AGENDA
REGULAR BOARD MEETING

Wednesday, March 10, 2021, 12:00 P.M.
Board Room, UWCD Headquarters
1701 N. Lombard Street, Oxnard CA 93030

Meeting attendees should be aware that the meetings of the Board are, as required by law, open to the public and the District has very limited powers to regulate who attends Board meetings. Therefore, attendees must exercise their own judgement with respect to protecting themselves from exposure to COVID-19, as the District cannot ensure that all attendees at public meetings will be free from COVID-19.

In addition to its public Regular Board of Directors meeting, people may choose to participate virtually using the Webex video conferencing application.

To participate in the Board of Directors meeting via Webex, please access:
https://unitedwaterconservationdistrict.my.webex.com/unitedwaterconservationdistrict.my/j.php?MTID=mc8f3b2ebeab01d3bec671cae817e2177

Use Meeting number: 126 404 6142 **Password:** Direct (347328 from phones)
Join by phone (audio only): +1-408-418-9388 (Toll rates apply) **Password**: Direct (347328)

BOARD MATTERS

Normally, Action (Motion) Items will be considered and acted upon separately; Consent Items will be considered and acted upon collectively, although a Consent Item may be considered and acted upon separately; and Information Items will be considered separately without action. The Board of Directors in its discretion may change the order of agenda items.

1. FIRST OPEN SESSION 12:00 P.M.

Items to be discussed in Executive (Closed) Session will be announced.

1.1 Public Comments

Information Item

Members of the public may address the Board on any matter on the Closed Session agenda or on any non-agenda item within the jurisdiction of the Board. All comments are subject to a five-minute time limit. Virtual participants, please use "raise hand" option in "participants" menu.

1.2 EXECUTIVE (CLOSED) SESSION 12:05 P.M.

The Board will discuss matters outlined in the attached Executive (Closed) Session Agenda (Exhibit A).

2. SECOND OPEN SESSION AND CALL TO ORDER 1:00 P.M.

2.1 Pledge of Allegiance

2.2 Public Comment
Information Item
Members of the public may address the Board on any item on the Consent Calendar or on any non-agenda item within the jurisdiction of the Board. No action will be taken by the Board on any non-agenda item. All comments are subject to a five-minute time limit.

2.3 Approval of Agenda
Motion

2.4 Oral Report Regarding Executive (Closed) Session
Information Item
Presented by District Legal Counsel David D. Boyer.

2.5 Board Communication
Information Item
Board members may present non-agenda information including, but not limited to, the following: 1) meetings, workshops, conferences and functions attended during the previous month on behalf of the District; 2) meetings, workshops, conferences and functions Directors plan to attend in the upcoming months; and 3) possible conflicts that Directors might have with respect to issues on the Agenda.

2.6 General Manager's Report
Information Item
The General Manager will present information on his activities of possible interest to the Board and that may have consequence to the District.

2.7 Update on Public Health Mandates Regarding Coronavirus Pandemic (COVID-19)
Information Item
The Board will receive an update on the latest measures being taken and recommended by the State of California Department of Public Health, Center for Disease Control and World Health Organization, among other sources, as well as executive orders from County Public Health officials, CA Governor Newsom and President Biden regarding the COVID-19 virus.

2.8 Public Hearing
Proposed Ordinance No. 25 - Consideration to Increase the Compensation of the Board of Directors
Motion
Continuation of Public Hearing and receive public comments on the proposed adoption of Ordinance No. 25, approving an increase in the Board of Director's per diem from $226 to $237 per day. After receiving public comments, Board may move to close the Public Hearing and adopt Ordinance No. 25. If approved at the March 10, 2021 Regular Board meeting, the increase in the Director's per diem will take effect in 60 days (May 12, 2021).

3. CONSENT CALENDAR: All matters listed under the Consent Calendar are considered routine by the Board and will be enacted by one motion. There will be no separate discussion of these items unless a Board member pulls an item from the Calendar. Pulled items will be discussed and acted on separately by the Board. Members of the public who want to comment on a Consent Calendar item should do so under Public Comments. (ROLL CALL VOTE REQUIRED)

A. Approval of Minutes
Motion
Approval of the Minutes for the Regular Board Meeting of February 10, 2021.

B. Groundwater Basin Status Reports
Information Item
Receive and file Monthly Hydrologic Conditions Report for the District.

C. Monthly Investment Report
Information Item
Report on the District's investments and the availability or restriction of these funds. All investments are in compliance with the District's investment policy, which is reviewed and approved annually by the Board.

4. MOTION ITEMS (By Department)

Engineering Department – Dr. Maryam Bral

4.1 Oxnard Hueneme (OH) System Backup Generator Project Construction Contract Award to Oilfield Electric & Motor
Motion
The Board will consider awarding a contract to the lowest responsible bidder, Oilfield Electric & Motor, in the amount of $771,000.00 and authorizing the General Manager to execute the contract with Oilfield Electric & Motor for the construction of the Oxnard Hueneme (OH) System Backup Generator.

Operations and Maintenance – Brian Collins

4.2 Execution of a Contributed Funds Agreement Amendment for the Physical Modeling of the Freeman Diversion Rehabilitation Project with the Bureau of Reclamation
Motion
The Board will consider authorizing the General Manager or his designee to execute a Contributed Funds Agreement (CFA) amendment with the Bureau of Reclamation (Bureau) for the physical modeling of the two proposed project alternatives for the Freeman Diversion Rehabilitation Project, currently under engineering design by Stantec and Northwest Hydraulic Consultants.

5. PRESENTATIONS AND MONTHLY STAFF REPORTS (By Department)

Administrative Services Department - Anthony Emmert

5.1 Monthly Administrative Services Department Report – Anthony Emmert
Information Item

Staff report and presentation to the Board on Administration Department activities including issues associated with budget development, financial performance versus budget plan, financial accounting requirements and procedures, potential debt issuance and related financial services, status of District investments and reserves, updates on its capital improvement programs, human resources and safety, District property and facilities maintenance and administration, the search for new District offices, District records and reports, groundwater extraction statements administration, risk management and District liability insurance matters, management of District contracts, policy development, governance procedures, and supporting activities of Board and staff.

Engineering Department – Maryam Bral

5.2 Monthly Engineering Department Report
Information Item

Staff report and presentation to the Board on various water resources, planning efforts and department programs affecting the District, including, but not limited to design and construction; dam safety; FERC license compliance; Freeman Diversion; recycled water; pipeline operations and various engineering analysis.

Environmental Services Department – Linda Purpus

5.3 Monthly Environmental Services Department Report
Information Item

Staff report and presentation to the Board on environmental and regulatory issues of note to the District. The report will include water releases, operations of the fish ladder at the Freeman Diversion, various monitoring efforts, study plans and issues associated with the Endangered Species Act, including the Section 10 MSHCP process, future fish passage requirements, compliance with the District's FERC license/Biological Opinion, the Santa Felicia Dam, studies and operations in and near Piru Creek, any interactions with Rancho Temescal and Rancho Camulos.

Operations and Maintenance – Brian Collins

5.4 Monthly Operation and Maintenance Department Report
Information Item

Summary report regarding the monthly operations and maintenance of District facilities including Santa Felicia Dam and hydroplant; the Piru Groundwater Recharge facility; the Freeman Diversion Dam; the Saticoy and El Rio Groundwater Recharge facilities; the Pleasant Valley and Pumping Trough Pipeline systems; and the Oxnard-Hueneme Pipeline system. The report covers operating plans, the quantity and quality of water diverted and delivered, fish ladder status, major maintenance problems and repairs, status of O&M projects and safety and training issues.

Park and Recreation Division – Clayton Strahan

5.5 Monthly Park and Recreation Department Report

Information Item

Summary report regarding operations and items of note relative to the Lake Piru Recreation Area. Items may include, but are not limited to, camping and boating policies at the lake; operations and activities; financing and status of facility improvement projects; maintenance activities; security issues; and emergency response activities.

Water Resources Department – Maryam Bral

5.6 Monthly Water Resources Department Report

Information Item

Summary report on monthly Water Resources Department activities. Department activities include, but are not limited to, updates to the Ventura Regional Groundwater Flow Model; brackish water treatment feasibility study; upper Santa Clara River Chloride TMDL; hydrologic and well conditions statewide and locally; available Forebay storage; Ventura County well ordinance update; Fox Canyon GMA issues; City of Oxnard's recycled water program; potential water supply and recycled water projects, including use of United's terminal reservoirs; user groups (including but not limited to Oxnard Plain and Pumping Trough Pipeline groups); and potential District solar power facilities.

5.7 Update on Groundwater Sustainability Agencies (GSAs) and Sustainable Groundwater Management Act (SGMA)

Information Item

Summary report on the monthly activities of the three local Groundwater Sustainability Agencies (Mound Basin GSA, Fillmore and Piru Basins GSA, and the Fox Canyon Groundwater Management Agency), for which the District serves as a member director, and Santa Paula basin (adjudicated) Technical Advisory Committee (including formation of groundwater sustainability agencies in the District's basins, stakeholder and basin user groups, joint powers or governance agreements, development of water markets, and potential basin boundary changes). Staff may also report on state-wide issues related to the implementation of the Sustainable Groundwater Management Act of 2014.

6. BOARD OF DIRECTORS READING FILE

7. FUTURE AGENDA ITEMS

8. ADJOURNMENT

The Board will adjourn to the **Regular Board Meeting scheduled for Wednesday, April 14, 2021** or call of the President.

The Americans with Disabilities Act provides that no qualified individual with a disability shall be excluded from participation in, or denied the benefits of, the District's services, programs or activities because of any disability. If you need special assistance to participate in this meeting, or if you require agenda materials in an alternative format, please contact the District Office at (805) 525-4431. Notification of at least 48 hours prior to the meeting will enable the District to make appropriate arrangements.

Approved: _____
Mauricio E. Guardado, Jr. – General Manager

Posted: (date) March 4, 2021 (time)1:30p.m. (attest) *Kris Sofley*
At: United Water Conservation District Headquarters, 1701 N. Lombard Street, Oxnard CA 93030

Posted: (date) March 4, 2021 (time) 1:45p.m. (attest) *Kris Sofley*
At: www.unitedwater.org

EXHIBIT A
EXECUTIVE (CLOSED) SESSION AGENDA

1. LITIGATION

1.1 Conference with Legal Counsel – Existing Litigation

Pursuant to Government Code Section 54956.9 (d)(1)

A. City of San Buenaventura v. United Water Conservation District, et al, Santa Barbara County Superior Court Case No. VENCI00401714

B. City of San Buenaventura v. United Water Conservation District, et al, Santa Barbara Superior Court Case No. 1414739 (consolidated for purposes of trial with case in subsection A.)

Note: 1.1 A and B consolidated in the California Supreme Court, 2nd Civil No. S226036, Review granted on June 24, 2015 of published decision of Division Six, Second District of the Court of Appeal of the State of California, 2d Civil No. B251810.

C. City of San Buenaventura v. United Water Conservation District, et al, Santa Barbara County Superior Court Case No. 1467531

D. Wishtoyo Foundation, et al v. United Water Conservation District, U.S. District Court for the Central District of California, Case No.2:16-cv-03869 GHK (PLAx)

E. Josey Hollis Dorsey, a minor, through his guardian ad litem Ryan Dorsey; and The Estate of Naya Rivera, through its personal representative, Justin Stiegemeyer, v. County of Ventura, a California public entity; United Water Conservation District, a California public entity; and Parks and Recreation Management, d/b/a Parks Management Company, a California corporation; and Does 1-20, inclusive, Superior Court of the State of California for the County of Ventura Case No. 56-2020-00547077-CU-PO-VTA

1.2 Conference with Legal Counsel-Anticipated Litigation

Pursuant to Government Code Section 54956.9(d)(2), one (1) case.

United Water CONSERVATION DISTRICT

Staff Report UWCD Board of

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager

From: Kris Sofley, Clerk of the Board

Date: **February 25, 2021 (March 10, 2021 Meeting)**

Agenda Item: **2.5 Board Communication**
Information Item

Staff Recommendation:
Receive information provided by the Board of Directors and review the calendar of upcoming District meetings and events.

Discussion:
This item is provided on the agenda of each regular District Board of Directors meeting in order to allow Directors to present non-agenda information including, but not limited to, the following:

1. UWCD Committee participation – Committee Chair to report on Committee's objectives and actions to Board.
2. Meetings, workshops, conferences and functions attended during the previous month on behalf of the District.
3. Meetings, workshops, conferences and functions Directors plan to attend in the upcoming months.
4. Possible conflicts that Directors might have with respect to issues on the Agenda.

A calendar of scheduled District meetings and other events for 2021 is attached, along with the AWA-VC calendar for 2021.

Attachments: A – 2021 Calendar of District's Standing Committee and Outside Agency meetings
B -- 2021 AWA VC Meeting and Events Calendar

United Water
CONSERVATION DISTRICT

2021 UWCD Standing Committee and Outside Agencies Meeting Dates

JANUARY: 04 - Legislative and Outreach (9am-10:15am)
05- Water Resources (9am-11:15am)
06- Recreation (9am-9:48am)
07- Engineering and Operations (9am-10:05am)
12- Finance and Audit (9:04am-10:08am)
13- Board Meeting (12noon-4:55pm)
20- CoLAB VC WHEEL (1pm)
21- Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)
27- Fox Canyon GMA (1:30pm)
FEBRUARY: 02- Water Resources (9am-10:13am)
03- Recreation (9am-9:34am)
04- Engineering and Operations (9am-9:48am)
09- Finance and Audit (9am-9:52am)
10- Board Meeting (12noon-3:08pm)
17- CoLAB VC WHEEL (1pm)
18- Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)
24- Fox Canyon GMA (1:30pm)
MARCH: 02- Water Resources (canceled)
03- Recreation (9am-)
04- Engineering and Operations (9am-)
09- Finance and Audit (9am-)
10- Board Meeting (12noon)
17- CoLAB VC WHEEL (1pm)
18- Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)
24- Fox Canyon GMA (1:30pm)
APRIL: 01- Engineering and Operations (9am)
05- Legislative and Outreach (9am)
06- Water Resources (9am)
07- Recreation (9am)
13- Finance and Audit (9am)
14- Board Meeting (12noon)
21- CoLAB VC WHEEL (1pm)
22- Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)
28- Fox Canyon GMA (1:30pm)
MAY: 04 - Water Resources (9am)
05- Recreation (9am)
06- Engineering and Operations (9am)
11- Finance and Audit (9am)
12- Board Meeting (12noon)
19- CoLAB VC WHEEL (1pm)
20- Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)
26- Fox Canyon GMA (1:30pm)
JUNE: 01 - Water Resources (9am)
02- Recreation (9am)
03- Engineering and Operations (9am)
08- Finance and Audit (9am)
09- Board Meeting (12noon)
16- CoLAB VC WHEEL (1pm)
17- Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)
JUNE, continued: 23- Fox Canyon GMA (1:30pm)
JULY: 01 - Engineering and Operations (9am)
05- Legislative and Outreach (9am)
06- Water Resources (9am)
07- Recreation (9am)
13- Finance and Audit (9am)
14- Board Meeting (12noon)
21- CoLAB VC WHEEL (1pm)
22- Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)
28- Fox Canyon GMA (1:30pm)
AUGUST – UWCD is DARK
18- CoLAB VC WHEEL (1pm)
19- Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)
25- Fox Canyon GMA (1:30pm)
31- Water Resources (9am)*
SEPTEMBER: 01- Recreation (9am)
02- Engineering and Operations (9am)
07- Finance and Audit (9am)
08- Board Meeting (12noon)
15- CoLAB VC WHEEL (1pm)
16- Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)
22- Fox Canyon GMA (1:30pm)
OCTOBER: 04 - Legislative and Outreach (9am)
05- Water Resources (9am)
06- Recreation (9am)
07- Engineering and Operations (9am)
12- Finance and Audit (9am)
13- Board Meeting (12noon)
20- CoLAB VC WHEEL (1pm)
21- Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)
27- Fox Canyon GMA (1:30pm)
NOVEMBER: 02 - Water Resources (9am)
03- Recreation (9am)
04- Engineering and Operations (9am)
09- Finance and Audit (9am)
10- Board Meeting (12noon)
17- CoLAB VC WHEEL (1pm)
18- Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)
30- Water Resources (9am)*
DECEMBER: 01- Recreation (9am)
01- Fox Canyon GMA (1:30pm)
02- Engineering and Operations (9am)
07- Finance and Audit (9am)
08- Board Meeting (12noon)
15- CoLAB VC WHEEL (1pm)
16 -Mound Basin GSA (1pm)
Fillmore and Piru Basin GSA (5pm)

*scheduled to prevent dual meetings on the same day

ASSOCIATION OF WATER AGENCIES OF VENTURA COUNTY

2021 CALENDAR OF EVENTS

ALL DATES ARE SUBJECT TO CHANGE

All meetings/events are confirmed by AWA via official notices sent prior to each meeting/event.
Note: All 2021 meetings/events will be via video-broadcast until further notice.

JANUARY	7	Board Meeting	3:00 pm, Thursday	
	19	Water Issues Committee	8:00 am, Tuesday	(AWA Members Only)
	21	**WaterWise Program**	**8:00 am, Thursday**	
	27	**Channel Counties/Water Systems**	**8:00 am, Wednesday**	
FEBRUARY	4	Executive Committee Meeting	3:00 pm, Thursday	
	16	Water Issues Committee	8:00 am, Tuesday	(AWA Members Only)
	18	**WaterWise Program**	**8:00 am, Thursday**	
	24	**Channel Counties/Water Systems**	**8:00 am, Wednesday**	
MARCH	4	Board Meeting (Annual Meeting-Elections)	3:00 pm, Thursday	
	16	Water Issues Committee	8:00 am, Tuesday	(AWA Members Only)
	18	**WaterWise Program (Installation/Directors)**	**8:00 am, Thursday**	
	24	**Channel Counties/Water Systems**	**8:00 am, Wednesday**	
APRIL	1	Executive Committee Meeting	3:00 pm, Thursday	
	15	**WaterWise Program**	**8:00 am, Thursday**	
	20	Water Issues Committee	8:00 am, Tuesday	(AWA Members Only)
	28	**Channel Counties/Water Systems**	**8:00 am, Wednesday**	
MAY	6	Board Meeting	3:00 pm, Thursday	
	18	Water Issues Committee	8:00 am, Tuesday	(AWA Members Only)
	20	**WaterWise Program**	**8:00 am, Thursday**	
	26	**Channel Counties/Water Systems**	**8:00 am, Wednesday**	
JUNE	3	Executive Committee Meeting	3:00 pm, Thursday	
	15	Water Issues Committee	8:00 am, Tuesday	(AWA Members Only)
	17	**WaterWise Program**	**8:00 am, Thursday**	
	23	**Channel Counties/Water Systems**	**8:00 am, Wednesday**	
Date to be Confirmed	__	**CC/Water Systems Workshop (Confined Space)**	**8-Noon**	(Fire Dept-Camarillo)
JULY	1	Board Meeting	3:00 pm, Thursday	
	15	**WaterWise Program**	**8:00 am, Thursday**	
	20	Water Issues Committee	8:00 am, Tuesday	(AWA Members Only)
	28	**Channel Counties/Water Systems**	**8:00 am, Wednesday**	
AUGUST		**DARK**		
SEPTEMBER	**2**	Board Meeting	3:00 pm, Thursday	
	21	Water Issues Committee	8:00 am, Tuesday	(AWA Members Only)
	22	**Channel Counties/Water Systems Luncheon**	**8:00 am, Wednesday**	
Date to be Confirmed		**Math Workshop: Water Distribution Exam Review**	**8:00am–Noon**	
Date to be Confirmed	***30**	**Reception for Members/Elected Officials**	**4:00 pm, Thursday**	(AWA Members/Guests Only)
OCTOBER	7	Executive Committee Meeting	3:00 pm, Thursday	
Date to be Confirmed	***21**	**Annual Water Symposium & Exposition**	**7:00am–1:00pm, Thurs.**	**Courtyard – Oxnard**
Date to be Confirmed	***21**	**Operators Tech Workshop & Exposition**	**7:00 am-3:30pm, Thurs.**	**Courtyard – Oxnard**
Date to be Confirmed	__	**Math Workshop: Water Treatment Exam Review**	**8:00am–Noon**	
NOVEMBER	4	Board Meeting	3:00 pm, Thursday	
Date to be Confirmed	__	**Annual VC Water Supply Bus Tour**	**8:00 am**	
	16	Water Issues Committee	7:00 am, Tuesday	(AWA Members Only)
	***17**	**Channel Counties/Water Systems Lunch**	**8:00 am, Wednesday**	
	18	**WaterWise Breakfast Program**	**8:00 am, Thursday**	
DECEMBER	*09	Executive Committee Meeting	3:00 pm, Thursday	
	09	**Holiday Mixer/Corporate Night**	**4:00 pm, Thursday**	(AWA Members/Guests Only)

* **Indicates change from typical event date**

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United Water
CONSERVATION DISTRICT

Staff Report UWCD

To: **UWCD Board of Directors**

From: Mauricio E. Guardado, Jr., General Manager

Date: **February 25, 2021 (March 10, 2021meeting)**

Agenda Item: **2.6 General Manager's Report**
Information Item

Staff Recommendation:
Receive an update from the General Manager related to items of possible interest to the Board and that may have consequences to the District.

Discussion:
The General Manager's primary responsibility is to ensure that the policies and directions of the Board of Directors are adhered to as he oversees and manages the efforts of the department managers and their staffs in the day-to-day operation and administration of the District. All of these efforts are to be consistent with the District's Mission Statement and within the fiscal constraints set by the Board of Directors.

The District's managers provide detailed monthly updates to the Board of Directors which outline projects' statuses, accomplishments, issues of concern, projects planning, etc. The monthly General Manager's report provides an opportunity for the General Manager to discuss issues that may impact the efforts of the separate departments as they pursue their defined goals and objectives. The report also provides the Board with information on the District's efforts and involvement in local, regional and state-wide issues.

Finally, the monthly General Manager's report offers the Board of Directors an overview of how their policies and directions are being administered through discussion of the work plan and efforts of the General Manager.

United Water CONSERVATION DISTRICT

Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager
Anthony Emmert, Assistant General Manager

From: Josh Perez, HR Manager
Tony Huynh, Safety and Security Program Coordinator

Date: **February 25, 2021 (March 10, 2021 Meeting)**

Agenda Item: **2.7 Update on Public Health Mandates Regarding Coronavirus Pandemic (COVID-19)**
Information Item

Staff Recommendation:
The Board of Directors will receive an update on the latest measures being taken and recommended by the State of California Department of Public Health, Center for Disease Control and World Health Organization, among other sources, as well as executive orders from Governor Newsom and President Biden regarding the COVID-19 virus.

United Water
CONSERVATION DISTRICT

Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager

From: Kris Sofley, Clerk of the Board

Date: **February 25, 2021 (March 10, 2021 Meeting)**

Agenda Item: **2.8 PUBLIC HEARING Proposed Ordinance No. 25 – Consideration to Increase Compensation of the Board of Directors Motion**

Staff Recommendation:
Continuation of Public Hearing to receive public comments on the proposed adoption of Ordinance No. 25, approving an increase in the Board of Director's per diem from $226 to $237 per day. After receiving public comments, Board may move to close the Public Hearing and move to adopt or decline Ordinance No. 25. If approved at the March 10, 2021 Regular Board meeting, the increase in the Director's per diem will take effect in 60 days (May 12, 2021).

Discussion:
Since 2020, District Directors have received $226 per meeting, for up to ten meetings per month. California Water Code Section 20202 authorizes the Board to increase its compensation up to five percent annually. A full five percent increase would allow the per-meeting compensation to increase to no more than $237.30.

