	0.00	-31.01	-23.38	10339.29	703.62	37.28	0.00	0.00	12.27	0.00	2.78	0.00
148	1997	4	30	-2768.98	-2323.52	-498.98	0.00	-44.60	-16.79	0.00	-30.00	-21.73	5855.57	640.44	62.33	0.00	0.00	11.92	0.00	2.89	0.00
149	1997	5	31	-2234.40	-2384.28	-508.82	0.00	-45.10	-17.04	0.00	-31.00	-21.88	3450.60	629.42	81.31	0.00	0.00	11.87	0.00	3.19	0.00
150	1997	6	30	-2062.47	-2138.92	-459.55	0.00	-42.78	-16.41	0.00	-30.00	-20.84	2952.50	443.64	81.54	0.00	0.00	11.53	0.00	3.27	0.00
151	1997	7	31	-2939.85	-2081.74	-429.01	0.00	-43.40	-17.77	0.00	-31.00	-21.25	4575.15	581.95	97.79	0.00	0.00	14.04	0.00	3.57	0.00
152	1997	8	31	-3387.35	-2585.94	-448.88	0.00	-42.66	-17.59	0.00	-31.00	-20.97	9827.17	2252.91	365.36	0.00	0.00	13.82	0.00	3.76	0.00
153	1997	9	30	-2979.44	-2173.79	-397.23	0.00	-40.65	-16.99	0.00	-30.00	-20.02	7466.83	1721.15	355.29	0.00	0.00	13.50	0.00	3.82	0.00
154	1997	10	31	-3713.53	-2136.57	-381.01	0.00	-41.40	-17.23	0.00	-31.00	-20.37	8895.17	1845.69	391.87	0.00	0.00	13.39	0.00	4.12	0.00
155	1997	11	30	-2385.60	-1651.80	-358.84	0.00	-47.97	-28.95	0.00	-32.17	-22.36	5302.77	717.65	101.68	0.00	0.00	26.16	0.00	1.58	0.00
156	1997	12	31	-3152.63	-1728.18	-406.85	0.00	-106.78	-71.41	0.00	-42.06	-27.04	6046.47	1120.94	62.55	0.00	0.00	56.60	0.00	0.12	0.00
157	1998	1	31	-2609.24	-1900.72	-432.28	0.00	-59.64	-64.47	0.00	-33.63	-26.63	6652.13	1144.97	34.92	0.00	0.00	62.37	0.00	1.10	0.00
158	1998	2	28	-6070.42	-3116.58	-890.63	0.00	-278.37	-394.78	0.00	-166.18	-41.95	13842.52	5741.86	446.02	0.00	0.00	305.95	0.00	0.04	0.00
159	1998	3	31	-6523.93	-3868.86	-1018.21	0.00	-137.43	-144.29	0.00	-38.54	-38.94	14679.92	2127.50	250.25	0.00	0.00	134.06	0.00	0.31	0.00
160	1998	4	30	-6096.57	-3656.89	-928.86	0.00	-55.25	-51.18	0.00	-31.96	-29.12	10506.19	1685.86	275.34	0.00	0.00	45.56	0.00	1.57	0.00
161	1998	5	31	-6777.82	-3945.95	-979.79	0.00	-101.15	-83.22	0.00	-36.14	-31.06	9379.47	1725.27	206.00	0.00	0.00	78.78	0.00	0.25	0.00
162	1998	6	30	-7296.70	-4198.07	-1050.27	0.00	-52.54	-23.97	0.00	-30.18	-26.65	7619.26	1377.92	360.78	0.00	0.00	18.09	0.00	3.03	0.00
163	1998	7	31	-7266.85	-4071.09	-1275.06	0.00	-52.63	-18.25	0.00	-31.00	-25.20	7314.52	1599.10	605.99	0.00	0.00	13.80	0.00	4.09	0.00
164	1998	8	31	-2499.91	-2436.46	-543.59	0.00	-51.12	-17.76	0.00	-31.00	-24.46	5996.42	713.02	56.97	0.00	0.00	13.30	0.00	4.28	0.00
165	1998	9	30	-5329.31	-3326.51	-668.32	0.00	-47.99	-17.10	0.00	-30.00	-23.18	8071.31	1904.33	272.21	0.00	0.00	12.82	0.00	4.32	0.00
166	1998	10	31	-4695.04	-3225.92	-740.50	0.00	-48.23	-17.52	0.00	-31.00	-23.54	8232.84	2053.04	395.87	0.00	0.00	13.03	0.00	4.65	0.00
167	1998	11	30	-5133.24	-3059.04	-735.52	0.00	-45.96	-18.03	0.00	-30.53	-23.10	8669.75	1888.68	360.43	0.00	0.00	13.21	0.00	3.81	0.00
168	1998	12	31	-4551.61	-3041.31	-732.51	0.00	-45.98	-17.28	0.00	-31.00	-23.22	9465.78	1873.93	346.43	0.00	0.00	12.66	0.00	4.79	0.00
169	1999	1	31	-2743.73	-2182.50	-625.20	0.00	-46.68	-27.55	0.00	-32.47	-25.12	6999.17	841.03	77.46	0.00	0.00	23.72	0.00	2.77	0.00
170	1999	2	28	-2237.91	-1994.56	-555.74	0.00	-40.15	-18.07	0.00	-28.90	-22.71	6048.60	678.12	46.35	0.00	0.00	13.31	0.00	2.86	0.00
171	1999	3	31	-2572.25	-2288.04	-631.42	0.00	-45.49	-33.76	0.00	-32.55	-26.26	6554.84	702.14	39.66	0.00	0.00	32.43	0.00	2.56	0.00
172	1999	4	30	-3097.80	-2057.51	-590.24	0.00	-43.11	-29.35	0.00	-31.34	-25.28	9491.96	774.54	24.68	0.00	0.00	26.13	0.00	2.59	0.00
173	1999	5	31	-2922.00	-2149.50	-586.13	0.00	-42.14	-17.87	0.00	-31.00	-23.78	7381.80	626.09	30.50	0.00	0.00	13.51	0.00	5.04	0.00
174	1999	6	30	-2495.52	-2162.28	-549.65	0.00	-40.19	-16.99	0.00	-30.00	-21.73	5448.02	581.28	50.82	0.00	0.00	12.90	0.00	5.41	0.00
175	1999	7	31	-2635.54	-2248.66	-560.42	0.00	-40.98	-17.42	0.00	-31.00	-21.93	2451.63	600.15	81.90	0.00	0.00	13.21	0.00	5.74	0.00
176	1999	8	31	-2278.30	-1988.56	-506.03	0.00	-40.47	-17.24	0.00	-31.00	-21.60	2713.06	471.90	76.74	0.00	0.00	12.99	0.00	5.89	0.00
177	1999	9	30	-3656.58	-2651.71	-512.53	0.00	-38.71	-16.65	0.00	-30.00	-20.62	8968.02	2242.77	328.03	0.00	0.00	12.67	0.00	5.83	0.00
178	1999	10	31	-2840.80	-2117.66	-496.55	0.00	-39.59	-16.89	0.00	-31.00	-21.00	6428.99	1249.15	272.52	0.00	0.00	12.55	0.00	6.17	0.00
179	1999	11	30	-2109.86	-1601.31	-445.09	0.00	-37.94	-16.31	0.00	-30.00	-20.04	3933.79	372.90	67.88	0.00	0.00	11.37	0.00	6.10	0.00
180	1999	12	31	-2143.19	-1595.38	-444.80	0.00	-38.85	-16.56	0.00	-31.00	-20.41	3927.42	506.35	67.32	0.00	0.00	12.12	0.00	6.43	0.00
181	2000	1	31	-2224.67	-1636.53	-451.09	0.00	-39.39	-21.66	0.00	-31.92	-21.52	4401.19	647.50	70.12	0.00	0.00	16.32	0.00	5.08	0.00
182	2000	2	29	-2981.84	-1590.64	-464.41	0.00	-123.92	-96.61	0.00	-55.66	-27.91	8471.17	1479.30	79.35	0.00	0.00	87.96	0.00	0.39	0.00
183	2000	3	31	-2868.67	-2126.01	-573.15	0.00	-44.39	-51.97	0.00	-32.68	-27.17	8548.18	1329.81	103.15	0.00	0.00	49.54	0.00	2.66	0.00
184	2000	4	30	-2421.05	-2140.84	-611.33	0.00	-41.98	-60.23	0.00	-31.46	-24.30	4985.33	1127.89	103.02	0.00	0.00	58.16	0.00	3.55	0.00
185	2000	5	31	-2702.54	-1893.51	-536.95	0.00	-40.80	-20.84	0.00	-31.00	-22.52	5981.28	742.17	59.82	0.00	0.00	16.53	0.00	6.11	0.00
186	2000	6	30	-2434.94	-1397.55	-386.96	0.00	-38.99	-17.12	0.00	-30.00	-20.35	7627.64	523.49	22.52	0.00	0.00	13.14	0.00	6.45	0.00
187	2000	7	31	-2036.67	-1683.32	-477.96	0.00	-39.83	-16.88	0.00	-31.00	-20.51	3359.96	518.25	72.51	0.00	0.00	12.00	0.00	6.80	0.00
188	2000	8	31	-1940.54	-1462.39	-450.94	0.00	-39.40	-16.66	0.00	-31.00	-20.23	2959.43	442.39	72.97	0.00	0.00	11.77	0.00	6.93	0.00
189	2000	9	30	-2960.86	-2007.55	-461.04	0.00	-37.76	-16.04	0.00	-30.00	-19.31	11384.62	2872.52	434.25	0.00	0.00	11.46	0.00	6.83	0.00
190	2000	10	31	-3230.74	-2273.85	-514.20	0.00	-39.83	-21.45	0.00	-32.45	-21.55	9413.22	2233.49	500.33	0.00	0.00	15.84	0.00	4.80	0.00
191	2000	11	30	-2563.13	-1767.89	-484.86	0.00	-37.17	-15.76	0.00	-30.00	-19.64	5951.25	1149.83	232.81	0.00	0.00	11.12	0.00	6.56	0.00
192	2000	12	31	-2102.78	-1433.49	-453.51	0.00	-38.12	-15.98	0.00	-31.00	-19.37	3922.49	599.50	68.25	0.00	0.00	10.98	0.00	7.32	0.00
193	2001	1	31	-2761.48	-1734.94	-491.66	0.00	-156.64	-62.40	0.00	-63.54	-26.19	6024.45	1093.09	90.79	0.00	0.00	45.33	0.00	0.58	0.00
194	2001	2	28	-3508.18	-2138.76	-562.60	0.00	-195.84	-102.16	0.00	-81.35	-28.43	7209.64	2238.51	189.81	0.00	0.00	89.77	0.00	0.00	0.00
195	2001	3	31	-3336.60	-3031.83	-745.97	0.00	-133.16	-157.05	0.00	-53.46	-31.66	8915.10	2996.43	328.67	0.00	0.00	141.95	0.00	0.00	0.00
196	2001	4	30	-3131.77	-2993.10	-691.71	0.00	-52.09	-33.85	0.00	-31.88	-26.54	6265.39	1063.11	114.68	0.00	0.00	27.85	0.00	2.19	0.00
197	2001	5	31	-2238.36	-2621.46	-627.28	0.00	-50.47	-17.68	0.00	-31.00	-23.29	4403.28	810.98	93.75	0.00	0.00	12.70	0.00	6.11	0.00
198	2001	6	30	-2069.49	-2151.08	-534.07	0.00	-47.35	-16.97	0.00	-30.00	-20.93	4262.74	710.57	86.54	0.00	0.00	12.33	0.00	6.57	0.00
199	2001	7	31	-2098.03	-1975.51	-514.08	0.00	-47.61	-16.95	0.00	-31.00	-20.90	3349.50	698.76	84.80	0.00	0.00	11.46	0.00	6.94	0.00
200	2001	8	31	-2567.06	-1816.88	-487.77	0.00	-46.43	-16.73	0.00	-31.00	-20.49	3156.75	651.99	80.41	0.00	0.00	11.26	0.00	7.09	0.00
201	2001	9	30	-3123.04	-2427.17	-506.11	0.00	-43.91	-15.98	0.00	-30.00	-19.54	11385.33	2991.32	455.61	0.00	0.00	10.84	0.00	6.99	0.00
202	2001	10	31	-3172.68	-2366.46	-533.56	0.00	-44.44	-16.31	0.00	-31.00	-19.92	9140.06	2326.89	499.98	0.00	0.00	10.86	0.00	7.35	0.00
203	2001	11	30	-3059.27	-2362.77	-550.03	0.00	-68.68	-38.08	0.00	-32.44	-21.92	6436.22	1279.24	221.77	0.00	0.00	35.73	0.00	3.09	0.00
204	2001	12	31	-2336.66	-2171.18	-522.87	0.00	-45.44	-19.47	0.00	-32.12	-21.93	5435.02	658.65	66.48	0.00	0.00	13.13	0.00	4.77	0.00
205	2002	1	31	-2234.99	-2268.27	-528.46	0.00	-43.53	-17.47	0.00	-31.71	-20.76	5082.88	671.54	70.87	0.00	0.00	10.65	0.00	5.97	0.00
206	2002	2	28	-1964.15	-1998.61	-472.08	0.00	-38.42	-14.53	0.00	-28.00	-17.81	3877.63	618.97	70.44	0.00	0.00	9.42	0.00	6.64	0.00
207	2002	3	31	-2069.90	-1969.55	-473.54	0.00	-41.89	-15.91	0.00	-31.00	-19.19	4714.32	658.86	70.89	0.00	0.00	9.81	0.00	7.70	0.00
208	2002	4	30	-1946.27	-1772.45	-432.32	0.00	-39.96	-15.21	0.00	-30.00	-18.30	4143.57	628.13	69.28	0.00	0.00	9.39	0.00	7.57	0.00
209	2002	5	31	-2523.34	-1736.93	-430.06	0.00	-40.74	-15.54	0.00	-31.00	-18.66	3899.70	627.16	75.29	0.00	0.00	9.34	0.00	7.94	0.00
210	2002	6	30	-1800.06	-1558.88	-393.42	0.00	-38.95	-14.87	0.00	-30.00	-17.81	3168.40	518.34	70.56	0.00	0.00	8.94	0.00	7.79	0.00
211	2002	7	31	-2389.08	-1436.42	-369.39	0.00	-39.79	-15.85	0.00	-31.00	-18.18	3605.72	489.10	70.43	0.00	0.00	11.27	0.00	8.15	0.00
212	2002	8	31	-2035.27	-1280.17	-354.85	0.00	-39.37	-15.67	0.00	-31.00	-17.95	2319.59	522.78	79.65	0.00	0.00	11.04	0.00	8.26	0.00
213	2002	9	30	-2185.52	-1767.88	-356.88	0.00	-37.74	-15.14	0.00	-30.00	-17.15	10895.64	3005.91	458.21	0.00	0.00	10.78	0.00	8.09	0.00
214	2002	10	31	-1921.31	-1159.07	-323.33	0.00	-38.66	-15.33	0.00	-31.00	-17.48	2934.03	581.85	88.73	0.00	0.00	10.59	0.00	8.46	0.00
215	2002	11	30	-2295.04	-1438.34	-368.03	0.00	-90.83	-45.66	0.00	-33.02	-20.14	3870.28	745.59	80.43	0.00	0.00	38.81	0.00	3.06	0.00
216	2002	12	31	-2455.96	-1686.22	-389.27	0.00	-89.35	-41.97	0.00	-33.97	-22.62	6053.64	773.04	44.81	0.00	0.00	37.99	0.00	2.36	0.00
217	2003	1	31	-2012.23	-1780.34	-421.77	0.00	-41.92	-15.35	0.00	-31.00	-19.06	4699.91	683.10	71.80	0.00	0.00	8.48	0.00	7.48	0.00
218	2003	2	28	-2627.27	-1547.63	-367.21	0.00	-112.02	-47.49	0.00	-39.95	-19.91	6462.38	1079.89	58.79	0.00	0.00	39.71	0.00	1.72	0.00
219	2003	3	31	-2535.11	-2039.78	-460.90	0.00	-80.19	-60.00	0.00	-33.66	-22.40	6440.47	1120.17	73.38	0.00	0.00	58.38	0.00	2.54	0.00
220	2003	4	30	-2586.00	-1768.14	-375.53	0.00	-44.79	-19.66	0.00	-31.50	-20.31	8169.48	914.41	35.43	0.00	0.00	12.34	0.00	4.76	0.00
221	2003	5	31	-2007.30	-2135.60	-479.58	0.00	-46.17	-22.98	0.00	-32.70	-20.89	4827.78	1201.88	122.26	0.00	0.00	17.27	0.00	5.04	0.00
222	2003	6	30	-1777.00	-1904.41	-450.24	0.00	-41.86	-15.17	0.00	-30.00	-18.37	3741.74	687.98	76.37	0.00	0.00	8.66	0.00	7.55	0.00

Monthly Streamflow Budget
units in Acre-feet

Stress	Year	Month	days in month	Rising Groundwater									Stream Percolation								
				System A Rising Groundwater			System B Rising Groundwater			System C Rising Groundwater			System A Stream Percolation			System B Stream Percolation			System C Stream Percolation		
				Piru	Fillmore	Santa Paula	Piru	Fillmore	Santa Paula	Piru	Fillmore	Santa Paula	Piru	Fillmore	Santa Paula	Piru	Fillmore	Santa Paula	Piru	Fillmore	Santa Paula
223	2003	7	31	-1740.67	-1701.42	-436.66	0.00	-42.51	-16.18	0.00	-31.00	-17.81	3140.26	638.16	73.76	0.00	0.00	11.57	0.00	8.42	0.00
224	2003	8	31	-1657.07	-1488.30	-413.56	0.00	-41.82	-15.96	0.00	-31.00	-17.59	2705.96	612.41	73.33	0.00	0.00	11.33	0.00	8.53	0.00
225	2003	9	30	-2029.07	-1950.89	-428.28	0.00	-39.89	-15.38	0.00	-30.00	-16.81	11468.81	2962.48	445.11	0.00	0.00	11.06	0.00	8.35	0.00
226	2003	10	31	-2247.32	-1623.63	-405.17	0.00	-40.67	-15.55	0.00	-31.00	-17.16	6802.21	1368.95	248.91	0.00	0.00	10.86	0.00	8.73	0.00
227	2003	11	30	-1864.64	-1439.94	-368.33	0.00	-41.17	-28.36	0.00	-32.14	-18.13	4338.49	620.83	60.79	0.00	0.00	25.66	0.00	4.94	0.00
228	2003	12	31	-1988.83	-1590.52	-369.67	0.00	-44.95	-20.97	0.00	-33.05	-19.90	5439.57	729.55	53.56	0.00	0.00	15.25	0.00	4.82	0.00
229	2004	1	31	-1934.47	-1513.87	-348.71	0.00	-39.57	-14.68	0.00	-31.00	-17.73	6053.44	630.60	45.65	0.00	0.00	8.23	0.00	8.19	0.00
230	2004	2	29	-2611.43	-1658.29	-370.84	0.00	-155.90	-61.02	0.00	-62.03	-22.13	7485.11	1424.63	70.53	0.00	0.00	46.20	0.00	0.89	0.00
231	2004	3	31	-2768.40	-1810.95	-396.51	0.00	-44.08	-16.97	0.00	-31.08	-19.93	7077.92	785.21	52.26	0.00	0.00	10.99	0.00	6.73	0.00
232	2004	4	30	-1783.51	-1735.32	-415.22	0.00	-41.85	-14.57	0.00	-30.00	-16.77	3817.15	693.68	76.27	0.00	0.00	8.75	0.00	8.39	0.00
233	2004	5	31	-2378.63	-1588.65	-393.33	0.00	-42.50	-14.87	0.00	-31.00	-17.02	4301.07	649.92	73.65	0.00	0.00	8.71	0.00	8.78	0.00
234	2004	6	30	-1674.40	-1396.39	-353.50	0.00	-40.47	-14.20	0.00	-30.00	-16.28	3478.34	579.11	68.32	0.00	0.00	8.37	0.00	8.60	0.00
235	2004	7	31	-1642.22	-1253.35	-344.52	0.00	-41.21	-15.35	0.00	-31.00	-16.63	2789.92	501.94	73.09	0.00	0.00	10.84	0.00	8.98	0.00
236	2004	8	31	-1618.21	-1054.68	-313.61	0.00	-40.65	-15.16	0.00	-31.00	-16.41	3037.70	471.44	71.91	0.00	0.00	10.63	0.00	9.08	0.00
237	2004	9	30	-2100.12	-919.19	-289.86	0.00	-38.85	-14.65	0.00	-30.00	-15.68	3227.38	333.89	74.15	0.00	0.00	10.44	0.00	8.88	0.00
238	2004	10	31	-2855.00	-1638.32	-333.02	0.00	-162.26	-55.87	0.00	-65.49	-22.13	12160.73	2875.29	307.75	0.00	0.00	42.97	0.00	1.15	0.00
239	2004	11	30	-2033.43	-1334.76	-333.39	0.00	-43.28	-15.00	0.00	-30.05	-18.46	4410.87	703.53	76.04	0.00	0.00	10.77	0.00	6.88	0.00
240	2004	12	31	-2821.72	-1478.91	-333.02	0.00	-196.78	-84.75	0.00	-81.12	-24.76	8315.88	1810.56	62.70	0.00	0.00	68.28	0.00	0.78	0.00
241	2005	1	31	-6429.60	-3084.91	-605.40	0.00	-336.60	-284.76	0.00	-207.34	-42.09	17981.96	5810.06	391.73	0.00	0.00	255.23	0.00	0.00	0.07
242	2005	2	28	-5665.26	-3441.83	-766.33	0.00	-253.84	-215.40	0.00	-105.87	-37.26	15755.06	4371.63	356.29	0.00	0.00	222.13	0.00	0.00	0.00
243	2005	3	31	-5414.85	-4117.31	-896.49	0.00	-173.13	-94.37	0.00	-34.57	-30.61	14552.29	2198.76	327.17	0.00	0.00	90.29	0.00	1.52	0.00
244	2005	4	30	-4616.38	-3865.95	-825.38	0.00	-67.32	-20.87	0.00	-30.00	-23.66	11469.44	1409.70	292.05	0.00	0.00	13.84	0.00	6.46	0.00
245	2005	5	31	-5515.47	-3663.77	-834.34	0.00	-66.47	-17.29	0.00	-31.00	-22.28	11160.25	1399.79	411.92	0.00	0.00	10.82	0.00	7.56	0.00
246	2005	6	30	-6748.76	-3713.56	-1129.44	0.00	-61.61	-16.51	0.00	-30.00	-20.80	8764.41	1787.49	779.67	0.00	0.00	10.41	0.00	7.47	0.00
247	2005	7	31	-3516.61	-2366.34	-440.06	0.00	-61.13	-16.95	0.00	-31.00	-20.97	6775.43	732.07	97.30	0.00	0.00	11.88	0.00	7.88	0.00
248	2005	8	31	-4928.86	-3047.23	-529.16	0.00	-58.80	-16.74	0.00	-31.00	-20.56	6623.04	1404.14	197.12	0.00	0.00	11.70	0.00	8.03	0.00
249	2005	9	30	-4866.07	-3082.25	-552.93	0.00	-54.89	-16.13	0.00	-30.00	-19.58	9229.58	2168.42	437.84	0.00	0.00	11.44	0.00	7.90	0.00
250	2005	10	31	-3370.16	-2449.70	-494.12	0.00	-55.76	-17.83	0.00	-32.00	-21.02	7719.12	1178.29	204.70	0.00	0.00	11.61	0.00	6.65	0.00
251	2005	11	30	-2439.93	-2115.28	-461.94	0.00	-51.47	-15.58	0.00	-30.00	-19.60	5510.35	628.60	53.65	0.00	0.00	10.45	0.00	7.82	0.00
252	2005	12	31	-2494.09	-2172.24	-456.22	0.00	-51.69	-16.04	0.00	-31.00	-19.59	5564.20	684.23	56.86	0.00	0.00	10.99	0.00	8.50	0.00
253	2006	1	31	-2711.43	-2098.76	-429.55	0.00	-125.37	-44.23	0.00	-44.29	-24.48	8528.65	1186.02	29.87	0.00	0.00	38.67	0.00	1.93	0.00
254	2006	2	28	-2523.86	-2290.00	-413.02	0.00	-107.62	-25.40	0.00	-35.11	-24.05	7572.61	1026.53	21.97	0.00	0.00	21.48	0.00	0.49	0.00
255	2006	3	31	-4434.27	-2756.21	-528.89	0.00	-122.22	-59.20	0.00	-40.92	-27.07	11428.94	1394.52	51.24	0.00	0.00	52.39	0.00	0.96	0.00
256	2006	4	30	-4854.52	-3130.89	-599.63	0.00	-134.78	-76.72	0.00	-44.69	-26.47	11474.35	2365.68	128.70	0.00	0.00	68.82	0.00	0.54	0.00
257	2006	5	31	-5265.42	-3568.61	-666.56	0.00	-57.45	-25.47	0.00	-31.94	-24.74	9976.59	864.03	98.75	0.00	0.00	20.11	0.00	5.29	0.00
258	2006	6	30	-4860.58	-2991.14	-579.59	0.00	-53.35	-16.96	0.00	-30.00	-21.23	7909.18	726.01	88.12	0.00	0.00	12.84	0.00	7.67	0.00
259	2006	7	31	-3956.03	-3063.85	-552.19	0.00	-53.40	-16.59	0.00	-31.00	-20.72	4201.87	783.82	106.97	0.00	0.00	11.38	0.00	8.35	0.00
260	2006	8	31	-7011.38	-3878.22	-643.20	0.00	-51.86	-16.36	0.00	-31.00	-20.14	7409.60	2084.68	402.25	0.00	0.00	11.14	0.00	8.48	0.00
261	2006	9	30	-4474.84	-3086.35	-559.99	0.00	-48.76	-15.73	0.00	-30.00	-19.16	6914.65	1796.86	390.31	0.00	0.00	10.82	0.00	8.32	0.00
262	2006	10	31	-4369.03	-3039.20	-551.25	0.00	-48.93	-15.94	0.00	-31.00	-19.57	7925.56	1937.79	413.99	0.00	0.00	10.68	0.00	8.72	0.00
263	2006	11	30	-2647.28	-2160.89	-474.65	0.00	-46.15	-15.33	0.00	-30.00	-18.68	4798.63	795.42	117.67	0.00	0.00	10.36	0.00	8.55	0.00
264	2006	12	31	-2385.52	-2146.93	-467.16	0.00	-46.56	-15.70	0.00	-31.00	-19.00	4590.19	681.83	78.73	0.00	0.00	9.21	0.00	8.94	0.00
265	2007	1	31	-2381.55	-2251.39	-470.47	0.00	-47.69	-27.64	0.00	-32.62	-20.80	5549.32	693.21	65.42	0.00	0.00	23.72	0.00	6.33	0.00
266	2007	2	28	-2179.93	-2114.07	-425.26	0.00	-41.60	-15.80	0.00	-29.24	-18.80	5380.93	616.76	63.59	0.00	0.00	10.28	0.00	5.78	0.00
267	2007	3	31	-2925.69	-2226.67	-456.77	0.00	-43.95	-15.33	0.00	-31.00	-19.18	5439.14	685.22	78.82	0.00	0.00	9.65	0.00	8.70	0.00
268	2007	4	30	-2119.82	-2043.39	-423.69	0.00	-41.79	-15.78	0.00	-30.00	-17.84	4570.08	643.38	74.18	0.00	0.00	9.68	0.00	8.89	0.00
269	2007	5	31	-2119.26	-2007.05	-421.58	0.00	-42.48	-14.99	0.00	-31.00	-18.21	3854.04	645.31	78.17	0.00	0.00	9.21	0.00	9.28	0.00
270	2007	6	30	-2564.65	-1779.18	-385.75	0.00	-40.50	-14.34	0.00	-30.00	-17.41	3778.02	610.58	77.92	0.00	0.00	8.85	0.00	9.07	0.00
271	2007	7	31	-2495.35	-1725.60	-373.58	0.00	-41.27	-14.65	0.00	-31.00	-17.78	3425.03	608.92	83.67	0.00	0.00	8.85	0.00	9.47	0.00
272	2007	8	31	-2686.22	-2196.40	-374.65	0.00	-40.73	-14.49	0.00	-31.00	-17.55	8476.31	2123.82	272.59	0.00	0.00	8.63	0.00	9.55	0.00
273	2007	9	30	-2594.88	-2072.24	-357.88	0.00	-38.96	-13.87	0.00	-30.00	-16.77	8735.94	2176.37	435.84	0.00	0.00	8.30	0.00	9.33	0.00
274	2007	10	31	-3430.79	-2120.55	-364.43	0.00	-39.82	-14.18	0.00	-31.00	-17.12	10045.82	2295.48	475.03	0.00	0.00	8.22	0.00	9.72	0.00
275	2007	11	30	-2112.32	-1481.69	-328.20	0.00	-38.14	-13.58	0.00	-30.00	-16.36	4790.89	784.85	127.76	0.00	0.00	7.91	0.00	9.49	0.00
276	2007	12	31	-2234.14	-1619.92	-348.24	0.00	-67.28	-35.67	0.00	-34.28	-19.44	6094.84	758.56	55.48	0.00	0.00	34.67	0.00	4.45	0.00
277	2008	1	31	-4176.38	-2172.16	-484.12	0.00	-261.84	-127.92	0.00	-119.48	-30.97	10889.57	3266.75	191.49	0.00	0.00	123.88	0.00	0.19	0.00
278	2008	2	29	-3480.90	-2614.18	-519.01	0.00	-52.84	-29.99	0.00	-31.71	-23.93	9075.18	1675.77	259.82	0.00	0.00	24.30	0.00	3.19	0.00
279	2008	3	31	-3054.54	-2569.65	-542.46	0.00	-48.57	-15.57	0.00	-31.00	-19.96	8121.41	1114.25	166.27	0.00	0.00	8.95	0.00	8.60	0.00
280	2008	4	30	-1976.46	-1975.89	-441.25	0.00	-45.76	-14.90	0.00	-30.00	-17.83	5489.47	787.53	73.65	0.00	0.00	8.64	0.00	8.97	0.00
281	2008	5	31	-2060.50	-1987.40	-445.38	0.00	-46.16	-15.18	0.00	-31.00	-17.90	4604.37	778.33	87.38	0.00	0.00	8.58	0.00	9.37	0.00
282	2008	6	30	-2560.53	-1740.42	-387.73	0.00	-43.69	-14.48	0.00	-30.00	-17.16	5547.11	647.75	66.57	0.00	0.00	8.23	0.00	9.16	0.00
283	2008	7	31	-1984.83	-1674.61	-376.62	0.00	-44.23	-15.29	0.00	-31.00	-17.54	4263.10	642.95	73.37	0.00	0.00	10.30	0.00	9.57	0.00
284	2008	8	31	-2592.05	-1438.36	-333.30	0.00	-43.39	-15.08	0.00	-31.00	-17.34	5572.91	618.69	64.57	0.00	0.00	10.08	0.00	9.66	0.00
285	2008	9	30	-3076.17	-2247.30	-364.11	0.00	-41.27	-14.55	0.00	-30.00	-16.58	12631.56	3262.40	533.08	0.00	0.00	9.87	0.00	9.43	0.00
286	2008	10	31	-3002.84	-2078.45	-372.85	0.00	-41.97	-14.71	0.00	-31.00	-16.92	10262.81	2627.65	598.00	0.00	0.00	9.66	0.00	9.83	0.00
287	2008	11	30	-2320.59	-1573.97	-354.29	0.00	-52.49	-26.19	0.00	-32.29	-17.60	5453.23	680.18	71.36	0.00	0.00	22.65	0.00	5.74	0.00
288	2008	12	31	-2339.21	-1790.80	-370.69	0.00	-55.01	-24.91	0.00	-33.09	-19.28	6318.28	717.57	52.45	0.00	0.00	20.48	0.00	5.58	0.00
289	2009	1	31	-2160.22	-1855.05	-366.97	0.00	-41.34	-14.12	0.00	-31.00	-17.34	5840.97	709.56	66.70	0.00	0.00	6.41	0.00	9.18	0.00
290	2009	2	28	-2649.09	-1607.55	-335.24	0.00	-130.73	-45.36	0.00	-51.28	-20.02	9077.00	1278.95	45.47	0.00	0.00	37.09	0.00	1.73	0.00
291	2009	3	31	-2899.18	-2046.05	-368.88	0.00	-44.48	-14.39	0.00	-31.02	-18.82	8166.02	815.37	59.50	0.00	0.00	6.72	0.00	7.98	0.00
292	2009	4	30	-2666.90	-1935.60	-350.07	0.00	-42.22	-13.81	0.00	-30.00	-16.37	6061.02	695.39	68.88	0.00	0.00	7.25	0.00	9.42	0.00
293	2009	5	31	-2131.55	-1956.73	-361.81	0.00	-42.86	-14.10	0.00	-31.00	-16.64	3887.49	685.15	87.76	0.00	0.00	7.16	0.00	9.82	0.00
294	2009	6	30	-2004.14	-1735.97	-333.58	0.00	-40.80	-13.48	0.00	-30.00	-15.90	3252.15	656.64	87.66	0.00	0.00	6.87	0.00	9.59	0.00
295	2009	7	31	-1996.43	-1620.32	-320.26	0.00	-41.52	-13.80	0.00	-31.00	-16.25	2825.10	594.94	91.28	0.00	0.00	7.99	0.00	9.99	0.00
296	2009	8	31	-1916.83	-1400.49	-289.09	0.00	-40.94	-13.64	0.00	-31.00	-16.05	2893.66	609.51	88.83	0.00	0.00	7.79	0.00	10.06	0.00
297	2009	9	30	-2699.43	-1843.88	-286.50	0.00	-39.12	-13.17	0.00	-30.00	-15.34	9860.68	2551.18	376.07	0.00	0.00	7.65	0.00	9.81	0.00
298	2009	10	31	-3284.79	-2401.35	-338.36	0.00	-81.85	-35.05	0.00	-35.04	-18.91	9716.80	2322.58	495.87	0.00	0.00	32.81	0.00	3.71	0.00
299	2009	11	30	-2244.08	-1585.11	-293.38	0.00	-40.02	-13.11	0.00	-30.00	-16.99	5509.57	846.18	129.06	0.00	0.00	7.53	0.00	8.60	0.00
300	2009	12	31	-2508.89	-1527.36	-276.46	0.00	-103.44	-36.26	0.00	-37.03	-19.63	7180.00	849.75	31.39	0.00	0.00	34.97	0.00	4.30	0.00
301	2010	1	31	-3201.74	-1906.14	-368.24	0.00	-154.87	-62.42	0.00	-58.33	-23.52	9011.97	1599.53	65.25	0.00	0.00	45.65	0.00	0.82	0.00
302	2010	2	28	-2841.38	-2113.86	-387.10	0.00	-101.51	-57.76	0.00	-33.76	-20.92	7631.25	1314.34	72.51	0.00	0.00	54.12	0.00	2.09	0.00
303	2010	3	31	-2901.85	-2132.45	-378.27	0.00	-49.04	-16.22	0.00	-31.00	-18.90	10549.57	870.27	51.60	0.00	0.00	8.60	0.00	8.59	0.00
304	2010	4	30	-2967.16	-2011.09	-351.73	0.00	-49.91	-21.78	0.00	-32.12	-18.88	11214.62	838.99	44.24	0.00	0.00	15.65	0.00	5.99	0.00
305	2010	5	31	-2105.01	-2091.86	-354.02	0.00	-46.64	-14.37	0.00	-31.00	-17.97	6087.62	714.52	50.71	0.00	0.00	6.90	0.00	9.07	0.00
306	2010	6	30	-2146.75	-2158.50	-362.58	0.00	-44.09	-13.73	0.00	-30.00	-16.15	3362.89	664.65	88.96	0.00	0.00	6.61	0.00	9.48	0.00
307	2010	7	31	-2132.96	-1980.56	-351.78	0.00	-44.60	-14.28	0.00	-31.00	-16.49	2348.15	675.72	100.04	0.00	0.00	8.81	0.00	9.89	0.00
308	2010	8	31	-2054.28	-1762.02	-324.81	0.00	-43.72	-14.10	0.00	-31.00	-16.29	2192.80	664.07	101.60	0.00	0.00	8.61	0.00	9.97	0.00
309	2010	9	30	-2812.83	-2057.65	-310.96	0.00	-41.56	-13.61	0.00	-30.00	-15.57	7900.84	2111.13	315.47	0.00	0.00	8.47	0.00	9.73	0.00
310	2010	10	31	-3420.84	-2600.34	-368.47	0.00	-45.02	-22.62	0.00	-32.68	-16.71	9613.78	2420.51	556.52	0.00	0.00	16.90	0.00	7.28	0.00
311	2010	11	30	-2781.37	-2222.75	-332.82	0.00	-41.38	-14.89	0.00	-31.67	-17.25	6466.16	1278.77	258.01	0.00	0.00	8.05	0.00	6.60	0.00
312	2010	12	31	-3737.37	-2096.98	-390.71	0.00	-246.97	-83.75	0.00	-102.89	-26.26	9084.66	1911.53	104.01	0.00	0.00	73.25	0.00	0.50	0.00
313	2011	1	31	-3542.31	-2714.39	-456.43	0.00	-50.09	-15.72	0.00	-31.41	-21.06	6621.64	966.94	168.15	0.00	0.00	8.42	0.00	7.05	0.00
314	2011	2	28	-2881.37	-1998.44	-351.65	0.00	-104.12	-47.15	0.00	-34.98	-19.69	7414.05	1003.01	50.75	0.00	0.00	42.90	0.00	2.95	0.00
315	2011	3	31	-4059.91	-2509.32	-448.02	0.00	-188.09	-89.72	0.00	-72.05	-27.02	12990.61	2351.31	78.89	0.00	0.00	76.21	0.00	0.18	0.02
316	2011	4	30	-3473.70	-2552.01	-427.97	0.00	-53.41	-17.49	0.00	-30.10	-21.25	12057.48	1051.53	71.31	0.00	0.00	10.67	0.00	6.91	0.00
317	2011	5	31	-3339.58	-2845.40	-483.87	0.00	-53.40	-15.11	0.00	-31.00	-18.47	6766.36	856.86	106.98	0.00	0.00	7.14	0.00	9.32	0.00
318	2011	6	30	-2786.90	-2278.90	-391.07	0.00	-50.17	-14.18	0.00	-30.00	-16.94	6218.60	701.27	53.78	0.00	0.00	7.42	0.00	9.14	0.00
319	2011	7	31	-2519.59	-2452.14	-430.57	0.00	-50.33	-14.43	0.00	-31.00	-17.12	3364.43	715.04	92.61	0.00	0.00	8.35	0.00	9.56	0.00
320	2011	8	31	-2344.41	-2213.17	-397.65	0.00	-48.82	-14.23	0.00	-31.00	-16.98	3388.69	648.31	84.44	0.00	0.00	8.15	0.00	9.67	0.00
321	2011	9	30	-3437.23	-2780.91	-410.73	0.00	-46.02	-13.60	0.00	-30.00	-16.24	7967.96	2337.49	395.11	0.00	0.00	7.86	0.00	9.45	0.00
322	2011	10	31	-3466.92	-2921.12	-438.52	0.00	-47.04	-15.03	0.00	-32.19	-16.99	8720.41	1896.05	454.68	0.00	0.00	7.03	0.00	7.81	0.00
323	2011	11	30	-2360.83	-2227.35	-388.56	0.00	-46.10	-15.10	0.00	-31.50	-17.17	5508.88	609.94	84.09	0.00	0.00	7.54	0.00	6.67	0.00
324	2011	12	31	-2271.30	-2217.62	-380.18	0.00	-44.59	-13.62	0.00	-31.00	-16.74	5337.62	624.51	68.59	0.00	0.00	7.42	0.00	9.42	0.00
325	2012	1	31	-2916.67	-2334.05	-385.01	0.00	-44.47	-13.52	0.00	-31.80	-16.68	4988.71	680.90	90.42	0.00	0.00	6.19	0.00	8.50	0.00
326	2012	2	29	-2050.42	-1980.16	-330.01	0.00	-40.25	-12.49	0.00	-29.00	-15.26	4447.08	821.72	79.19	0.00	0.00	6.78	0.00	9.11	0.00
327	2012	3	31	-2315.07	-2039.52	-331.57	0.00	-59.28	-30.22	0.00	-33.40	-18.56	6142.05	964.16	56.28	0.00	0.00	27.30	0.00	6.01	0.00
328	2012	4	30	-2218.37	-2103.39	-321.81	0.00	-49.76	-22.20	0.00	-32.18	-18.79	6406.18	757.99	46.93	0.00	0.00	17.13	0.00	5.32	0.00
329	2012	5	31	-2217.04	-2323.59	-353.35	0.00	-42.14	-13.29	0.00	-31.00	-16.96	4507.70	638.64	81.83	0.00	0.00	6.78	0.00	9.32	0.00
330	2012	6	30	-2046.86	-1993.75	-322.02	0.00	-40.18	-12.74	0.00	-30.00	-15.50	2899.63	606.43	88.67	0.00	0.00	6.55	0.00	9.75	0.00
331	2012	7	31	-1982.87	-1803.64	-308.46	0.00	-40.96	-14.55	0.00	-31.00	-15.79	2849.33	575.36	88.12	0.00	0.00	10.60	0.00	10.16	0.00
332	2012	8	31	-2471.39	-1612.94	-293.66	0.00	-40.44	-14.43	0.00	-31.00	-15.58	3102.92	566.47	91.73	0.00	0.00	10.44	0.00	10.24	0.00
333	2012	9	30	-2800.81	-2123.76	-307.67	0.00	-38.69	-14.04	0.00	-30.00	-14.88	10403.11	2768.61	487.01	0.00	0.00	10.39	0.00	9.98	0.00

Monthly Streamflow Budget
units in Acre-feet

				Rising Groundwater									Stream Percolation								
				System A Rising Groundwater			System B Rising Groundwater			System C Rising Groundwater			System A Stream Percolation			System B Stream Percolation			System C Stream Percolation		
Stress	Year	Month	days in month	Piru	Fillmore	Santa Paula	Piru	Fillmore	Santa Paula	Piru	Fillmore	Santa Paula	Piru	Fillmore	Santa Paula	Piru	Fillmore	Santa Paula	Piru	Fillmore	Santa Paula
334	2012	10	31	-2947.80	-2065.37	-318.87	0.00	-39.55	-13.05	0.00	-31.00	-13.34	8815.93	2204.82	539.75	0.00	0.00	7.44	0.00	10.39	0.00
335	2012	11	30	-2109.06	-1559.18	-289.43	0.00	-39.55	-17.03	0.00	-31.61	-14.41	3984.46	591.38	86.13	0.00	0.00	10.65	0.00	7.53	0.00
336	2012	12	31	-2180.19	-1823.26	-321.24	0.00	-40.93	-23.23	0.00	-32.51	-15.60	4604.58	600.96	76.76	0.00	0.00	18.66	0.00	7.42	0.00
337	2013	1	31	-2129.39	-1962.24	-334.87	0.00	-40.21	-16.04	0.00	-32.41	-14.53	4183.43	645.43	85.65	0.00	0.00	9.22	0.00	7.65	0.00
338	2013	2	28	-1825.71	-1651.54	-285.30	0.00	-34.66	-12.80	0.00	-28.00	-11.65	3982.07	595.97	76.52	0.00	0.00	9.20	0.00	9.00	0.00
339	2013	3	31	-2549.31	-1633.90	-299.08	0.00	-38.10	-13.21	0.00	-31.00	-12.47	4927.18	657.58	82.67	0.00	0.00	7.04	0.00	10.48	0.02
340	2013	4	30	-2397.17	-1453.96	-275.74	0.00	-36.62	-13.16	0.00	-30.00	-11.88	4465.27	620.62	79.96	0.00	0.00	8.77	0.00	10.21	0.04
341	2013	5	31	-1765.85	-1343.87	-264.88	0.00	-37.60	-13.33	0.00	-31.00	-12.11	3361.35	558.57	82.46	0.00	0.00	8.55	0.00	10.61	0.07
342	2013	6	30	-2183.89	-1171.98	-248.66	0.00	-36.17	-12.97	0.00	-30.00	-11.56	3078.70	477.69	84.06	0.00	0.00	8.54	0.00	10.34	0.09
343	2013	7	31	-2156.47	-1069.09	-244.66	0.00	-37.18	-13.46	0.00	-31.00	-11.79	3057.02	438.25	85.74	0.00	0.00	9.04	0.00	10.74	0.12
344	2013	8	31	-1573.96	-947.56	-238.61	0.00	-36.99	-13.38	0.00	-31.00	-11.62	2327.39	368.35	89.02	0.00	0.00	8.93	0.00	10.81	0.15
345	2013	9	30	-1501.37	-852.02	-223.56	0.00	-35.63	-13.05	0.00	-30.00	-11.09	2548.52	309.76	83.06	0.00	0.00	8.96	0.00	10.51	0.15
346	2013	10	31	-1601.46	-838.81	-221.86	0.00	-36.67	-13.24	0.00	-31.00	-11.30	3272.84	326.27	79.54	0.00	0.00	8.75	0.00	10.92	0.16
347	2013	11	30	-1583.06	-801.64	-211.30	0.00	-35.35	-12.47	0.00	-30.00	-10.78	3897.22	337.57	71.80	0.00	0.00	7.74	0.00	10.62	0.15
348	2013	12	31	-1647.92	-819.43	-216.10	0.00	-36.39	-13.10	0.00	-31.00	-10.97	3881.60	365.35	75.03	0.00	0.00	8.56	0.00	11.03	0.16
349	2014	1	31	-1616.04	-774.24	-207.75	0.00	-36.27	-14.04	0.00	-31.00	-10.82	3895.12	360.27	77.72	0.00	0.00	10.81	0.00	11.08	0.16
350	2014	2	28	-1828.64	-837.04	-202.44	0.00	-78.81	-32.16	0.00	-30.95	-13.66	4864.05	759.54	62.91	0.00	0.00	31.81	0.00	5.22	0.15
351	2014	3	31	-1965.92	-1064.98	-232.12	0.00	-46.77	-16.75	0.00	-33.31	-15.67	4844.10	1374.00	132.95	0.00	0.00	9.97	0.00	6.33	0.18
352	2014	4	30	-1553.54	-886.99	-219.22	0.00	-36.83	-13.67	0.00	-30.00	-13.78	3295.95	741.68	94.49	0.00	0.00	10.77	0.00	9.92	0.16
353	2014	5	31	-2057.18	-779.60	-213.24	0.00	-37.78	-13.85	0.00	-31.00	-11.08	3368.25	540.67	89.79	0.00	0.00	10.56	0.00	10.99	0.16
354	2014	6	30	-1487.63	-654.36	-188.52	0.00	-36.32	-13.55	0.00	-30.00	-10.51	3142.64	268.87	77.20	0.00	0.00	10.63	0.00	10.68	0.15
355	2014	7	31	-1410.59	-632.40	-204.32	0.00	-37.30	-13.01	0.00	-31.00	-10.71	2270.04	259.07	88.74	0.00	0.00	8.74	0.00	11.10	0.16
356	2014	8	31	-1279.04	-596.90	-201.24	0.00	-37.09	-12.94	0.00	-31.00	-10.57	1922.37	251.30	88.87	0.00	0.00	8.65	0.00	11.14	0.16
357	2014	9	30	-1303.81	-542.77	-188.16	0.00	-35.71	-12.64	0.00	-30.00	-10.09	2172.41	216.27	83.11	0.00	0.00	8.71	0.00	10.84	0.15
358	2014	10	31	-1505.11	-528.76	-184.66	0.00	-36.73	-12.80	0.00	-31.00	-10.28	2771.56	273.97	81.97	0.00	0.00	8.47	0.00	11.24	0.16
359	2014	11	30	-1547.55	-506.73	-166.91	0.00	-35.39	-11.87	0.00	-30.00	-9.81	3679.36	327.52	73.29	0.00	0.00	6.18	0.00	10.93	0.15
360	2014	12	31	-2550.72	-632.33	-134.29	0.00	-95.23	-37.68	0.00	-36.53	-14.49	7528.13	1087.04	41.37	0.00	0.00	36.12	0.00	5.99	0.17
361	2015	1	31	-2009.57	-748.06	-179.09	0.00	-40.46	-14.99	0.00	-32.41	-14.69	6249.86	956.58	64.84	0.00	0.00	7.23	0.00	7.83	0.17
362	2015	2	28	-2091.21	-671.89	-179.68	0.00	-34.74	-10.29	0.00	-28.00	-10.40	4250.16	723.99	81.16	0.00	0.00	4.85	0.00	9.66	0.15
363	2015	3	31	-2244.34	-681.02	-182.32	0.00	-38.16	-11.29	0.00	-31.00	-10.25	4710.46	756.48	83.71	0.00	0.00	3.63	0.00	11.20	0.17
364	2015	4	30	-1496.31	-609.20	-182.98	0.00	-36.65	-11.35	0.00	-30.00	-9.76	3102.74	577.34	82.22	0.00	0.00	6.04	0.00	10.90	0.16
365	2015	5	31	-1584.21	-592.22	-161.48	0.00	-37.61	-11.07	0.00	-31.00	-9.95	4377.19	461.39	74.47	0.00	0.00	3.77	0.00	11.31	0.16
366	2015	6	30	-1463.31	-544.49	-176.43	0.00	-36.17	-11.23	0.00	-30.00	-9.51	2776.83	270.16	82.41	0.00	0.00	5.85	0.00	10.99	0.15
367	2015	7	31	-1666.48	-598.08	-174.87	0.00	-37.15	-10.96	0.00	-31.00	-9.69	2811.07	291.22	90.53	0.00	0.00	2.55	0.00	11.41	0.16
368	2015	8	31	-1602.50	-537.00	-174.06	0.00	-36.95	-12.29	0.00	-31.00	-9.55	2358.55	216.15	90.23	0.00	0.00	7.75	0.00	11.45	0.16
369	2015	9	30	-1383.58	-470.66	-148.75	0.00	-35.59	-10.49	0.00	-30.00	-9.12	2869.81	238.57	80.18	0.00	0.00	4.10	0.00	11.13	0.15
370	2015	10	31	-1508.57	-456.38	-159.07	0.00	-36.61	-12.15	0.00	-31.00	-9.30	2807.02	246.35	82.48	0.00	0.00	7.54	0.00	11.53	0.16
371	2015	11	30	-1494.21	-401.54	-149.71	0.00	-35.29	-11.87	0.00	-30.00	-8.87	3043.47	294.55	79.03	0.00	0.00	7.63	0.00	11.21	0.15
372	2015	12	31	-1568.03	-382.65	-148.72	0.00	-36.33	-12.00	0.00	-31.00	-9.03	3407.05	327.04	78.60	0.00	0.00	7.33	0.00	11.62	0.16

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APPENDIX E-2

Implementation of Groundwater and Surface Water Model Inputs for Simulations in Support of Groundwater Sustainability Plan Development by the Mound, Fillmore and Piru Groundwater Sustainability Agencies Technical Memorandum (United, 2021b)

TECHNICAL MEMORANDUM

IMPLEMENTATION OF GROUNDWATER AND SURFACE WATER MODEL INPUTS FOR SIMULATIONS IN SUPPORT OF GROUNDWATER SUSTAINABILITY PLAN DEVELOPMENT BY THE MOUND, FILLMORE AND PIRU GROUNDWATER SUSTAINABILITY AGENCIES

UNITED WATER CONSERVATION DISTRICT

JUNE 2021

This document describes selected modeling stresses and assumptions used by United Water Conservation District to conduct simulations of future hydrologic conditions considered in the Groundwater Sustainability Plans prepared by the Mound Basin Groundwater Sustainability Agency and the Fillmore and Piru Basins Groundwater Sustainability Agency that may not be described in detail in the Groundwater Sustainability Plans.

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Figure 11 -	Decrease in maximum infiltration rate for artificial recharge to the Oxnard Forebay as a function of groundwater elevation at well 2N22W12R01S.
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1 INTRODUCTION

The Fillmore and Piru Basins Groundwater Sustainability Agency (FPBGSA) and the Mound Basin Groundwater Sustainability Agency (MBGSA), with the assistance of their consultants, Daniel B. Stephens and Associates and INTERA Incorporated, respectively, are developing the Groundwater Sustainability Plans (GSPs) for the Piru, Fillmore, and Mound subbasins of the Santa Clara River Valley groundwater basin (Figure 1) in compliance with the 2014 Sustainability Groundwater Management Act (SGMA). The United Water Conservation District (UWCD or United) is supporting the analysis of the GSPs for the Piru, Fillmore, and Mound subbasins by using its recently expanded MODFLOW-based Regional Groundwater Flow Model ("Regional Model") (UWCD, 2021; 2018).

In supporting the GSP development efforts of the FPBGSA and MBGSA, this document details the implementation of selected modeling stresses used for the GSP simulations for three future scenarios: (1) future baseline reference, (2) near future (2030 climate change factors), and (3) late future (2070 climate change factors). All future scenarios use the period 1943-2019 as the past reference period for hydrological inputs, the longest period possible with good recorded hydrologic data. The document contains two main sections which describe selected processes and assumptions used in the simulations by UWCD to conduct simulations for the Groundwater Sustainability Plans: Section 3 *Groundwater Flow Modeling Inputs*, and Section 4 *Surface Water Hydrology Modeling*. Section 4 details the modeling of several surface water hydrology spreadsheet models that provide input data to the groundwater model. The groundwater model reports (UWCD, 2021, 2018) detail the construction and calibration of the Regional Model. Specific to the GSP modeling presented here, this document provides additional detail regarding how the surface water and groundwater forecasting for the future runs requested by FPBGSA and MBGSA was implemented into the Regional Model.

2 INTERACTIONS BETWEEN GROUNDWATER FLOW MODEL AND SURFACE WATER HYDROLOGY MODELS

Surface water hydrology inputs to the Regional Model (UWCD, 2021) were determined using a number of hydrological models used for reservoir operations, streamflow routing and Freeman Diversion operations. Figure 2 provides a schematic of the model integration employed for the GSP supporting work. Figure 3 shows the streamflow locations used in Figure 2, as well as stream gages described in Section 4. A more detailed explanation of each surface water hydrology model is also provided in Section 4. The modeling workflow consists of the following four elements:

1) Groundwater Flow Model upstream of Freeman Diversion facility.

The Regional Model simulates streamflow, groundwater levels and water balances for the Piru, Fillmore and Santa Paula basins. Hydrological models are used to calculate Lake Piru outflows (including spills), Castaic Lake reservoir releases, and streamflow in the Santa Clara River (SCR) upstream of the confluence with Castaic Creek. Estimated future discharges from water reclamation facilities (WRFs) in the Santa Clarita Valley (SCV) are combined with simulated Castaic Lake releases and streamflow in the SCR upstream of Castaic Creek to calculate streamflow in the SCR upstream of the confluence with Piru Creek. Lake Piru outflows and streamflow in the SCR upstream of Piru Creek are used as inputs to the Regional Model. Additionally, the Regional Model incorporates inputs for tributary flows, weather, recharge, pumping, diversions and WRF discharges in Ventura County.

2) Diversions and bypass flows at the Freeman Diversion

Stream flow in the Santa Clara River just upstream of the Freeman Diversion facility was calculated using United's Upper Basins Routing Model. Diversions and Santa Clara River flows just downstream of the Freeman Diversion ("bypass flows") were calculated by United's Hydrological Operations Simulation System (HOSS). The HOSS requires inputs for groundwater elevations for selected wells in the Oxnard Forebay. Since the HOSS is not integrated with the Regional Model, the first HOSS model run for a scenario is generally run using historical groundwater elevations or estimates from a prior run. Model outputs are then input to the Oxnard Plain Surface Water Distribution Model (SWDM, see below), which provides inputs to the Regional Model. Selected groundwater elevation outputs from the Regional Model are then used as inputs for a second run of the HOSS, the SWDM and the Regional Model. This iterative process is repeated until groundwater elevations converge.

While the Regional Model also calculates streamflow at the Freeman Diversion, its simulated streamflow at the Freeman Diversion was not able to adequately reproduce the historical daily flow magnitudes and trends during model calibration, although the simulated monthly-average streamflow was close to the historical monthly records. The MODFLOW Stream Package (STR) used by the Regional Model is based on a simplistic concept of stream routing which does not include the streamflow travel time in the stream channel, leading to the limitation that the STR package is more suitable for the relatively stable streams. Although the Reginal Model may not be able to adequately simulate the daily SCR streamflow rates, it should be noted that the Regional Model was able to simulate the groundwater levels in the basins of the SCR valley with good calibration.

3) Artificial recharge and surface water deliveries by United

The Oxnard Plain Surface Water Distribution Model (SWDM) was used to calculate the volumes of artificial recharge to each of United's recharge basins and surface water deliveries to the Pumping-Trough-Pipeline (PTP) and the Pleasant Valley (PV) pipeline, based on diversions calculated by the HOSS. The SWDM also calculates pumping demands in United's surface water delivery service areas (PTP and PV) as the deficit between total demand and surface water deliveries. Conejo Creek diversions are also incorporated in the SWDM, and are an important water supply to the PV service area. The SWDM requires inputs for groundwater elevations for selected wells in the Oxnard Forebay. Since the SWDM is not integrated with the Regional Model, iterative runs are performed in a similar manner as with the HOSS model.

4) Groundwater Flow Model downstream of Freeman Diversion Facility.

The Regional Model uses inputs provided by the upgradient portion of the model (groundwater fluxes from Santa Paula basin), the SWDM (artificial recharge, surface water deliveries, pumping) and HOSS (diversions, bypass flows) to simulate streamflow, groundwater levels and water balances for the Mound, Oxnard, Pleasant Valley and western Las Posas Valley basins. Selected groundwater elevations from wells in the Oxnard Forebay are exported to the HOSS and SWDM operations models for iterative runs until groundwater elevations for wells in the Oxnard Forebay and fluxes to Mound basin converge (as described in the previous paragraphs and in Sections 4.6 and 4.7). Generally two-to-four model runs are required, depending on how well initial water levels assumed for the HOSS and SWDM runs match the Regional Model outputs.

3 GROUNDWATER FLOW MODELING INPUTS

This section describes the various data inputs that were required for simulations by the Regional Model in support of the GSP analysis in cooperation with FPBGSA and MBGSA and their consultants. Some of these components have previously been described within the Regional Model documentation (UWCD, 2021, 2018), while some are specific to the scenarios simulated for the GSP development.

3.1 WEATHER DATA

Precipitation used over the model domain and reference evapotranspiration (ET) used in riparian stream channel reaches were estimated based on the California Department of Water Resources (DWR) datasets and guidelines for the preparation of GSPs (DWR, 2018a). DWR provided Variable Infiltration Capacity (VIC) model output for precipitation and reference ET at 1/16th degree resolution spatial resolution and monthly temporal resolution (monthly totals) for a reference simulation over 1915-2011 that represents a historical simulation with the temperature detrended as well as monthly total change factors for each month for two future climate periods representing the near future (2030) and the late future (2070).

United, FPBGSA, and MBGSA selected three weather datasets based on a single historical climate cycle (1943-2019). The historical climate cycle was adjusted by the two DWR climate factors provided for precipitation and reference ET corresponding to the DWR baseline reference simulation and recommended central tendency scenarios for each climate periods for the near future (2030) and the late future (2070). This resulted in a total of three 77-year climate datasets to be used for model simulations.

Using the monthly totals for precipitation and reference ET from the DWR baseline reference simulation, near future (2030) and late future (2070) estimates were calculated for input into the Regional Model future climate simulations. A crop coefficient of 1.0 was used for riparian vegetation. Monthly total values for precipitation and ET were then mapped from the VIC grid cells to MODFLOW grid cells based on the VIC grid cell that the center of a MODFLOW grid cell was determined to be located within (Figure 4). Monthly totals of precipitation and ET were then uniformly distributed across each month.

Lastly, as the DWR precipitation and reference ET change factors were available for model years 1915-2011 as monthly totals, input for recent model years 2012-2019 were determined by selecting analogous water years in the historical record and applying the precipitation and reference evapotranspiration change factors published for these analogous water years. The analogous year selection criteria were chosen based on streamflow analysis, and more detail related to those methods is presented in Section 4.8.

3.2 RECHARGE

The Regional Model was used to simulate groundwater recharge resulting from various sources and uses of surface water, as described below. The recharge from different sources and/or uses were summed as total recharge in the recharge package (RCH) in the Regional Model. The groundwater recharge from various sources and/or usages of surface water is detailed in the following subsections. The recharge rates used were based on the calibration result of the Regional Model (UWCD; 2021, 2018).

3.2.1 PRECIPITATION

In relation to areal recharge calculations, monthly evapotranspiration (ET) was assumed to be 0.75 inch. If the monthly precipitation was less than 0.75 inch, no recharge from the precipitation was simulated. If the monthly precipitation was greater than 0.75 inch, the recharge was assumed to increase linearly, proportional to the monthly precipitation, with a maximum recharge rate of 30 percent. The recharge from precipitation was implemented as follows:

- If monthly precipitation was less than 0.75 inch, then no recharge was assigned in that area;
- If monthly precipitation was 0.75 to 1 inch, then recharge was assigned from 0 to 10 percent of precipitation (on a sliding scale);
- If monthly precipitation was 1 to 3 inches, then recharge was assigned from 10 to 30 percent of precipitation
- If monthly precipitation was greater than 3 inches, then recharge was assigned as 30 percent of precipitation.

3.2.2 EXTRACTED WATER FROM WELLS

The extracted groundwater from wells serves agricultural need as well as municipal and industrial (M&I) use. The extracted groundwater for agriculture was assumed to have higher recharge rate than M&I use.

The agricultural water recharge rate was assumed to be 25% for Oxnard subbasin and 20% for all other basins (Piru, Fillmore, Santa Paula, Mound, Pleasant Valley, and West Las Posas). If the precipitation recharge rate was higher than the assumed agricultural water recharge rate (20% or 25%) particularly during wet months, the agricultural water recharge rate was replaced by the higher precipitation recharge rate. The M&I water recharge rate was assumed to be 5% (of delivered water) for all basins.

3.2.3 APPLIED WATER

Regardless of the source, for modeling purposes water use is classified so that return flows to the systems can be characterized properly. The recharge rates for agricultural and M&I uses were calculated in the same manner as described in Section 3.2.2 *Extracted Water from Wells*, above. Cities, and various local water companies and mutuals pump and deliver water to users, in addition to a multitude of private groundwater wells that are operated within the model domain. Several surface water diversions are also maintained and operated. Cities on the Oxnard Plain import water from the State Water Project (via Calleguas Municipal Water District (CMWD)), but direct deliveries of State Water does not yet occur in the Piru, Fillmore, Santa Paula or Mound basins. In a few instances extracted water is transported by pipeline to other basins.

3.2.4 UWCD Recharge Activities and Surface Water Deliveries

UWCD diverts streamflow from the Santa Clara River for artificial recharge within its spreading basins and delivers a portion of diverted SCR water via pipelines to Pumping Trough Pipeline (PTP) users and Pleasant Valley County Water District (PVCWD) users for agricultural irrigation. Additionally, Camrosa Water District (Camrosa) diverts water from Conejo Creek to supply PVCWD users and users within their own service area. The recharge resulting from surface water deliveries from the water diverted and delivered water by UWCD and Camrosa was calculated as agricultural return flow in the same manner as described in Section 3.2.2 *Extracted Water from Wells*, above. The recharge occurring in UWCD's spreading basins was calculated without loss based on a series of surface water hydrology and operational models, as detailed in *Section 4 Surface Water Hydrology Modeling*. United is not currently operating their Piru Spreading Grounds and there are no UWCD surface water deliveries within Piru, Fillmore, or Mound basins. Recharge activities related to conservation releases from Lake Piru and other releases along the Santa Clara River are detailed in *Section 4 Surface Water Hydrology Modeling*.

3.3 MOUNTAIN FRONT RECHARGE

There are some areas outside of the Regional Model domain that are part of surface watersheds associated with the Oxnard, Pleasant Valley, West Las Posas, Mound, Santa Paula, Fillmore, and Piru groundwater basins. Precipitation that falls on these areas may contribute mountain front recharge to the aquifers. The precipitation is calculated based on the surface watershed areas outside of the Regional Model. The sum of precipitation is multiplied by the same precipitation recharge ratio used in calculating the precipitation recharge detailed in Section 3.2.1 *Precipitation*, which is presented above.

3.4 STREAMFLOW, INTER-BASIN SUBSURFACE FLOW, AND DIVERSIONS

The Regional Model simulated flows in the Santa Clara River and several tributaries, Conejo Creek, Arroyo Las Posas, and Calleguas Creek. The streamflow rates at the Freeman Diversion were calculated as detailed in Section 4.5 *Santa Clara River Upstream of Freeman Diversion Facility*, below. UWCD simulated SCR flow from Piru basin to the ocean. The simulated SCR streamflow at the Los Angeles Country boundary in Piru and the simulated streamflows of its tributaries (Piru, Hopper, Pole, Sespe, and Santa Paula Creeks) were calculated as described in

Section 4. *Surface Water Hydrology Inputs*. Diversions along the Santa Clara River and tributaries were implemented similarly as described in the 2020 Regional Model documentation (UWCD, 2021) with future monthly total estimates calculated as the average for the available reported data 2010-2019.

The streamflow in Conejo Creek entering the Regional Model was based on data provided by the Fox Canyon Groundwater Management Agency (FCGMA)'s consultant, DUDEK, for the previous future modeling of the lower basins (UWCD, 2019). Estimates based on a relationship between monthly precipitation for a nearby VIC grid cell (DWR, 2018a) and historical observed Conejo Creek streamflow were previously provided to UWCD. For the future simulations presented here, the relationship was modified slightly using a VIC grid cell (ID 9894) that was within the Conejo Creek watershed and produced a slightly improved relationship between the VIC precipitation and historical observed Conejo Creek streamflow. This relationship was then applied to the 1915-2011 DWR records, adjusted for 2030 and 2070 change factors and the 2012-2019 years were determined by selecting analogous water years in the historical record in the same manner as mentioned in Section 3.1, above, and detailed in 4.8, below. The discharge to Conejo Creek by Camarillo Sanitation District was included in the Stream (STR) package, as was the flow diversion by Camrosa.

The streamflow in Arroyo Las Posas enters the Regional Model from East Las Posas. There was also an inter-basin flow between East Las Posas and the PV basin in the form of subsurface flow (groundwater flux) beneath Arroyo Las Posas. Similar to Conejo Creek, streamflow entering the Regional Model was based on data provided by the FCGMA's consultant, DUDEK for the previous future modeling of the lower basins (UWCD, 2019) based on a relationship between monthly precipitation for a nearby VIC grid cell (DWR, 2018a) and historical observed Arroyo Las Posas Creek streamflow. The same relationship was used and applied to estimated streamflow for the future baseline, 2030 and 2070 simulations, and the 2012-2019 years were determined by selecting analogous water years in the historical record in the same manner as mentioned in Section 3.1, above, and detailed in 4.8, below.

The inter-basin flow between the East Las Posas and the Pleasant Valley basins were previously simulated by a groundwater model developed by CMWD's consultant, INTERA and previously provided to UWCD (UWCD, 2019). The 1930-1979 inter-basin flow for the 2030 and 2070 future climates were used to fill associated years in the 1943-2019 records. 1980-2019 was filled with 1930-1979 monthly averages, adjusted for the difference between the 1970-1979 average and the 1930-1979 average. In the absence of future baseline information, future baseline was filled with estimated 2030 data over 1943-2019.

3.5 PUMPING

Pumping within the Piru, Fillmore, and Mound Basins were prescribed for the future baseline, 2030, and 2070 simulations by FPBGSA and MBGSA. Because the Santa Paula basin is adjudicated, the pumping within the Santa Paula basin uses average 2015-2019 pumping for future baseline, 2030, and 2070 simulations. Future pumping related to the Oxnard basin, Pleasant Valley basin, and Las Posas basin was previously prescribed by FCGMA in accordance with their GSPs (FCGMA, 2019a, 2019b, 2019c), and the implementation in the future scenarios is detailed in previous modeling documentation (UWCD, 2019).

4 SURFACE WATER HYDROLOGY INPUTS

A number of hydrological models were used to simulate reservoir operations, streamflow routing and Freeman diversion operations. All models were run using historical hydrology for the period 1943-2019 for the future baseline scenarios, and with adjustments for climate change according to the DWR Guidance Document for the Sustainable Management of Groundwater. All models were calculated and calibrated in daily time steps. Hydrology models were spreadsheet models, calculated in Microsoft Excel, except for the runoff model used to calculate change factors to account for development in the Santa Clarita Valley. A description of all surface water hydrology models and major assumptions is presented here. More detailed information is available in other published reports, as referenced.

4.1 CASTAIC RESERVOIR RELEASES

The California Department of Water Resources (DWR) completed construction of Castaic Dam in 1973. The current operations of Castaic Reservoir include flood flow releases to the Downstream Water Users (DWUs), of which United is member. Flood flow releases are implemented according to a 1978 agreement between DWR and the DWUs, allowing for storage and later release of natural inflows in excess of 100 cfs into Castaic Reservoir. Storage of flood flows is contingent on availability of sufficient storage volume, and all stored water is to be releases by May 1. Any remaining water can be appropriated by DWR. United coordinates the flood flow release program for the DWUs and makes the requests for water storage and release to DWR.

Simulation of releases from Castaic Reservoir was performed using a Castaic Reservoir operations model. While daily operations logs with releases are available for the 1977-2019 period, an operations model allows calculation of releases for the entire 1943-2019 modeling period, and allows simulated releases for different climate change scenarios.

The Castaic Reservoir model was developed as a simple water balance model in Microsoft Excel. Reservoir inflows were calculated as follows (Figure 3):

- 1/1/1943 – 9/30/1946: estimated based on correlation with gage USGS 11108500 SANTA CLARA RIVER AT L.A.-VENTURA CO. LINE CA
- 10/1/1946 - 12/31/1976: Gage USGS 11108145 CASTAIC C NR SAUGUS CA
- 1/1/1977 – 12/31/2019: natural inflows from DWR Southern Field Division Water Operations Logs.

The following assumptions were made for calculating flood flow releases:

- Inflow-outflow regime is implemented when reservoir inflows are less than 100 cfs.
- Flood flow releases occur between February and April.
- Flood flow releases are initiated when stored flood flows exceed 10,000 acre-feet (February), 4,000 acre-feet (March) or 0 acre-feet (April)

- Maximum flood flow release rates are determined as such that flows in the Santa Clara River downstream of the Castaic Creek confluence do not exceed 75 cfs (February) or 200 cfs (March-April).
- Percolation losses in Castaic Creek during flood flows releases equal 10% of flow.
- When reservoir inflows exceed 5000 cfs (daily), 50% of inflows are released as inflow-outflow and 50% are stored for later release (if storage capacity is available).
- Inflow-outflow regime is implemented when stored flood flows exceed 15,000 to 45,000 acre-feet (depending on month).
- All flood flows are appropriated by DWR when cumulative inflows exceed 40,000 acre-feet (indicating wet years when historically no flood flow releases were requested).

The Castaic Reservoir model was calibrated by comparing modeled and observed annual total releases (including flood flow releases and releases during inflow-outflow operations) for the 1979-2020 period, and by comparing modeled and observed flood flow releases for the 1998-2020 period (Figure 5). Figure 6 shows an example of how simulated reservoir releases differ from historical flows in Castaic Creek before construction of Castaic Reservoir.

4.2 SANTA CLARA RIVER NATURAL RUNOFF UPSTREAM OF CASTAIC CREEK

The historical record of "natural" (no WRF discharges") streamflow in the Santa Clara River upstream of Castaic Creek was calculated by subtracting historical Valencia WRF discharges and Castaic Creek discharges from the flows at Santa Clara River downstream of Castaic Creek. The latter were compiled using the following records (Figure 3):

- 1943-1946: estimated based on correlations with gage USGS 11108000 SANTA CLARA R NR SAUGUS CA.
- 1947-1952: sum of flows from gages USGS 11108000 SANTA CLARA R NR SAUGUS CA and USGS 11108145 CASTAIC C NR SAUGUS CA.
- 1952-1996: Gage USGS 11108500 SANTA CLARA RIVER AT L.A.-VENTURA CO. LINE CA
- 1996-2019: Gage USGS 11109000 SANTA CLARA R NR PIRU CA.

Significant development occurred in the Santa Clarita Valley between 1943 and 2019. Therefore, for future modeling efforts, the historical flow record for the Santa Clara River upstream of Castaic Creek was adjusted to reflect the current rainfall-to-runoff response associated with a higher degree of urban development and land use with impervious surfaces. It was assumed that future developments will not significantly alter the current percentage of effective impervious area, and therefore the flow record was not further adjusted for future land use changes. This assumption is based on the expectation of infill development and the implementation of stormwater Best Management Practices in most future developments.

Adjustment of historical flows to reflect current levels of impervious area was performed as follows:

1) Daily runoff in the Santa Clara River upstream of Castaic Creek was simulated for 1960-2005 using the calibrated and validated Santa Clara River hydrology model developed by the Ventura County Watershed Protection District using the U.S. EPA Hydrologic Simulation Program – FORTRAN (HSPF) (VCWPD, 2009). This model run used the 2001 Southern California Association of Governments (SCAG) land use data. Flows were simulated for station RCH190 in the HSPF model (Figure 3).
2) The HSPF model was run as before but with impervious area reflecting 1950s, 1970s and 1990s land use. Land use coverage in the HSPF model was adjusted by reducing the impervious land use proportional to the reduction in population in the Santa Clarita Valley between 2000 (pop. 190,000) and the earlier periods. Impervious land use was reduced by 94% (pop. 12,000), 70% (pop. 58,000) and 28% (pop 136,000) for the 1950s, 1970s and 1990s, respectively. The area corresponding to the impervious land use reductions was assigned to open space and agriculture according to available historical land use data (Price et al., 2007, Robson, 1972).
3) For each of the HSPF runs with reduced impervious area (1950s, 1970s, 1990s), the difference in runoff with the 2000s land use run was calculated. The only variables that were different between model runs were the percentages of impervious, agricultural and open space land use. Relationships were established between the reduction in runoff with reduced impervious land use and modeled discharge, separately for peak flows and flows on receding limb of hydrograph, for the 1950s, 1970s and 1990s model runs (Figure 7).
4) The relationships from step 3 for the 1950s, 1970s and 1990s were applied to the historical record of 1943-1959, 1960-1979, and 1980-1999, respectively, effectively increasing daily flows during storm peaks and hydrograph receding limbs (only storm runoff exceeding 50 cfs). The historical record from year 2000 onwards was not adjusted for land use changes. The resulting flow record and a comparison with the historical record is shown in Figure 8.