Notice has been given in the Ventura County Star on Thursday, January 28, 2021 and on Thursday, February 4, 2021 (in accordance with notice requirements for this public hearing) to allow for the per diem to be increased by five percent, up to $237.30, as permitted by law.

District staff surveyed other local water agencies and ascertained per diems paid to Directors as of 2019. As listed below, per diems were:

Calleguas MWD	$225.00
Camrosa Water District	$200.00
Casitas MWD	$180.00
Las Virgenes MWD	$220.00
Montecito Water District	$184.00
Santa Clarita Valley Water	$239.00

The attached draft Ordinance includes a new per diem rate of $237, reflecting a rounding of the maximum five percent increase allowable by law ($237.30), however, the Board could move to reduce this amount prior to adopting and approving the Ordinance.

Regardless of the amount, any increase must be adopted through an Ordinance and a Public Hearing process. At the opening of the Public Hearing at the February 2021 Regular Board meeting, along with the introduction of Ordinance No. 25, there was a motion to adopt the Ordinance, with three directors voting for adoption, and three directors voting against adoption of the Ordinance. One director was absent. The Board agreed to continue the Public Hearing and to readdress a motion to adopt the proposed Ordinance No. 25 at its March 2021 Regular Board meeting, and, if approved, the increase in per diem would take effect 60 days after the Ordinance's adoption (May 12, 2021).

Fiscal Impact

Based upon prior activities and an average number of five meetings per month per Director, an increase in the per diem from $226 to $237 would result in a cost increase of approximately $9,240 annually, as up to 10 meetings per month are compensable. There are sufficient funds within the budget to cover the additional costs.

Attachments: A – Proposed Ordinance No. 25
B - Board Compensation Survey

UNITED WATER CONSERVATION DISTRICT
ORDINANCE NO. 25

AN ORDINANCE AUTHORIZING AN INCREASE IN COMPENSATION OF THE MEMBERS OF THE BOARD OF DIRECTORS

WHEREAS, the compensation of each Director of United Water Conservation District was last adjusted in 2020 to an amount not to exceed two hundred twenty six dollars and no cents ($226.) per day for each day's attendance at meetings of the Board or for each day's service rendered as a Director by request of the Board, not exceeding a total of ten days in any calendar month, together with any expenses incurred in the performance of each Director's duties required or authorized by the Board; and

WHEREAS, California Water Code sections 20201 and 20202 authorize the governing board of a water conservation district to increase the compensation received by members of the Board of Directors of the District above the amount of one hundred dollars ($100.00) per day by an amount not to exceed five percent of the compensation which is received when the ordinance is adopted, for each calendar year following the operative date of the last adjustment, for a total of not more than ten days in any calendar month.

NOW, THEREFORE, the Board of Directors of United Water Conservation District hereby ordains as follows:

That each Director of this District shall receive compensation in an amount not to exceed two hundred thirty seven dollars and no cents ($237) per day for each day's attendance at meetings of the Board or for each day's service rendered as a Director by request of the Board, not exceeding a total of ten days in any calendar month, together with any expenses incurred in the performance of the Director's duties required or authorized by the Board.

This ordinance shall become effective sixty (60) days after its

adoption. **PASSED AND ADOPTED** this 10th day of March 2021.

ATTEST:

By _____
Michael W. Mobley, President

By _____
Sheldon G. Berger, Secretary/Treasurer

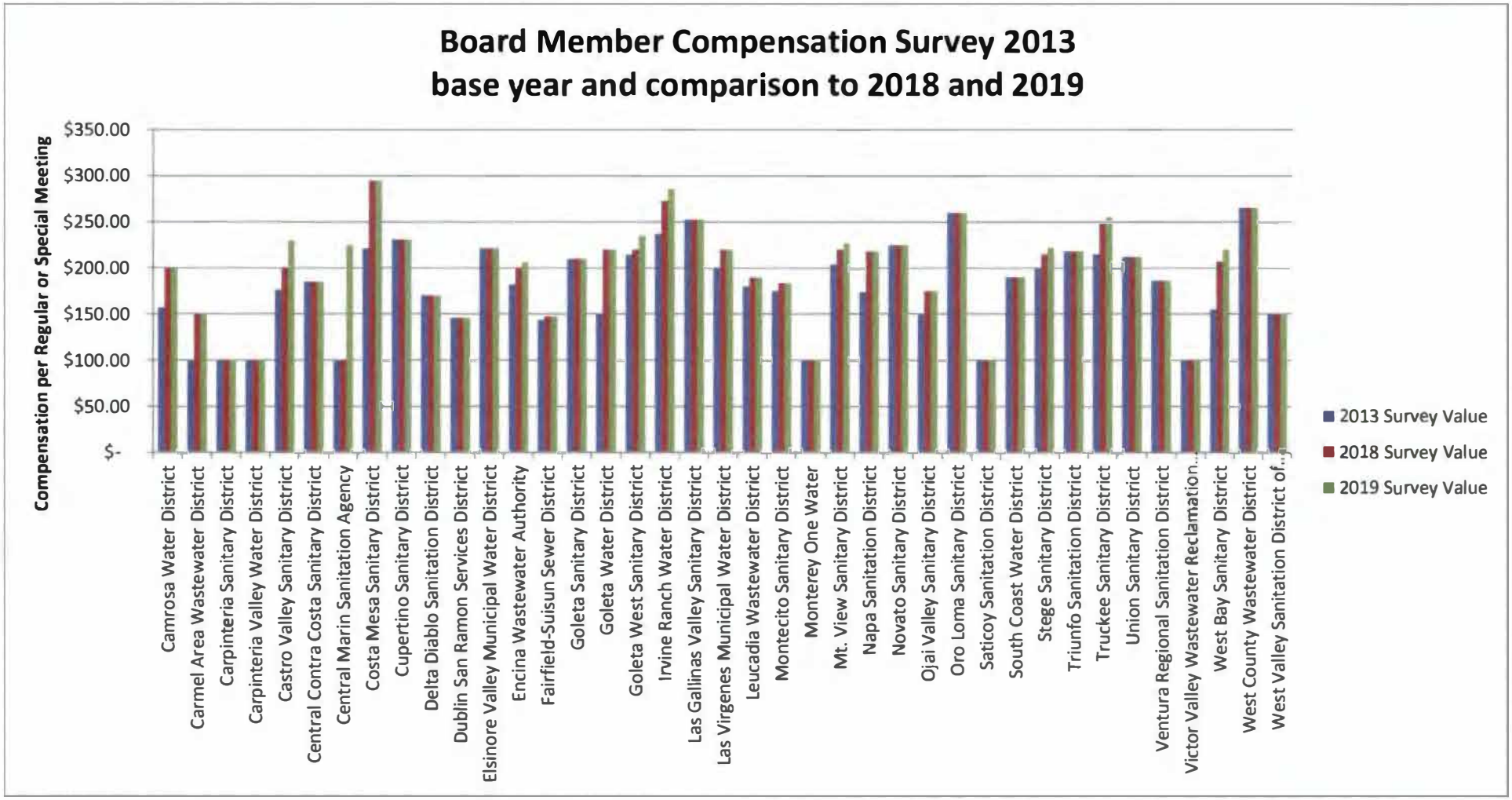
Agency	Compensation Per Meeting
Goleta West Sanitary District	$ 235
United Water Conservation District	$ 226
Calleguas Municipal Wtr District	$ 225
Las Virgenes Municipal Water District	$ 220
Triunfo County Sanitation District	$ 220
Goleta Water District	$ 220
Goleta Sanitary District	$ 210
Camrosa Water District	$ 200
Pleasant Valley County Wtr District	$ 200
Ventura Regional Sanitary District	$ 186
Montecito Sanitary District	$ 184
Casitas Municipal Water District	$ 180
Ojai Valley Sanitary District	$ 175
Ventura River County Wtr District	$ 160
Meiners Oaks County Wtr District	$ 150
Carpinteria Sanitary District	$ 100
Carpinteria Valley Water District	$ 100
Saticoy Sanitary District	$ 100
Channel Islands Beach CSD	$ 100
Santa Clarita Valley Water	$ 239
Average:	$ 181
Median:	$ 193

G:\BOARD\Director Compensation\[BOARD Compensation Survey refresh 2019.xlsx]Database

What is the compensation for the Board members for attendance at regular or special Board meetings?

AGENCY NAME	2013 Survey Value	2018 Survey Value	2019 Survey Value	Percentage change from 2013 to 2018 % Change	Percentage change from 2013 to 2019 % Change	Percentage change from 2018 to 2019 % Change
Camrosa Water District	$ 157.00	$ 200.00	$ 200.00	27.39%	27.39%	0.00%
Carmel Area Wastewater District	$ 100.00	$ 150.00	$ 150.00	50.00%	50.00%	0.00%
Carpinteria Sanitary District	$ 100.00	$ 100.00	$ 100.00	0.00%	0.00%	0.00%
Carpinteria Valley Water District	$ 100.00	$ 100.00	$ 100.00	0.00%	0.00%	0.00%
Castro Valley Sanitary District	$ 176.34	$ 200.00	$ 230.00	13.42%	30.43%	15.00%
Central Contra Costa Sanitary District	$ 185.00	$ 185.00	$ 185.00	0.00%	0.00%	0.00%
Central Marin Sanitation Agency	$ 100.00	$ 100.00	$ 225.00	0.00%	125.00%	125.00%
Costa Mesa Sanitary District	$ 221.00	$ 295.00	$ 295.00	33.48%	33.48%	0.00%
Cupertino Sanitary District	$ 231.00	$ 231.00	$ 231.00	0.00%	0.00%	0.00%
Delta Diablo Sanitation District	$ 170.00	$ 170.00	$ 170.00	0.00%	0.00%	0.00%
Dublin San Ramon Services District	$ 146.00	$ 146.00	$ 146.00	0.00%	0.00%	0.00%
Elsinore Valley Municipal Water District	$ 221.43	$ 221.43	$ 221.43	0.00%	0.00%	0.00%
Encina Wastewater Authority	$ 182.00	$ 200.00	$ 206.00	9.89%	13.19%	3.00%
Fairfield-Suisun Sewer District	$ 143.59	$ 147.32	$ 147.32	2.60%	2.60%	0.00%
Goleta Sanitary District	***$ 209.82***	***$ 209.82***	***$ 209.82***	***0.00%***	***0.00%***	***0.00%***
Goleta Water District	$ 150.00	$ 220.00	$ 220.00	46.67%	46.67%	0.00%
Goleta West Sanitary District	$ 215.00	$ 220.00	$ 235.00	2.33%	9.30%	6.82%
Irvine Ranch Water District	$ 237.00	$ 273.00	$ 286.00	15.19%	20.68%	4.76%
Las Gallinas Valley Sanitary District	$ 252.70	$ 252.70	$ 252.70	0.00%	0.00%	0.00%
Las Virgenes Municipal Water District	$ 200.00	$ 220.00	$ 220.00	10.00%	10.00%	0.00%
Leucadia Wastewater District	$ 180.00	$ 190.00	$ 190.00	5.56%	5.56%	0.00%
Montecito Sanitary District	$ 175.00	$ 183.75	$ 183.75	5.00%	5.00%	0.00%
Monterey One Water	$ 100.00	$ 100.00	$ 100.00	0.00%	0.00%	0.00%
Mt. View Sanitary District	$ 204.00	$ 220.00	$ 226.60	7.84%	11.08%	3.00%
Napa Sanitation District	$ 174.00	$ 218.00	$ 218.00	25.29%	25.29%	0.00%
Novato Sanitary District	$ 225.00	$ 225.00	$ 225.00	0.00%	0.00%	0.00%
Ojai Valley Sanitary District	$ 150.00	$ 175.00	$ 175.00	16.67%	16.67%	0.00%
Oro Loma Sanitary District	$ 260.00	$ 260.00	$ 260.00	0.00%	0.00%	0.00%

G:\BOARD\Director Compensation\[BOARD Compensation Survey refresh 2019.xlsx]Database	What is the compensation for the Board members for attendance at regular or special Board meetings?			Percentage change from 2013 to 2018	Percentage change from 2013 to 2019	Percentage change from 2018 to 2019
AGENCY NAME	**2013 Survey Value**	**2018 Survey Value**	**2019 Survey Value**	**% Change**	**% Change**	**% Change**
Saticoy Sanitation District	$ 100.00	$ 100.00	$ 100.00	0.00%	0.00%	0.00%
South Coast Water District	$ 190.00	$ 190.00	$ 190.00	0.00%	0.00%	0.00%
Stege Sanitary District	$ 200.00	$ 215.00	$ 222.31	7.50%	11.16%	3.40%
Triunfo Sanitation District	$ 218.00	$ 218.00	$ 218.00	0.00%	0.00%	0.00%
Truckee Sanitary District	$ 215.00	$ 250.00	$ 255.00	16.28%	18.60%	2.00%
Union Sanitary District	$ 212.10	$ 212.10	$ 212.10	0.00%	0.00%	0.00%
Ventura Regional Sanitation District	$ 186.00	$ 186.00	$ 186.00	0.00%	0.00%	0.00%
Victor Valley Wastewater Reclamation Authority	$ 100.00	$ 100.00	$ 100.00	0.00%	0.00%	0.00%
West Bay Sanitary District	$ 155.00	$ 207.27	$ 220.00	33.72%	41.94%	6.14%
West County Wastewater District	$ 265.35	$ 265.35	$ 265.35	0.00%	0.00%	0.00%
West Valley Sanitation District of Santa Clara County	$ 150.00	$ 150.00	$ 150.00	0.00%	0.00%	0.00%
Averages:	$ 178.39	$ 192.48	$ 198.14	7.90%	11.07%	2.94%


Board Member Compensation Survey 2013
base year and comparison to 2018 and 2019
Compensation per Regular or Special Meeting
$350.00
$300.00
$250.00
$200.00
$150.00
$100.00
$50.00
$-
Camrosa Water District
Carmel Area Wastewater District
Carpinteria Sanitary District
Carpinteria Valley Water District
Castro Valley Sanitary District
Central Contra Costa Sanitary District
Central Marin Sanitation Agency
Costa Mesa Sanitary District
Cupertino Sanitary District
Delta Diablo Sanitation District
Dublin San Ramon Services District
Elsinore Valley Municipal Water District
Encina Wastewater Authority
Fairfield-Suisun Sewer District
Goleta Sanitary District
Goleta Water District
Goleta West Sanitary District
Irvine Ranch Water District
Las Gallinas Valley Sanitary District
Las Virgenes Municipal Water District
Leucadia Wastewater District
Montecito Sanitary District
Monterey One Water
Mt. View Sanitary District
Napa Sanitation District
Novato Sanitary District
Ojai Valley Sanitary District
Oro Loma Sanitary District
Saticoy Sanitation District
South Coast Water District
Stege Sanitary District
Triunfo Sanitation District
Truckee Sanitary District
Union Sanitary District
Ventura Regional Sanitation District
Victor Valley Wastewater Reclamation...
West Bay Sanitary District
West County Wastewater District
West Valley Sanitation District of...
2013 Survey Value
2018 Survey Value
2019 Survey Value

United Water CONSERVATION DISTRICT

MINUTES
REGULAR BOARD MEETING
Wednesday, February 10, 2021, 12:00 P.M.
Board Room, UWCD Headquarters
1701 N. Lombard Street, Oxnard CA 93030

Directors Present
Michael W. Mobley, president
Bruce E. Dandy, vice president (participating virtually)
Sheldon G. Berger, secretary/treasurer (participating virtually)
Mohammed A. Hasan
Lynn E. Maulhardt
Edwin T. McFadden (arrived late, participating virtually)
Daniel C. Naumann

Staff Present
Mauricio E. Guardado, general manager
David D. Boyer, legal counsel
Dr. Maryam Bral, chief engineer
John Carman, operations and maintenance program supervisor (participating virtually)
Brian Collins, chief operations officer
Dan Detmer, supervising hydrogeologist
Anthony Emmert, assistant general manager (participating virtually)
Joseph Jereb, chief financial officer
Kathleen Kuepper, hydrogeologist (participating virtually)
John Lindquist, senior hydrogeologist
Murray McEachron, principal hydrologist (participating virtually)
Craig Morgan, senior engineer (participating virtually)
Josh Perez, human resource manager
Linda Purpus, environmental services manager (participating virtually)
Robert Richardson, senior engineer (participating virtually)
Dr. Jason Sun, senior hydrogeologist/modeler (participating virtually)
Peter Witman, park ranger cadet (participating virtually)

Public Present
Frank Brommenschenkel, Frank B and Associates (participating virtually)
Dennis Cardoza, Foley & Lardner (participating virtually)
Burt Handy, (participating virtually)
Patrick Kelly, (participating virtually)
Brian Wheeler, AALRR (participating virtually)

1. FIRST OPEN SESSION 12:00 P.M.

President Mobley called the meeting to order at 12noon.

1.1 Public Comments

Information Item

President Mobley asked if there were any public comments. None were offered.

1.2 EXECUTIVE (CLOSED) SESSION 12:05 P.M.

President Mobley asked District's Legal Counsel, David Boyer, to outline the discussion items for today's Executive (Closed) Session.

Mr. Boyer reported that the Board would be discussing one case of anticipated litigation pursuant to Government Code Section 54956.9(d)(2) and five cases of existing litigation pursuant to Government Code Section 54956.9(d)(1), including three cases with the City of San Buenaventura, one with Wishtoyo Foundation and one with the estate of Naya Rivera and her minor child.

President Mobley adjourned the meeting into Executive Session at 12:05p.m.

2. SECOND OPEN SESSION AND CALL TO ORDER 1:00 P.M.

President Mobley called the second open session to order at 1p.m. and asked Director Hasan to lead the group in reciting the Pledge of Allegiance.

2.1 Pledge of Allegiance

Director Mohammed A. Hasan

2.2 Public Comment

Information Item

President Mobley asked if there were any public comments. None were offered.

2.3 Approval of Agenda

Motion

President Mobley asked if there were any changes to the agenda. General Manager Mauricio Guardado replied there were no changes to the agenda.

Motion to approve the agenda, Director Maulhardt; Second, Director Naumann. Voice vote: six ayes (Berger, Dandy, Hasan, Maulhardt, Naumann, Mobley); none opposed; one absent (McFadden). Motion carries unanimously 6/0/1.

2.4 Oral Report Regarding Executive (Closed) Session

Information Item

District Legal Counsel David D. Boyer reported the Board voted unanimously (six ayes Berger, Dandy, Hasan, Maulhardt, Naumann, Mobley) to appeal the judgement in the existing litigation case of the City of San Buenaventura v. UWCD et. al (Santa Barbara County Superior Court Case No. 1467531). No other action was taken in Executive (Closed) Session that is reportable under the Brown Act.

2.5 Board Communication

Information Item

Director Berger reported his participation at the February 3 Recreation Committee meeting, the February 9 Finance and Audit Committee meeting and AWA VC meetings on February 7 and January 21. He also participated in a legislative ad hoc committee meeting on the 19th of January. He also reminded everyone that the AWA VC meeting on February 18 would focus on the District's Coastal Brackish Groundwater Treatment Plant project with the U.S. Navy, who were also participating in the update, and encouraged everyone to attend.

Director Dandy reported his participation at the January 12 Finance and Audit Committee meeting, the UWCD Board meeting on January 13, the VCSDA meeting on February 2, at which time he was asked to serve as president of the organization and he said yes, that he would serve as president of VCSDA. Al Fox will remain as vice president and now it is just figuring out how to handle the election process.

Director Naumann reported his participation at the AWA VC meeting on January 21, a prep meeting for the Fox Canyon GMA meeting on January 24 and his virtual participation at the Fox Canyon GMA Meeting on January 27. He also attended the VCSDA meeting on February 2, the Engineering and Operations Committee meeting and the Regional Air Defense for the 21st Century meeting on February 4 and the Finance and Audit Committee meeting on February 9 as well as today's Board meeting. He also reported that he was receiving numerous phone calls regarding the variance requests for Fox Canyon GMA, people inquiring about the philosophy of UWCD.

Director Maulhardt reported his participation at the Water Resources Committee meeting on February 2 and the Engineering and Operations Committee meeting on February 4.

Director Hasan reported his participation at the Recreation Committee meeting on February 3, several online training webinars and meetings with legal counsel and Dr. Mathis. He also reported that, as co-founder of Ocean Foresters, an innovative global resource for food and energy, he participated in the Ocean Decade Convention last week.

President Mobley reported that since the last Board meeting, he has attended the Mound Basin GSA Board meeting on January 21, and the next Mound Basin GSA Board meeting on February 18; a Special Fox Canyon GMA Board meeting on February 8 and the regular Fox Canyon GMA Board meeting on January 27, as well as the next Fox Canyon GMA Board meeting on February 24, the AWA meeting on January 21, a Fox Canyon GMA prep meeting with Director Naumann and United staff on January 25 and a prep meeting for today's Board meeting with the GM on February 9.

2.6 General Manager's Report

Information Item

General Manager Mauricio Guardado reported that he had no additional items to add to his report.

2.7 Update on Public Health Mandates Regarding Coronavirus Pandemic (COVID-19)

Information Item

The GM introduced HR Manager Josh Perez by stating that the Board had requested an IT plan to meet the current and future technology needs of the District, and that Mr. Perez will address that plan in his presentation to the Board entitled "COVID-19 Technology Enhancement Plan" (see attached slides).

Mr. Perez reported that all Board members and key staff would receive an iPad device that would improve communications across the board. Director Hasan asked what happens when other technology is rolled out, such as Elan Musk's Starlink, would this be compatible with that technology? IT Administrator Zachary Plummer responded to Director Hasan saying that Starlink is not part of the AT&T technology that would be used by the District for these devices currently.

Director Dandy asked if the system would prevent hacking, like what happened to the water system in Florida. Mr. Perez replied that more effective and secure systems were part of the plan and the District was employing cybersecurity and threat monitoring.

Mr. Perez added that the funds for this upgrade are included in the budget now and that he welcomes feedback through the General Manager as to implementation of the plan.

2.8 Public Hearing

Proposed Ordinance No. 25 - Consideration to Increase the Compensation of the Board of Directors

Motion

President Mobley opened a Public Hearing to receive public comments on the proposed adoption of Ordinance No. 25, approving an increase in the Board of Director's per diem from $226 to $237 per day. No public comments were offered.

Motion to approve Ordinance No. 25, Director Dandy; Second, Director Naumann.

Director Maulhardt stated that he was not in favor of an increase at this time, even though it was a small amount of money. He was concerned that in the current environment, when many have lost their businesses and jobs, that this is the wrong message at the wrong time. He again stressed that it was the amount of the increase but rather the symbolic gesture of the Board giving itself a raise, so he was voting No, as he is against the motion.

Director Hasan agreed with Director Maulhardt, saying the timing is not right and suggested that when COVID goes away, maybe the motion could be brought back for the Board's consideration. And for that reason, he too was voting No.

Voice Vote: three ayes (Berger, Dandy, Naumann); three nays (Hasan, Maulhardt, Mobley); one absent (McFadden). Motion did not pass.

President Mobley continued the Public Hearing to the March 10 Board meeting when all Directors should be present.

3. CONSENT CALENDAR: All matters listed under the Consent Calendar are considered routine by the Board and will be enacted by one motion. There will be no separate discussion of these items unless a Board member pulls an item from the Calendar. Pulled items will be discussed and acted on separately by the Board. Members of the public who want to comment on a Consent Calendar item should do so under Public Comments. (ROLL CALL VOTE REQUIRED)

A. Approval of Minutes
Motion
Approval of the Revised Minutes for the Regular Board Meeting of December 9, 2020 and the Minutes of the Regular Board Meeting of January 13, 2021.

B. Groundwater Basin Status Reports
Information Item
Receive and file Monthly Hydrologic Conditions Report for the District.

C. Monthly Investment Report
Information Item
Report on the District's investments and the availability or restriction of these funds. All investments are in compliance with the District's investment policy, which is reviewed and approved annually by the Board.

D. Second Quarter Fiscal Year Financial Report and Budget Amendments (July 1 – December 31, 2020)
Information Item
The Board will review the FY 2020-21 Second Quarter Financial Report for the period of July 1, 2020 through December 31, 2020, review the monthly investment report, and consider approving budget modifications as recommended.

3.E Standing Committee Assignments and Appointments of Board Representation to Outside Agencies
Motion
The President will appoint membership for the District's 2021 standing committees and appoint representatives and alternates to the following organizations: Association of Water Agencies of Ventura County Board of Directors; Association

of Water Agencies of Ventura County Water Issues Committee; Fox Canyon Groundwater Management Agency; Ventura County Special Districts Association; Oxnard Chamber Water Committee; and ACWA JPIA Board of Directors.

3.F <u>Resolution 2021-04</u> Requesting the Amendment of the District's List of Authorized Signers and Updating the District's Mailing Address on the District's Local Agency Investment Fund (LAIF) account with the California State Treasurer's Office

<u>Motion</u>

The Board will consider approving <u>Resolution 2021-04</u> requesting the amendment of the District's list of authorized signers and updating the District's mailing address on the District's Local Agency Investment Fund (LAIF) account with the California State Treasurer's Office.

Motion to approve Consent Calendar items, Director Naumann; Second, Director Hasan. Voice Vote: six ayes (Berger, Dandy, Hasan, Maulhardt, Naumann, Mobley); none Opposed; one absent (McFadden). Motion carries unanimously 6/0/1.

4. MOTION ITEMS (By Department)

<u>Engineering Department</u> – Dr. Maryam Bral

4.1 El Rio Water Well No. 19 Construction Project Contract Award to Best Drilling and Pump, Inc.

<u>Motion</u>

Chief Engineering Dr. Maryam Bral addressed the Board, explaining that the District's wells were first established in the 1950s and as part of the Capital Improvement Plan projects, individual wells are targeted each year for destruction and replacement. Six wells have been replaced to date, and now El Rio Water Well No. 6 is scheduled to be replaced with Well No. 19. The District received bids for the project and the lowest responsible bidder, Best Drilling and Pump, Inc., with a bid amount of $450,774, should be awarded the contract and, if the Board approves, it should also authorize the General Manager to execute the contract with Best Drilling and Pump, Inc. for the construction of El Rio Water Well No. 19.

Director Maulhardt said the Engineering and Operations Committee reviewed this item, which is part of the District's routine maintenance, and the Committee recommends Board approval of the motion. President Mobley asked if the well capacity would be the same. Dr. Bral said yes, and added that the older well's production capacity had declined with age.

Motion to award a construction contract to Best Drilling and Pump, Inc., for the replacement of El Rio Water Well No. 19 and authorize the General Manager to execute the contract in the amount of $450,774, Director Maulhardt; Second, Director Hasan. Voice Vote: six ayes (Berger, Dandy, Hasan, Maulhardt, Naumann, Mobley); none opposed; one absent (McFadden). Motion carries unanimously 6/0/1.

5. PRESENTATIONS AND MONTHLY STAFF REPORTS (By Department)

Operations and Maintenance – Brian Collins

5.1 Monthly Operation and Maintenance Department Report

Information Item

Mr. Collins delivered a staff report and presentation to the Board regarding the monthly operations and maintenance of District facilities. (see attached slide presentation).

Director Maulhardt reported that a lengthy discussion about the crack in the ground at Lake Piru Recreation area during the Engineering and Operations Committee as the Committee had concerns about a potential storm could cause the entire slope where the crack is to give way. Mr. Collins said staff excavated down four feet and lifted materials up to 'shore up' the crack. Staff also presented stormwater and erosion control options to the Committee and offered to gather bids for correcting the problem and bring them back to the Board for its consideration.

Mr. Collins addressed a main line failure during flushing and sediment issues at Saticoy as well as a power outage at the Moss screen resulting from a Southern California Edison public safety power shutoff has resulted in plans for the installation of an emergency generator in the next fiscal year.

Mr. Collins also reported that the Oxnard Hueneme Booster Plant Rehab project had recouped $35,000 from Southern California Edison's incentive program; and that the District had secured agreements with both the City of Ventura and Casitas Municipal Water District for the District to purchase their State Water Project carryover water, bringing 3,625 acre feet of water into the District.

Director Hasan stated that he appreciated staff's efforts regarding the State Water Project and called the results exemplary. Director Maulhardt agreed and added that the District needs to capitalize on all the good news.

President Mobley asked if there were any other comments or questions. None were offered.

Park and Recreation Division – Clayton Strahan

5.2 Monthly Park and Recreation Department Report

Information Item

Chief Ranger Clayton Strahan delivered a report and presentation to the Board regarding activities and operations at the Lake Piru Recreation Area. (see attached slide presentation).

Chief Strahan reported that visitation and revenue at Lake Piru was just over $15,000 for the month of January, which was an 853 percent increase over this time last year. Revenue was on track for similar increase in February, too. He also

stressed that this was just from Day Use as camping was still not allowed due to COVID-19 public health issues.

During the month, Rangers also upgraded the irrigation system so that newly planted trees with thrive and added security cameras to the Ranger Station and the Kiosk entrance. Chief Strahan also reported the disposal of a capsized boat that was removed from the lake and never retrieved by its owner, and other general maintenance to spruce up the area in anticipation of opening for overnight camping soon.

Working with O&M staff, they have cleaned up the swim beach area at Juan Fernandez and the overflow camping area and did some weed abatement in preparation for spring. There was some wind damage to oak trees, which were trimmed and cleaned up and numerous administrative tasks in preparation of the launch of the new website (ExploreLakePiru.com) and the MySites online reservation system for camping and day use.

President Mobley asked if there were any comments or questions from the Board or public.

Director Maulhardt said he had been listening and watching Chief Strahan and was noticing a sense of energy, purpose and direction that was very exciting. He also said he liked the graphics for the online reservation system and believed the whole package would catapult the Lake Piru Recreation Area to a popular family destination, adding that the District needs to market the recreational activities and help get the word out.

Chief Strahan he was excited and even though it was a lot of work, it was fun.

President Mobley added that the demise of PMC may have been a true blessing and the situation was really showing off Chief Strahan's skills and that there is nothing like the Lake Piru Recreation area in the whole of Ventura County.

Water Resources Department – Maryam Bral

5.3 Monthly Water Resources Department Report

Information Item

John Lindquist delivered a report and presentation to the Board on the recommendations set forth by the OPV Core Stakeholders Projects Committee related to proposed basin optimization water sustainability projects and follow up steps related to initial feasibility assessment of selected projects. (see attached slide presentation). He also answered questions from the Board regarding specific projects.

Director Maulhardt said that it was very important to engage the public in the discussions of these projects and cautioned Mr. Lindquist to be careful with terminology that may be off putting to the general public. Director Hasan added

that it may be beneficial to title the projects "Potential Optimization Projects," as a way of catching the public's eye and interest.

President Mobley asked if there were any additional questions or comments for Mr. Lindquist. None were offered.

5.4 Update on Groundwater Sustainability Agencies (GSAs) and Sustainable Groundwater Management Act (SGMA)
Information Item
Mr. Lindquist also updated the Board on the monthly activities of the three local Groundwater Sustainability Agencies (Mound Basin GSA, Fillmore and Piru Basins GSA, and the Fox Canyon Groundwater Management Agency), for which the District serves as a member director, and Santa Paula basin (adjudicated) Technical Advisory Committee (including formation of groundwater sustainability agencies in the District's basins, stakeholder and basin user groups, joint powers or governance agreements, development of water markets, and potential basin boundary changes). (see attached slide presentation)

Administrative Services Department - Anthony Emmert

5.5 Monthly Administrative Services Department Report – Anthony Emmert
Information Item
Summary report on Administration Department activities was received by the Board.

Engineering Department – Maryam Bral

5.6 Monthly Engineering Department Report
Information Item
Summary report on various water resources, planning efforts and department programs affecting the District was received by the Board.

Environmental Services Department – Linda Purpus

5.7 Monthly Environmental Services Department Report
Information Item
Summary report on environmental and regulatory issues of note to the District was received by the Board.

6. BOARD OF DIRECTORS READING FILE

7. FUTURE AGENDA ITEMS
It was suggested that District signage upgrades should be addressed at a future meeting as there is a new logo and signage should be consistent in branding the District.

8. ADJOURNMENT 3:08p.m.
President Mobley adjourned the meeting at 3:08p.m. to the **Regular Board Meeting scheduled for Wednesday, March 10, 2021** or call of the President.

I certify that the above is a true and correct copy of the minutes of the UWCD Board of Directors meeting of February 10, 2021.

ATTEST:_____
Sheldon G. Berger, Secretary/Treasurer

ATTEST:_____
Kris Sofley, Clerk of the Board

COVID-19 Technology Enhancement Plan

FEBRUARY 10, 2021

1

Board Feedback

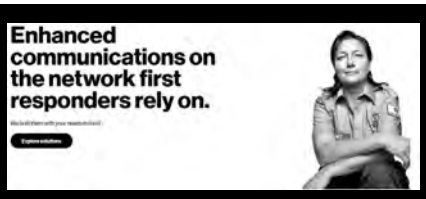
Feedback Received from Board on COVID-19 technology impact:

- Audio Visual Concerns
- Internet Bandwidth Issues
- Meeting Platform (Zoom, Teams, WebEx)
- Additional Board seating area space
- Ability to retrieve agenda digitally and make notes as appropriate
- Ability to aid and assist Board members with meetings

2

FIRSTNET
Built with AT&T

Purpose



RELIABILITY AND CONNECTIVITY DURING CRISIS

RISK REDUCTION: SECURITY & LEGAL

FINANCIAL: COST EFFECTIVENESS

TECHNOLOGICAL UPGRADE

3

Capabilities of FirstNet Video

4

Access

Situational Awareness on Network Status

− 08/06/2020 12:01	08/06/2020 05:00	VENTURA	CA	Los Angeles

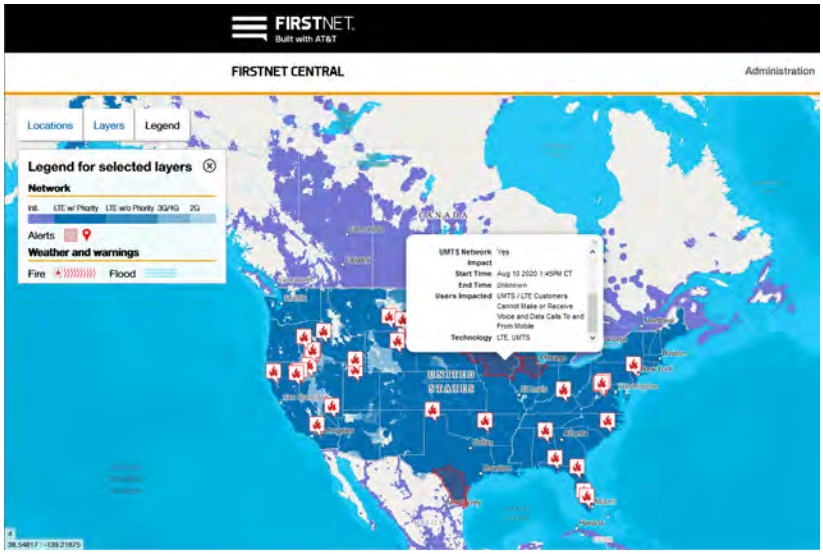
Category:	RAN/CORE/CCB
Reference Number:	VCR000001999359
Service Affected:	E911
Product Affected:	Voice & Data
Type:	CELL SITE Nortel Eric
Item:	Microwave Config. Change
Summary:	RLAG troubleshoot Red Mountain to Rincon

+ 08/06/2020 12:01	08/06/2020 05:00	CASTAIC	CA	Los Angeles

5

Access

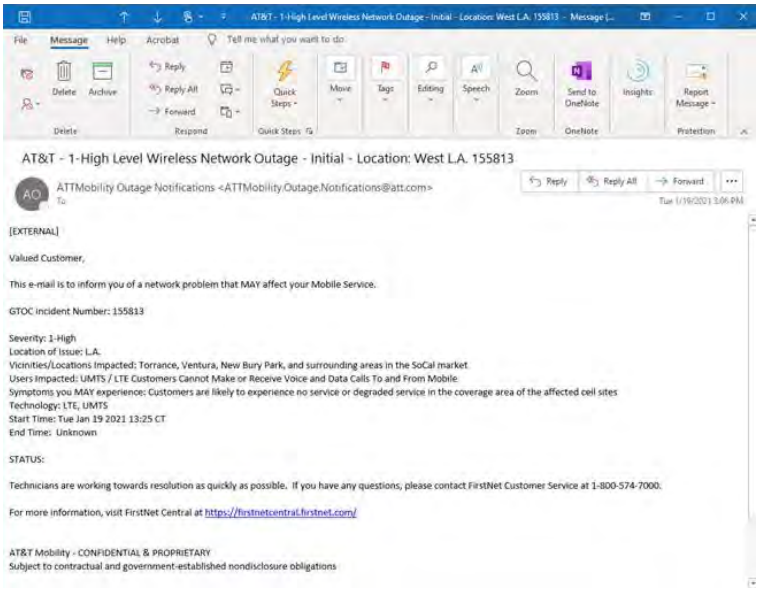
Situational Awareness on Network Status



6

Access

Situational Awareness on Network Status



AT&T - 1-High Level Wireless Network Outage - Initial - Location: West L.A. 155813

ATTMobility Outage Notifications <ATTMobility.Outage.Notifications@att.com>

[EXTERNAL]

Valued Customer,

This e-mail is to inform you of a network problem that MAY affect your Mobile Service.

GTOC Incident Number: 155813

Severity: 1-High
Location of Issue: L.A.
Vicinities/Locations Impacted: Torrance, Ventura, New Bury Park, and surrounding areas in the SoCal market
Users Impacted: UMTS / LTE Customers Cannot Make or Receive Voice and Data Calls To and From Mobile.
Symptoms you MAY experience: Customers are likely to experience no service or degraded service in the coverage area of the affected cell sites
Technology: LTE, UMTS
Start Time: Tue Jan 19 2021 13:25 CT
End Time: Unknown

STATUS:

Technicians are working towards resolution as quickly as possible. If you have any questions, please contact FirstNet Customer Service at 1-800-574-7000.

For more information, visit FirstNet Central at https://firstnetcentral.firstnet.com/

AT&T Mobility - CONFIDENTIAL & PROPRIETARY
Subject to contractual and government-established nondisclosure obligations

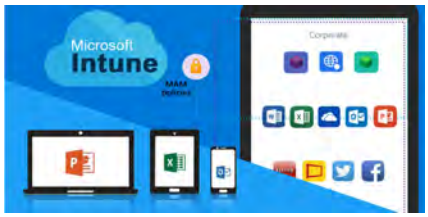
7

Proposed Solution – Apple iPad Pro Purchase

Purchase Apple iPad Pro devices providing best in class available technology immediately to address Board feedback discussed earlier and to enhance current technological capabilities.

8

Proposed Solution – Benefits



cisco Meraki

Key Benefits for Board/Staff

- Best in class audio/visual capabilities
- Best in class tech support/white glove service with Mobile Device Management
- Same technology platform distributed to all Board Members so synchronicity of devices in hand
- Preloaded software (Zoom, WebEx, Microsoft Office Suite Excel, Outlook, PowerPoint, Teams) as well as other future applications
- Software designed to ensure seamless transition into committee, board, and constituency meetings
- No additional cost for licensed usage of various Microsoft and web products/services
- Able to proactively detect cybersecurity and respond to cybersecurity concerns

9

Proposed Solution – Benefits (continued)

zoom

Join a Meeting

Sign In

Webex Meetings

- Ease of use and transport and device will feature security features and Band 14: spectrum dedicated to public safety & represents 20MHz of 700MHz spectrum.
  - ✓Demo devices have been tested at all key District locations (including SFD and Lake Piru)
- Provides exceptional coverage in urban and rural areas.
- LTE and Band 14 work together to give priority to those in possession of an assigned device.
- Links – Ease of use to connect to meetings, training provided to Board and staff on use can be synchronized.
- Applications are designed to run on Apple devices.

10

Proposed Solution – Additional Benefits to Board Members and Staff

- Prepared presentations saved for meetings with civic leaders, local agency meetings, and key constituents
- More effective meetings and scheduling for Board and staff members
- Typing capability and notes on documents can be written or noted on screen while viewing or reviewing documents
- Versatile easy to use devices that be transported with no need for unnecessary accessories such as adapters and cables
- Longer battery life of device in comparison to other potential traditional laptop solutions
- Best in class Headset solution (Air pods) provided as an accessory synchronizing audio to the device

11

El Rio Well Replacement Program

Water Well No. 19 Construction Project

Bid Results:

Best Drilling and Pump: 450,774

Nor-Cal Pump & Well Drilling: $579,764

Zim Industries: $604,874

2/10/2021

Drilling A BOREHOLE TO 475 FT BGS, 32" CONDUCTOR, SANITARY SEAL TO 100 FT BGS, 18" CASING AND WELL SCREENS, GRAVEL PACK AND SOUNDING TUBE
Two Screen Intervals

Notice of Award: Feb 10, 2021
Notice to Proceed: Mar 1, 2021
Completion: Jun 30, 2021

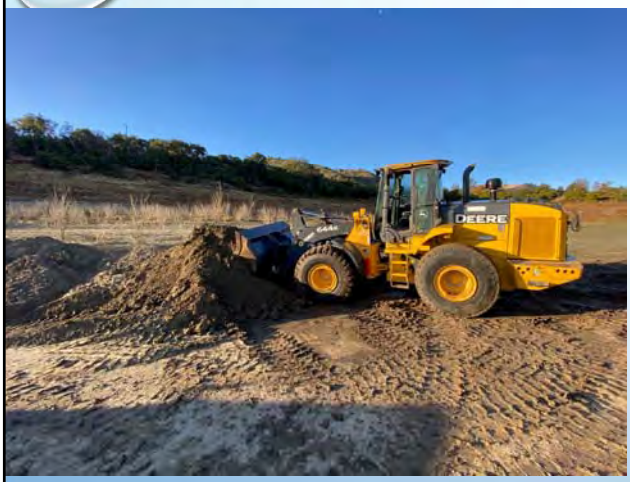
OPERATIONS & MAINTENANCE UPDATE

FEBRUARY 10, 2021

1

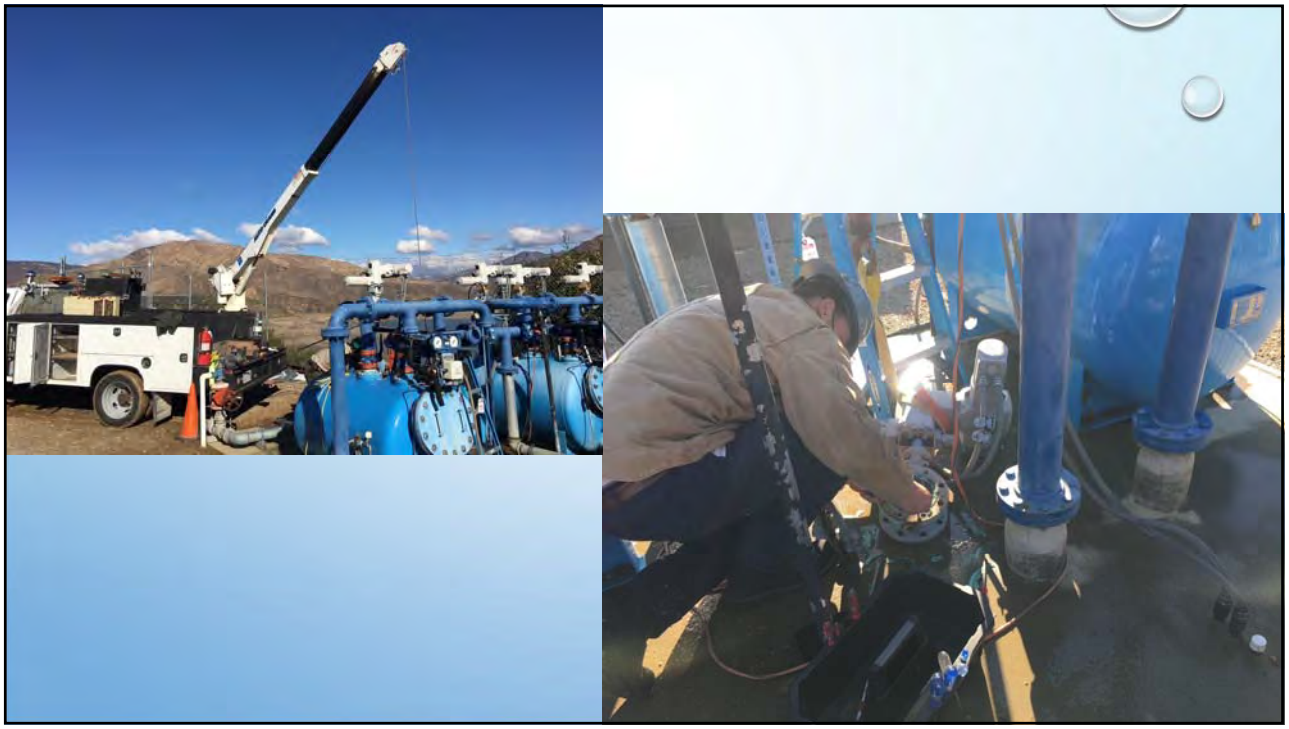
1

SFD and Lake Piru



2

2



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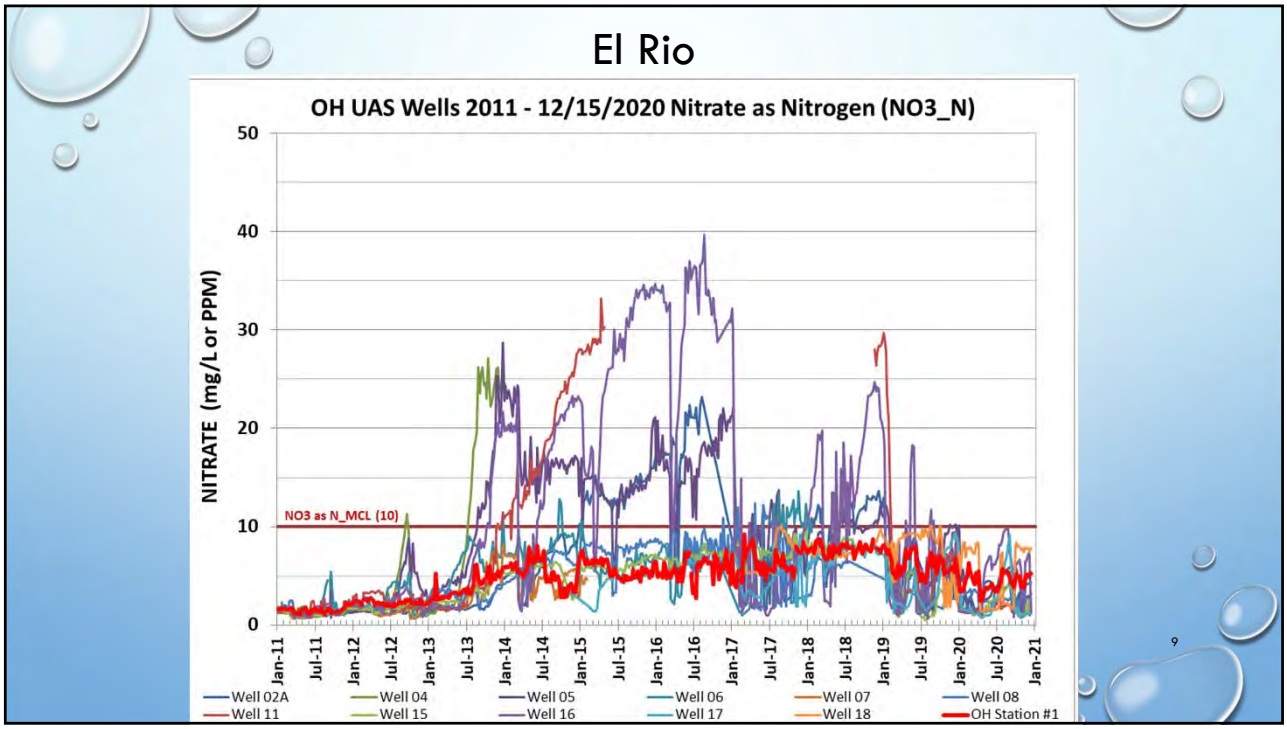