4.3 SANTA CLARA RIVER DOWNSTREAM OF CASTAIC CREEK

Daily discharge in the Santa Clara River downstream of Castaic Creek (Figure 3) was calculated as the sum of the flows upstream of Castaic Creek (Section 4.2), releases from Castaic Reservoir (Section 4.1) and estimated discharges from the Valencia, Saugus and future Newhall Ranch WRFs. Future discharges from the WRFs were assumed to be constant at 30 cfs, no streamflow losses were applied. United's estimate of WRFs discharges corresponds well with the total WRF discharges assumed by Santa Clarita Valley Water Agency (SCVWA) for their GSPs future water balance (Dirk Marks, personal communications). SCVWA assumes average monthly discharges between 25 and 37 cfs, or 29 cfs on average.

4.4 LAKE PIRU RESERVOIR OUTFLOWS

The Lake Piru reservoir model is a water balance model calculating water levels and storage in Lake Piru based on historical data or assumed scenarios for inputs and outputs. Water inputs include inflows from the Middle Piru Creek watershed (natural flows, State Water imports, releases from Pyramid Lake) and rainfall; outputs include releases through the Santa Felicia Dam (SFD) outlet works (conservation releases, migration releases, habitat releases), spills and evaporation. Inflows from Middle Piru Creek were compiled based on gages USGS 11110000 PIRU C NR PIRU CA (1943-1955) and USGS 11109600 PIRU CREEK ABOVE LAKE PIRU CA (1955-2019) (Figure 3).

Important assumptions and inputs include:

- Lake Piru storage area and volume were gradually decreased to reflect the current rate of sedimentation in the reservoir. Storage capacities and corresponding areas were reduced gradually every 5 years from 82,000 AF (1943-1947 model years) to 69,384 AF (2013-2019 model years). The starting storage capacity was based on a 2020 bathymetry survey, and the 5-year sediment loads to the reservoir were calculated based on the average annual rainfall for each 5-year period using the equation 5-yr sediment load (AF) = 126.5 * average rainfall (inches) – 1,653. This relationship was developed from the 1985, 1996, 2005, 2015 and 2020 Lake Piru bathymetry surveys.
- Historical inflows from Middle Piru Creek includes periods when Pyramid Lake operations were different from current operations (inflow-outflow).
- Habitat and migration releases are simulated using operational rules that mimic releases according to operations specified in the Santa Felicia Water Release Plan (UWCD, 2012).
- Conservation releases are simulated using operational rules that mimic current operations. Conservation releases were started in September with maximum release rates of 400 cfs during dry and normal years, and started in August with a maximum release rate of 300 cfs during wet years. Minimum carry-over storage volumes during dry, normal and wet years were 15,000 AF, 30,000 AF and 50,000 AF, respectively.
- UWCD has a State Water Project Table A allocation of 3,150 AF. Annual allocations of Table A water were based on DWR’s modeling of the State Water Project’s existing delivery capability, which includes current flow regulations and adjusted to account for land-use changes (DWR, 2018b). To simulate current operations, it was assumed that UWCD would not purchase Table A water during wet years (water year rainfall at Santa Paula gage #245 < 25” or 3-year running average for Sespe runoff > 200,000 AF when rainfall at gage #245 > 10”) and during years when the conservation release exceeds 31,000 AF.

4.5 SANTA CLARA RIVER UPSTREAM OF FREEMAN DIVERSION FACILITY

Streamflow in the Santa Clara River at the Freeman Diversion facility was calculated using the Upper Basins Surface Water Model. This model calculates surface flows, recharge to groundwater and rising groundwater for the reaches of the Santa Clara River overlying the Piru, Fillmore and Santa Paula basins (Figure 9). Model inputs include releases from Lake Piru (Section 4.4), Santa Clara River flows from Los Angeles County (Section 4.3), tributary flows (Hopper Creek, Sespe Creek, Santa Paula Creek), and historical available storage in Piru and Fillmore basins. Model outputs include available storage in the Piru and Fillmore basins for model scenarios, and river flows at the Freeman Diversion. Empirical relationships (based on observations) are used to model the following processes: recharge to groundwater in the Piru and Fillmore basins, rising groundwater at the Piru/Fillmore and Fillmore/Santa Paula basin boundaries, underflow between Piru and Fillmore basins, and losses in surface flows across Santa Paula basin. The model calculates the change in available storage in Piru and Fillmore basins for a modeling scenario compared to historical trends in available storage (based on a water mass balance for each basin), and subsequently adjusts fluxes for recharge, rising groundwater and underflow for the modeling scenario based on the calculated available storage and the established empirical relationships. The groundwater basin water balances for Piru and Fillmore only include fluxes for stream recharge, rising groundwater and underflow. Other fluxes including groundwater pumping, recharge not associated with the stream channel and evapotranspiration are assumed to remain unchanged between the historical hydrology and modeled scenarios. The influxes and outfluxes calculated for each reach are summarized in Table 1.

Two additional calculations were included in the model to improve model calibration.

- A multiplication factor of 1.2 was applied to gaged daily streamflows from major tributaries (Hopper Creek, Sespe Creek, and Santa Paula Creek). The correction factor improves calibration by accounting for bank storage and inflows from minor tributaries that were not included in the model.
- Simulated daily streamflow at the Freeman Diversion Facility was adjusted for model bias by subtracting the modeling error obtained from simulating historical hydrology and operations. This bias correction improves the model results when the unadjusted model would consistently over- or under predict streamflow for a period of time (e.g. during a conservation release, or on the receding limb of hydrograph for a specific storm event).

Model calibration results for streamflow just upstream of the Freeman Diversion Facility for the Upper Basins Surface Water Model and the Regional Model, and simulated diversions based on these streamflows, are compared in Figure 10. While both models perform well, the Regional Model underpredicts long-term average streamflow, leading to an underprediction of simulated diversions. Diversions simulated by the HOSS (simulating bypass flows proposed in United's Multiple Species Habitat Conservation Plan; UWCD, 2020) based on observed historical streamflows are 65,060 AF/yr, while simulated diversions based on streamflows from the Upper

Basins Surface Water Model and the Regional Model are 65,700 AF/yr and 57,300 AF/yr, respectively. Therefore, the Upper Basins Surface Water Model was used to simulate future streamflow at the Freeman Diversions.

4.6 DIVERSIONS AND BYPASS FLOWS AT FREEMAN DIVERSION FACILITY

Diversions are calculated based on total river flows entering the Freeman Diversion facility (imported from the Upper Basins Surface Water Model), and operational simulations using the Hydrological Operations Simulation System (HOSS) model.

The HOSS is a hydrology-based operations model that simulates diversions and flow magnitudes in the Santa Clara River downstream of the Freeman Diversion (bypass flows), and the amount of water that is lost or gained to/from groundwater in the “critical reach” of the SCR in the Oxnard Forebay. The HOSS is based upon several decades of historical flow gage data, groundwater conditions in the Forebay, and diversion flow rates, and has been peer-reviewed by R2 Resource consultants (R2 Resource Consultants, 2016).

Since some modeled operations in the HOSS depend on groundwater levels, iterative runs were performed where diversions from the HOSS were used in the SWDM and Regional Model, and groundwater level outputs from the groundwater model run (forecasted groundwater elevations at three wells) were then used to re-run the same scenario in the HOSS and SWDM until model runs converged (see also Section 4.7).

For groundwater modeling for GSP development, bypass flow and diversion operations were implemented as follows:

- 1943-1945 model years (2020-2022): Bypass flow operations as currently implemented by United, based on the reasonable and prudent alternative 2 (RPA 2(a) and 2(b)) as contained in the 2008 Biological Opinion issued by National Marine Fisheries Service (NMFS, 2008). These operations require increased bypass flows for steelhead migration compared to historical operations. Operations correspond to Scenario 4 (UWCD, 2016).
- 1946-1949 model years (2023-2026): Bypass flow operations proposed by United in its Freeman Diversion Multiple Species Habitat Conservation Plan (UWCD, 2020), without infrastructure improvements. These operations are designed to provide adequate bypass flows for fish migration while increasing diversions compared to the operations based on the Biological Opinion, and represents a realistic scenario for future diversion operations. No updates to United’s facilities are implemented during these years.
- 1950-2019 model years (2027-2096): Bypass flow operations as for the prior period, but with implementation of Freeman Expansion Phase 1 project. This project will connect the Ferro basin and make improvements to the existing desilting basin and headworks. Maximum diversion rates are 375 cfs as before, but diversion of water with higher suspended sediment concentrations is possible (up to 7,000 mg/l total suspended solids compared to 4,000 mg/l prior).

4.7 ARTIFICAL RECHARGE AND SURFACE WATER DELIVERIES ON OXNARD PLAIN

The Oxnard Plain Surface Water Distribution Model was used to calculate the amounts of artificial recharge at UWCD's facilities and surface water deliveries to the PTP and the PVWCD surface water delivery systems. The Oxnard Plain Surface Water Distribution Model is a water routing model that simulates amounts of groundwater recharge and surface water deliveries based on a series of adjustable hydrologic inputs (e.g. total river flow, diversions, obtained from the HOSS model) and operational assumptions. Some modeled operations in the Surface Water Distribution Model depend on available storage in the Oxnard Forebay and groundwater mounding in the vicinity of the Saticoy Recharge Facility, which is determined based on groundwater levels for three wells in the Oxnard Forebay. Therefore, iterative runs were performed where outputs from the Surface Water Distribution Model (spreading at recharge basins and calculated groundwater extractions) were used in the groundwater model, and groundwater level outputs from the groundwater model run were then used to re-run the same scenario in the Surface Water Distribution Model. The model runs were repeated until groundwater elevations in two wells in the Oxnard Forebay (2N22W12R01S and 2N22W12E04S) and fluxes between the Oxnard Forebay and Mound basin converged (daily water levels mostly within 5 ft and monthly fluxes within 20 AF between consecutive runs).

The Surface Water Distribution Model was also used to calculate pumping demands in the PTP and PV service areas, based on the difference between surface water deliveries and total agricultural demands within the respective service areas. Baseline total agricultural demands were based on the average historical demand for the years 2015-2017, and were reduced by 35% in the Oxnard Basin and 20% in Pleasant Valley basin during the first 20-year period. These demand assumptions are the same as those used for the scenario with projects in the Groundwater Sustainability Plans for the Oxnard Basin and Pleasant Valley Basin (FCGMA, 2019a, 2019b).

Water resource inputs to the Surface Water Distribution Model include diversion amounts, pumping from Saticoy wells and Conejo Creek diversions. Operational assumptions govern how the distribution of surface water is prioritized among recharge basins and surface water deliveries, and change based on season and hydrologic conditions (dry, normal or wet years). The following assumptions were made regarding water inputs:

- Surface water from the Freeman Diversion can supply all recharge basins and surface water delivery systems, while water occasionally pumped from UWCD's Saticoy well field is restricted to the PTP and PVCWD surface water delivery pipelines. Surface water from Conejo Creek diversions are restricted to the PVCWD delivery pipeline.
- Diversions calculated in the HOSS were reduced by 10% for days when bypass flows were provided, in order to account for inefficiencies in diversion operations due to flushing, maintenance and other reasons.

- The Saticoy well field is used to pump down the groundwater mound that sometimes develops beneath the Saticoy recharge basins in wet years. The production capacity of the Saticoy well field is dependent upon groundwater elevation. The well field does operate during periods of significant spreading in the recharge basins, because pipeline demands can normally be met with diverted surface water at these times.
- Surface water deliveries to PVCWD from the Conejo Creek diversion were estimated at 4,500 AF/year by Camrosa Water District.

Water routing prioritization indicates the order in which recharge basins and surface water delivery systems receive available water. A priority assignment of 1 is the highest priority. Facilities assigned a priority of 3 or greater often receive no water, as all available surface water has been used by facilities with higher priority. Prioritization rules for water routing are summarized in Table 2, and depend on the following factors:

- Water year hydrology: defined as dry, normal, wet, based on streamflow magnitude (R2 Resource Consultants, 2016).
- Season: summer is defined as beginning on July 1st and continuing to the first significant storm event of the winter (equal to first turn-out of the season); winter is the remaining period. During summer dry and normal conditions, the highest priorities for surface water routing are El Rio, PTP and PV (percentages to each facility are detailed in Table 2). During the winter season and wet summers, the highest priority is surface water deliveries (equally divided between PTP and PV), followed by recharge at El Rio and then other recharge basins.
- Forebay available storage: the estimated volume of additional groundwater that could be stored in the Forebay, calculated based on groundwater elevations in two key wells. Conditions with available storage > 70,000 AF indicate dry conditions, with increased priority for recharge in El Rio.
- Suspended sediment concentrations: when sediment levels in the river exceed 3,000 NTUs, diversions are routed to the Ferro basin (from 2027 onwards), and the Noble and Rose recharge basins first, to avoid clogging of the surface layer in the Saticoy and El Rio recharge basins. Sediment levels in the river were estimated based on a historical empirical correlation between average daily streamflow and sediment concentration.

Water deliveries to recharge basins and surface water delivery pipelines are limited by conveyance capacity, basin infiltration rates and demands for surface water deliveries to the PTP and PV pipelines.

- The modeled instantaneous conveyance capacity limits for facilities are: 350 cfs for Saticoy, 180 cfs for Noble, 80 cfs for Rose, 0 cfs (2020-2026) and 375 cfs (2027-2096) for Ferro, 120 cfs for El Rio, 65 cfs for PTP and PV systems (individually), and 75 cfs for PTP and PV systems combined.
- When modeled groundwater elevations in well 02N22W12R01S were less than 95 ft amsl, the maximum infiltration rates in each of the recharge basins were 145 cfs for Saticoy, 100

cfs for Noble, 52 cfs for Rose, 151 cfs for Ferro and 100 cfs for El Rio, for a maximum combined artificial recharge rate in the Oxnard Forebay of 397 cfs without Ferro basin, and 548 cfs with Ferro basin. When groundwater elevations at well 02N22W12R01S exceeded 95 ft amsl, combined maximum infiltration rates were gradually reduced according to the relationship shown in Figure 11. For example, at a groundwater elevation of 120 ft in well 02N22W12R01S, artificial recharge to the Oxnard Forebay is limited to 191 cfs (without Ferro basin) and 263 cfs (with Ferro basin). These maximum and reduced infiltration rates due to mounding were based on field observations.

- Demand for surface water deliveries was estimated on a daily basis using historical surface water delivery data, and accounts for seasonal, daily and weather-related variability in demand.

4.8 SURFACE FLOW INPUTS UNDER CLIMATE CHANGE SCENARIOS

All hydrology models presented in Section 4 require daily inputs for streamflow. For scenario runs that simulate climate change, daily flows from tributaries and drainage areas that feed into the models were adjusted using the 2030 and 2070 future conditions streamflow change factors provided by DWR. The following historical records were adjusted for climate change (see locations in Figure 3):

- Castaic Reservoir inflows. Historical records were compiled based on USGS gage records and DWR operations logs as detailed in Section 4.1.
- Santa Clara River upstream of Castaic Creek. Historical records were compiled based on USGS gage records and adjusted for current development as detailed in Section 4.2.
- Middle Piru Creek (inflows to Lake Piru). Historical records were compiled based on USGS gage records as detailed in Section 4.4.
- Pole Creek. Historical records were compiled from VCWPD Station 713 Pole Creek at Sespe Ave (1974-2018). Missing data were estimated based on correlations with Hopper Creek. Flows from Pole Creek were exclusively used by the Regional Groundwater Flow Model.
- Hopper Creek. Historical records from USGS gage 11110500 Hopper Creek near Piru CA, and VCWPD Station 701 Hopper Creek at Hwy 126 near Piru. Flows from Hopper Creek were also used by the Regional Groundwater Flow Model.
- Sespe Creek. Historical records are from gage USGS 11113000 SESPE C NR FILLMORE. Flows from Sespe Creek were also used by the Regional Groundwater Flow Model.
- Santa Paula Creek. Historical records are from gage USGS 11113500 SANTA PAULA C NR SANTA PAULA. Flows from Santa Paula Creek were also used by the Regional Groundwater Flow Model.

Daily historical flow records were adjusted to 2030 and 2070 future conditions using the HUC8_18070102 annual and monthly streamflow change factors provided by the DWR, using the methodology for application of time series change factor data described in the Guidance Document for Climate Change Data Use during Groundwater Sustainability Plan Development (DWR, 2018a). The methodology was applied to the daily flow data using the same methods as recommended for monthly data.

DWR streamflow change factors were available for model years 1916-2011. Change factors for model years 2012-2019 were determined by selecting analogous water years in the historical record, and applying the streamflow change factors published for these analogous water years. Analogous water years were determined using the monthly precipitation record for VCWPD rain gage 245 (Santa Paula), which has a complete data record from 1915-2019, and is representative of the average annual precipitation observed in large portions of the watershed. Analogous water years for each of the 2012-2020 water years were determined by calculating the root mean square error (RMSE) based on monthly precipitation with each water year from 1915-2011. Monthly precipitation for each of the 2012-20 water years was compared with the two 1915-2011 water years with lowest RMSE (see example in Figure 12). Generally, the year with the lowest RMSE was selected as the analogous water year, except for WY 2017. For 2017, the year with the lowest RMSE had significantly higher precipitation, and therefore the water year with second-lowest RMSE was selected. The analogous water years, annual precipitation and RMSEs for 2012-2020 are tabulated in Table 3.

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6 TABLES

Table 1. Model reaches and influxes/outfluxes for the Santa Clara River Upper Basins Surface Water Model.

Reach No.	Reach Description	Influxes	Outfluxes
1	Piru Creek SFD dam to SCR confluence	- Flows from SFD (from Lake Piru model)	- Piru Creek diversions - Percolation Piru Creek - Piru Creek flow upstream SCR confluence
2	SCR Newhall to Torrey	- Piru Creek flow upstream SCR confluence - SCR flow upstream of Piru Creek	- Percolation Newhall to Torrey - SCR flow Torrey
3	SCR Torrey to Piru/Fillmore basin boundary	- SCR flow Torrey - Hopper Creek flow - Piru basin rising groundwater	- Percolation Torrey to Piru basin boundary - Percolation Hopper Creek - SCR flow Cavin
4	SCR Piru/Fillmore basin boundary to Sespe confluence	- SCR flow Cavin	- Percolation Cavin to Sespe - SCR flow upstream Sespe confluence
5	SCR Sespe confluence to Fillmore/Santa Paula basin boundary	- SCR flow upstream Sespe confluence - Sespe Creek flow - Fillmore basin rising groundwater	- Percolation Sespe Creek - Percolation SCR downstream Sespe - SCR flow at Fillmore basin boundary
6	SCR Fillmore/ Santa Paula basin boundary to Freeman diversion	- SCR flow at Fillmore basin boundary - Santa Paula Creek	- Percolation Santa Paula Creek - Santa Paula basin losses (percolation and diversions) - SCR flows at Freeman

Table 2. Prioritization order for water resources supply to recharge basins and PTP/PV systems. When facilities are assigned identical priorities, the percentages of supply received for each facility are included in parentheses.

Facility	Summer (dry)	Summer (normal-wet), winter	Forebay storage > 70,000 AF	NTU > 3,000
El Rio basin	1 (50%)	2	1	5
PTP system	1 (25%)	1 (50%)	2 (50%)	6 (50%)
PV system	1 (25%)	1 (50%)	2 (50%)	6 (50%)
Saticoy basin	2	3	3	4
Noble basin	3	4	4	2
Rose basin	4	5	5	3
Ferro basin	5	6	6	1

Table 3. Summary of analogous water years for water years 2012-2020 for the purpose of calculating streamflow change factors, with annual precipitation for each year and calculated root mean square error (RMSE).

WY	WY analog	WY precip	WY analog precip	RMSE (monthly)
2012	1925	10.18	10.01	0.68
2013	2002	6.03	6.98	0.53
2014	1959	6.12	6.67	0.85
2015	1949	10.63	9.79	0.76
2016	1930	9.63	11.59	0.43
2017	1973	21.65	23.32	1.62
2018	1981	8.84	11.88	0.62
2019	1973	22.23	23.32	1.33
2020	1942	15.04	14.19	0.99

7 FIGURES

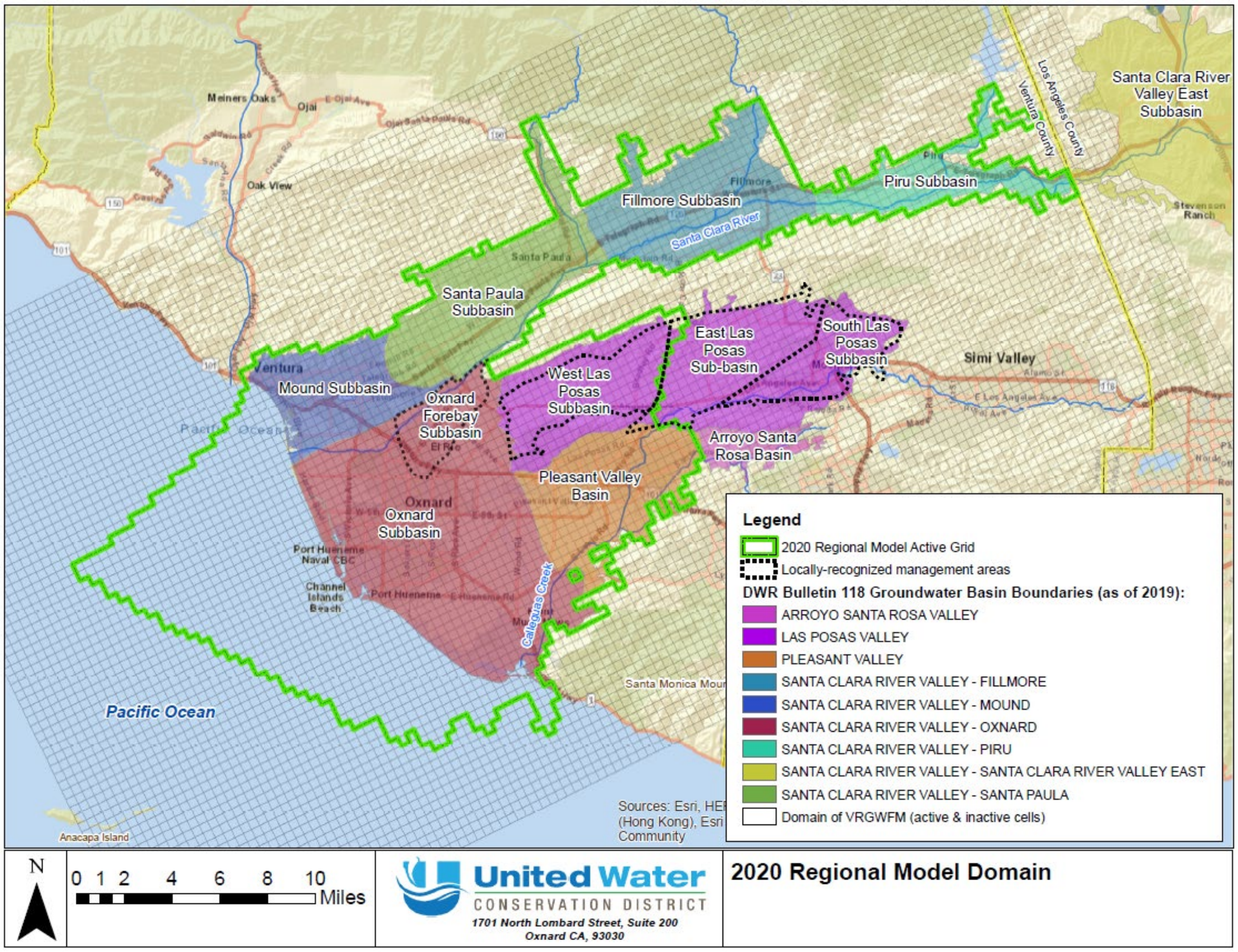

Figure 1. Regional Model Domain with Santa Clara River Valley Expansion.

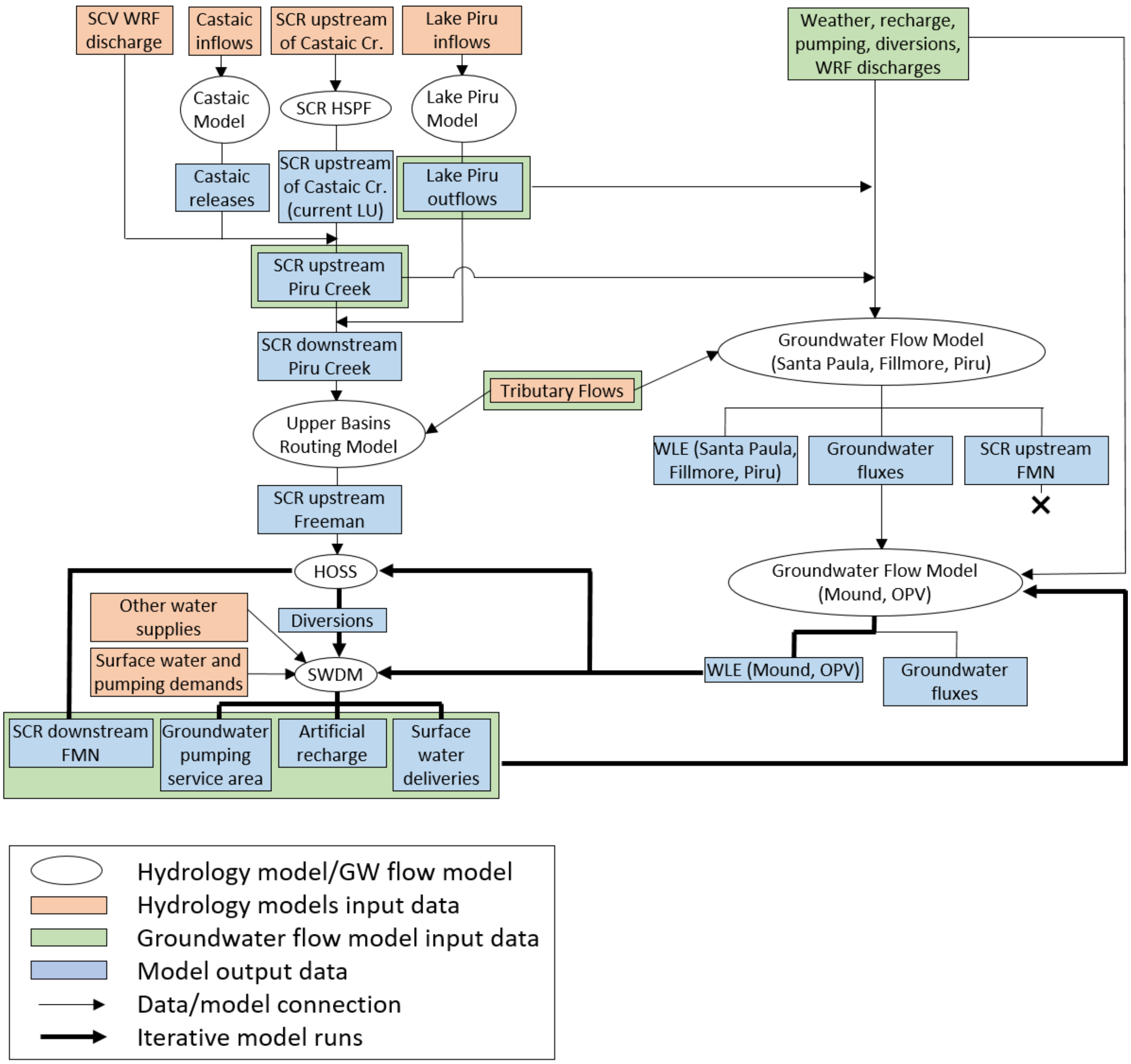

Figure 2. Schematic of the interaction between surface water hydrology models and Ventura Regional Groundwater Flow Model.

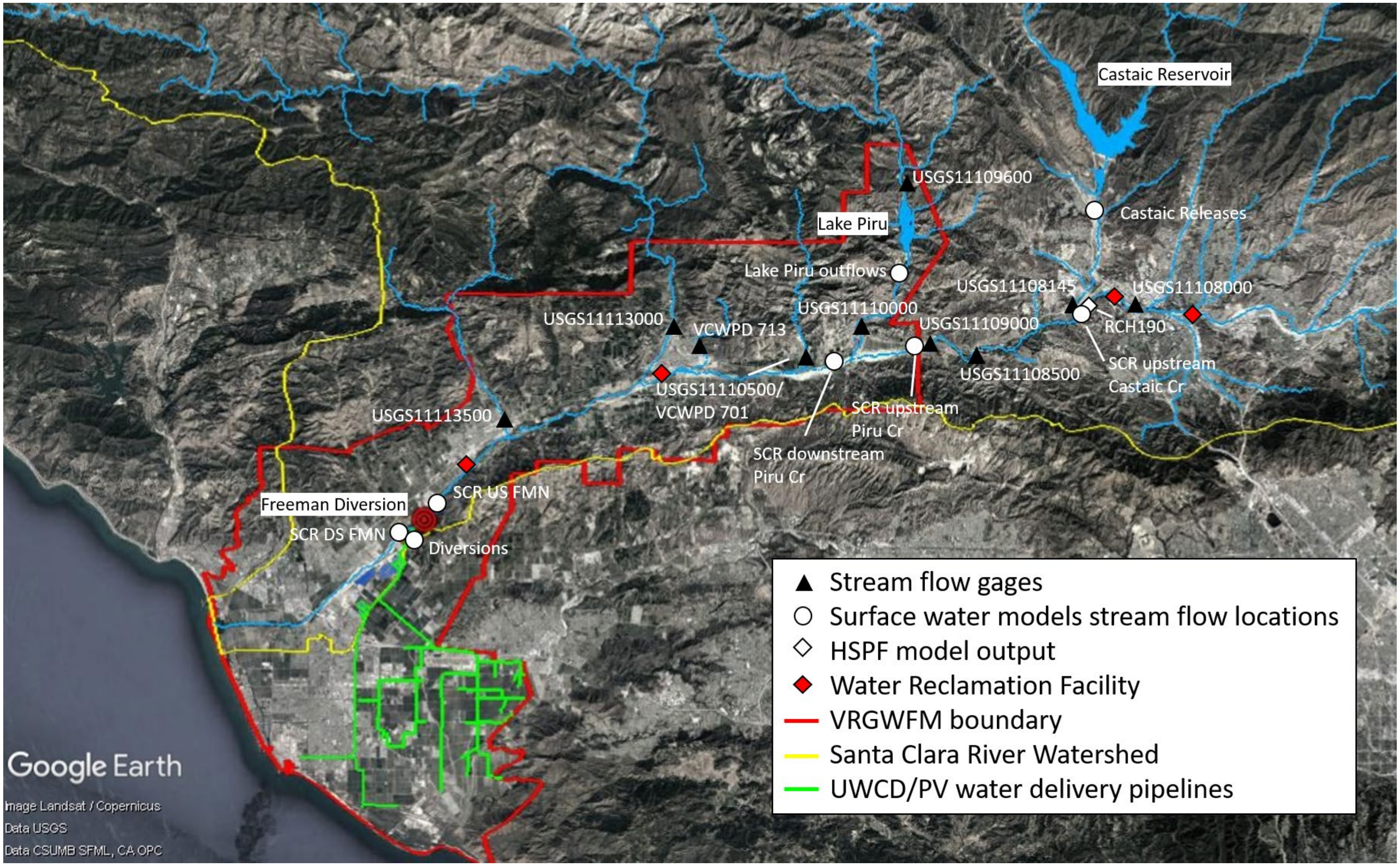

Figure 3. Map of streamflow locations, gages and water reclamation facilities used in surface water hydrology and Regional Model models.

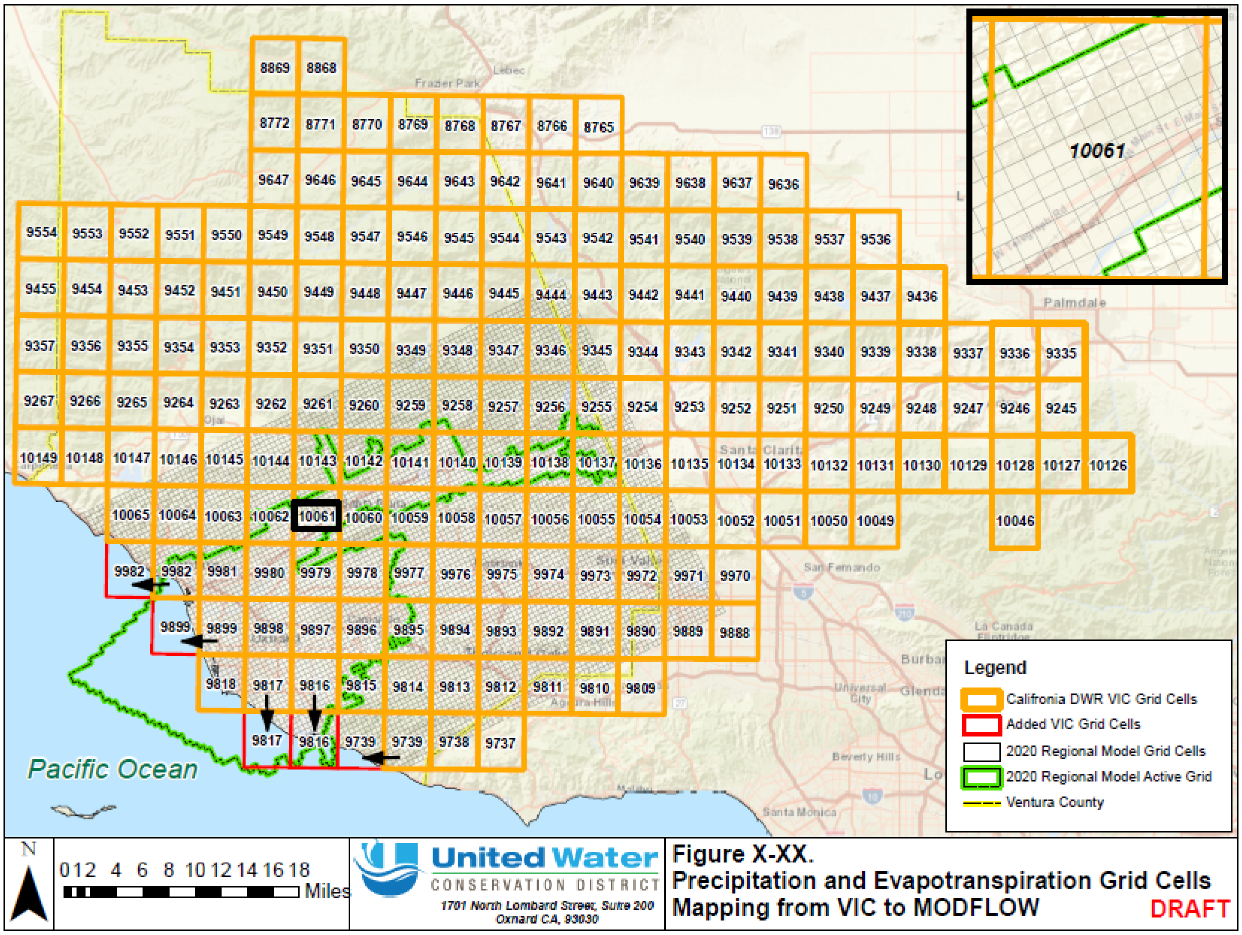

Figure 4: Mapping of California DWR provided Variable Infiltration Capacity (VIC) grid cells to Regional Model MODFLOW grid cell; Additional VIC cells (red) were added for completeness based on neighboring grid cells; Inset figure displays example of Regional Model MODFLOW grid cells located within a single VIC grid cell (ID 10061) within Santa Paula basin.

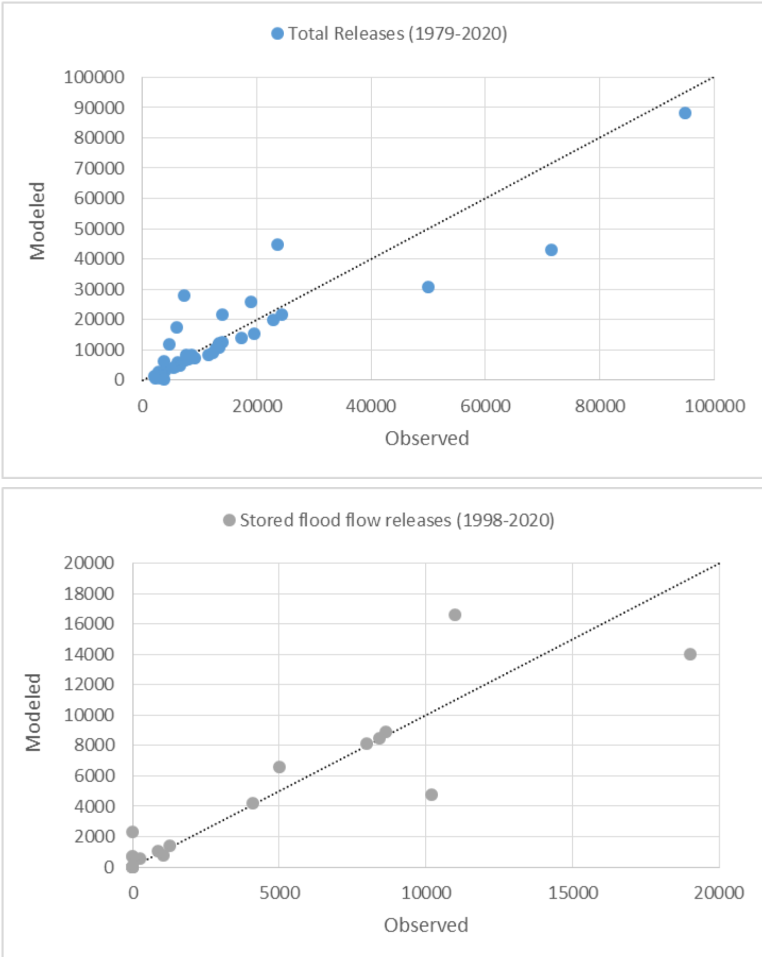

Figure 5. Calibration of Castaic Reservoir Operations Model. Modeled versus observed total releases (top) and flood flow releases (bottom) from Castaic Reservoir.

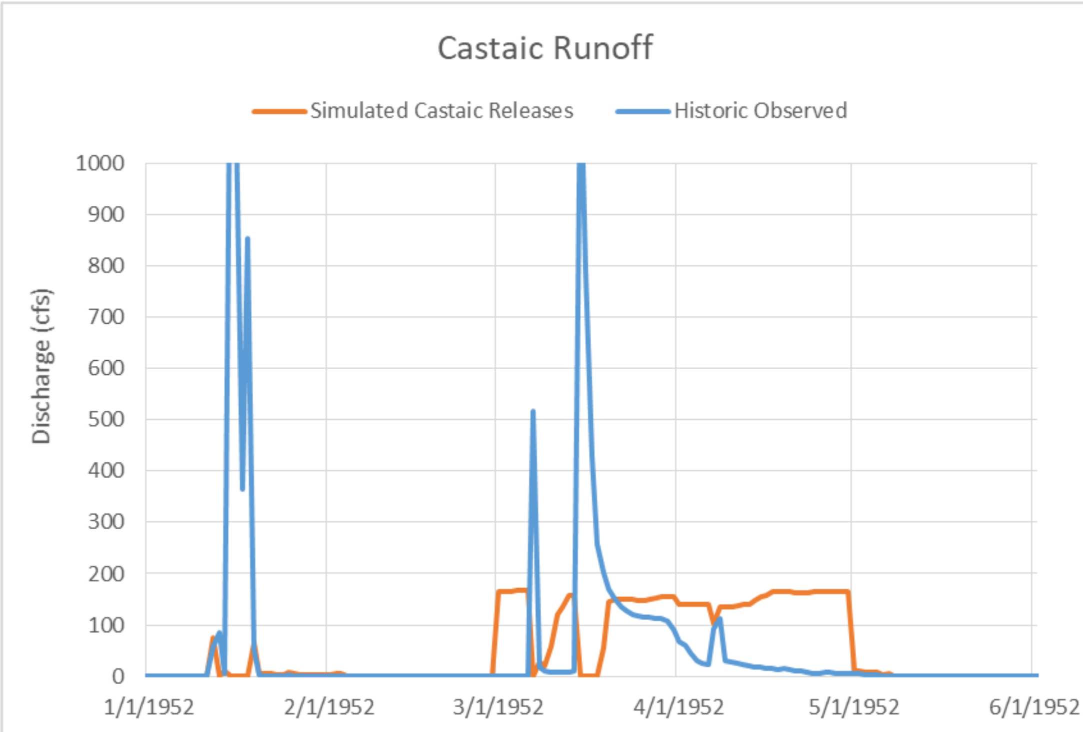

Figure 6. Example of simulated releases from Castaic Reservoir compared to historical flows in Castaic Creek before construction of Castaic Reservoir.

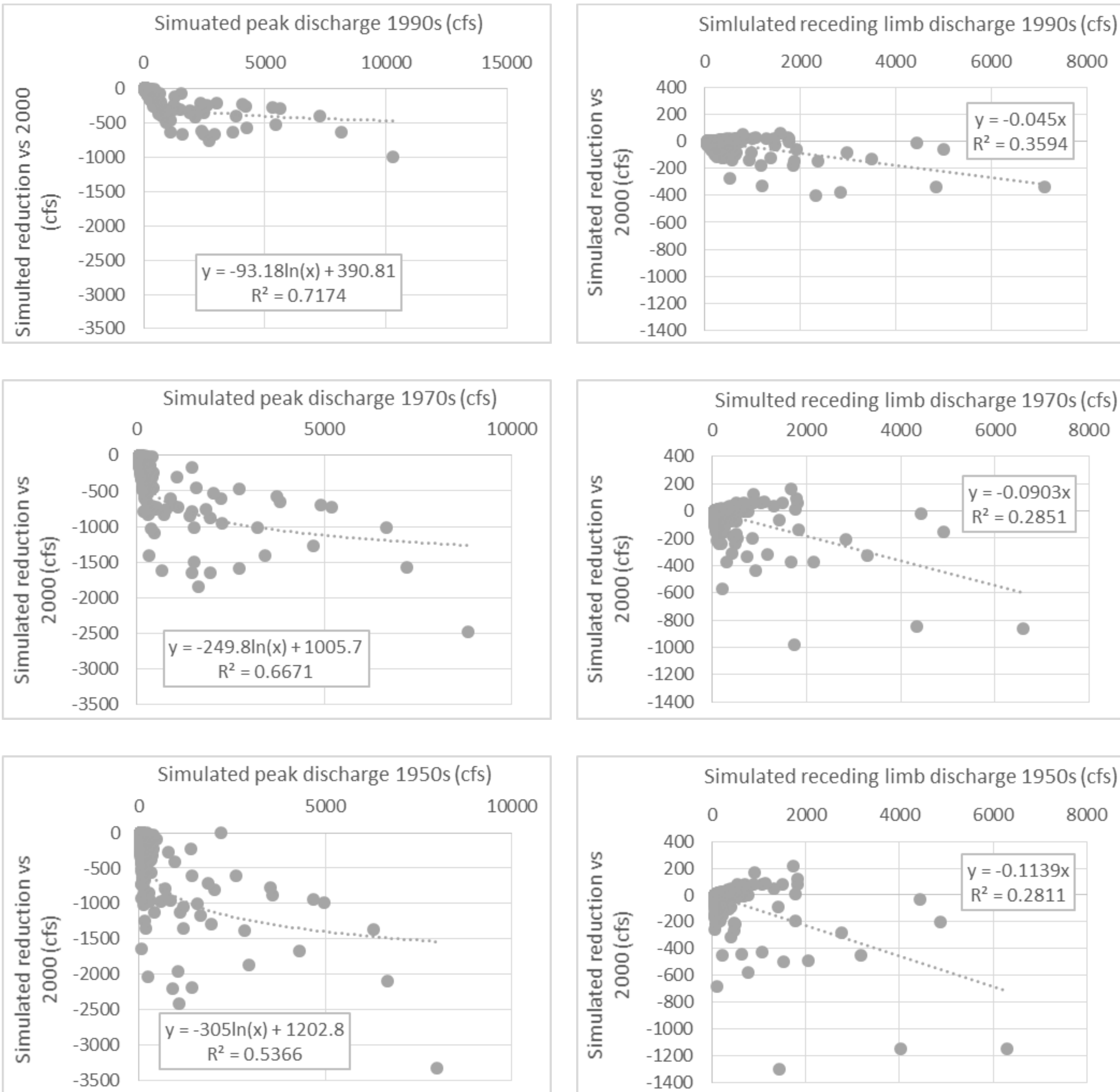

Figure 7. Simulated reduction in daily streamflow for storm peak discharges (left side) and storm flow discharges on receding limb (right side) for the 1950s, 1970s and 1990s simulation periods compared to the model run using 2000s land use. Best fit regression curves and equations are shown for each run.

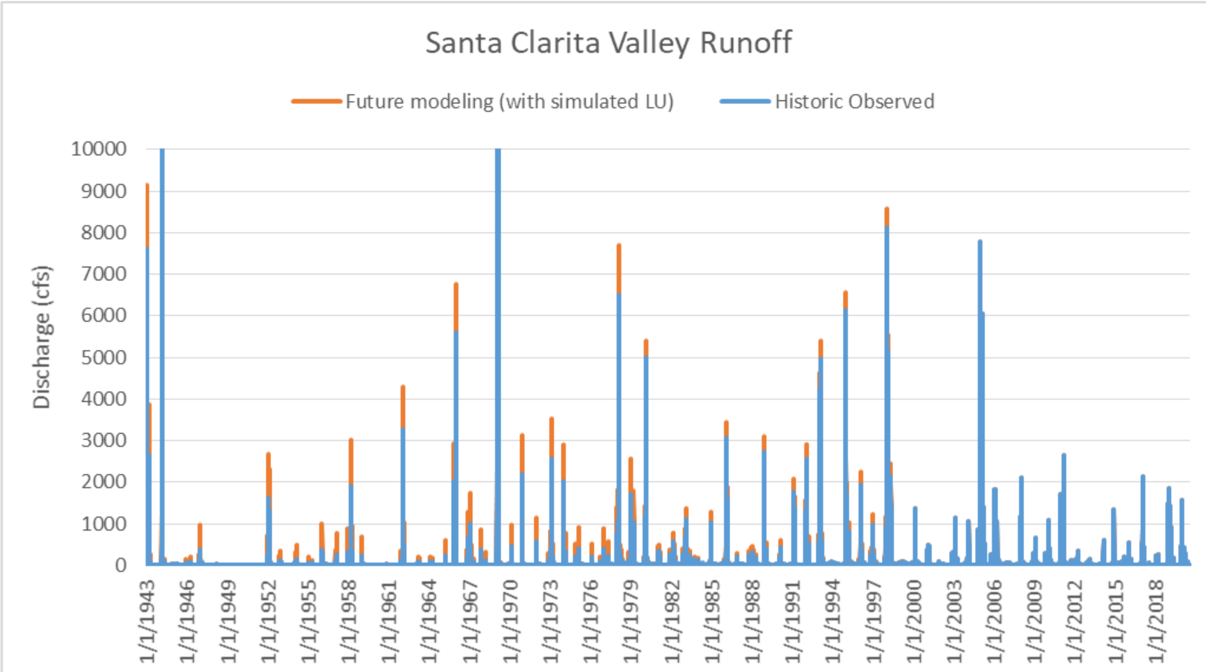

Figure 8. Natural streamflow in the Santa Clara River upstream of Castaic Creek before (historical observed) and after adjustment to reflect current impervious land use (LU). The adjusted record with simulated land use was used in future modeling efforts.

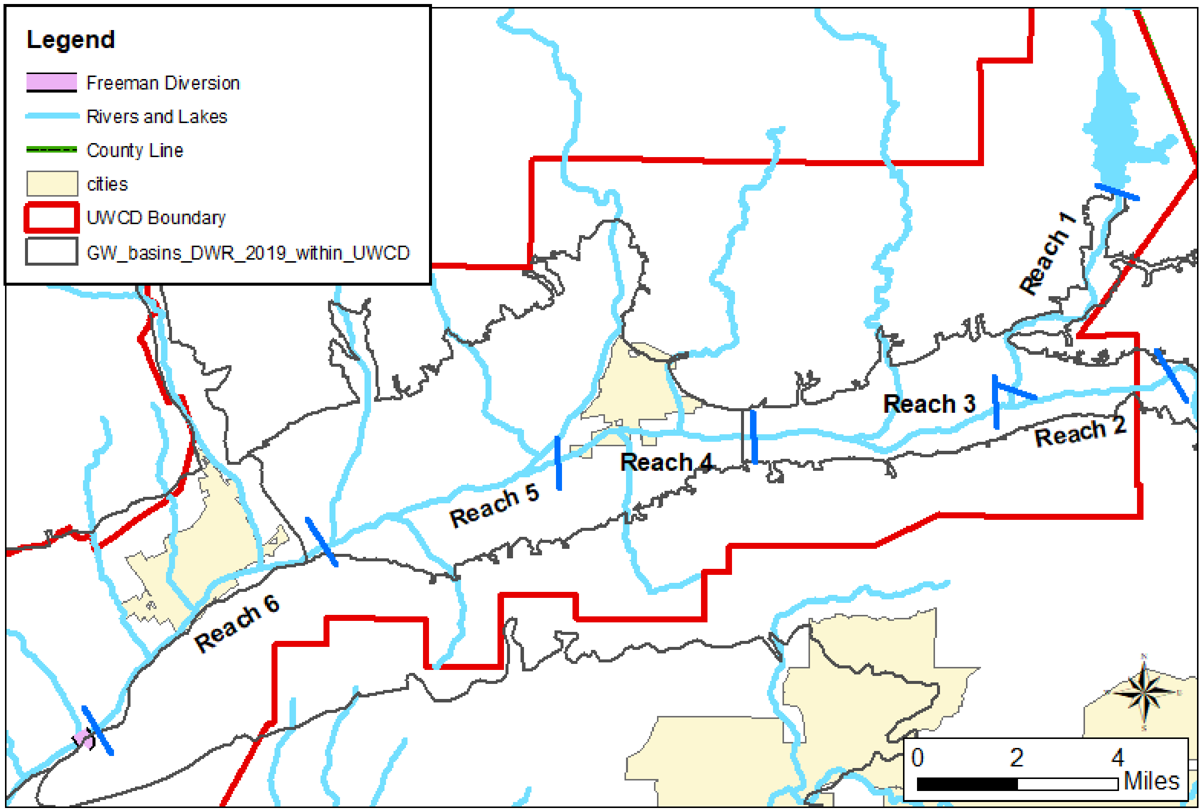

Figure 9. Model reaches for the Santa Clara River Upper Basins Surface Water Model. Reaches are numbered and separated by blue lines.

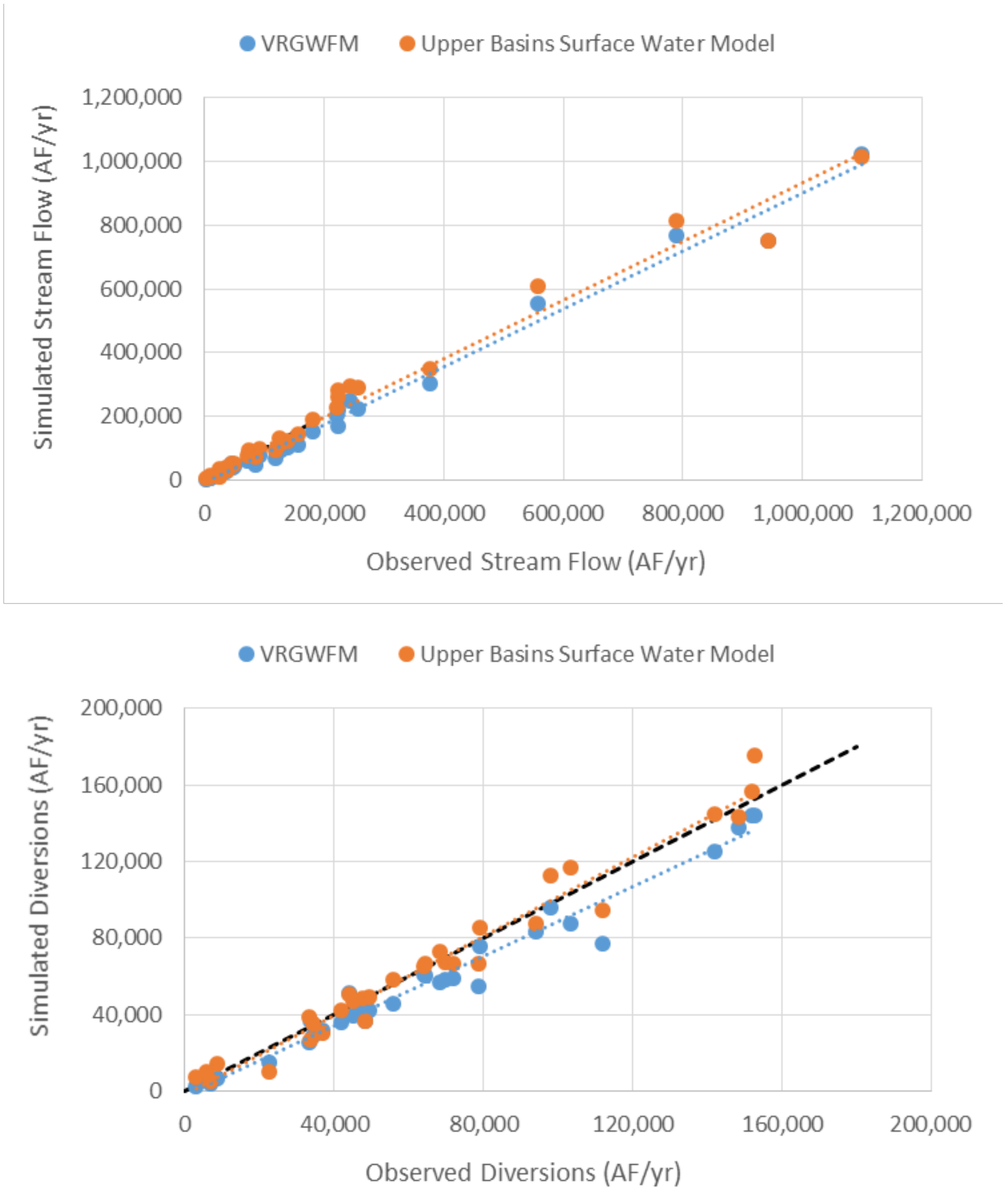

Figure 10. Simulated versus observed historical annual streamflow at the Freeman Diversion (top) and annual diversions based on simulated streamflow (bottom), for the regional groundwater flow model (Regional Model) and the Upper Basins Surface Water Model. Model simulations were performed for the 1985-2015 calibration period, assuming bypass flow operations as proposed in United's Multiple Species Habitat Conservation Plan (UWCD, 2020). Simulations of diversions were performed with the Hydrological Operations Simulation System (HOSS).

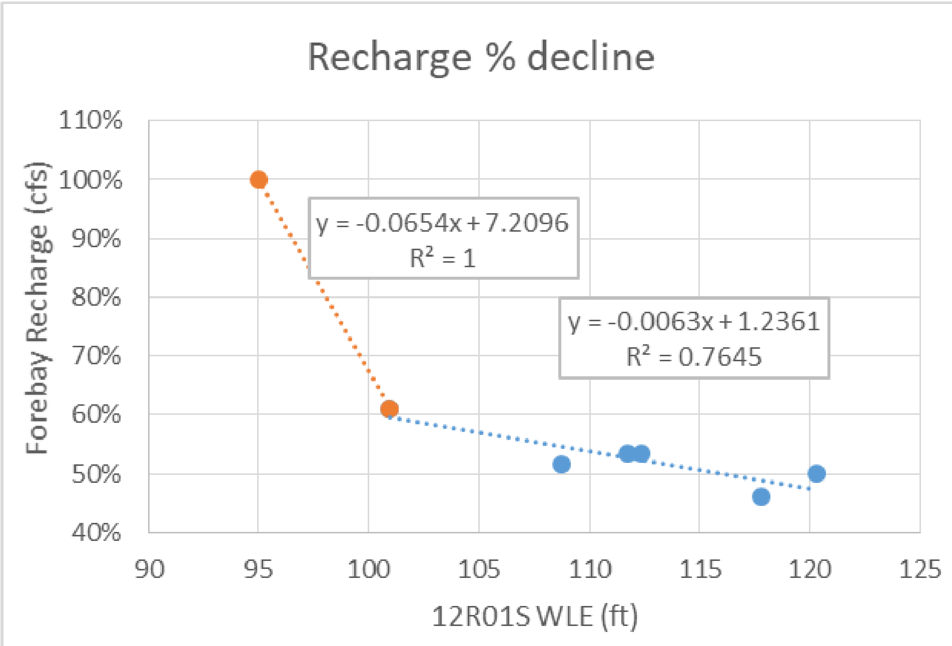

Figure 11. Decrease in maximum infiltration rate for artificial recharge to the Oxnard Forebay as a function of groundwater elevation at well 2N22W12R01S.

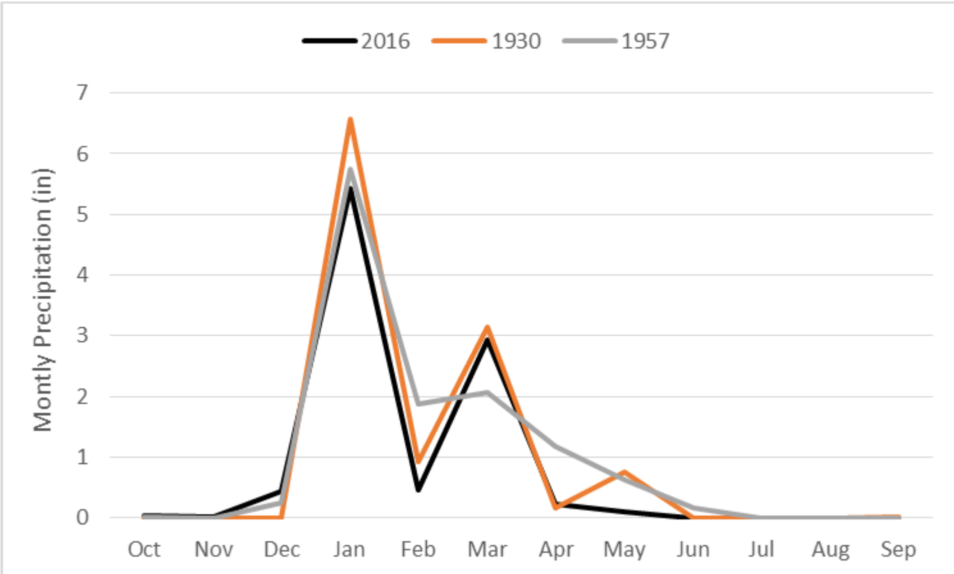

Figure. 12. Comparison of monthly precipitation for VCWPD gage 245 (Santa Paula) for water year 2016 and the two water years with streamflow change factors with the lowest RMSE (0.42 for WY 1930, 0.59 for WY 1957). Water year 1930 was selected as the analogous year for 2016 for the purpose of calculating streamflow change factors.

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APPENDIX F

Fillmore and Piru Basins Land Subsidence Evaluation Technical Memorandum (DBS&A, 2021b)

Fillmore and Piru Basins Land Subsidence Evaluation Technical Memorandum

Submitted to

Fillmore and Piru Basins Groundwater Sustainability Agency

Prepared by

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August 6, 2021

Certification

This Technical Memorandum was prepared in accordance with generally accepted professional hydrogeologic principles and practices. This Technical Memorandum makes no other warranties, either expressed or implied as to the professional advice or data included in it. This Technical Memorandum has not been prepared for use by parties or projects other than those named or described herein. It may not contain sufficient information for other parties or purposes.

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List of Acronyms and Abbreviations

AB	assembly bill
ADCP	acoustic doppler current profiler
AF	acre-feet
AFY	acre-feet per year
Ag	agriculture
AMI	automated (or advanced) metering infrastructure
amsl	above mean sea level
APN	assessor parcel number
B	boron
bgs	below ground surface
BMP	best management practices
BOS	bottom of screen
CA	California
CalGEM	Geologic Energy Management Division (formerly DOGGR)
CASGEM	California statewide groundwater elevation monitoring
CCR	California Code of Regulations
CDPH	California Department of Public Health
CFS	cubic feet per second
CIMIS	California irrigation management information system
Cl	chloride
COC	chemical of concern
CWC	California Water Code
CWL	Critical Water Level
DBS&A	Daniel B. Stephens & Associates, Inc.
DDW	[SWRCB] Division of Drinking Water

DEM	digital elevation model
DOGGR	Division of Oil, Gas, and Geothermal Resources (reorganized as CalGEM)
DQO	data quality objective
DTW	depth to water
DWR	[CA] Department of Water Resources
DWUs	downstream water users
EGM96	Earth Gravitational Model of 1996
ENSO	El Niño Southern Oscillation
EPA	U.S. Environmental Protection Agency
ET	evapotranspiration
ET_0	reference evapotranspiration
FCGMA	Fox Canyon Groundwater Management Agency
FICO	Farmers Irrigation Company
FPBGSA	Fillmore and Piru Basins Groundwater Sustainability Agency (also called GSA or Agency)
FT	feet
GAMA	[USGS] groundwater ambient monitoring & assessment
GIS	geographic information system
GPS	global positioning system
GSP	groundwater sustainability plan
HASP	health and safety plan
HCM	hydrogeologic conceptual model
Hydrodata	[VCWPD] hydrologic data server
ID	identification
LARWQCB	Los Angeles Regional Water Quality Control Board
LiDAR	light detection and ranging
NCCAG	natural communities commonly associated with groundwater
M&I	municipal and industrial
MCL	maximum contaminant level
MOU	memorandum of understanding
MS4	municipal separate storm sewer system
NAD	North American datum

NAVD88	North American vertical datum of 1988
ND	not detected
NGVD29	national geodetic vertical datum of 1929
NO3	nitrate
NWIS	national water information system
OFR	open file report
PBP	priority basin project
PDO	Pacific Decadal Oscillation
PSI	pounds per square inch
PSW	public-supply well
PVC	polymerizing vinyl chloride
QA	quality assurance
QC	quality control
RASA	regional aquifer-system analysis
RP	reference point (elevation)
RWQCB	[CA] Regional Water Quality Control Board
SAP	sampling and analysis plan
SCE	Southern California Edison
SCV-GSA	Santa Clarita Valley Groundwater Sustainability Agency
SMC	Sustainable Management Criteria
SNMP	Salt and Nutrient Management Plan
SO4	sulfate
SUM	summation
SWL	static water level
SWN	[CA DWR] state well number
SWRCB	[CA] State Water Resource Control Board
TD	total depth
TDS	total dissolved solids
TFR	total filterable residue
TMDL	total maximum daily load
TNC	The Nature Conservancy
TOS	top of screen

URL	uniform resource locator (web address)
USGS	U.S. Geological Survey
UWCD	United Water Conservation District
VC	Ventura County
VCWPD	Ventura County Watershed Protection District
VCWWD#16	Ventura County Waterworks District Number 16
VRGWFM	Ventura Regional Groundwater Flow Model
WGS84	world geodetic system 1984
WL	water level
WLE	water level elevation
WQ	water quality
WY	water year

1. Introduction

Daniel B. Stephens & Associates, Inc. (DBS&A) has prepared this Fillmore and Piru Groundwater Basins Land Subsidence Evaluation Technical Memorandum (Tech Memo) for the Fillmore and Piru Basins Groundwater Sustainability Agency (FPBGSA or Agency) and is under contract to prepare their mandated Groundwater Sustainability Plans (GSP or Plan) under the Sustainable Groundwater Management Act (SGMA) of 2014. Although SGMA requires separate Plans to be prepared for each basin, Fillmore and Piru subbasins (hereafter referred to as "basins") are hydrogeologically connected and have historically been managed and monitored together. The FPBGSA Board of Directors has memorialized in Resolution 2021-05 their intent continue this precedent and to manage these basins together. In keeping with this historical precedent, this tech memo has been prepared to cover both basins. This document includes references to Appendices in the GSPs to provide supplemental information on several topics.

Land subsidence is one of six sustainability indicators defined in the SGMA legislation. This document provides a background discussion on inelastic land subsidence (subsidence), summaries of previous investigations, a review of current data sets (e.g., geodetic monitoring, interferometric synthetic radar), and an evaluation of subsidence susceptibility for both basins.

Responses to the stakeholder comments on the draft Subsidence Technical Memorandum (February 4, 2021) that was posted to the FPBGSA website are contained in Appendix C of the GSP.

2. Background

Subsidence directly related to subsurface fluid extractions (e.g., groundwater and hydrocarbons) has been observed for several decades in California. Compaction of fine-grained sediments occurs due to the increase in the effective stress of overburden caused by fluid removal (i.e., lowering of groundwater levels), which reduces the volume of pore spaces between sediment grains (i.e., volume available for groundwater storage). For this evaluation, it is important to acknowledge the difference between inelastic and elastic subsidence in relation to changes in groundwater levels. Inelastic subsidence is interpreted to occur where land surface elevations do not recover following recovery of groundwater levels. On the other hand, elastic subsidence is that which land surface elevation does recover following rising groundwater levels. A detailed discussion of the geomechanics associated with subsidence can be found in Poland (1984) and Poland and Davis (1969) and its effects in USGS (1999, 2016). In the context of SGMA, the potential for inelastic subsidence is the primary concern because it is essentially irreversible (i.e., lost groundwater storage capacity).

Hanson (1995) proposed causal factors of subsidence in Ventura County could be groundwater extraction, hydrocarbon extraction (i.e., petroleum and natural gas), and tectonic movement. A detailed discussion of the steady increase of groundwater pumping in the basins since the late 1800’s through the late 1980’s is included in the Plan. Regional tectonic movement and surrounding hydrocarbon extraction areas are briefly discussed in this section. Although the basins are located in or near tectonically active and active hydrocarbon extraction areas, the purpose of this document is to address subsidence related to the lowering of groundwater levels.

Hydrocarbon extraction has occurred in Ventura County for many decades, however, subsidence related to oil and gas withdrawal specifically in the basins has not been historically observed or determined. Figure 1 shows well sites near the basins associated with hydrocarbon extraction as listed by California Geologic Energy Management Division's (CalGEM, formerly the Department of Oil, Gas and Geothermal Resources [DOGGR]). Active oil and gas production in the area occurs primarily outside of the basins with several hydrocarbon well fields located in the surrounding mountains. A few active wells of the Bardsdale and Shiells Canyon Oil Fields are located less than 0.25 miles inside of the southeastern Fillmore basin boundary. Three Holser Oil Field active wells are located just inside the Piru basin boundary in Holser Canyon (tributary east of Piru Creek). There are no reported instances of subsidence directly associated with hydrocarbon extraction areas within the basins or those well fields immediately adjacent to the basins.

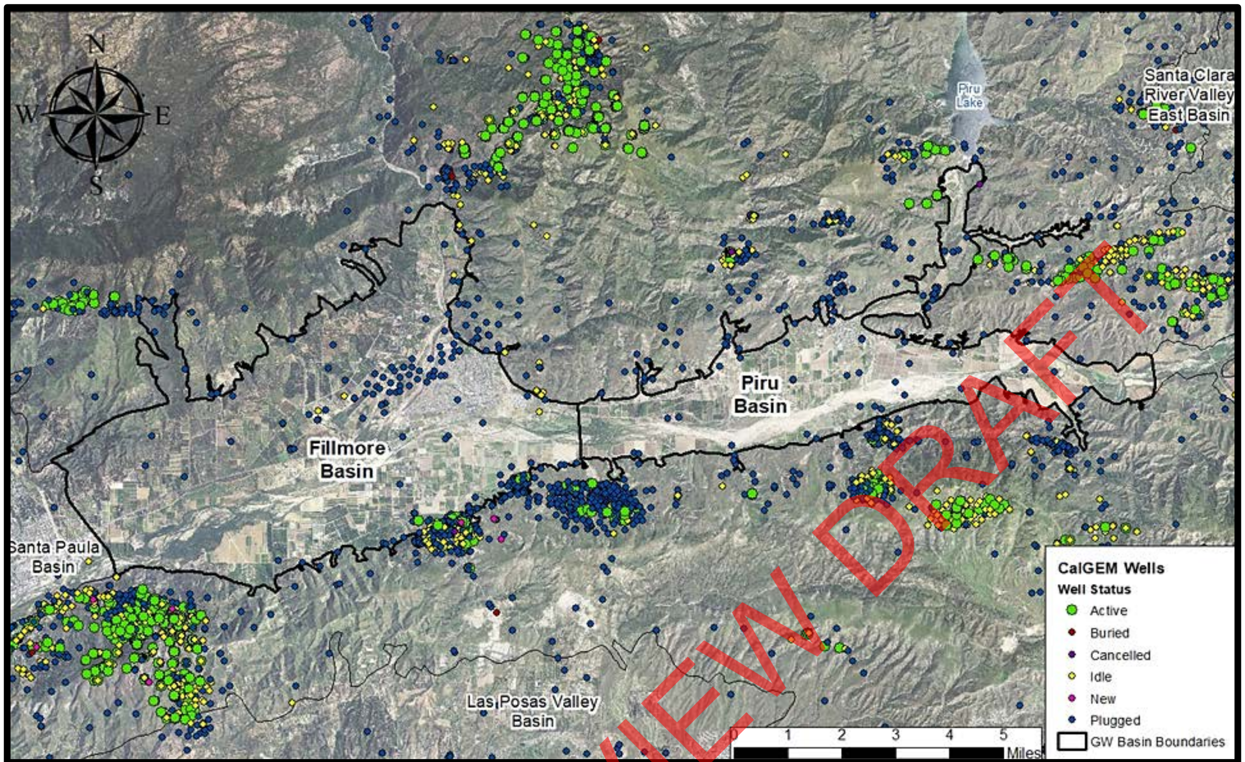

Figure 1: Fillmore and Piru basins area map showing CalGEM hydrocarbon extraction-related wells.

The basins are part of the tectonically active Transverse Ranges, where crustal shortening and rapid uplift rates have occurred for millions of years. Orme (1998) reports a broad range of 0.05 to 9 mm/year of long-term uplift for the coastal Transverse Ranges region. The basins consist of varying thicknesses of alluvium underlain primarily by the San Pedro Formation synclinal fold. Studies have estimated a maximum dip-displacement for the north basin-bounding San Cayetano reverse fault and south basin-bounding Oak Ridge fault to be 8.8 mm/year (about 0.03 feet/year) (Rockwell, 1988) and 12.5 mm/year (about 0.04 feet/year) (Yeats, 1988), respectively. Not only is the region's topography vertically affected by gradual long-term tectonic shifts, but the area is prone to earthquakes which can cause sudden land movements.

The evaluation of subsidence for the Fillmore and Piru basins in this document is based on review of the following lines of evidence:

- Previous investigations and reports;
- Geodetic surveys;
- Interferometric Synthetic Aperture Radar (InSAR) data;
- Analytical subsidence susceptibility evaluations.

3. Previous Investigations

Numerical groundwater flow modeling by Hanson et al. (2003) was used to estimate the timing and magnitude of historical subsidence in coastal Ventura County from 1891 through 1993. The use of a groundwater flow model to infer subsidence is not a direct measurement or observation of subsidence. Groundwater flow model estimated historical subsidence is a calculated value based on the geomechanical properties of the geologic material and the rate and magnitude of historical groundwater level change predicted by the model. Simulated subsidence was compared to select benchmarks on the South Oxnard Plain for subsidence model calibration. Hanson et al. (2003) stated the majority of the subsidence in their model domain occurred following the drought of the late 1920s and increase in agricultural pumping that occurred between the 1950's and 1993. The highest modeled subsidence was in the South Oxnard Plain and Las Posas Valley subareas where 3 and 5 feet was simulated, respectively (Figure 2). During the early development period from 1939 to 1960, subsidence occurred primarily in the upper aquifer system on the Oxnard Plain before pumping increased in the lower aquifer system from 1959 to 1993. The model indicates a maximum value of just over 0.1 feet (0.00098 ft/yr) of subsidence from 1891 to 1993 in the Fillmore basin and just over 0.25 feet (0.0024 ft/yr) in the eastern portion of the Piru Basin.

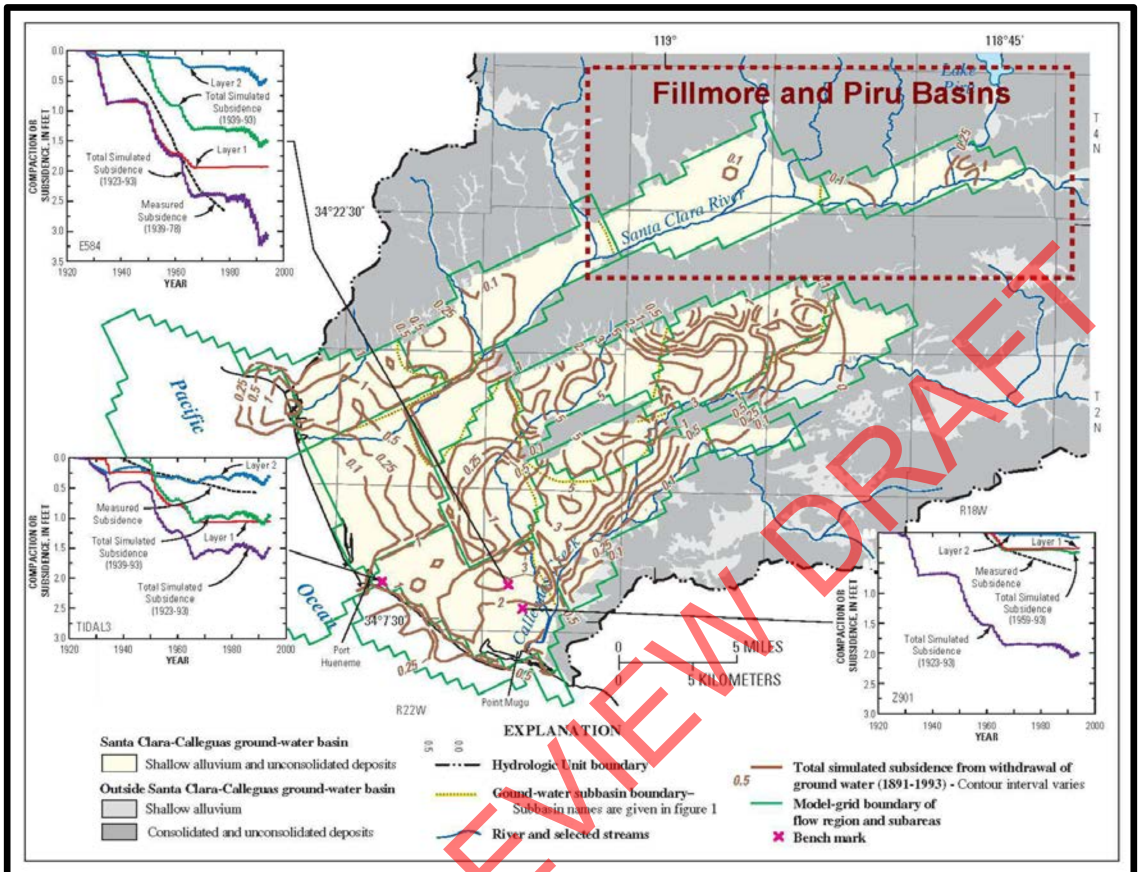

Figure 2: Simulated subsidence in the Santa Clara-Calleguas groundwater basin due to groundwater withdrawal from 1891 to 1993. Figure originally produced by Hanson et al. (2003).