El Rio
OH UAS Wells 2011 - 12/15/2020 Nitrate as Nitrogen (NO3_N)
NITRATE (mg/L or PPM)
50
40
30
20
10
0
NO3 as N_MCL (10)
Jan-11
Jul-11
Jan-12
Jul-12
Jan-13
Jul-13
Jan-14
Jul-14
Jan-15
Jul-15
Jan-16
Jul-16
Jan-17
Jul-17
Jan-18
Jul-18
Jan-19
Jul-19
Jan-20
Jul-20
Jan-21
Well 02A
Well 04
Well 05
Well 06
Well 07
Well 08
Well 11
Well 15
Well 16
Well 17
Well 18
OH Station #1
9

9


GENERAL PUMP COMPANY

10

11

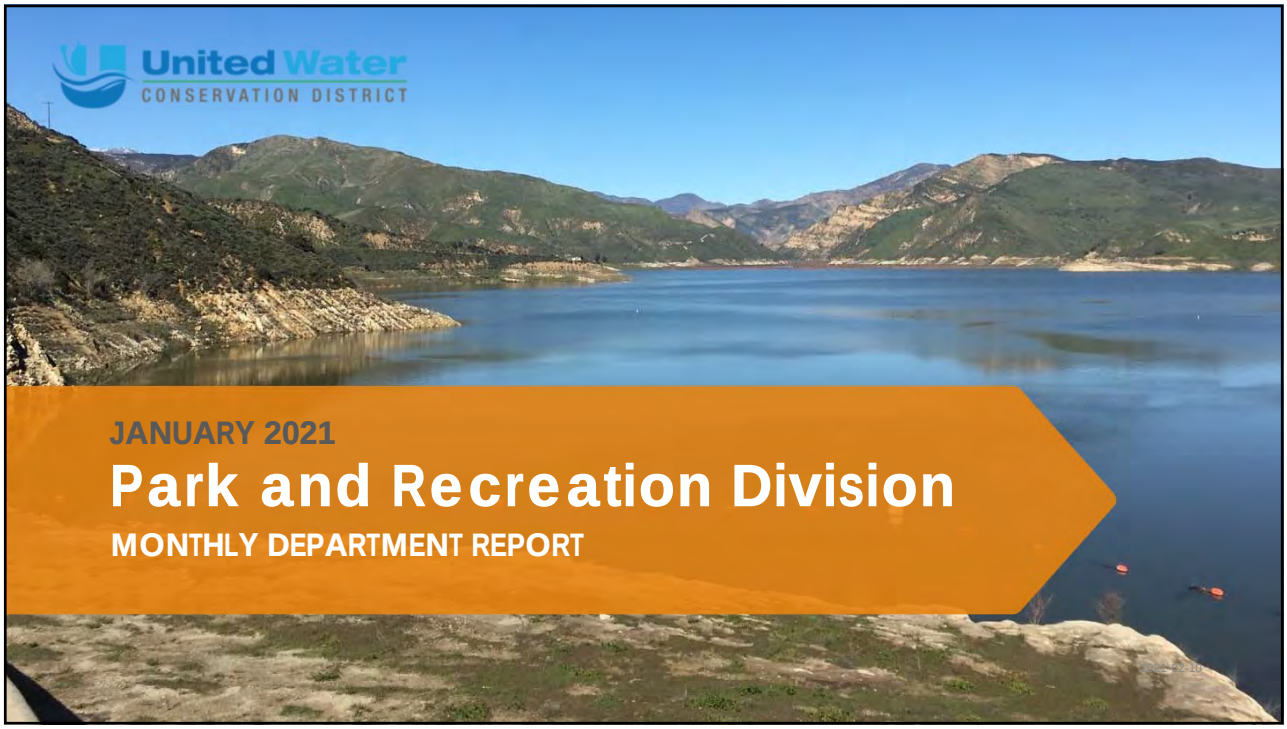
STATE WATER PROJECT UPDATE

- 525 AF ACQUIRED FROM VENTURA WATER.
- 3,100 AF ACQUIRED FROM CASITAS MUNICIPAL WATER DISTRICT.

- **HISTORIC EVENT- 3 AGENCY REGIONAL COLLABORATION! FIRST TIME IN 47 YEARS!**

12

12



1

Visitation and Revenue Recap

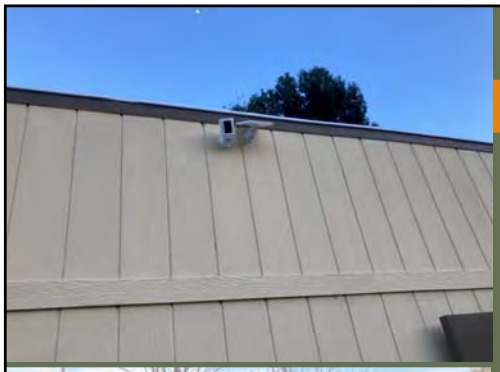
January 2021 vs. January 2020
Day Use Revenue & Visitation Comparison

Year	Cash Revenue	Credit Revenue	Combined Revenue	Persons	Vehicles	Vessels
2021	**$6,410.00**	**$7,714.00**	**$13,584.00**	**2317**	**1040**	**124**
2020	Unknown	Unknown	**$1,598.40**	**276**	**154**	**26**

- January 2021 revenue and visitation figures are current through January 24.
- 2020 figures are for entire month and were provided by PMC. To provide equivalent comparison, camping revenue and visitation are not included, as the District is not currently open for these areas.
- **633% increase** in **revenue** between January 1-20 (2021 vs. same period 2020)
- **637% increase** in **visitation** between January 1-20 (2021 vs. same period 2020)

2021-02-10

2

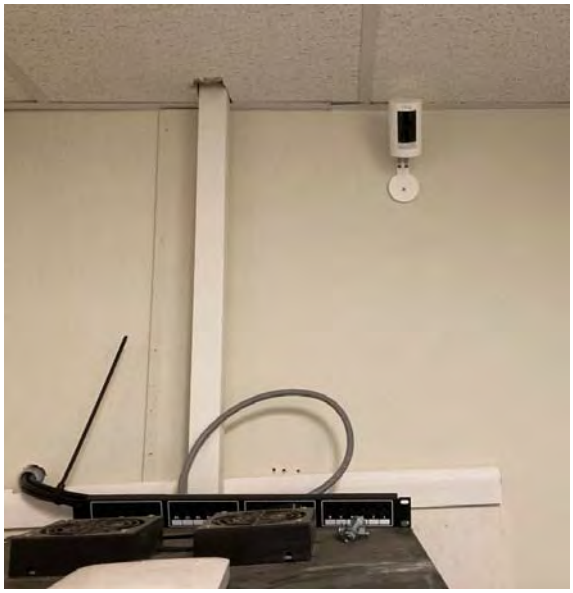


Operational Update

- Installed security cameras at the Ranger Station and Kiosk to manage secure cash collection locations
- Interviewed landscape contractors to assess and repair the day-use irrigation system (ongoing)
- Interviewed landscape contractors and secured proposals for potential long term landscape maintenance contracts
- Performed an Inventory audit of the Lake Piru store contents

2021-02-10

3



2021-02-10

4

Operational Update

Began repairs to onsite facilities including:

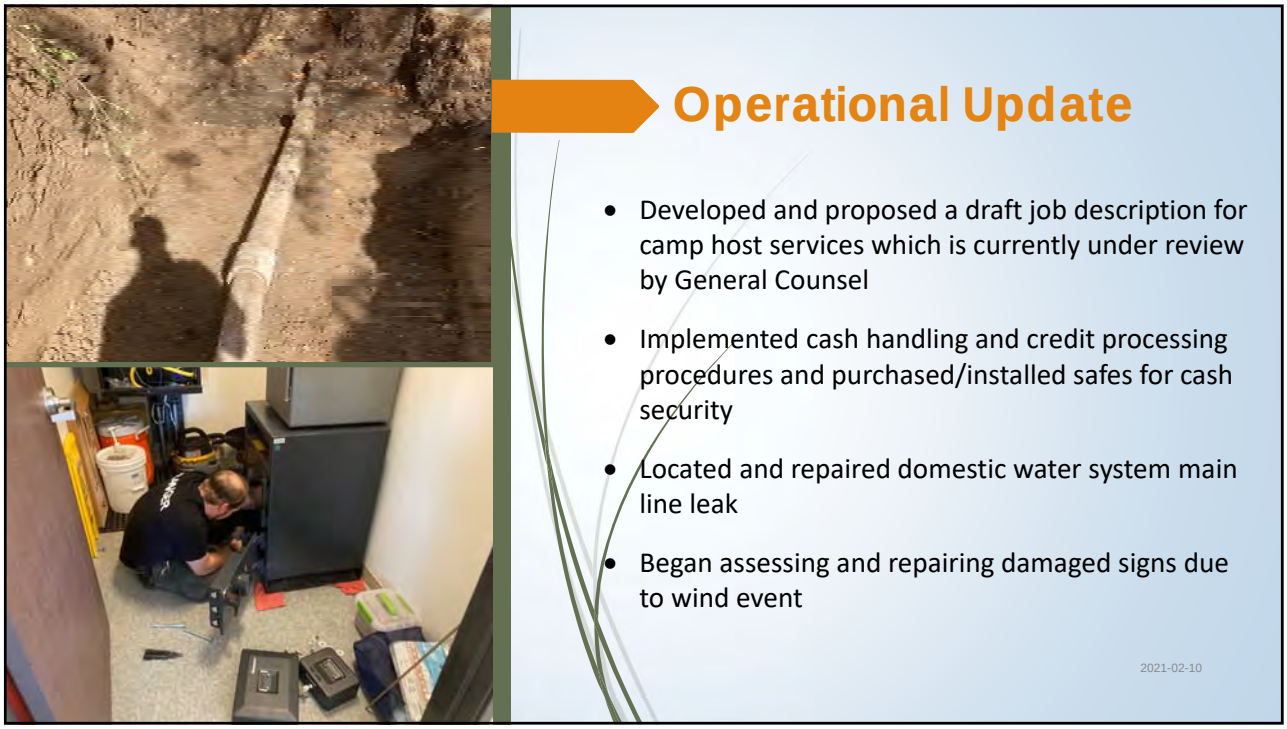
- Built base pads for Connex storage containers
- Painted and prepped trim for Entry Kiosk repairs
- Contracted quality ag to replace roof on Dog Park restroom
- Arranged account services began ordering processes with House Sanitary for janitorial services

2021-02-10

5

2021-02-10

6


Operational Update
• Developed and proposed a draft job description for camp host services which is currently under review by General Counsel
• Implemented cash handling and credit processing procedures and purchased/installed safes for cash security
• Located and repaired domestic water system main line leak
• Began assessing and repairing damaged signs due to wind event
2021-02-10

7

8

Operational Update

Administrative Tasks:

- Reviewed two drafts of the mysites.com reservation system (anticipated launch in February)
- Approved IT purchases of equipment needed for cash handling (desktops, cash drawers, credit card readers, and printers)
- Completed a PCI Compliance Survey for credit card processing at Lake Piru
- Secured a proposal from CV Strategies to develop a customer facing website for Lake Piru

2021-02-10

9

10

Information Item 5.3:

Summary of OPV Core Stakeholders Group Projects Committee Efforts and Recommendations to Date

Board of Directors Meeting
February 10, 2021

United Water CONSERVATION DISTRICT

1

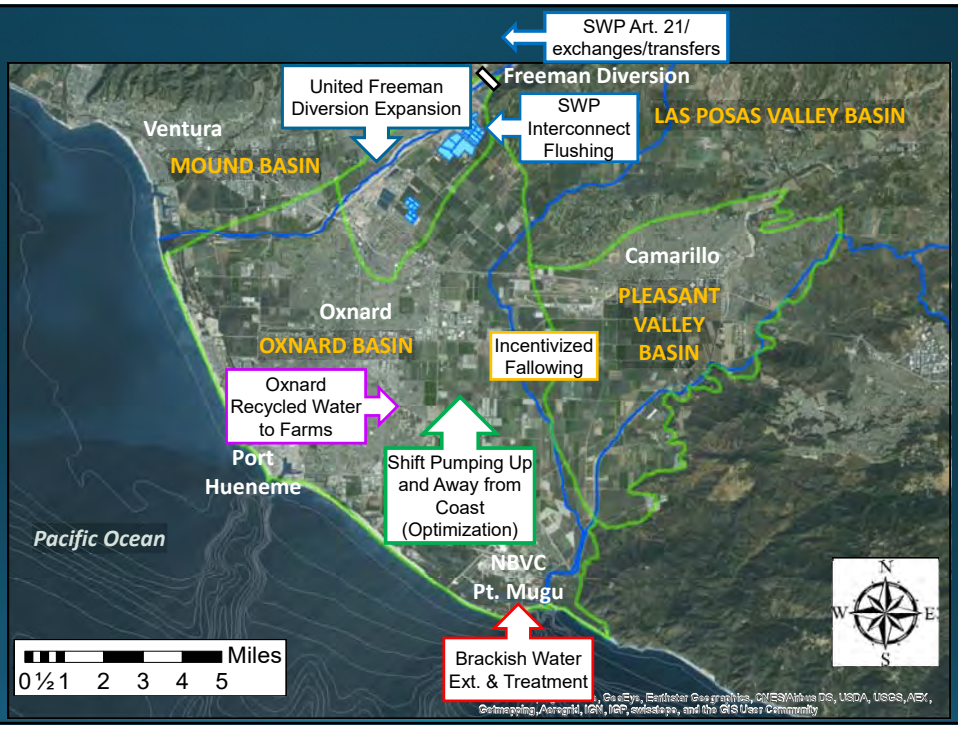
THE BOTTOM LINE…

The OPV Core Stakeholders group is recommending a suite of new and old water-supply projects for further modeling to:

1. Evaluate whether it is feasible to improve supply and/or sustainable yield to match historical demand.
2. Start firming up estimated yields and costs of projects
3. Better understand potential synergies and challenges

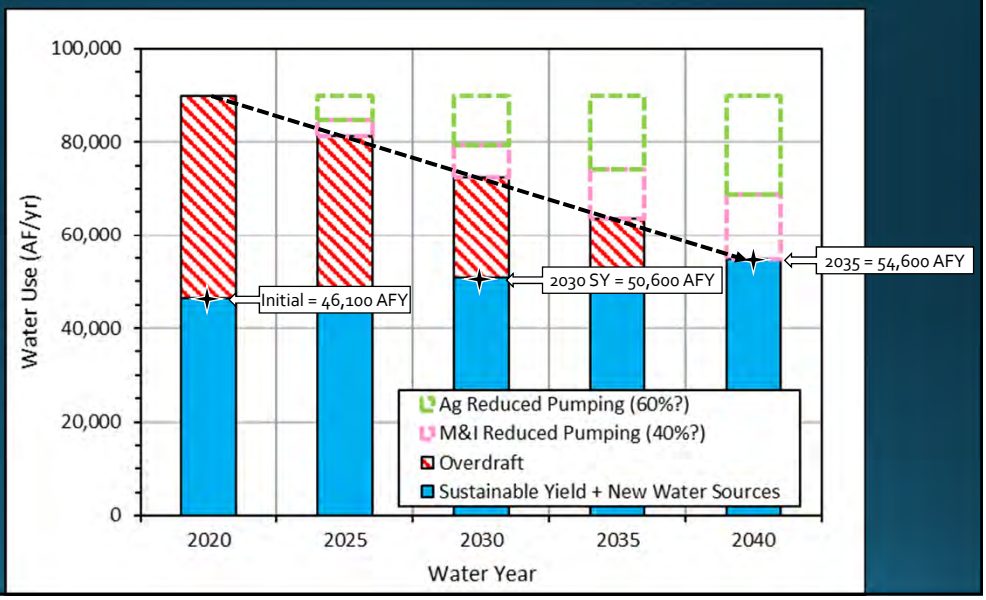
2

Water-Supply Projects to be Modeled



3

Why? Path to Sustainable Yield with Current GSP Projects:



About 425 Wells in Oxnard and Pleasant Valley (OPV) basins extracted groundwater in 2015

Notes:

- *~50 wells in OPV basins pumped ~1 to 5 acre-feet per year (AFY)*
- *~ 50 wells in OPV basins pumped less than 1 AFY*

Goals of the OPV Stakeholders Projects Committee (Sept – Dec 2020)

1. Support the Core Group's efforts in identifying a cost effective portfolio of projects and optimization measures that align with the GSP objectives and respond to regional water needs.

2. Recommend cohesive strategy to bring these projects into fruition for the Core Group's consideration.

6

New Projects with Low Infrastructure Requirements or With High Certainty of Being Implemented

Project	Quantity (AFY)	Notes
Recycled water to farms (2021)	4,600	Included in GSP
Recycled water to recharge (---)	~~4,500~~ 0	Included in GSP, but later withdrawn
Incentivized fallowing (2021)	2,700	Included in GSP
SWP Interconnect flushing/recharge (2027)	500	New project planned by United and Ventura
Freeman Expansion Ph. 1 (2028)	4,000	Planned by United, discussed in GSP
Freeman Expansion Ph. 2 (2036)	4,000	Planned by United, discussed in GSP
SWP Art. 21, exchanges, transfers (2021)	6,000	No new infrastructure required

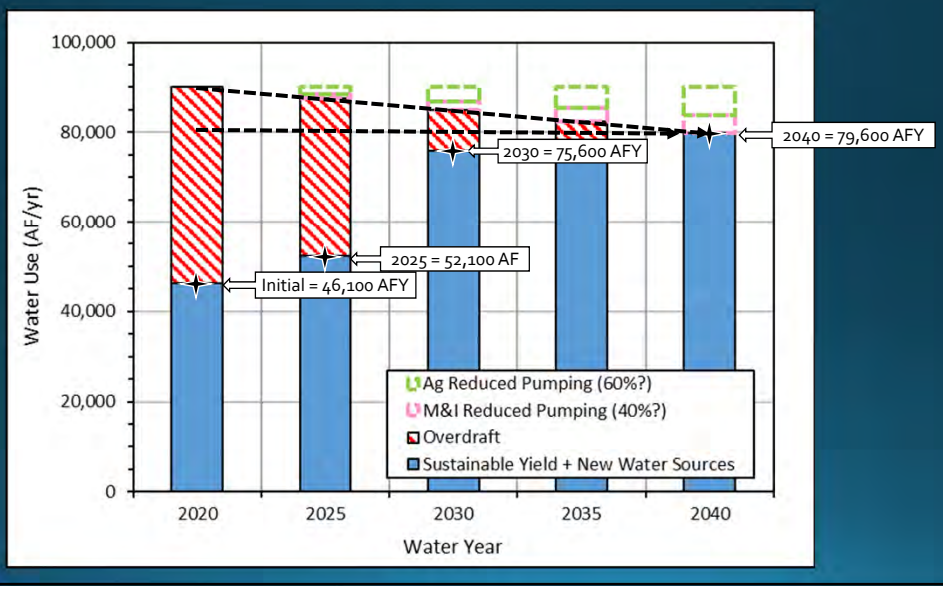
Big Project Concept 1: Optimization

Big Project Concept 2: Barrier to Seawater Intrusion

Potential Project-Implementation Scenarios

Project	GSP: Reduction w/ Projects	GSP: Reduction w/ Projects (revised)	SWI Barrier Focus	Optimization Focus	Hybrid Approach
Recycled water to farms (2021)	4,600	4,600	4,600	4,600	4,600
Recycled water to recharge (---)	4,500	0	0	0	0
Incentivized fallowing (2021)	2,700	2,700	2,700	2,700	2,700
SWP Interconnect flushing (2027)	0	500	500	500	500
Freeman Expansion Ph. 1 (2028)	0	4,000	4,000	4,000	4,000
Freeman Expansion Ph. 2 (2036)	0	4,000	4,000	4,000	4,000
SWP Art. 21, exchanges, transfers (2021)	0	0	6,000	6,000	6,000
Optimization Ph. 1 (2027)	0	0	4,000	4,000	4,000
Optimization Ph. 2 (2030)	0	0	1,000	1,000	1,000
Optimization Ph. 3 (2035)	0	0	0	12,000	0
Brackish Water Ext. Ph. 1 (2027)	0	0	12,000-16,000	0	12,000-16,000
Brackish Water Ext. Ph. 2 (2035)	0	0	12,000-8,000	0	0
Reduced pumping (from 90,000 AFY)	39,000	35,000	200	12,000	8,000-12,000?

Potential Rampdown under a Hybrid (SWI Barrier + Optimization) Scenario



Other Potential Future Projects that Could be Modeled at a Later Date

Project	Quantity (AFY)	Notes
Conejo Creek Storage (2030)	2,500?	Being developed by Camrosa MWD
M&I water market/alternative sources	???	Being developed by Curtis Hopkins
AWPF expansion for other uses	4,500?	Oxnard suggested they may have more recycled water available for projects

PLANNED PROCESS AS ORIGINALLY ENVISIONED

All of the groundwater basins in United's service area are connected!

It's important to understand sustainable yield in adjacent basins before getting too far ahead of ourselves in the Oxnard and Pleasant Valley basins.

13

QUESTIONS?

"The probability of success is difficult to estimate;

but if we never search the chance of success is zero."

--Giuseppe Cocconi and Philip Morrison, 1959, on the search for extraterrestrial intelligence

14

Information Item 5.4:

Update on Groundwater Sustainability Agencies (GSAs) and Sustainable Groundwater Management Act (SGMA)

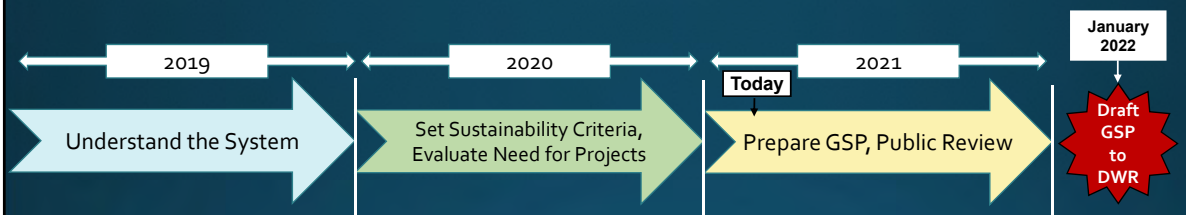
Board of Directors Meeting
February 10, 2021

United Water CONSERVATION DISTRICT

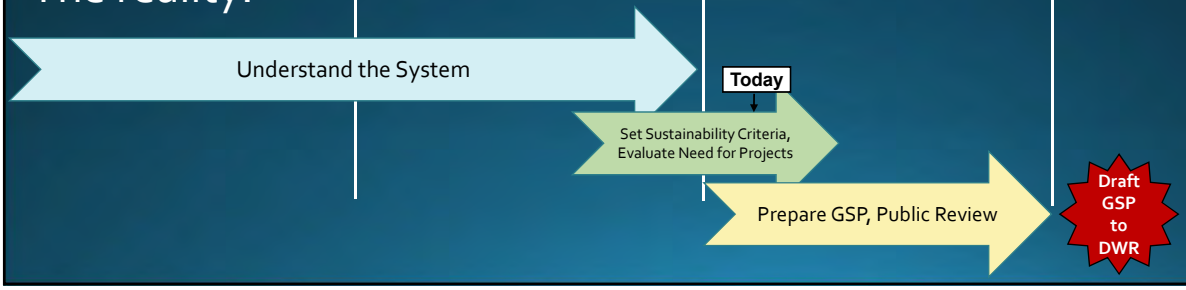
15

FILLMORE-PIRU BASINS GSP SCHEDULE

The original plan:



The reality:



16

Notable Fillmore-Piru Basins GSA Activities

1. December Stakeholder workshop:
   a. Water budgets and summary of United groundwater model

2. January Board meeting:
   a. Daniel B. Stephens & Assoc. (DBSA) report on development of draft sustainability criteria
   b. UCSB PhD student presentation on drought impacts on riparian vegetation
   c. United (McEachron) presentation on impacts of releases from Lake Piru
   d. DBSA update on potential new monitoring well locations

17

Santa Paula Basin TAC

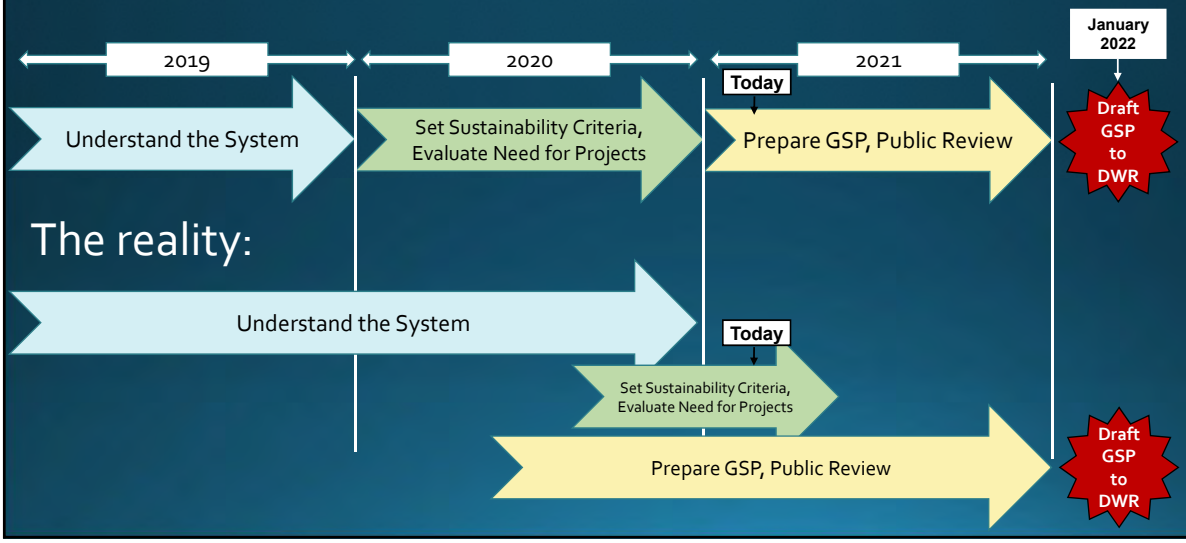
- 2020 Annual Report in progress
  - Expanded to include updates from model

- Anticipated this year: Modeling of potential yield-enhancement projects proposed by SPBPA

18

MOUND BASIN GSA SCHEDULE

The original plan:



The reality:

19

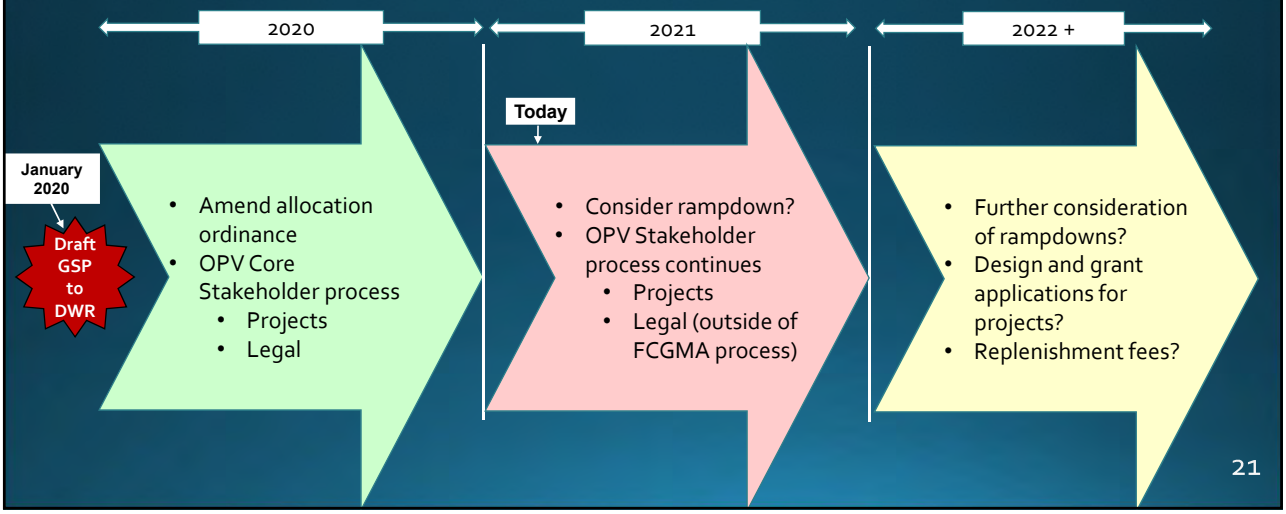
NOTABLE MOUND BASIN GSA ACTIVITIES

1. January Board meeting:
   a. Update on progress, focused on United modeling of future conditions
   b. Selection of date for next Stakeholder workshop (March 4)

2. After January Board meeting:
   a. DWR approval of technical assistance grant for new monitoring well near coast (south of Ventura Harbor)

20

Fox Canyon GMA GSP Implementation Schedule



21

Notable FCGMA Activities

1. January Board meeting:
   a. Board approved Dudek as GSP update consultant
   b. Board approved consultant Jarvis Fay & Gibson for initial Prop 218 analysis for replenishment fee
   c. Staff provided update on OPV Stakeholder process

22

QUESTIONS?

"Give me six hours to chop down a tree and I will spend the first four sharpening the axe."

– Abraham Lincoln

"Always feel free to stop and think" *(before committing to a potentially expensive course of action).*

– John Lindquist

United Water CONSERVATION DISTRICT

Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager
Maryam A. Bral, Chief Engineer

From: Kathleen Kuepper, Hydrogeologist
Bram Sercu, Senior Hydrologist

Date: **March 2, 2021 (March 10, 2021, meeting)**

Agenda Item: **3.B Groundwater Basin Status Report**
Informational Item

Staff Recommendation:

The Board will receive and file this summary report from the Water Resources Department regarding activities for the month of February 2021.

Summary:

Spreading and Pipeline Deliveries for Month of February 2021

Location	Amount (acre-feet)
Saticoy	54
Noble and Rose Pits	
El Rio	1,798
Piru	
Diverted at Freeman for Pipeline Deliveries	783
Saticoy/O-H Deep Wells Pumped for Ag Pipeline Deliveries	
Lloyd-Butler Diversion	Not available

Groundwater Basin Available Storage at End of Month of February 2021

Basin	Available Storage (acre-feet)
Oxnard Forebay	101,400

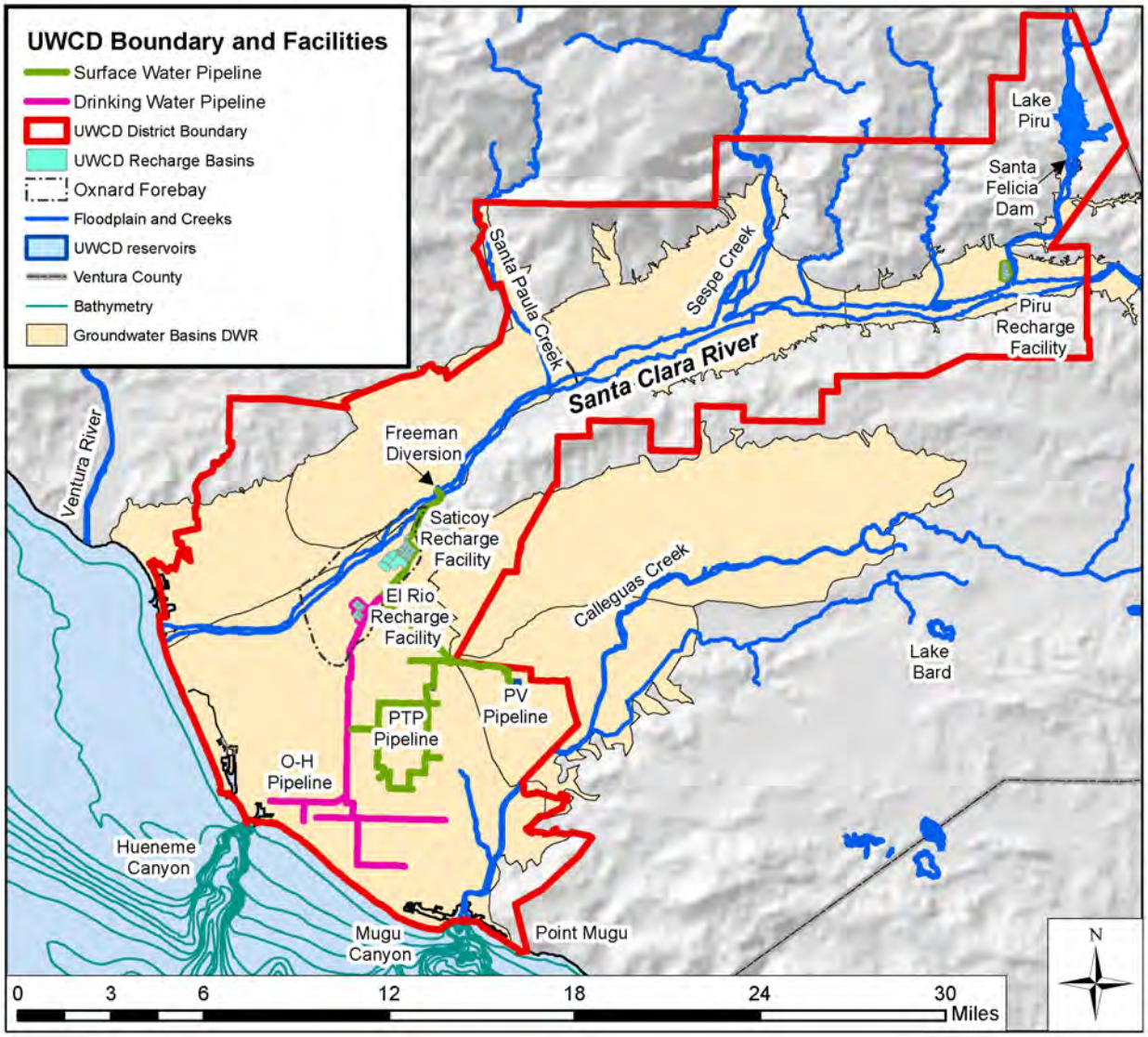
Precipitation for Month of February 2021

Location	Precipitation (inches)
Lake Piru	0.01
Santa Paula	0.04
El Rio	0.02

United Water
CONSERVATION DISTRICT

February 2021 Hydrologic Conditions Report
2020/21 Water Year

March 2, 2021



Note: This report may contain provisional data until final review at the end of the water year.

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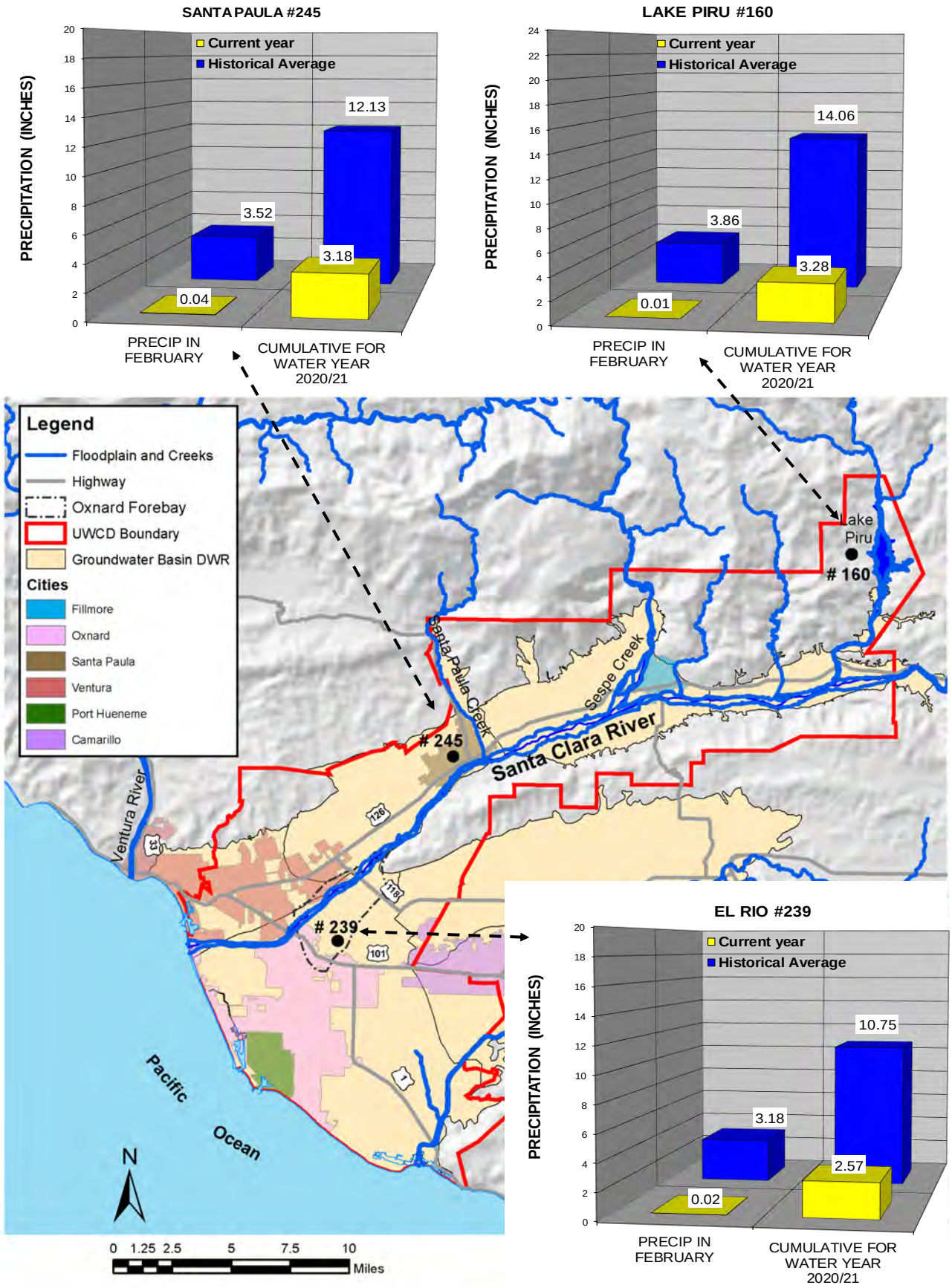
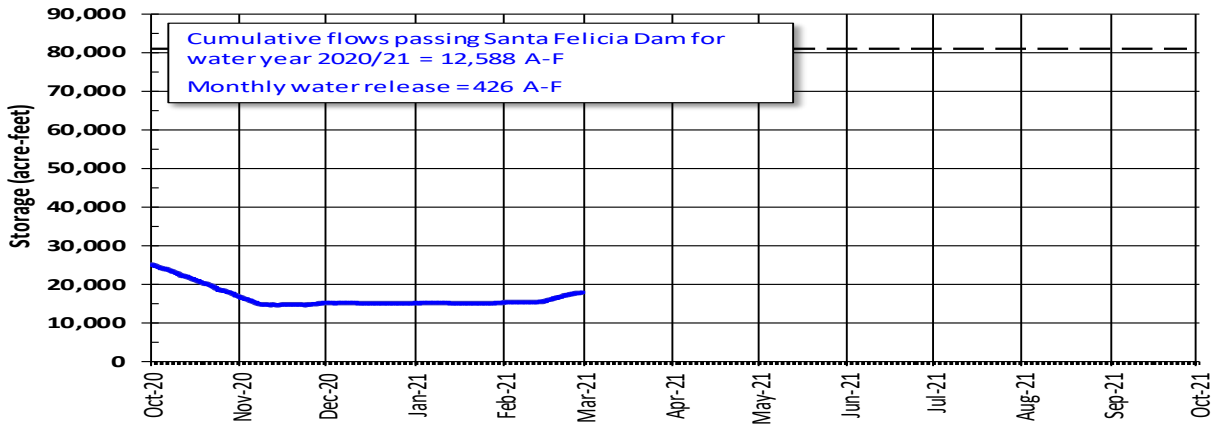


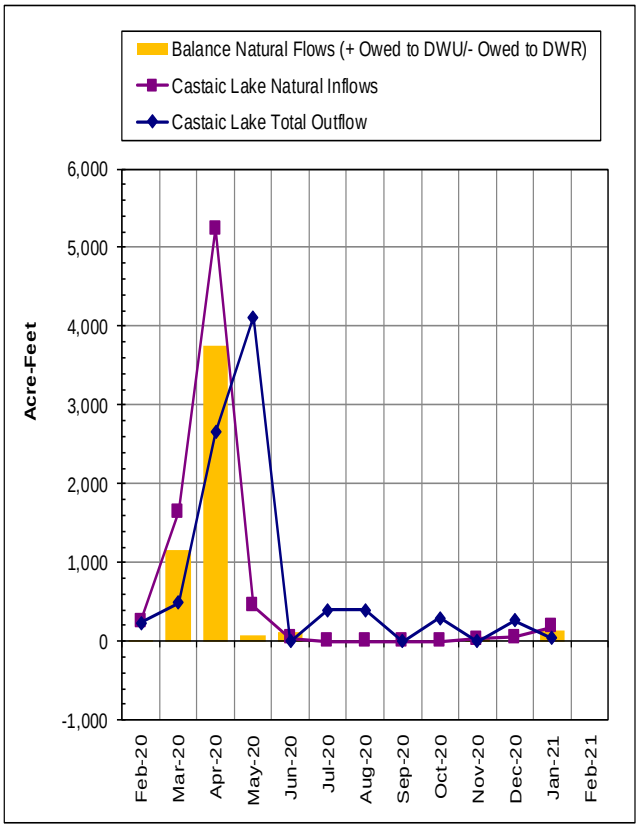
District-wide percent of normal precipitation = 24%

Lake Piru storage and outflow

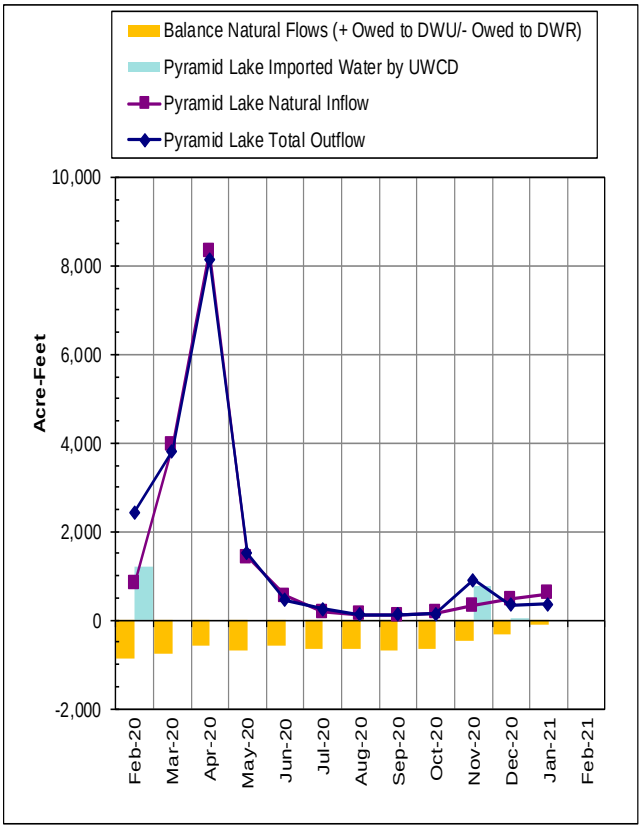


	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Hydro Plant Outflow (Acre-Feet)	4,345	214	0	0	0							
Cumulative Hydro Plant Outflow (A-F)	4,345	4,559	4,559	4,559	4,559							

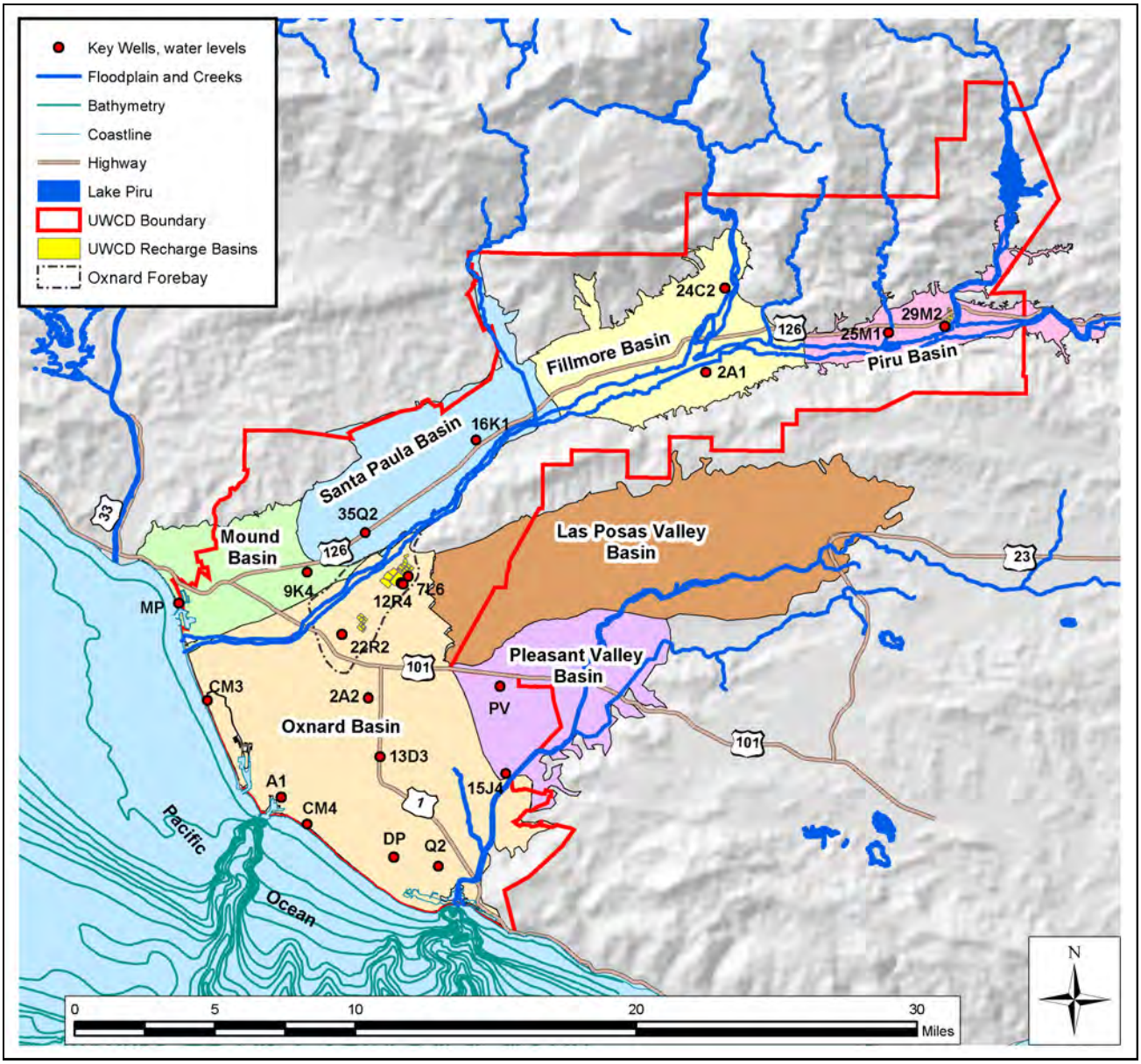
Castaic Lake releases to downstream water users (DWU)