Borchers (2014) summarizes results from the Hanson et al. (2003) study, solely focusing on areas of more significant subsidence (i.e. Oxnard Plain, Las Posas Valley, and South Pleasant Valley subbasins).

The 2013 Ventura County General Plan Hazards Appendix (Ventura County, 2013) contains a brief section and map showing the limits of subsidence zones. The zones were based on figures from the 1973 Hazards Appendix and have not been updated due to lack of geodetic data in these areas. Part of the zone extends along the Santa Clara River Valley, including the basins. The report states that sediment loading and groundwater level decline in the present Santa Clara River course could lead to hydrocompaction (assumed to be equivalent to subsidence for the General Plan, however, hydrocompaction and subsidence are related but not identical geologic processes) and possible flooding in lower lands (Oxnard Plain) could occur. Ventura County recently produced a 2040 General Plan Environmental Impact Report (Ventura County, 2020), which provides a general statement and map showing the Santa Clara River Valley (including the basins), Oxnard Plain, and Las Posas Valley as part of the subsidence risk area caused by groundwater extraction.

In 2014, California Department of Water Resources (DWR) prepared a document summarizing recent, historical, and estimated future subsidence potential for groundwater basins included in CA DWR Bulletin 118 (DWR, 2014). The purpose of the document was to provide screening-level information with respect to subsidence. DWR lists Fillmore basin with low potential for future subsidence. The ranking was determined from less than 10 percent of wells with long term water level trends (well records longer than 10 years) with current water levels (2008-2014) at or below historical low spring levels and one active continuous GPS monitoring station (see Geodetic Surveys) that showed 0.03 feet of maximum decrease in ground elevation. The Piru basin had insufficient data to establish a subsidence ranking.

4. Geodetic Surveys

UNAVCO monitors continuously operating geodetic instrument networks, including Continuous Global Positioning Systems (CGPS) stations, that measure three-dimensional positions (generally every 15 or 30 seconds) of a point near the earth's surface. Four CGPS stations are found near the basins (less than 5 miles away) with surface elevation data extending back to either 1999 or 2000. All four stations are mounted outside of the alluvial basins and in bedrock, suggesting any vertical movement is likely caused by tectonic movement rather than compaction of fine-grained materials due to groundwater withdrawal.

Figure 3 shows locations of these CGPS stations, along with UNAVCO time-series graphs displaying measured land displacement relative to the first measurement of each station. Data displayed in the time-series graphs are referenced to the North American tectonic plate (NAM14) reference frame. Outliers with a standard deviation greater than 20 mm (about 0.8 inches) were removed by UNAVCO. Long-term general vertical movement rate trends were determined by applying a line of best fit to each station's entire measured timeframe of data. Three of the four CGPS stations surrounding Fillmore basin (KBRC, SOMT, and FMVT) are all set in weathered or poorly lithified sedimentary bedrock (UNAVCO) and show a long-term trend of approximately 0.003 mm/year (0.000009 feet/year) of downward vertical movement since December 2000. Just south of Lake Piru, CGPS station SFDM set in bedrock (UNAVCO) indicates a linear trend of 0.001 mm/year (0.000003 feet/year) of upward vertical movement since 1999. Looking on a smaller timescale, the four stations show similar seasonal upward and downward movement trends.

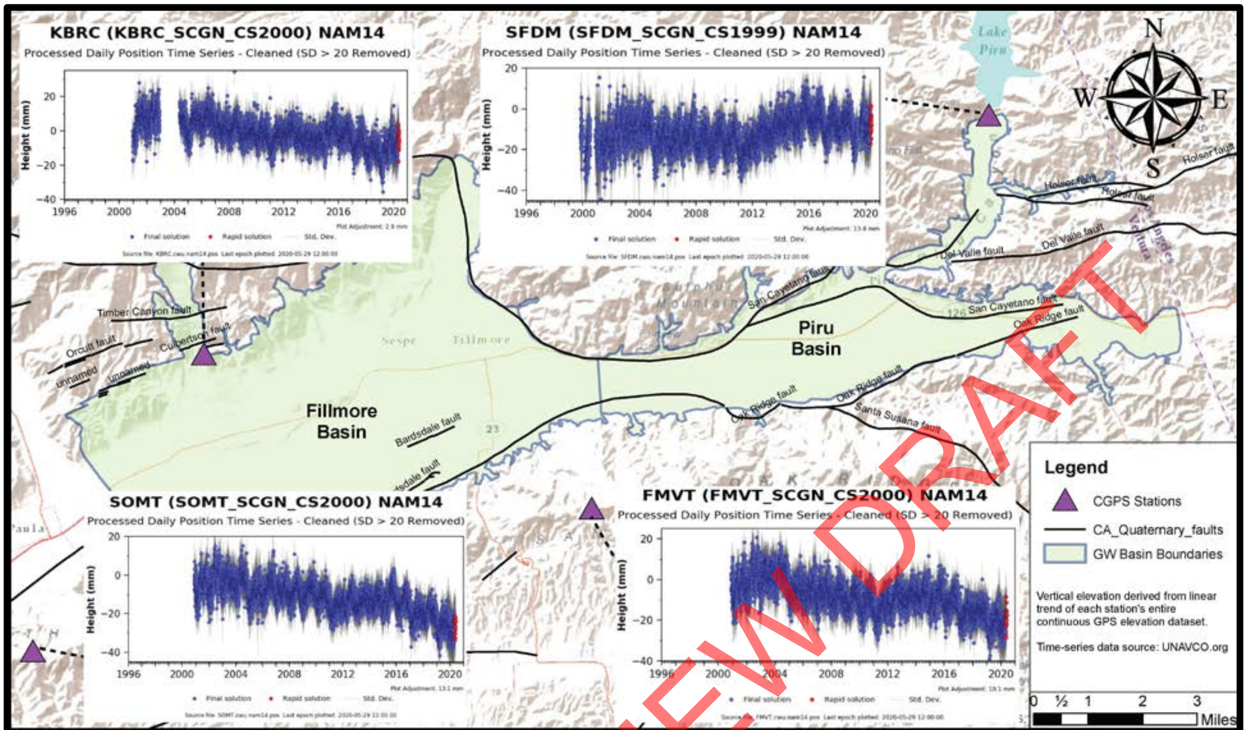

Figure 3: Map showing CGPS locations and vertical movement time-series data provided by UNAVCO.

Following the 1994 Northridge earthquake (magnitude 6.7), the USGS (1996) conducted a study to assess and restore geodetic infrastructure affected or damaged by land elevation changes caused by the earthquake. A geophysical model of permanent ground deformation, based on the geodetic infrastructure movement, was developed and benchmarks that differed +/- 1.2 inches (3 cm) from the model were considered anomalous (suggesting needed replacement). The model required non-tectonic deformation (i.e., subsidence due to groundwater withdrawal) to be removed from measured elevation changes to infer deformation solely due to tectonic activity. Therefore, at least three pre-seismic surveys made between 1971 and 1989 were used to subtract the elevation changes from the 1994 measurements. The National Geodetic Survey (NGS) conducted leveling surveys along routes in areas affected by the earthquake, including routes cutting through the Fillmore and Piru basins (Figure 4).

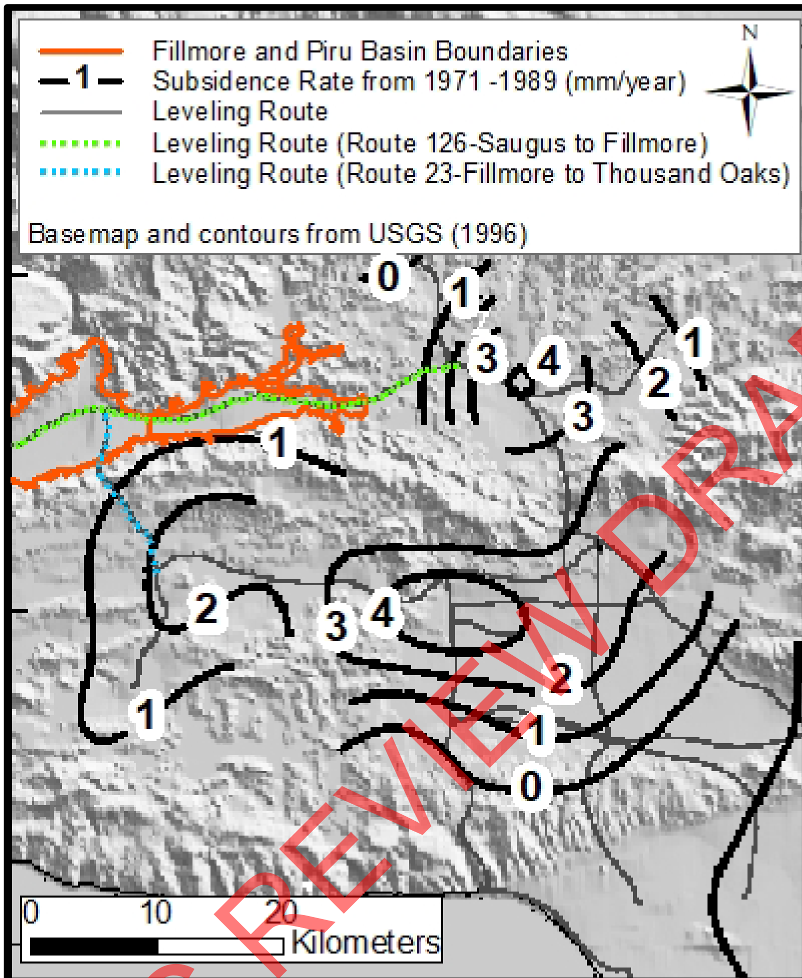

Figure 4: Map from USGS 1994 Northridge Earthquake report (USGS, 1996) showing NGS leveling routes and contours of measured pre-seismic subsidence rates (mm/year) from 1971 to 1989.

Figure 4 includes subsidence rate contours that the USGS produced from the 1971 to 1989 pre-seismic surveys covering the Los Angeles Basin. Based on these contours, average subsidence rates in the Fillmore and Piru Basins were under 1 mm (0.003 feet) per year from 1971 to 1989. A comparison of 1975 and 1989 leveling surveys (pre-1994 Northridge earthquake) taken along Route 126 (Los Angeles Avenue) from Saugus to Fillmore determined 15 mm (0.05 feet) of cumulative subsidence over the 14-year period, with maximum subsidence of 60 mm (0.2 feet) occurring between the 1975 and 1978 surveys. The area of maximum subsidence was 20 km (12.4 miles) wide and centered around the Town of Piru. The rebound in ground elevation following 1978 could have been due to groundwater recharge or a systematic error in the 1978 survey. A survey along Route 23 (Moorpark Freeway) from Fillmore to Thousand Oaks determined a maximum subsidence of 8 mm (0.03 feet) at Fillmore between 1975 and 1989.

The final modeled coseismic uplift extent related to the 1994 Northridge earthquake is shown in Figure 5. Within the basins, only the very eastern portion of the Piru basin showed tectonic deformation related to the earthquake and fell within the 0 to 10 cm (less than 0.3 feet) zone of the coseismic uplift contours modeled by USGS.

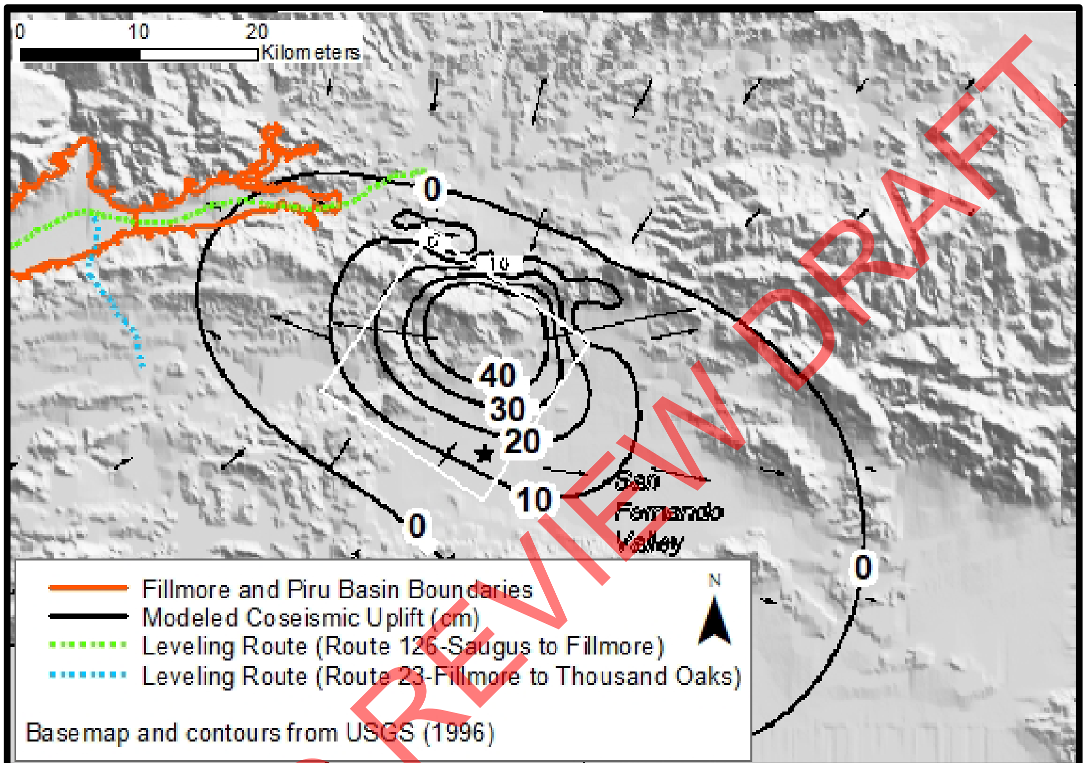

Figure 5: Map from USGS 1994 Northridge Earthquake report (USGS, 1996) modeled coseismic uplift related to the 1994 Northridge Earthquake in relation to the basin boundaries and NGS leveling routes surveyed in the basins.

5. Interferometric Synthetic Aperture (InSAR) Data

Interferometric Synthetic Aperture (InSAR) is a satellite-based remote sensing method used to map ground surface elevation change over large areas with high accuracy. Satellites emit electromagnetic pulses that produce measurements upon their return. These measurements are processed to create synthetic aperture radar images. The InSAR method calculates the change in elevation from one measurement to the next and presents the changes as raster images. To assist with quantitative subsidence evaluations for GSP development, DWR contracted TRE Altamira Inc. (TRE) to process InSAR data collected by the European Space Agency (ESA) Sentinel-1A satellite covering Bulletin 118 groundwater basins. The processed TRE InSAR datasets are available to the public on DWR's SGMA Map Viewer: (https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#landsub).

TRE processed InSAR point data (measured about every two weeks) to get values representing average monthly vertical movement per 100 square meter (about 1,000 square feet) areas within the basins from May 20, 2015 to September 1, 2019. TRE also provided rasters interpolated from the point data representing total and annual vertical displacement relative to June 13, 2015 (date entire CA study coverage began), both in monthly time steps. Towill Inc., contracted by DWR, conducted an accuracy study by comparing the InSAR vertical displacement data with CGPS data (including CPGS station, KBRC, mentioned in Section 4). The study (Towill, 2020) determined that InSAR data within California provided accurate vertical displacement measurements within 16 mm (+/-0.05 feet or +/-0.6 inch) at the 95% confidence interval.

Figure 6 shows TRE-processed InSAR data representing total vertical displacement in the basins over the longest available time period, June 13, 2015 through September 19, 2019. The Fillmore basin generally did not have vertical land movement that fell outside of the measurement accuracy range of +0.05 feet to -0.05 feet. The central portion of Piru basin shows uplift of up to 0.14 feet that extends westward from near the confluence of Piru Creek and SCR to the Piru-Fillmore basin boundary. This area spatially corresponds with the areas along the Santa Clara River where high surface water infiltration rates associated with natural runoff or man-made surface water enhancement projects (e.g., Article 21 Water, releases of water from Santa Felicia Dam). The areas of uplift above the minimum measurement accuracy are likely related to basin recharge (i.e., recovery of groundwater levels following the 2012-2016 drought), resulting in elastic recovery.

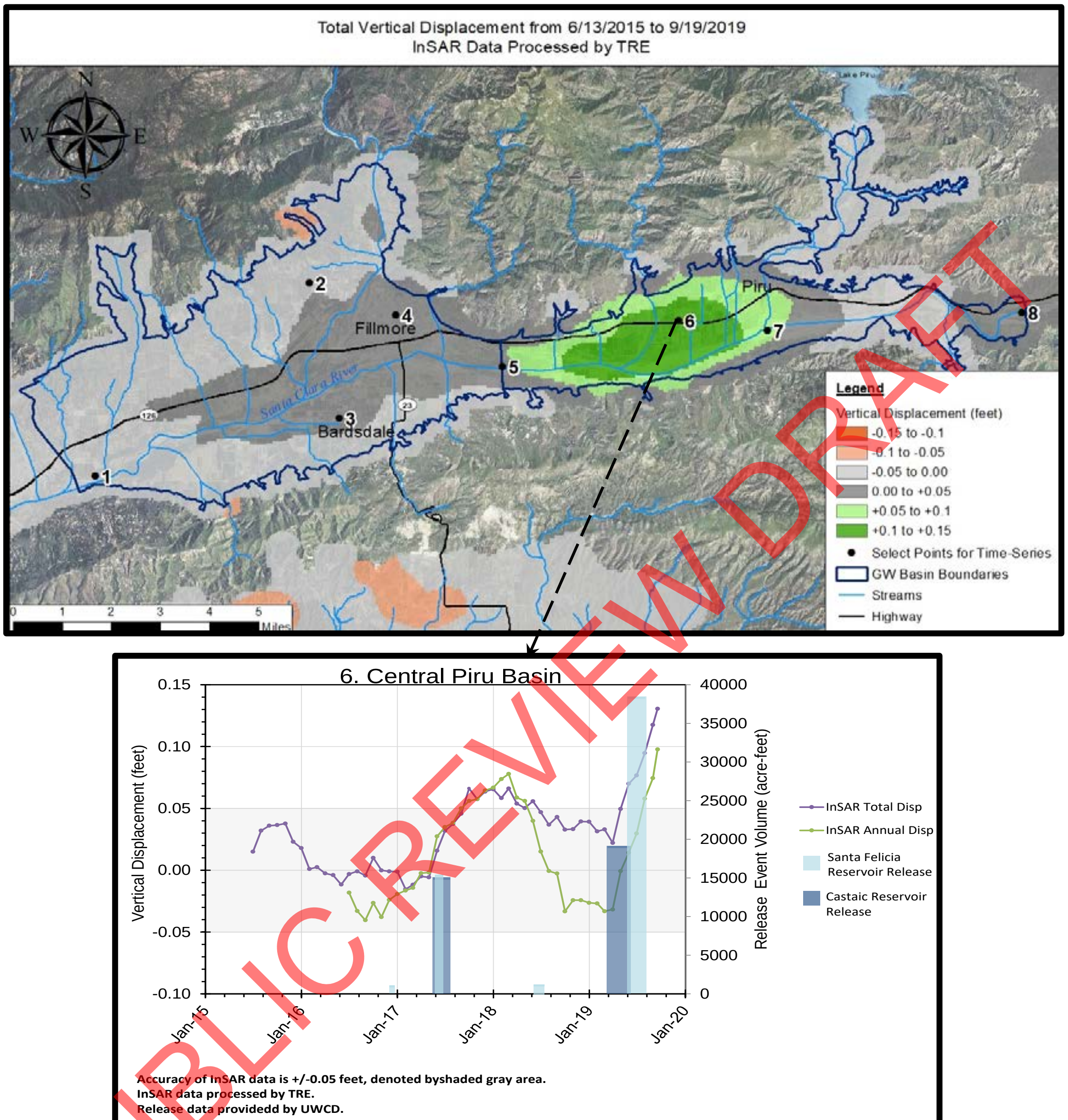

Figure 6: InSAR data processed by TRE showing total vertical displacement within the basins from June 13, 2015 to September 19, 2019. Time-series graph shows relationship of upward movement observed in InSAR data in relation to reservoir releases.

Eight points within the basins were chosen for vertical displacement time-series analysis based on special geographical characteristics and/or hydrogeological settings (e.g., likelihood of the area having significant thicknesses of fine-grained sediment, presence or absence of rising groundwater elevations, and general depths-to-groundwater). Locations of these points are shown on the maps in Figure 6 and described below:

1. Fillmore-Santa Paula Basin Boundary
2. Sespe Uplands
3. Bardsdale
4. City of Fillmore (Pole Creek Fan)
5. Fillmore-Piru Basin Boundary
6. Central Piru Basin
7. Piru Creek/Santa Clara River Confluence
8. Piru-SCR East Basin Boundary

Time-series graphs showing total and annual vertical displacement from the available TRE - processed InSAR datasets are shown in Figure 7. The values represent the vertical elevation change for the end date of the analyzed periods. Total displacement shows monthly cumulative departure change from a beginning reference date of June 13, 2015 for TRE data. Annual vertical displacement shows a monthly moving window representing displacement occurring within the past 12 months. Annual vertical displacement measurements allow analysis of annual land elevation change without seasonal variation.

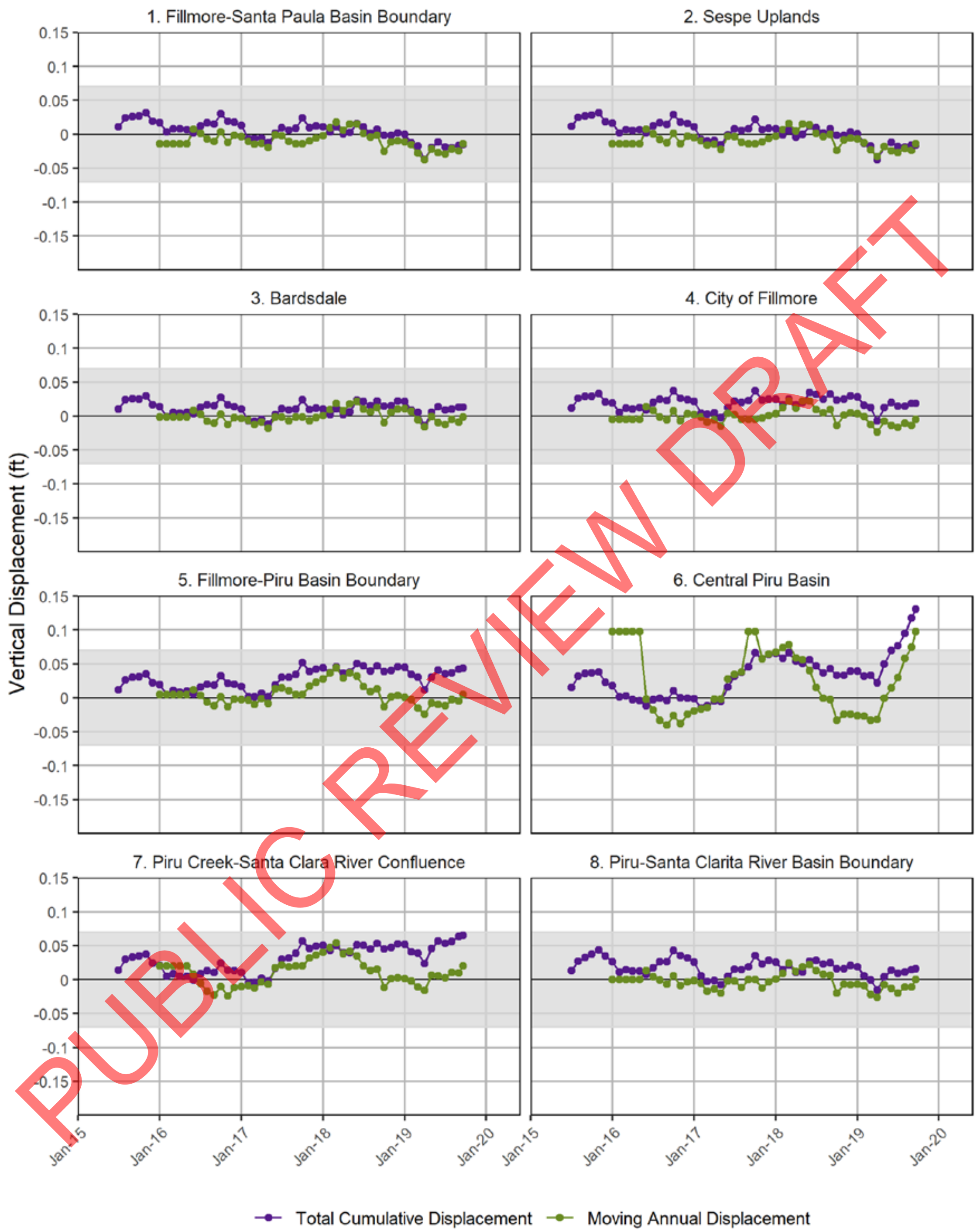

Figure 7: Time-series graphs showing running annual and total land surface elevation changes derived from InSAR data processed by TRE for select points in the basins.

Figure 7 shows that the majority of the measured land elevation changes fall within the measurement accuracy range of +/-0.05 feet (grey bands on the plots). Quantitative interpretations of the land surface movement in the +/-0.05 feet range should be done with caution. However, general land surface movement trends can be seen in the InSAR data.

Fillmore basin locations 1 through 4 and Piru basin location 8 show a similar pattern of land elevation fluctuation within the accuracy range over the time span (i.e., no significant change in land surface). Locations 5 and 7 show a small jump in total vertical displacement of approximately 0.05 feet of uplift beginning in May 2017 and somewhat stabilizes by October 2017. Location 6 has a similar jump of about 0.07 feet from May to October 2017 and another jump of about 0.11 feet beginning in April 2019 to the end of the dataset (September 2019), corresponding with groundwater recharge efforts performed by UWCD, as mentioned earlier in this section. Overall, the InSAR data set does not suggest land surface movements in excess of the minimum resolution of this instrumental technique.

6. Future Potential Subsidence

The datasets and reports previously discussed in this document provide insight on historical subsidence, however, a prediction method is needed to project possible future subsidence for the basins. Potential subsidence is significantly influenced by fine-grained layer distribution, thickness and compressibility, amount and timing of water-level changes, and lowest historical water level. It is important to note that any significant predicted subsidence would not occur until water levels drop below historical lows. The UWCD-developed groundwater flow model (UWCD, 2021) was used to simulate future groundwater water elevations under moderately extreme climate change conditions (the central tendency 2070 Climate Change Factors [2070CF]). The simulated water level time-series allow the effect of general hydrologic conditions (e.g., wet versus dry conditions) to be compared over a multi-decadal timeframe (1986 through 2096). In order to assess the potential for future subsidence with groundwater declines, simulated future groundwater elevation time-series at select wells in the Fillmore and Piru basins were evaluated by comparing future water levels against estimated historical lows (Figure 8).

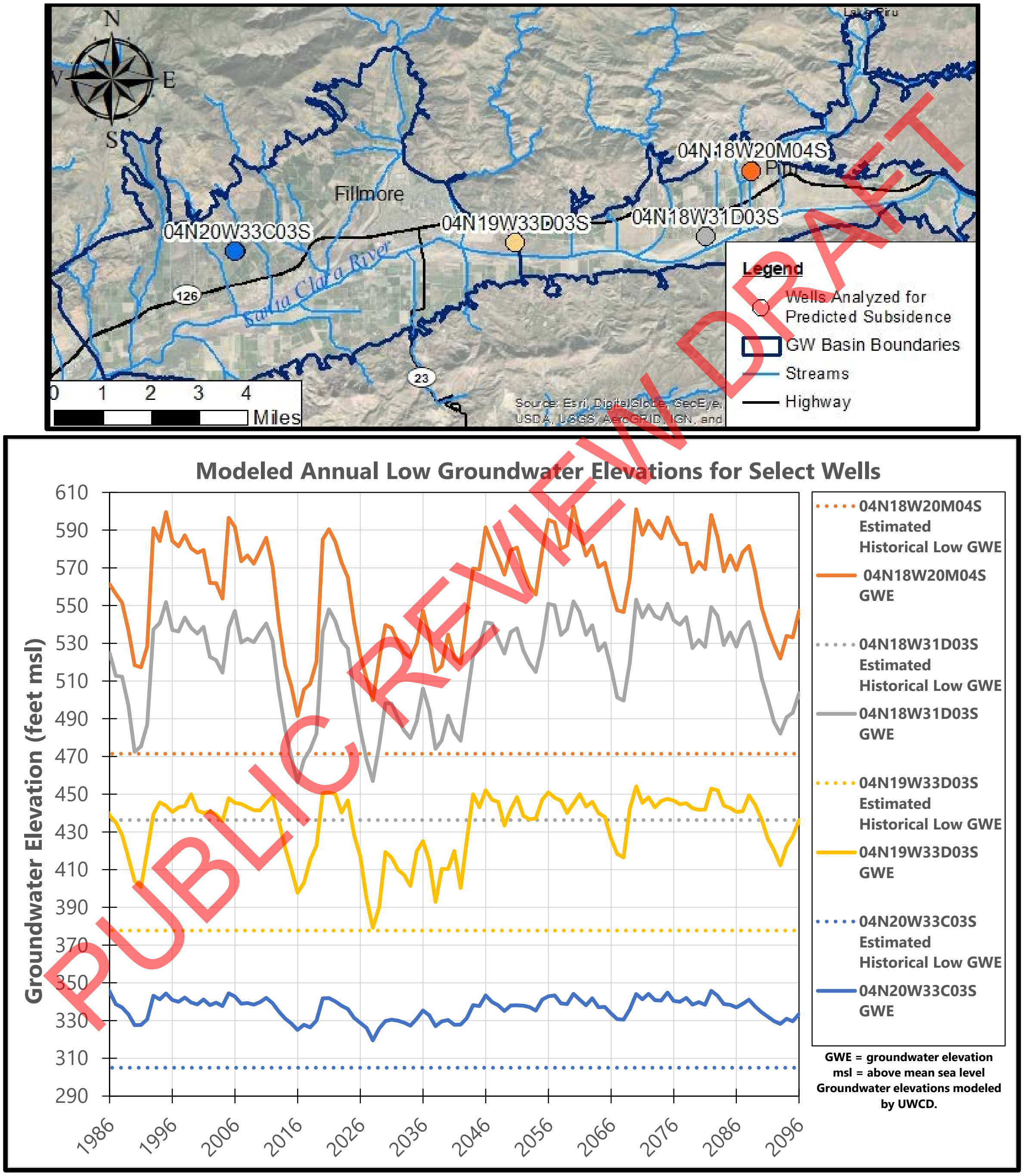

Figure 8: Map showing example wells locations used for analysis for potential future subsidence. Graphs represent modeled annual low water levels for the example wells, with their respective estimated historical low water levels

Simulated annual low water levels for the four example wells for the available model timeframe were used for the evaluation. In order to account for maximum historical lows anticipated prior to the modeled timeframe, the historical low water level was estimated to be 20 feet lower than the modeled 2016 drought water level. This historical low estimate was based on the review of wells with long-term water level records (e.g., back to the 1940s) that showed early drought levels generally measured about 20 feet lower than the measured 2016 drought low water levels.

The hydrographs in Figure 8 reveal that the future water levels predicted by the 2070 climate change factor scenario (2020-2096) are functionally identical to those experienced during the historical period of record (1986-2019). The range between the minimum water levels during major drought periods and the maximum water levels during wet periods for the historic and future modeling timeframes are very similar. Additionally, the future simulated water levels do not decline to the elevation of the estimated historical low water levels. In the absence of future water levels below the estimated historical low water levels, it is unlikely that subsidence would be experienced at these well locations.

A basin-wide review of the relationship between the estimated historical low groundwater elevation and the low groundwater level predicted by the 2070 CF model scenario allows the determination of where in the basins the change in groundwater levels might initiate conditions susceptible to subsidence. Figure 9 shows that nearly all wells (for which the well construction details are known) are predicted to have future water levels shallower than the estimated historic low levels. This relationship suggests that it is unlikely that subsidence in either basin would be experienced in the future under the modeled climatic and groundwater extraction scenario.

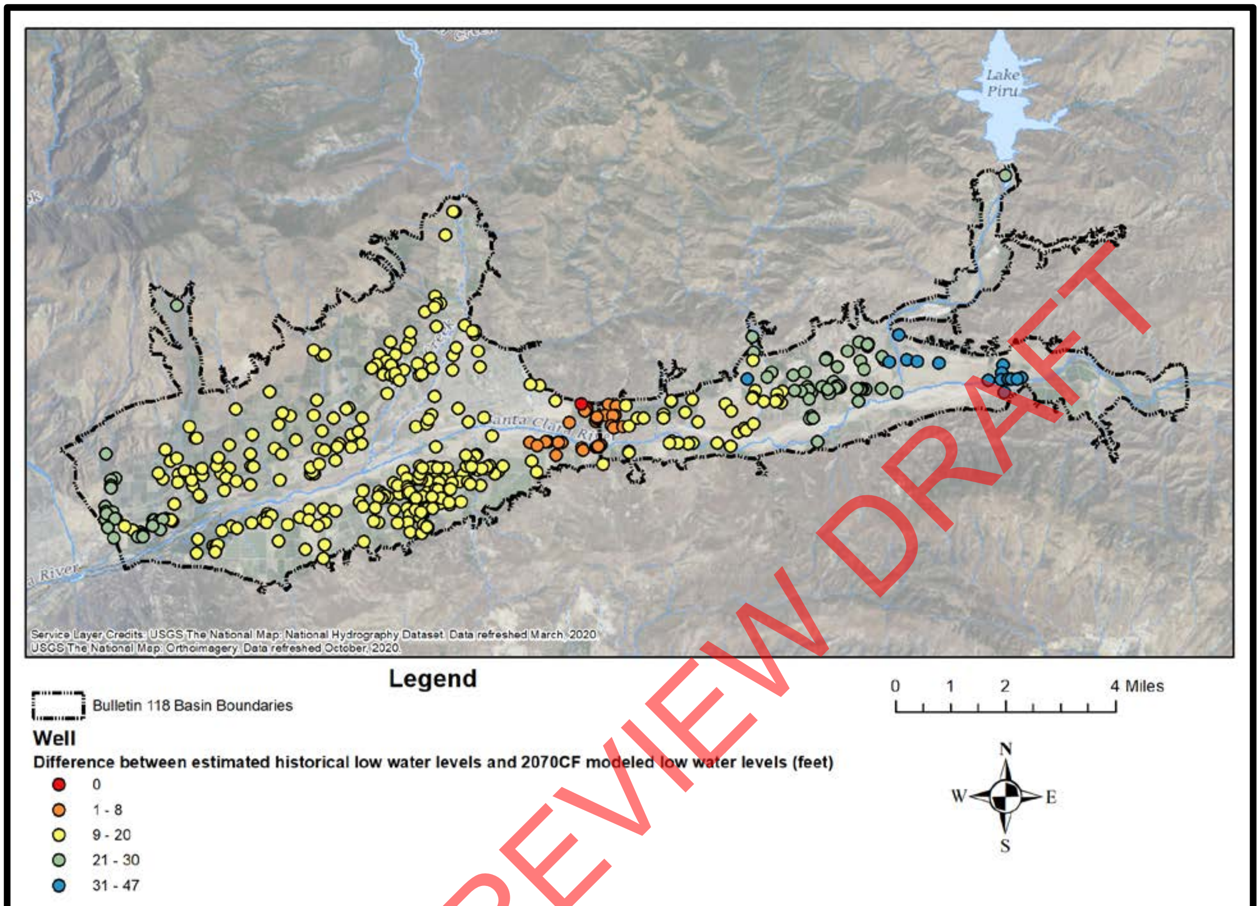

Figure 9: Difference between estimated historical low water level and 2070CF modeled low water levels

The water levels near the boundary between the Fillmore and Piru basins are typically some of the shallowest in the basins and the 2070CF modeled water levels are predicted to be less than 10 feet above the estimated historical low in this area. In general, the differences between the estimated historical low water level and the 2070CF modeled low water levels increase to the east and west away from the Fillmore-Piru basin boundary.

7. Discussion

The potential for subsidence in the Fillmore and Piru basins has been approached from multiple aspects and is summarized in Table 1.

Study/Investigator	Fillmore Basin	Piru Basin	Comments
USGS, 1996	maximum subsidence of 0.03 feet (8 mm, 0.6	maximum subsidence zone up to 0.05 feet (15	1975-1989 study period

Study/Investigator	Fillmore Basin	Piru Basin	Comments
	mm/yr) near City of Fillmore	mm, ~1 mm/year) around the Town of Piru	
Hanson, 2003	maximum value of just over 0.1 feet (0.00098 ft/yr) of subsidence	0.25 feet (0.0024 ft/yr) in the eastern portion of Piru Basin	1891 to 1993 study period
Ventura County, 2013 and 2020	Lies within subsidence hazard zone	Lies within subsidence hazard zone	No technical analyses conducted.
DWR, 2014	Low potential	Insufficient data	
InSAR	Less than +/-0.05 ft	Generally, less than +/- 0.05 ft except during periods of artificial recharge, then up to +0.14 ft of rebound in Piru basin	June 2015 – Sept 2019 study period
2070 Climate Change Modeling by UWCD	No subsidence anticipated	No subsidence anticipated	1986 to 2096 model timeframe

Table 1. Summary of Subsidence Evaluations

The susceptibility of each basin to subsidence is rooted in a few key factors:

- The hydrostratigraphic setting (i.e., do the geologic units contain fine-grained sediments); and
- If the water level is below, or projected to be below, the historic lows in the future.

In general, both of these factors must be present to initiate subsidence. Site-specific subsidence monitoring data (e.g., extensometer or tiltmeter) can be used, if available, to augment the hydrostratigraphic setting and water level data sets and develop a subsidence susceptibility ranking for the basins as summarized in Table 2 below.

Basin	Hydro-stratigraphic Setting Susceptibility	Chronic Declines in Groundwater Levels	Geodetic / Extensometer / Tiltmeter Evidence of Subsidence	InSAR Evidence of Subsidence	Subsidence Susceptibility Ranking
Fillmore	Low to Moderate	No	No	No	**Low**
Piru	Low	No	No	No	**Low**

Table 2. Summary of (Inelastic) Subsidence Potential

The hydrostratigraphic setting for the Fillmore basin is identified as Low to Moderate to reflect the greater amount of fine-grained alluvial sediments in the western portion of the basin compared to the eastern portion. As a contrast, the Piru basin hydrostratigraphic setting is dominated by coarse-grained materials and consequently assigned a Low value. Consideration of each of the input variables supports the assignment of an overall Low Subsidence Susceptibility Ranking for each basin.

8. Conclusion

This review of available historical reports, geodetic survey data, and satellite imagery (InSAR) indicates that the Fillmore and Piru basins have historically shown little to no subsidence related to groundwater withdrawal, even through multiple droughts and record low water levels.

The basins are located in a very tectonically active region that also has oil and gas extraction operations, which adds complexity to determination of the cause(s) of land elevation changes. Previous historical investigations covering the basins have primarily been inconclusive in determining actual rates or values of subsidence, due to lack of available data, and focus on a regional scale or areas of significant subsidence (i.e., Oxnard Plain). The following key takeaway points are:

- Multi-decadal historical datasets involving geodetic measurements and model simulations have revealed very low overall subsidence rates throughout the basins;
- Recent InSAR data covering the 2015 to 2019 time period suggests little to no subsidence throughout the Fillmore basin, while rebound is observed in the Piru basin associated with elastic recovery related to recharge following a multi-year drought;
- Future water levels projected through 2096 in the UWCD 2070CF model do not go below historical lows, thereby minimizing the potential for subsidence.

The FPBGSA can use a variety of monitoring techniques for subsidence:

Water Levels: There is an extensive historical water level database in these basins and it is expected that a robust monitoring program will continue into the future. These datasets can be used to identify when, or if, the water levels are approaching the estimated historical low water levels. Based on historical and projected future groundwater level trends, the basins are at low risk for water level declines that would suppress water levels to elevations lower than the estimated historical lows.

Geodetic / InSAR data: The available geodetic and InSAR datasets are effective monitoring tools that document current and recent (e.g., within the past year) subsidence. The DWR plans on continuing to provide InSAR subsidence data covering the groundwater basins, allowing a low-cost method of the monitoring future land surface elevation changes. Prevention of future inelastic subsidence is reliant on maintaining water levels above historical lows.

Based on the review of these readily available data sets, the susceptibility ranking is considered Low for both the Fillmore and Piru basins.

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APPENDIX G

Summary of Past Groundwater models and Water Budgets for the Piru, Fillmore, and Santa Paula Groundwater Basins (United, 2020c)

SUMMARY OF PAST GROUNDWATER MODELS AND WATER BUDGETS FOR THE PIRU, FILLMORE, AND SANTA PAULA GROUNDWATER BASINS

United Water Conservation District

Open-File Report 2020-02

November 2020

WATER RESOURCES DEPARTMENT

UNITED WATER CONSERVATION DISTRICT

THIS REPORT IS PRELIMINARY AND SUBJECT TO MODIFICATION BASED UPON FUTURE ANALYSIS AND EVALUATIONS

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Preferred Citation: United Water Conservation District, 2020, *Summary of Past Groundwater Models and Water Budgets for the Piru, Fillmore, and Santa Paula Groundwater Basins*, United Water Conservation District Open-File Report 2020-02.

Principal Authors: Zachary Hanson and Dan Detmer

EXECUTIVE SUMMARY

This report summarizes the water budgets of the Piru, Fillmore, and Santa Paula groundwater basins based on major hydrologic investigations that have taken place over the past century. Reviewing these previous investigations related to numerical groundwater modeling and water budgets of the groundwater basins supports United's efforts in the expansion of United's active numerical groundwater flow model domain to include the remaining groundwater sub-basins of the Santa Clara River Valley within Ventura County, California.

Table E-1 summarizes the hydrologic investigations which contributed water budget components related to the Piru, Fillmore, and Santa Paula groundwater basins. Table E-2 summarizes the range of reported water budget component values for each of the groundwater basins which were presented in the previous hydrologic studies that are listed in Table E-1. The majority of the values presented in Table E-2 were extracted from a California Department of Water Resources (DWR, 1956) or Mann (1959), with other primary sources being CH2M HILL (2004, 2005), CH2M HILL and HydroGeoLogic (CH2M HILL/HGL, 2008), LWA and others (2015) and DBS&A and RCS (2017). Values of lower and upper ranges were sourced from all the investigations reported. Each of the reports used for this review are representative of varying, sometimes overlapping, climatic periods and conditions (Table E-1). Since the values reported from DWR (1956) and Mann (1959) provided the most complete summaries of water budgets, most of the lower and upper bounds of the reported range for many of the components, presenting the results in this way is considered appropriate, and helpful, for comparison purposes.

Reviewing previous water budget component estimates helps during numerical model development and calibration by confirming that values of various water budget components from the new model are reasonable, and that differences may be explained due to physical changes or processes considered. The numerical groundwater model expansion efforts further support United's ability of regional water management planning, with the most immediate need in supporting local Groundwater Sustainable Agencies (GSAs) in developing Groundwater Sustainability Plans (GSPs).

Based on this review, United offers the following conclusions related to the previous studies and reported water budgets for the Piru, Fillmore, and Santa Paula groundwater basins:

- There are extensive previous studies available for these basins that were based on field, analytical, and numerical studies, dating back to the 1920s (Table E-1).
- The most significant inflows to each basin consist of recharge from streamflow (Santa Clara River) percolation, areal recharge from precipitation and applied water from groundwater and surface water sources, and incoming subsurface underflow from upstream groundwater basins.
- The most significant outflows to each basin consist of groundwater extractions for beneficial use and outgoing subsurface underflow to downstream groundwater basins.

- With the Santa Clara River (SCR) being the largest source of recharge (especially for Piru and Fillmore Basins), these basins are highly variable due to the dependence on local rainfall within the SCR watershed. This variability and dependence on surface water inflows leads to the large range observed in the previously reported water budget components (Table E-2). This dependence to surface water flows is expected to continue in the future, resulting in variable water budgets of similar ranges.
- Basin boundary modifications have recently been adopted that expanded the extent of the Piru, Fillmore, and Santa Paula groundwater basins. The majority of the studies reviewed for this document utilized boundaries that captured most of the water-bearing and productive alluvial deposits and underlying aquifers along the valley floor, and the overall effect on the ranges for many of the water budget components is not expected to be significant. Changes to the upstream extent of the Piru basin will however result in an increase in the subsurface underflow into Piru basin from the east. This value is expected to increase using the Department of Water Resources (DWR, 2019) boundary moving forward due to the substantial increase in saturated aquifer thickness near the Los Angeles County line compared to the downstream locations used in previous studies. The increased area will also result in increased recharge to the underlying aquifers due to precipitation.

Table E-1: Chronology of hydrologic investigations which contributed water budget components related to Santa Clara River Valley groundwater basins (Piru, Fillmore, and Santa Paula).

Entity	Year Published	Reference	Budget Components Provided?	Representative Years
California Department of Public Works, Division of Water Resource[1]	1933	DWR, 1933	All, various	1927 - 1932
California State Water Resources Board[1]	1956	DWR, 1956	All, various	1936 - 1951
John F. Mann and Associates	1959	Mann, 1959	All, various	1936 - 1957
California Department of Water Resources	1974	DWR, 1974a	Piru, subsurface inflow	1956 - 1967
Law/Crandall Inc.	1993	Law/Crandall, 1993	Fillmore, subsurface outflow	1956 - 1990
United States Geological Survey	2003	Reichard and others, 2003	Fillmore, subsurface outflow	1984 – 1993
CH2M HILL	2004	CH2M HILL, 2004	Piru, subsurface inflow	1980 - 1999
CH2M HILL	2005	CH2M HILL, 2005	Piru, subsurface inflow	1980 - 2005
CH2M HILL/ HydroGeoLogic Inc; HydroMetrics (United-sponsored analysis)	2008	CH2M HILL/ HGL, 2008	Piru and Fillmore, subsurface inflow	1975 - 2005
HydroMetrics (United-sponsored updates)	2015	LWA and others, 2015	All, various	1996 - 2012
Steve Bachman	2015	Bachman, 2015	Fillmore, subsurface outflow	1947 - 2014
Daniel B. Stephens and Associates, Inc/ Richard C. Slade and Associates LLC	2017	DBS&A and RCS, 2017	Fillmore and Santa Paula, various	1999 - 2012

[1]One of the predecessor agencies to California's current Department of Water Resources (DWR). DWR was formed in 1956 with legislation that simultaneously dissolved the Water Project Authority and Division of Water Resources within the Department of Public Works as well as took over duties of a reconstituted State Water Resources Board (DWR, 2020).

Table E-2: Range of water budget components for the study area's groundwater basins that were presented in previous studies listed in Table E-1. Majority of values extracted from DWR (1956) or Mann (1959), with other references being CH2M HILL (2004, 2005), CH2M HILL/HGL (2008), LWA and others (2015) and DBS&A and RCS (2017). Values rounded to nearest 10 AF.

	Piru		***Fillmore***		***Santa Paula***	
Budget Components (AFY)	*Lower*	*Upper*	*Lower*	*Upper*	*Lower*	*Upper*
Inflows						
Subsurface underflow	240	18,800	12,570	111,210	3,900	30,910
Stream Percolation	6,400	61,850	1,790	49,130	4,210	24,440
Precipitation Recharge	190	20,200	470	54,200	40	25,590
Mountain Front Recharge	2,620	2,620	3,530	3,530	3,600	3,600
Managed Recharge	0	11,800	--	--	--	--
Local Wastewater Treatment Percolation Ponds	210	210	1,040	1,040	2,230	2,230
Imported	0	5,840	4,900	11,770	4,220	8,570
Outflows						
Subsurface underflow	12,570	111,210	3,900	30,910	1,800	7,350
Rising groundwater	0	37,800	6,030	48,200	2,040	17,340
Consumptive use*	6,450	15,000	20,590	36,200	15,420	33,730
Exported	2,200	6,450	0	5,160	310	2,100
Change in Groundwater Storage*	***-19,600***	***44,600***	***-20,170***	***49,300***	***-10,900***	***21,680***

*Of applied water and precipitation on basin (including phreatophytes)

**Reported changes in annual storage (not calculated from inflows and outflows presented here)

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1 INTRODUCTION

United Water Conservation District (United) is a California special district (i.e., a public agency) with a service area of approximately 335 square miles (214,000 acres) of southern Ventura County. United's service area includes the Ventura County portion of the Santa Clara River Valley and much of the Oxnard coastal plain, including the lower part of the Calleguas Creek watershed, as shown on Figure 1-1. United serves as a steward for managing the surface water and groundwater resources within all or part of eight groundwater basins. It is governed by a seven-person board of directors elected by region, and receives revenue from property taxes, pump charges, recreation fees, and water delivery charges. United is authorized under the California Water Code to conduct water resource investigations, acquire water rights, build facilities to store and recharge water, construct wells and pipelines for water deliveries, commence actions involving water rights and water use, prevent interference with or diminution of stream/river flows and their associated natural subterranean supply of water, and to acquire and operate recreational facilities (California Water Code, section 74500 et al).

1.1 PURPOSE

This report summarizes the water budgets and hydrologic investigations of the Piru, Fillmore, and Santa Paula groundwater basins based on investigations that have taken place over the past century. The investigations described herein often included the Piru, Fillmore, and Santa Paula groundwater basins as parts of regional efforts to better understand the quantity of water resources available for current use and future planning. Other studies were motivated by water quality issues. The field investigations that took place in the earlier portion of the 20th century ultimately lead into numerical modeling development and additional field investigations that have estimated hydrologic components of the groundwater basins' water budgets over various periods of analysis.

Additionally, this report supports United's efforts in the expansion of United's active numerical groundwater flow model domain to include the remaining groundwater sub-basins of the Santa Clara River Valley within Ventura County, California. The basins are connected sub-basins in the larger groundwater system of the Santa Clara River Valley (DWR basin number 4-004), but the common vernacular is to refer to them as basins. United's groundwater flow model extension study area will include the remaining groundwater basins of the Santa Clara River Valley within Ventura County: Piru (DWR 4-004.06), Fillmore (DWR 4-004.05), and Santa Paula (DWR 4-004.04; Figure 1-2). The current effort of extending the numerical groundwater modeling builds from United's initial groundwater flow model development (UWCD, 2018) which included the coastal basins of the Santa Clara River Valley (Oxnard (DWR 4-004.02) and Mound (DWR 4-004.03)) as well as the Pleasant Valley groundwater basin (DWR 4-006) and a western portion of the Las Posas Valley groundwater basin (DWR 4-008). Following the completion of this model expansion, United's numerical groundwater flow model will include all of its direct service area as well as portions of the adjacent region.

1.2 PHYSICAL SETTING

The Santa Clara River is located in Southern California, with a total watershed area of approximately 1,625 square miles (Figure 1-3). The main channel is oriented east to west and runs approximately 83 miles from its headwaters along the northern slopes of the San Gabriel Mountains in Los Angeles County and through Ventura County until it meets the Pacific Ocean (Figures 1-2 and 1-3). The Santa Clara River is the largest river in the Southern California region that remains in a relatively natural state (Los Angeles Regional Water Quality Control Board [Regional Board], 2006). After flowing through the Santa Clarita Valley within Los Angeles County, the Santa Clara River then flows through a narrow and thin geologic constriction near the Ventura County line, where the river and minor groundwater underflow enters the Santa Clara River Valley within Ventura County. The Santa Clara River then flows down the valley through the alluvial Piru, Fillmore, and Santa Paula groundwater basins of Ventura County before entering the Oxnard and Mound basins near the Pacific Ocean.

The Santa Clara River watershed encompasses three significant tributary watersheds within Ventura County -- those of Piru, Sespe, and Santa Paula Creeks (Figure 1-3), which enter the Piru, Fillmore, and Santa Paula groundwater basins, respectively. Land surface elevations in the watershed range from sea level at the coast to nearly 8,850 feet at the headwaters of Piru Creek near the border between Ventura and Kern Counties. Much of the discharge in the Santa Clara River is derived from streamflow originating in the mountain regions drained by these tributaries. The flows within the Santa Clara River watershed is highly variable with nearly all of the flows coming during the winter and spring months.

Along the Santa Clara River Valley, the river is the primary source of recharge to the underlying groundwater basins. Beneficial users, such as agricultural, domestic, and municipal are wholly dependent upon the groundwater resources stored in the groundwater basins for their water supply, which are extracted with groundwater pumping wells. The alluvial groundwater basins of interest for this report contain about 29 miles of the main channel of the Santa Clara River and represent a total of 55,600 acres (86.8 mi^2) within Piru (10,900 acres, 17.0 mi^2); Fillmore (22,580 acres, 35.3 mi^2); and Santa Paula (22,110 acres, 34.5 mi^2).

2 PREVIOUS INVESTIGATIONS RELATED TO HYDROLOGIC DATA AND CONDITIONS

The Santa Clara River Valley has been the subject of geologic and hydrologic investigations for nearly a century now. Many of these studies included the Piru, Fillmore, and Santa Paula groundwater basins as part of regional efforts for hydrologic understanding and planning of water resources by various agencies (e.g. United Water Conservation District, Ventura County, the cities of Fillmore, Santa Paula, Ventura, and Oxnard, as well as agricultural pumpers associations). This section summarizes these previous reports relating to the Santa Clara River Valley and describes their relevance to the Piru, Fillmore, and Santa Paula groundwater basins.

2.1 VENTURA COUNTY INVESTIGATIONS

Western practices of stock-raising and small-scale agriculture were introduced to the Ventura County region following the founding of the San Buenaventura Mission in 1782 (SFEI, 2011). Prior to the 1880s, the Ventura County region predominantly supported large cattle (up to about 1864) and sheep ranchos. An extremely dry year in 1877 lead to significant losses to the sheep populations, and landowners within the region quickly transitioned to commercial agricultural land uses, which developed during the period dating from the 1880s to the 1920s (SFEI, 2011). With increased interest from landowners to turn to agriculture production for their livelihoods, increased use of groundwater brought reductions to water table elevations which caused some shallow wells to go dry. As a result of increased demand and reduced supply in the region, numerous applications for water rights were submitted to the State of California (State) in the early 1920s. Competing applications sought to appropriate water from Sespe Creek (Fillmore basin) and Piru Creek (Piru basin) and convey water out of the Santa Clara River watershed into other portions of the County. Little was known about Ventura County water resources at that time and the State reasoned that a study was required before significant water rights could be granted.

Field work for the Ventura County Investigation was initiated in August 1927 and was completed in September 1932. Findings were presented in Bulletin 46 in order to provide additional data to aid in determining the available water supply and inform decision makers at the State (California Department of Public Works, Division of Water Rights; DWR, 1933). Bulletin 46 characterized five years of records from the groundwater basins of Ventura County, including Piru, Fillmore, and Santa Paula basins, and included measurements of rainfall, streamflow, and percolation rates from various stream channels (including Santa Clara River, Piru Creek, Sespe Creek, and Santa Paula Creek) to the underlying groundwater basins (Figure 2-1). Of these five years of records, the region received unusually little rainfall in the first four years, and average to above-average rainfall in the final year.

From the surface water data that had been gathered, Bulletin 46 provided estimates of costs and yields related to potential water supply projects (storage reservoirs, spreading activities, and conveyance). The study also included a crop survey and provided statistics on irrigated area and estimated draft on storage from the groundwater basins at that time. Relating to developing a plan for the area's water supply, the report concluded that due to the extremely expensive nature of surface reservoirs, "consideration should be given to spreading work and other methods of utilizing the natural underground reservoirs prior to construction of reservoirs" (DWR, 1933; page 26). Bulletin 46 concluded that spreading works in the Montalvo (Oxnard) Forebay would be enough at that time for conservation of Santa Clara River water because spreading alone could put sufficient volumes of water into storage and was also the cheapest option (DWR, 1933; page 27). Relating to groundwater basin hydrologic budgets for Piru, Fillmore, and Santa Paula basins, Bulletin 46 presented changes in storage from fall 1927 through fall 1932 (pages 77 – 79 in DWR, 1933) and estimated consumptive use representative of the crops and land use at that time (Table 20 in DWR, 1933).

2.2 VENTURA COUNTY INVESTIGATIONS UPDATE

In 1950, the Ventura County Board of Supervisors and the Ventura County Flood Control District requested that the State Water Resources Board perform a comprehensive investigation related to the water resources of the County. In 1956, the final version of Bulletin 12 was published and provided an update to the earlier Ventura County Investigations in order to reevaluate the "water problems in the County of Ventura and the formulation of plans for their solution" (DWR, 1956). The scope of this expanded Ventura County Investigation included analysis of water quality, the replenishment and utilization of the underground water supplies, and preliminary plans and cost estimates for the development of several surface water reservoirs.

Bulletin 12 utilized previous reports and data dating back to Bulletin 46 (DWR, 1933), primarily analyzing available data from 1936 to 1951, and the newly acquired data from field investigations performed from 1951 to 1953. Additionally, Bulletin 12 identified seven groundwater basins of the Santa Clara River Hydrologic Unit as the most important in Ventura County, from an economic standpoint (Figure 2-2; Piru, Fillmore, Santa Paula, Mound, Oxnard Forebay, Oxnard Plain, and Pleasant Valley). Whereas Bulletin 46 described the area downstream of Santa Paula Basin as the Montalvo Basin (Figure 2-1), Bulletin 12 now identified that area in more detail as the Mound Basin and the Oxnard Forebay.

Consistent with earlier investigations, groundwater occurring in the Piru, Fillmore, and Santa Paula groundwater basins was classified as unconfined, with westerly and northwesterly portions of alluvium in the Santa Paula basin showing localized pressure conditions. Relating to recharge mechanisms for the unconfined aquifers, DWR (1956) identified that "the unconfined ground water basins are replenished by percolation of flow in the Santa Clara River and its tributaries, percolation of direct precipitation, artificial spreading and percolation of surface waters [Piru Creek and Santa Clara River], and by percolation of the unconsumed residuum of water applied for irrigation and other uses." DWR (1956) also identified the major mechanisms for groundwater losses from the basins as "effluent discharge to lower basins [groundwater rising to the surface and flowing as surface water downstream], by pumped extractions to meet beneficial consumptive uses, by consumptive use of phreatophytes in areas of high ground water, and by subsurface flow to lower basins."

Relevant to the water budgets for Piru, Fillmore, and Satna Paula basins, Bulletin 12 estimated detailed annual budgets for each of the groundwater basins. A summary of these results for Piru and Fillmore are presented in Tables 2-1 to 2-3, below. The time periods analyzed were the studies' base period (1936 - 1951) as well as sub-periods within the base periods that represented both wet conditions (1936 - 1944) and dry conditions (1945 - 1951). The period under consideration began and ended with the same available storage value for the Piru, Fillmore, and Santa Paula groundwater basins, resulting in zero change in storage over the analyzed period. Subsurface inflow into the Piru basin was not estimated or described in Bulletin 12.

Table 2-1. Estimated average water budget components for the Piru basin; representative average base period (1936 - 1951), wet conditions (1936 - 1944) and dry conditions (1945 - 1951) from DWR's Bulletin 12 (1956; Table 12).

Budget Components (AFY)	Average for base period (1936 - 1951)	Average for wet period (1936 - 1944)	Average for dry period (1945 - 1951)
Surface inflow	102,000	161,500	34,000
Import	1,800	1,000	2,800
Precipitation	9,600	124,00	6,200
Total inflow	**113,400**	**174,900**	**43,000**
Surface outflow	72,900	123,100	15,500
Subsurface outflow	20,600	21,100	19,900
Export	5,700	5,600	5,700
*Total consumptive use**	14,200	14,500	14,000
Total outflow	**113,400**	**164,300**	**55,100**
Change of storage over period	0	--	--
Minimum	-19,600	--	--
Maximum	44,600	--	--
Average annual storage depletion	38,410	--	--
Minimum	8,000	--	--
maximum	94,300	--	--

*Of applied water and precipitation on basin (including phreatophytes)

Table 2-2. Estimated average water budget components for the Fillmore basin; representative average base period (1936 - 1951), wet conditions (1936 - 1944) and dry conditions (1945 - 1951) from DWR's Bulletin 12 (1956; Table 13).

Budget Components (AFY)	Average for base period (1936 - 1951)	Average for wet period (1936 - 1944)	Average for dry period (1945 - 1951)
Surface inflow	176,900	290,900	46,600
Subsurface inflow	20,600	21,100	19,900
Import	5,700	5,600	5,700
Precipitation	25,800	33,500	17,000
Total inflow	**229,000**	**351,100**	**89,200**
Surface outflow	181,300	296,800	49,200
Subsurface outflow	11,500	11,500	11,500
Export	1,400	400	2,400
*Total consumptive use**	34,800	35,300	34,200
Total outflow	**229,000**	**344,000**	**97,300**
Change of storage over period	0	--	--
Minimum	-16,200	--	--
Maximum	49,300	--	--
Average annual storage depletion	17,570	--	--
Minimum	1,400	--	--
Maximum	61,000	--	--

*Of applied water and precipitation on basin (including phreatophytes)

Table 2-3. Estimated average water budget components for the Santa Paula basin; representative average base period (1936 - 1951), wet conditions (1936 - 1944) and dry conditions (1945 - 1951) from DWR's Bulletin 12 (1956; Table 14).

Budget Components (AFY)	Average for base period (1936 - 1951)	Average for wet period (1936 - 1944)	Average for dry period (1945 - 1951)
Surface inflow	209,700	342,800	57,600
Subsurface inflow	11,500	11,500	11,500
Import	1,400	400	2,400
Precipitation	18,500	24,500	11,700
Total inflow	**241,100**	**379,200**	**83,200**
Surface outflow	203,200	338,700	48,300
Subsurface outflow	7,200	7,200	7,200
Export	1,300	1,400	1,100
*Total consumptive use**	29,400	29,600	29,100
Total outflow	**241,100**	**376,900**	**85,700**
Change of storage over period	0	--	--
Minimum	-10,800	--	--
Maximum	15,600	--	--
Average annual storage depletion	9,210	--	--
Minimum	2,200	--	--
Maximum	22,600	--	--

*Of applied water and precipitation on basin (including phreatophytes)

2.3 UNITED GROUNDWATER MANAGEMENT PLAN

In the 1950s, John F. Mann, Jr. and Associates was contracted by United to conduct several investigations and provide reports (e.g. Mann, 1952; Mann, 1953; Mann, 1958). Mann (1959) synthesized available information from previous investigations and data collected by United staff and other agencies, with the following objectives:

1. “A refinement of the ground water geology of the District (United), in order to analyze the influence of the geologic complexities on ground water management;

2. A recalculation of the District’s ground water inventories on the basis of the refined geologic framework;

3. A detailed study of ground water quality to spell out the influence of poor-quality waters on continued ground water development;

4. A description of the current status of sea-water intrusion, and the development of a general plan for combating it.”

Mann’s (1959) final report estimated potential groundwater yields from the various basins, delineated hydrostratigraphic units (HSUs), and reported on water quality problems specific to certain aquifers and locations (Figure 2-3). Concerning estimated water budgets, Mann performed similar analysis that was presented in Bulletin 12 (DWR, 1956) and previous United investigations (Wilde and Long, 1953; Kawano and Parson, 1956). These “Ground Water Inventories” were a major component of Mann’s report and were based largely on the previous United investigations (Wilde and Long, 1953; Kawano and Parson, 1956), extending them over the representative time period of 1936 – 1957. The water budgets for each of the individual groundwater basins included estimates of inflows, outflows, change in storage as well as estimated available storage for each year considered. Like Bulletin 12, the period of investigation contained wet and dry variability throughout. Water budget inventories were made on a monthly basis, but annual summaries were provided for the water year for each of the water budget components that Mann (1959) included (Table 2-4).

Notably, this report described and included in their reported water budgets the occurrence of groundwater underflow between the various groundwater basins within the District, including subsurface underflow into Piru basin (DWR, 1956 did not estimate this value) as well as the occurrences of rising groundwater within the Piru, Fillmore, and Santa Paula basins. Subsurface underflow was based on available observed water level fluctuations near the basin boundaries. Related to pumping demand and water demand by natural vegetation from the groundwater basin, Mann determined the pumping demand within a basin “by applying unit consumptive use values to acreages devoted to the various crops or other uses” and also considered consumptive use by phreatophytes as part of the pumping demand. Water used in excess of this calculated demand was returned to the groundwater system.

Additionally, more detailed importation and exportation of water for each basin were included in comparison with Bulletin 12. For the Piru, Fillmore, and Santa Paula groundwater basins these considered pumping of groundwater by various entities (e.g. Newhall Land and Farming Company, California Department of Fish and Wildlife at the Fillmore Fish Hatchery, La Cienega Water Company, Southside Improvement Company, and Farmers Irrigation Company) which extracted groundwater outside of a given basin and applied within another, typically downstream, basin. In some cases, these groundwater extraction operations were previously surface water diversion operations in areas of rising groundwater near basin boundaries (e.g. Farmers Irrigation Company).

Lastly, Mann's "Plan for Ground Water Management" (1959) provided safe yield estimates, which defines "the maximum perennial rate of extraction which will not produce certain undesirable conditions," such as:

- "Lower water levels so far as to make pumping uneconomical;
- Causing a serious deterioration of water quality;
- interfering unreasonably with existing water rights."

Mann (1959) stated that to date of the report, the Piru, Fillmore, and Santa Paula groundwater basins had not yet exceeded safe yield during the historical period from 1936 – 1957 considered. Within these basins Mann considered safe yield equal to:

- "The amount of water supplied to satisfy consumptive use requirements for urban and irrigation purposes, and the draft on ground water by phreatophytes;
- Plus the total pumpage exported or surface diversions delivered to the next basin downstream;
- Minus the total imported water"

The safe yield values for Piru, Fillmore, and Santa Paula groundwater basins are provided within Table 2-4, below.

Table 2-4. Piru, Fillmore, and Santa Paula Basin's Average Annual Summary of Groundwater Inventory (AFY) representative of 1936 – 1957 (Mann, 1959).

Average Budget Components (AFY)	Piru	Fillmore	Santa Paula
Flood inflow	75,180	127,880	135,610
Imports	2,580	8,170	6,250
Rising water inflow	--	14,170	27,600
Underflow inflow	240	17,200	5,400
Total inflow to basin[1]	**78,000**	**167,420**	**174,860**
Rainfall penetration	4,070	10,010	5,630
Stream percolation	30,410	24,680	15,420
Artificial spreading	5,140	--	--
Total to groundwater basin[1]	**39,860**	**51,890**	**26,450**
Net consumptive use requirement	8,750	25,140	19,340
Net extraction from groundwater basin	5,520	17,890	13,580
Underflow out	17,200	5,400	1,800
Rising water outflow	14,170	29,040	11,340
Export	3,860	980	580
Total from groundwater basin[2]	**40,750**	**53,310**	**26,720**
Flood outflow	44,770	117,370	147,390
Total outflow from basin[1]	**85,520**	**170,680**	**174,110**
Annual change of storage	**-900**	**-1,420**	**-270**
Minimum[3]	-17,770	-20,170	-10,900
Maximum[3]	44,530	42,970	21,680
Annual available storage	**55,050**	**38,250**	**12,330**
Minimum[3]	12,320	5,380	4,420
Maximum[3]	103,220	91,700	27,330
Safe Yield	**12,600**	**23,100**	**18,500**

[1]Total inflow and outflow to and from each basin/groundwater basin were calculated as the sum of the components inflowing or outflowing

[2]Total from gw basin = Net extraction from gw basin + Underflow out + Rising water outflow + Export

[3]All values are average annual values except for minimum and maximum components related to storage

2.4 VENTURA COUNTY COOPERATIVE INVESTIGATION

As awareness of saltwater intrusion increased, other water quality issues and concerns about long-term water reliability grew within the Oxnard plain. DWR and the Ventura County Flood Control District entered into a cooperative agreement to conduct additional investigations to provide comprehensive studies of geology, hydrology, water quality, and operation-economics of the major groundwater basins within the county (DWR, 1976). These studies would: 1) provide an update to the data compiled in DWR's Bulletin 12 (DWR, 1956) and 2) support development of numerical modeling for regional water resources management planning purposes. The study area included the Piru, Fillmore, Santa Paula, Mound, Oxnard Plain and Forebay basins associated with the Santa Clara River, as well as Las Posas, Pleasant Valley, and Arroyo Santa Rosa Valley (Santa Rosa) basins within the Calleguas Creek watershed. This update was released in two volumes that contained a compilation of various Technical Information Records prepared by Ventura County Department of Public Works' Flood Control and Drainage Department staff (Mukae and Turner, 1975) and DWR staff (DWR, 1975). Mukae and Turner (1975) performed and presented geologic studies that reviewed previous reports, water-well logs, and oil- and gas-well logs to update geologic maps and cross-sections. DWR (1975) presented hydrologic, operational, and economic studies, some of which included new and reinterpreted evaluations of groundwater and surface-water parameters for much of the study area (Figure 2-4). DWR used the data compiled by these investigations (Mukae and Turner, 1975; DWR, 1975) to develop numerical modeling that would be used for future water resources management planning (DWR, 1974a,b), described in Section 3.1, below. The results of these investigations were then summarized in DWR Bulletin 104-8 (DWR, 1976).

2.5 USGS SANTA CLARA RIVER VALLEY INVESTIGATIONS

Beginning in the late 1980s and extending through the 1990s, the United States Geological Survey (USGS) performed investigations within the Santa Clara River and Calleguas Creek watersheds in cooperation with UWCD, The Fox Canyon Groundwater Management Agency and Calleguas Municipal Water District. This cooperative effort also helped to support the USGS' Southern California investigation as part of their Regional Aquifer-System Analysis program (RASA; Sun and Johnston, 1994). Several studies were conducted that focused on data collection and analysis of regional groundwater conditions (Izbicki and others., 1995; data collected from 1989 - 1993), seawater intrusion in the coastal plains (Densmore, 1996; data collected 1989 – 1995), and interactions between groundwater and surface water along the Santa Clara River Valley (Densmore and others, 1992; Reichard and others, 1999; data collected in 1991 and between 1993 – 1995, respectively). Reichard and others (1999) measured discharge and water quality during several time periods that included both base flows as well as conservation releases from Lake Piru (Figure 2-5). In addition to surface water measurement, a monitoring site was installed (RP1) in the Piru basin, about 8,000 ft downstream of the confluence of Piru Creek and the Santa Clara River. The RP1 site consists of five wells which were screened at various intervals below the land surface in order to understand the vertical gradients at that location within the region. Co-located with this well site was a drive point piezometer within the stream bed of the Santa Clara River that provided an estimate of the changes in the stream stage. Continuous monitoring of water levels within the drive point piezometer and the shallow aquifer well at RP1 (RP1-5; perforations at the interval of 50 – 70 feet below land surface) allowed for analysis of the gradients and interaction between the surface water and the groundwater. The USGS report summarized "…the groundwater system and stream-aquifer interactions along the Santa Clara River," and included additional technical discussion of the observed hydrologic conditions (e.g., rising groundwater at subbasin boundaries, correlations of water quality with surface water flow magnitudes, interaction between various aquifers) in the Santa Clara River Valley (Reichard and others, 1998).

2.6 UWCD BASIN CONDITIONS REPORTS

With the USGS well installations and RASA program data collection ending by the mid-1990's, United expanded their own monitoring programs. These efforts continue and have increased over time, and include measuring groundwater elevations in wells, collecting water quality samples from a lessor number of wells, measuring surface water discharge, and collecting surface water samples for water quality analysis (e.g. UWCD, 2017). As water wells have come in and out of operation across the basins, United has revised their program to expand and enhance the monitoring network for increased spatial and temporal resolution. These data collection efforts have supported numerous studies performed by United to better understand the movement of water and change of conditions within the eight groundwater basins within the District's boundaries (Piru, Fillmore, Santa Paula, Mound, Oxnard Forebay, Oxnard Plain, Pleasant Valley, and West Las Posas).

Related to Piru and Fillmore groundwater basins, United helped to prepare a Groundwater Management Plan for the Piru and Fillmore Basin Groundwater Management Planning Council, which represented United, the City of Fillmore, and the Pumpers of the Piru and Fillmore basins (Piru and Fillmore Groundwater Planning Council, 1996). Following this, United produced an Annual Groundwater Conditions Reports from 1997 to 2009 (e.g. UWCD, 1997 and 2010) and Biennial Groundwater Conditions Reports from 2010 to 2015 (e.g. UWCD, 2013, 2015, and 2016). These Fillmore and Piru reports were produced to support water resource initiatives and activities, and summarized recent data related to basin location and dimensions, hydrogeology, precipitation, groundwater recharge and surface flows, reservoir releases, groundwater pumping, groundwater elevations, surface water quality, groundwater quality. Specific topic of interest included Santa Clara River Chloride Total Maximum Daily Load (TMDL) requirements, wastewater reclamation plant discharges, landfills, conditions near the basin boundaries and changes in agricultural land uses over time.

Related to Santa Paula basin, United has produced a *Santa Paula Basin Annual Report* each year since 1997 (e.g. UWCD, 1998, 2019a, and 2020) as a requirement of a 1996 stipulated judgement by the Superior Court of the State of California for the County of Ventura. The judgement established pumping allocations for the Santa Paula basin (United Water Conservation District vs. City of San Buenaventura, original March 7, 1996, amended August 24, 2010). The judgment requires annual reports summarizing results of the monitoring program, and further specifically provides that "United Water Conservation District shall have the primary responsibility for collecting, collating, and verifying the data required under the monitoring program, and shall present the results thereof in annual reports to the Technical Advisory Committee" (UWCD, 2018).

3 PREVIOUS INVESTIGATIONS RELATED TO NUMERICAL MODELING DEVELOPMENT

Several numerical modeling efforts have taken place within Ventura County that focused on the groundwater basins associated with the Santa Clara River and the Calleguas Creek watersheds. The efforts began in the late 1960s and early 1970s, with the initial focus primarily being the coastal plain basins and concerns related to seawater intrusion. However, once modeling tools were developed along the coast, efforts pushed up the Santa Clara River Valley groundwater basins. The following sections briefly detail each of the numerical modeling efforts as well as detail and discuss water budget components that were estimated for the Piru, Fillmore, and Santa Paula groundwater basins.

3.1 CALIFORNIA DEPARTMENT OF WATER RESOURCES

The earliest numerical groundwater flow model of the aquifers underlying the Santa Clara River Valley and Oxnard coastal plain was completed in the early 1970s by DWR. The groundwater flow model developed (DWR, 1974a) used a digital Thiessan-Weber Polygon superposition methodology (adaptation of DWR software, reference not available) that was combined with a newly developed solute-transport model (DWR, 1974b). This work was summarized in Bulletin 104 (DWR, 1976). A total of 158 grid nodes were used for the study area (Figure 3-1) and each represented areal extents ranging from hundreds of acres to several thousand acres. The Piru, Fillmore, Santa Paula, Mound, Las Posas, Pleasant Valley, and Arroyo Santa Rosa Valley basins were simulated using a single layer, and the Oxnard Plain and Forebay basins were simulated using two layers.

The numerical modeling simulated historical transient hydraulic and water-quality conditions for the verification period from the spring of 1957 to the spring of 1967 using 201 time-steps. The model was calibrated using measured groundwater elevations over the entire time period. As part of the calibration process, recharge, transmissivity, and storage coefficients were adjusted to obtain better matches between measured and simulated groundwater levels. Using the calibrated model, DWR selected five management alternatives for analysis over a time period representing the years 1970 – 2020, for the purpose of long-term regional water resources planning (DWR, 1976).

The detailed documentation of the numerical modeling developed by DWR for this investigation (DWR, 1974 a,b) provided some water budget information, but was often presented as net inflows into the modeling sub-domains. The one relevant piece of information related to water budgets of groundwater basins was the estimation of approximately 245 AFY of subsurface underflow into Piru basin representative from 1957 – 1967 (DWR, 1974a; Table 14).

3.2 UNITED STATES GEOLOGICAL SURVEY

In parallel with their data collection efforts of the late 1980s (Section 2.5 above), the USGS also initiated a major numerical modeling effort of the regional alluvial-aquifer systems of the Santa Clara River and Calleguas Creek watersheds. This study of the hydrogeology of the Santa Clara-Calleguas watersheds was completed as part of the Southern California Regional Aquifer-System Analysis (RASA) program (Sun and Johnston, 1994). The regional groundwater system in southern Ventura County was selected as a representative southern California basin for study, with cultural practices and hydrogeologic processes common to other basins or groups of basins.

3.2.1 GROUNDWATER SURFACE WATER OPTIMIZATION STUDY

The first local modeling effort by the USGS (Reichard, 1995) focused on the current study area groundwater basins as part of the Santa Clara River and adjacent region (Figure 3-2). This study was an extension of the original DWR modeling described in Section 3.1, above (DWR, 1974a,b; 1976). The USGS developed a stochastic simulation-optimization model and used it to analyze a hypothetical 15-year planning period for the Santa Clara - Calleguas basin beginning in October 1989. In order to do so, Reichard (1995) applied the hydrogeological data that was included in the original digital Thiessan-Weber Polygon to be used with the USGS's recently-developed groundwater flow modeling code, MODFLOW (McDonald and Harbaugh, 1988). Like the original DWR modeling, this work simulated the multiple aquifers of the region using one or two model layers. The Upper Aquifer System (UAS) was the only layer represented in the Piru, Fillmore, Santa Paula, and Mound basins. The Lower Aquifer System (LAS) was the only layer represented in the Las Posas, Pleasant Valley, and Arroyo Santa Rosa Valley basins. The Oxnard Plain and Forebay basins were simulated with both the UAS and LAS present. Model cells were 0.5 mile x 0.5 mile in extent, and the system was modeled assuming heterogenous, isotropic confined flow in both layers. Previously simulated water levels representing 1967 (DWR, 1976) were used to represent initial conditions for a six-year transient simulation (using annual stress periods) from 1984 to 1989. The initial simulation used average measured pumping and artificial recharge over the simulated period. The final water level elevations from the six-year transient simulation were then used as initial conditions for Reichard's stochastic simulation-optimization modeling over the 15-year planning period which was constrained to meet demands (pumping and pipeline deliveries) across 13 "water-demand sectors" representative of 1984 – 1989 conditions on an annual basis. Reichard's (1995) work included uncertainty using probability distributions of streamflow within the Santa Clara River available for diversion and artificial recharge, and presented allocation alternatives for the region that optimized groundwater and surface water management strategies to satisfy the demands and minimize seawater intrusion.

3.2.2 RASA MODEL

Building upon Reichard's (1995) work, the USGS published a significant numerical modeling update for the Santa Clara River and Calleguas Creek watersheds in 2003 (Hanson and others, 2003; commonly referred to as "the USGS RASA model" due to its contribution to the USGS' RASA program). The domain was again discretized into 0.5 mile x 0.5 mile cells which included the Piru, Fillmore, Santa Paula, Mound, Oxnard Plain, Oxnard Forebay, Pleasant Valley, Santa Rosa, East Las Posas, West Las Posas, and South Las Posas basins, and extended farther offshore than the previous regional modeling domains (Figure 3-3). The USGS RASA model was also constructed using their groundwater flow modeling code, MODFLOW (McDonald and Harbaugh, 1988), but this time included two layers across the entire modeling domain in order to represent UAS and LAS aquifers within each basin (Figure 3-4). The USGS RASA model simulated the UAS as unconfined within the Piru, Fillmore, and Santa Paula basins, as well as the Oxnard Forebay, the Northeast Oxnard Plain, Las Posas Valley, and parts of Santa Rosa Valley (Figure 3-4, blue shaded area labeled as subareas with valley-floor recharge). In all other areas UAS aquifers were simulated as confined, and all basin LAS layers were simulated as confined. Additional modeling packages were included in order to simulate routing of streamflow (Prudic, 1989), land subsidence (Leake and Prudic, 1991), and faults as horizontal-flow-barriers to groundwater flow (Hsieh and Freckleton, 1993).

In the upper basins of the Santa Clara River Valley (Piru, Fillmore, and Santa Paula), data from shallow wells (depths less than 50 feet) were noted to have had higher observed water levels than water levels observed in nearby wells completed within the same upper aquifer system, but deeper in comparison (note: there are very limited wells this shallow). The USGS RASA report (Hanson and others., 2003; Page 69) commented that this "may indicate some degree of hydraulic separation between the Shallow (recent alluvium) aquifer and the underlying aquifer along the Santa Clara River." Observed water levels within the UAS of the Santa Paula and Piru basins were observed to be 10 – 25 feet higher than water levels in the LAS, which illustrates downward vertical gradients within those basins. Calibration within the Piru, Fillmore and Santa Paula basins were dependent on about a dozen wells across the LAS (4) and UAS (9) (Hanson and others., 2003; Page 99, Figures 13, 14, 15, and 21). This split between the targets available in the UAS and LAS calibrations was likely due to the availability of drilled wells being skewed toward shallower depths, given the relatively higher water-table and water production capacity of wells within those basins.

The USGS RASA model investigation included results from three model runs: one "historical" model and two "forward" model simulations to represent projected future groundwater conditions. The historical model scenario was simulated from 1891 – 1993 using estimated and reported pumping for agricultural, municipal and industrial users as well as estimated and measured streamflow and diversions. The historical model was used for calibration, with targets of estimated historical surface-water flows and measured groundwater levels during the period from 1891 –

1993. The years 1984 – 1993 were the only period when reported pumping records were available for most of the model domain. The initial conditions for transient calibration were derived from predevelopment steady-state conditions, which were considered adequate when having water levels of 40 to 50 feet above sea level near the coast, based on early hydraulic conditions previously reported (Freeman, 1968). The 103-year transient model simulation used 3-month stress periods in order to represent season changes, and 12 equal time-steps for each stress period in order to represent seasonal variability. Hydrologic budget components were estimated in the report, however, many were representative of the entire SCR-Calleguas domain, rather than detailed budgets for each basin. The Fillmore and Piru groundwater basins were often lumped with Santa Paula for analysis of the Santa Clara River Valley basins as a unit.

Following calibration efforts, the model was used to project future groundwater flows and to evaluate several alternatives to future groundwater flow, including six proposed water-supply projects. These future assessments were not focused on the upper basins, but rather were related to overdraft in the coastal basins and assessing the risk of increased seawater intrusion. The primary forward model scenario was based on historical hydrologic records for the years 1970 – 1993 in order to simulate a 24-year projection of future groundwater flows representing the years 1994 – 2017. The historical record period (1970 – 1993) contained 13 "dry" and 11 "wet" years, and the average wet and average dry pumping and streamflow values across the entire period were used for each individual wet and dry year, accordingly. In addition to the primary forward modeling approach, another approach was used for a 44-year projection of future groundwater flows representative of 1994 – 2037, that used statistical and time-series signal processing of long-term historical annual precipitation totals (1905 – 1993) in order to estimate precipitation into the future.

3.3 MODELING UPDATES SPONSORED BY UWCD

The USGS RASA model (Hanson and others., 2003) described in the previous section was an outcome of decades of geologic and hydrologic investigations within the Santa Clara River and Calleguas Creek watersheds. However, its use of only two model layers to represent the multiple aquifers within the UAS and LAS was a simplification that limited the degree to which it could be calibrated. This limitation prevented it from being able to evaluate impacts of future pumping/recharge scenarios on specific aquifers, particularly in coastal areas impacted by seawater intrusion.

Following the completion of the USGS RASA model, United went on to support subsequent efforts intended to further refine and enhance the model in order to apply it for better regional understanding and planning of water resources. These efforts extended over a period of about seven years in which United supported three different organizations for model updates and refinements, including:

- ETIC Engineering (2002 to 2006)
- CH2M HILL (early 2006)
- HydroMetrics: (mid 2006 – 2008)

The various refinements and modifications from the USGS RASA model were noted in the *Groundwater Management Plan* for the Fox Canyon Groundwater Management Agency (FCGMA and others, 2007), including:

- Refinement of cell size from 1/2 mile x 1/2 mile to 1/6 mile x 1/6 mile for the alluvial basins
(Figure 3-5, this report).
- Reduction in grid size. In the original USGS RASA model only 28% of the grid cells were active and in the modified model 47% of grid cells were active (ETIC, 2003).
- Extension of the historical and forward model to include 1994 to 2000 hydrology.
- Addition of a zone of lower hydraulic conductivity in the Lower Aquifer System extending in a linear trend from the Camarillo Hills to Port Hueneme.
- Addition of a third layer in the Piru, Fillmore and Santa Paula basins to better simulate the more permeable alluvium along the Santa Clara River, Sespe Creek, Santa Paula Creek and Piru Creek. In other words, this partitioned the UAS into two-separate UAS layers.
- Recalibration of the Forebay and Oxnard Plain portions of the model over the period 1983 to 1998 to better reflect the increased diversions and recharge that had occurred in this area since the USGS originally calibrated the model (HydroMetrics, 2006).
- Expansion of the forward model period to a full 55 years to reflect the climate and hydrology of the years 1944 to 1998. This period was a commonly-used base period because it starts and ends in very wet years, spans several dry cycles, and represents zero cumulative departure for rainfall across the period.

- Refinement of time discretization from 3-month stress periods to 1-month stress periods (using 300 time-steps per stress period).

As the various revisions and updates were completed, the regional groundwater flow model was used for several local studies related to proposed water projects and management strategies (FCGMA and others, 2007):

- Oxnard Plain LAS and UAS overdraft analysis – UWCD (2001)
- GREAT Project EIR – UWCD and City of Oxnard
- Las Posas Basin ASR project operations – Calleguas MWD
- City of Fillmore water supply planning – UWCD and City of Fillmore
- Pleasant Valley AB303 grant study – UWCD
- Fox Canyon Groundwater Management Agency Groundwater Management Plan – UWCD and FCGMA

3.4 LOWER SANTA CLARA RIVER SALT AND NUTRIENT PLAN

A consultant team consisting of Larry Walker Associates, in association with HydroMetrics, Carollo Engineers, Rincon Consultants, and Dr. Norm Brown (affiliated with University of California, Santa Barbara) prepared the Lower Santa Clara River (LSCR) Salt and Nutrient Management Plan (SNMP) under the direction of the Ventura County Public Works Agency's Watershed Protection District (LWA and others, 2015; Figure 3-6). The purpose of the SNMP was to understand the potential impacts of increased future use of recycled water upstream and within the basins containing the LSCR. The plan was created in order to satisfy the requirement set by the State Water Resources Control Board (State Water Board) following the State Water Board's adoption of the Recycled Water Policy (State Water Resources Control Board Resolution No. 2009-0011) in February 2009, which required the development of regional or sub-regional SNMPs for groundwater basins within California.

3.4.1 LSCR SNMP GROUNDWATER BASIN WATER BUDGETS

The LSCR SNMP provides the most recent summary of the water budgets for the Piru, Fillmore and Santa Paula groundwater basins based on numerical modeling. Because the area included in the LSCR SNMP is almost entirely dependent on groundwater for water supply, the SNMP was focused on sources and sinks related to the groundwater basins. The consultant team leveraged HydroMetrics' experience with the previous modeling updates supported by United, and as well as work HydroMetrics performed for United to acquire numerical modeling output from other entities relating to fluxes into and between the basins of the groundwater basins (see Section 4.2).

The hydrologic numerical modeling supporting the SNMP was based on the primary forward modeling run and relevant modifications of the USGS RASA model (Hanson and others, 2003) sponsored by United and described in Section 3.3, above. In the model, the Piru, Fillmore, and Santa Paula basins have three layers, with layers 1 and 2 defining the UAS and layer 3 defining the LAS (LWA and others, 2015, Section 7.1.2). The results represent surface water modeling and groundwater modeling over 17 total water years (WYs), from 1996 - 2012. Climatic statistics were calculated based the United-sponsored forward modeling run (see section 3.3) using 1944 – 1998 data. Each WY from 1996 – 2012 was then classified as wet, dry, or average, and forced with the values calculated from the historical climatic data accordingly. These transient groundwater flow results were then used to inform a steady-state mass balance model which calculated groundwater concentrations for certain salts the UAS each year, using surface water inflows and outflows and groundwater flow data available over the 1996 – 2012 simulation period. Each groundwater basin was divided into various subdomains in calculating the annual steady-state concentrations, and estimated flows were adjusted for each year to maintain equilibrium (inflows approximately equal to outflows). Results presented in this report are the average values of each water budget component considered, as summarized below in Tables 3-1 to 3-3 for the Piru, Fillmore, and Santa Paula groundwater basins.

Table 3-1. Piru Basin Salt and Nutrient Management Plan Water Budget; Average values of Water Years 1996 – 2012 (LWA and others, 2015; Tables 7-3, 7-4, and 7-5).

INFLOW	Component	RATE (AFY)
GW Flows	Upper Santa Clara River Aquifer Underflow	360
Non-Land Use Surface Flows	Managed Recharge	1150
	Precipitation Recharge	1990
	Santa Clara River and Tributaries	60670
	Mountain Front Recharge	2620
Land Use Surface Flows	Ag irrigation with SW	1240
	Ag irrigation with GW	2760
	Water Treatment Percolation Ponds	210
	Septic Systems	67
OUTFLOW		
GW Flows	Seepage to Santa Clara River	1990
	GW production	9210
	Upper Aquifer Underflow to Fillmore basin	10480
	Net Lower Aquifer Underflow to Fillmore basin[1]	25220

Table 3-2. Fillmore Basin Salt and Nutrient Management Plan Water Budget; Average values of Water Years 1996 – 2012 (LWA and others, 2015; Tables 7-6, 7-7, and 7-8).

INFLOW	Component	RATE (AFY)
GW Flows	Piru Upper Aquifer Underflow to Filmore Basin	10480
	Net Lower Aquifer Underflow to Fillmore[1]	25220
Non-Land Use Surface Flows	Precipitation	9170
	Santa Clara River and Tributaries	12470
	Mountain Front Recharge	3530
Land Use Surface Flows	Municipal irrigation	230
	Ag irrigation with GW	9480
	Water Treatment Percolation Ponds	1040
	Urban irrigation recycled water	50
	Septic Systems	210
OUTFLOW		
GW Flows	Underflow to Santa Paula Basin	16990
	Seepage to Santa Clara River	14420
	GW production	39470

Table 3-3. Santa Paula Basin Salt and Nutrient Management Plan Water Budget; Average values of Water Years 1996 – 2012 (LWA and others, 2015; Tables 7-9, 7-10, 7-11, and 7-12).

INFLOW	Component	RATE (AFY)
GW Flows	Santa Paula Aquifer Underflow from Fillmore Basin	16,990
Non-Land Use Surface Flows	Precipitation	8,770
	Santa Clara River and Tributaries	1,370
	Mountain Front Recharge	3,600
Land Use Surface Flows	Municipal irrigation	960
	Ag irrigation with GW	7,310
	Water Treatment Percolation Ponds	2,230
	Ag irrigation with SW	90
	Septic Systems	180
OUTFLOW		
GW Flows	Underflow to Oxnard Forebay Aquifer	8,090
	Underflow to Mound Aquifer	1,010
	GW production	41,040

4 PREVIOUS INVESTIGATIONS DETAILING SUBSURFACE UNDERFLOW ESTIMATES

In addition to the studies that focused on all three of the study area groundwater basins, there have been several investigations and numerical modeling efforts that have focused on: 1) The Santa Clara River Valley East basin, located directly upstream of the Piru basin and 2) the Santa Paula groundwater basin, with work related to technical support and resulting management and updates following adjudication of the basin. The following sections will provide some background related to the studies and detail the relevant water fluxes that were estimated by those studies.

4.1 SANTA CLARITA VALLEY REGIONAL GROUNDWATER FLOW MODELING

The Santa Clarita Valley Regional Groundwater Flow Model (SCVRGFM) was developed as part of the work of scope contained in an August 2001 Memorandum of Understanding that was signed by the Upper Basin Water Purveyors in the Santa Clarita Valley of Los Angeles County and by United Water Conservation District in Ventura County. The final numerical model documentation was completed in April 2004 (CH2M HILL, 2004). This modeling effort used MicroFEM (Hemker and de Boer, 2003), a finite-element numerical modeling tool for the groundwater modeling. MicroFEM was used to calibrate and simulate a steady-state model over the calendar years 1980 – 1985, which provided the initial conditions to a transient model that was calibrated and simulated over the calendar years 1980 – 1999. The modeling extended over the Santa Clara River Valley East groundwater basin (Figure 4-1). The relevant information from this work related to the downstream Piru groundwater basin is the estimated groundwater underflow that moves between the basin near the Los Angeles/ Ventura County Line. The SCVRGFM estimated the groundwater underflow across the county line using a specified head boundary (805 feet) in the alluvial aquifer material based on groundwater elevation contours interpreted by Richard C. Slade (1986, 2002; using spring 2000 water table elevations). Estimates of subsurface underflow entering across the Los Angeles/ Ventura County Line for the steady-state and the transient model simulations are shown in Table 4-1, below. There are believed to be issues in the assumption made during this investigation that considered hydrogeologic conditions east of the Los Angeles/ Ventura County Line to be the same at the USGS County Line gage, where streamflow was compared. Because of this, subsurface underflow at the County Line and surface flows at the USGS County Line gage were essentially presented as being co-located, which is now understood to be problematic (Figure 4-2). For that reason, we present the underflow results from this investigation as being representative as the underflow entering across the Los Angeles/ Ventura County Line. These differences are described in more detail in Section 4.4. Lastly, streamflow was simulated in this investigation at the USGS County Line gage and monthly discharges were compared with observational records. Annual streamflow out of the modeling domain were not presented alone in the investigation's water budget summary, but as part of "total discharge", which included all discharge to the Santa Clara River, evapotranspiration, subsurface outflow, and pumping.

Table 4-1. Subsurface underflow at County Line related to initial Santa Clarita Valley regional groundwater flow modeling (CH2M HILL, 2004).

Model Run	Period	Subsurface underflow (AFY)
Steady-State	1980 - 1985	6,600
Transient, minimum	1980 - 1999	6,520
Transient, maximum	1980 - 1999	7,017
Transient, average	1980 - 1999	6,703
Transient, median	1980 - 1999	6,657

A calibration update to the SCVRGFM occurred within the following year (CH2M HILL, 2005), which extended the modeling period by a little more than 5 years for validation purposes. The original simulation period of January 1980 – December 1999 became a simulation period of January 1980 – February 2005. This revised transient simulation resulted in updated estimates of subsurface flow at the county line, which are shown in Table 4-2, below. From this update, subsurface underflow at the Los Angeles/ Ventura County Line increased nearly three-fold. As part of the calibration update, changes in the boundary condition representing underflow into their domain at the eastern portion of their model boundary were reported and a previously neglected underflow component from the upstream Acton basin was introduced following additional field visits along the Santa Clara River channel. This underflow component was estimated to be a considerable volume (average of 16,538 AFY from 1980 – 2005), which appears to have propagated down-gradient and significantly increasing in the estimated subsurface underflow outflowing downstream into Ventura County.

Table 4-2. Subsurface underflow at the County Line related to updated Santa Clarita Valley regional groundwater flow modeling (CH2M HILL, 2005).

Model Run	Period	Subsurface underflow (AFY)
Transient, minimum	1980 - 2005	18,059
Transient, maximum	1980 - 2005	18,802
Transient, average	1980 - 2005	18,324
Transient, median	1980 - 2005	18,315

4.2 UPPER SANTA CLARA RIVER TRANSPORT MODELING

Following finalization of SCVRGFM reports mentioned above, development of a new hydrologic model was completed for the eastern portions of the Santa Clara River watershed that would allow for improved simulation of the interaction between groundwater and surface water (CH2M HILL/HGL, 2006 and 2008). This work focused on simulating the fate and transport of chloride and total dissolved solids throughout the Santa Clara River Valley East groundwater basin, the Piru groundwater basin, and extended slightly into the Fillmore groundwater basin (Figure 4-3). This new effort was motivated by requirements set by the Los Angeles Regional Water Quality Control Board to perform several major studies related to a Total Maximum Daily Load for chloride within the Santa Clarita Valley. One of these major studies included the need to develop a Groundwater/Surface-water Interaction Model (GSWIM) in order to assess long-term impacts in the Piru basin.

For the GSWIM modeling effort, CH2M HILL collaborated with HydroGeoLogic, Inc. (HGL) and used a hydrologic modeling code called MODHMS (HGL, 2006). MODHMS was based on the USGS' MODFLOW model and was developed and enhanced by HGL in order to conduct simulations of fully-integrated groundwater and surface-water flow (including saturated and unsaturated flow) and solute transport. The model calibration started with a steady-state simulation using January 1975 for average boundary conditions (groundwater elevations, streamflow locations, and solute concentrations) throughout the modeling domain (CH2M HILL/HGL, 2008, Task 2B-1, Section 3.5). The steady-state groundwater elevation solution was then used as initial conditions for a transient integrated groundwater and surface water simulation over calendar years 1975 – 2005. Initial calibration was performed using monthly stress periods and without considering chloride concentrations, but the final calibration was performed using daily stress periods which allowed comparison of daily streamflow discharge rates and chloride concentrations to calibration targets. After GSWIM was calibrated at the daily temporal resolution, the model was used to simulate future scenarios in order to evaluate potential future basin conditions given the anticipated future loads of chloride and total dissolved solids within the watershed.

Like the previous Santa Clarita Valley modeling described in Section 4.1 above, the relevant groundwater information from this work that relates to the downstream Piru groundwater basin is the estimated groundwater underflow that moves between the basin near the Los Angeles County/Ventura County line. The results of calibrated underflow coming across the county line were not explicitly detailed within the numerical modeling report for this work (CH2M HILL and HGL, 2008). United contracted HydroMetrics to review the numerical modeling effort and report. As part of that analysis HydroMetrics requested additional data from the CH2M HILL team regarding the flow, both surface and subsurface, across the county line and into the Piru groundwater basin. From that work, HydroMetrics reported to United that the CH2M HILL/HGL numerical model simulated most of the water flux across the county line occurred as surface water, with relatively little water flowing into the Piru groundwater basins as subsurface flow within the underlying alluvium surrounding the streambed (Figure 4-4; HydroMetrics, 2008). Though not calculated by HydroMetrics, the plot referenced here suggests the CH2M HILL/HGL numerical modeling estimated annual average subsurface flow into the Piru groundwater basin at approximately 1,084 AFY. This value was computed for this document using an average daily value of 1.5 cfs for subsurface flow within the alluvium (from Figure 4-4) and converting that to AFY (1 cfs equates to approximately 1.98 AFD; 365 days within 1 year).

Additionally, HydroMetrics noted that the simulated surface water flows showed a good match with measured flows, but with slight overprediction during low-flow periods (Figure 4-5). If the overall estimate of flow in the Blue Cut area is correct, this overprediction of streamflow during summer baseflow periods could mean that actual subsurface flow in this area was less than what was simulated within the CH2M HILL/HGL (2008) numerical modeling.

During CH2M HILL/HGL's GSWIM model development, it was determined that United's numerical model used an estimated value of approximately 2,000 AFY flowing into the Piru groundwater basin as subsurface flow (CH2M HILL/HGL, 2006; Table C-1). Additionally, The USGS RASA model (2003) only specified stream inflow and mountain-front recharge into Piru basin and did not explicitly state that subsurface underflow from the Santa Clarita Valley was included.

4.3 SANTA PAULA SAFE YIELD

The Santa Paula groundwater basin is located downstream of the Fillmore basin. Several past studies have investigated hydrologic budget components within the Santa Paula basin, with the USGS numerical model and United-sponsored modifications thereafter providing the only estimates from numerical groundwater models.

The first report that documented the subsurface outflow from Fillmore basin to Santa Paula basin in the context of adjudication and legal decision making was the *Water Resources Evaluation Santa Paula Ground Water Basin Ventura County, California* (Law/Crandall, 1993). This report used wells near the basin boundaries which had corresponding water level measurements for most of the period 1973 – 1987. Using observed well tests for aquifer properties and hydraulic gradients, Darcy's Law was used to calculate the estimated average subsurface flow from the Fillmore basin to the Santa Paula basin as 3,914 AFY for the period 1956 – 1990. These methods were very similar to previous methods used by DWR (1956) and Mann (1959), and the report briefly mentioned subsurface outflow from Santa Paula basin and agreed with Mann (1959) that "the average subsurface outflow through the recent river deposits is approximately 1,800" AFY, mentioning that it was "consistent with their estimates of the transmissivity, outflow area, and local gradient."

The most-recent report that estimated the subsurface outflow from Fillmore basin to Santa Paula basin was the *Santa Paula Basin Hydrogeologic Characterization and Safe Yield Study Ventura County, California* (DBS&A and RCS, 2017). This report used observed well test results for hydraulic conductivity for both the undifferentiated alluvium and the more consolidated San Pedro Formation, as well as observed groundwater elevations from 2000, 2010, and 2013 to calculate groundwater flux using Darcy's Law (Figure 4-6). From this analysis, the average subsurface flow from the Fillmore basin to the Santa Paula basin was estimated to be 25,244 AFY. Within this report they also present the findings of a similar study from Bachman (2015), which estimated groundwater flux across the same basin boundary area to be 19,700 AFY. DBS&A and RCS (2017) also reported estimated subsurface outflow from the Santa Paula basin to be 7,349 AFY, using similar methodology to Santa Paula basin subsurface inflow calculation.

4.4 SUMMARY OF SUBSURFACE UNDERFLOW ESTIMATES

For the purpose of comparison, this section summarizes the previously estimated subsurface underflow budget components. Previous estimates of subsurface underflow into Piru groundwater basin ranges from 240 AFY to 18,300 AFY (Table 4-3). Previous estimates of subsurface underflow into Fillmore groundwater basin ranges from 17,200 AFY to 39,300 AFY (Table 4-4). Previous estimates of subsurface underflow into Santa Paula groundwater basin ranges from 3,900 AFY to 25,200 AFY (Table 4-5). Previous estimates of subsurface underflow out of Santa Paula groundwater basin ranges from 1,900 AFY to 9,100 AFY (Table 4-6).

Table 4-3: Summary of previous estimates made by various entities relating to average annual subsurface underflow into Piru groundwater basin

INFLOW (AFY)	Representative Years	Source
240	1936 – 1957	Mann, 1959
245	1957 – 1967	DWR, 1974a
6,703	1980 - 1999	CH2M HILL, 2004
18,324	1980 - 2005	CH2M HILL, 2005
2,084	1986 - 2000	UWCD (presented in CH2M HILL/HGL, 2006)
1,084	1975 - 2005	HydroMetrics (2008) review of CH2M HILL/HGL (2008)
360	1996 - 2012	SNMP (HydroMetrics), 2015

Table 4-4: Summary of previous estimates made by various entities relating to average annual subsurface underflow into Fillmore groundwater basin

INFLOW (AFY)	Representative Years	Source
20,600	1936 - 1951	DWR, 1956
17,200	1936 – 1957	Mann, 1959
44,287	1975 - 2005	CH2M HILL/HGL, 2008
35,700	1996 - 2012	SNMP (HydroMetrics), 2015

Table 4-5: Summary of previous estimates made by various entities relating to average annual subsurface underflow into Santa Paula groundwater basin

INFLOW (AFY)	Representative Years	Source
11,500	1936 - 1951	DWR, 1956
5,400	1936 – 1957	Mann, 1959
3,900	1956 - 1990	Law/Crandall, 1993
16,990	1996 - 2012	SNMP (HydroMetrics), 2015
19,700	1947 - 2014	Bachman, 2015*
25,244	1999 – 2012	DBS&A and RCS, 2017**

*Representative years weighted using of wet (2005), average (2010), and dry (2012) years, respectively, using spring and fall conditions for each

**Average value derived from representative median (2000), 75th percentile (2010), and 25th percentile (2012) water years, respectively, based on precipitation from rain gauges located in Saticoy and Ventura over the hydrologic base period of 1999 – 2012. Minimum value reported was 22,320 AFY and maximum value reported was 30,909 AFY.

Table 4-6: Summary of previous estimates made by various entities relating to average annual subsurface underflow out of Santa Paula groundwater basin

OUTFLOW (AFY)	Representative Years	Source
7,200	1936 - 1951	DWR, 1956
1,800	1936 – 1957	Mann, 1959
1,800	1956 - 1990	Law/Crandall, 1993
9,100	1996 - 2012	SNMP (HydroMetrics), 2015
7,350	1999 – 2012	DBS&A and RCS, 2017**

**Average value derived from representative median (2000), 75th percentile (2010), and 25th percentile (2012) water years, respectively, based on precipitation from rain gauges located in Saticoy and Ventura over the hydrologic base period of 1999 – 2012.

The various investigations described in the previous sections of this report all represented various time periods over the last century, and because of that we expect to see differences due to natural variability in water inputs into the systems as well as systematic changes in certain inputs (such as increased flows from Los Angeles County waste water due to increased development).

Related to the range of estimated inflowing subsurface underflow values reported for Piru basin, there is a significant issue in comparing these values because different studies estimated subsurface underflow at different locations. Most of the values were representative of flows entering into previous Piru basin boundary (Mann, 1959), prior to DWR's 2003 update (DWR, 2003) and the most recent 2019 modifications (DWR, 2019; Figure 4-7). The CH2M Hill (2004 and 2005) numerical modeling estimates are the only estimates affected by this discrepancy because of where their investigation terminated. An important concern related to the presentation of the CH2M Hill (2004 and 2005) underflow estimates is that the investigators made the assumption that the hydrogeologic conditions several miles east of the Los Angeles/ Ventura County Line also represented the conditions in an around the County Line gage (Figure 4-2). In fact, the Los Angeles/ Ventura County Line is located approximately 2/3-mile approximately upstream from the USGS County Line streamflow gage.

For context, when the CH2M Hill (2004 and 2005) projects were conducted, there was no groundwater well information in the County Line area and groundwater well data from several miles into the eastern groundwater basin within Los Angeles County was used to inform aquifer thickness in Ventura County. With subsequent investigations conducted related to the data gap in the County Line gage area (e.g. Geomatrix, 2006; CH2M Hill/HGL, 2008), thickness of water-bearing aquifer material within the County Line gage location was approximated to be 10 feet at the gage location. United staff estimate the thickness of water-bearing aquifer material increases to approximately 30 feet in the Newhall gage area where more groundwater well information is known (Figure 4-7). Therefore, the CH2M Hill (2004 and 2005) reported subsurface underflow values are likely largely overestimated for subsurface underflows at the County Line gage, but good initial estimates for subsurface underflow at the Los Angeles/ Ventura County Line as well as the recently updated Piru basin boundary (Figure 4-7).Following the field investigations near the County Line gage location, the CH2M HILL/HGL (2008) estimate into the Piru basin boundary (Mann, 1959) is believed to be the best approximation for the historical basin boundary given that additional information was known in the vicinity of the USGS County Line gage as well as the fact that no numerical model boundary conditions were located near this area of interest to affect estimates.

Related to the range of estimated inflowing subsurface underflow values reported for Fillmore basin, the estimates for the average have variability that could be explained by the various time periods examined. The CH2M Hill/HGL (2008) estimates ranged from 23,345 AFY to 111,205 AFY, with the upper range representative of 2005, which was an extremely wet year. The implementation of a specified head boundary condition that completed their modeling domain was located just downstream of the Piru and Fillmore basin boundary and set to a constant elevation of 10 feet below the surface of the Santa Clara River channel. Their subsurface underflow estimate should also be viewed as having potential issues because the proximity of the boundary condition to the water budget component of interest as well as the implementation of a specified head boundary condition which could be influencing the gradient across the basin to conditions that are not present during a given wet or dry period. Specifically, the upper value of 111,205 AFY of subsurface underflow during 2005 is likely to be greatly overestimated because the specified head boundary just downstream of this boundary creates a sink that results is a large amount of water draining out of the Piru basin when really the basins would be extremely full during this exceptionally wet period.

Finally, related to the range of estimated inflowing and outflowing subsurface underflow values reported for Santa Paula basin, the estimates for the averages have variability that could be explained by the various time periods examined. Although more recent numerical modeling estimates are not available to detail these components, Bachman (2015) and DBS&A and RCS (2017) did both look at these values during more recent time periods, and produced similar results in line with earlier estimates.

5 GROUNDWATER BASIN BOUNDARY MODIFICATIONS

This section briefly describes and illustrates recent changes to the DWR groundwater basin boundaries. The historical boundaries that have been used in the previous studies discussed in this report differ from the new boundaries. A comparison of the new basin boundaries to the older boundaries is warranted, as the most recent boundaries will be used in upcoming and future numerical modeling reports from United and the GSAs in their reporting to DWR for the Piru, Fillmore, and Santa Paula basins.

5.1 BACKGROUND AND MODIFICATIONS

The groundwater basin boundaries for the Piru, Fillmore, and Santa Paula basins were first presented in DWR's Bulletin 46 (1933). DWR (1956) updated these and Mann (1959) refined the basin boundaries presented by DWR (1956). Most of the studies previously discussed in this report utilized these Mann (1959) boundaries, or close variations, for their own studies and water budget component estimates (Mann, 1959; Hanson and others., 2003; LWA and others, 2015).

Figure 5-1 shows the groundwater basin boundaries that have historically been used by United and others during investigations along the Santa Clara River within Ventura County. These basin boundaries are all largely based on the delineation presented by Mann (1959). DWR updated their basin boundaries in 2003 (DWR, 2003) , which saw: 1) the expansion of Piru basin to include lower Piru Creek as well as extend east toward the Ventura/Los Angeles County line, 2) expansion of Fillmore basin up the hillslopes where aquifer material outcrops beyond the extent of alluvial deposits, and 3) expansion of Santa Paula basin up the hillslopes where aquifer material outcrops and to include Santa Paula Creek. The update to Santa Paula basin aligned it more closely, but not exactly, with the settlement boundary (see Section 2.6).

With the development of the GSA and defining their boundaries, DWR revised their Bulletin 118 groundwater basin boundaries from 2003 (DWR, 2003) and released the updated extents for review and requests for modifications in 2016 (DWR, 2016). Local agencies that were in the process of forming the GSAs for those basins were tasked with reviewing the revised DWR boundaries and submit requests for modifications. DWR was to accept modifications that were either scientifically or jurisdictionally motivated and based on relevant geologic and geographic data. Two separate rounds of modifications (2016 and 2018) were used by DWR to finalize the extents of the forming GSAs groundwater basin boundaries in February of 2019 (DWR, 2019).

For the Fillmore and Piru basins, United played the lead role in the analysis and submission of requests for modifications to the updated boundaries. Mound Basin GSA requested modifications for the shared boundary between the Santa Paula and Mound basins. Four notable modifications were made relating to the connection between these basins: 1) Scientific Internal modification of the Fillmore Basin and Piru subbasins, which better reflected the location of hydrologic connection manifested at the surface between the Fillmore and Piru basins (rising groundwater into the Santa Clara River); 2) Scientific External modification along the northern and southern portions of the Fillmore and Piru subbasins boundaries, which edited some misplaced geologic contacts as well as included alluvial deposits running upward in various canyons that drain into the basins; 3) a Jurisdiction Internal modification of the Santa Paula and Fillmore subbasins boundaries, which aligned the western end of the Fillmore Basin with the stipulated judgment boundary of the Santa Paula Basin; 4) a Jurisdiction Internal modification of the Mound and Santa Paula subbasins boundaries, which aligned the eastern end of the Mound subbasin with the stipulated judgment boundary of the Santa Paula Basin The formal documentation of the accepted modifications requests can be found on the DWR website at (last accessed: November 2020):

https://sgma.water.ca.gov/basinmod/modrequest/preview/191

and

https://sgma.water.ca.gov/basinmod/modrequest/preview/230

A comparison of the representative previous basin boundaries (Mann, 1959) to the current and official basin boundaries (DWR, 2019) can be seen in Figure 5-1 and Table 5-1, below.

Table 5-1: Piru, Fillmore and Santa Paula groundwater basin boundary modifications areal comparison

	Groundwater Basin Area (acres)		
	Mann (1959)	DWR (2019)	% increase
Piru	7,201	10,896	51
Fillmore	18,497	22,583	22
Santa Paula	14,205	22,110	56

From the DWR 2003 update and the 2019 modifications to the DWR boundaries, there was a noticeable increase in size for the Piru, Fillmore, and Santa Paula groundwater basins when compared to the Mann (1959) delineations. As mentioned above, the Piru basin increase was largely due to the inclusion of lower Piru Creek. The Fillmore basin increase was primarily from the extension of the groundwater basin up into areas of alluvial deposits at the base of the mountain slopes, including Timber Canyon to the north, and areas where the Saugus Formation outcrops along the margins of the basin. However, due to changes in the groundwater basin areal extents, future basin-specific hydrologic budgets will also be different compared to all previous investigations due to changes in total inflows, outflow, and available storage. Santa Paula's increase was a combination of the extension of the groundwater basin up into alluvial deposits at the base of the mountain slopes as well as the inclusion of Santa Paula Creek on the north, and where the San Pedro/Saugus Formation outcrops. Along the valley floor the DWR (2019) Piru/Fillmore boundaries were modified to align with the Mann (1959) delineation. Likewise, the DWR (2019) Fillmore/Santa Paula and Santa Paula/Mound basin boundaries were also were modified to align with the Mann (1959) delineation, which also coincides with the Santa Paula settlement boundary (see Section 2.6) that relied on Mann's work.

5.2 WATER BUDGET IMPACTS

With the majority of previous modeling efforts and reported water budgets based on analysis of the Piru, Fillmore, and Santa Paula basins as delineated by Mann (1959), water budgets that are estimated moving forward using the DWR (2019) basin boundaries are expected to have some differences. As mentioned above, the DWR (2019) modifications adjusted the previous DWR basin boundaries for the Piru/Fillmore shared boundary (scientific internal modification), Fillmore/Santa Paula shared boundary (jurisdiction internal modification) and the Santa Paula/Mound shared boundary (jurisdiction internal modification). These modifications brought the shared boundaries to coincide with those that Mann (1959) delineated, which allows for no changes moving forward at the boundary compared to most previous studies for these basins.

Several water budget components that would be expected to increase with the expanded basin boundaries include: 1) increased areal recharge from precipitation and applied water from groundwater and surface water sources, 2) increased groundwater extractions, and 3) increased groundwater and surface water exchange with the inclusion of creek deposits. As mentioned in the section above, the largest changes in these basins occurred by adding deposits underlying Creeks (Lower Piru Creek and Santa Paula Creek) as well as including the furthest extent of the outcrop and alluvial deposits extending up the hillslopes. With Mann's basin delineations having captured most of the water bearing and productive alluvial deposits and underlying aquifers along the valley floor, the effect on overall water budgets in not expected to be much from the additions. Relating to the addition of the creeks, Piru Creek is expected to have some groundwater and surface water interaction. Santa Paula Creek was previously believed to be a source of recharge for the Santa Paula basin, but more recent analysis has suggested that changes in the channel from flood control projects in the late 1990s have potentially reduced the recharge within Santa Paula Creek to be very minor (UWCD, 2013, 2019b). Relating to the addition of the hillslope alluvial deposits, not much change impact is expected from these additional areas because the water sources and uses within these areas were previously included in previous studies (estimated recharge from the hillslopes) or are minor (only a handful of wells are located in these higher elevation areas). As mentioned above, additional applied water will be included for these areas that were previously not considered to be within part of the groundwater basins, and the applied water is in some cases sourced from small creek diversions that capture storm flows draining from the northern hillslopes.

A significant change in the water budget estimates due to basin boundary changes between Mann (1959) and DWR (2019) is expected to be the location of Piru Creek's eastern basin boundary near the Ventura/Los Angeles County Line and the impacts it has on the underflow estimates moving from the Eastern basin into Piru basin. With the underflow estimates increasing substantially when Mann's Piru basin boundary was moved to the east for the DWR update (2003) and modifications (2019) because the water-bearing material is much thicker at the Ventura/Los Angeles County Line location compared to the previous boundary locations where alluvial deposits of limited depth and width are present. This was Piru basin change was detailed in Section 4.4, above.

6 OTHER NOTABLE CHANGES TO CONSIDER

As Section 5 details, Mann (1959), or very similar, basins boundaries were used for many of the studies from the 1950s through the more recent, which helps in the comparison of values. However, land use changes have occurred within the groundwater basins since the periods that the DWR (1956) and Mann (1959) reports considered (1937 – 1957), which affect water budgets in these basins and must be considered when comparing results from investigations during later periods. Several changes include: 1) the construction of Santa Felicia Dam on Piru Creek and related water conservation activities, 2) moderate urbanization and development within the groundwater basins, 3) changes in agricultural practices (e.g. crop changes, crop locations, and available water efficiency technology), and 4) significant urbanization and development within upstream Santa Clara groundwater basins.

Another change over time and perhaps the most systematic change that has affected Piru, Fillmore, and Santa Paula groundwater basins average annual water budgets components following construction of Santa felicia Dam is related to base flows arriving from the Eastern basin in Los Angeles County. Beginning in 1980, State Water Project water was imported to the eastern Santa Clara River Valley groundwater basin, augmenting local groundwater resources to meet increasing water demands by extensive urbanization. Large portions of this increased water use have historically been discharged as treated wastewater effluent into the Santa Clara River, resulting in increased streamflow and subsurface underflow entering Piru basin, compared to periods prior to 1980. The increased in water use upstream could explain the increase from about 240 AFY estimated in DWR (1956) and Mann (1959) to approximately 1100 AFY in CH2M HILL/HGL (2008) numerical modeling (HydroMetrics, 2008; analysis for United) for underflow near the Mann (1959) eastern Piru basin boundary. As such, changes in water use and demand upstream in Los Angeles County (e.g. increased development, potential increased recycled water) is expected to affect the water budgets of Piru and the remaining downstream groundwater basins within Ventura County.

7 SUMMARY AND CONCLUSIONS

Extensive efforts by various entities have provided foundational knowledge of the hydrology of the Piru, Fillmore, and Santa Paula groundwater basins as well as provided detailed datasets and estimates of various water budgets components for each basin. Table E-1 summarizes the hydrologic investigations which contributed water budget components related to the groundwater basins that make up the current study area. Table E-2 summarizes the range of reported water budget component values for each of the groundwater basins which were presented in the previous hydrologic studies that are listed in Table E-1.

The majority of the values presented in Table E-2 were extracted from DWR (1956) or Mann (1959), with other primary sources being CH2M HILL (2004, 2005), CH2M HILL/HGL (2008), LWA and others (2015) and DBS&A and RCS (2017). Values of lower and upper ranges were sourced from all the investigations reported. Each of the reports used for this review are representative of varying, sometimes overlapping, climatic periods and conditions (Table E-1). Since the values reported from DWR (1956) and Mann (1959) provided the most complete summaries of water budgets, most of the lower and upper bounds of the reported range for many of the components, presenting the results in this way is considered appropriate, and helpful, for comparison purposes.

In relation to United's efforts in the expansion of United's active numerical groundwater flow model, reviewing all available previous water budget component estimates helps during the numerical modeling development and calibration in order to ensure values of water budget components from the new model are reasonable. Additionally, it highlights where less information is known from a quantitative perspective and where additional monitoring and/or coordination with neighboring agencies can help further inform during the development process. With this review of previous water budgets estimates, United staff is continuing its ongoing numerical groundwater model expansion efforts that will support United's ability of regional water management planning, with the most immediate need satisfied through supporting local GSAs in developing GSPs.

Based on this review, United offers the following conclusions related to the previous studies and reported water budgets for the Piru, Fillmore, and Santa Paula groundwater basins:

- There are extensive previous studies available for these basins that were based on field, analytical, and numerical studies, dating back to the 1920s (Table E-1).
- The most significant inflows to each basin consist of recharge from streamflow (Santa Clara River) percolation, areal recharge from precipitation and applied water from groundwater and surface water sources, and incoming subsurface underflow from upstream groundwater basins.
- The most significant outflows to each basin consist of groundwater extractions for beneficial use and outgoing subsurface underflow to downstream groundwater basins.
- With the Santa Clara River (SCR) being the largest source of recharge (especially for Piru and Fillmore Basins), these basins are highly variable due to the dependence on local

rainfall within the SCR watershed. This variability and dependence on surface water inflows leads to the large range observed in the previously reported water budget components (Table E-2). This dependence to surface water flows is expected to continue in the future, resulting in variable water budgets of similar ranges.

- Basin boundary modifications have recently been adopted that expanded the extent of the Piru, Fillmore, and Santa Paula groundwater basins. The majority of the studies reviewed for this document utilized boundaries that captured most of the water-bearing and productive alluvial deposits and underlying aquifers along the valley floor, and the overall effect on the ranges for many of the water budget components is not expected to be significant. Changes to the upstream extent of the Piru basin will however result in an increase in the subsurface underflow into Piru basin from the east. This value is expected to increase using the Department of Water Resources (DWR, 2019) boundary moving forward due to the substantial increase in saturated aquifer thickness near the Los Angeles County line compared to the downstream locations used in previous studies. The increased area will also result in increased recharge to the underlying aquifers due to precipitation.

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FIGURES

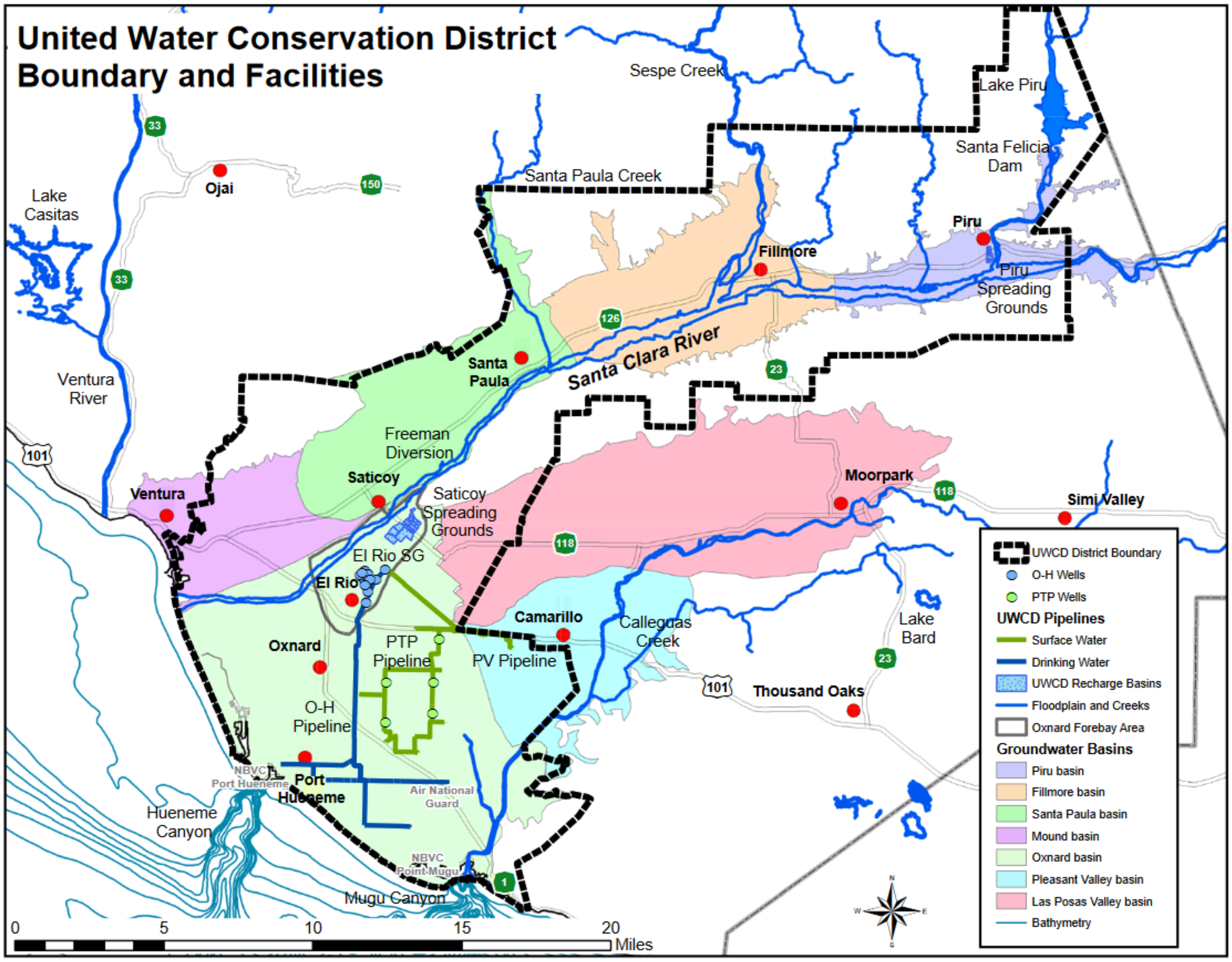

Figure 1-1. United's district boundaries, major recharge and conveyance facilities and groundwater basins.

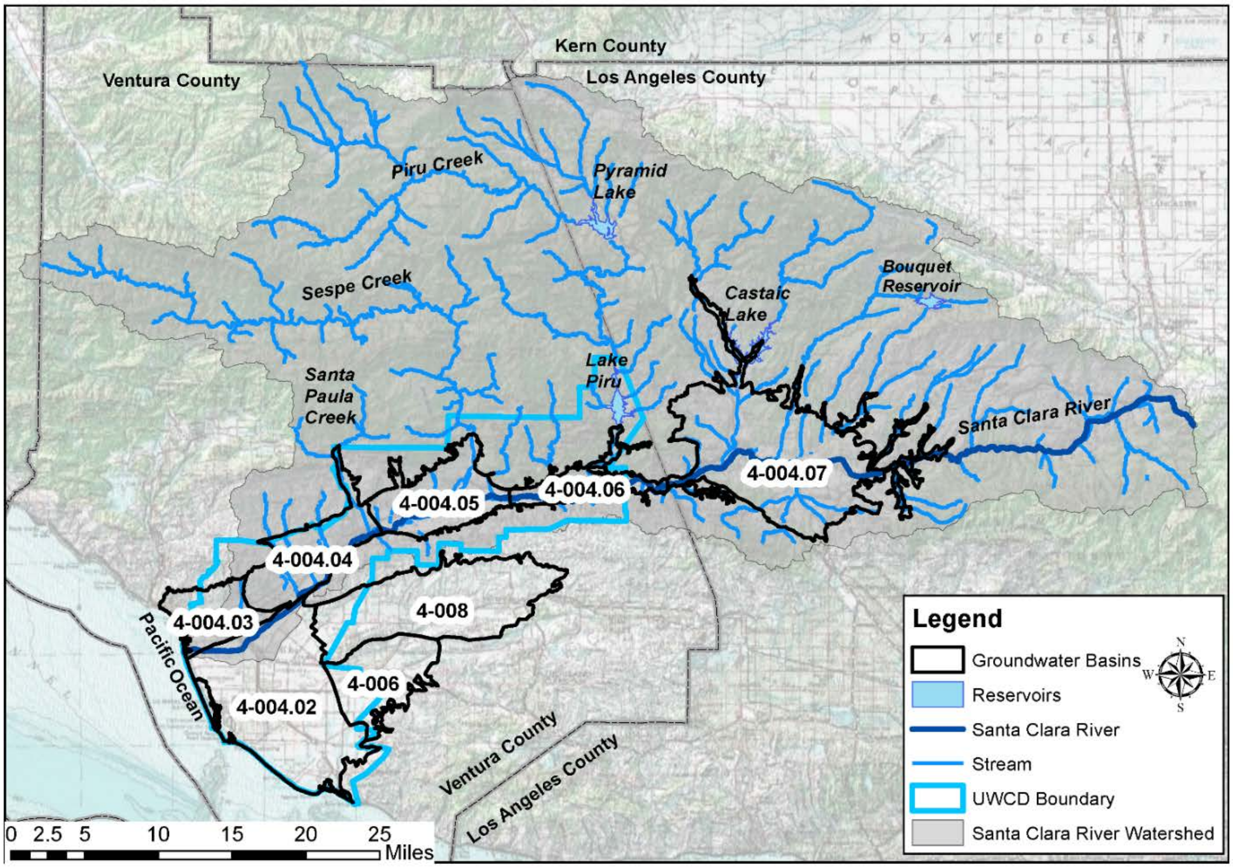

Figure 1-2. Study area and adjacent basins, with California Department of Water Resources groundwater basin boundary numbering.

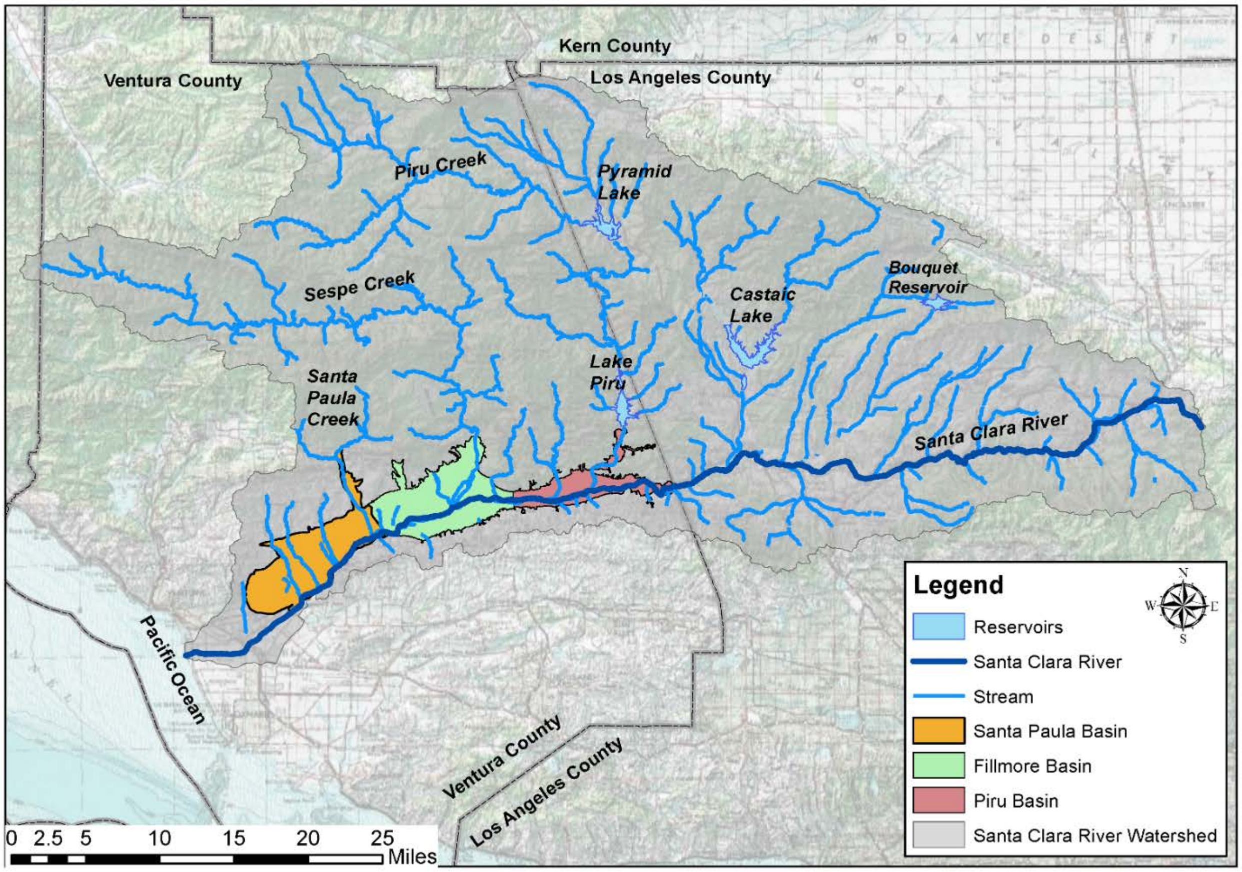

Figure 1-3. Watershed of the Santa Clara River, and the Piru, Fillmore and Santa Paula groundwater basins.

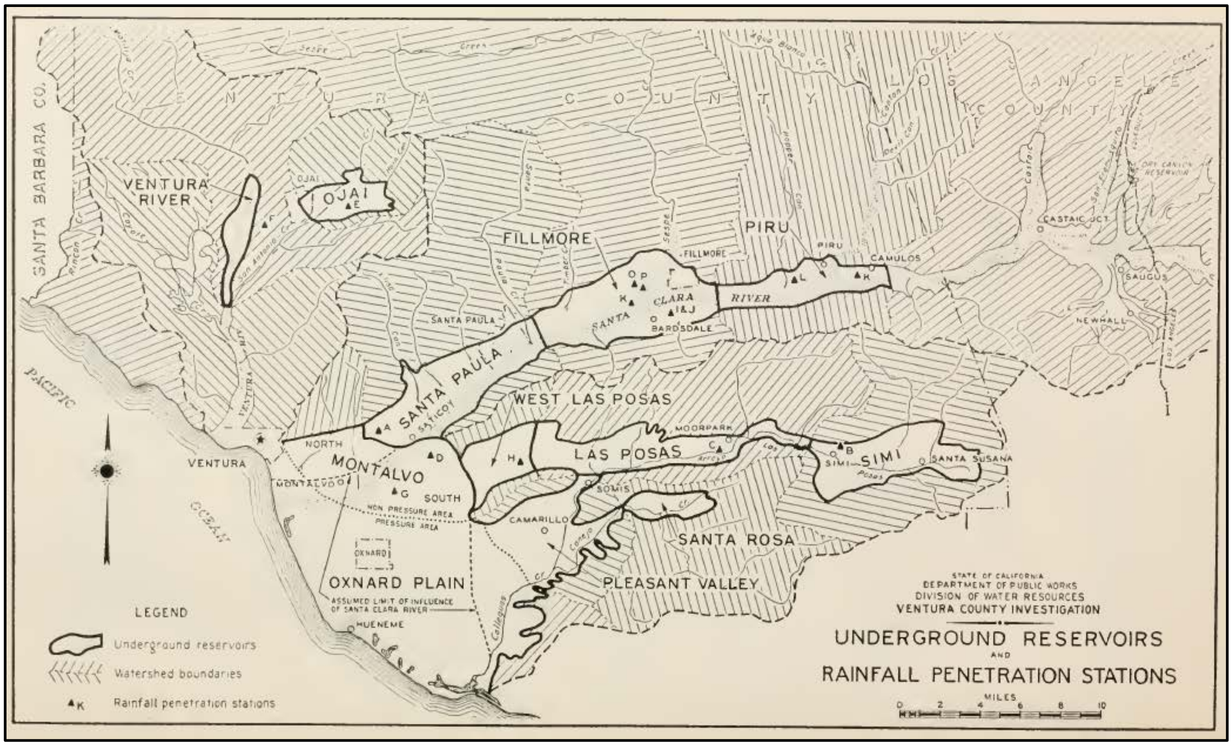

Figure 2-1. Underground reservoirs and rainfall penetration stations as of 1932 (DWR 1933, Plate 1).

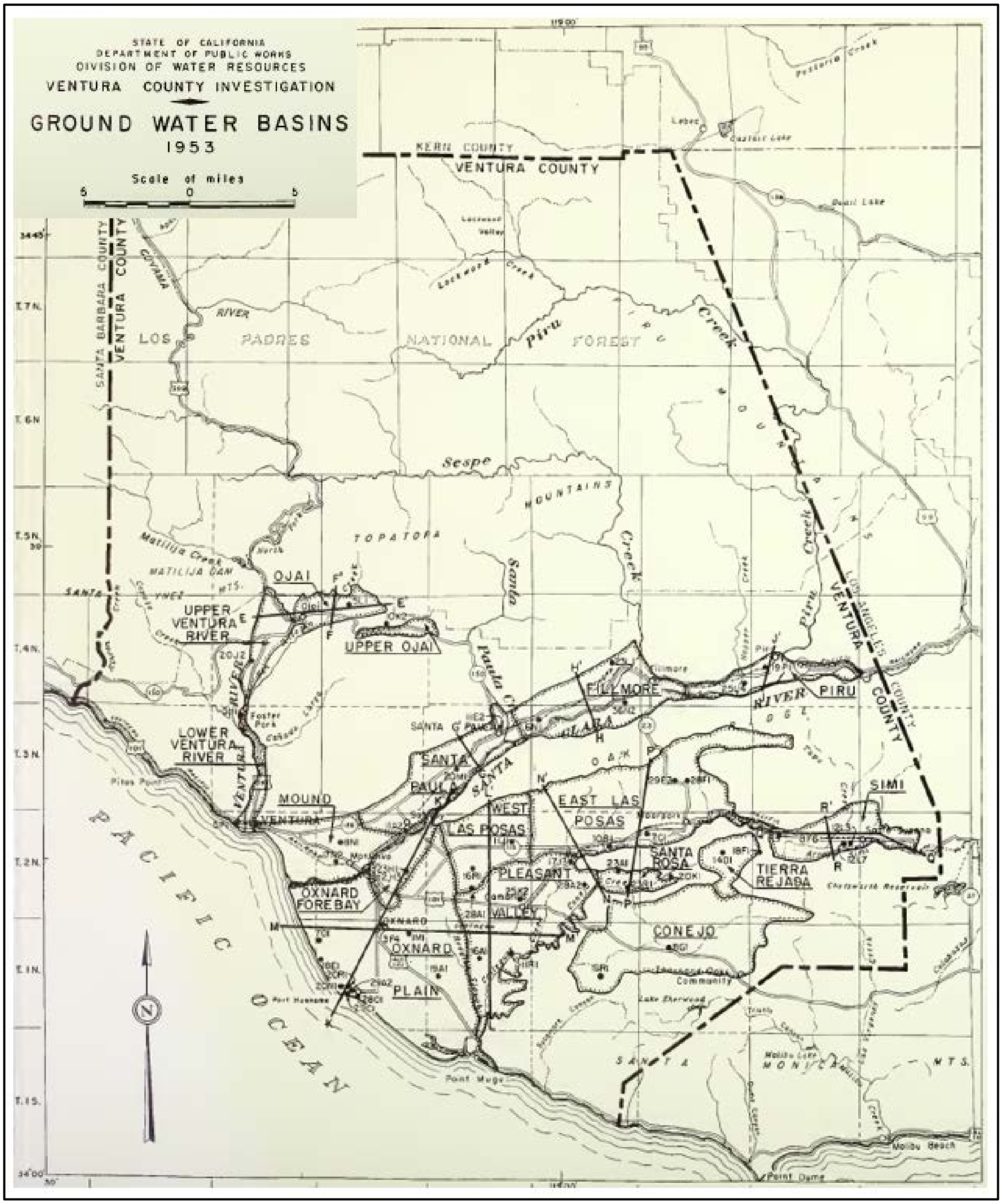

Figure 2-2. Ventura County groundwater basins as of 1953 (DWR, 1956, Plate 11).

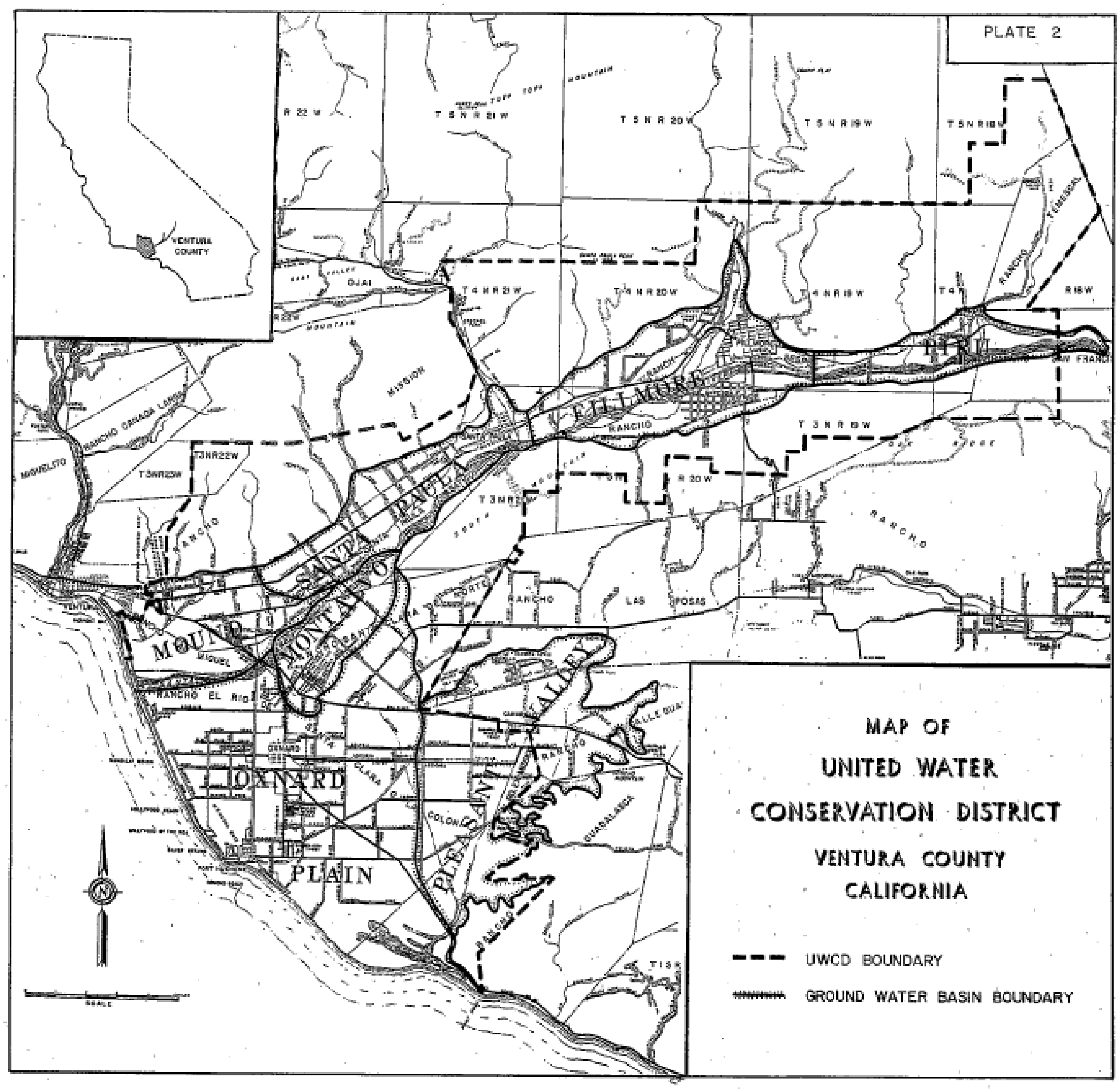

Figure 2-3. Map of United Water Conservation District and groundwater basins as described by (Mann, 1959; Plate 2). *Note: "Oxnard Forebay" groundwater basin presented in Bulletin 12 (DWR, 1956) is called "Montalvo." Like Bulletin 12, Mound basin is now identified.*

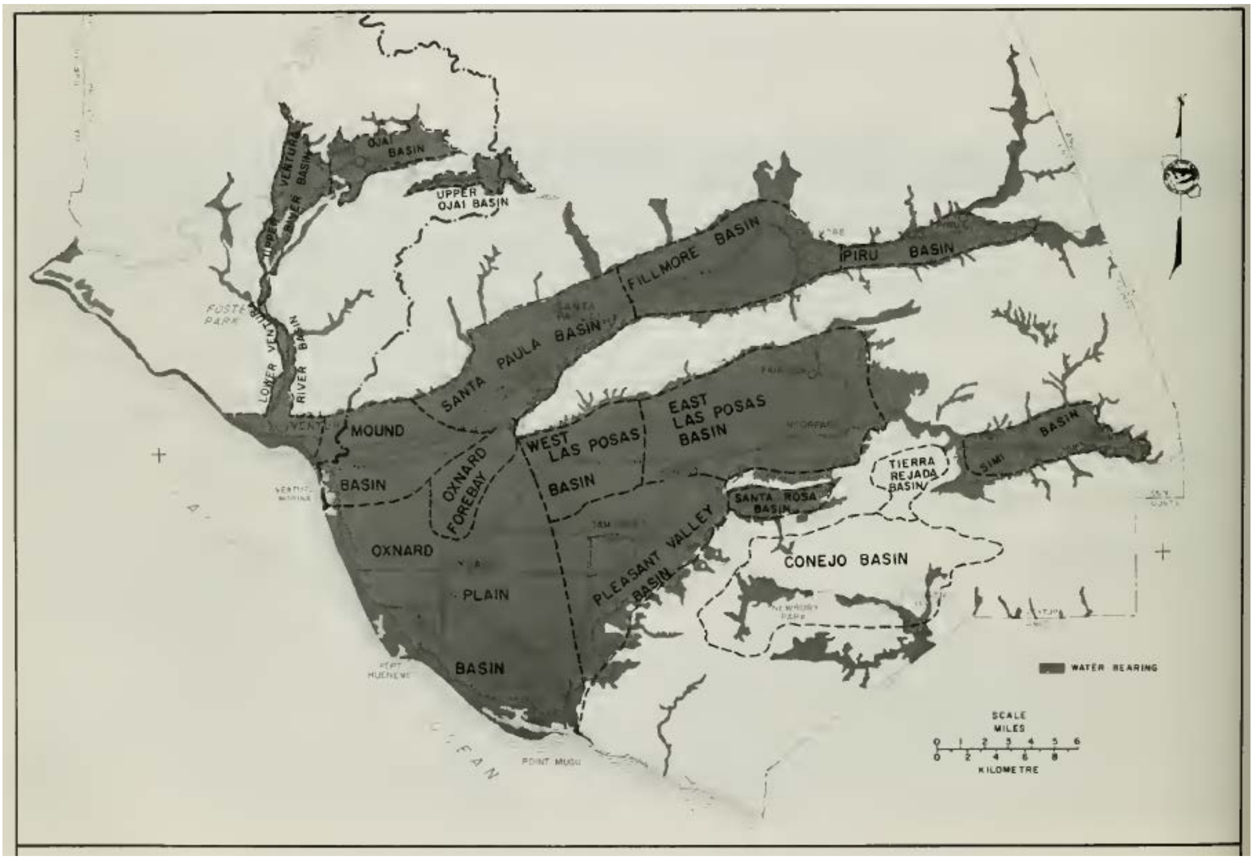

Figure 2-4. Groundwater basins (DWR, 1976; Figure 8).

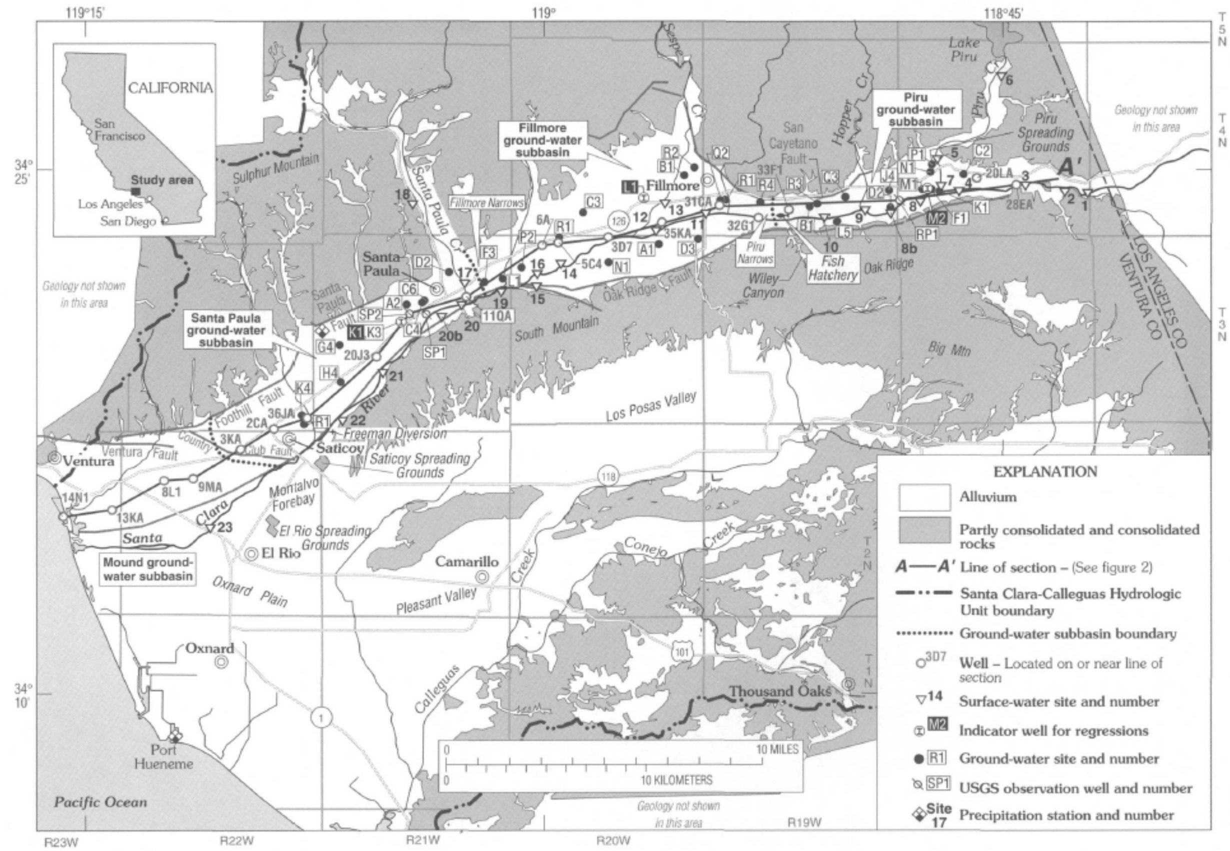

Figure 2-5. Surface water and groundwater sampling sites in the study area, Santa Clara River basin, Ventura County, California (Reichard and others, 1999; Figure 1).