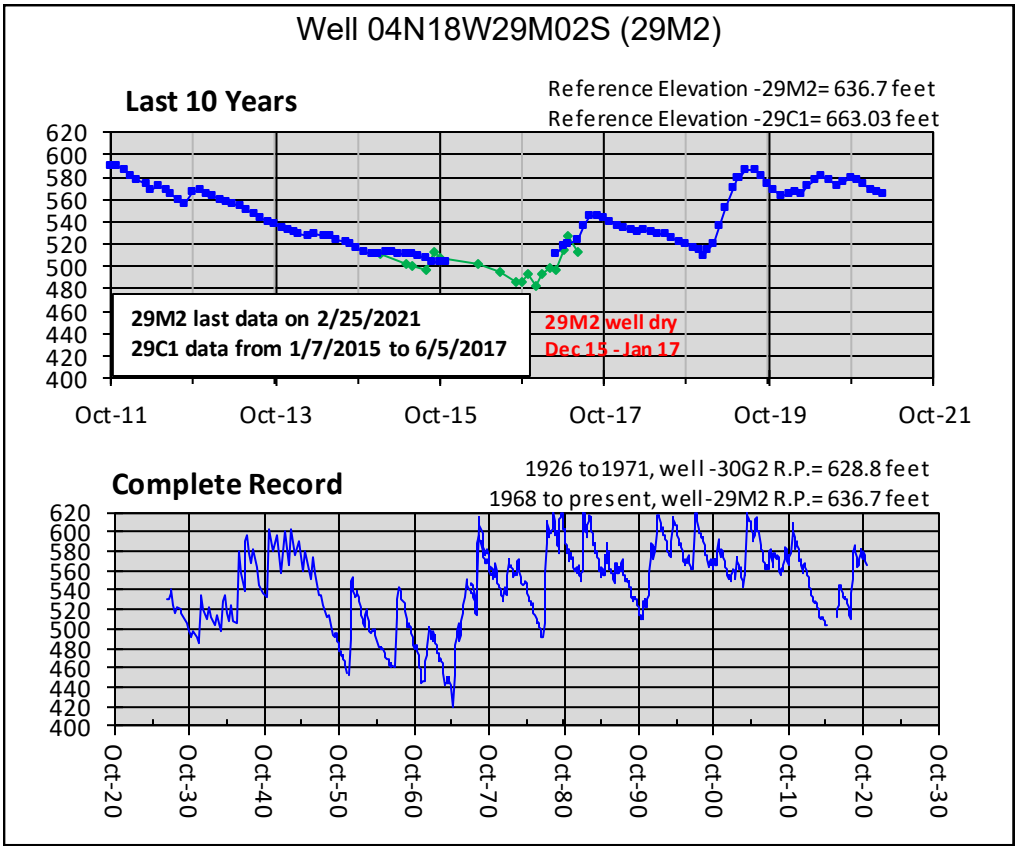
Pyramid Lake releases to UWCD

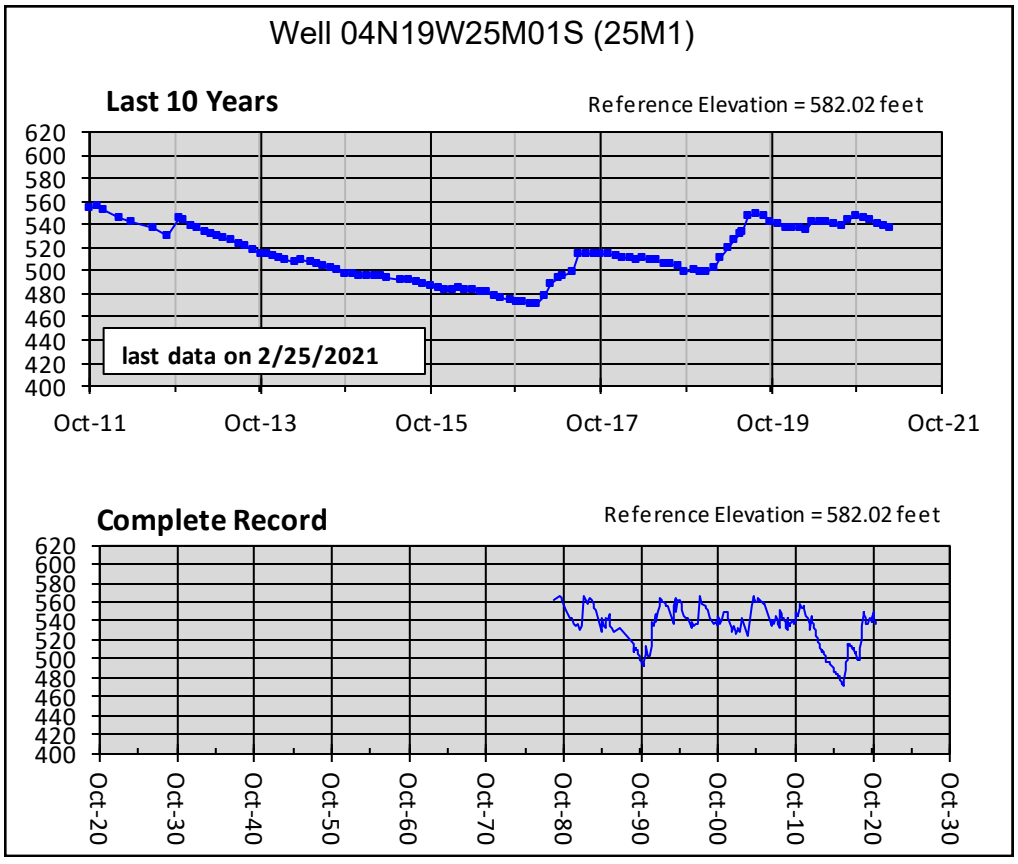


Locations of key wells, monthly groundwater elevation monitoring

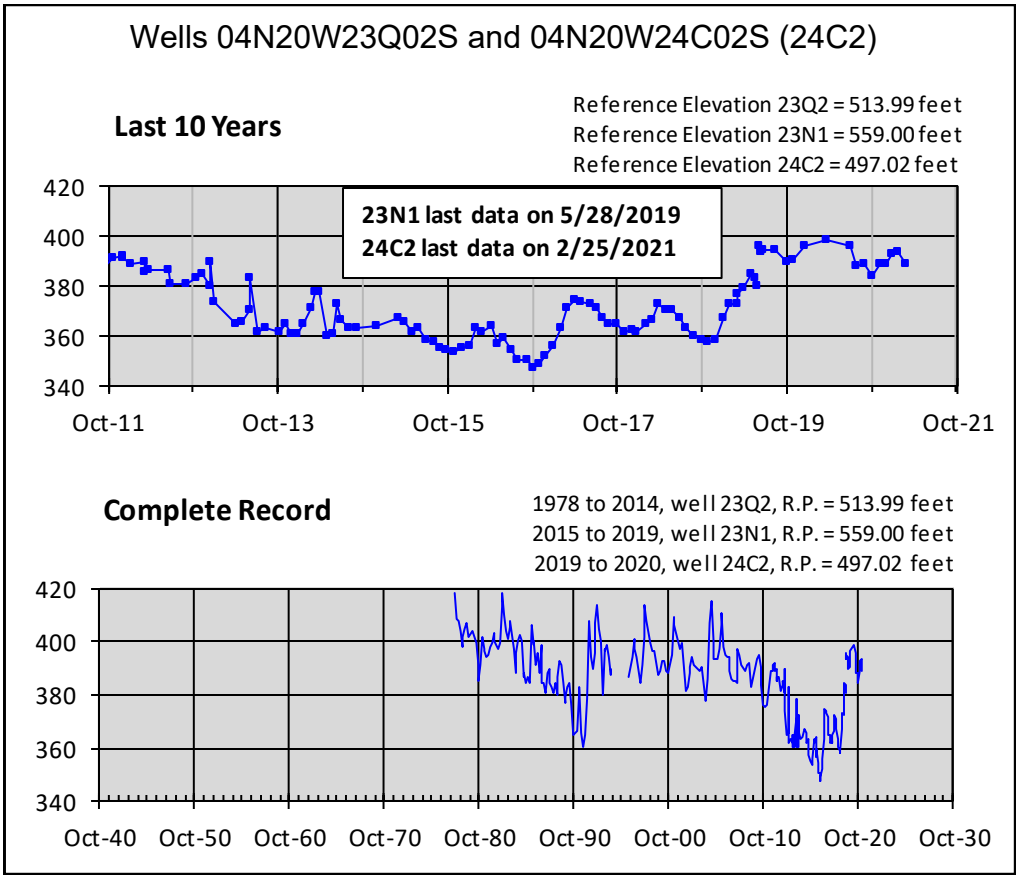


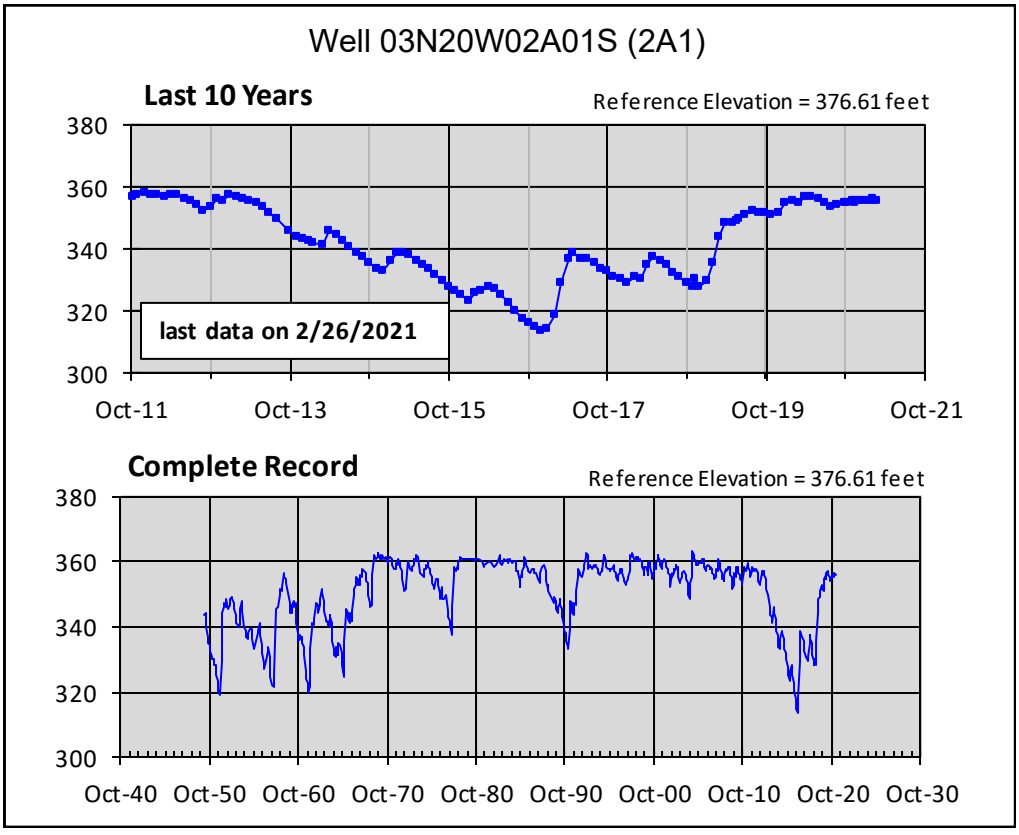
Piru Basin Key Wells
Groundwater Elevation Records





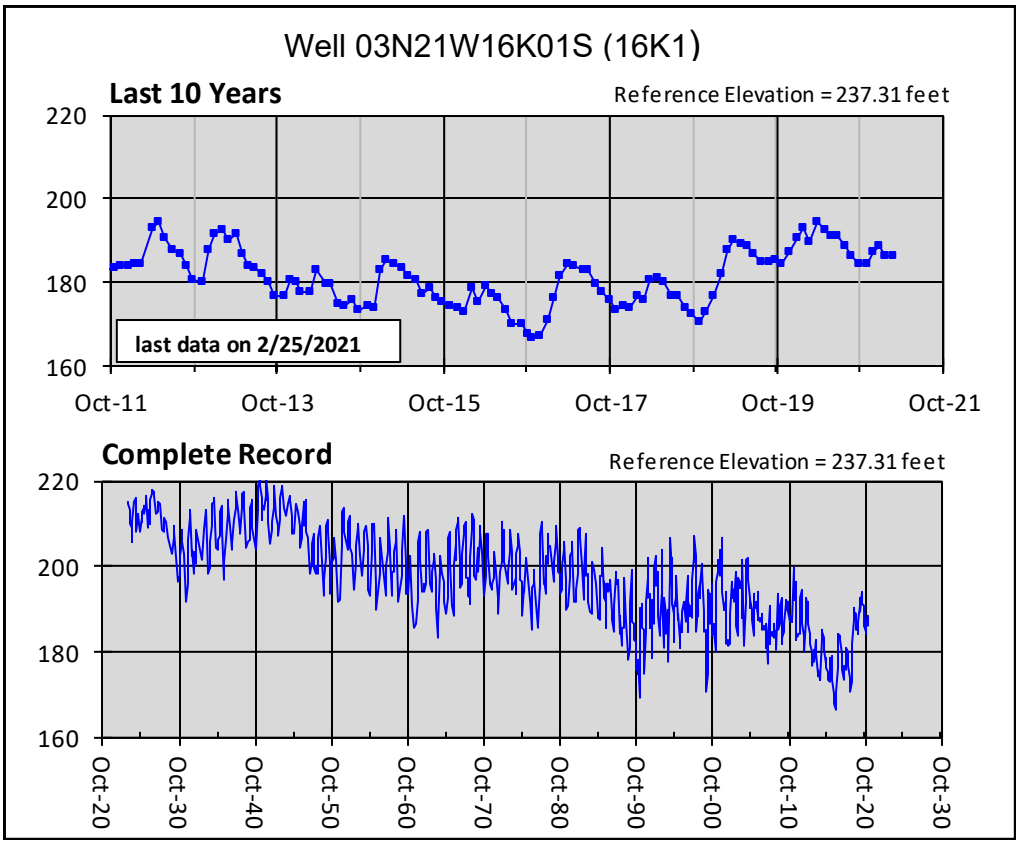
Fillmore Basin Key Wells
Groundwater Elevation Records