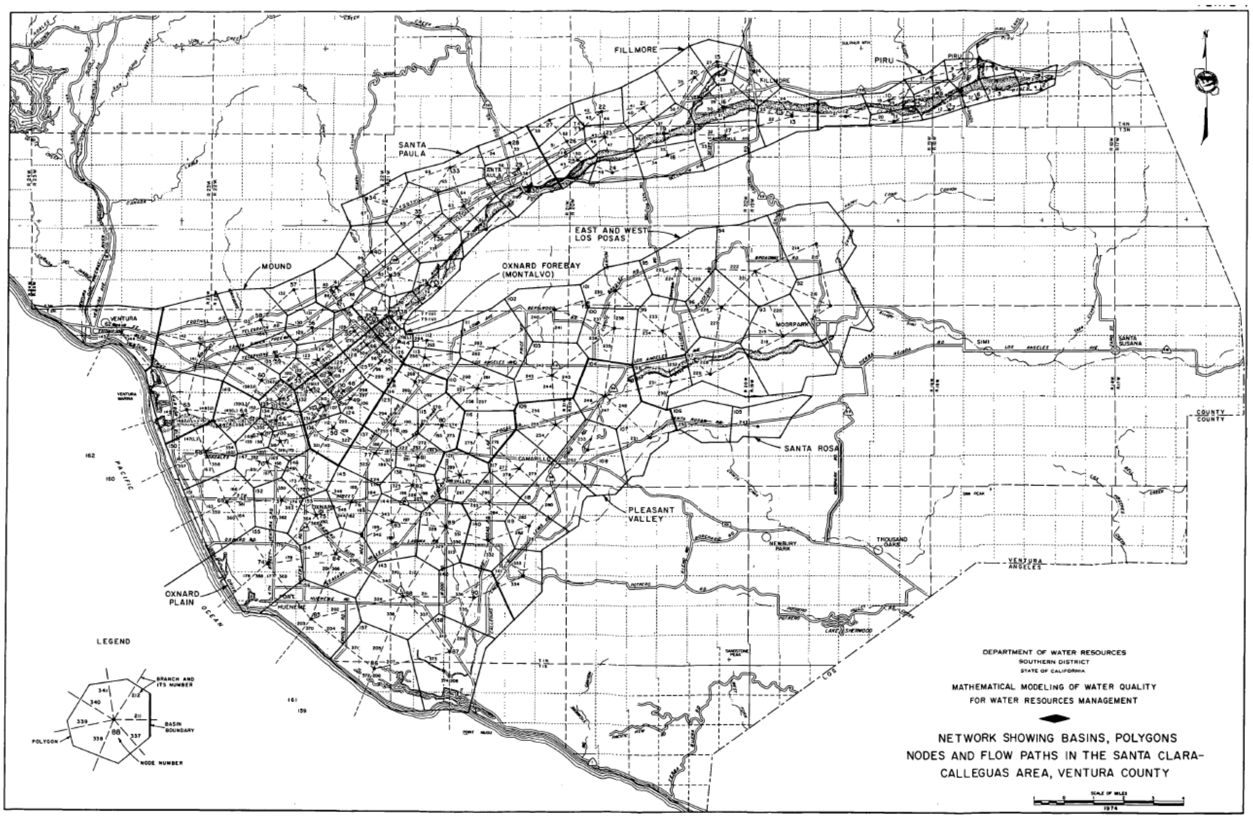

Figure 3-1. Network showing basins, polygons nodes and flow paths in the Santa Clara-Calleguas area, Ventura County based in DWR modeling (DWR 1974a; Plate 1).

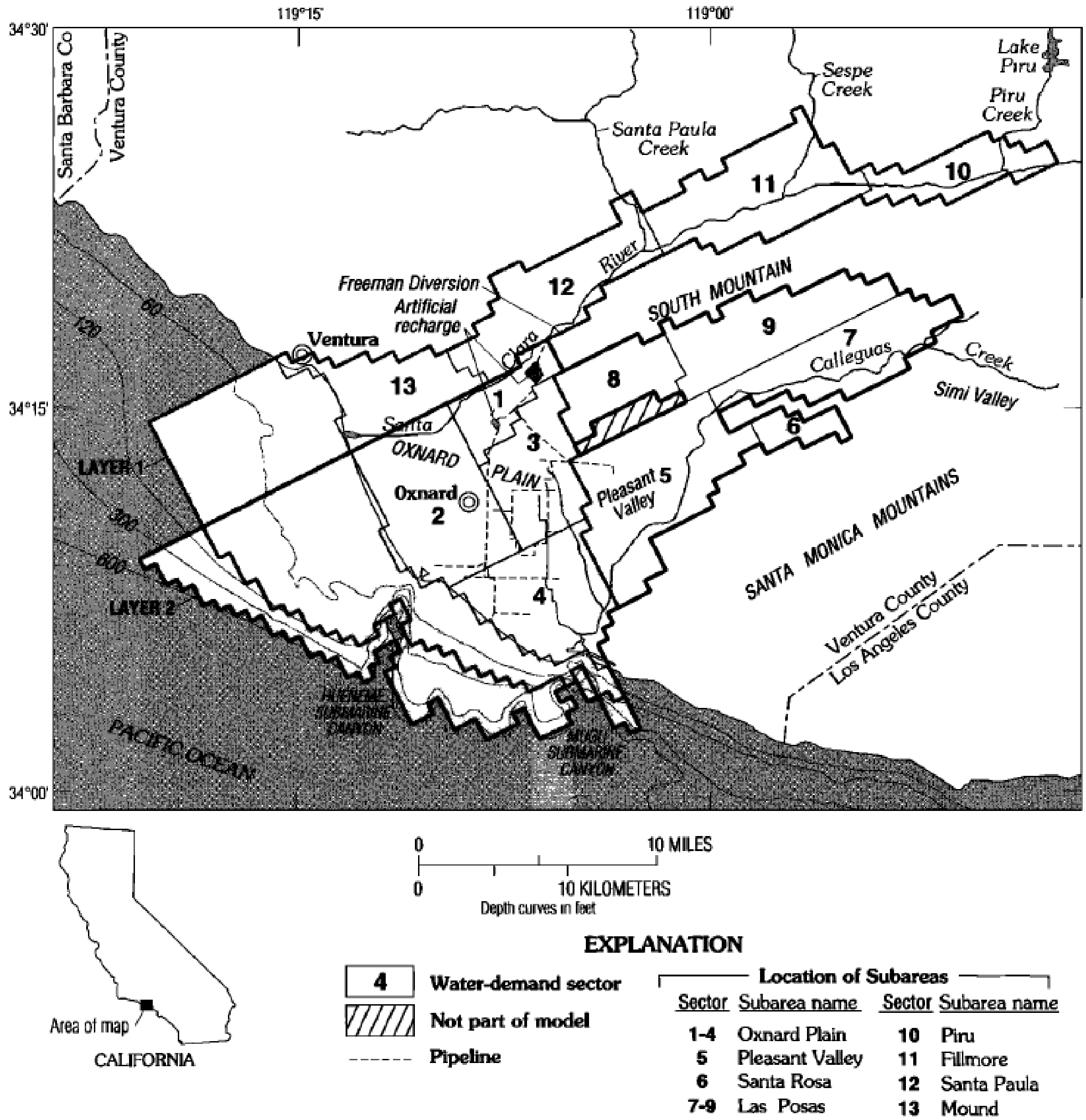

Figure 3-2. Santa Clara-Calleguas basins used by Reichard (1995; Figure 1).

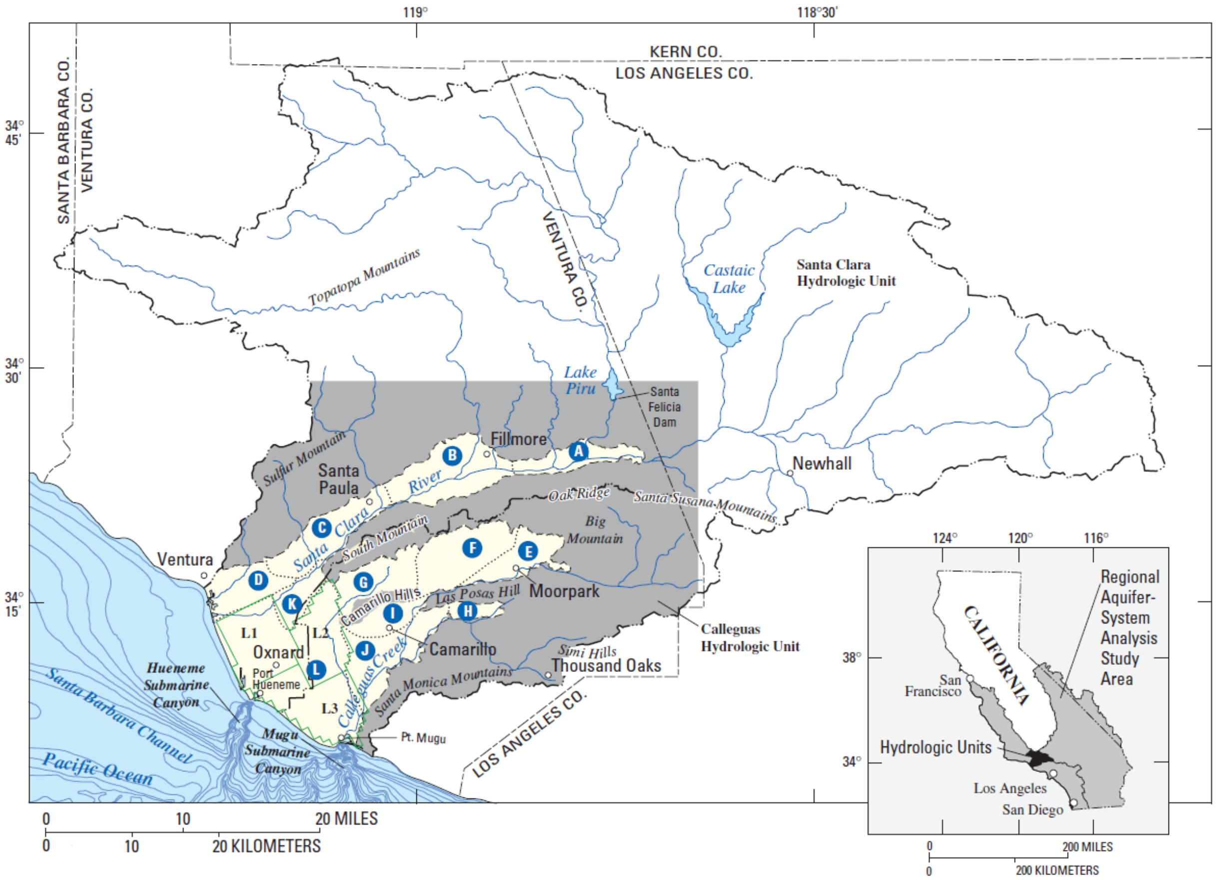

Figure 3-3. Santa Clara-Calleguas hydrologic unit and groundwater basins, (Hanson and others, 2003; Figure 1).

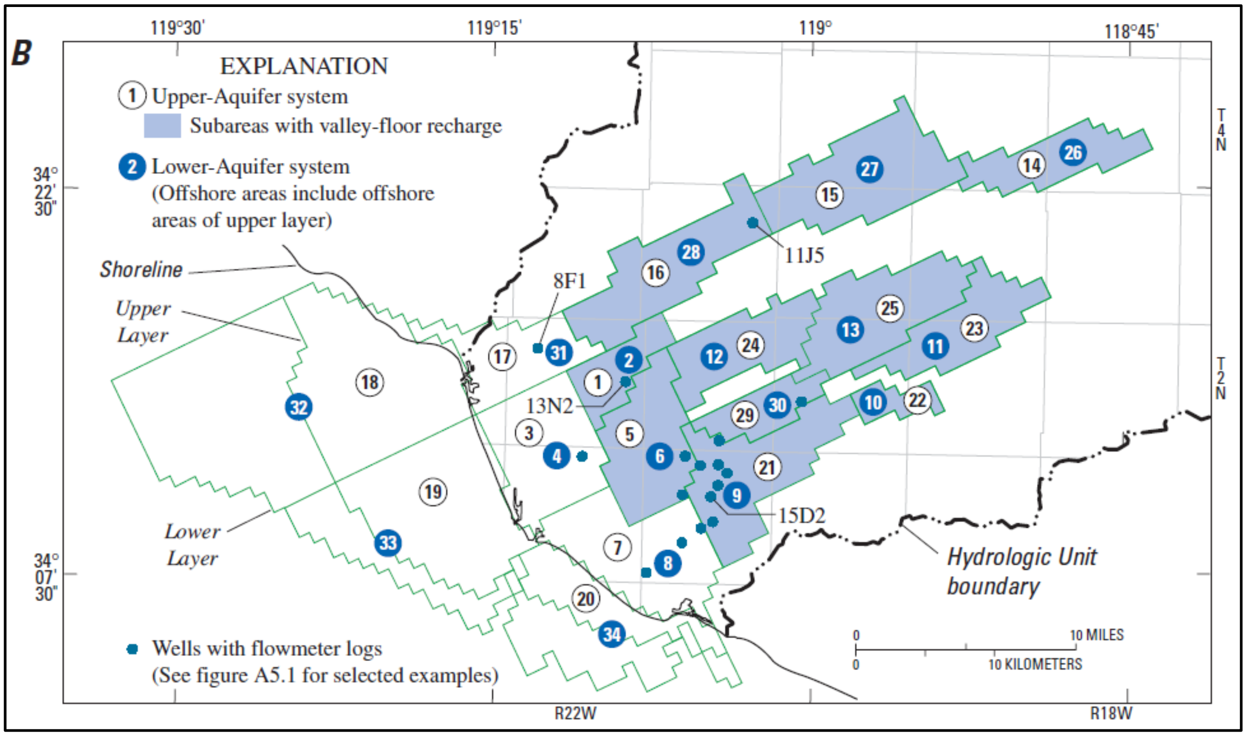

Figure 3-4. Modeled subareas for the upper-and lower-aquifer systems (Hanson and others., 2003; Figure 17B).

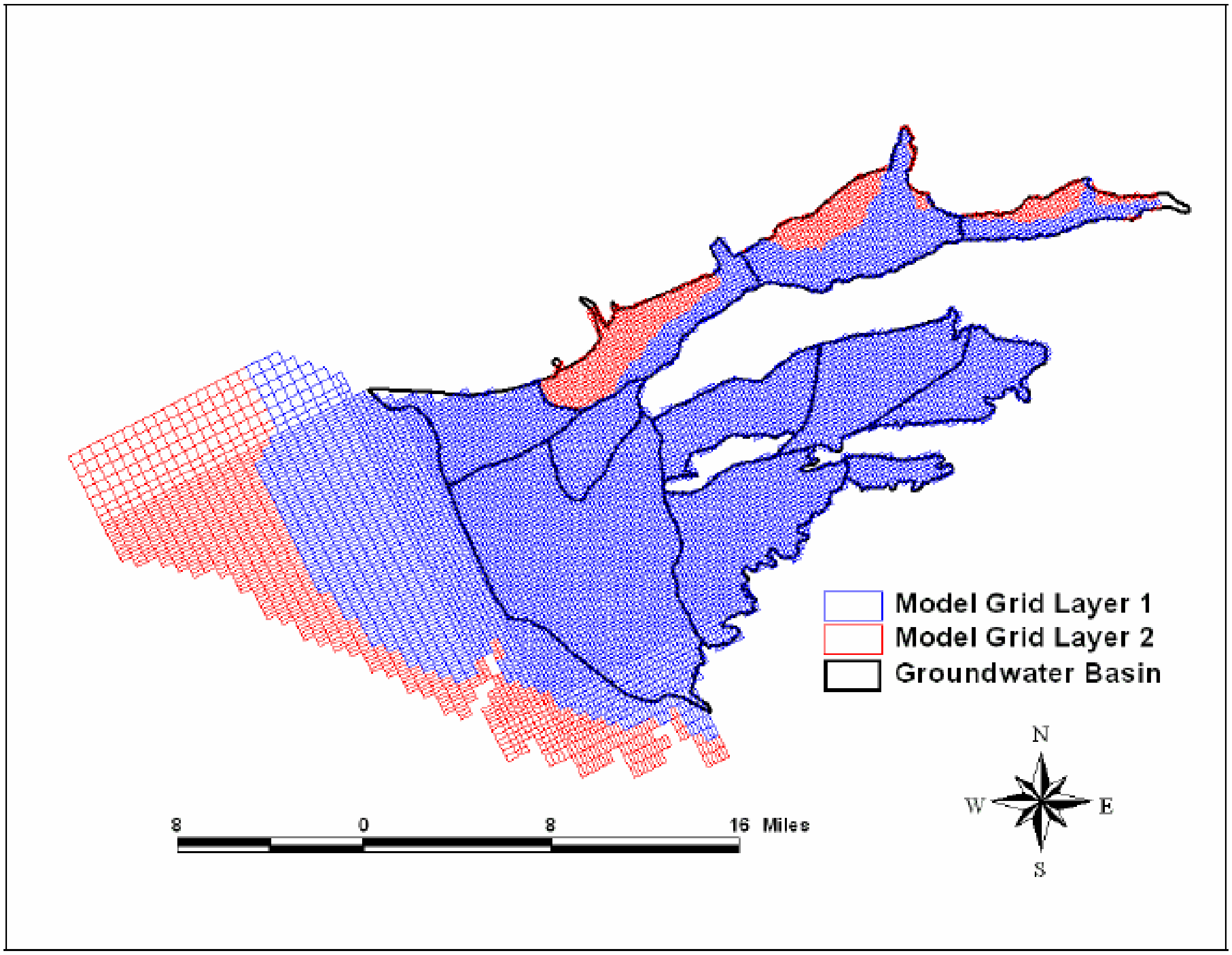

Figure 3-5. Updated model grid for Ventura Regional Groundwater Model (FCGMA and others, 2007; Figure 57).

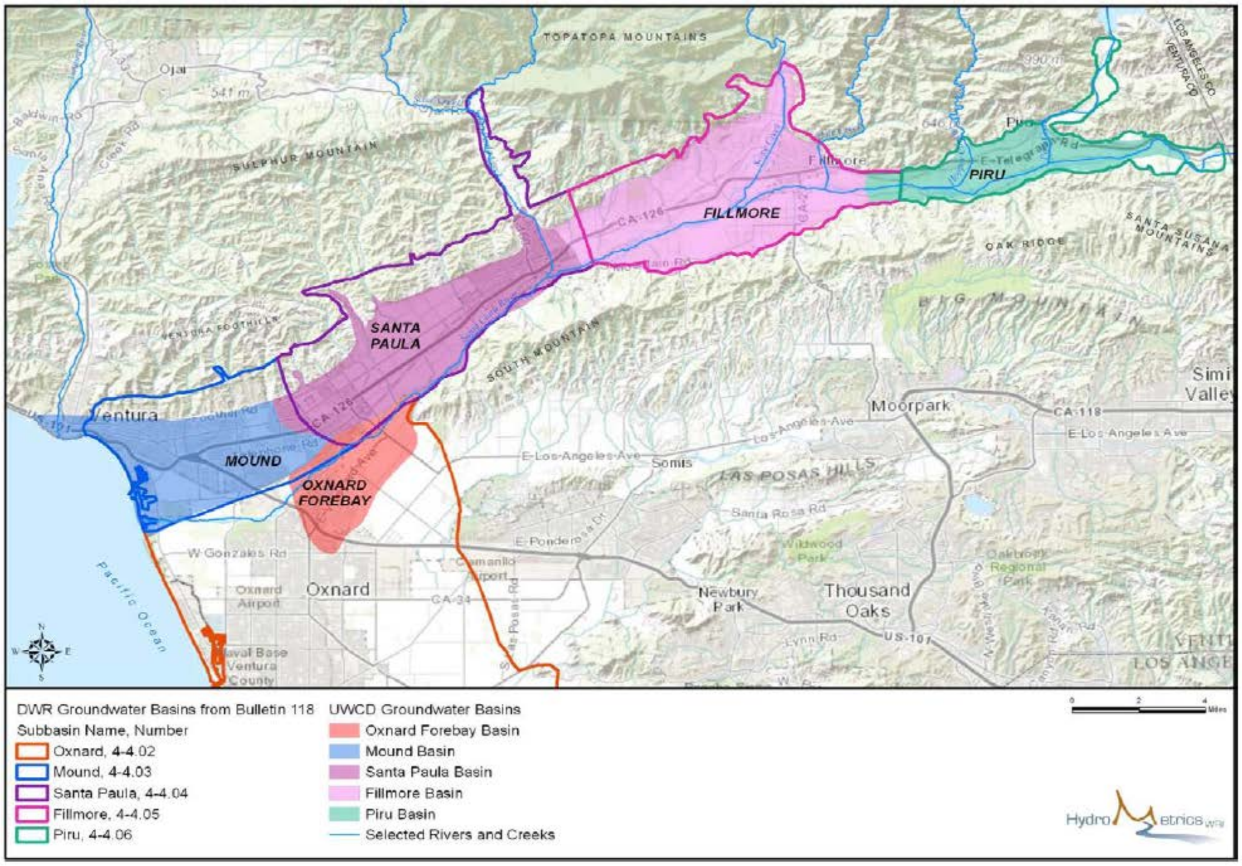

Figure 3-6. Lower Santa Clara River SNMP area comparison of DWR (Update 2003) and UWCD groundwater basins delineations (LWA and others, 2015; Figure 3-2). Note: LWA and others (2015) used United's basin boundaries for analysis.

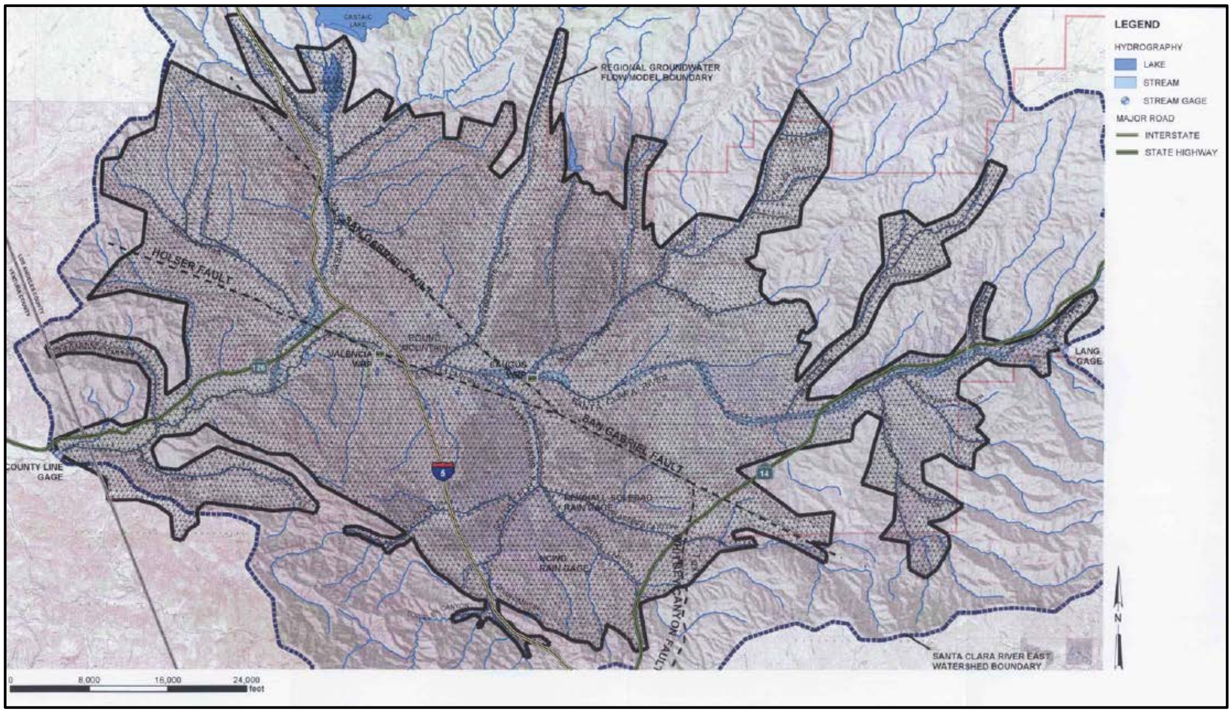

Figure 4-1. Groundwater flow model grid for the Santa Clarita Valley, (CH2M HILL, 2004; Figure 3-1).

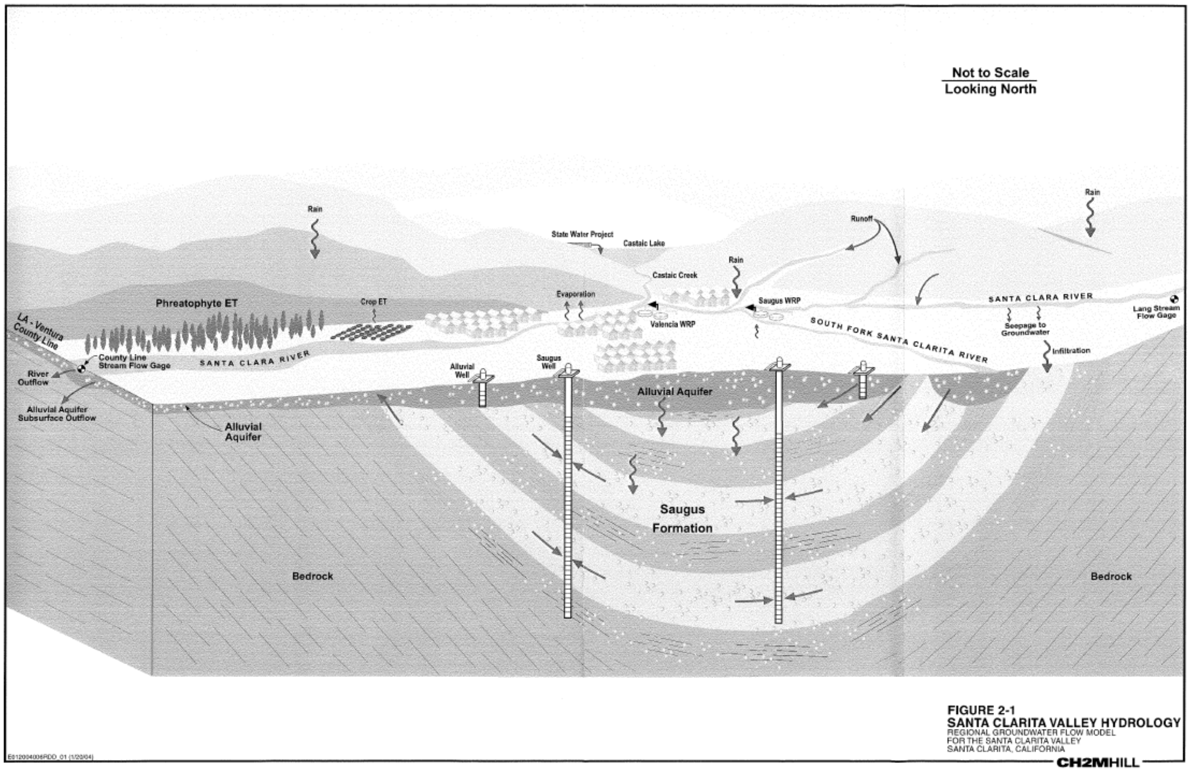

Figure 4-2. Santa Clarita Valley hydrology (CH2M HILL, 2004; Figure 2-1).

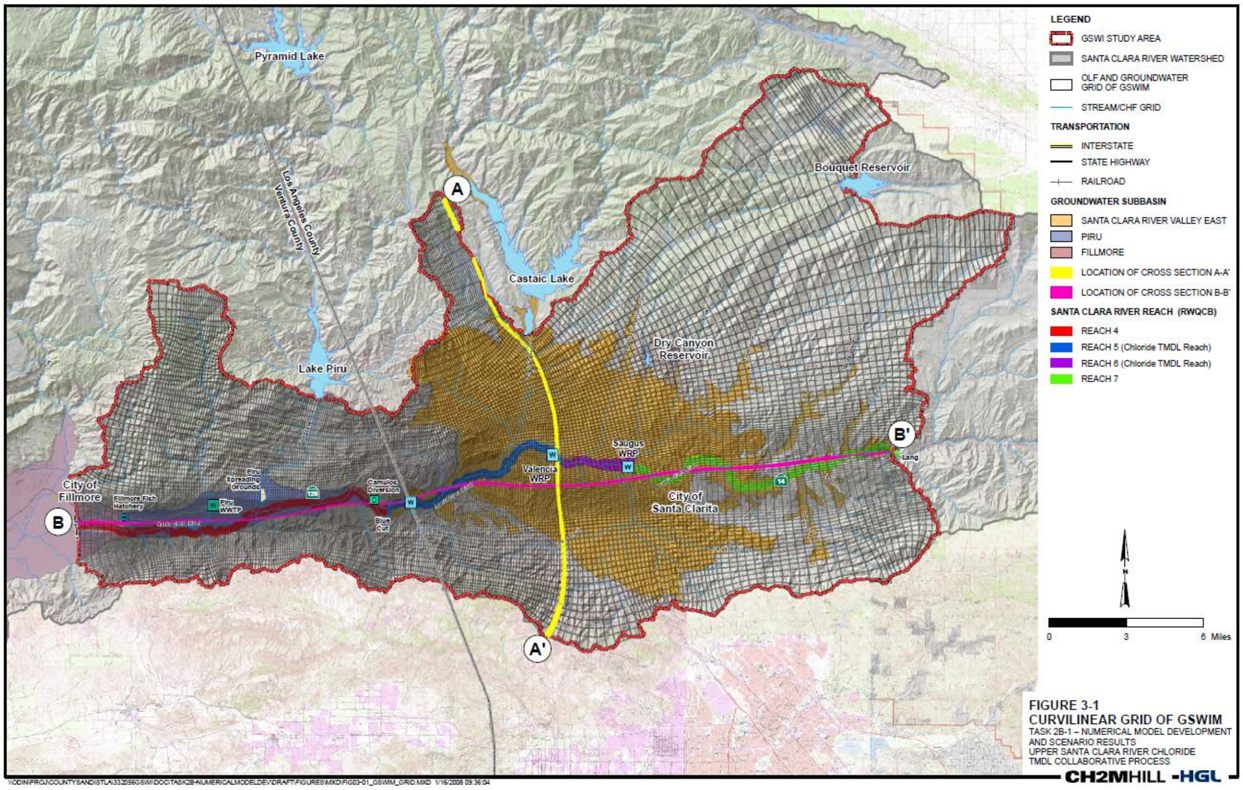

Figure 4-3. Curvilinear grid of GSWIM (CH2M HILL/HGL, 2008; Figure 3-1).

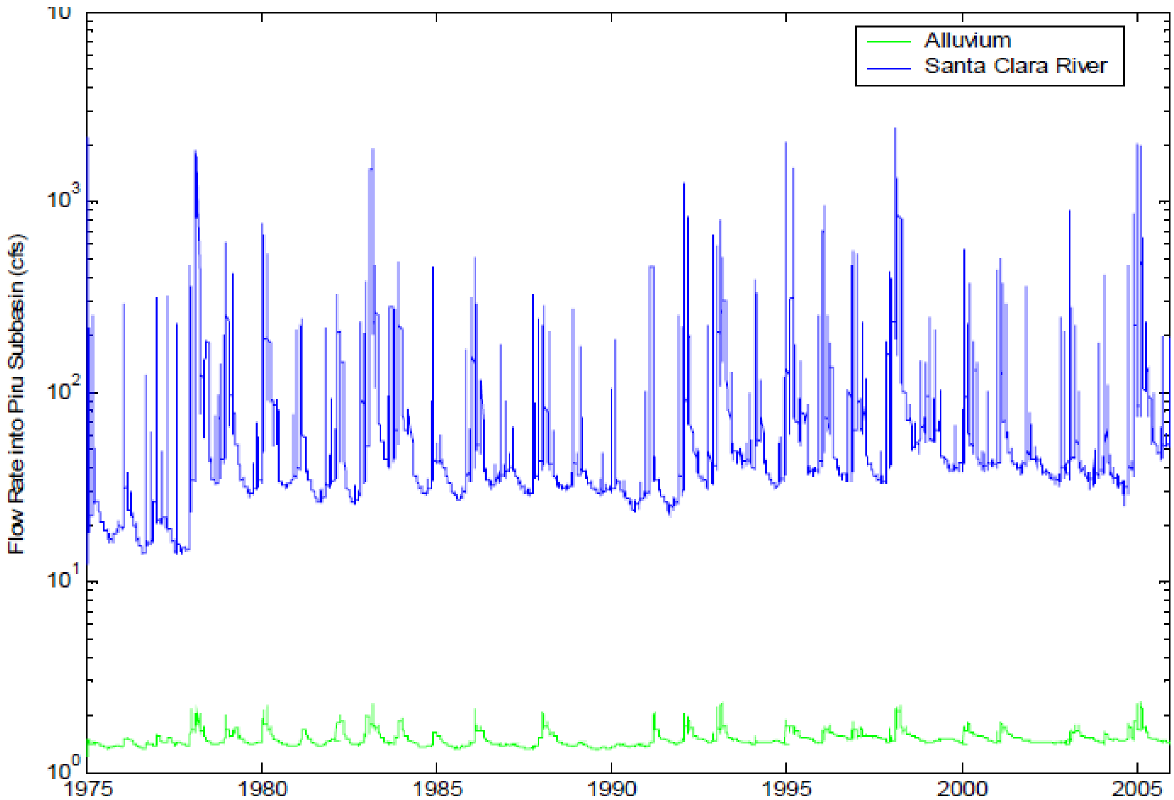

Figure 4-4. CH2M HILL and HGL modeled flow rates into Piru groundwater basin (CH2M HILL, 2008), modified from the HydroMetrics report (2008; Figure 2).

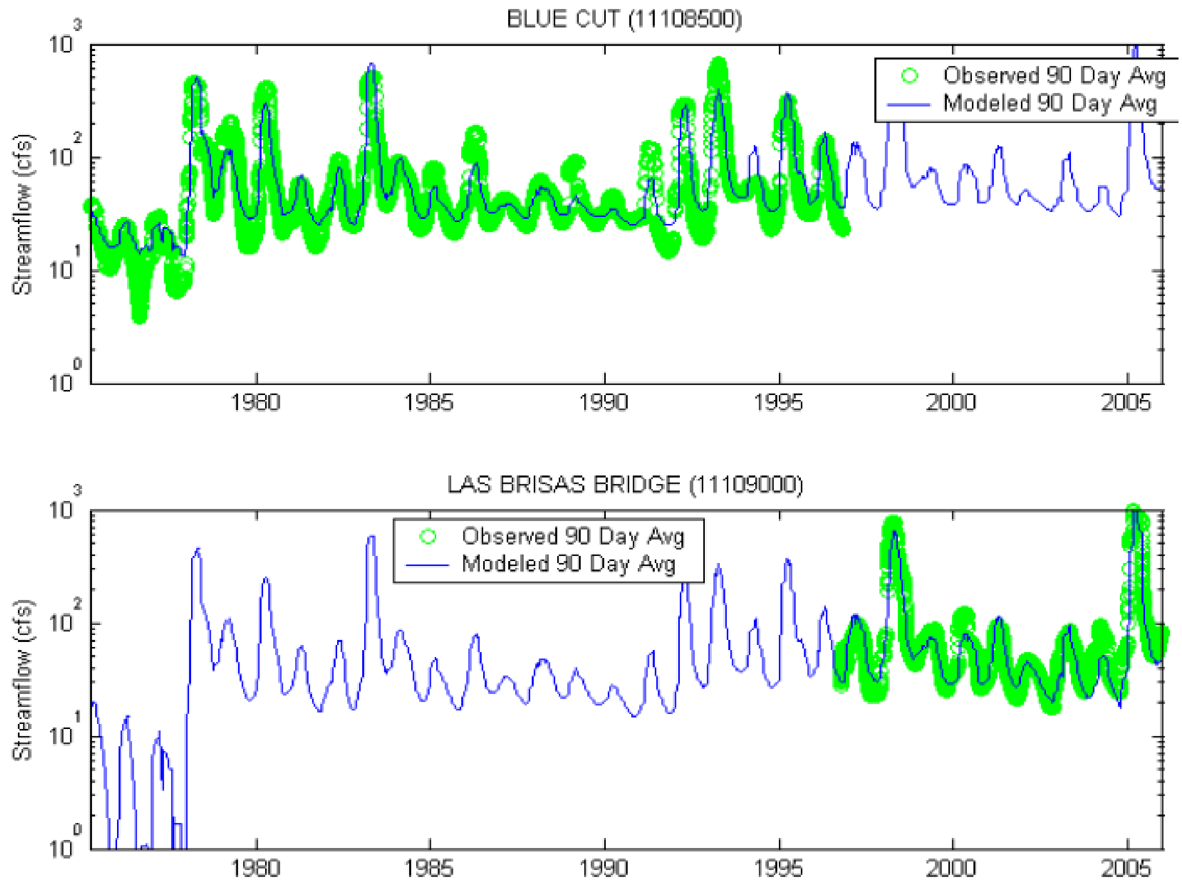

Figure 4-5. CH2M HILL/HGL 90-day averages of modeled versus observed streamflows at Blue Cut (CH2M HILL/HGL, 2008). modified from the HydroMetrics report (2008; Figure 2). *Note: that Blue Cut and Las Brisas Bridge are the two USGS streamflow locations near the Los Angeles and Ventura County Line. The USGS moved the official gaging location from Blue Cut to Las Brisas in October 1996.*

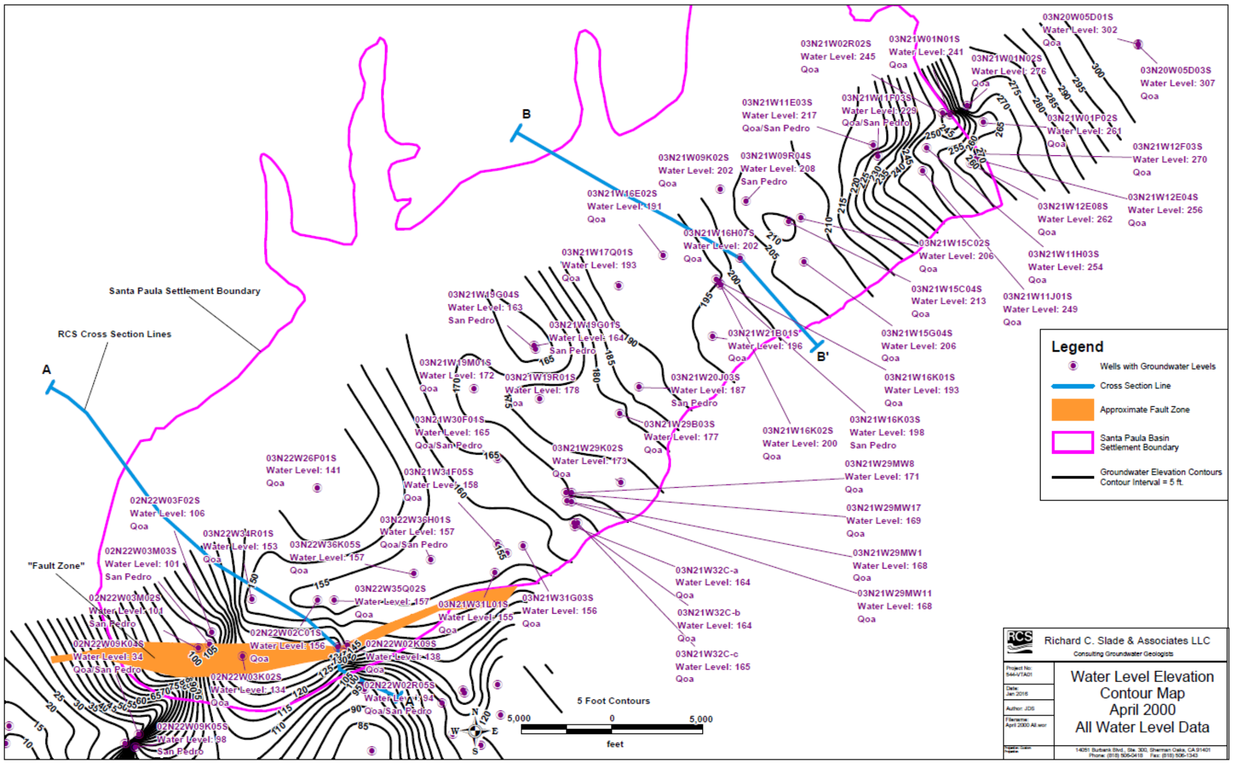

Figure 4-6. Water level elevation contour map, April 2000, all water level data (DBS&A and RCS, 2017; Figure 1 in Appendix F).

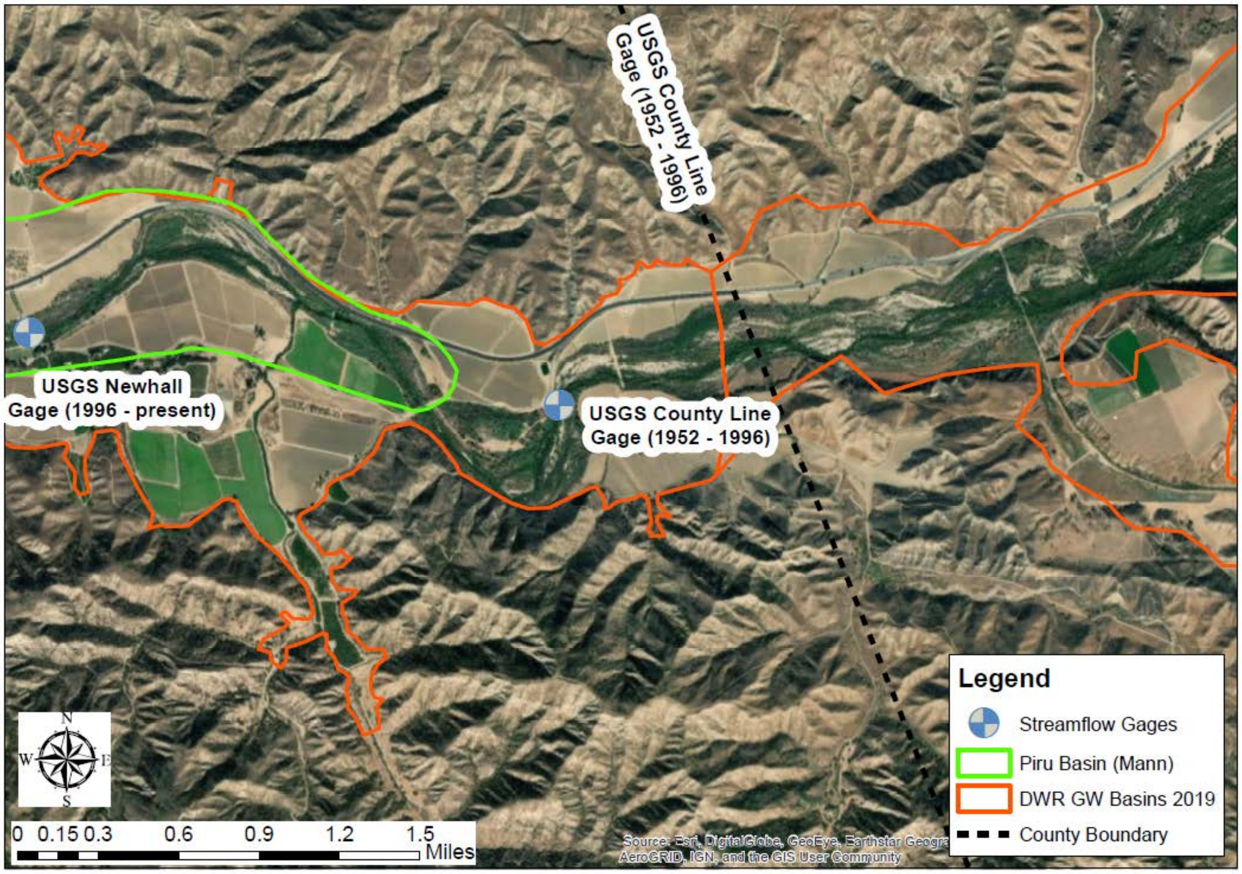

Figure 4-7. Site location of Piru Basin boundaries from Mann (1959) and DWR (2019) as well as streamgages and the Ventura/Los Angeles County Line.

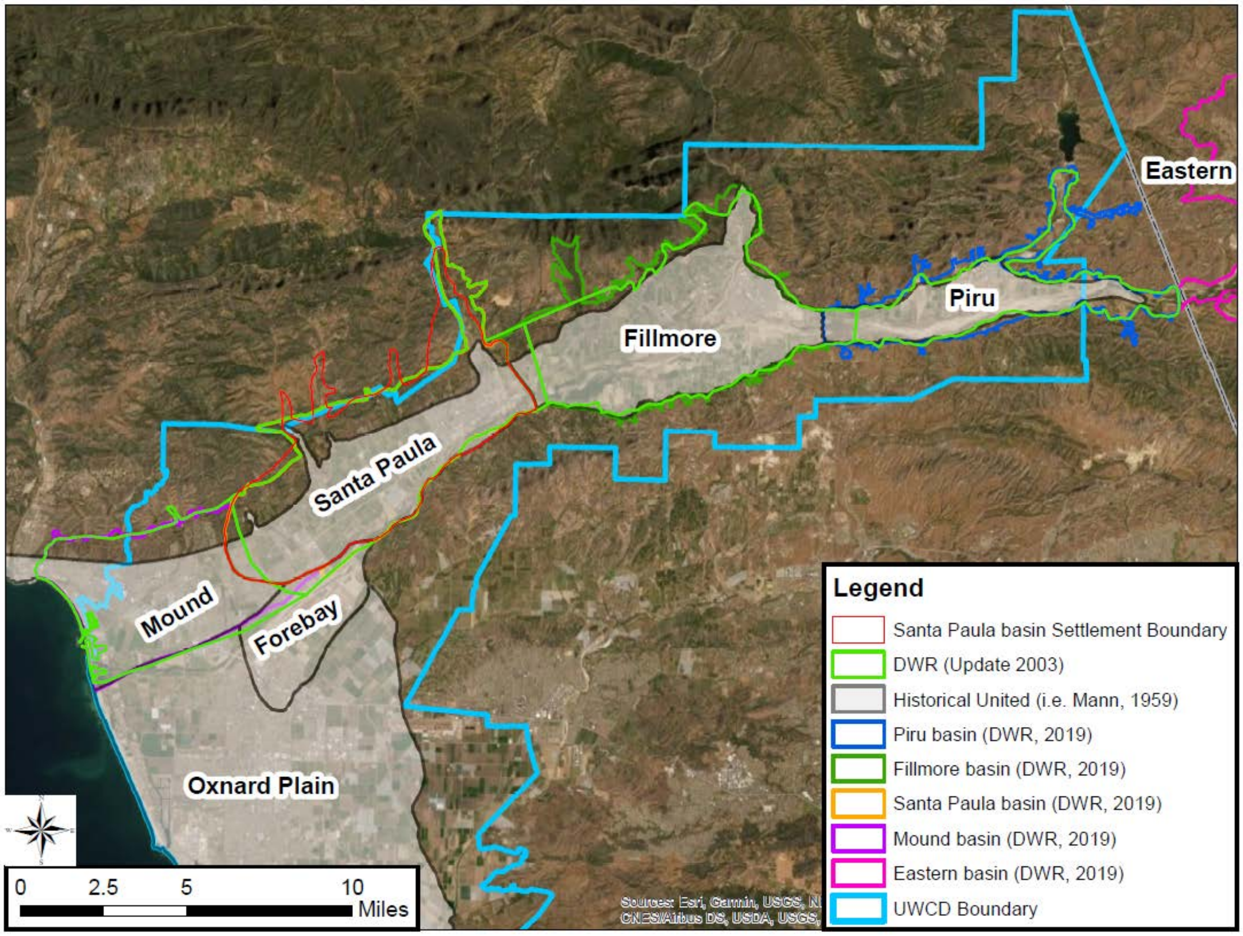

Figure 5-1. Comparison of groundwater basin boundaries along the Santa Clara River within Ventura County.

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APPENDIX H

Historical and Current Water Budgets

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APPENDIX H-1

Historical and Current Annual Surface Water Budget

DRAFT

Historic and Current Annual
Surface Water Budget

Water Year	Type	Inflows Sespe Creek	Inflows Santa Clara River (from Piru)	Inflows Pole Creek	Outflows Santa Clara River (to Santa Paula)	Inflows - Outflows
1988	Dry	46,701	687	12,169	-72,462	12,905
1989	Dry	14,145	461	8,510	-30,185	7,070
1990	Critical	4,465	196	746	-12,970	7,563
1991	Dry	78,093	732	21,423	-100,892	643
1992	Wet	203,648	2,166	67,169	-260,137	-12,847
1993	Wet	460,968	4,578	229,354	-703,454	8,554
1994	Above Normal	28,845	4,701	36,368	-93,003	23,090
1995	Wet	332,734	12,759	117,371	-505,381	42,517
1996	Above Normal	29,947	1,948	28,796	-87,822	27,131
1997	Below Normal	80,970	1,473	21,928	-126,572	22,200
1998	Wet	386,503	6,468	259,158	-697,457	45,328
1999	Wet	22,665	1,152	29,933	-81,776	28,027
2000	Dry	44,231	1,043	27,837	-88,631	15,521
2001	Above Normal	145,439	2,753	48,454	-213,991	17,345
2002	Critical	7,661	525	32,596	-55,479	14,697
2003	Below Normal	52,213	683	16,717	-79,777	10,164
2004	Below Normal	28,919	1,149	9,106	-50,245	11,072
2005	Wet	541,667	12,881	400,598	-997,965	42,819
2006	Wet	152,871	2,023	49,941	-239,125	34,289
2007	Critical	11,013	373	23,382	-56,333	21,565
2008	Critical	137,048	1,490	43,937	-198,016	15,541
2009	Below Normal	28,645	484	30,248	-73,127	13,750
2010	Above Normal	71,584	668	23,114	-110,769	15,403
2011	Wet	158,553	1,036	48,170	-231,034	23,275
2012	Below Normal	15,183	962	24,437	-60,889	20,307
2013	Critical	4,316	107	12,222	-29,662	13,018
2014	Critical	18,583	108	3,007	-26,714	5,016
2015	Critical	8,556	191	3,522	-13,865	1,596
2016	Critical	6,615	28	2,012	-9,551	897
2017	Below Normal	94,766	2,747	35,899	-126,990	-6,422
2018	Dry	17,653	156	1,013	-16,718	-2,105
2019	Above Normal	143,365	1,842	47,834	-177,241	-15,801

Notes:
- Flows are in acre-feet/year (AFY), based on values from United (2021a).
- Water year types are based on those provided by DWR (2018a).

Historic and Current Annual
Surface Water Budget

Water Year	Type	Inflows: Santa Clara River (into Piru)	Inflows: Piru Creek	Inflows: Hopper Creek	Outflows: Santa Clara River (to Fillmore)	Outflows: Unaccounted Flows
1988	Dry	31,121	24,056	1,577	-12,169	-44,584
1989	Dry	33,207	10,531	405	-8,510	-35,634
1990	Critical	24,200	5,255	451	-746	-29,160
1991	Dry	33,784	13,102	4,121	-21,423	-29,584
1992	Wet	68,769	54,387	6,775	-67,169	-62,762
1993	Wet	149,946	155,970	17,562	-229,354	-94,123
1994	Above Normal	32,640	53,158	3,789	-36,368	-53,219
1995	Wet	83,720	95,951	20,935	-117,371	-83,236
1996	Above Normal	45,040	32,846	2,094	-28,796	-51,185
1997	Below Normal	38,677	37,268	3,128	-21,928	-57,145
1998	Wet	204,517	104,939	34,049	-259,158	-84,347
1999	Wet	42,149	47,220	1,521	-29,933	-60,957
2000	Dry	44,344	33,294	3,121	-27,837	-52,921
2001	Above Normal	33,741	65,512	6,635	-48,454	-57,433
2002	Critical	23,870	52,568	694	-32,596	-44,537
2003	Below Normal	35,399	24,720	1,655	-16,717	-45,056
2004	Below Normal	34,637	11,778	1,781	-9,106	-39,090
2005	Wet	274,323	191,371	48,240	-400,598	-113,335
2006	Wet	70,342	41,373	5,170	-49,941	-66,945
2007	Critical	27,760	39,930	398	-23,382	-44,706
2008	Critical	56,718	42,226	9,435	-43,937	-64,442
2009	Below Normal	39,910	40,338	1,165	-30,248	-51,164
2010	Above Normal	54,203	26,861	1,987	-23,114	-59,937
2011	Wet	69,946	42,043	6,674	-48,170	-70,493
2012	Below Normal	31,714	40,054	681	-24,437	-48,011
2013	Critical	23,321	22,776	95	-12,222	-33,970
2014	Critical	20,669	6,512	1,799	-3,007	-25,973
2015	Critical	25,352	6,366	391	-3,522	-28,588
2016	Critical	17,361	5,889	1,139	-2,012	-22,378
2017	Below Normal	59,056	28,027	9,903	-35,899	-61,087
2018	Dry	17,246	6,406	202	-1,013	-22,840
2019	Above Normal	60,788	49,994	6,101	-47,834	-69,049

Notes:
- Flows are in acre-feet/year (AFY), based on values from United (2021a).
- Water year types are based on those provided by DWR (2018a).

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APPENDIX H-2

Historical and Current Annual Groundwater Budget

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		Inflows				**Inflow/ Outflow**	**Outflows**			**Annual**	**Cumulative**	**Annual**	**Cumulative**
Water Year	**Type**	**Underflow from Piru**	**Recharge (Basin Floor)**	**Recharge (Mountain Front)**	**Underflow from Outside**	**Stream Exchange**	**Wells**	**Underflow to Santa Paula**	**Evapo-transpiration (ET)**	**Change in Storage**	**Change in Storage**	**Error**	**Error**
1988	Dry	43,246	22,324	6,506	2,289	-4,568	-46,352	-16,561	-13,418	-6,539	-6,539	-5	-5
1989	Dry	43,140	19,714	5,458	1,842	-1,686	-52,726	-16,794	-10,819	-11,867	-18,406	4	-1
1990	Critical	39,774	19,089	4,962	1,677	-3,933	-58,655	-17,246	-7,105	-21,435	-39,841	2	1
1991	Dry	35,280	24,296	7,955	1,553	3,816	-57,039	-17,454	-6,085	-7,678	-47,519	0	1
1992	Wet	40,111	27,606	10,023	1,320	15,029	-50,168	-17,192	-8,529	18,211	-29,308	11	12
1993	Wet	52,296	29,764	12,147	1,321	11,780	-46,023	-17,071	-14,740	29,468	160	-6	6
1994	Above Normal	53,385	17,981	5,878	1,768	-4,046	-47,536	-17,155	-14,752	-4,483	-4,323	-6	0
1995	Wet	51,179	29,241	12,135	2,138	-4,168	-41,914	-17,320	-17,143	14,143	9,820	-5	-5
1996	Above Normal	52,531	18,284	6,111	2,054	-8,201	-50,613	-17,599	-15,504	-12,941	-3,121	-4	-9
1997	Below Normal	50,856	19,404	7,014	1,843	-4,226	-45,588	-17,601	-14,875	-3,177	-6,298	-4	-13
1998	Wet	52,892	26,651	11,462	1,752	-3,799	-39,920	-17,304	-17,512	14,236	7,938	14	1
1999	Wet	53,107	16,522	4,649	1,977	-6,286	-50,890	-17,015	-15,051	-12,990	-5,052	-3	-2
2000	Dry	50,979	18,767	5,983	1,585	-1,687	-51,763	-17,372	-13,554	-7,066	-12,118	-4	-6
2001	Above Normal	50,476	25,122	8,799	1,483	-427	-47,139	-17,420	-15,027	5,862	-6,256	-5	-11
2002	Critical	48,492	16,130	4,715	1,496	-2,814	-47,918	-17,492	-13,028	-10,422	-16,678	-3	-14
2003	Below Normal	45,347	21,375	7,129	1,220	-1,057	-41,681	-17,483	-13,444	1,401	-15,277	-5	-19
2004	Below Normal	45,358	17,534	5,863	1,205	-2,646	-45,744	-17,594	-12,297	-8,326	-23,603	-5	-24
2005	Wet	48,644	30,578	14,207	1,446	2,055	-35,935	-17,766	-16,627	26,598	2,995	-4	-28
2006	Wet	53,935	20,577	7,487	1,705	-8,460	-40,074	-17,937	-17,191	40	3,035	-2	-30
2007	Critical	50,055	14,599	4,361	1,459	-4,904	-47,561	-18,803	-13,908	-14,706	-11,671	-4	-34
2008	Critical	50,217	22,999	7,497	1,303	695	-50,440	-18,702	-14,017	-451	-12,122	-3	-37
2009	Below Normal	50,837	19,387	5,760	1,123	-1,602	-47,353	-18,976	-13,375	-4,204	-16,326	-5	-42
2010	Above Normal	51,404	22,688	7,617	1,056	-2,520	-43,707	-18,924	-14,520	3,089	-13,237	-5	-47
2011	Wet	52,098	23,347	9,060	1,170	-3,951	-38,956	-18,568	-16,203	7,993	-5,244	-4	-51
2012	Below Normal	49,849	16,434	5,075	1,324	-5,408	-42,730	-18,555	-14,456	-8,473	-13,717	-6	-57
2013	Critical	45,120	13,762	4,464	1,034	-3,534	-45,680	-16,706	-11,718	-13,263	-26,980	-5	-62
2014	Critical	39,154	16,052	4,931	1,050	-881	-53,018	-17,365	-7,620	-17,699	-44,679	-2	-64
2015	Critical	34,095	14,462	5,039	1,091	1,024	-42,599	-17,629	-5,671	-10,191	-54,870	-3	-67
2016	Critical	31,342	16,543	5,316	1,020	1,938	-49,486	-17,610	-4,792	-15,732	-70,602	-3	-70
2017	Below Normal	31,643	22,665	8,848	1,119	10,306	-44,877	-17,043	-5,245	7,412	-63,190	-4	-74
2018	Dry	35,765	15,785	5,980	889	4,057	-48,399	-16,323	-4,335	-6,584	-69,774	-3	-77
2019	Above Normal	36,003	18,236	8,374	910	16,318	-34,551	-16,876	-5,998	22,412	-47,362	-4	-81

Notes:
- Flows are in acre-feet/year (AFY) from the United Water Conservation District Ventura Regional Groundwater Flow Model (United, 2021a).
- Water year types are provided by DWR; water year type for 2019 was determined based on DWR (2021).

		Inflows				Outflows			Annual	Cumulative	Annual	Cumulative
Water Year	Type	Stream Percolation	Recharge (Basin Floor)	Recharge (Mountain Front)	Underflow from Outside	Underflow to Fillmore	Wells	Evapo-transpiration (ET)	Change in Storage	Change in Storage	Error	Error
1988	Dry	40,127	8,252	10,339	0	-43,245	-12,760	-3,575	-866	-866	-3	-3
1989	Dry	33,606	6,436	8,039	0	-43,140	-13,890	-2,741	-11,692	-12,559	-2	-5
1990	Critical	27,070	6,615	6,577	0	-39,774	-15,810	-2,471	-17,794	-30,353	-1	-6
1991	Dry	26,737	9,271	10,765	0	-35,280	-17,501	-2,776	-8,789	-39,142	-4	-10
1992	Wet	55,840	20,020	14,687	0	-40,111	-13,155	-3,377	33,899	-5,244	-5	-15
1993	Wet	73,461	26,560	17,527	3	-52,296	-10,711	-7,791	46,747	41,503	-6	-21
1994	Above Normal	37,500	12,939	7,878	0	-53,385	-12,730	-7,806	-15,608	25,895	-5	-26
1995	Wet	47,712	21,971	15,640	4	-51,178	-9,676	-8,125	16,342	42,237	-6	-32
1996	Above Normal	40,493	7,792	9,418	0	-52,531	-14,319	-7,558	-16,708	25,529	-4	-36
1997	Below Normal	46,619	9,401	11,089	0	-50,855	-11,607	-5,897	-1,256	24,273	-5	-41
1998	Wet	49,443	21,862	20,856	2	-52,891	-8,356	-10,258	20,644	44,917	-13	-54
1999	Wet	45,649	6,968	7,050	0	-53,107	-12,435	-8,605	-14,486	30,431	-5	-59
2000	Dry	43,225	8,162	9,744	0	-50,978	-13,120	-4,989	-7,961	22,470	-6	-65
2001	Above Normal	42,737	11,797	12,087	0	-50,476	-11,199	-4,767	174	22,644	-5	-71
2002	Critical	35,727	6,149	6,594	0	-48,492	-11,452	-3,745	-15,224	7,420	-5	-76
2003	Below Normal	39,701	9,263	11,637	0	-45,346	-10,086	-3,916	1,247	8,667	-6	-82
2004	Below Normal	33,791	6,557	8,147	0	-45,357	-11,931	-3,508	-12,305	-3,639	-4	-86
2005	Wet	76,223	18,620	20,447	3	-48,644	-9,510	-8,415	48,717	45,078	-7	-93
2006	Wet	49,722	11,171	11,703	0	-53,935	-11,602	-11,152	-4,098	40,981	-5	-98
2007	Critical	36,018	4,264	5,642	0	-50,055	-13,993	-5,185	-23,312	17,668	-4	-102
2008	Critical	55,285	8,629	10,947	0	-50,217	-14,193	-4,616	5,831	23,499	-4	-106
2009	Below Normal	45,826	6,239	8,484	0	-50,836	-12,421	-4,417	-7,129	16,370	-4	-110
2010	Above Normal	52,382	9,266	11,942	0	-51,404	-12,013	-5,373	4,795	21,165	-5	-115
2011	Wet	55,861	10,371	12,864	0	-52,098	-10,646	-7,191	9,155	30,320	-7	-121
2012	Below Normal	37,214	6,465	7,697	0	-49,848	-11,767	-4,547	-14,789	15,531	-3	-125
2013	Critical	24,805	5,475	6,136	0	-45,119	-12,189	-3,302	-24,197	-8,665	-2	-126
2014	Critical	21,525	5,651	6,795	0	-39,154	-14,526	-2,504	-22,215	-30,880	-2	-129
2015	Critical	26,421	5,421	7,358	0	-34,095	-12,553	-2,531	-9,984	-40,863	-3	-132
2016	Critical	18,886	6,070	7,573	0	-31,342	-14,481	-2,533	-15,831	-56,694	-4	-135
2017	Below Normal	56,583	9,401	12,755	0	-31,642	-10,660	-3,381	33,050	-23,645	-5	-141
2018	Dry	19,944	5,714	7,775	0	-35,765	-12,841	-2,665	-17,842	-41,487	-5	-145
2019	Above Normal	69,117	9,081	12,502	0	-36,002	-10,782	-3,511	40,402	-1,085	-4	-150

Notes:
- Flows are in acre-feet/year (AFY) from the United Water Conservation District Ventura Regional Groundwater Flow Model (United, 2021a).
- Water year types are provided by DWR; water year type for 2019 was determined based on DWR (2021).

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APPENDIX I

Projected Water Budgets

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APPENDIX I-1

Projected Annual Surface Water Budget

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Water Year	Type	Inflows Sespe Creek	Inflows Santa Clara River (from Piru)	Inflows Pole Creek	Outflows Santa Clara River (to Santa Paula)	Inflows - Outflows
2022	--	131,388	172,347	1,768	-319,471	-13,968
2023	--	50,347	17,475	711	-81,788	-13,256
2024	Dry	45,006	32,454	611	-81,857	-3,787
2025	Dry	35,343	16,774	637	-54,897	-2,143
2026	Critical	3,861	466	208	-7,952	-3,417
2027	Critical	6,007	108	268	-6,956	-573
2028	Critical	12,685	914	434	-11,859	2,175
2029	Critical	1,213	31	166	-371	1,039
2030	Wet	129,413	37,856	1,842	-150,746	18,366
2031	Above Normal	14,475	24,233	578	-25,103	14,183
2032	Dry	29,631	6,777	478	-29,507	7,379
2033	Dry	13,069	3,040	422	-10,687	5,844
2034	Below Normal	27,607	5,716	726	-28,091	5,958
2035	Dry	22,480	4,204	539	-21,363	5,859
2036	Wet	188,768	36,795	2,696	-208,621	19,639
2037	Above Normal	34,389	17,989	635	-43,417	9,595
2038	Critical	10,459	17,714	296	-23,704	4,765
2039	Critical	6,254	74	297	-4,908	1,717
2040	Above Normal	172,686	43,475	2,439	-203,587	15,012
2041	Above Normal	15,213	25,307	623	-27,729	13,414
2042	Dry	10,593	1,040	430	-8,357	3,707
2043	Dry	16,942	1,312	427	-13,700	4,981
2044	Above Normal	134,239	45,618	1,941	-165,142	16,657
2045	Wet	123,891	30,820	2,468	-140,628	16,551
2046	Above Normal	18,230	17,808	709	-31,183	5,563
2047	Wet	483,111	394,113	7,173	-893,859	-9,462
2048	Wet	48,310	19,709	823	-79,862	-11,020
2049	Dry	53,242	29,436	931	-88,682	-5,073
2050	Dry	24,500	21,806	564	-46,118	753
2051	Above Normal	161,911	60,776	1,759	-223,850	596
2052	Wet	50,665	29,667	866	-83,074	-1,876
2053	Below Normal	51,465	14,583	408	-69,483	-3,027
2054	Below Normal	35,027	8,515	429	-43,001	970
2055	Below Normal	13,818	8,291	285	-23,495	-1,102
2056	Wet	419,294	210,153	4,545	-642,775	-8,783
2057	Wet	97,047	100,376	673	-222,951	-24,855
2058	Wet	157,252	153,476	3,302	-343,812	-29,782
2059	Above Normal	28,149	19,477	1,077	-60,048	-11,345
2060	Below Normal	34,768	27,657	479	-66,940	-4,037
2061	Wet	296,234	144,764	7,340	-472,948	-24,610
2062	Wet	30,193	20,726	1,341	-71,546	-19,286

Water Year	Type	Inflows Sespe Creek	Inflows Santa Clara River (from Piru)	Inflows Pole Creek	Outflows Santa Clara River (to Santa Paula)	Inflows - Outflows
2064	Above Normal	197,448	53,739	2,713	-262,137	-8,237
2065	Dry	13,248	10,660	507	-27,586	-3,172
2066	Dry	53,738	11,523	625	-65,620	267
2067	Dry	11,655	7,201	418	-19,019	254
2068	Critical	13,394	2,038	223	-15,353	302
2069	Dry	85,142	36,467	798	-114,754	7,653
2070	Wet	198,786	76,254	2,115	-265,869	11,285
2071	Wet	367,779	261,874	4,524	-650,925	-16,747
2072	Above Normal	31,272	19,466	5,096	-67,263	-11,428
2073	Wet	325,342	176,883	12,476	-540,599	-25,899
2074	Above Normal	35,523	46,092	2,311	-98,045	-14,119
2075	Below Normal	71,001	34,489	1,292	-120,666	-13,883
2076	Wet	358,230	276,249	5,995	-679,833	-39,360
2077	Above Normal	20,580	17,779	1,046	-55,949	-16,544
2078	Dry	47,646	51,217	1,123	-109,150	-9,164
2079	Above Normal	158,826	42,327	3,006	-217,124	-12,965
2080	Critical	6,710	16,057	461	-27,786	-4,558
2081	Dry	45,351	22,879	593	-72,408	-3,585
2082	Below Normal	31,674	12,118	1,258	-48,072	-3,023
2083	Wet	534,507	359,147	12,710	-943,167	-36,803
2084	Wet	128,151	48,874	1,696	-204,386	-25,665
2085	Critical	10,725	15,986	364	-33,242	-6,167
2086	Critical	135,113	48,847	1,469	-187,848	-2,419
2087	Dry	26,358	12,100	445	-39,365	-462
2088	Below Normal	70,664	30,419	659	-100,785	958
2089	Above Normal	131,591	40,033	860	-180,704	-8,220
2090	--	12,925	16,848	818	-33,231	-2,639
2091	--	3,786	11,192	94	-19,150	-4,080
2092	--	23,618	5,891	138	-29,129	517
2093	--	8,256	1,481	184	-9,589	333
2094	--	6,853	2,088	29	-7,675	1,294
2095	--	96,584	29,090	9,321	-127,532	7,463
2096	--	17,578	2,758	156	-15,011	5,481
2097	--	146,116	43,299	1,878	-176,068	15,224

Water Year	Type	Inflows: Santa Clara River (into Piru)	Inflows: Piru Creek	Inflows: Hopper Creek	Outflows: Santa Clara River (to Fillmore)	Outflows: Unaccounted Flows
2022	--	127,637	116,959	5,394	-172,347	-77,643
2023	--	39,219	31,053	1,641	-17,475	-54,438
2024	Dry	32,808	52,532	1,550	-32,454	-54,436
2025	Dry	37,072	30,460	1,730	-16,774	-52,488
2026	Critical	23,920	5,861	224	-466	-29,540
2027	Critical	22,973	5,068	366	-108	-28,300
2028	Critical	22,526	6,282	932	-914	-28,826
2029	Critical	21,924	5,068	131	-31	-27,093
2030	Wet	61,961	34,919	5,755	-37,856	-64,779
2031	Above Normal	29,022	40,580	972	-24,233	-46,341
2032	Dry	31,206	16,179	910	-6,777	-41,518
2033	Dry	26,784	10,467	674	-3,040	-34,884
2034	Below Normal	28,849	11,643	1,678	-5,716	-36,453
2035	Dry	27,089	10,487	1,288	-4,204	-34,660
2036	Wet	52,261	41,973	9,094	-36,795	-66,533
2037	Above Normal	27,491	29,936	1,133	-17,989	-40,571
2038	Critical	22,468	28,467	483	-17,714	-33,703
2039	Critical	22,282	5,068	275	-74	-27,552
2040	Above Normal	52,073	44,172	8,174	-43,475	-60,944
2041	Above Normal	24,552	40,925	835	-25,307	-41,005
2042	Dry	23,327	6,641	646	-1,040	-29,573
2043	Dry	24,314	6,986	935	-1,312	-30,923
2044	Above Normal	63,299	39,937	6,671	-45,618	-64,289
2045	Wet	54,035	37,450	8,324	-30,820	-68,989
2046	Above Normal	35,797	30,486	1,593	-17,808	-50,068
2047	Wet	267,452	201,034	26,459	-394,113	-100,832
2048	Wet	43,707	30,319	1,687	-19,709	-56,004
2049	Dry	45,223	39,584	2,217	-29,436	-57,587
2050	Dry	40,574	32,045	1,313	-21,806	-52,125
2051	Above Normal	98,570	35,823	5,581	-60,776	-79,198
2052	Wet	50,517	36,656	2,057	-29,667	-59,563
2053	Below Normal	38,256	25,630	1,690	-14,583	-50,994
2054	Below Normal	37,889	16,774	665	-8,515	-46,813
2055	Below Normal	37,703	12,787	607	-8,291	-42,807
2056	Wet	192,713	94,688	20,789	-210,153	-98,037
2057	Wet	103,267	65,173	4,096	-100,376	-72,159
2058	Wet	123,563	95,134	13,582	-153,476	-78,804
2059	Above Normal	42,872	30,319	1,382	-19,477	-55,096
2060	Below Normal	48,950	42,644	1,498	-27,657	-65,436
2061	Wet	123,854	91,185	17,943	-144,764	-88,218
2062	Wet	48,858	31,956	1,793	-20,726	-61,881

		Inflows			Outflows	
Water Year	Type	Santa Clara River (into Piru)	Piru Creek	Hopper Creek	Santa Clara River (to Fillmore)	Unaccounted Flows
2064	Above Normal	80,423	36,837	8,220	-53,739	-71,741
2065	Dry	38,905	22,217	414	-10,660	-50,876
2066	Dry	45,012	23,464	1,434	-11,523	-58,387
2067	Dry	44,998	9,457	368	-7,201	-47,622
2068	Critical	38,990	6,551	514	-2,038	-44,017
2069	Dry	58,267	32,777	4,493	-36,467	-59,069
2070	Wet	86,581	60,767	6,564	-76,254	-77,660
2071	Wet	195,423	137,529	17,356	-261,874	-88,433
2072	Above Normal	47,232	29,936	4,114	-19,466	-61,816
2073	Wet	120,573	122,499	20,476	-176,883	-86,666
2074	Above Normal	66,202	42,297	2,469	-46,092	-64,876
2075	Below Normal	52,053	46,988	2,743	-34,489	-67,295
2076	Wet	208,146	127,994	31,569	-276,249	-91,460
2077	Above Normal	48,403	30,249	1,371	-17,779	-62,245
2078	Dry	55,676	57,798	3,361	-51,217	-65,619
2079	Above Normal	53,386	46,381	7,245	-42,327	-64,685
2080	Critical	31,984	29,724	609	-16,057	-46,260
2081	Dry	40,684	36,381	1,438	-22,879	-55,624
2082	Below Normal	43,042	17,847	1,951	-12,118	-50,723
2083	Wet	280,066	138,359	47,602	-359,147	-106,880
2084	Wet	64,256	49,690	4,335	-48,874	-69,406
2085	Critical	33,055	29,232	388	-15,986	-46,689
2086	Critical	61,458	49,531	9,302	-48,847	-71,444
2087	Dry	41,335	21,005	1,073	-12,100	-51,313
2088	Below Normal	55,637	38,182	1,962	-30,419	-65,361
2089	Above Normal	63,288	39,818	5,539	-40,033	-68,612
2090	--	32,656	29,950	579	-16,848	-46,336
2091	--	25,853	19,878	84	-11,192	-34,623
2092	--	28,787	11,215	2,237	-5,891	-36,347
2093	--	33,400	5,560	350	-1,481	-37,828
2094	--	27,139	6,169	1,157	-2,088	-32,376
2095	--	59,133	19,511	10,093	-29,090	-59,648
2096	--	25,734	10,199	199	-2,758	-33,374
2097	--	67,338	41,032	7,257	-43,299	-72,328

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APPENDIX I-2

Projected Annual Groundwater Budget

DRAFT

		Inflows				Inflow/ Outflow	Outflows			Annual	Cumulative	Annual	Cumulative
Water Year	Type	Underflow from Piru	Recharge (Basin Floor)	Recharge (Mountain Front)	Underflow from Outside	Stream Exchange	Wells	Underflow to Santa Paula	Evapo-transpiration (ET)	Change in Storage	Change in Storage	Error	Error
2022		51,292	20,134	8,636	1,135	4,820	-45,571	-17,541	-13,264	9,641	9,641	-2	-2
2023		53,437	17,016	7,358	1,159	-5,721	-45,950	-17,433	-12,895	-3,032	6,610	-1	-3
2024	Dry	52,699	15,692	6,119	1,185	-149	-55,069	-17,317	-11,869	-8,710	-2,100	-1	-4
2025	Dry	50,123	15,234	6,258	1,060	31	-50,545	-15,506	-10,877	-4,223	-6,322	0	-4
2026	Critical	46,655	13,294	4,581	1,099	-2,997	-57,425	-15,291	-7,266	-17,350	-23,672	0	-4
2027	Critical	39,662	14,471	4,709	1,278	-714	-56,633	-15,010	-4,839	-17,077	-40,748	0	-4
2028	Critical	36,874	15,714	5,628	1,354	2,021	-52,043	-16,867	-4,467	-11,784	-52,532	1	-3
2029	Critical	33,794	14,178	4,563	1,526	899	-60,253	-17,093	-3,153	-25,530	-78,062	8	5
2030	Wet	35,629	25,515	11,577	1,130	16,491	-47,720	-17,346	-3,756	21,526	-56,536	5	10
2031	Above Normal	43,642	14,254	5,358	1,085	9,697	-48,942	-16,912	-4,337	3,845	-52,691	0	10
2032	Dry	43,368	17,629	7,083	1,062	5,408	-52,677	-16,869	-4,483	521	-52,169	0	10
2033	Dry	42,056	15,313	5,723	1,115	4,681	-52,041	-17,031	-4,286	-4,471	-56,639	0	10
2034	Below Normal	39,434	16,203	6,444	1,142	5,194	-48,799	-17,035	-4,151	-1,559	-58,197	9	19
2035	Dry	37,061	16,096	5,918	1,206	5,127	-54,643	-17,039	-3,779	-10,038	-68,234	14	33
2036	Wet	39,605	24,048	11,337	1,031	18,294	-39,938	-16,931	-5,310	32,140	-36,094	4	37
2037	Above Normal	45,438	14,444	5,971	1,130	6,528	-52,061	-17,284	-5,769	-1,590	-37,684	12	49
2038	Critical	44,214	14,433	5,259	963	2,444	-52,247	-17,124	-5,535	-7,587	-45,271	5	54
2039	Critical	38,400	13,391	4,634	1,438	1,505	-60,072	-16,827	-4,290	-21,810	-67,081	10	65
2040	Above Normal	36,036	22,549	9,828	1,139	14,421	-48,846	-16,608	-4,499	14,022	-53,059	3	68
2041	Above Normal	41,149	16,362	5,961	1,162	9,213	-54,679	-16,538	-4,124	-1,486	-54,544	8	76
2042	Dry	36,902	14,263	4,897	1,029	3,332	-51,630	-15,396	-3,573	-10,176	-64,719	2	77
2043	Dry	35,460	14,316	5,880	1,246	4,836	-47,682	-16,772	-2,878	-5,589	-70,307	5	82
2044	Above Normal	36,035	19,514	8,522	920	15,442	-47,642	-15,638	-3,692	13,464	-56,843	2	84
2045	Wet	44,453	20,706	9,421	798	16,159	-37,846	-15,938	-5,275	32,479	-24,364	0	84
2046	Above Normal	50,046	15,057	5,880	1,086	4,528	-45,564	-17,382	-7,344	6,306	-18,058	0	84
2047	Wet	51,822	26,905	13,235	1,030	11,215	-44,598	-17,329	-12,451	29,827	11,769	-1	82
2048	Wet	53,497	15,685	5,978	1,340	-4,371	-49,095	-17,482	-12,787	-7,235	4,534	-1	81
2049	Dry	52,180	16,521	6,741	1,221	-1,179	-49,214	-17,465	-11,965	-3,161	1,374	-1	80
2050	Dry	52,659	15,763	5,858	1,290	840	-62,647	-16,960	-9,868	-13,057	-11,683	7	87
2051	Above Normal	53,029	22,917	9,712	1,082	3,981	-54,001	-16,906	-10,025	9,789	-1,893	0	87
2052	Wet	52,570	16,764	6,810	1,081	2,222	-49,361	-17,160	-10,794	2,132	240	0	86
2053	Below Normal	52,171	17,181	7,195	1,095	-1,085	-48,196	-17,394	-10,992	-26	215	0	86
2054	Below Normal	49,876	15,575	6,570	1,133	-495	-49,581	-17,300	-9,459	-3,682	-3,466	0	86
2055	Below Normal	47,777	15,132	5,662	1,016	-2,351	-51,220	-16,283	-8,481	-8,750	-12,215	0	86
2056	Wet	49,496	29,783	14,146	1,125	6,620	-42,694	-17,100	-12,535	28,841	16,626	-1	86
2057	Wet	54,604	20,368	8,657	1,204	-7,854	-43,912	-17,246	-14,160	1,658	18,285	-2	84
2058	Wet	53,585	23,381	10,586	1,393	-6,787	-46,258	-16,971	-15,110	3,819	22,105	-2	83
2059	Above Normal	53,714	15,774	5,929	1,640	-5,602	-53,344	-16,996	-13,526	-12,412	9,693	-1	81
2060	Below Normal	52,442	16,622	6,427	1,372	-775	-51,381	-17,087	-11,056	-3,435	6,258	0	81
2061	Wet	52,334	29,583	13,040	1,436	-1,641	-47,090	-17,131	-13,876	16,661	22,920	6	87
2062	Wet	55,393	14,992	5,750	1,920	-8,742	-48,609	-16,987	-14,524	-10,809	12,112	-1	86
2063	Critical	54,247	13,599	5,092	1,414	-5,815	-49,446	-17,062	-12,486	-10,457	1,655	-1	85
2064	Above Normal	53,274	21,277	9,631	1,406	-1,556	-41,264	-17,215	-13,049	12,502	14,157	-1	84
2065	Dry	51,319	13,712	4,239	1,459	-1,577	-57,936	-17,323	-11,059	-17,166	-3,009	0	84
2066	Dry	51,312	16,213	5,883	1,231	241	-47,508	-17,229	-10,691	-548	-3,556	0	84
2067	Dry	51,917	14,406	4,998	1,179	-505	-57,361	-16,852	-9,296	-11,513	-15,069	0	84
2068	Critical	47,563	14,373	4,971	1,189	72	-58,896	-16,811	-6,674	-14,212	-29,281	0	84
2069	Dry	44,773	19,591	8,196	1,167	6,414	-57,497	-16,899	-5,734	12	-29,269	0	84
2070	Wet	51,060	24,032	10,473	968	12,319	-50,585	-17,029	-8,932	22,307	-6,962	0	83
2071	Wet	52,442	26,881	12,768	1,276	5,464	-42,607	-16,950	-13,798	25,480	18,518	5	88
2072	Above Normal	55,249	15,400	5,832	1,891	-3,347	-53,104	-17,004	-13,069	-8,145	10,373	8	96
2073	Wet	54,437	26,402	12,628	2,092	-2,315	-47,592	-17,079	-14,879	13,695	24,069	2	98
2074	Above Normal	54,718	17,694	6,711	2,112	-6,055	-56,286	-17,134	-13,554	-11,778	12,291	14	112
2075	Below Normal	54,767	18,438	7,731	1,794	-5,605	-46,255	-17,046	-14,326	-503	11,789	-1	111
2076	Wet	54,147	29,905	14,330	1,640	-9,173	-39,306	-17,065	-14,696	19,788	31,577	3	114
2077	Above Normal	55,541	13,476	4,483	1,990	-8,510	-53,117	-16,883	-13,644	-16,652	14,926	12	126
2078	Dry	54,383	18,199	7,110	1,526	-2,447	-52,856	-16,812	-13,066	-3,963	10,963	-1	125
2079	Above Normal	54,161	21,694	9,558	1,517	-3,471	-49,574	-17,030	-13,052	3,802	14,766	-1	124
2080	Critical	51,816	11,937	4,239	1,539	-2,911	-51,412	-17,086	-11,456	-13,335	1,431	-1	124
2081	Dry	50,731	17,389	7,039	1,113	-2,211	-42,041	-17,106	-12,050	2,863	4,295	0	124
2082	Below Normal	50,211	14,337	5,864	1,211	-2,238	-48,558	-17,346	-11,263	-7,782	-3,487	0	124
2083	Wet	50,457	30,529	15,410	1,429	-1,966	-36,402	-17,102	-14,065	28,288	24,802	-2	122
2084	Wet	53,079	16,939	7,517	1,766	-10,195	-40,784	-17,040	-14,241	-2,962	21,840	-1	121
2085	Critical	51,565	10,628	3,892	1,491	-3,243	-52,170	-16,999	-12,762	-17,599	4,241	-1	120
2086	Critical	52,347	18,784	7,795	1,337	2,952	-55,199	-16,995	-12,185	-1,162	3,079	0	120
2087	Dry	52,034	14,598	5,421	1,194	823	-54,533	-17,035	-10,276	-7,775	-4,696	0	120
2088	Below Normal	51,875	18,630	7,521	1,078	2,418	-48,819	-17,225	-10,658	4,820	124	0	120
2089	Above Normal	52,526	19,503	8,748	1,095	-1,305	-43,135	-17,124	-11,964	8,345	8,469	-1	119
2090		50,208	12,154	4,250	1,294	-430	-50,779	-16,569	-11,168	-11,041	-2,571	0	119
2091		47,393	13,651	5,263	1,006	-3,187	-50,940	-15,248	-9,485	-11,548	-14,118	0	119
2092		42,536	15,268	6,003	1,115	593	-55,976	-15,318	-7,070	-12,847	-26,964	0	119
2093		39,358	14,075	5,042	1,099	211	-50,620	-15,216	-5,032	-11,082	-38,046	0	119
2094		37,420	16,355	6,310	1,032	1,662	-53,459	-15,646	-4,605	-10,932	-48,978	0	119
2095		38,770	20,956	9,183	1,344	10,476	-52,289	-15,555	-4,937	7,948	-41,030	0	119
2096		38,985	15,674	5,961	1,367	4,543	-53,054	-15,342	-4,308	-6,174	-47,204	0	119
2097		39,411	19,536	9,183	1,007	14,936	-39,164	-16,081	-5,133	23,695	-23,508	0	118

Notes:
- Information is from United (2021a,b)
- Values are in acre-feet per year (AFY).

		Inflows				Outflows			Annual	Cumulative	Annual	Cumulative
Water Year	Type	Stream Percolation	Recharge (Basin Floor)	Recharge (Mountain Front)	Underflow from Outside	Underflow to Fillmore	Wells	Evapo-transpiration (ET)	Change in Storage	Change in Storage	Error	Error
2022	--	52,703	11,583	13,200	4	-51,292	-14,256	-6,371	5,565	5,565	-7	-7
2023	--	41,112	9,407	10,560	0	-53,437	-14,362	-5,551	-12,271	-6,707	0	-7
2024	Dry	45,183	8,441	8,904	0	-52,699	-16,722	-4,256	-11,146	-17,852	3	-3
2025	Dry	44,854	8,417	9,596	0	-50,123	-13,902	-3,945	-5,102	-22,954	1	-3
2026	Critical	24,731	6,414	6,741	0	-46,655	-16,444	-2,493	-27,707	-50,661	0	-3
2027	Critical	24,064	7,214	7,408	0	-39,662	-17,452	-2,219	-20,648	-71,309	0	-3
2028	Critical	24,501	7,547	8,382	0	-36,874	-14,326	-2,330	-13,098	-84,407	2	-1
2029	Critical	22,924	6,418	6,754	0	-33,794	-16,261	-2,230	-16,097	-100,504	90	89
2030	Wet	61,229	13,319	16,197	8	-35,629	-10,793	-2,715	41,647	-58,857	32	122
2031	Above Normal	45,798	7,199	7,993	0	-43,642	-14,073	-2,796	478	-58,378	0	121
2032	Dry	38,634	9,682	10,666	0	-43,368	-15,330	-2,716	-2,432	-60,810	-1	121
2033	Dry	31,353	8,394	9,075	0	-42,056	-14,967	-2,444	-10,645	-71,455	0	120
2034	Below Normal	32,439	8,323	9,620	2	-39,434	-13,107	-2,431	-4,589	-76,044	1	121
2035	Dry	30,751	8,220	9,012	2	-37,061	-15,052	-2,509	-6,636	-82,680	1	122
2036	Wet	62,120	13,499	16,188	1	-39,605	-10,556	-3,012	38,634	-44,045	-1	120
2037	Above Normal	38,915	7,661	8,218	0	-45,438	-16,478	-2,980	-10,103	-54,148	0	120
2038	Critical	31,369	7,203	7,804	0	-44,214	-15,633	-2,542	-16,012	-70,160	1	121
2039	Critical	23,560	6,517	6,672	0	-38,400	-17,349	-2,442	-21,442	-91,602	0	121
2040	Above Normal	56,039	11,852	13,378	7	-36,036	-14,907	-2,837	27,496	-64,106	0	121
2041	Above Normal	40,411	7,986	8,638	0	-41,149	-15,615	-2,563	-2,291	-66,397	1	121
2042	Dry	25,483	6,680	7,450	0	-36,902	-14,539	-2,304	-14,131	-80,528	0	121
2043	Dry	26,537	7,305	8,738	0	-35,460	-11,848	-2,337	-7,065	-87,593	0	121
2044	Above Normal	60,161	10,828	12,743	6	-36,035	-13,194	-2,977	31,533	-56,061	1	122
2045	Wet	63,694	11,733	14,136	0	-44,453	-11,705	-3,222	30,186	-25,875	2	124
2046	Above Normal	46,141	8,425	9,876	0	-50,046	-11,998	-3,550	-1,150	-27,025	0	125
2047	Wet	73,607	14,157	16,827	15	-51,822	-12,434	-7,005	33,339	6,313	-6	118
2048	Wet	43,743	7,797	8,501	0	-53,497	-15,174	-5,903	-14,534	-8,221	0	119
2049	Dry	47,645	8,864	9,574	1	-52,180	-16,581	-4,405	-7,079	-15,299	3	121
2050	Dry	47,024	7,854	8,032	0	-52,659	-18,968	-3,608	-12,326	-27,625	0	121
2051	Above Normal	69,828	12,086	13,236	2	-53,029	-17,035	-4,863	20,222	-7,403	-1	120
2052	Wet	49,729	9,153	10,002	3	-52,570	-15,806	-4,511	-4,000	-11,402	1	121
2053	Below Normal	43,216	8,977	9,937	0	-52,171	-15,130	-3,799	-8,971	-20,373	0	121
2054	Below Normal	43,196	8,138	9,188	0	-49,876	-13,742	-3,047	-6,144	-26,517	-1	120
2055	Below Normal	39,070	7,882	8,805	0	-47,777	-14,353	-2,928	-9,302	-35,819	-1	120
2056	Wet	76,161	16,622	19,826	6	-49,496	-12,310	-6,168	44,635	8,816	-6	114
2057	Wet	48,788	11,318	13,142	1	-54,604	-13,150	-8,557	-3,071	5,745	-10	104
2058	Wet	49,090	13,327	15,475	7	-53,585	-14,033	-8,415	1,856	7,601	-10	94
2059	Above Normal	43,445	8,116	8,485	0	-53,714	-17,800	-5,995	-17,463	-9,862	0	94
2060	Below Normal	56,278	8,734	9,484	0	-52,442	-15,904	-4,335	1,815	-8,047	0	95
2061	Wet	57,808	16,912	19,587	1	-52,334	-13,577	-7,896	20,486	12,439	-15	80
2062	Wet	45,543	8,014	8,764	0	-55,393	-15,030	-8,064	-16,166	-3,727	-1	79
2063	Critical	46,224	7,384	7,871	0	-54,247	-15,937	-5,330	-14,036	-17,763	-2	78
2064	Above Normal	58,422	12,074	14,387	1	-53,274	-12,116	-5,690	13,802	-3,962	-3	75
2065	Dry	43,940	6,554	6,221	0	-51,319	-20,081	-4,097	-18,780	-22,741	1	76
2066	Dry	52,578	8,677	9,660	0	-51,312	-13,844	-3,817	1,942	-20,799	0	76
2067	Dry	43,391	7,416	7,721	0	-51,917	-16,509	-3,332	-13,230	-34,029	0	76
2068	Critical	39,609	7,197	7,161	0	-47,563	-18,190	-2,935	-14,722	-48,751	-1	75
2069	Dry	55,114	10,091	10,708	0	-44,773	-18,706	-2,833	9,602	-39,149	0	75
2070	Wet	70,676	13,720	15,562	5	-51,060	-15,318	-3,924	29,661	-9,489	0	75
2071	Wet	59,403	15,061	17,842	12	-52,442	-12,618	-8,340	18,903	9,414	-14	61
2072	Above Normal	47,301	7,503	8,356	0	-55,249	-14,727	-6,630	-13,446	-4,032	0	61
2073	Wet	55,624	13,659	16,331	12	-54,437	-12,045	-8,365	10,765	6,733	-14	48
2074	Above Normal	50,459	8,805	9,603	0	-54,718	-16,565	-7,005	-9,422	-2,689	-2	45
2075	Below Normal	52,442	9,366	10,892	1	-54,767	-12,806	-6,904	-1,776	-4,465	0	45
2076	Wet	53,518	15,788	19,287	11	-54,147	-8,728	-8,179	17,535	13,070	-14	31
2077	Above Normal	48,046	6,160	6,787	0	-55,541	-14,012	-6,803	-15,363	-2,293	1	32
2078	Dry	53,079	8,930	10,065	1	-54,383	-14,584	-5,719	-2,612	-4,905	-2	30
2079	Above Normal	48,482	11,089	12,896	2	-54,161	-12,869	-5,801	-360	-5,265	0	30
2080	Critical	39,420	5,571	6,207	0	-51,816	-13,595	-3,711	-17,926	-23,191	-1	29
2081	Dry	48,262	9,932	11,585	0	-50,731	-11,159	-3,754	4,136	-19,055	0	29
2082	Below Normal	44,577	7,282	8,184	0	-50,211	-14,182	-3,471	-7,823	-26,878	-1	28
2083	Wet	64,480	17,246	20,880	15	-50,457	-10,575	-7,205	34,372	7,494	-11	16
2084	Wet	47,195	9,250	10,717	0	-53,079	-12,614	-7,369	-5,903	1,592	-3	13
2085	Critical	38,805	5,554	5,559	0	-51,565	-17,029	-4,545	-23,222	-21,630	-1	13
2086	Critical	59,940	9,820	10,438	3	-52,347	-16,970	-4,109	6,775	-14,856	1	14
2087	Dry	44,844	7,558	8,200	0	-52,034	-15,276	-3,488	-10,197	-25,052	-1	12
2088	Below Normal	58,067	10,352	11,678	1	-51,875	-13,817	-3,798	10,606	-14,446	-1	11
2089	Above Normal	55,322	10,515	12,292	2	-52,526	-12,490	-4,797	8,315	-6,131	-3	8
2090	--	38,954	5,664	6,259	0	-50,208	-14,663	-3,584	-17,578	-23,710	0	8
2091	--	29,338	6,966	7,856	0	-47,393	-13,942	-2,882	-20,058	-43,768	0	8
2092	--	31,756	7,645	8,349	0	-42,536	-15,696	-2,670	-13,153	-56,921	0	8
2093	--	33,478	7,345	7,912	0	-39,358	-15,483	-2,418	-8,526	-65,447	-1	7
2094	--	27,787	8,737	9,595	0	-37,420	-16,017	-2,623	-9,941	-75,388	0	7
2095	--	50,688	10,714	12,454	2	-38,770	-13,642	-2,809	18,634	-56,754	-3	4
2096	--	29,844	7,629	8,591	0	-38,985	-14,779	-2,680	-10,381	-67,135	-1	3
2097	--	67,604	10,366	12,454	2	-39,411	-12,327	-3,118	35,568	-31,567	-2	0

Notes:
- Flows are in acre-feet/year (AFY) from the United Water Conservation District Ventura Regional Groundwater Flow Model (United, 2021a,b).
- Climate change is based on change factors provided by DWR for the 2070 Central Tendency (CT) scenario.
- Water years without DWR-designated types are denoted as "--".

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APPENDIX J

Sustainable Management Criteria Technical Memorandum (DBS&A, 2021c)

DRAFT

Fillmore and Piru Basins Sustainable Management Criteria Technical Memorandum

Submitted to
Fillmore and Piru Basins Groundwater Sustainability Agency

Fillmore and Piru Basins
Groundwater Sustainability Agency

Prepared by

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Certification

This Technical Memorandum was prepared in accordance with generally accepted professional hydrogeologic principles and practices. This Technical Memorandum makes no other warranties, either expressed or implied as to the professional advice or data included in it. This Technical Memorandum has not been prepared for use by parties or projects other than those named or described herein. It may not contain sufficient information for other parties or purposes.

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List of Acronyms and Abbreviations

AB	assembly bill
ADCP	acoustic doppler current profiler
AF	acre-feet
AFY	acre-feet per year
Ag	agriculture
AMI	automated (or advanced) metering infrastructure
amsl	above mean sea level
APN	assessor parcel number
B	boron
bgs	below ground surface
BMP	best management practices
BOS	bottom of screen
CA	California

CalGEM	Geologic Energy Management Division (formerly DOGGR)
CASGEM	California statewide groundwater elevation monitoring
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CFS	cubic feet per second
CIMIS	California irrigation management information system
Cl	chloride
COC	chemical of concern
CWC	California Water Code
CWL	Critical Water Level
DBS&A	Daniel B. Stephens & Associates, Inc.
DDW	[SWRCB] Division of Drinking Water
DEM	digital elevation model
DOGGR	Division of Oil, Gas, and Geothermal Resources (reorganized as CalGEM)
DQO	data quality objective
DTW	depth to water
DWR	[CA] Department of Water Resources
DWUs	downstream water users
EGM96	Earth Gravitational Model of 1996
ENSO	El Niño Southern Oscillation
EPA	U.S. Environmental Protection Agency
ET	evapotranspiration
ET_0	reference evapotranspiration
FCGMA	Fox Canyon Groundwater Management Agency
FICO	Farmers Irrigation Company
FPBGSA	Fillmore and Piru Basins Groundwater Sustainability Agency (also called GSA or Agency)
FT	feet
GAMA	[USGS] groundwater ambient monitoring & assessment
GIS	geographic information system
GPS	global positioning system

GSP	groundwater sustainability plan
HASP	health and safety plan
HCM	hydrogeologic conceptual model
Hydrodata	[VCWPD] hydrologic data server
ID	identification
LARWQCB	Los Angeles Regional Water Quality Control Board
LiDAR	light detection and ranging
NCCAG	natural communities commonly associated with groundwater
M&I	municipal and industrial
MCL	maximum contaminant level
MOU	memorandum of understanding
MS4	municipal separate storm sewer system
NAD	North American datum
NAVD88	North American vertical datum of 1988
ND	not detected
NGVD29	national geodetic vertical datum of 1929
NO3	nitrate
NWIS	national water information system
OFR	open file report
PBP	priority basin project
PDO	Pacific Decadal Oscillation
PSI	pounds per square inch
PSW	public-supply well
PVC	polymerizing vinyl chloride
QA	quality assurance
QC	quality control
RASA	regional aquifer-system analysis
RP	reference point (elevation)
RWQCB	[CA] Regional Water Quality Control Board
SAP	sampling and analysis plan
SCE	Southern California Edison
SCV-GSA	Santa Clarita Valley Groundwater Sustainability Agency

SMC	Sustainable Management Criteria
SNMP	Salt and Nutrient Management Plan
SO4	sulfate
SUM	summation
SWL	static water level
SWN	[CA DWR] state well number
SWRCB	[CA] State Water Resource Control Board
TD	total depth
TDS	total dissolved solids
TFR	total filterable residue
TMDL	total maximum daily load
TNC	The Nature Conservancy
TOS	top of screen
URL	uniform resource locator (web address)
USGS	U.S. Geological Survey
UWCD	United Water Conservation District
VC	Ventura County
VCWPD	Ventura County Watershed Protection District
VCWWD#16	Ventura County Waterworks District Number 16
VRGWFM	Ventura Regional Groundwater Flow Model
WGS84	world geodetic system 1984
WL	water level
WLE	water level elevation
WQ	water quality
WY	water year

1. Introduction

Daniel B. Stephens & Associates, Inc. (DBS&A) has prepared this Fillmore and Piru Groundwater Basins Sustainable Management Criteria (SMC) Technical Memorandum (Tech Memo) for the Fillmore and Piru Basins Groundwater Sustainability Agency (FPBGSA or Agency) and is under contract to prepare their mandated Groundwater Sustainability Plans (GSP or Plan) under the Sustainable Groundwater Management Act (SGMA) of 2014. Although SGMA requires separate Plans to be prepared for each basin, Fillmore and Piru subbasins (Figure 1-1)(hereafter referred to as "basins") are hydrogeologically connected and have historically been managed and monitored together. The FPBGSA Board of Directors has memorialized in Resolution 2021-05 their intent continue this precedent and to manage these basins together. In keeping with this historical precedent, this Tech Memo has been prepared to cover both basins.

SMC are foundational elements of the GSPs. This document provides a background discussion on the development of the SMCs, and their potential impacts on the groundwater resources in the basins and its uses and users.

This document includes references to Appendices in the GSPs to provide supplemental information on several topics. Additional information included as a part of this Tech Memo are referred to as Attachments.

2. Background

The development of the SMCs occurred over a several month period that started with an ad hoc committee of the Board of Director setting some of the introductory contextual framework for discussing how to approach establishing SMCs and their various elements. Draft SMCs were discussed by the FPBGSA Board of Directors and stakeholders at multiple regular board meetings, as well as a series of Special Board meetings and stakeholder workshops.

2.1 Sustainability Goal

The sustainability goal for the FPBGSA is memorialized in the Guiding Principles (https://bit.ly/3sQp8LR) adopted by the Board of Directors in November 2019 and includes principles of understanding covering the governance, communication and education, funding and finances, as well as SGMA Implementation and Sustainability. These principles describe commitments and common interests that combined leadership from the FPBGSA and were agreed on as a way to influence current and future compliance with SGMA. The FPBGSA Joint Exercise of Powers Agreement (JPA) (GSP Appendix A) is the legal foundational document for the groundwater sustainability agency (GSA). These Guiding Principles are intended to be consistent with and in furtherance of the JPA. In the event of a conflict between the JPA and these principles, the JPA takes precedence.

These Guiding Principles can be digested into two of the General Principles:

Gen 6 - Sustainable groundwater conditions in the Basins are critical to support, preserve, and enhance the economic viability, social well-being, environmental health, and cultural norms of all Beneficial Users and Uses including Tribal, domestic, municipal, agricultural, environmental and industrial users; and

Gen 7 - FPBGSA is committed to conduct sustainable groundwater practices that balance the needs of and protect the groundwater resources for all Beneficial Users in the Basins.

The beneficial uses of water, pertaining to water rights, are defined in the California Code of Regulations (CCR) §659-672 to include: domestic; irrigation; power; municipal; mining; industrial; fish and wildlife preservation and enhancement; aquaculture; recreational; stockwatering; water quality; frost protection; and heat control. Water quality control plans (basin plans) also designate beneficial uses and establish water quality objectives for waters of the State. Basin plans commonly designate beneficial uses in addition to those uses identified for water rights in CCR §659-672.
(https://www.waterboards.ca.gov/waterrights/water_issues/programs/public_trust_resources/#beneficial)

The basin plan pertinent to the Fillmore and Piru Basins is the Los Angeles Regional Water Quality Control Board (LARWQCB) Basin Plan for Coastal Watersheds in Los Angeles and Ventura Counties (LARWQCB, 2020), in which, beneficial users of groundwater and surface water are identified (Tech Memo Attachment A). Based on FPBGSA stakeholder engagement over the past couple of years, the beneficial users of surface water and groundwater in the basins include domestic, agricultural, municipal, industrial, and fish and wildlife preservation and enhancement.

2.2 Historical Groundwater Management Program

The Guiding Principles leaned heavily upon the extensive history of groundwater monitoring, study and management in the basins. California Assembly Bill 3030 was enacted in 1992, which established in the California Water Code sections 10750-10756, a systematic procedure for a local agency to develop a groundwater management plan. Subsequently, in 1995, a Memorandum of Understanding (M.O.U.) was signed among United Water Conservation District (United Water or United), the City of Fillmore, water companies and other pumpers to establish how an AB 3030 groundwater management plan would be formulated for the Piru and Fillmore groundwater basins (M.O.U.,1995). The M.O.U. established that the Management Plan would be a cooperative plan for the Basins. After the adoption of the M.O.U., a Groundwater Management Plan (Plan) was formulated and adopted in 1996. The Plan outlined the roles of the various parties in implementing a groundwater management program, including the establishment of a Groundwater Management Council to manage the Plan. The Council consisted of seven members: two City Council representatives from Fillmore, four pumpers (of which two were from private entities and two from investor-owned companies or mutual water companies), and one elected board member from United Water.

SB 1938 (2002) and AB 359 (2013) required additional elements be included in all AB 3030 management plans, and an updated Draft Piru/Fillmore Basins AB 3030 Groundwater Management Plan was submitted to the AB 3030 Groundwater Management Council in 2011. The Draft Plan update included Basin Management Objectives (BMOs) for groundwater elevations, groundwater quality and surface water quality at various locations. It also included a groundwater export policy which provoked considerable discussion. In 2013 an updated version of the Draft Plan was submitted to the Council. The revised draft of the Plan was never adopted by the Council and therefore never finalized. The AB 3030 process has since been superseded by the SGMA.

2.3 Future Groundwater Management Considerations

The FPBGSA Board of Directors has carefully considered the Guiding Principles and the hydrologic conditions of the basins in establishing how sustainability can be achieved in these basins. Consideration was given to how future land use and climate change are expected to impact hydrologic conditions in the basins. Future land use is expected to remain similar to historical (primarily agricultural with some urban) because of Ventura County policies to preserve agricultural and open space land use designations (Figure 1-1). Modest growth in urban water use is expected in both basins. Future climate change is expected to have greater variability in precipitation (e.g., more intense floods and droughts) and higher annual average air temperature (UWCD, 2021).

2.4 Basin Hydrology

The hydrology of the basins is strongly influenced by the wet-dry cycles (Figure 2-1) common to Southern California. The basins exhibit a repetitive sequence of lower water levels during drought periods with recovery of the water levels during subsequent wet periods (Figure 2-2). The basins do not exhibit evidence of chronic, long-term water level declines or prolonged declines in groundwater storage based on groundwater level measurements (Appendix K). Interpretation of long-term groundwater level records indicate water year 2011 is representative of "basin full" conditions, when water levels plateau at highest values.

The basins' responses to varying degrees of stresses (e.g., pumping, precipitation and evapotranspiration) were evaluated using the numerical groundwater flow model developed by United Water to better understand how alternate climate/pumping scenarios can affect groundwater levels. The historical model period (1985 through 2019) was simulated with several scenarios of increased pumping (by 20%, 40%, 60%, 80% and even 100% relative to baseline)(Figure 2-3) to evaluate how much lower and for how much longer groundwater levels would be (Attachment B). Results indicated that water levels become progressively deeper in each scenario, especially during significant drought periods (e.g., 2012-2016), yet water levels in all scenarios recover to similar "basin full" levels upon the return of wet or normal precipitation periods (implying sustainable groundwater level trends without long-term, chronic declines).

Stream flow measurements are available at a limited number of locations along the Santa Clara River within the Fillmore and Piru basins. Hydrologists from UWCD have identified an empirical relationship between groundwater levels in nearby wells (Figure 2-4) and the surface water flow measurements near the Cienega/Fish Hatchery and Willard Road/East End areas of rising groundwater (i.e., shallow groundwater discharges to the land surface). This empirical relationship allows forecasts of the rising groundwater rates at these areas to be developed for future modeled groundwater levels and were extensively relied upon for the analysis and formulation of the sustainable management criteria for multiple indicators.

During prolonged dry periods (i.e., multi-year droughts), the surface water flows in the Santa Clara River disappear in an east to west pattern as the drought progresses. Figure 2-5 was compiled by UWCD hydrologists and shows the progression of the most recent 2011-2017 drought period. The surface water in the Cienega/Fish Hatchery disappears earliest, then retreats westward as the drought continues for multiple years. This is a common trend on how the rising groundwater that supplies the surface water flows slowly diminishes in the Cienega/Fish Hatchery area before other areas in the Fillmore basin.

Projections of future groundwater conditions in the basins were simulated by applying climate change factors (i.e., 2070 central tendency scenario provided by DWR) to precipitation and evapotranspiration values in the United Water model, along with increases in pumping (due to urban growth and higher temperatures that should increase agricultural demand) (Figure 2-6) , to evaluate groundwater level trends (Attachment C). Comparison of analogous time periods (years 1990 to 2019 vs. projected 2067 to 2096) exhibited similar patterns of groundwater level responses during dry and wet periods, indicating that the basins are resilient to projected climate change and pumping increases of about 10%.

A model scenario was also run with a 50% reduction in historical and projected pumping, by turning off wells within an approximate one mile band centered along the Santa Clara River channel, to evaluate the relative effects of droughts and pumping on groundwater levels near significant wildlife corridors that correspond with zones of rising groundwater (see Section 3 in this document). Results indicated that pumping near the River causes groundwater levels to decline faster during droughts, yet groundwater levels would decrease below a critical depth of 10 feet below 2011 levels even without pumping along the River during the last major (2012 to 2016) drought. The critical water depth below 2011 levels applies to groundwater dependent vegetation and is based on preliminary research presented by Christopher Kibler at the January 21, 2021 Board Meeting (Kibler, 2021b).

3. Sustainable Management Indicators

The following matrix summarizes the SMC for the six sustainability indicators specified in SGMA.

Table 3-1 Sustainable Management Criteria (SMC) Matrix

SMC	Undesirable Results	Metric	MT (June 10, 2021)	MO	Comments
GW Elevation	Loss of ability to pump GW	GW elevation	WL declines below the base of well screens in more than 25% of representative wells	GW levels at 2011 high WL	maximizes range between MT and MO
	Significant and unreasonable GDE vegetation die-off due to GSP implementation	Depth to GW at the Fillmore - Piru basin boundary	WL declines below the Critical Water Level defined as 10 ft lower than 2011 low WL*	GW levels at 2011 high WL	*when the CWL is exceeded, mitigation water (e.g., pumped GW) will be provided to CDFW for use at the Cienega Springs restoration project site, if the WL has not recovered to CWL by the subsequent May 1st
GW Storage Reduction	inadequate GW storage to last through multi-year drought without GW extraction limitations	GW elevation	WL declines below the base of well screens in more than 25% of representative wells	GW levels at 2011 high WL	maximizes range between MT and MO
SW Depletion	Surface water flow declines due to GW extractions that interfere with the beneficial use and users	Rising GW rates at the Fillmore-Piru basin boundary (Fish Hatchery area)	A MT is not applicable for this sustainability indicator.	GW levels at 2011 high WL	**Future rising GW conditions are not expected to be materially different from historical conditions.** The GSP does not propose projects or management actions that would change the operational regime of the basins. Therefore, implementation of the GSP does not cause significant and unreasonable effects.
Land Subsidence	Land subsidence amounts that interfere with infrastructure operations	Subsidence rates	Total inelastic subsidence of 1ft/yr or 1ft over 5 yrs	Inelastic subsidence rates within +/- 0.1 ft/yr as determined by InSAR	Monitor subsidence amount - InSAR data from DWR; study to identify susceptible infrastructure (e.g., long-span bridges, gravity sewage systems) for 5 yr GSP update
Degraded WQ	Water quality degradation that impairs the beneficial use of the resource	WQ values	Water quality parameters established in existing or future regulations	FPBGSA is not a water purveyor and lacks regulatory authority for WQ compliance, but will cooperate with appropriately empowered entities	
Seawater Intrusion	NA	NA	NA	NA	

Version: Approved by the FPBGSA Board at the June 10, 2021 Board Meeting (Item 3A).

Several definitions are integral to the understanding the process of establishing sustainable management criteria for the Fillmore and Piru basins. The following definitions are taken from §351. Definitions from the GPS Emergency Regulations and Title 23, Division 2 of the California CCR.

Metric refers to how a minimum threshold will be measured (e.g., groundwater levels, water quality, rates of seawater intrusion).

(t) "**Minimum threshold**" refers to a numeric value for each sustainability indicator used to define undesirable results.

(s) "**Measurable objectives**" refer to specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions that have been included in an adopted Plan to achieve the sustainability goal for the basin.

(x) "**Undesirable result**" means one or more of the following effects caused by groundwater conditions occurring throughout the basin:

(1) Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and groundwater recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods.

(2) Significant and unreasonable reduction of groundwater storage.

(3) Significant and unreasonable seawater intrusion.

(4) Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.

(5) Significant and unreasonable land subsidence that substantially interferes with surface land uses.

(6) Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

Significant and unreasonable - GSAs must consider and document the conditions at which each of the six sustainability indicators become significant and unreasonable in their basin, including the reasons for justifying each particular threshold selected. These general descriptions of significant and unreasonable conditions are later translated into quantitative undesirable results, as described in this document. The evaluation of significant and unreasonable conditions should identify the geographic area over which the conditions need to be evaluated so the GSA can choose appropriate representative monitoring sites (DWR, 2017).

The following discussion of the six sustainability indicators is ordered from the least impactful to the most impactful. The order of the discussion has no other significance.

3.1 Significant and Unreasonable Sea Water Intrusion

Sea water intrusion is an ongoing concern for the coastal areas of Ventura County (UWCD, 2016) (Figure 3-1). Sea water intrusion has not historically migrated beyond the coastal plain (e.g., Oxnard Basin) even during severe drought conditions.

The Fillmore and Piru basins are located a substantial distance inland from the coast and therefore, sea water intrusion is not a realistic threat to these basins. The western boundary of the Fillmore basin, closest to the coast, is approximately 15 miles inland and at an elevation of about 270 ft amsl.

This sustainability indicator is not applicable for the Fillmore or Piru basins.

3.1.1 Undesirable Results

Not applicable to these basins.

3.1.2 Metric

Not applicable to these basins.

3.1.3 Minimum Thresholds

Not applicable to these basins.

3.1.4 Measurable Objectives

Not applicable to these basins.

3.2 Significant and Unreasonable Degraded Water Quality

The FPBGSA recognizes the importance of monitoring the quality of water that supports the beneficial uses and users of that resource and has developed a monitoring program, building upon the water quality sampling and analysis programs conducted by the VCWPD, United Water, and various water purveyors in the basins (Figure 3-2; Appendix K).

A recently developed multi-basin (including Fillmore and Piru basins) water quality monitoring and management program is the Lower Santa Clara River Basin Salt and Nutrient Management Plan (SNMP) adopted by the LARWQCB on July 9, 2015 (Chapter 8 of LARWQCB, 2020). The overarching goal of the SNMP is to protect, conserve, and augment water supplies and to improve water supply reliability. This goal is supported by objectives of:

- Protecting Agricultural Supply and Municipal and Domestic Supply Beneficial Uses of groundwater;

- Supporting increased recycled water use in the basin;
- Facilitating long-term planning and balancing use of assimilative capacity and management measures across the basin;
- Encouraging groundwater recharge in the Santa Clara River valley; and
- Collecting, treating, and infiltrating stormwater runoff in new development and redevelopment projects.

The SNMP and Agency have similar objectives to protect beneficial uses of agricultural supply and municipal and domestic supply, and to encourage groundwater recharge in the Santa Clara River (i.e., through existing recharge management operations lead by United Water).

3.2.1 Undesirable Results

The Agency has an established water quality monitoring program (Figure 3-2), based on the programs implemented by VCWPD and UWCD, that will identify conditions that impair the beneficial use or users of the water.

Examples of undesirable results associated with high levels of:

- Boron can preclude agricultural use (especially for citrus crops);
- Chloride can preclude agricultural use (especially for avocadoes);
- Nitrate can preclude domestic use (especially for infants (i.e., blue-baby syndrome [Infant Methemoglobinemia]);
- Taste and odor that are an aesthetic nuisance;
- Sulfate and TDS (other inorganic minerals) can make water hard and require water softeners, which are often banned to prevent elevated levels in wastewater discharges; and
- Constituents with a maximum contaminant level (MCL) listed in Title 22 of the CCR.

Because the Agency does not have authority to regulate water quality, the most pertinent actions the Agency can take to help ensure sustainable basin conditions is to monitor groundwater quality and understand how changes to groundwater conditions (e.g., groundwater levels) can affect concentrations of various constituents of concern to agencies with regulatory authority over water quality.

3.2.2 Metric

The proposed metrics are the water quality analyte values and units included in existing and future regulations including, but not limited to, for example, Basin Plan Objectives (included in Attachment A as an example) and maximum contaminant levels (MCLs) listed in Title 22 of the CCR. Select historical COCs MCLs in the basins are shown in GSP table 2.2-1 in the GSP (2.2.2.5.1)

3.2.3 Minimum Thresholds

There are many regulatory agencies in the State of California with authorities over water quality, however, the FPBGSA is not among that group. Per SGMA regulations, GSAs do not have regulatory authority over water quality. The Agency has elected to use the water quality concentrations (e.g., MCLs) established by those entities with authority over water quality as the minimum thresholds for both basins.

3.2.4 Measurable Objectives

FPBGSA is not a water purveyor and lacks regulatory authority for water quality compliance, but is committed to working cooperatively with the appropriately empowered entities. Lacking regulatory authority over water quality compliance limits the Agency's control in achieving water quality measurable objectives if the Agency were to establish MOs for specific monitoring points in the basins. Consequently, the FPBGSA will cooperate with entities such as Ventura County Watershed Protection District and the Los Angeles Regional Water Quality Control Board (LARWQCB) as they enforce regulations designed to prevent the degradation of water quality to the extent it impairs the beneficial use of and use by stakeholders.

3.3 Chronic Lowering of Groundwater Levels

This sustainable management indicator addresses changes in groundwater levels in the Fillmore and Piru basins <u>due to groundwater extractions</u> and the potential impacts of those groundwater level changes on the beneficial use and users. As stated previously in Section 2.4, there is no evidence of chronic lowering of groundwater levels in either basin. Water levels do fluctuate in response to natural precipitation cycles with water levels declining during periods of severe droughts and recovering when normal or wet precipitation periods prevail.

The beneficial uses and users of groundwater throughout the basins include, but are not necessarily limited to:

- Pumping for agricultural, domestic, municipal, industrial and even aquaculture (for the CDFW owned and operated fish hatchery lands located near the eastern boundary of the Fillmore basin) (Figure 3-3; LARWQCB, 2020; Attachment A)
- Groundwater dependent ecosystems – vegetation element (GDEs; Figure 3-3). These beneficial users depend on sustainable groundwater supplies, most simply represented by groundwater levels.

As discussed in Section 2, historical data and projected model scenarios indicate that groundwater levels do not (and are not anticipated to) exhibit chronic declines over periods of wet and drought conditions. Given the absence of evidence for chronic lowering of groundwater levels, the Agency considers the most significant potential effect of groundwater levels on beneficial users to be how long groundwater levels remain depressed during droughts and what proportion of the water level decline is attributable to groundwater extractions v. drought.

The groundwater flow model constructed by United Water was used to help discern what portion of the water level declines during droughts, normal, and wet periods were attributable to groundwater extractions. The model included projections of water levels under future climate conditions (i.e., 2070CF), groundwater extractions, and land use changes.   The model was used to simulate how groundwater levels changed when extractions from wells within about 1 mile of the Santa Clara River were eliminated (Figure 3-4).

Figures 3-5, 3-6, and 3-7 show the effect groundwater extractions have on water levels at a few example wells. In general, the effect of groundwater pumping on water levels is more pronounced during drought periods and where water levels are estimated to be lowered by 5 to 40 feet.

3.3.1 Undesirable Results

The undesirable results to be avoided for this sustainability indicator have two segments: the loss of the ability to pump groundwater from the existing well network (Table 3-1; Figure 3-3) and significant and unreasonable GDE vegetation die-off due to implementation of the GSP.

3.3.1.1 Water Levels Declining below Bottom of Well Screen

The loss of ability to pump groundwater from the existing wells in each basin was established by the FPBGSA, in consultation with stakeholders, as the decline of water levels below the base of the well screen in a well. The MT for this sustainability indicator is when 25% of the representative monitoring wells (Section 3 of GSP) show water levels below the bottom of the well screen. The United water groundwater flow was used to simulate how future groundwater levels might react as future pumping rates increase (but only slightly) and the impacts of climate change are factored into the scenario.

Groundwater levels are actively monitored at a subset of wells (Figure 3-8) in the Fillmore and Piru basins. The United Water groundwater flow model was used to compare modelled groundwater levels with the bottom of screen (perforation) intervals of wells (where this information is available from United Water and VCWPD databases) to provide a more robust evaluation of additional wells that do have groundwater level measurement records. Wells with groundwater level data were used to evaluate model biases to help interpret the likeliness that any wells would actually have groundwater levels drop below the bottom of screen. No anecdotal evidence of dry water wells has been reported historically (based on Board member and stakeholder engagement during the November 19, 2020 Board Meeting), although one well (04N18W29M02S Vic Warren) went dry in the recent drought (Appendix K)

The modelled future water levels were also compared to the bottom of the well screen for all active wells in the database where that information is known. The modelled future water level data indicated that as many as 9 production wells (Figure 3-9) would be expected to have their water levels decline below the bottom of the well screen for a period of time greater than 1 month. Correcting for model bias in the future scenario, it was determined that none of the wells originally suspected of going dry are likely to do so (Figure 3-10).

3.3.1.2 GDE Die-Off due to Declining Water Levels from Implementation of the GSP

Concerns about the effect of groundwater level declines during droughts on GDEs in the rising groundwater areas were recognized by the FPBGSA Directors and additional analyses were performed to quantify the impact groundwater extractions had on water levels in the vicinity of the major GDE areas (Cienega/Fish Hatchery area near Fillmore-Piru basin boundary and East End/Willard Road area of the Fillmore basin near the Fillmore-Santa Paula boundary) along the Santa Clara River. The shallow groundwater, as well as the surface water, in both of these GDE areas is fed by rising groundwater. A third area of GDEs fed by shallow groundwater and/or surface water is the Del Valle area in eastern Piru basin. This area has relatively stable surface water flows and shallow groundwater levels due to the waste water treatment plant effluent from the Valencia treatment plant being discharged to the Santa Clara River. In the absence of declining water levels and a relatively stable supply of effluent, this GDE area will not be considered further in this section.

Shallow groundwater levels are known to vary in the areas with the GDEs in accordance with the major precipitation trends – lower water levels during periods of drought with higher levels associated with wet to normal precipitation patterns. It is also recognized that the ongoing groundwater extraction activity also impacts water levels. A GSA is not responsible for mitigating the impacts of a drought on water levels, but it is important for the FPBGSA to understand the degree to which groundwater extractions contribute to lower groundwater levels reported during major droughts.

The impact of groundwater extractions on water levels near the Santa Clara River were evaluated by comparing simulated water levels from two model scenarios:

- Current pumping practices (i.e., extraction quantities, spatial distribution of wells); and
- A hypothetical 50% reduction in pumping achieved by eliminating groundwater extractions from wells within about 1 mile of the Santa Clara River (Figure 3-4).

3.3.1.2.1 Cienega / Fish Hatchery

Near the Cienega / Fish Hatchery GDE area rising groundwater serves to limit water level fluctuations during normal to wet periods and is the source of the surface water commonly found in this area. Rising groundwater conditions are the normal for the majority of the simulated time period (Figure 3-11). However, during prolonged drought periods, the impact of groundwater extractions on the water levels is exacerbated (Figure 3-11).

Figure 3-11 illustrates how the shallow groundwater levels are impacted by extractions and by climate change. During future normal to wet precipitation periods simulated groundwater extraction results in water levels that are about 20 ft lower than without groundwater extractions (but including the impacts of climate change) near the Fish Hatchery facility. By contrast, the shallow water levels during drought periods are typically 50-75 feet lower when compared to non-drought periods. Approximately, 30-50 feet of the water level decline during major droughts is attributable to groundwater extractions with another 20-25 feet a function of the drought and the influences of climate change.

Drought impacts on the shallow groundwater level simulated for the key well (04N18W31D04S) located a short distance upstream from the Fillmore-Piru basin boundary have much smaller groundwater extraction impacts on the water levels (typically 10 ft or less).

Critical Water Levels (CWLs) for GDE vegetation are defined using the system suggested by Kibler (2021a,b) where they concluded that vegetative stress due to lower groundwater levels occurs when the water levels in the Cienega/Fish Hatchery area decline 10 feet below the 2011 water level. This condition is modelled to occur during multiyear droughts (Figure 3-12). The modeling results also indicate that the drought impact is not mitigated by the reduction of groundwater extractions within about 1 mile of the Santa Clara River. The shallow water levels tend to fluctuate slightly above or below the CWL during the drought periods, but do not remain above the CWL as is the common condition during normal or wet precipitation periods.

3.3.1.2.2 East End/Willard Road GDE Area

The second area of GDEs deemed of importance to the design and implementation of a GSP is the East End / Willard Road area located at the west end of the Fillmore basin. This is another of the unique areas in the Fillmore and Piru basins where rising groundwater supplies the surface water that supports the GDEs during periods without surface water runoff. The rising groundwater quantities are impacted by groundwater extractions; however, the simulated rising groundwater quantities are not totally depleted during droughts (Figure 3-13), in contrast to the Cienega / Fish Hatchery GDE area. The prevalence of rising groundwater even with groundwater extractions and climatic change effects suggests that this area is not experiencing chronic groundwater level declines and is maintaining the shallow groundwater levels to support GDE vegetation.

Even under this hypothetical significant pumping reduction, groundwater levels were projected to still drop below the CWL (10 feet below 2011 basin groundwater levels), and therefore, GDEs were considered to not be a significant beneficial user of groundwater by which to base the MT for groundwater levels. Although GDEs were considered not a significant factor in establishing groundwater level SMC, the Board recognizes the importance of the ability for GDEs to recover following drought periods and plans to support habitat restoration and preservation projects (i.e., the Cienega site) (See GSP Section 4).

3.3.2 Metric

Groundwater elevation (level) measurements relative to the North American Vertical Datum of 1988 (NAVD88).

3.3.3 Minimum Thresholds

The MT set at each representative monitoring site (well) is equivalent to the bottom of screen (perforation) elevation, which represents the groundwater elevation at which lower water levels result in a "dry" well (loss of ability to pump groundwater for beneficial uses). The MT is considered "exceeded" if groundwater levels drop below the bottom of the screen of 25% of the total number of representative monitoring points (wells) shown on Figure 3-14.

A MT for GDEs (vegetation) has been defined as the CWL (i.e., 10 feet below the 2011 water level). The FPBGSA Board of Directors have elected to mitigate the effects groundwater extraction has upon shallow water levels during droughts by providing supplemental groundwater from an existing or potentially new water well to augment the Cienega Springs restoration program water supplies during a prolonged drought. How and where the supplemental water would be utilized at the restoration program site would be decided by the CDFW personnel managing that facility. Those environmental professionals would determine how to maximize the benefit of the supplemental water. The supplemental water triggering events are:

- If the shallow water levels in the representative wells at the Cienega Springs restoration site decline below the CWL, the water levels will be more closely monitored through the next winter season (when most rainfall occurs) and if the water levels remain below the CWL on May 1st after the winter season, then supplemental water deliveries will be available for the Cienega Springs restoration project management to draw upon;
- The supplemental water deliveries will continue until the shallow water levels in the representative wells at the Cienega Springs restoration site remain at or above the CWL for a period of three consecutive months; and
- The quantity of supplemental water to be supplied will be determined in consultation with the Cienega Springs restoration management team, FPBGSA ecosystem consultants,

and stakeholders. The details of the mitigation program will be memorialized in a *Mitigation Plan* (GSP Section 4)

3.3.4 Measurable Objectives

Water level at the 2011 high which approximately represents basin-full conditions. This maximizes operational range between MT and MO. Groundwater conditions are considered sustainable so long as water levels recover to similar "basin full" conditions following droughts.

3.3.5 Discussion / Evaluation / Implication

The evaluation of long-term hydrographs of measured groundwater elevations throughout the basins (Figures 3-5, 3-6, and 3-7; Appendix K; Attachment C) indicate groundwater level trends have been sustainable (i.e., no long-term declining trends were observed) and are expected to remain stable over multi-decadal time frames. The same conclusion is made for groundwater levels that are projected 70 years into the future (Attachment C), using the United Water groundwater flow model (with projected pumping increases of about 10% and using climate change factors from DWR). Based on these evaluations of historical and projected groundwater level trends, the primary concern of this sustainability indicator is considered insignificant (i.e., sustainable).

Another evaluation was made using the United Water groundwater flow model to evaluate how many wells would be expected to go dry during droughts in the future (Attachment C). This evaluation was made to consider all wells with known well construction (i.e., screen depth intervals) and identify risks to sensitive receptors (i.e., shallow domestic wells). The evaluation revealed that some wells were technically considered to go dry at times (or all the time) per the simulated groundwater levels; however, further evaluation of simulated versus measured groundwater levels at nearby wells indicated that the model tends to bias groundwater levels lower than actual, and in our professional judgement, indicates little to no risk of shallow production wells going dry during future droughts (assuming similar climate conditions as modelled).

3.4 Significant and Unreasonable Reduction of Groundwater Storage

Groundwater storage is directly correlated with groundwater levels and estimates of storage properties of the various aquifer zones (from the calibrated United Water groundwater flow model) in each of the Fillmore and Piru basins. As previously noted, there is no evidence of long-term, chronic decline in water levels in either basin. Consequently, since the estimates of groundwater in storage are linked to those water levels, there is no evidence of long-term decline in groundwater storage (Figure 3-15).

Cyclic variations in the amount of groundwater in storage are evident as water levels decline during periods of prolonged drought, the groundwater storage amount also declines. However, the hydrology of these basins shows that water levels recover (and therefore storage quantities) when normal to wet periods return to the basins.

3.4.1 Undesirable Results

Undesirable results associated with groundwater storage would be considered an amount of groundwater storage reduction (i.e., MT) from the MO (i.e., 2011 basin conditions) that does not permit continued groundwater production (extraction) through a multi-year drought. This is equivalent to the amount of groundwater level decline that would result in water levels below the bottom of screened intervals (i.e., dry well conditions).

3.4.2 Metric

Groundwater elevation (level) relative to the North American Vertical Datum of 1988 (NAVD88). The DWR BMP Guidance Document (2017) confirms that surrogate metrics can be used to quantify a sustainability indicator if there is a clear relationship between the proposed surrogate and the indicator. For this indicator, there is a clear relationship between groundwater elevation and groundwater storage quantities.

3.4.3 Minimum Thresholds

The MT for groundwater storage reduction is the same as that for groundwater level declines (Section 3.3.3)(i.e., water levels in 25% of the representative wells decline to below the bottom of the well screen). The MT for this sustainability indicator does not consider GDEs as those are dealt with by other sustainability indicators.

3.4.4 Measurable Objectives

The MT for groundwater storage reduction is the same as that for groundwater level declines (Section 3.3.4).

3.5 Significant and Unreasonable Land Subsidence

Historical and projected land subsidence estimates are described in detail in the Subsidence Tech Memo (Appendix F). Evaluation of historical subsidence, focused on land elevation changes measured with InSAR during the 2012-2016 drought and recovery period thereafter, revealed insignificant declines (i.e., less than 0.1 feet) throughout the basins. The most significant land surface changes were observed in the western Piru basin and correlated with the decline and recovery of groundwater levels, which indicates any land subsidence in this area was elastic. This sustainability indicator is only concerned with inelastic land subsidence (i.e., land elevation declines that do not recover). Inelastic land subsidence would be considered undesirable because it implies a non-recoverable loss of groundwater storage capacity (due to compaction of pore spaces in the subsurface) and at high enough magnitudes, could damage critical infrastructure.

3.5.1 Undesirable Results

Undesirable results associated with land subsidence would be considered an annual rate or cumulative amount of inelastic subsidence that occurs over a period of years that interfere with infrastructure (e.g., gravity drained systems for wastewater in urban areas, roads/bridges, pipelines).

3.5.2 Metric

Land subsidence will be monitored by changes in land surface elevation (in feet relative to NAVD88) from InSAR datasets provided by DWR. The accuracy of InSAR land elevation change values is considered +/- 0.07 feet.

3.5.3 Minimum Thresholds

The MT for land subsidence at any location in either basin is set at an annual rate of 1 foot/year or 1 foot of cumulative [net] subsidence over a period of five years.

3.5.4 Measurable Objectives

The MO for land subsidence has been set as inelastic subsidence rates within +/- 0.1 feet/year (i.e., within the error range of InSAR land surface elevation change values).

3.6 Depletions of Interconnected Surface Water

The areas of interconnected surface water and groundwater are primarily at the basin boundaries where rising groundwater conditions (i.e., gaining stream conditions) occur along the Santa Clara River (Figure 3-3). These major areas of interconnected surface water support GDE communities and are identified as the Del Valle, Fish Hatchery/Cienega, and Willard Road/East Basin area (Figure 3-3; Appendix D)).

3.6.1 Areas of Interconnected Surface Water and Groundwater

The major areas of interconnected surface water are found in the eastern portion of the Piru basin (Del Valle), straddling the Fillmore-Piru basin boundary (Fish Hatchery/Cienega), and the western end of the Fillmore basin Willard Road/East Basin areas (Figure 3-3; Appendix D).

3.6.1.1 Del Valle area

The Del Valle area is located in the extreme eastern portion of the Piru Basin. Surface and groundwater flow in this reach of the Santa Clara River are supported by the waste water effluent releases from the upstream treatment plants (primarily the Valencia plant) serving the greater Santa Clarita area. These effluent releases to the Santa Clara River serve to dampen the effects of the limited groundwater extractions in the area, as well as the effects of drought. The depth to bedrock in this reach of the river is typically very shallow (e.g., less than 50 ft), so maintaining surface water flows are easier than in downstream reaches where the alluvial thickness can be greater than 1,000 ft.

This unique hydrogeologic setting coupled with limited groundwater extractions, and continuous source of WWTP effluent creates the conditions where surface water depletion due to groundwater extraction has very little impact on the surface water flows in this reach of the Santa Clara River. Based on these conditions, the Del Valle area will not be considered further and minimum thresholds and measurable objectives are not deemed appropriate for this reach of the river.

3.6.1.2 Fish Hatchery / Cienega Area

This is an area where rising groundwater is the primary source of surface water during many months of the year. For the majority of the months in a typical year, the area of rising groundwater are isolated from upstream and downstream reaches. During these periods, the source of the water in these isolated pools of water is rising groundwater, as there is no contributory surface water flow from the upstream reach.

During the wettest years with abundant runoff or during times when releases from Santa Felicia Dam or possibly Castaic Lake can temporarily connect the areas of rising groundwater. This connection is intermittent as the runoff abates and the reaches up- and down gradient of the rising groundwater intervals return to their natural losing reach conditions.

Figure 3-16 shows the rising water rates with and without groundwater extractions in the nearby area (i.e., within about 1 mile of the Santa Clara River). Rising groundwater occurs during normal and wet precipitation periods, although it can become nonexistent during periods of prolonged drought. The amount of rising groundwater/surface water is highly variable with the higher quantities of surface water flow augmented by precipitation runoff during wet periods.

3.6.1.3 Willard Road / East Basin

Rising groundwater is the predominant source of surface water in this reach of the Santa Clara River and has a less flashy hydrologic response to wet and dry cycles (Figure 3-16) than the Cienega/Fish Hatchery area of rising groundwater. The rising groundwater rates (after removing groundwater extractions within ~1 mile of the Santa Clara River) are estimated to be typically in the range of about 10-25 cfs with the lower rates associated with dry periods.

3.6.2 Impact of Groundwater Extractions on Surface Water Flow

Stream flow measurements are recorded at only a few locations in the basins (Appendix K). The impact of groundwater extractions on surface water flows was estimated using the groundwater flow model (Appendix E) developed by UWCD for these basins. The change in rising groundwater rates was estimated by eliminating groundwater extractions within about 1 mile of the Santa Clara River and calculating the rate difference with and without those extractions.

3.6.2.1 Fish Hatchery / Cienega Area

Figure 3-16 shows the rising water rates with normal groundwater extractions and without groundwater extractions in the nearby area (i.e., within about 1 mile of the Santa Clara River). The most apparent observation is that the impact of groundwater extractions is most pronounced during periods of prolonged droughts. During non-drought periods the impact of groundwater extraction on rising groundwater rates is in the range of 3-10 cfs.

Figure 3-17 shows how the groundwater extractions impact on the rising groundwater quantities varied across the historical time period, as well as the simulated future period (including the effects of climate change, future land use changes, and expansion of future pumping quantities). Comparing the mean and median differences due to groundwater extraction over the historical period with the mean and median differences from future model scenarios covering 2020-2096 reveals that the differences between the historical and future impacts of groundwater extraction were very similar (i.e., mean of 3.7 cfs vs. 5.1 cfs with median of 3.8 vs. 4.8 cfs).

The future projection of precipitation used in the groundwater flow model was a replication of the historical precipitation record (Appendices E and I). If the comparative analysis is confined to analogous time periods (those with the same precipitation trends) in the historical and future timelines Figure , the surface water (rising groundwater) depletion due to groundwater extraction is very similar in the historical time period (mean = 3.8 cfs, median = 3.8 cfs) and future time period (mean = 5.1 cfs, median = 4.6 cfs)(Figure 3-18). The slightly greater surface water depletions in the future scenario are reflective of the influences climate change has on the hydrology of the basins.

3.6.2.2 *Willard Road / East Basin*

Rising groundwater rates in this portion of the Fillmore basin are depicted in Figure 3-16. Groundwater extractions have an impact on the rate of rising groundwater. That impact is estimated to be about 5 cfs during normal and wet periods, but could increase to about 10 cfs during prolonged dry periods. However, groundwater extractions (including the impacts of climate change) are not expected to totally eliminate the rising groundwater even during prolonged dry periods.

3.6.3 Undesirable Results

The FPBGSA Board of Directors have defined the undesirable results associated with this sustainability indicator as "Surface water flow declines due to groundwater extractions that interfere with the beneficial use and users" (Table 3-1).

3.6.4 Metric

Rising groundwater rates at the Fillmore-Piru basin boundary near the Cienega/Fish Hatchery area.

3.6.5 Minimum Thresholds

Future rising groundwater conditions are not expected to be materially different from historical conditions even with consideration of the effects of climate change. The GSPs for the Fillmore and Piru basins do not propose projects or management actions that would change the operational regime of the basins. Therefore, implementation of the GSPs does not cause significant and unreasonable effects. Consequently, a MT has not been developed for this sustainability indicator.

3.6.6 Measurable Objectives

The MT for groundwater storage reduction is the same as that for groundwater level declines (Section 3.3.4).

4. Monitoring Network

The monitoring network associated with these sustainable management criteria are presented in Section 3 of the GSPs for the Fillmore and Piru basins and will not be further detailed in this document. Background information on the current monitoring programs in these basins is contained in Appendix K.

5. Discussion/Conclusion

The Board has approved SMC for the sustainability indicators based on the best available data and science. Sea water intrusion is not an applicable sustainability indicator to these basins due to the large horizontal and vertical distance that separates these basins from the Pacific Ocean, and therefore, SMC are not established. For the water quality sustainability indicator, the Agency does not have authority to regulate surface water or groundwater quality, but recognizes the importance of established thresholds (e.g., SNMP water quality objectives and Title 22 regulations) and will continue to monitor and evaluate how water quality metrics relate to groundwater conditions

The groundwater level sustainability indicator (metric) controls other sustainability indicators, such as groundwater storage reduction and inelastic land subsidence. Although the groundwater level sustainability indicator concerned with preventing chronic declines in water levels (per SGMA), evaluation of measured (historical) and projected (modelled) groundwater levels indicate these basins are resilient and recover from droughts each time, so long as occasional wet periods occur. The basin is considered sustainable in regards to groundwater levels because no chronic (long-term) trends are observed or projected. The same conclusion is made for the groundwater storage and land subsidence sustainability indicators, because storage and water levels are directly correlated and our evaluation of historical land subsidence (based on InSAR datasets) indicate insignificant (less than 0.1 feet/year) land surface elevation changes that rebound with recovery of groundwater levels (i.e., elastic subsidence).

SMC are established to maximize the operational flexibility of the basins by setting the MO and MT at each representative monitoring site (wells) at basin full conditions (2011 groundwater levels) and MT at the bottom of screen of representative monitoring sites (wells), respectively. The basins are considered sustainable in regards to these three sustainability indicators, and therefore, no management actions or projects are considered necessary to prevent undesirable results from groundwater level fluctuations. Although GDEs were considered not a significant factor in establishing groundwater level SMC, the Board recognizes the importance of the ability for GDEs to recover following drought periods and plans to support habitat restoration and preservation projects (i.e., the Cienega site).

Regarding the last sustainability indicator - depletions of surface waters that are interconnected with groundwater - the Board has determined that the anticipated future and historical reductions in the rising groundwater rates are not materially different (even with climate change) and after consultation with DWR, has elected to not establish a MT for this sustainability indicator.