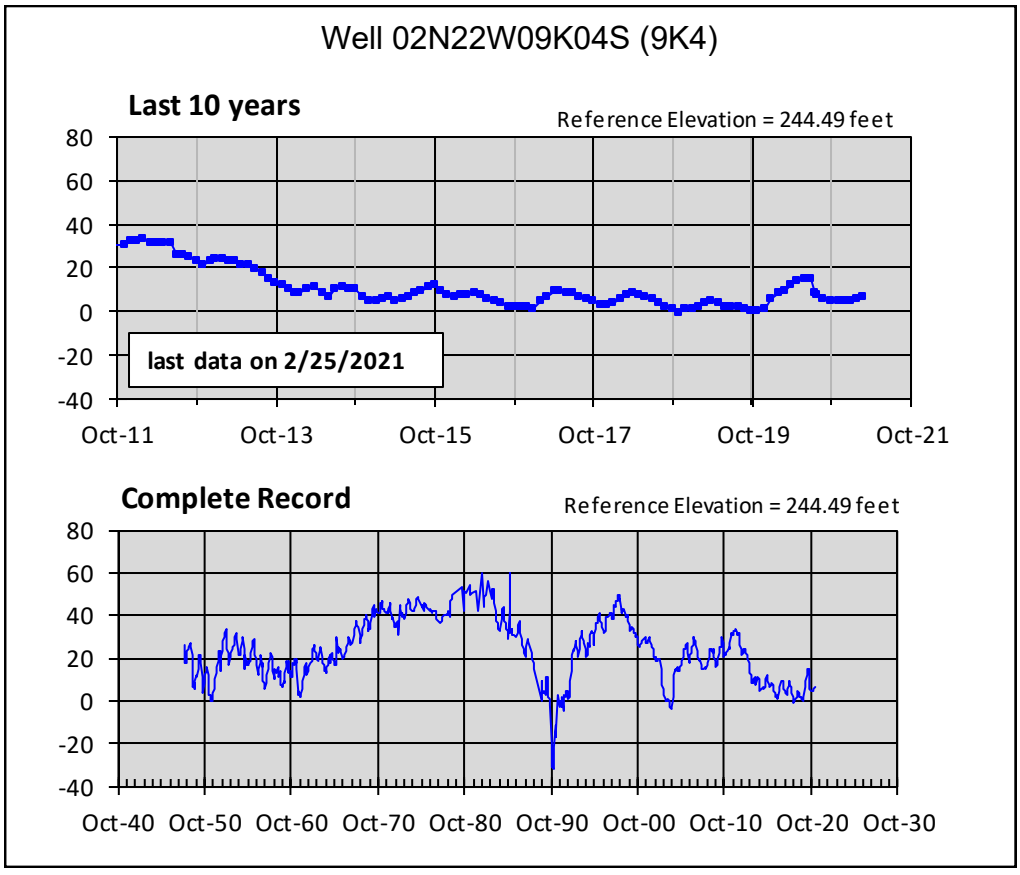


Groundwater Elevation Records

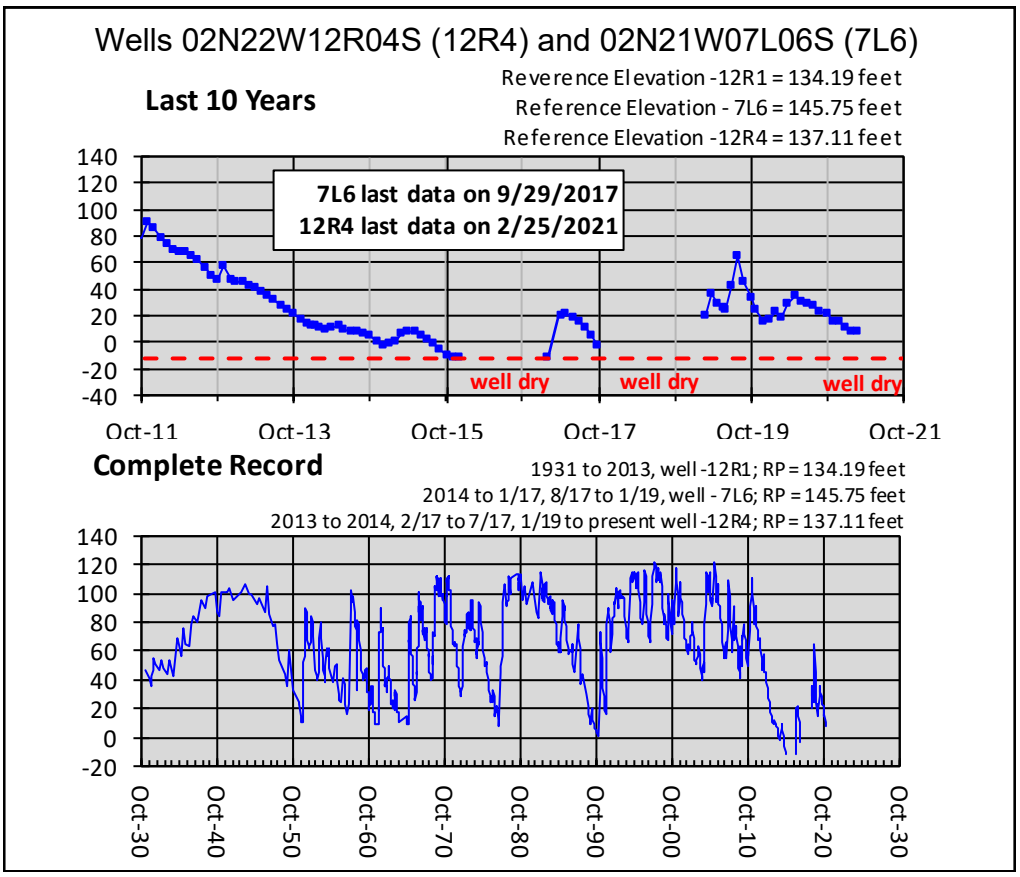
Santa Paula Basin Key Well

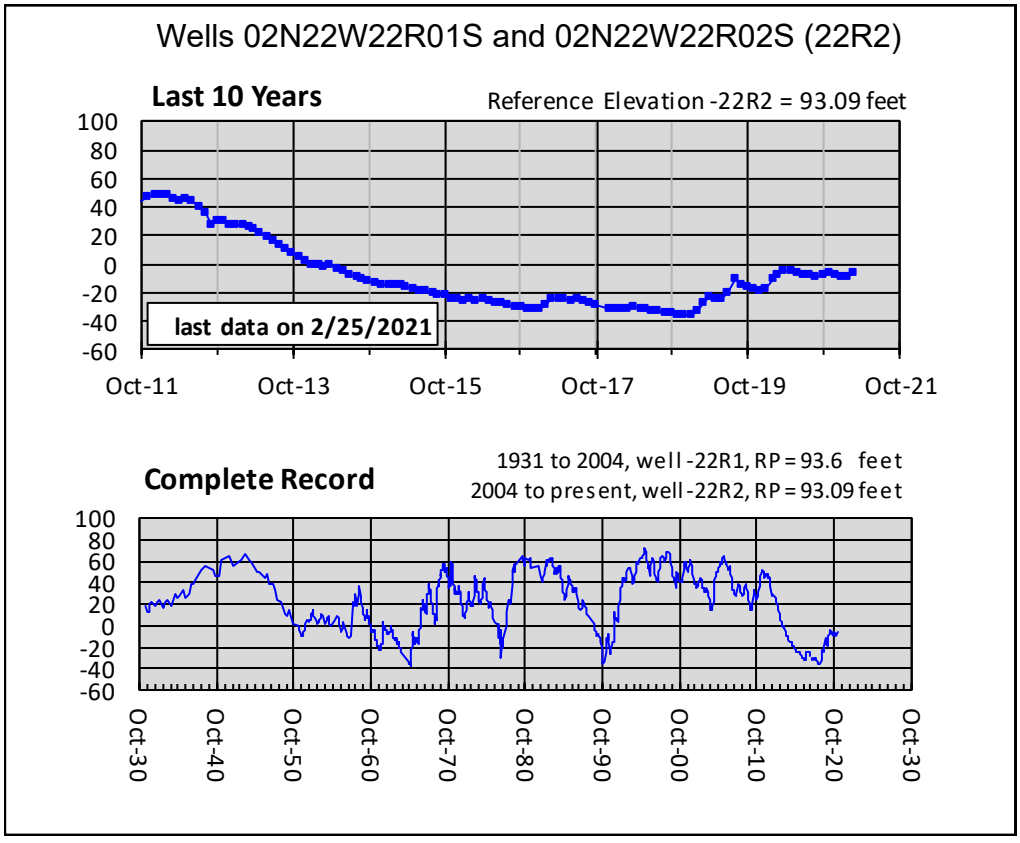


Mound Basin Key Well

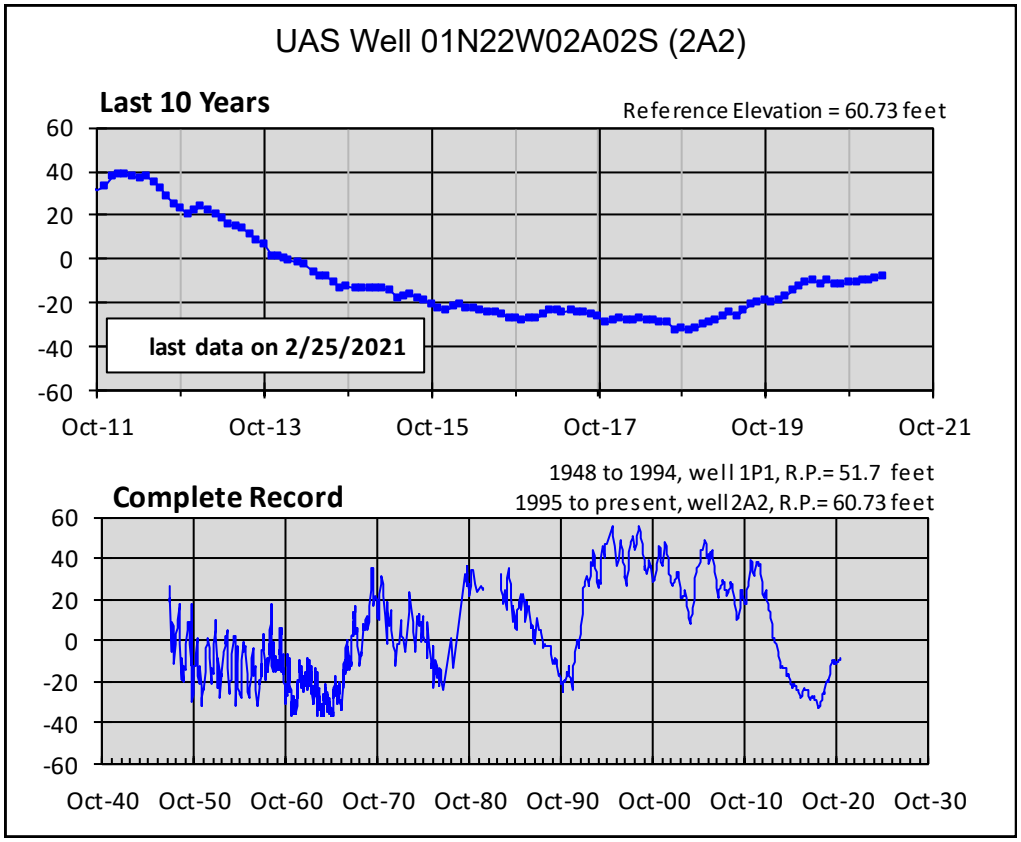


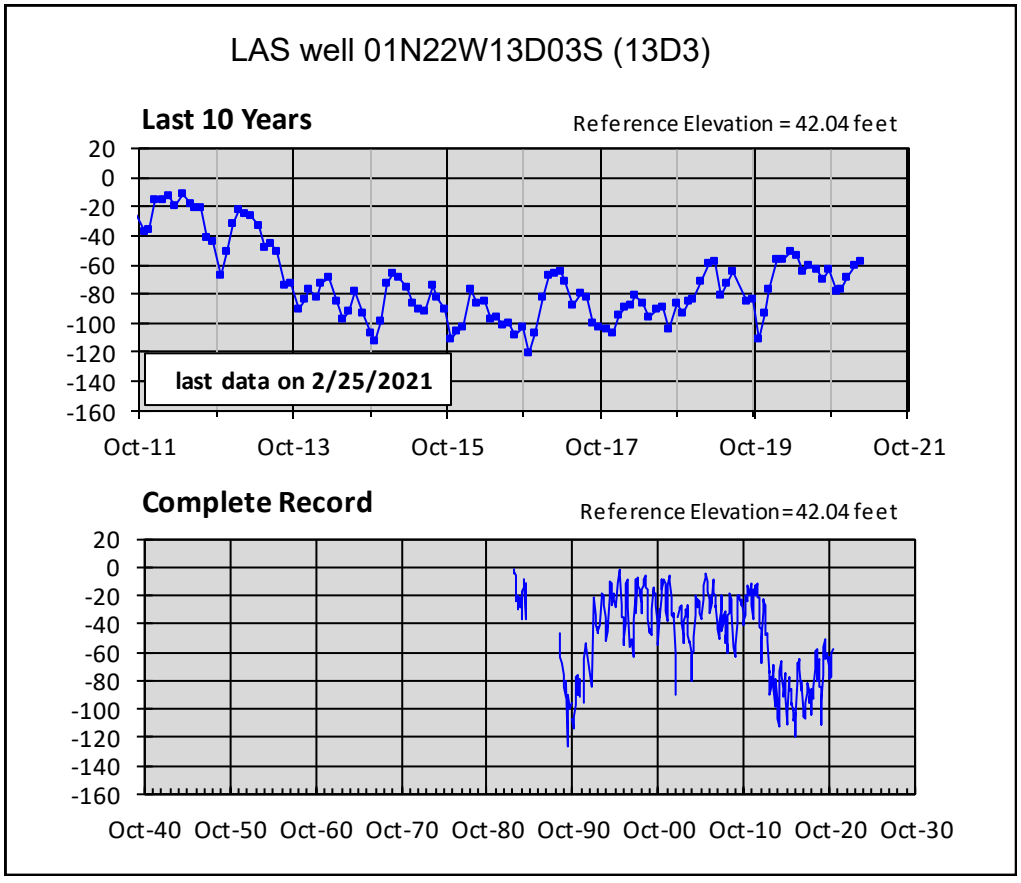
Oxnard Basin—Forebay Key Wells
Groundwater Elevation Records



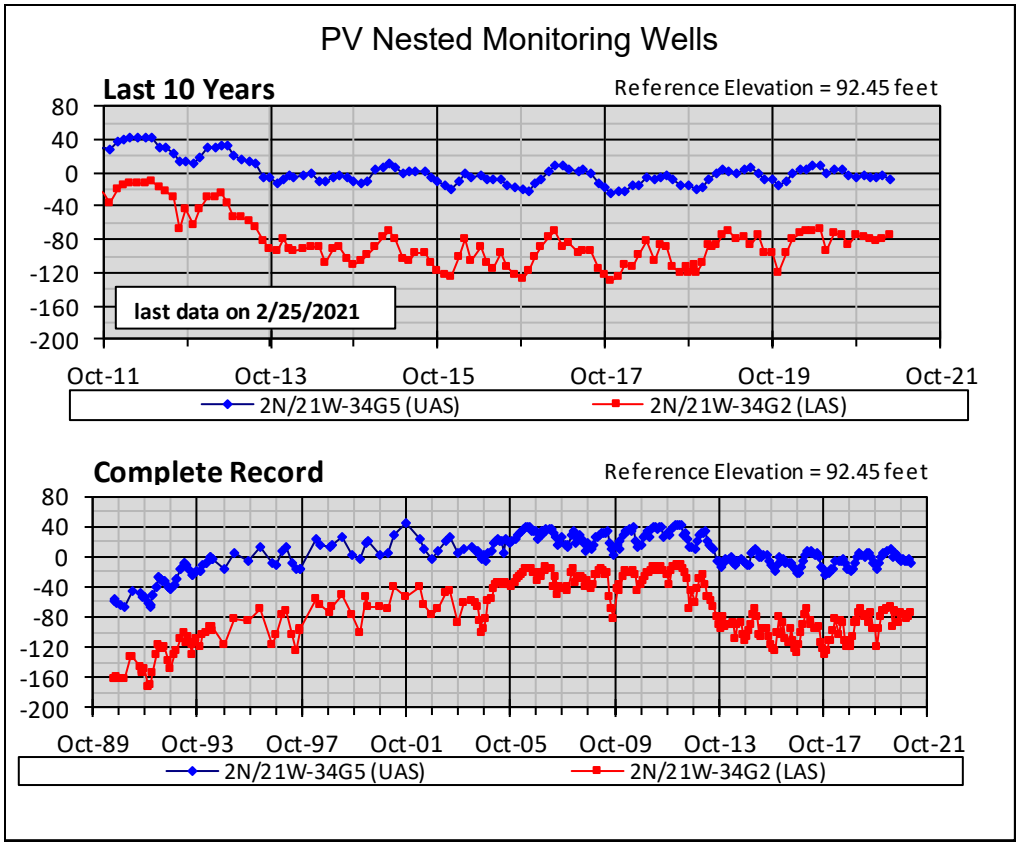


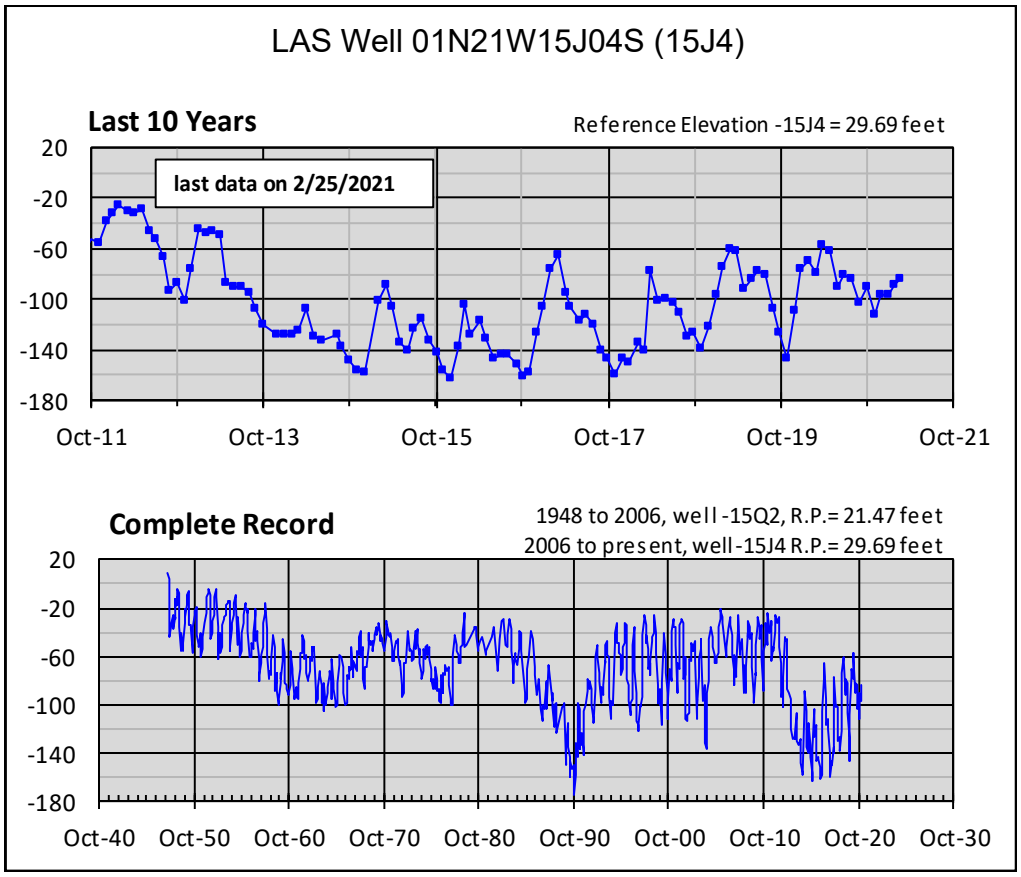
Oxnard Basin Key Wells
Groundwater Elevation Records



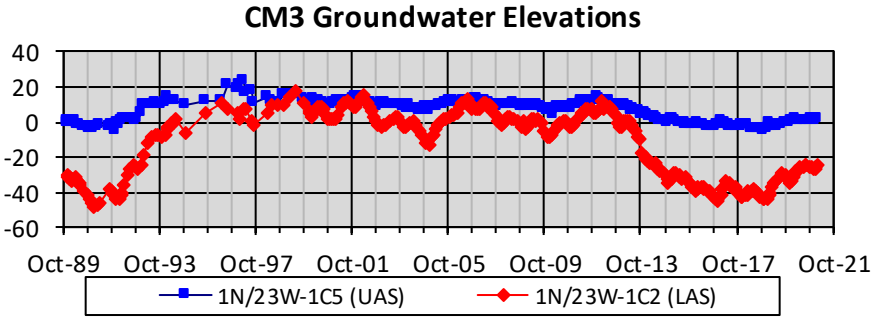


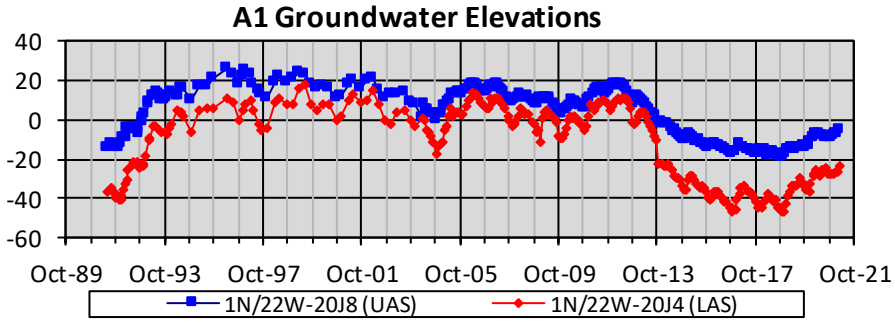
Pleasant Valley Basin Key Wells
Groundwater Elevation Records

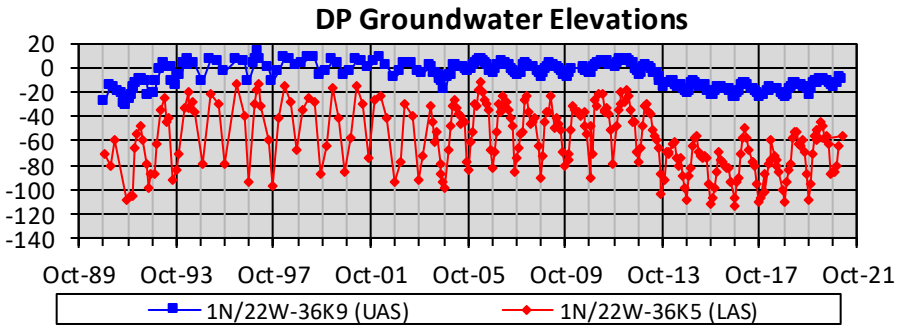


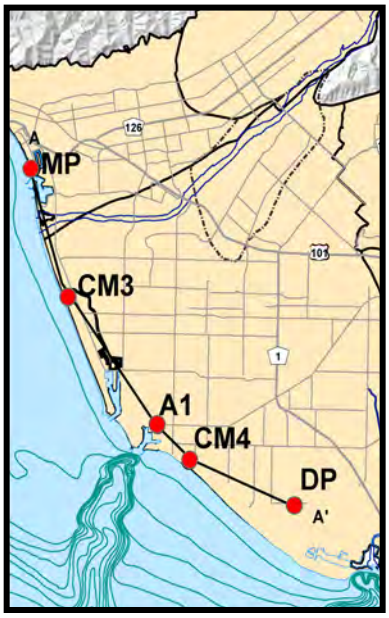


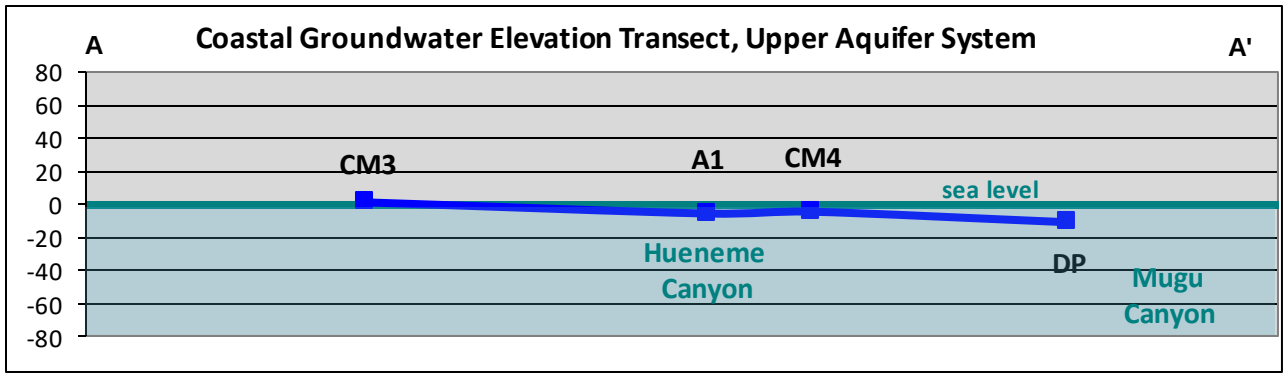
Oxnard Plain Coastal Key Wells—Nested Monitoring Wells

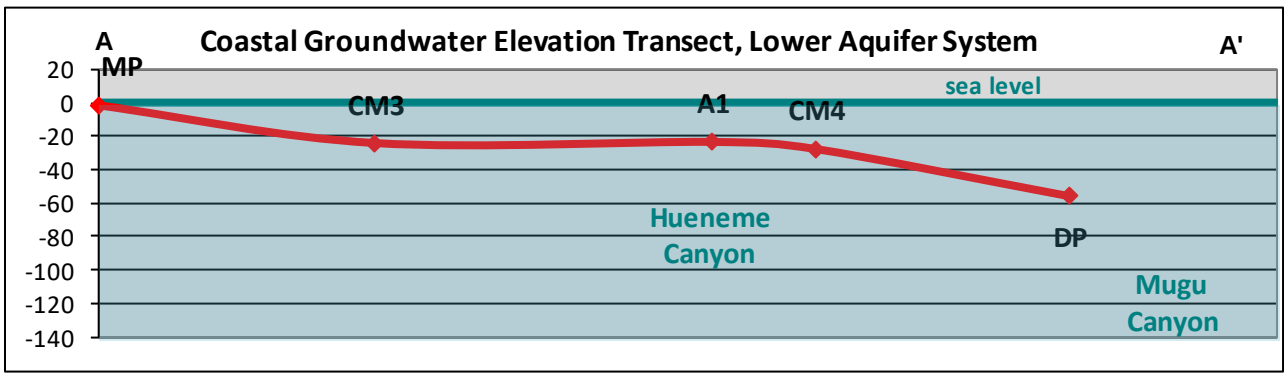












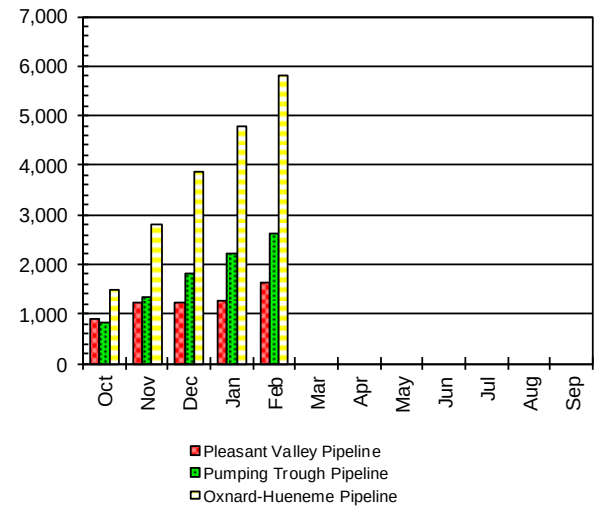
Monthly Water Deliveries, acre-feet (Water Year 2020/21)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
PV Pipeline (surface water)	902.5	329.0	13.4	16.9	372.0							
PV Pipeline (saticoy well field)	0.0	0.0	0.0	0.0	0.0							
Total to Pleasant Valley Pipeline	902.5	329.0	13.4	16.9	372.0							
Saticoy Well Field	0.0	0.0	0.0	0.0	0.0							
PTP (surface water)	783.7	422.6	483.9	390.7	410.6							
PTP (groundwater)	24.8	92.3	19.0	0.6	4.9							
PTP (Saticoy well field)	0.0	0.0	0.0	0.0	0.0							
Total PTP	808.5	514.9	502.9	391.3	415.5							
O-H Pipeline (groundwater)	1,503.0	1,296.0	1,063.0	936.0	1,012.0							
Total Surface Water Delivery (PTP & PV)	1,686.2	751.6	497.3	407.6	782.6							
Total Groundwater Delivery (OH & PTP)	1,527.8	1,388.3	1,082.0	936.6	1,016.9							
Total Delivery, Surface Water & GW	3,214.0	2,139.9	1,579.3	1,344.2	1,799.5							

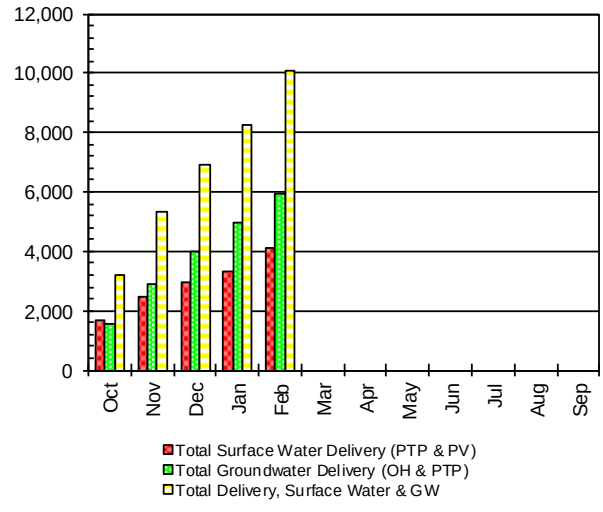
Cumulative Water Deliveries, acre-feet (Water Year 2020/21)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
PV Pipeline (surface water)	902.5	1,231.5	1,244.9	1,261.7	1,633.7							
PV Pipeline (saticoy well field)	0.0	0.0	0.0	0.0	0.0							
Total to Pleasant Valley Pipeline	902.5	1,231.5	1,244.9	1,261.7	1,633.7							
Saticoy Well Field	0.0	0.0	0.0	0.0	0.0							
PTP (surface water)	783.7	1,206.3	1,690.2	2,080.9	2,491.5							
PTP (groundwater)	24.8	117.1	136.1	136.7	141.6							
PTP (Saticoy well field)	0.0	0.0	0.0	0.0	0.0							
Total PTP	808.5	1,323.4	1,826.3	2,217.6	2,633.1							
O-H Pipeline (groundwater)	1,503.0	2,799.0	3,862.0	4,798.0	5,810.0							
Total Surface Water Delivery (PTP & PV)	1,686.2	2,437.8	2,935.1	3,342.6	4,125.2							
Total Groundwater Delivery (OH & PTP)	1,527.8	2,916.1	3,998.1	4,934.7	5,951.6							
Total Delivery, Surface Water & GW	3,214.0	5,353.9	6,933.2	8,277.4	10,076.9							

Cumulative deliveries by system



Cumulative deliveries by source/type



Monthly diversion and recharge totals by facility, 2020/21, in acre-feet

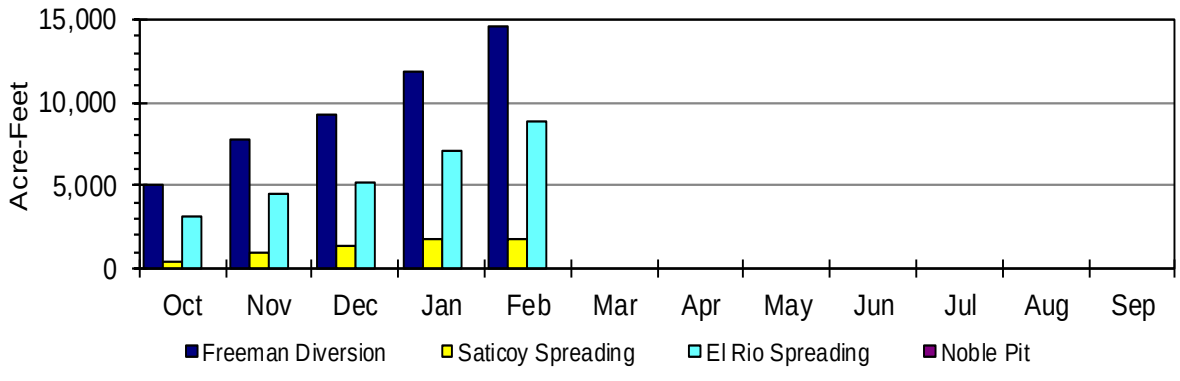
Month	Piru Spreading	Freeman Diversion	Saticoy Spreading	El Rio Spreading	Noble Pit
Oct	0	5,073	365	3,155	0
Nov	0	2,661	612	1,366	0
Dec	0	1,477	392	634	0
Jan	0	2,703	374	1,960	0
Feb	0	2,620	54	1,798	0
Mar					
Apr					
May					
Jun					
Jul					
Aug					
Sep					

Lloyd-Butler diversion was not available at the time this report was prepared and therefore not accounted for in the calculation of Saticoy Spreading.