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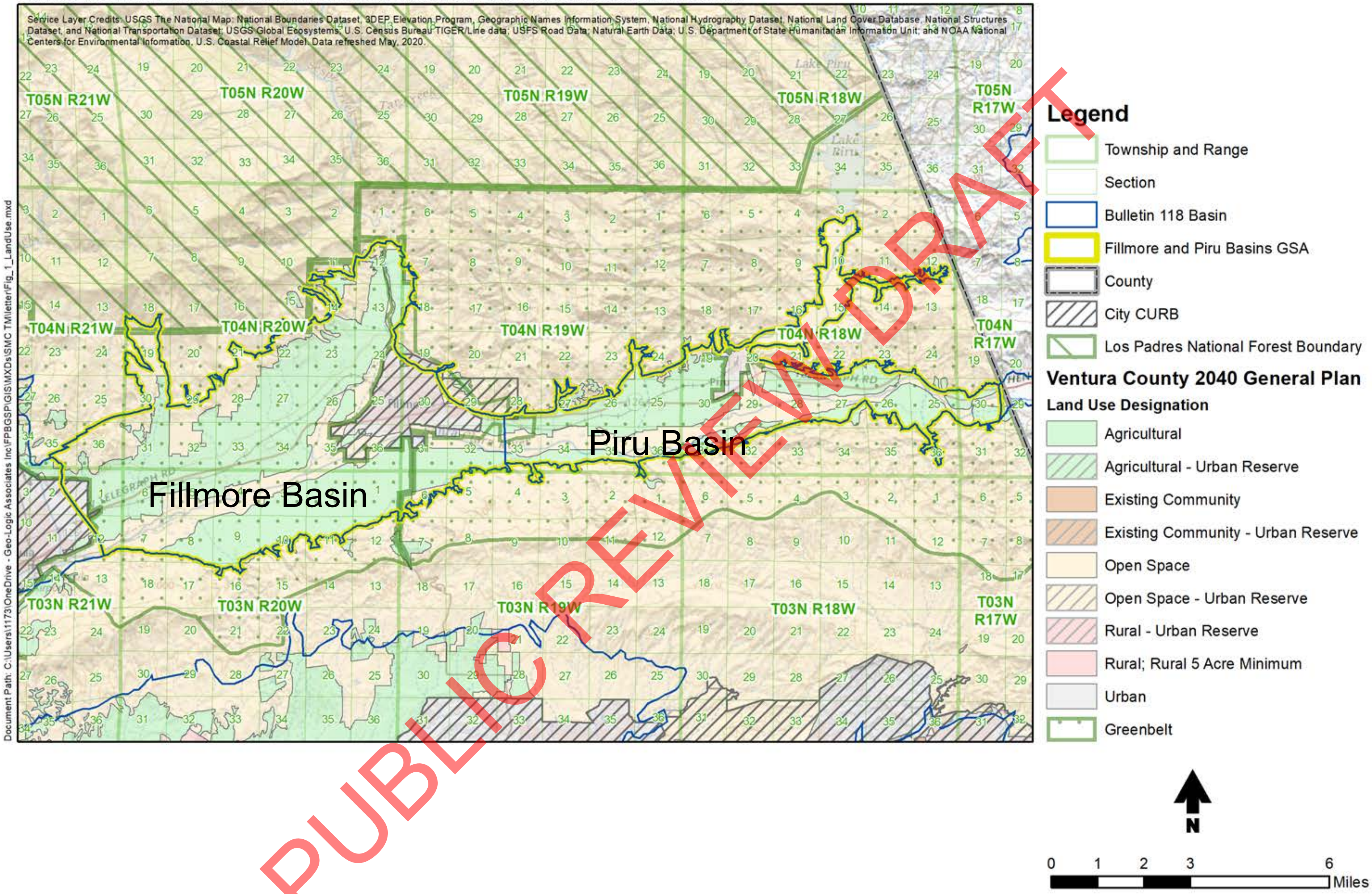
7. Figures

Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet | Projection: Lambert Conformal Conic | Datum: North American 1983



Sustainable Management Criteria Technical Memorundum

Land Use Designations Map

Figure 1-1

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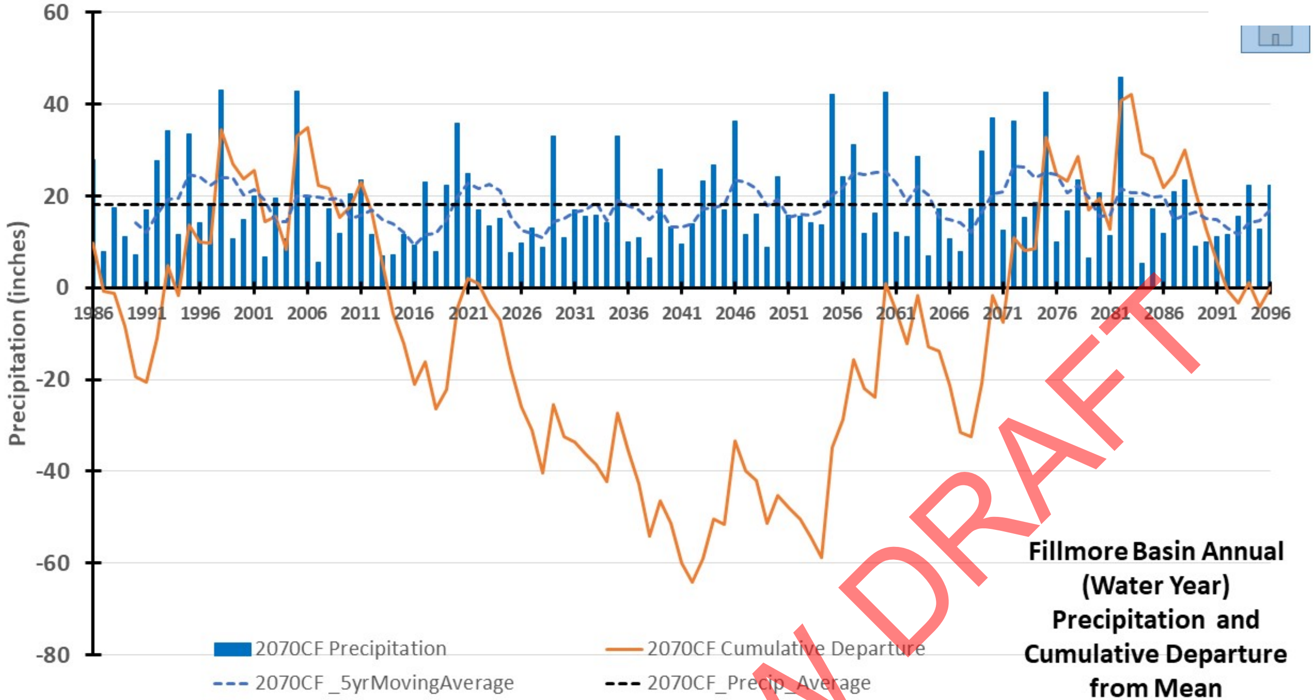

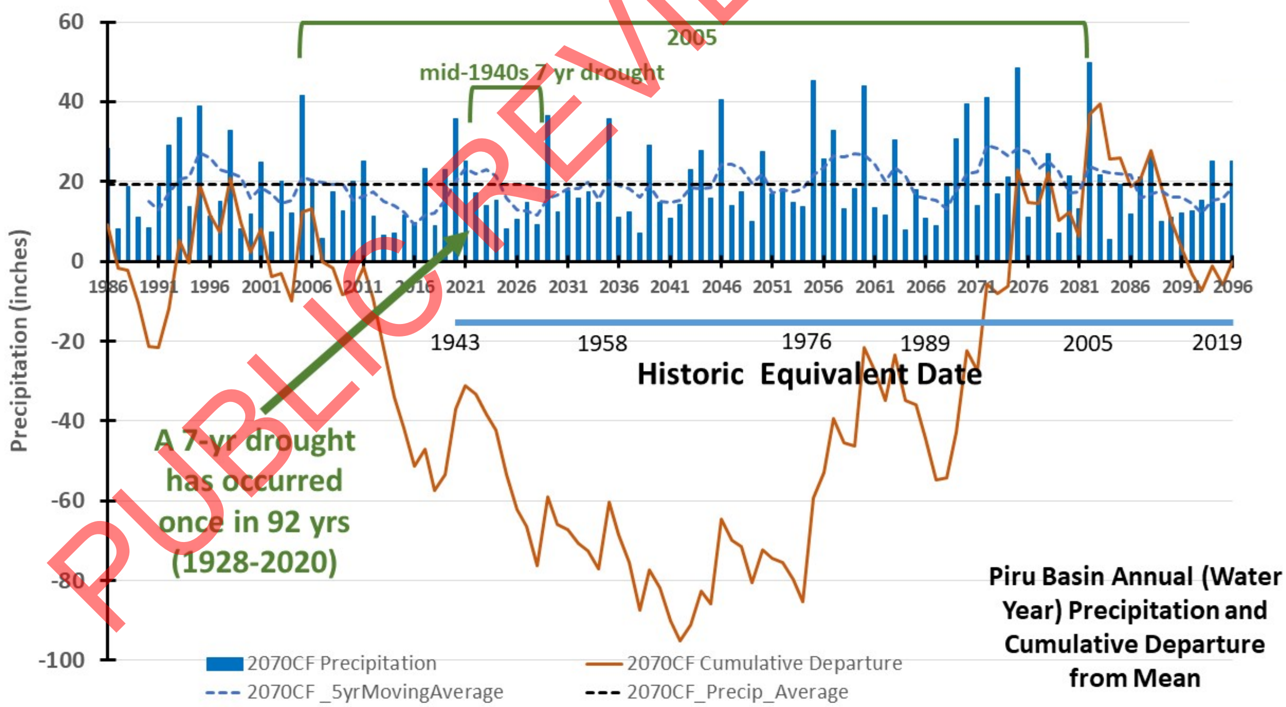

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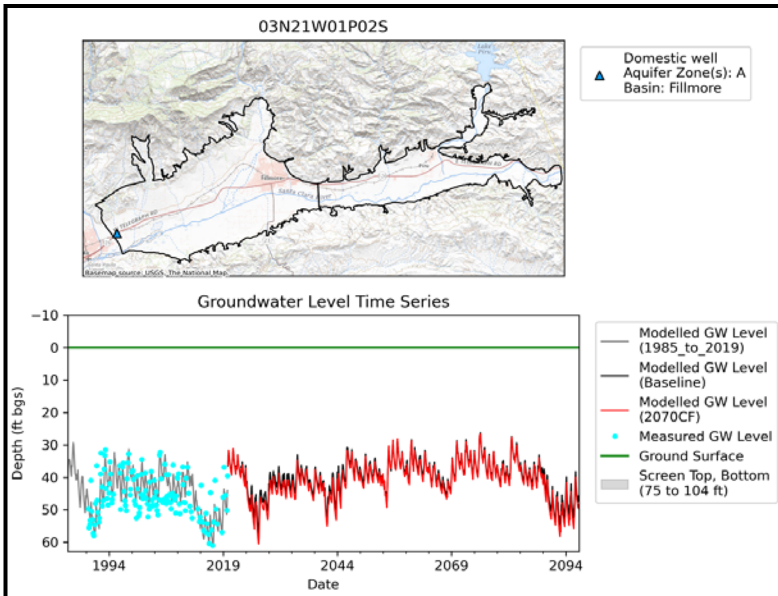
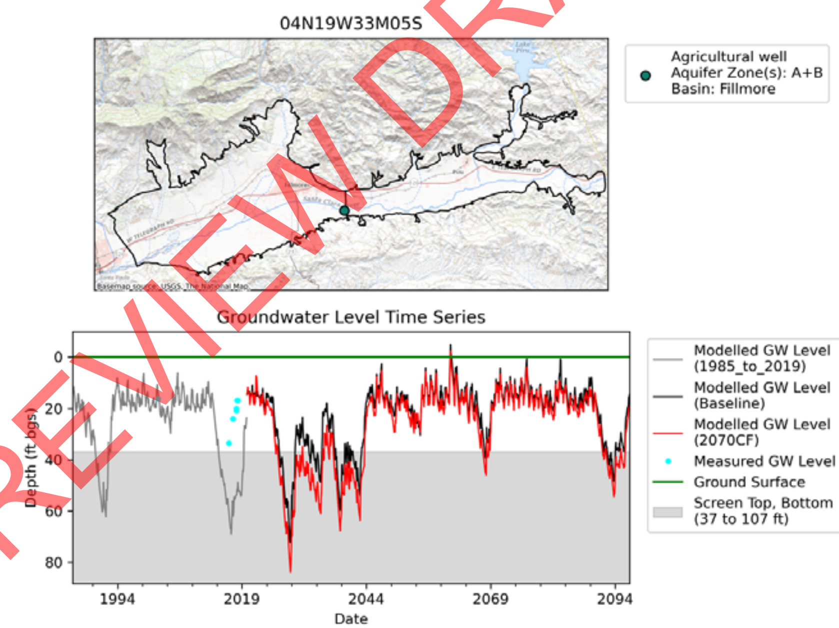
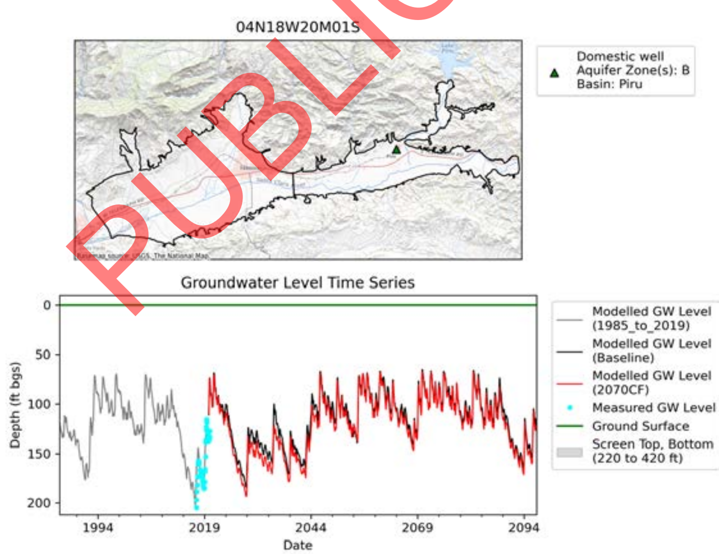
Precipitation – Historical and Future Projections

Figure 2-1







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Representative Hydrographs

Figure 2-2

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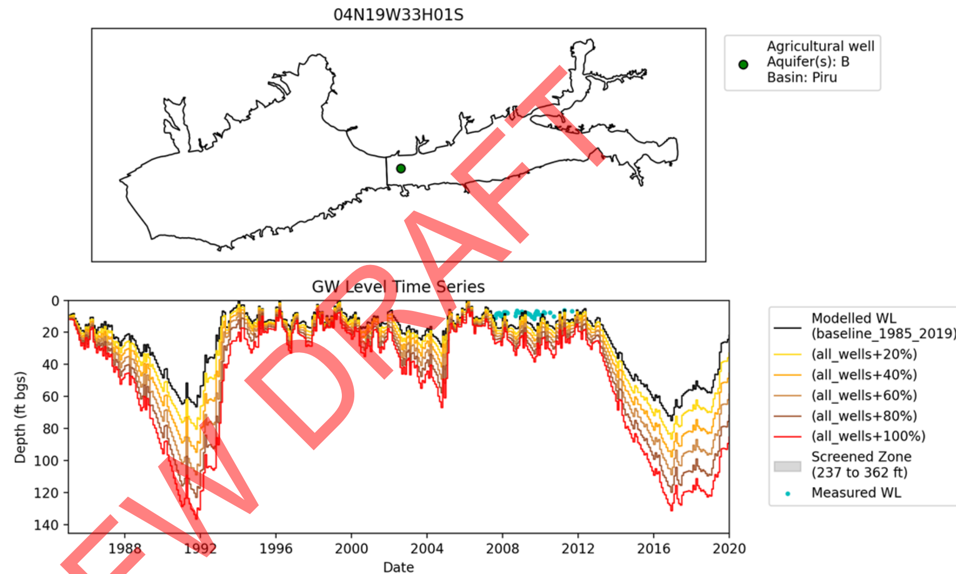
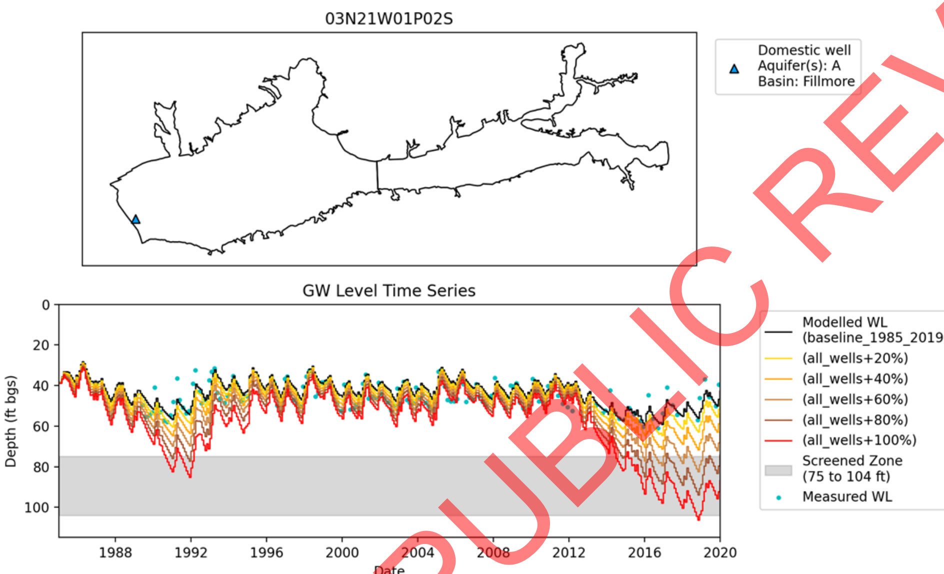
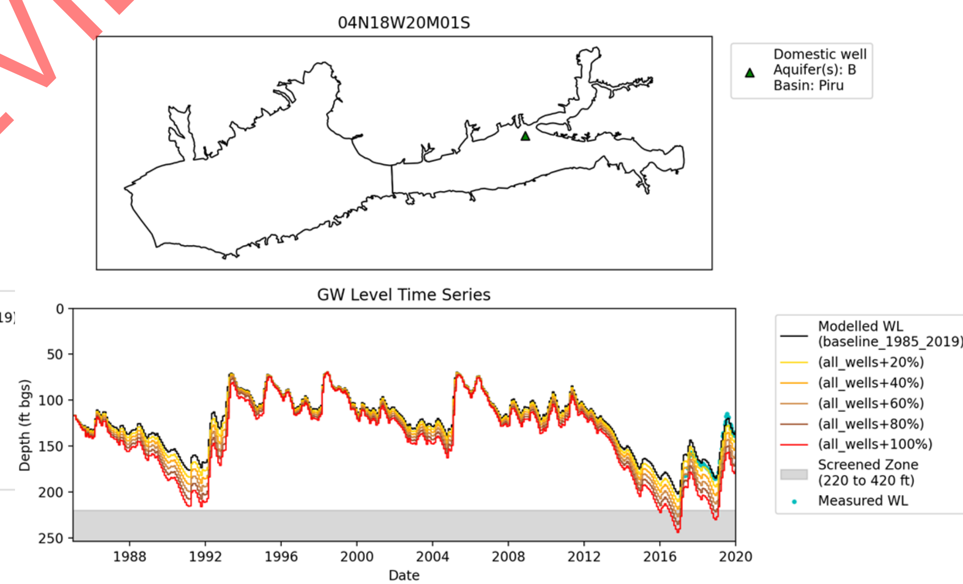
Pumping , AFY	Fillmore basin	Piru basin	Total for both basins
Baseline	46,760	11,390	58,150
Baseline + 20%	56,120	13,670	69,780
Baseline + 40%	65,470	15,950	81,420
Baseline + 60%	74,820	18,220	93,050
Baseline + 80%	84,180	20,500	104,680
Baseline + 100%	93,530	22,780	116,310

(Values rounded to nearest 10 AFY)







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Basin Pumping Stress Tests

Figure 2-3

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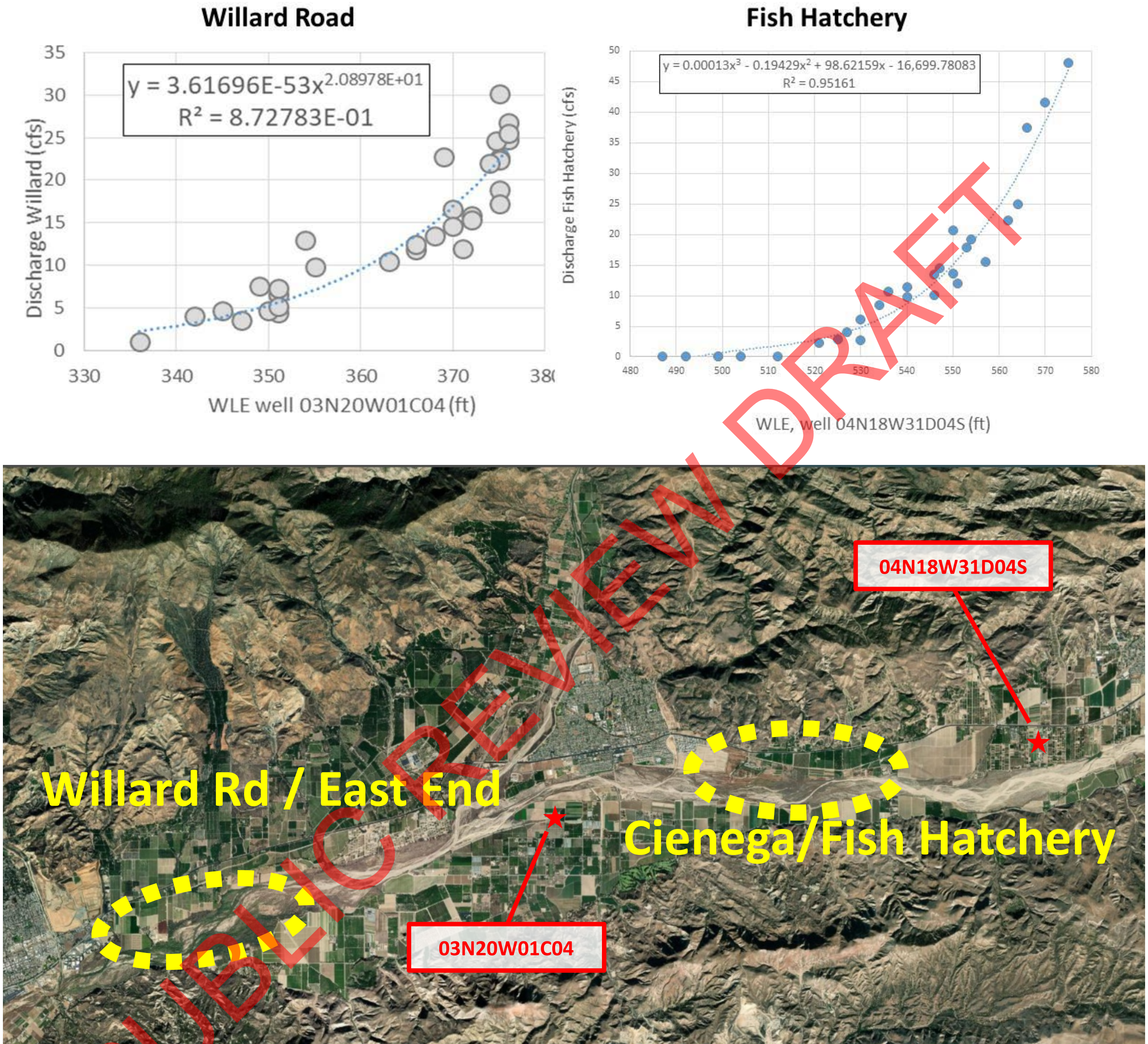
Water Level - Stream Flow Cross Over Analyses



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Surface Water-Groundwater Empirical Relationships

Figure 2-4

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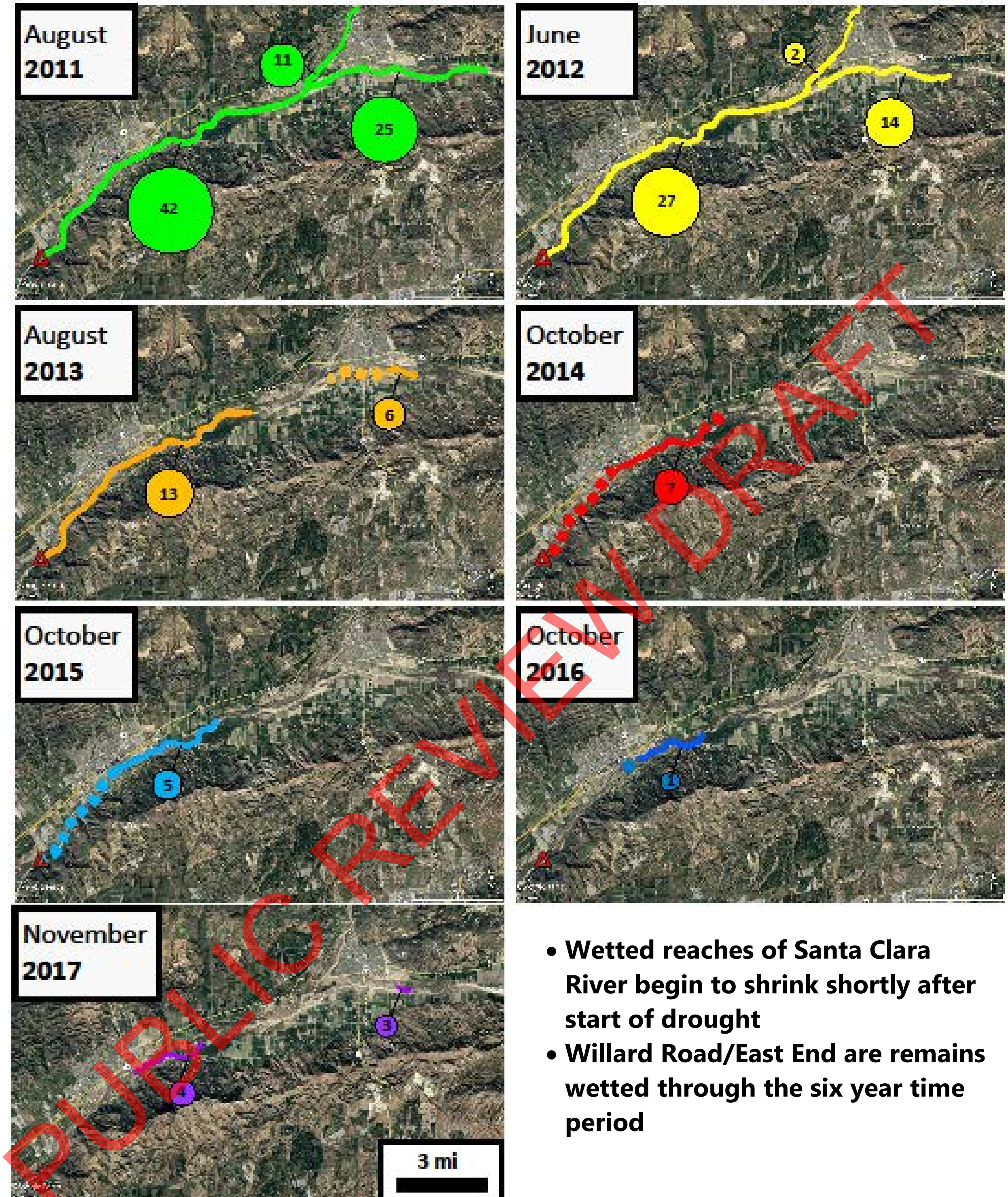
Document1



- **Wetted reaches of Santa Clara River begin to shrink shortly after start of drought**
- **Willard Road/East End are remains wetted through the six year time period**

Surface water flow in cfs shown in circles

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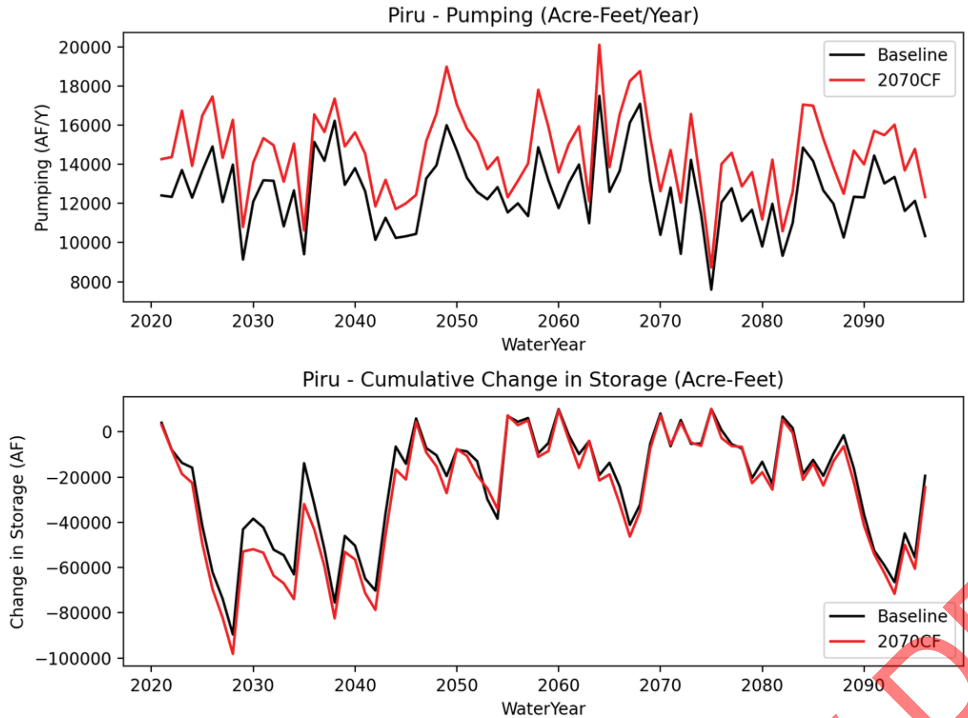
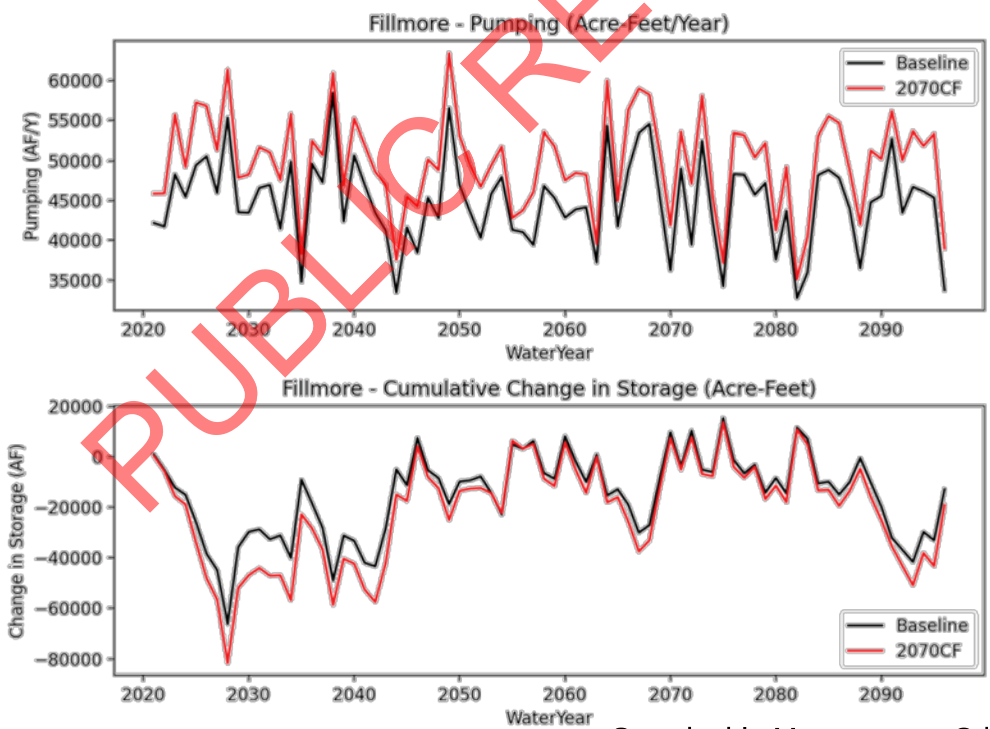
Example Surface Water Flow in Extended Drought – 2011-2017

Figure 2-5



	Average Pumping (Acre-Feet/Year)	
Scenario	Fillmore	Piru
Historical	46,800	11,400
Baseline	44,800	12,600
2070CF	49,800	14,600



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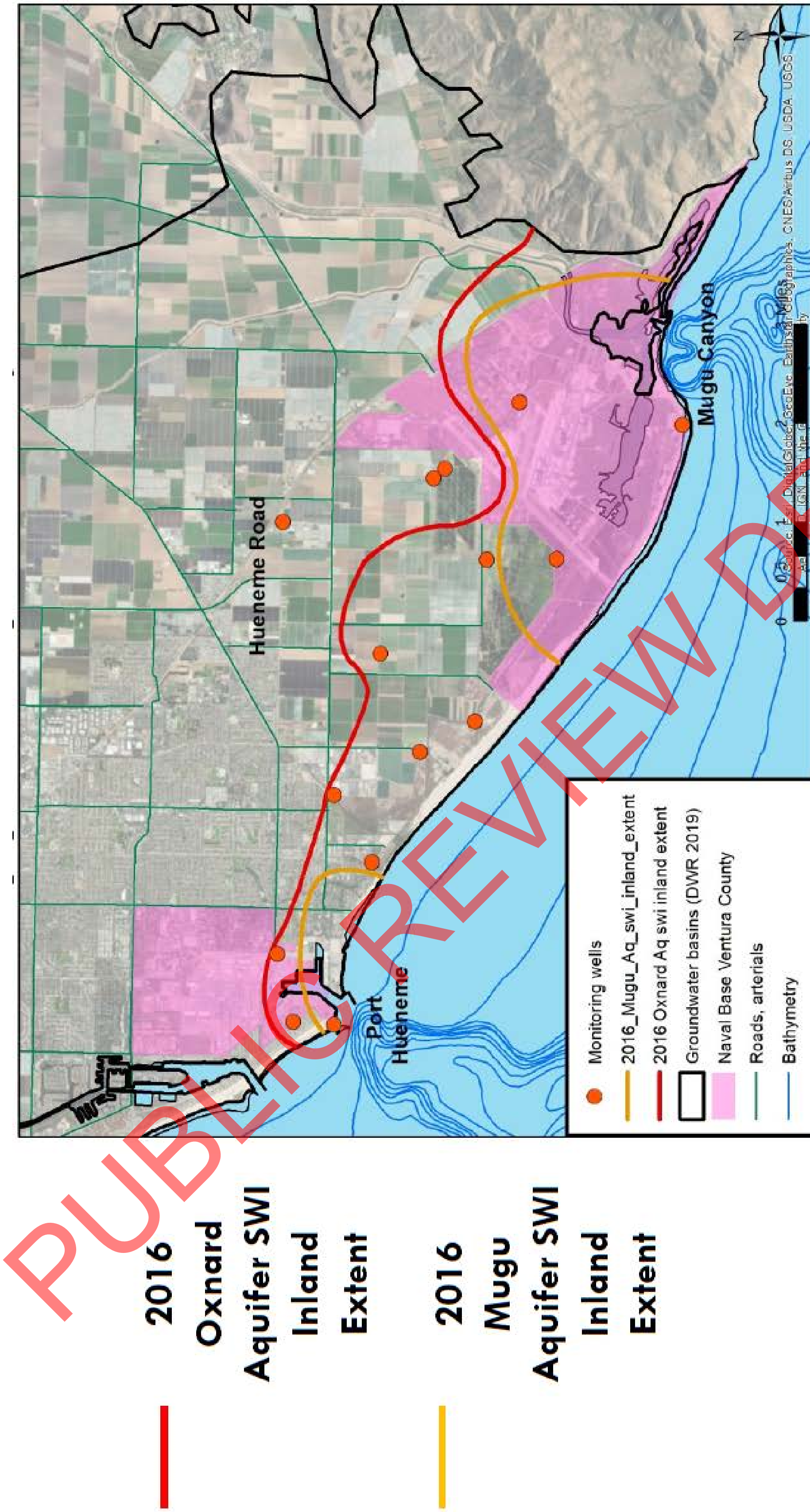
Future Groundwater Extractions And Change in Storage

Figure 2-6



UWCD, 2021, Coastal Brackish Groundwater Extraction and Treatment Project Update

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Seawater Intrusion – Upper Aquifer System

Figure 3-1

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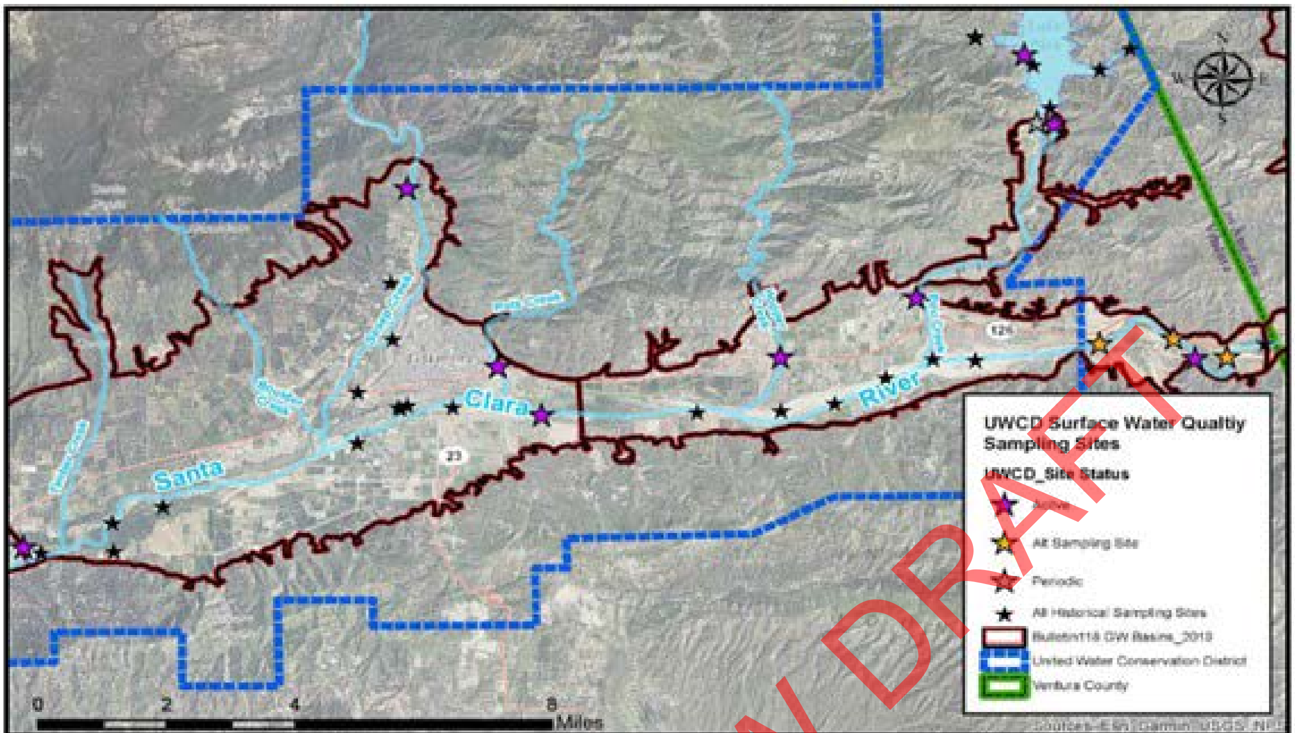

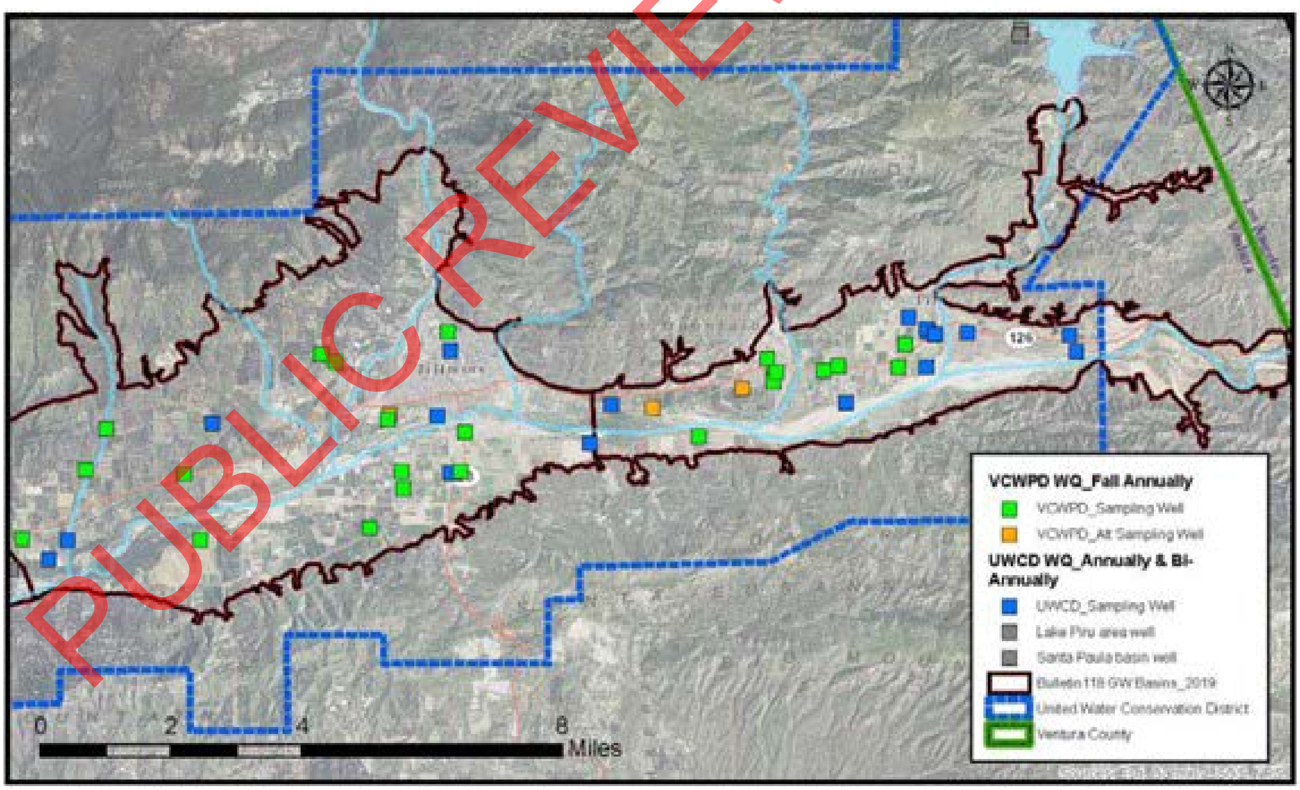

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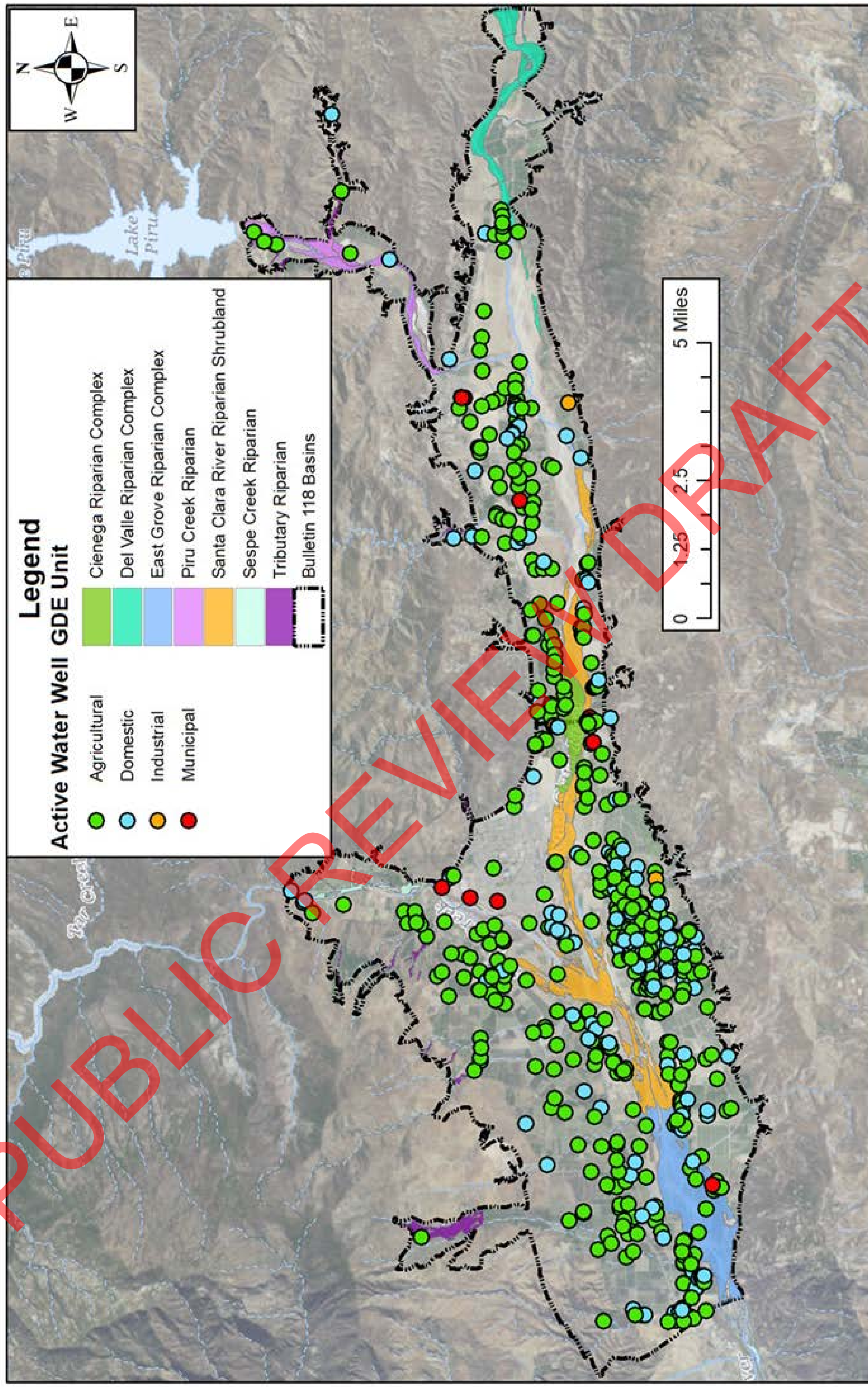
Water Quality Sampling Sites

Figures 3-2a & b



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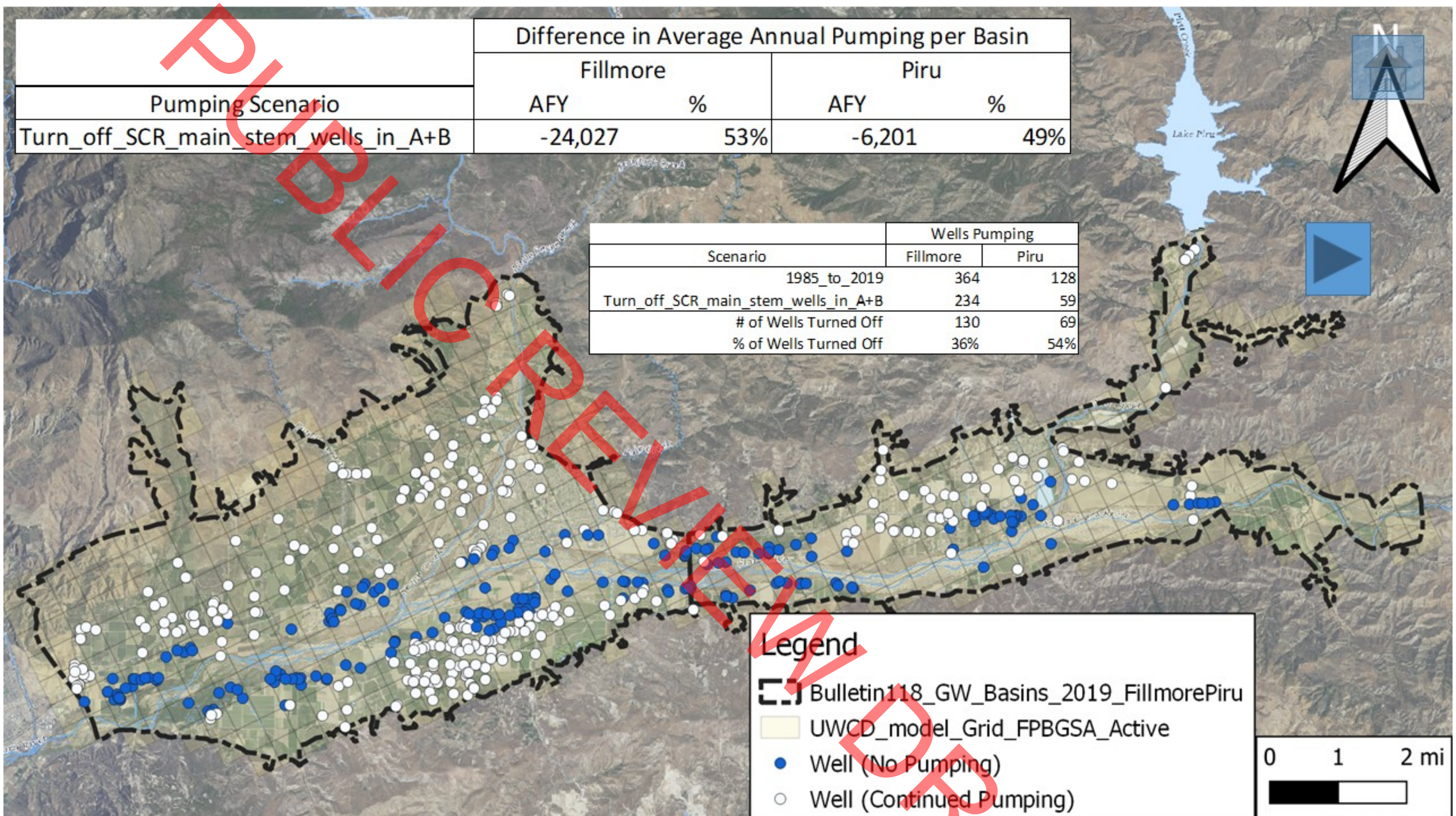
Active Water Wells & GDE Units

Figure 3-3



	Difference in Average Annual Pumping per Basin			
	Fillmore		Piru	
Pumping Scenario	AFY	%	AFY	%
Turn_off_SCR_main_stem_wells_in_A+B	-24,027	53%	-6,201	49%

	Wells Pumping	
Scenario	Fillmore	Piru
1985_to_2019	364	128
Turn_off_SCR_main_stem_wells_in_A+B	234	59
# of Wells Turned Off	130	69
% of Wells Turned Off	36%	54%

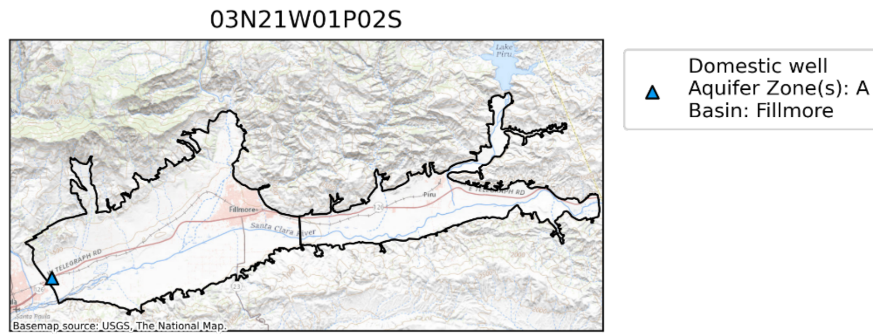
Blue Wells – Pumping eliminated

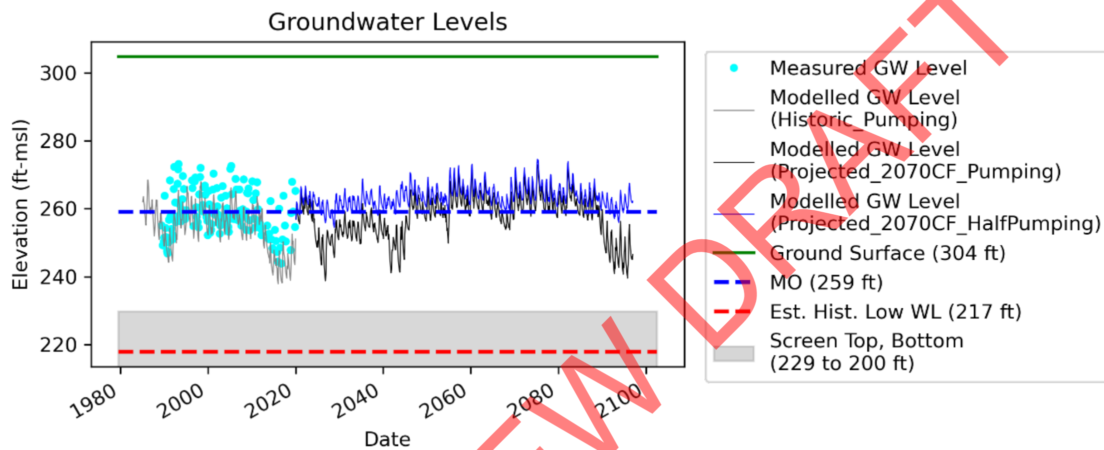
White Well – Continued pumping

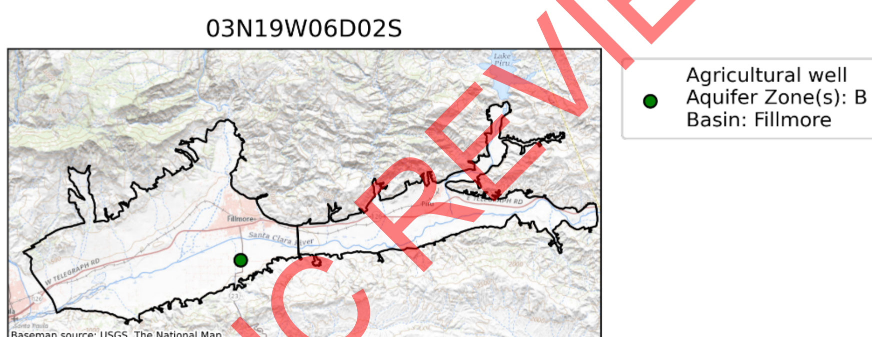
Sustainable Management Criteria Technical Memorandum

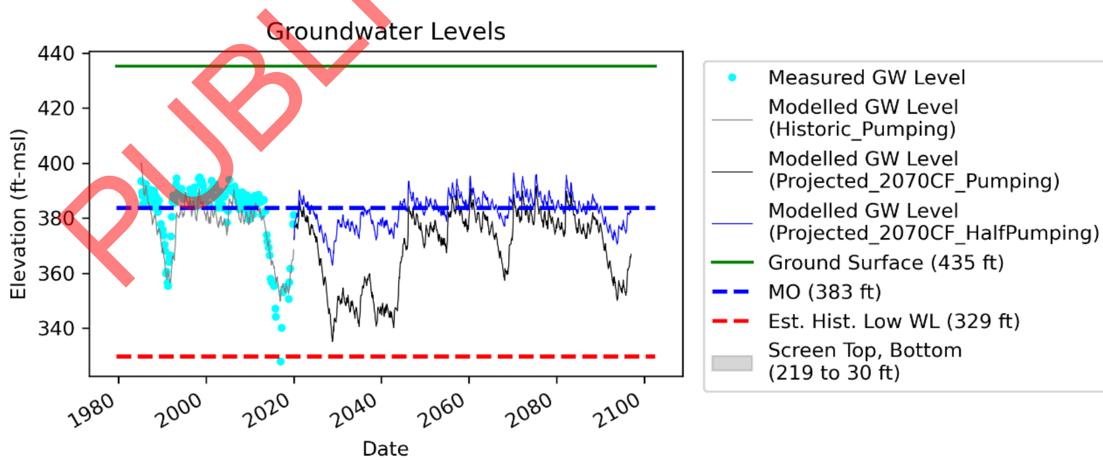
Simulated Groundwater Extraction Reductions

Figure 3-4





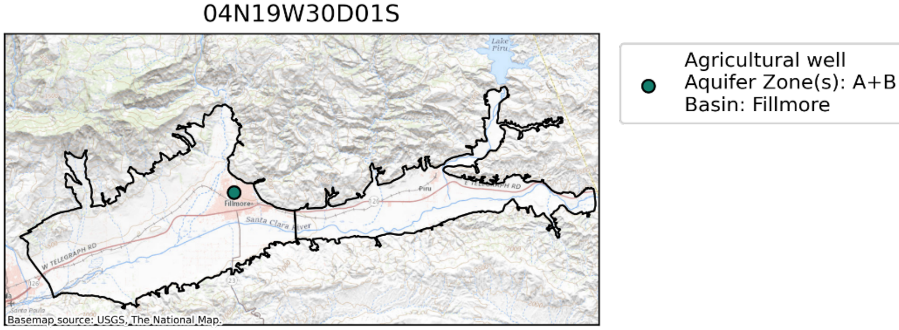


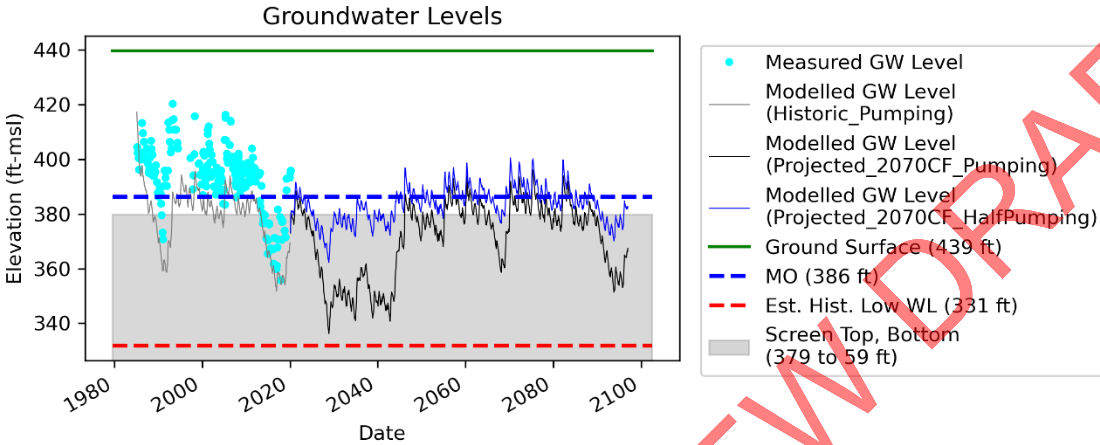


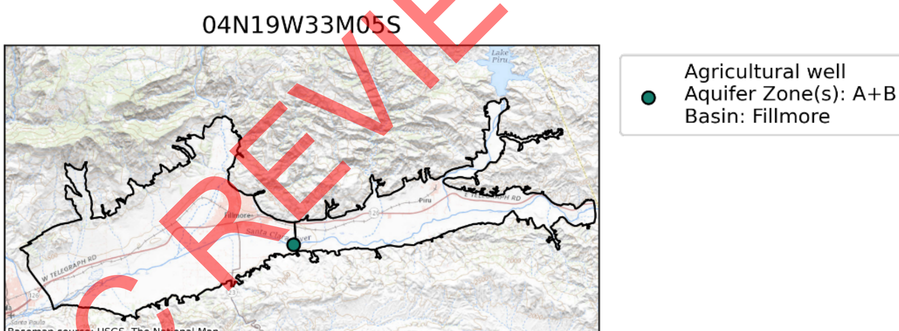
Sustainable Management Criteria Technical Memorandum

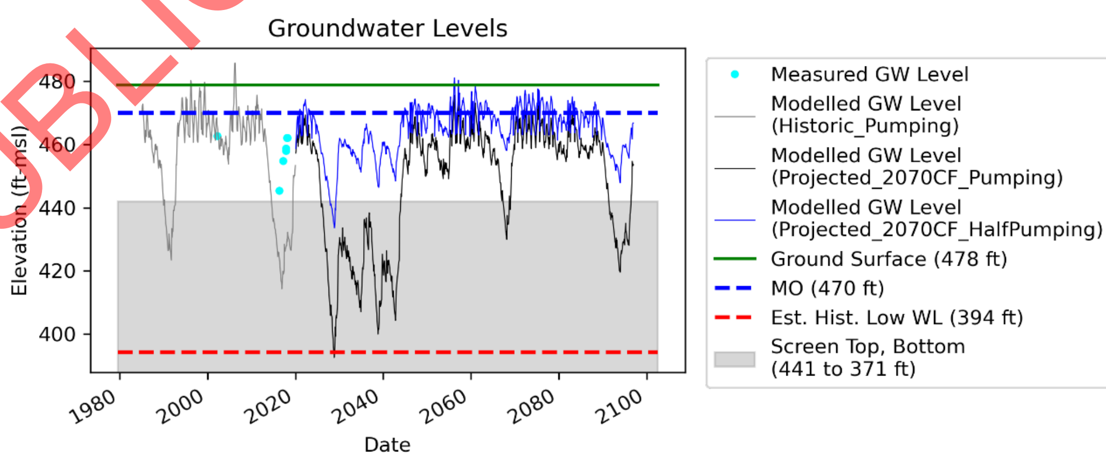
Simulated Groundwater Hyrographs with Extraction Reductions

Figure 3-5









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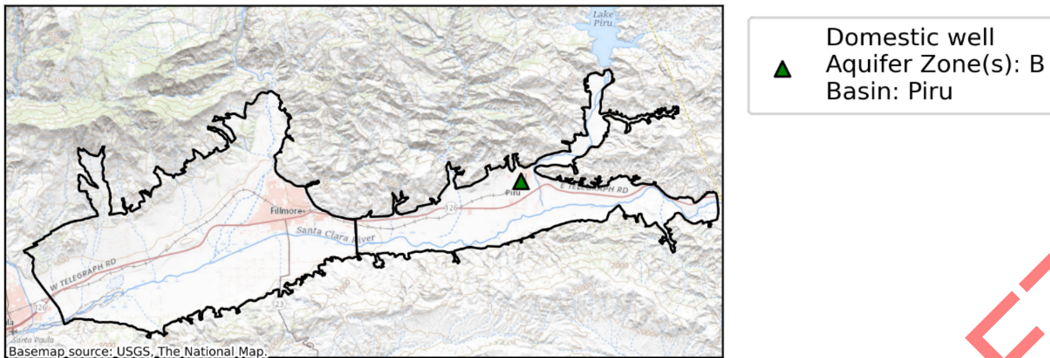
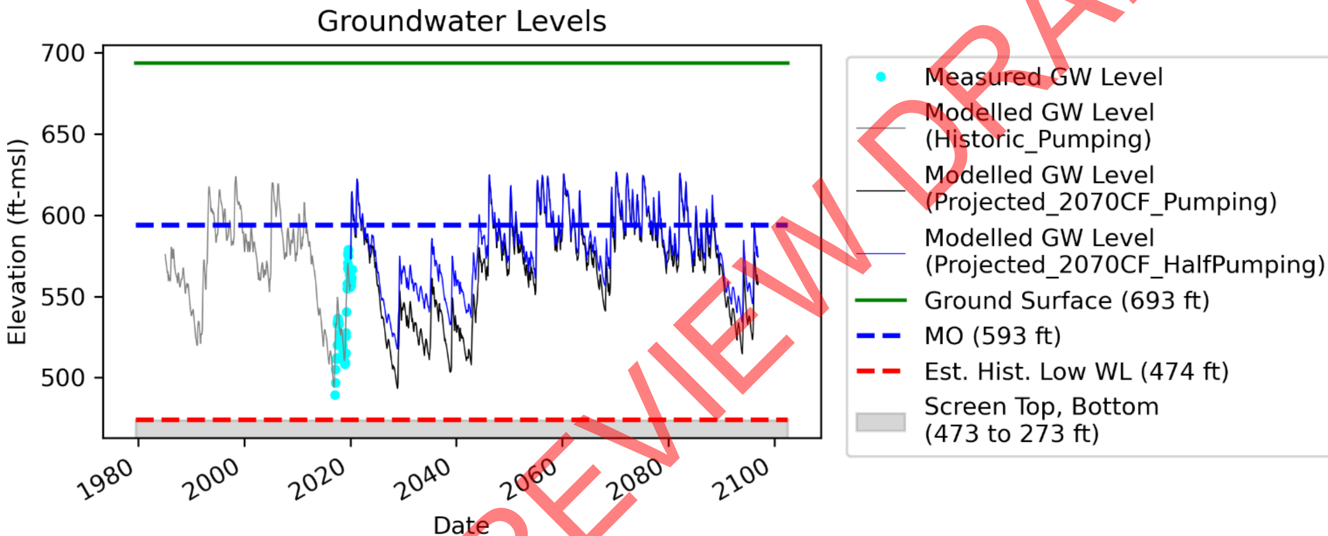
Simulated Groundwater Hyrographs with Extraction Reductions

Figure 3-6

04N18W20M01S





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Simulated Groundwater Hyrographs with Extraction Reductions

Figure 3-7

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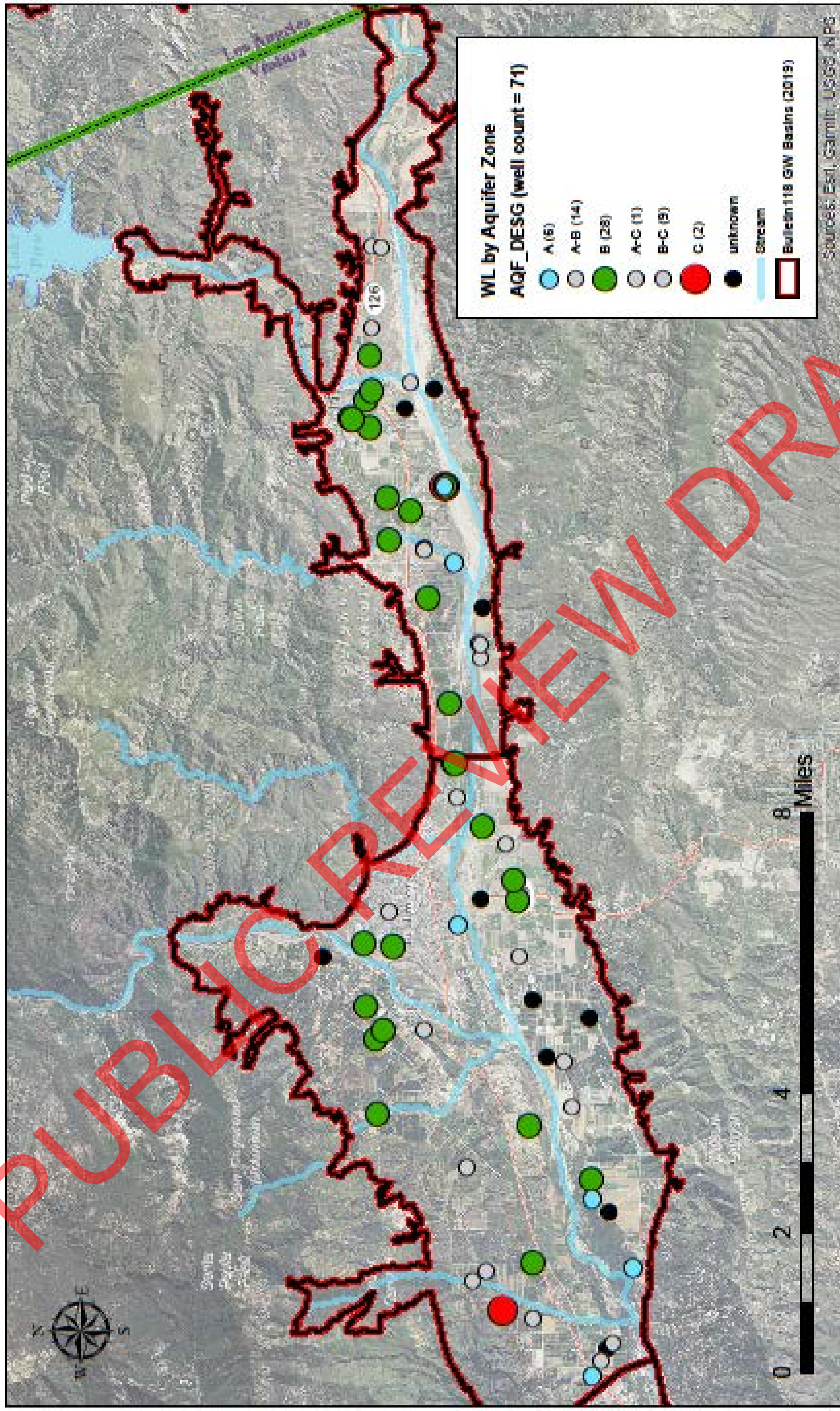
Document1



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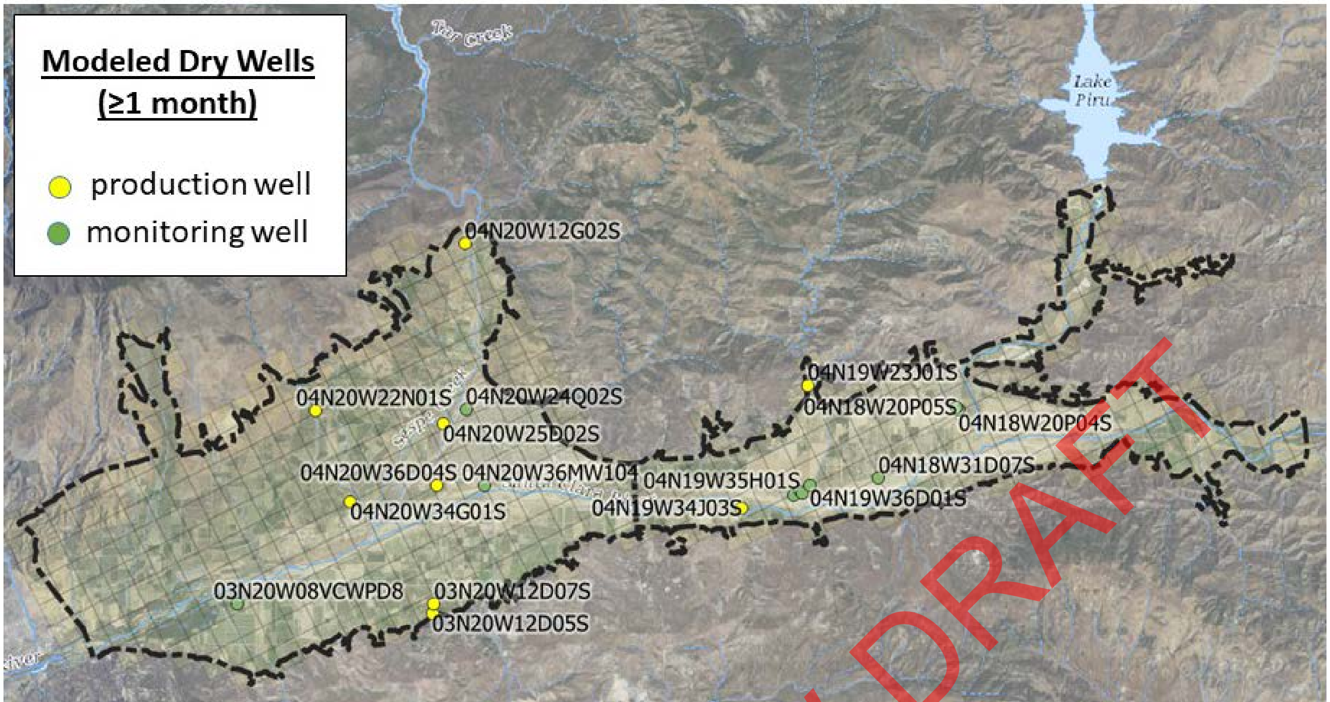
Water Level Monitoring Network

Figure 3-8



PUBLIC REVIEW DRAFT

"Dry" Well Evaluation
No Production Wells are expected to go "Dry" in the future.

- Nine (9) shallow production well were identified as going "dry" at various months according to the model. The hydrographs for these wells were reviewed for model bias and it was determined that are not expected to go "dry"
- Wells most susceptible to getting close to "dry" conditions are <100 feet deep, on average
- Shallow monitoring wells are expected to go dry (and have gone dry) periodically
- Based on UWCD groundwater flow model results (Projected 2070CF)

Sustainable Management Criteria Technical Memorandum

Dry Well Evaluation

Figure 3-9

Document1

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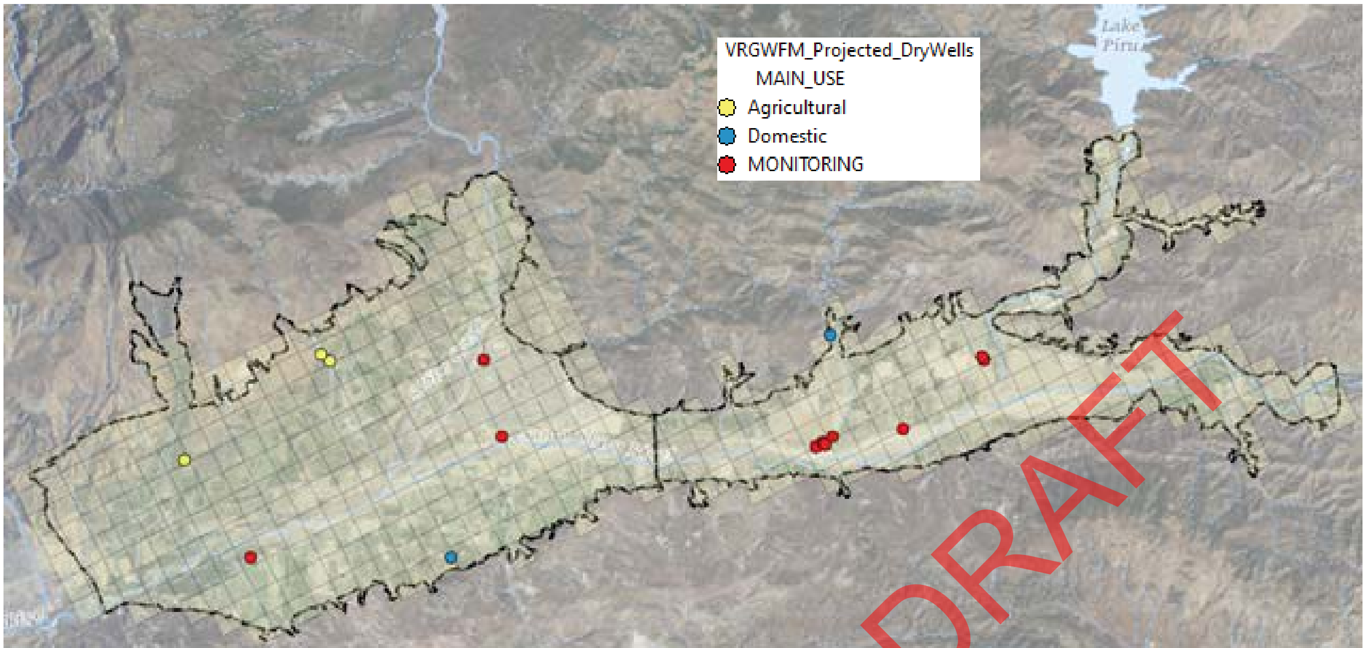
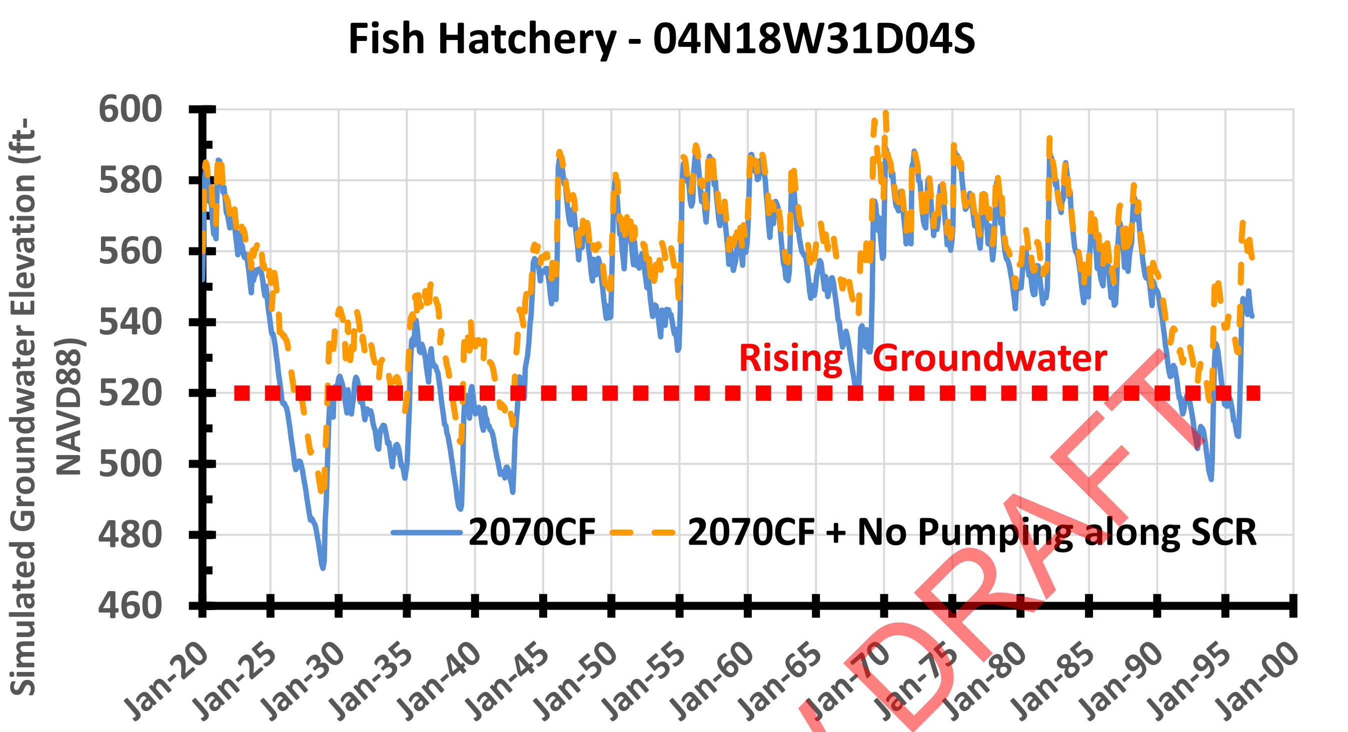
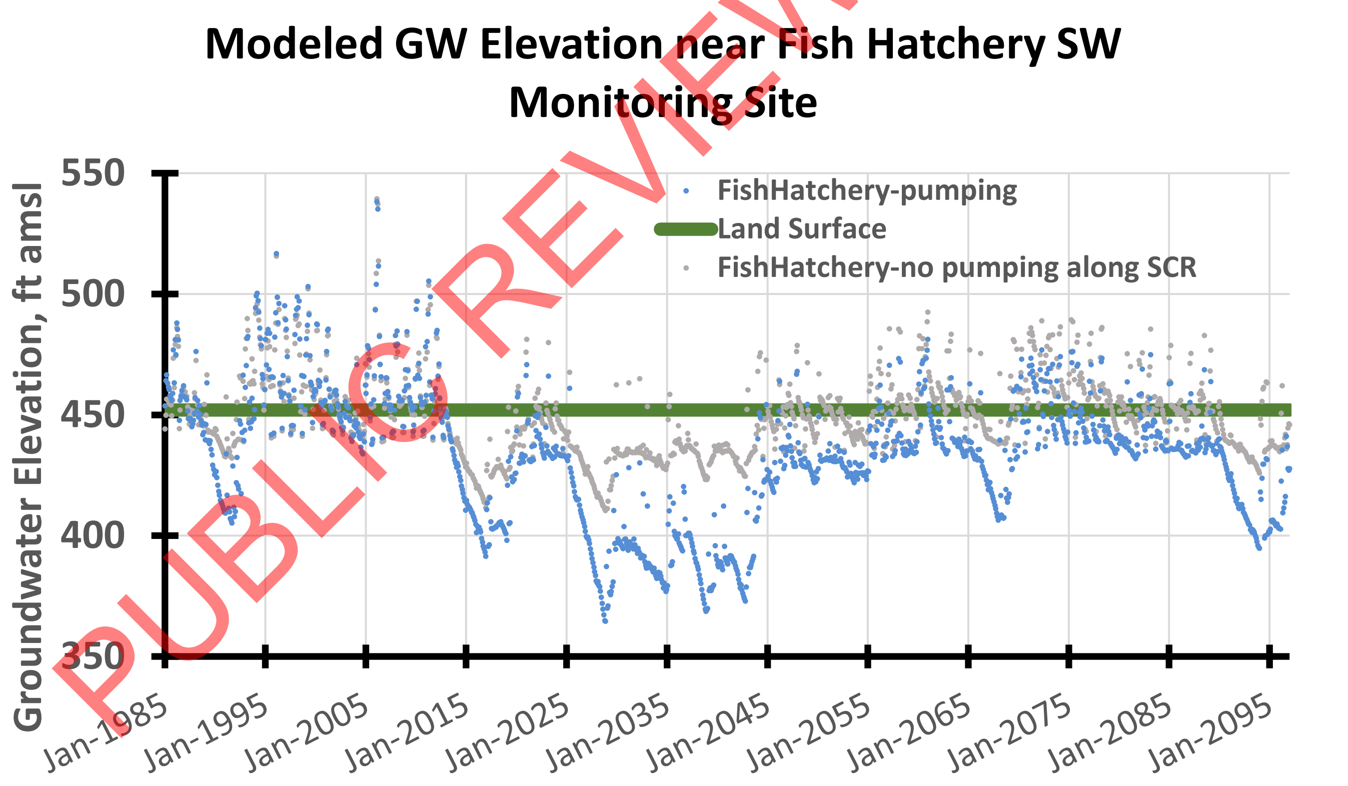


"Dry" Well Evaluation
No Potable Production Wells or Agricultural Irrigation wells are expected to go "Dry" in the future.

- Based on comparison of groundwater levels v. bottom of well screen
- Nine (9) shallow production well were identified as going "dry" at various months according to the model. The hydrographs for these wells were reviewed for model bias and it was determined that are not expected to go "dry"
- Manually inspected model results at 3 agricultural irrigation wells (yellow) and 2 domestic wells (blue) and when adjusted for model bias, these wells are not expected to go dry
- Wells most susceptible to getting close to "dry" conditions are <100 feet deep, on average
- Shallow monitoring wells are expected to go dry (and have gone dry) periodically
- Based on UWCD groundwater flow model results (Projected 2070CF)



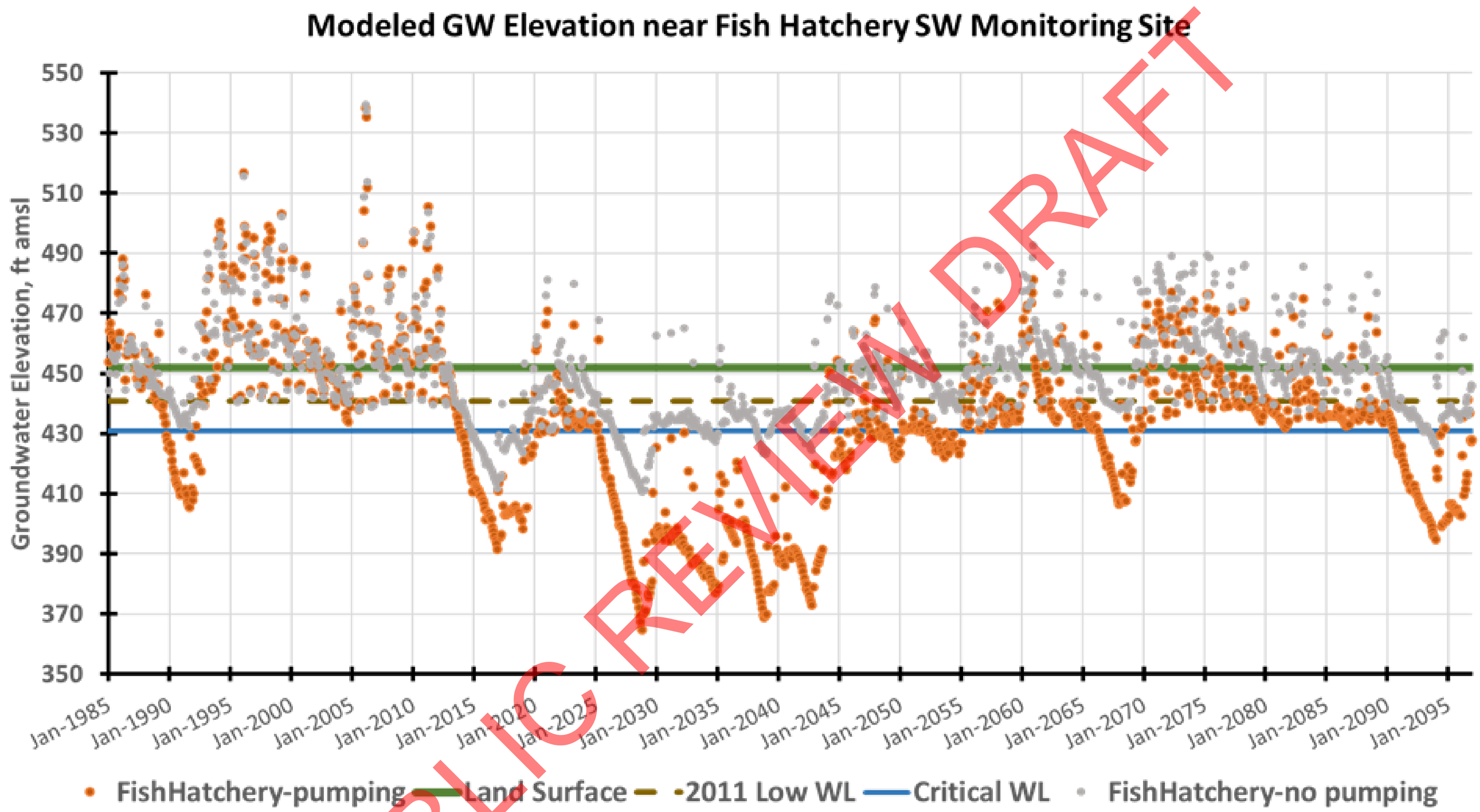


Sustainable Management Criteria Technical Memorandum

Groundwater Extraction Impacts on Water Levels

Cienega / Fish Hatchery

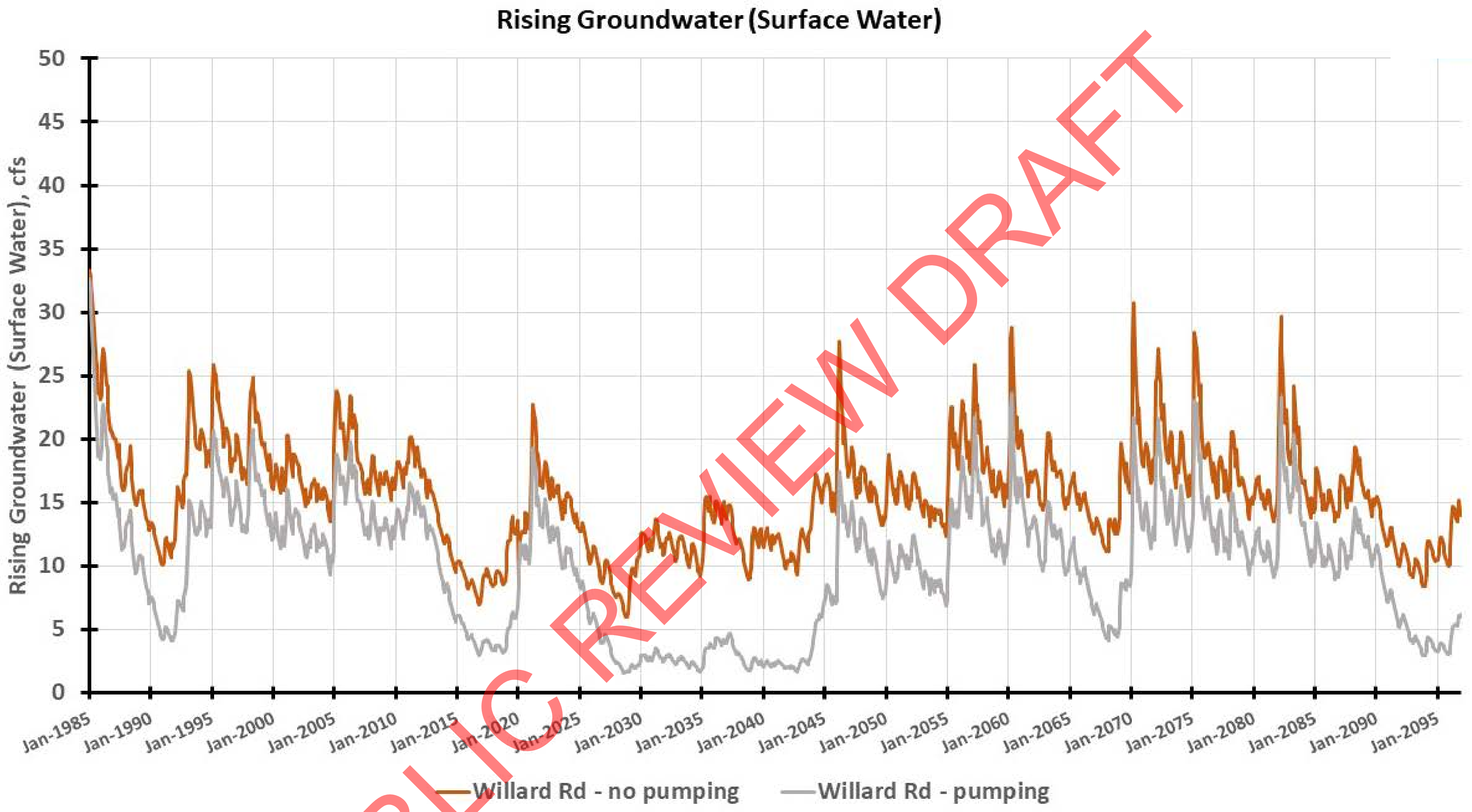
Figure 3-11



FILLMORE BASIN GROUNDWATER SUSTAINABILITY PLAN

Critical Water Level for Vegetation
Cienega / Fish Hatchery Area

Figure 3-12



Fillmore and Piru Basins Groundwater Sustainability Agency

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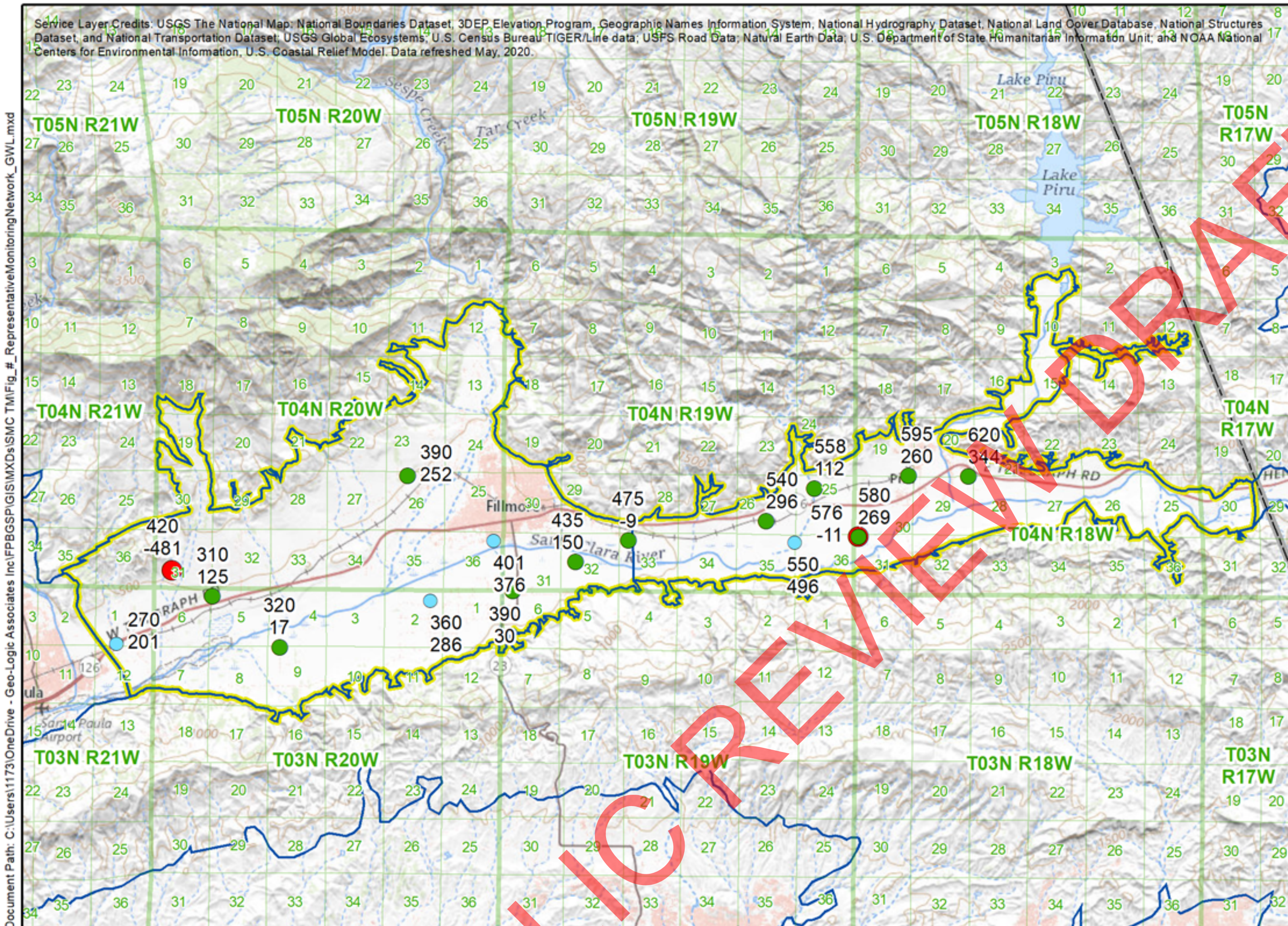
SUSTAINABLE MANAGEMENT CRITERIA TECHNICAL MEMORANDUM

Surface Water Flow - East End/Willard Road

Figure 3-13

Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet | Projection: Lambert Conformal Conic | Datum: North American 1983



Notes:
- MO: Measurable Objective
- MT: Minimum Threshold

Legend

Representative Monitoring Site (Well)

Aquifer Zone

- A (4)
- B (11)
- C (2)

Label:
MO: (2011 High Water Elev.)
MT: (Bottom of Screen Elev.)

- Township and Range
- Section
- Bulletin 118 Basin
- Fillmore and Piru Basins GSA
- County

N

0 1 2 3 6 Miles

Fillmore and Piru Basins Groundwater Sustainability Agency

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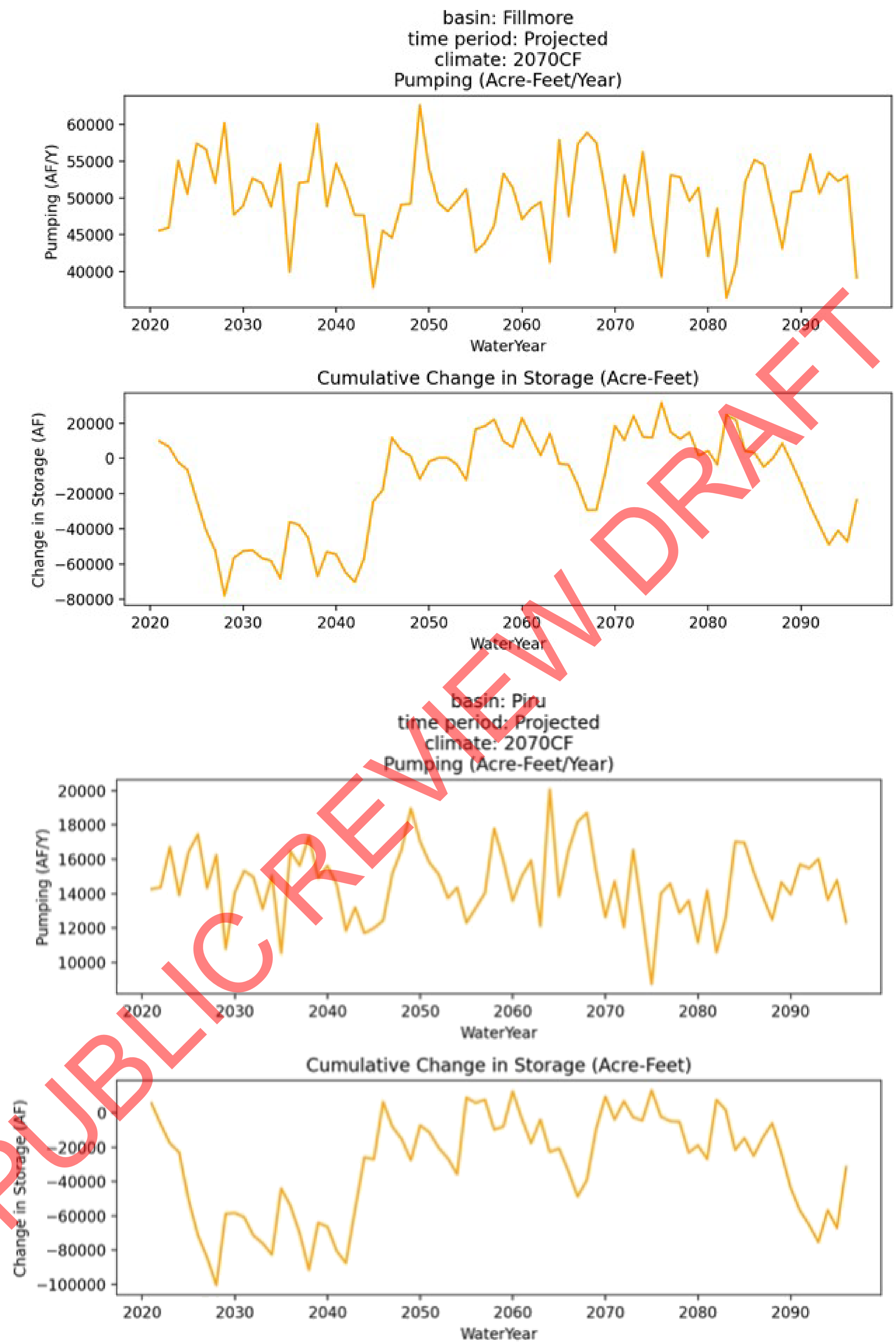
FILLMORE BASIN GROUNDWATER SUSTAINABILITY PLAN

Representative Groundwater Level Monitoring Sites - Aquifer Zones A, B and C

Figure 3-14



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Forecasted Annual Pumping & Cumulative Changes in Storage

Figure 3-15

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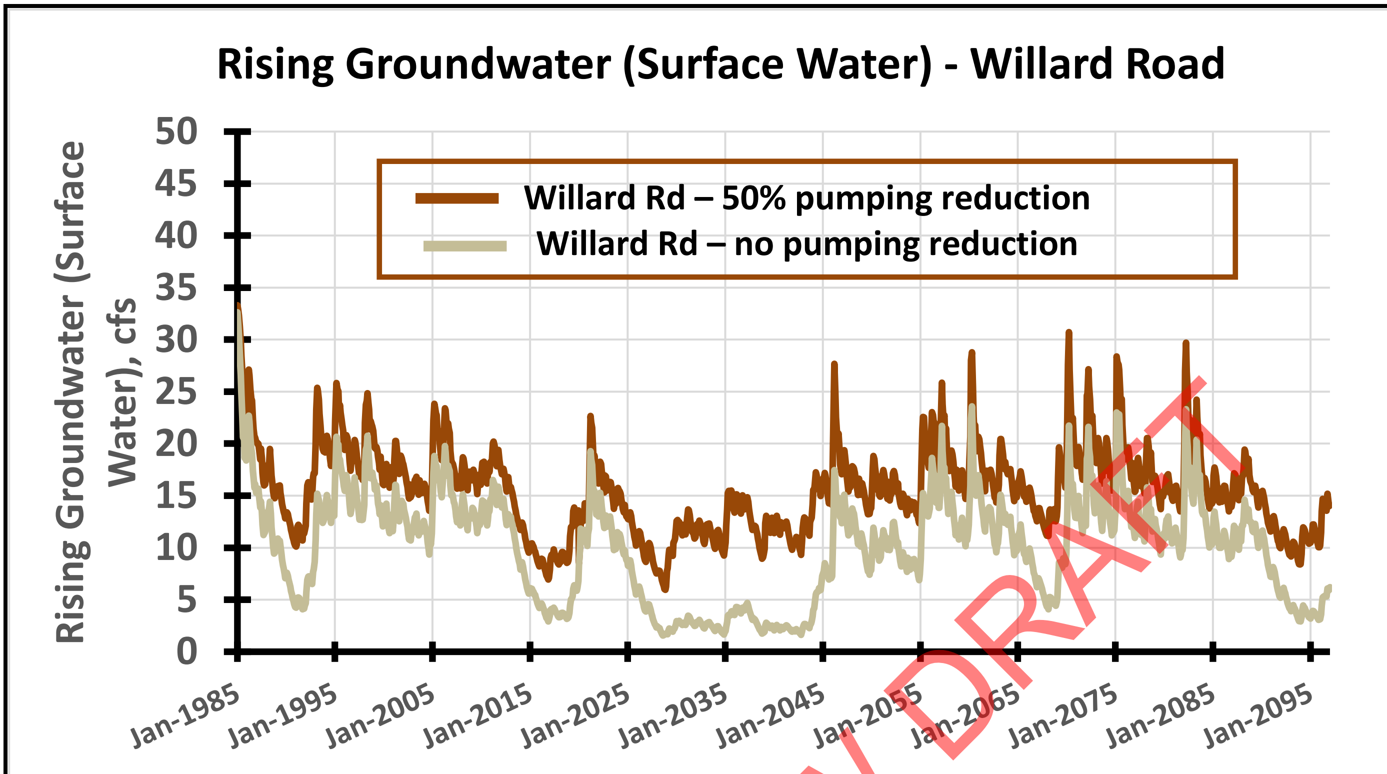
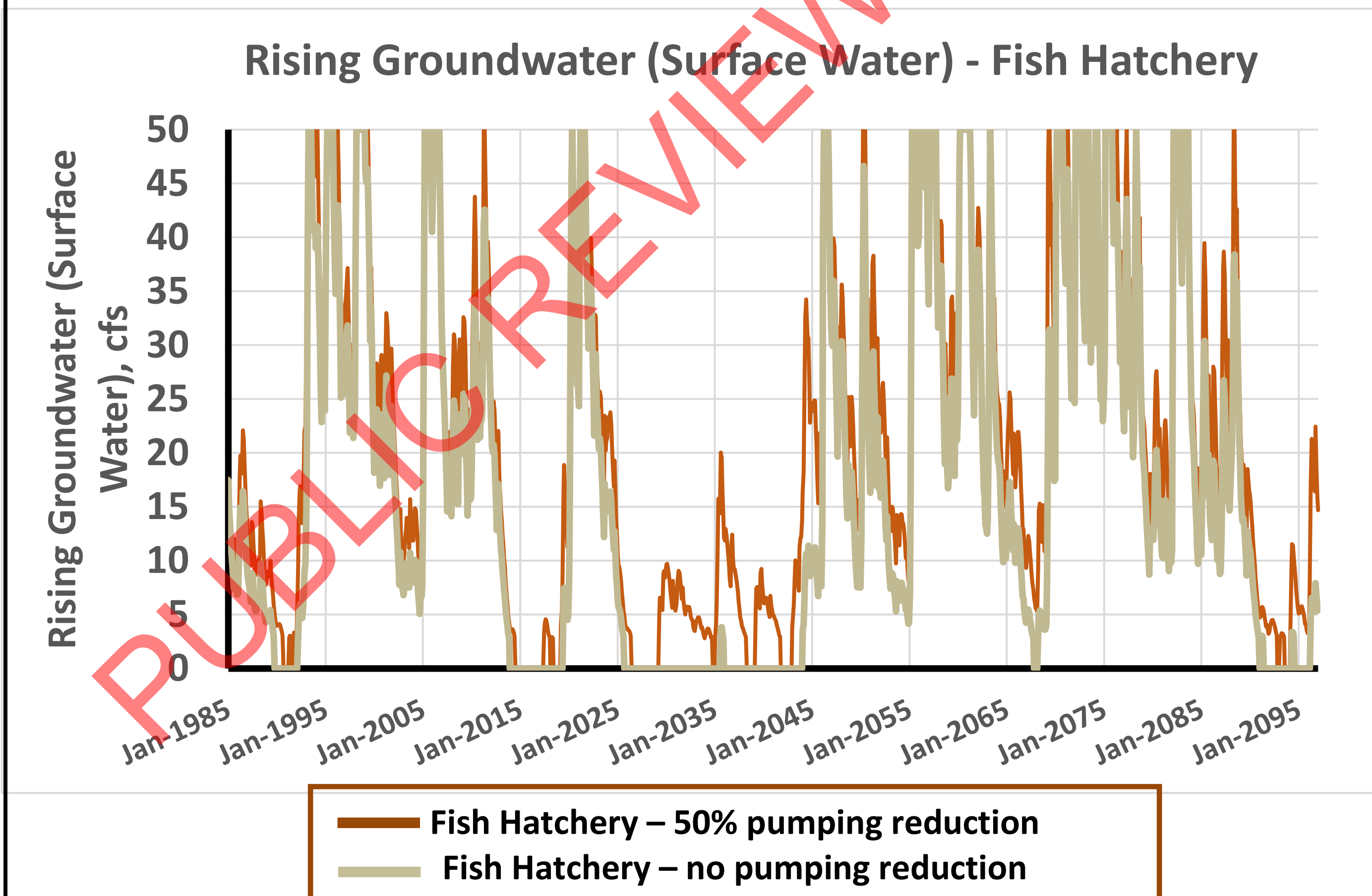
Document1





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Surface Water Depletion Impacts
Due to Groundwater Extraction

Figure 3-16

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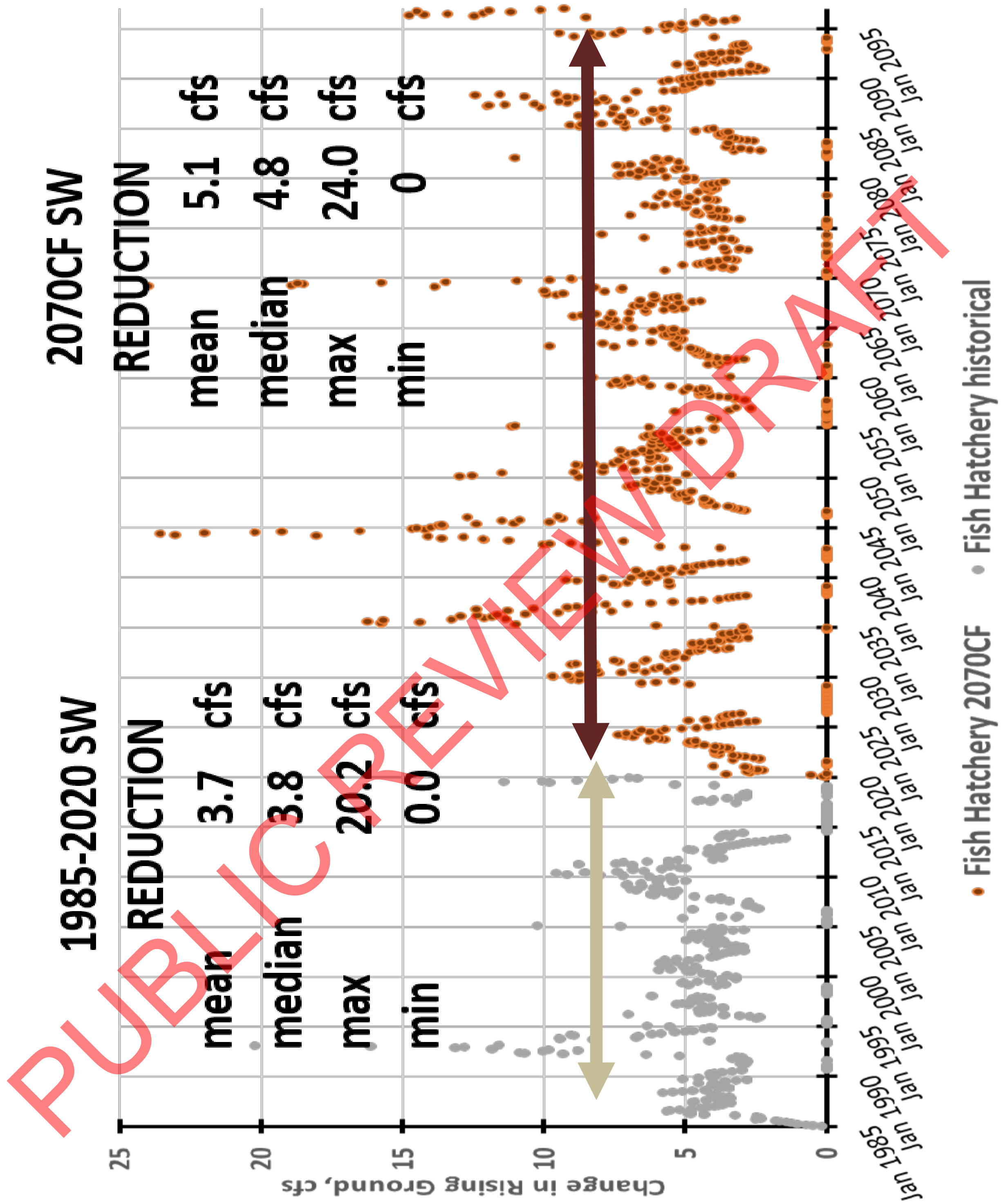

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Change in Rising Groundwater due to Groundwater Extractions
Historical v. Future with Climate Change
Cienega / Fish Hatchery Area

Figure 3-17

Document1

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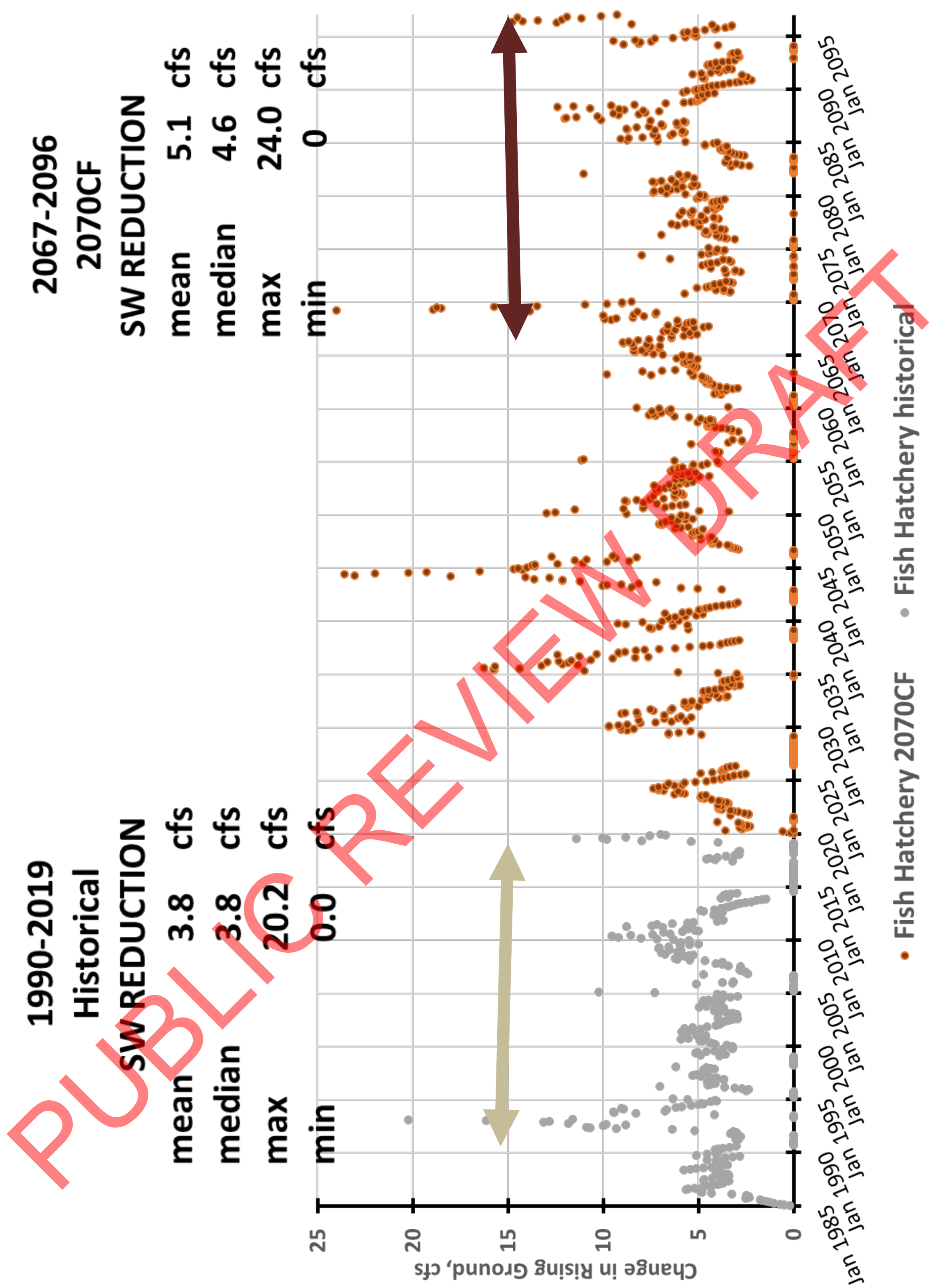

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Change in Rising Groundwater due to Groundwater Extractions

Analogous Time Periods

Cienega / Fish Hatchery Area

Figure 3-18

Document1

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Attachments

ATTACHMENT A
LARWQCB Basin Plan

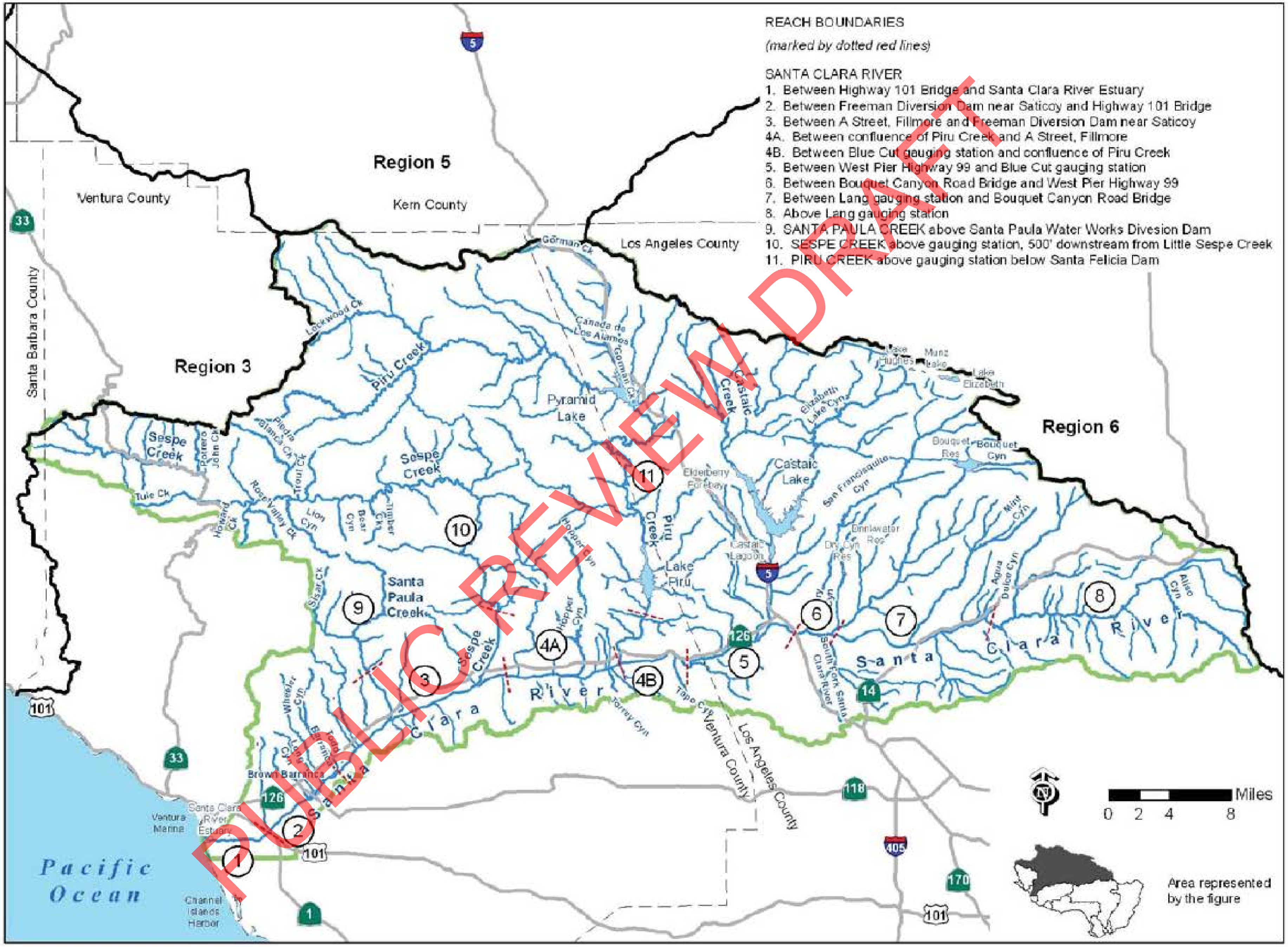


Figure 2-3. Major surface waters of the Santa Clara River watershed.

Beneficial Users - Surface Water

Los Angeles Regional Water Quality Control Board

Table 2-1. Beneficial Uses of Inland Surface Waters.

WATERSHED[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]	REC1	LREC-1	REC2	High Flow Suspension
SANTA CLARA RIVER WATERSHED																											
Santa Clara River Reach 3																											
Santa Clara River (Santa Paula Creek to Sespe Creek)	180701020902	P*	E	E	E	E	E					E					E		E	E			E	Ed		E	
Santa Clara River (Sespe Creek to A Street, Fillmore)	180701020802	P*	E	E	E	E	E					E					E		E	E			E	Ed		E	
Santa Clara River Reach 4A																											
Santa Clara River (A Street, Fillmore to Piru Creek)	180701020802	P*	E	E	E	E	E					E					E		E	E			E	E		E	
Santa Clara River Reach 4B																											
Santa Clara River (Piru Creek to Blue Cut gaging station)	180701020403	P*	E	E	E	E	E					E					E		E	E			E	E		E	

Footnotes are consistent for all beneficial use tables.

E: Existing beneficial use.
P: Potential beneficial use.
I: Intermittent beneficial use.
E, P, and I shall be protected as required.

* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory section would require a detailed analysis of the area.
e: One or more rare species utilize all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, estuaries, lagoons and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
g: Condor refuge.
i: Soledad Canyon is the habitat of the Unarmored Three-Spine Stickleback.

a: Waterbodies are listed multiple times if they cross
to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetla
require a detailed analysis of the area.
d: Limited public access precludes full utilization.

Beneficial Users - Ground Water

Los Angeles Regional Water Quality Control Board

Table 2-2. Beneficial Uses of Ground Water.

DWR[ad] Basin No.	BASIN	MUN	IND	PROC	AGR	AQUA
4-4	SANTA CLARA RIVER VALLEY[af]					
4-4.05	Fillmore					
4-4.05	Pole Creek Fan area	E	E	E	E	
4-4.05	South side of Santa Clara River	E	E	E	E	
4-4.05	Remaining Fillmore area	E	E	E	E	E
4-4.05	Topa Topa (upper Sespe) area	P	E	P	E	
4-4.06	Piru					
4-4.06	Upper area (above Lake Piru)	P	E	E	E	
4-4.06	Lower area east of Piru Creek	E	E	E	E	
4-4.06	Lower area west of Piru Creek	E	E	E	E	

Footnotes are consistent for all beneficial use tables.

E: Existing beneficial use.
P: Potential beneficial use.

ac: Beneficial uses for ground waters outside of the major basins listed on this table and outlined in Fig 1-9 have not been specifically listed. However, ground waters outside of the major basins are, in many cases, significant sources of water. Further existing sources of water for downgradient basins, and such, beneficial uses in the downgradient basins shall apply to these areas.
ad: Basins are numbered according to DWR Bulletin No. 118-Update 2003 (DWR, 2003).
ae: Ground waters in the Pitas Point area (between the lower Ventura River and Rincon Point) are not considered to comprise a major basin and, accordingly, have not been designated a basin number by the DWR or outlined on Fig. 1-9.
af: Santa Clara River Valley Basin was formerly Ventura Central Basin and Acton Valley Basin was formerly Upper Santa Clara Basin (DWR, 1980).
ag: Pleasant Valley, Arroyo Santa Rosa Valley, and Las Posas Valley Basins were formerly subbasins of Ventura Central (DWR, 1980).
ah: Nitrite pollution in the groundwater of the Sunland-Tujunga area currently precludes direct MUN uses. Since the ground water in this area can be treated or blended (or both), it retains the MUN designation.
ai: Raymond Basin was formerly a subbasin of San Gabriel Valley and Monk Hill subbasin is now part of San Fernando Valley Basin (DWR, 2003). The Main San Gabriel Basin was formerly separated into Eastern and Western areas. Since these areas had the same beneficial uses as Puente Basin all three areas have been combined into San Gabriel Valley. Any ground water upgradient of these areas is subject to downgradient beneficial uses and objectives, as explained in Footnote ac.
aj: These areas were formerly part of the Russell Valley Basin (DWR, 1980).
ak: Ground water in the Conejo-Tierra Rejada Volcanic Area occurs primarily in fractured volcanic rocks in the western Santa Monica Mountains and Conejo Mountain areas. These areas have not been delineated on Fig. 1-9.
al: With the exception of ground water in Malibu Valley (DWR Basin No. 4-22) ground waters along the southern slopes of the Santa Monica Mountains are not considered to comprise a major basin and accordingly have not been designated a basin number by DWR.
am: DWR has not designated basins for ground waters on the San Pedro Channel Islands.

BENEFICIAL USE DEFINITIONS

The following definitions for beneficial uses are applicable statewide (in alphabetical order by abbreviation). If a Regional Water Board has a region-specific variation on a statewide beneficial use, the region-specific definition is also defined. Additional beneficial use definitions adopted by individual Regional Water Boards, for which there is no equivalent statewide beneficial use, are listed on page 5.

Agricultural Supply (AGR) - Uses of water for farming, horticulture or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Variation:

R5: **Agricultural Supply (AGR)** - Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing.

Aquaculture (AQUA) - Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.

Preservation of Biological Habitats of Special Significance (BIOL) - Uses of water that support designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves, or Areas of Special Biological Significance (ASBS), where the preservation or enhancement of natural resources requires special protection.

Variations:

R1: **Preservation of Areas of Special Biological Significance (ASBS)** - Includes marine life refuges, ecological reserves and designated areas of special biological significance, such as areas where kelp propagation and maintenance are features of the marine environment requiring special protection.

R2: **Areas of Special Biological Significance (ASBS)** - Areas designated by the State Water Board. These include marine life refuges, ecological reserves, and designated areas where the preservation and enhancement of natural resources requires special protection. In these areas, alteration of natural water quality is undesirable. The areas that have been designated as ASBS in this Region are Bird Rock, Point Reyes Headland Reserve and Extension, Double Point, Duxbury Reef Reserve and Extension, Farallon Islands, and James V. Fitzgerald Marine Reserve, depicted in Figure 2-1. The California Ocean Plan prohibits waste discharges into, and requires wastes to be discharged at a sufficient distance from, these areas to assure maintenance of natural water quality conditions. These areas have been designated as a subset of State Water Quality Protection Areas as per the Public Resources Code.

R3: **Areas of Biological Significance (ASBS)** – Are those areas designated by the State Water Resources Control Board as requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable.

Cold Freshwater Habitat (COLD) - Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Commercial and Sport Fishing (COMM) - Uses of water for commercial or recreational collection of fish and shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Variation:

R6: **Commercial and Sport Fishing (COMM)** - Beneficial uses of waters used for commercial or recreational collection of fish or other organisms including, but not limited to, uses involving organisms intended for human consumption.

Estuarine Habitat (EST) - Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).

Variation:

R2: **Estuarine Habitat (EST)** - Uses of water that support estuarine ecosystems, including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds), and the propagation, sustenance, and migration of estuarine organisms.

Freshwater Replenishment (FRSH) - Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).

Variation:

R3: **Freshwater Replenishment (FRSH)** - Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity) which includes a water body that supplies water to a different type of water body, such as, streams that supply reservoirs and lakes, or estuaries; or reservoirs and lakes that supply streams. This includes only immediate upstream water bodies and not their tributaries.

Ground Water Recharge (GWR) - Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting saltwater intrusion into freshwater aquifers.

Variation:

R3: **Ground Water Recharge (GWR)** – Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers. Ground water recharge includes recharge of surface water underflow.

Industrial Service Supply (IND) - Uses of water for industrial activities that do not depend primarily on water quality, including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.

Variation:

R6: **Industrial Service Supply (IND)** - Beneficial uses of waters used for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, geothermal energy production, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.

Marine Habitat (MAR) - Uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).

Migration of Aquatic Organisms (MIGR) - Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.

Variations:

R2: **Fish Migration (MIGR)** - Uses of water that support habitats necessary for migration, acclimatization between fresh water and salt water, and protection of aquatic organisms that are temporary inhabitants of waters within the region.

R4 & R6: **Migration of Aquatic Organisms (MIGR)** - Uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.

Municipal and Domestic Supply (MUN) - Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water.

Navigation (NAV) - Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

Hydropower Generation (POW) - Uses of water for hydropower generation.

Industrial Process Supply (PRO) - Uses of water for industrial activities that depend primarily on water quality.

Variations:

R2, R3, R4, R9: **Industrial Service Supply (PROC)** - Uses of water for industrial activities that depend primarily on water quality.

R8: **Industrial Process Supply (PROC)** - waters are used for industrial activities that depend primarily on water quality. These uses may include, but are not limited to, process water supply and all uses of water related to product manufacture or food preparation

Rare, Threatened, or Endangered Species (RARE) - Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.

Water Contact Recreation (REC-1) - Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

Non-Contact Water Recreation (REC-2) - Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Inland Saline Water Habitat (SAL) - Uses of water that support inland saline water ecosystems including, but not limited to, preservation or enhancement of aquatic saline habitats, vegetation, fish, or wildlife, including invertebrates.

Shellfish Harvesting (SHELL) - Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters and mussels) for human consumption, commercial or sport purposes.

Spawning, Reproduction, and/or Early Development (SPWN) - Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Variation:

R5: **Spawning, Reproduction, and/or Early Development (SPWN)** - Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish. SPWN shall be limited to cold water fisheries.

Warm Freshwater Habitat (WARM) - Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Variation:

R5: **Warm Freshwater Habitat (WARM)** - Uses of water that support warm water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. WARM includes support for reproduction and early development of warm water fish.

Wildlife Habitat (WILD) - Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Variations:

R5: **Wildlife Habitat (WILD)** - Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

R6: **Wildlife Habitat (WILD)** - Beneficial uses of waters that support wildlife habitats including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.

Additional Beneficial Use Definitions Adopted By Individual Regional Water Boards and Approved By the State Water Board

Native American Culture (CUL) Uses of water that support the cultural and/or traditional rights of indigenous people such as subsistence fishing and shellfish gathering, basket weaving and jewelry material collection, navigation to traditional ceremonial locations, and ceremonial uses. North Coast Regional Board (Region 1)

Subsistence Fishing (FISH) Uses of water that support subsistence fishing. North Coast Regional Board (Region 1)

Flood Peak Attenuation/Flood Water Storage (FLD) - Beneficial uses of riparian wetlands in flood plain areas and other wetlands that receive natural surface drainage and buffer its passage to receiving waters. Lahontan Regional Board & North Coast Regional Board (Regions 6 & 1):

Limited Water Contact Recreation (LREC-1): Uses of water for recreational activities involving body contact with water, where full REC-1 use is limited by physical conditions such as very shallow water depth and restricted access and, as a result, ingestion of water is incidental and infrequent. Los Angeles Regional Board (Region 4):

Limited Warm Freshwater Habitat (LWRM) - Waters support warm water ecosystems which are severely limited in diversity and abundance as the result of concrete-lined watercourses and low, shallow dry weather flows which result in extreme temperature, pH, and/or dissolved oxygen conditions. Naturally reproducing finfish populations are not expected to occur in LWRM waters. Santa Ana Regional Board (Region 8):

Shellfish Harvesting (SHELL) - Uses of water that support habitats suitable for the collection of filter feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sport purposes. This includes waters that have in the past, or may in the future, contain significant shellfisheries. Central Coast Regional Board (Region 3)

Wetland Habitat (WET) Uses of water that support natural and man-made wetland ecosystems, including, but not limited to, preservation or enhancement of unique wetland functions, vegetation, fish, shellfish, invertebrates, insects, and wildlife habitat. North Coast Regional Board (Region 1)

Wetland Habitat (WET) - Uses of water that support wetland ecosystems, including, but not limited to, preservation or enhancement of wetland habitats, vegetation, fish, shellfish, or wildlife, and other unique wetland functions which enhance water quality, such as providing flood and erosion control, stream bank stabilization, and filtration and purification of naturally occurring contaminants. Los Angeles Regional Board (Region 4)

Water Quality Enhancement (WQE) Uses of waters, including wetlands and other waterbodies, that support natural enhancement or improvement of water quality in or downstream of a waterbody including, but not limited to, erosion control, filtration and purification of naturally occurring water pollutants, stream bank stabilization, maintenance of channel integrity, and siltation control. North Coast Regional Board (Region 1)

Water Quality Enhancement (WQE) - Beneficial uses of waters that support natural enhancement or improvement of water quality in or downstream of a water body including, but not limited to, erosion control, filtration and purification of naturally occurring water pollutants, stream bank stabilization, maintenance of channel integrity, and siltation control. Lahontan Regional Board (Regions 6)

ATTACHMENT B
Basin Stress Tests

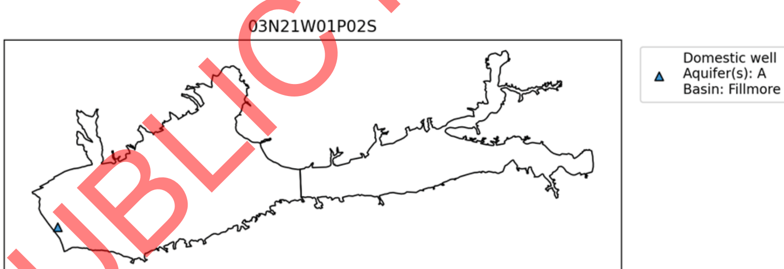
Basin "Stress Test"

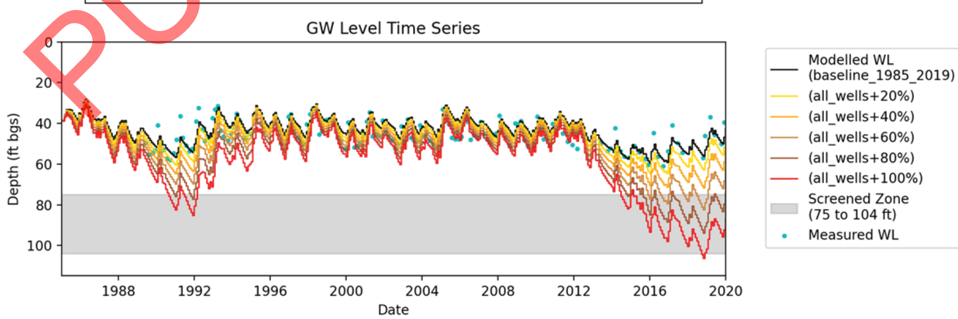
- GW pumping increased for all well categories by 20%, 40%, 60%, 80%, & 100%

Pumping , AFY	Fillmore basin	Piru basin	Total for both basins
Baseline	46,760	11,390	58,150
Baseline + 20%	56,120	13,670	69,780
Baseline + 40%	65,470	15,950	81,420
Baseline + 60%	74,820	18,220	93,050
Baseline + 80%	84,180	20,500	104,680
Baseline + 100%	93,530	22,780	116,310

(Values rounded to nearest 10 AFY)

Basin "Stress Test"

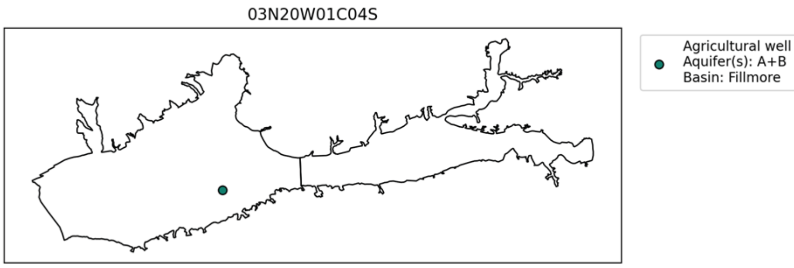


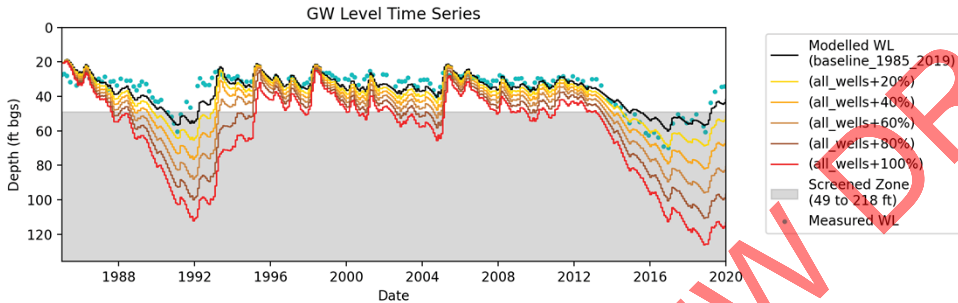


Summary

- Even with pumping increased by 100%, WLs recover to within ~10 ft of baseline in wet periods
- Increasing pumping by 20% or 40% allows WLs to recover within ~5ft of baseline in wet periods

Basin “Stress Test”

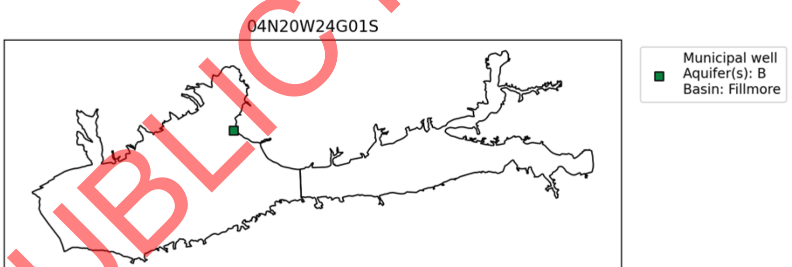


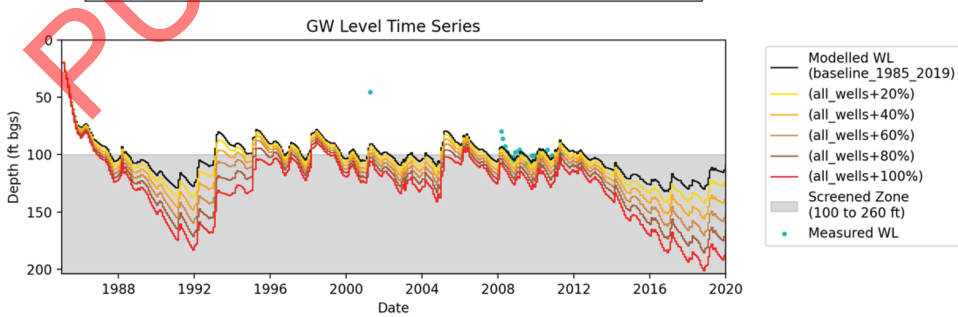


Summary

- Even with pumping increased by 100%, WLs recover to within ~20 ft of baseline in wet periods
- Increasing pumping by 20% or 40% allows WLs to recover within ~10ft of baseline in wet periods

Basin “Stress Test”

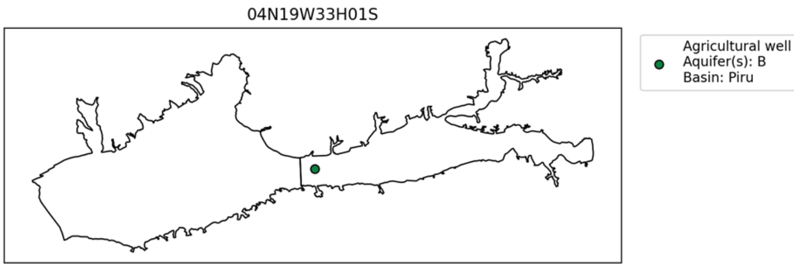


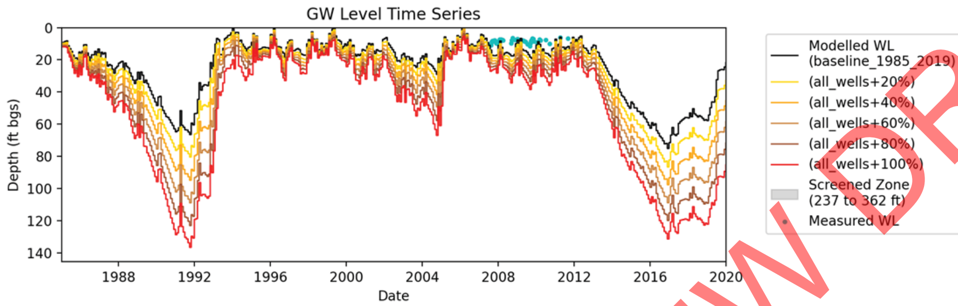


Summary

- Even with pumping increased by 100%, WLs recover to within ~20 ft of baseline in wet periods
- Increasing pumping by 20% or 40% allows WLs to recover within ~10ft of baseline in wet periods

Basin "Stress Test"

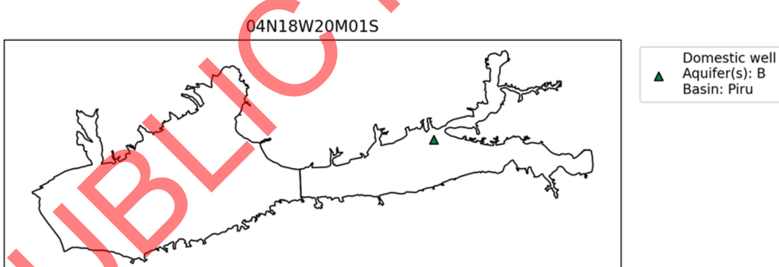


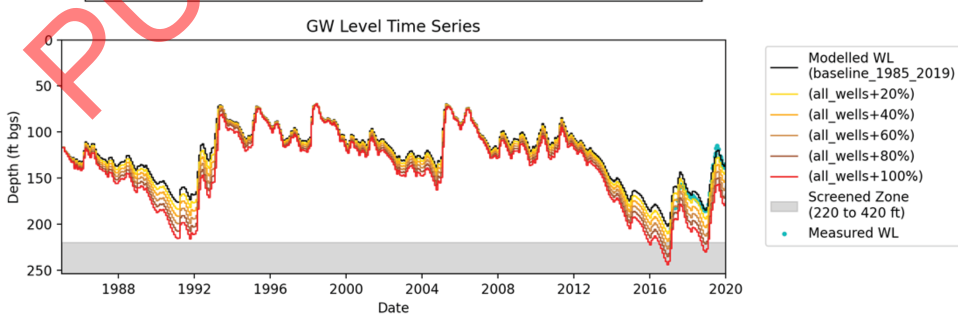


Summary

- Even with pumping increased by 100%, WLs recover to within ~15 ft of baseline in wet periods
- Increasing pumping by 20% or 40% allows WLs to recover within ~5ft of baseline in wet periods

Basin "Stress Test"





Summary

- Even with pumping increased by 100%, WLs recover to within ~10 ft of baseline in wet periods
- Increasing pumping by 20% or 40% allows WLs to recover within ~5ft of baseline in wet periods

Basin "Stress Test" - Summary (based on limited # of wells)

Pumping Scenario	No. (%) of Wells Evaluated in Model (330 Total) WL < Top of Screen	WL < Bottom of Screen
Baseline	55 (18%)	0 (0.0%)
Baseline + 20%	75 (25%)	1 (0.3%)
Baseline + 40%	99 (33%)	8 (2.4%)
Baseline + 60%	125 (42%)	14 (4.2%)
Baseline + 80%	150 (50%)	23 (7.0%)
Baseline + 100%	170 (56%)	23 (7.0%)

Basin "Stress Test" - Summary *(based on limited # of wells)*

In general…

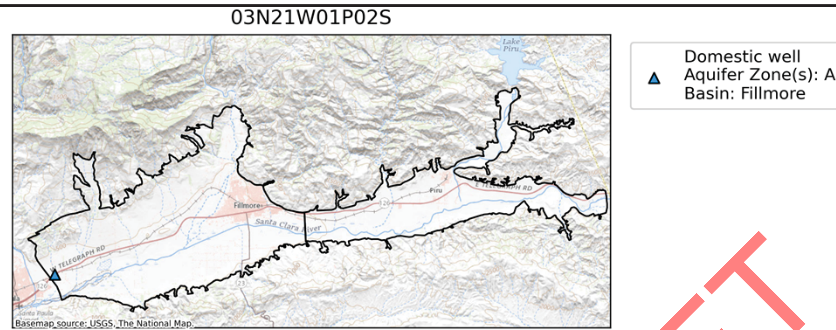
	Recovery	Droughts
Baseline + 20%	WLs recover to within 1 to 10 ft of baseline	Low WLs during droughts are 2 to 10 ft lower than baseline
Baseline + 40%	WLs recover to within 2 to 20 ft of baseline	Low WLs during droughts are 14 to 26 ft lower than baseline
Baseline + 60%	WLs recover to within 3 to 30 ft of baseline	Low WLs during droughts are 26 to 43 ft lower than baseline
Baseline + 80%	WLs recover to within 4 to 40 ft of baseline	Low WLs during droughts are 38 to 59 ft lower than baseline
Baseline + 100%	WLs recover to within 5 to 50 ft of baseline	Low WLs during droughts are 50 to 75 ft lower than baseline

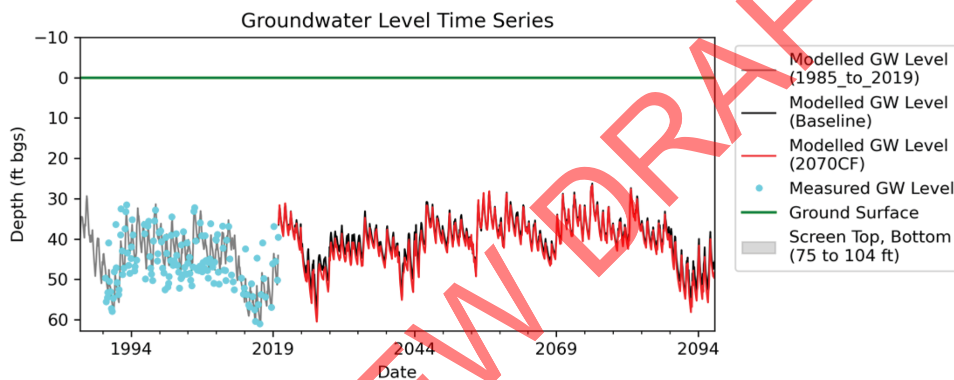
ATTACHMENT C
Example Long-Term Hydrographs

Lowering of Groundwater Levels

Conclusions

- **No evidence of chronic decline in GW levels.**
- GW level ranges are similar to the historic period.
- Difference in 2070CF scenario GW levels vs. Baseline scenario:
  - Wet periods: <5 ft
  - Droughts: <10 ft

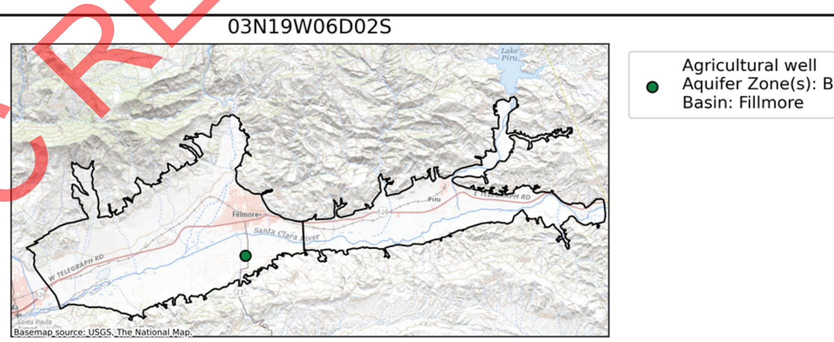


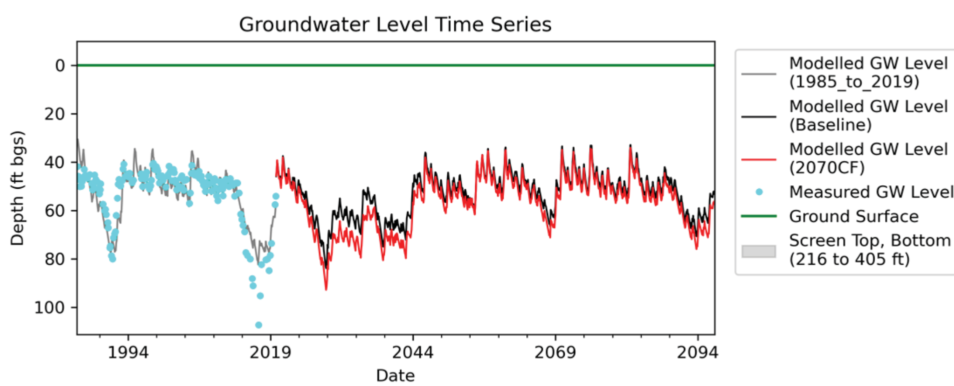


Lowering of Groundwater Levels

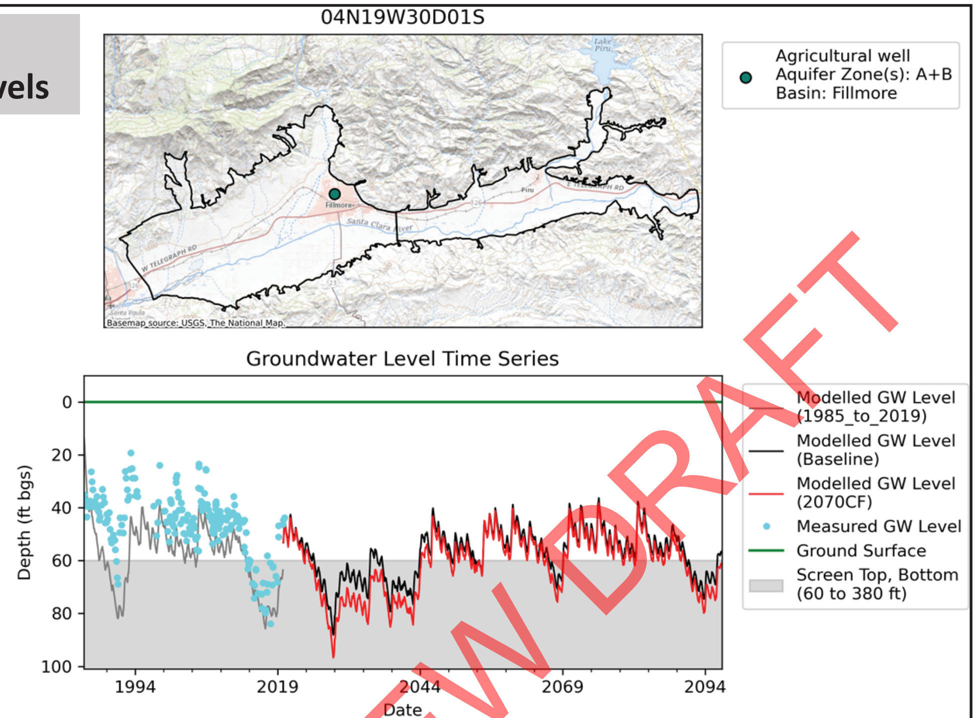
Conclusions

- **No evidence of chronic decline in GW levels.**
- GW level ranges are similar to the historic period.
- Difference in 2070CF scenario GW levels vs. Baseline scenario:
  - Wet periods: <5 ft
  - Droughts: <20 ft





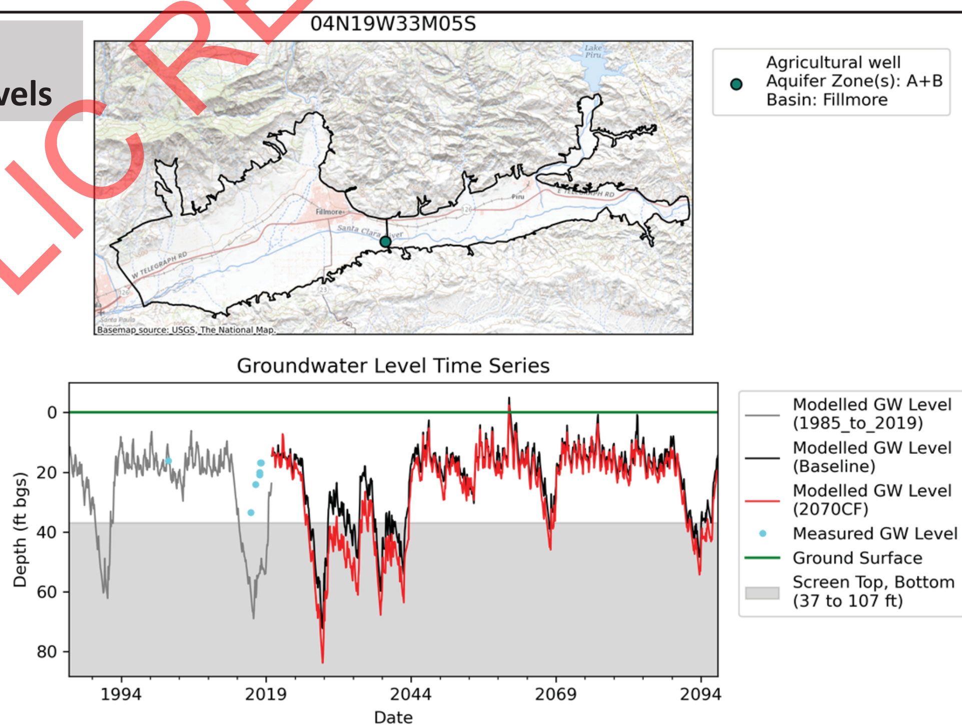
Lowering of Groundwater Levels



Conclusions

- **No evidence of chronic decline in GW levels.**
- GW level ranges are similar to the historic period.
- Difference in 2070CF scenario GW levels vs. Baseline scenario:
  - Wet periods: <5 ft
  - Droughts: <20 ft

Lowering of Groundwater Levels



Conclusions

- **No evidence of chronic decline in GW levels.**
- GW level ranges are similar to the historic period.
- Difference in 2070CF scenario GW levels vs. Baseline scenario:
  - Wet periods: <5 ft
  - Droughts: <20 ft

Lowering of Groundwater Levels

Conclusions

- **No evidence of chronic decline in GW levels.**
- GW level ranges are similar to the historic period.
- Difference in 2070CF scenario GW levels vs. Baseline scenario:
  - Wet periods: <5 ft
  - Droughts: <20 ft

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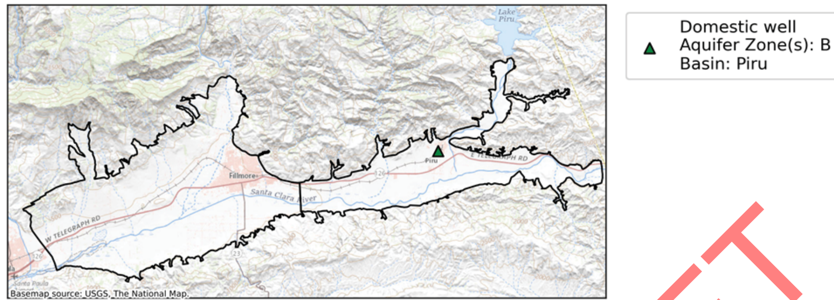
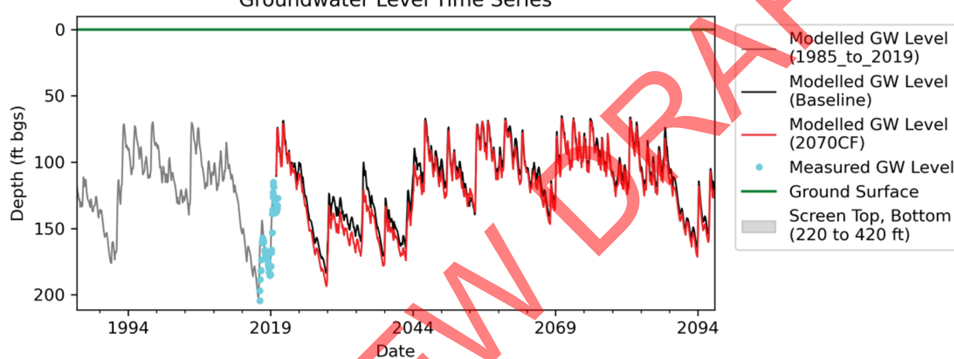


Groundwater Level Time Series



ATTACHMENT D
Water Quality Objectives

Table 3-10. Water Quality Objectives for Selected Constituents in Inland Surface Waters[a].

Reaches are in upstream to downstream order.

WATERSHED/STREAM REACH[b]	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[c] (mg/L)	Nitrogen[d] (mg/L)	SAR[e] (mg/L)
Between Blue Cut gaging station and Piru Creek	1300	600	100[m]	1.5	5	5
Between Piru Creek and A Street, Fillmore	1300	600	100	1.5	5	5
Between A Street, Fillmore and Freeman Diversion "Dam" near Saticoy	1300	650	100[l]	1.5	5	5

Notes:

- Modified from the Los Angeles Regional Water Quality Control Board (LARWQCB Basin Plan, May 6, 2019)
- a. As part of the State's continuing planning process, data will continue to be collected to support the development of numerical water quality objectives for waterbodies and constituents where sufficient information is presently unavailable. Any new recommendations for water quality objectives will be brought before the Regional Board in the future.
- b. All references to watersheds, streams and reaches include all tributaries. Water quality objectives are applied to all waters tributary to those specifically listed in the table. See Figures 2-1 to 2-10 for locations.
- c. Where naturally occurring boron results in concentrations higher than the stated objective, a site-specific objective may be determined on a case-by-case basis.
- d. Nitrate-nitrogen plus nitrite-nitrogen (NO3-N + NO2-N). The lack of adequate nitrogen data for all streams precluded the establishment of numerical objectives for all streams.
- e. Sodium adsorption ratio (SAR) predicts the degree to which irrigation water tends to enter into cation-exchange reactions in soil. SAR = Na+/((Ca++ + Mg++)/2)1/2
- l. This objective was updated though a Basin Plan amendment adopted by the Regional Board on November 6, 2003 (Resolution No. R03-015) and went into effect on August 4, 2004.
- m. These objectives apply as a 3-month rolling average. The 3-month averaging period for these objectives was established though a Basin Plan amendment adopted by the Regional Board on October 9, 2014 (Resolution No. R14-010) and went into effect on April 28, 2015.

Table 3-13. Water Quality Objectives for Selected Constituents in Regional Ground Waters[a].

BASINS			Objectives (mg/l)[m]				
Basin	Basin No[b]	1994 Basin Name	1994 Basin No	TDS	Sulfate	Chloride	Boron
Santa Clara River Valley[d]	**4-4**	**Ventura Central**	**4-4**				
Piru	4-4.06	Santa Clara-Piru Creek Area	4-4				
Piru	4-4.06	Lower Area East of Piru Creek	4-4	2500	1200	200	1.5
Piru	4-4.06	Lower Area West of Piru Creek	4-4	1200	600	100	1.5
Fillmore	4-4.05	Fillmore Area	4-4				
Fillmore	4-4.05	Pole Creek Fan Area	4-4	2000	800	100	1.0
Fillmore	4-4.05	South Side of Santa Clara River	4-4	1500	800	100	1.1
Fillmore	4-4.05	Remaining Fillmore Area	4-4	1000	400	50	0.7

Notes:

- Modified from the Los Angeles Regional Water Quality Control Board (LARWQCB Basin Plan, May 6, 2019)
- b. Basins are numbered according to Bulletin 118-Update 2003 (Department of Water Resources, 2003).
- d. The Santa Clara River Valley (4-4) was formerly Ventura Central Basin

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