Cumulative diversion and recharge totals by facility, 2020/21, in acre-feet

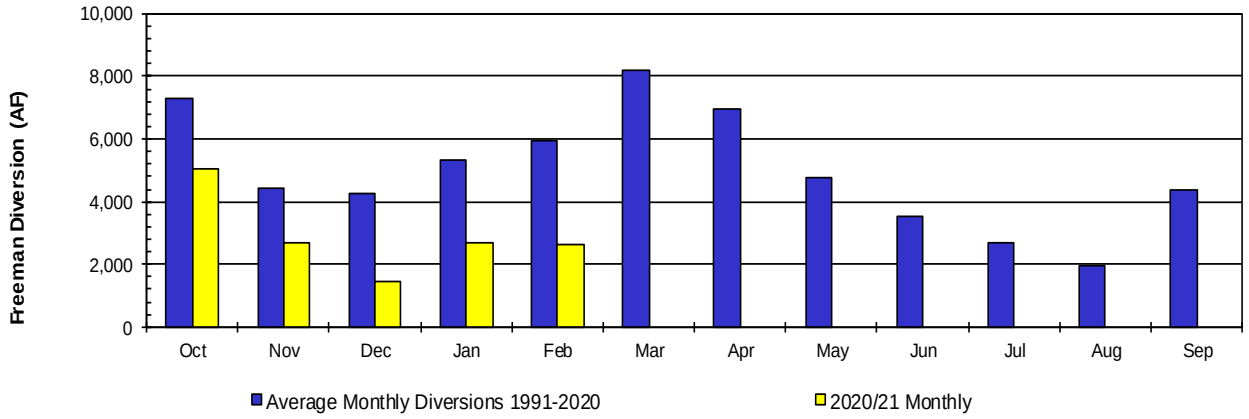
Month	Piru Spreading	Freeman Diversion	Saticoy Spreading	El Rio Spreading	Noble Pit
Oct	0	5,073	365	3,155	0
Nov	0	7,734	977	4,521	0
Dec	0	9,211	1,369	5,155	0
Jan	0	11,914	1,743	7,115	0
Feb	0	14,534	1,797	8,913	0
Mar					
Apr					
May					
Jun					
Jul					
Aug					
Sep					

Cumulative diversion at Freeman, and distribution to recharge facilities

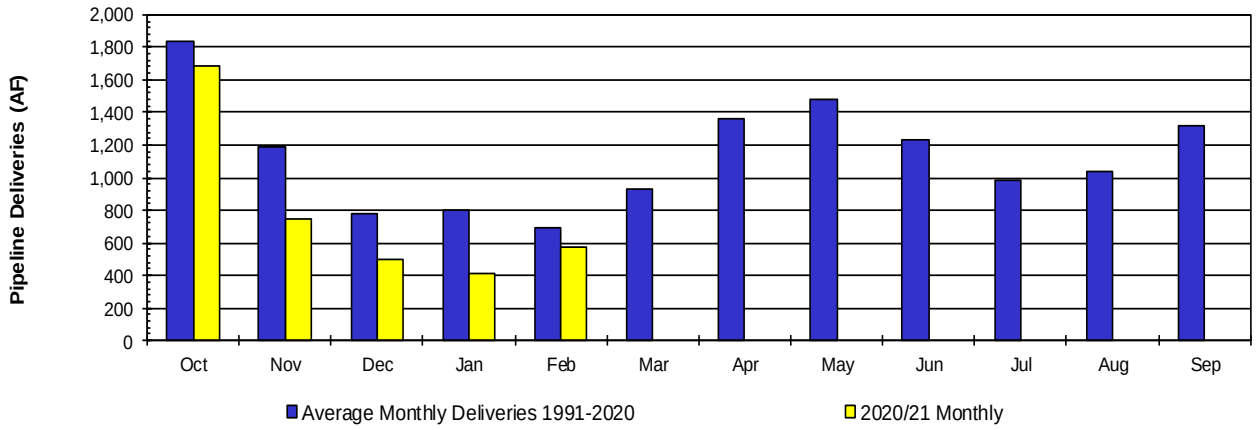


Cumulative diversions to Piru Spreading Grounds, 2020/21 = 0 AF

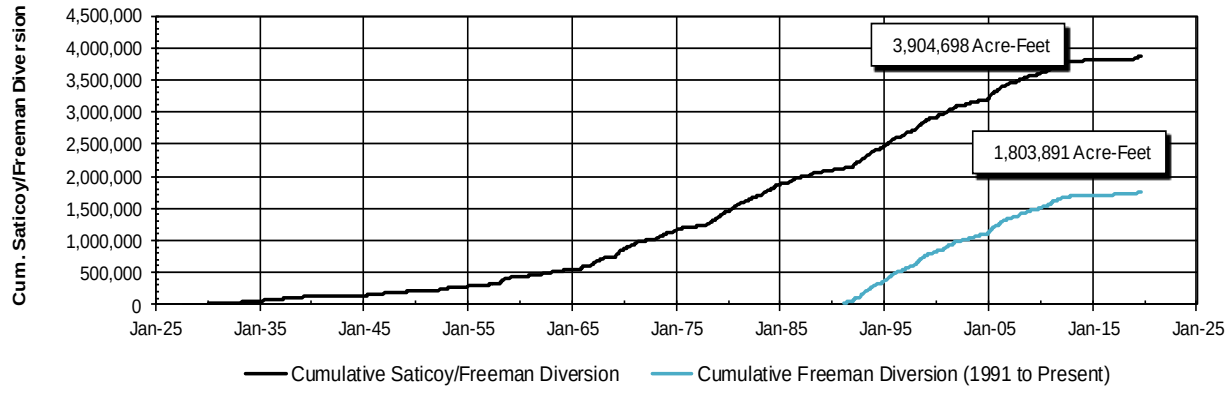
Monthly 2020/21 diversion at Freeman, compared to average monthly diversions (1991-2019)

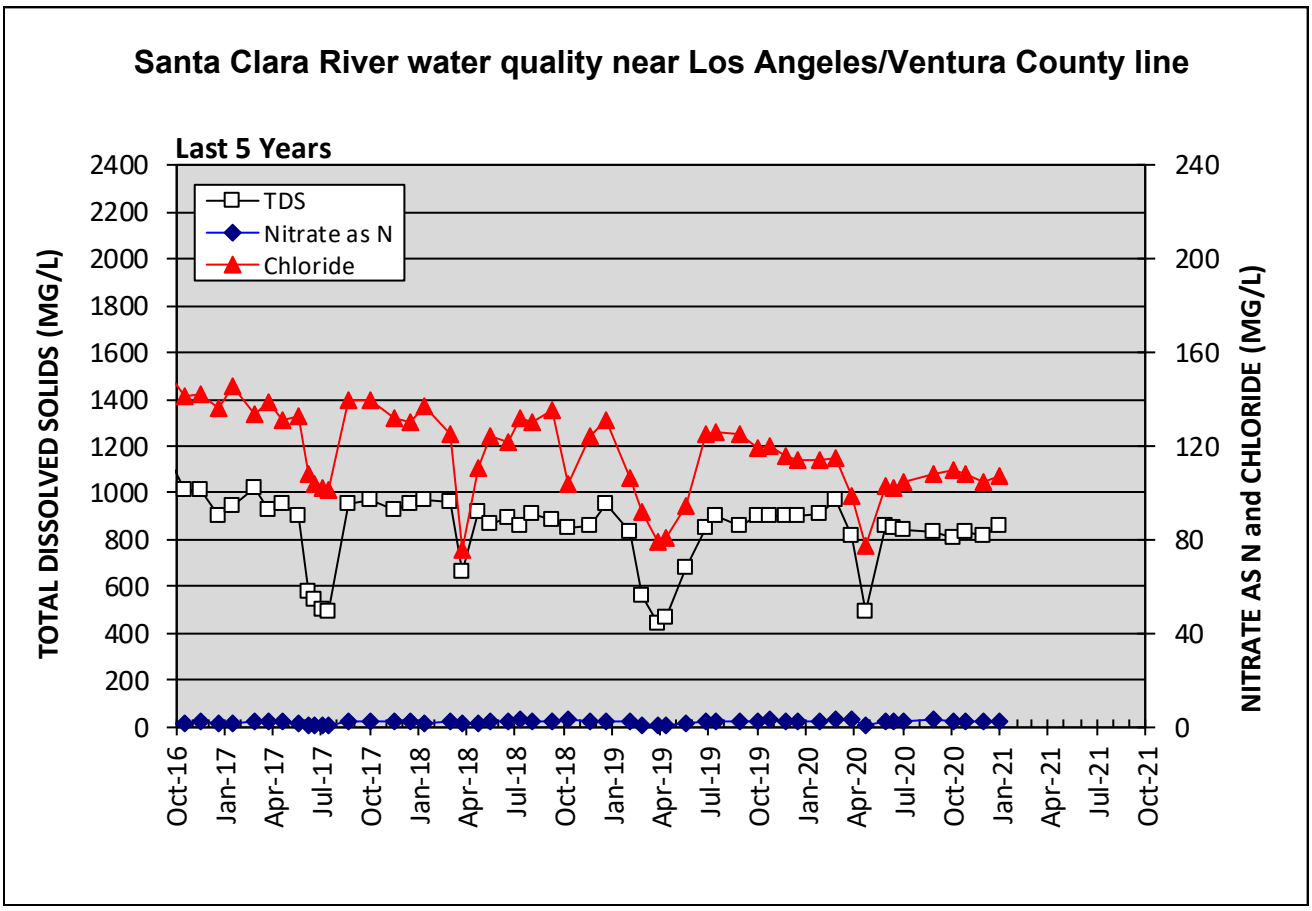


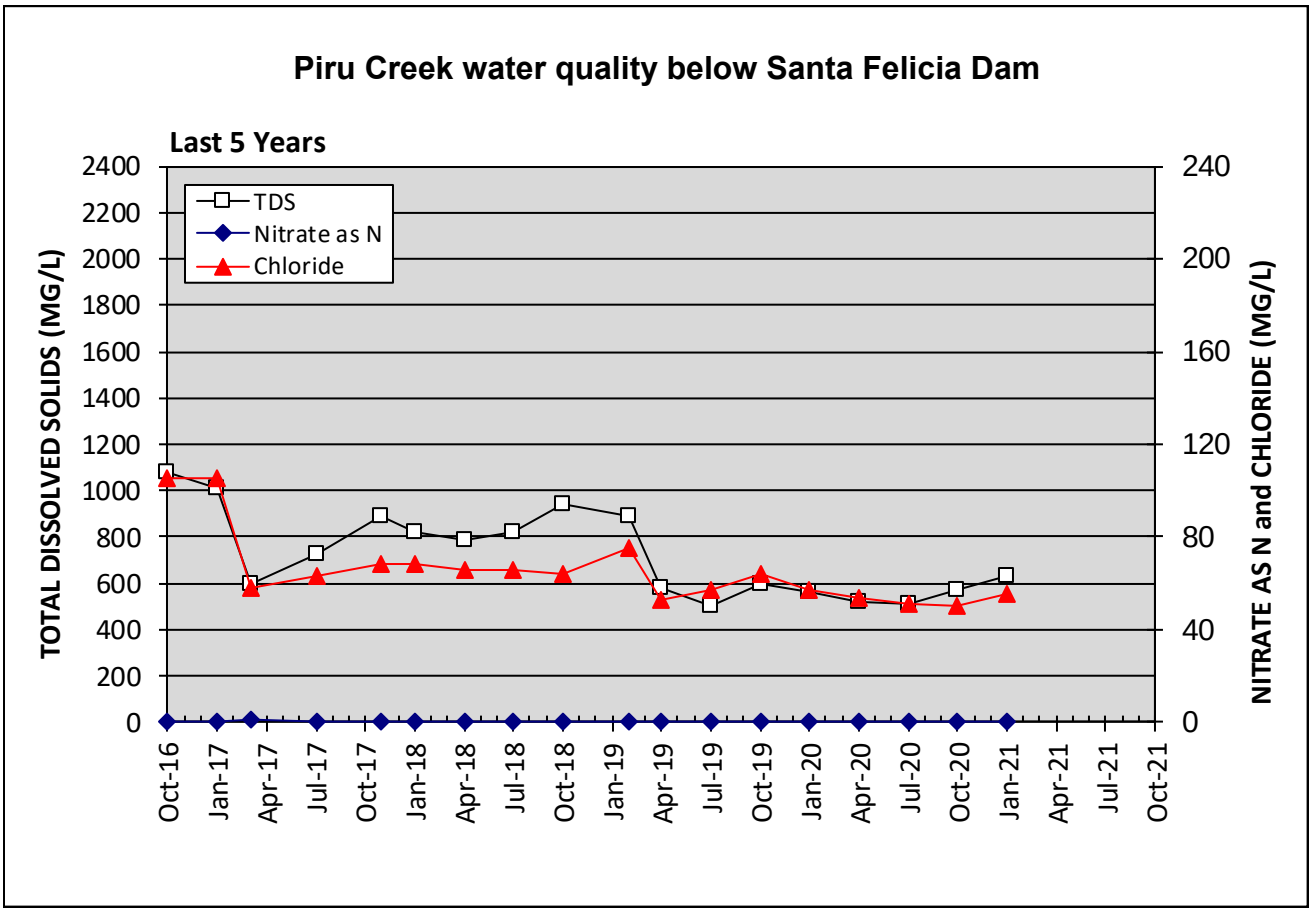
Monthly 2020/21 pipeline deliveries (surface water deliveries), compared to average monthly pipeline deliveries (1991-2019)

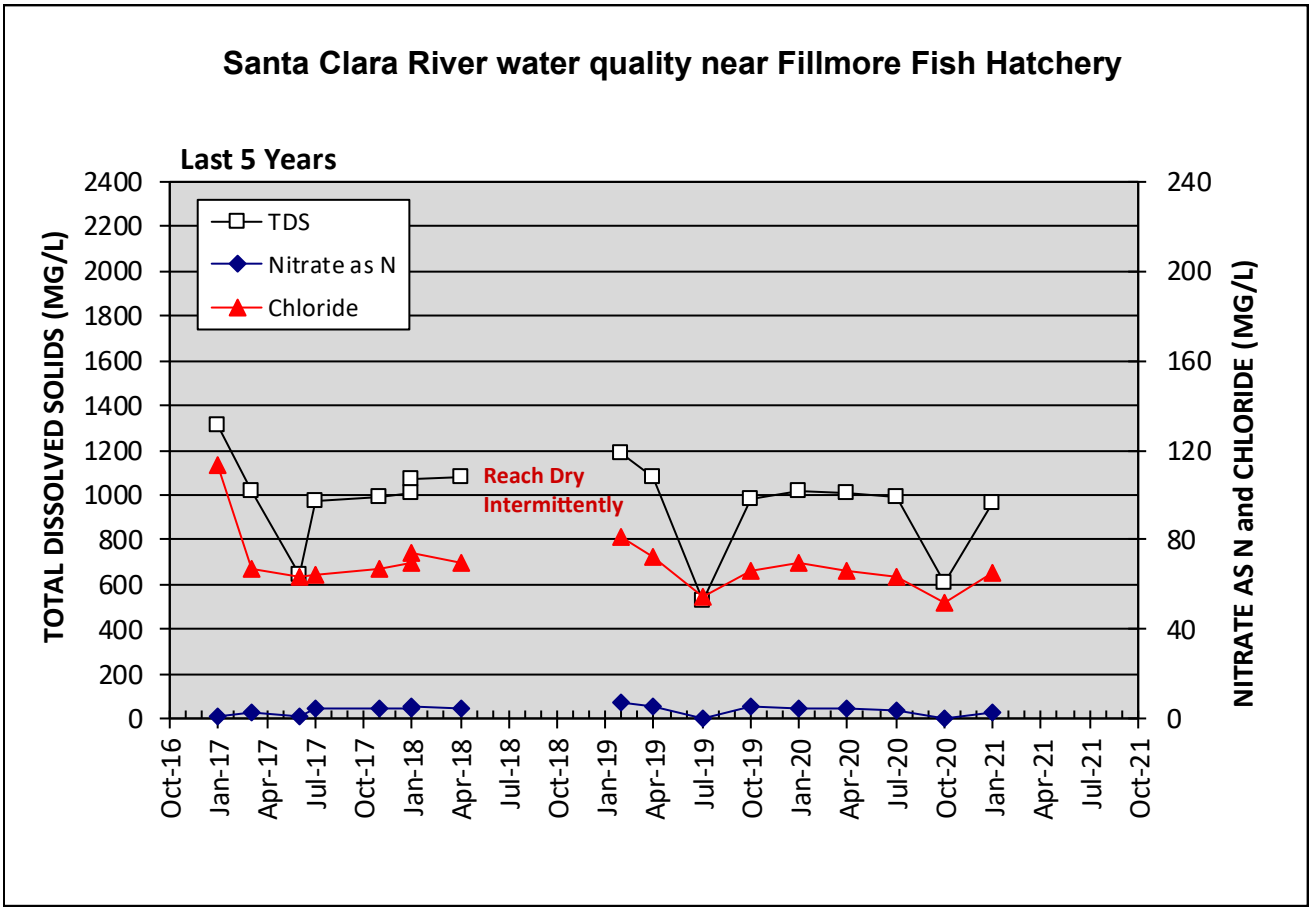


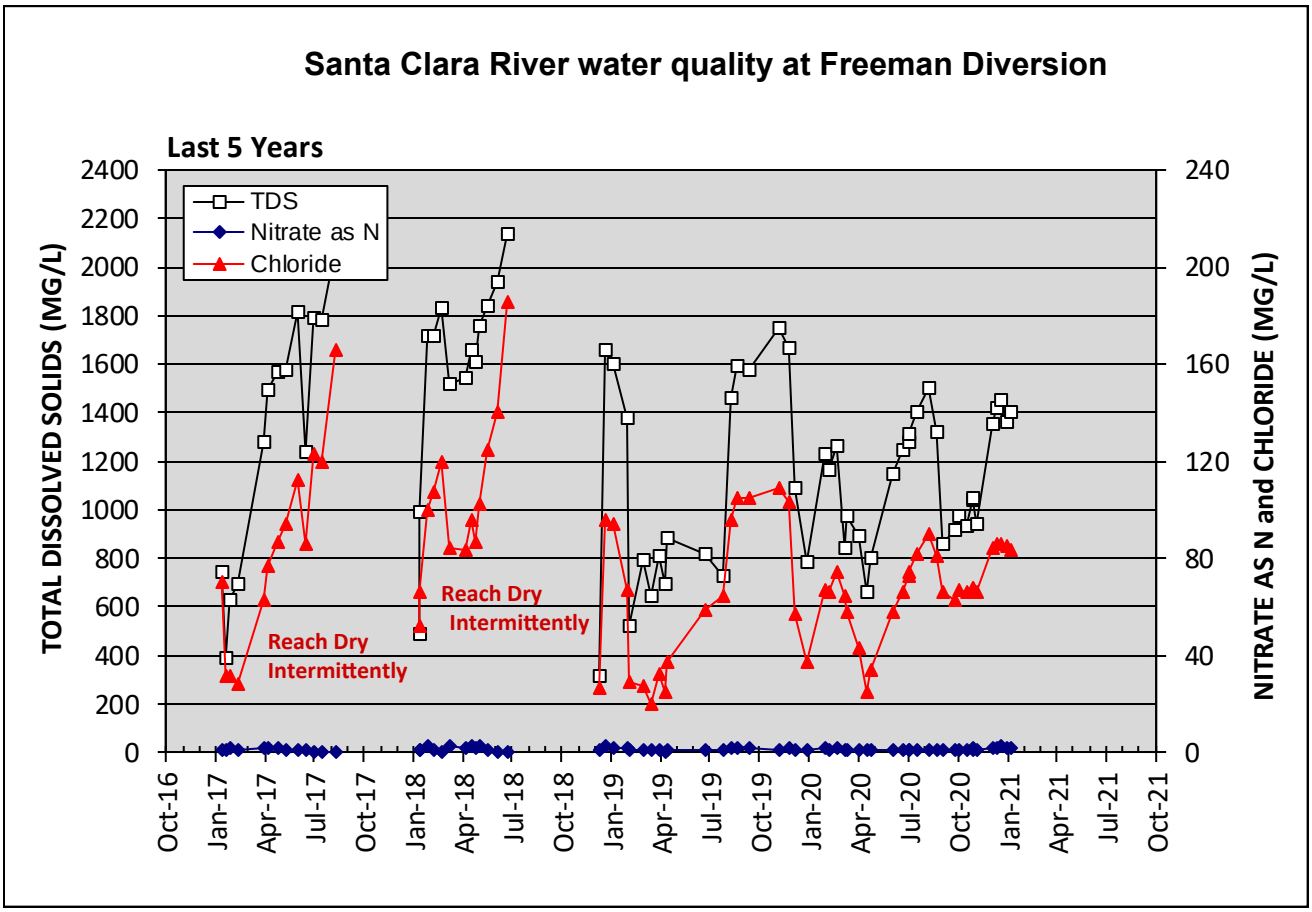
Cumulative diversion at Saticoy and Freeman Diversion, in acre-feet

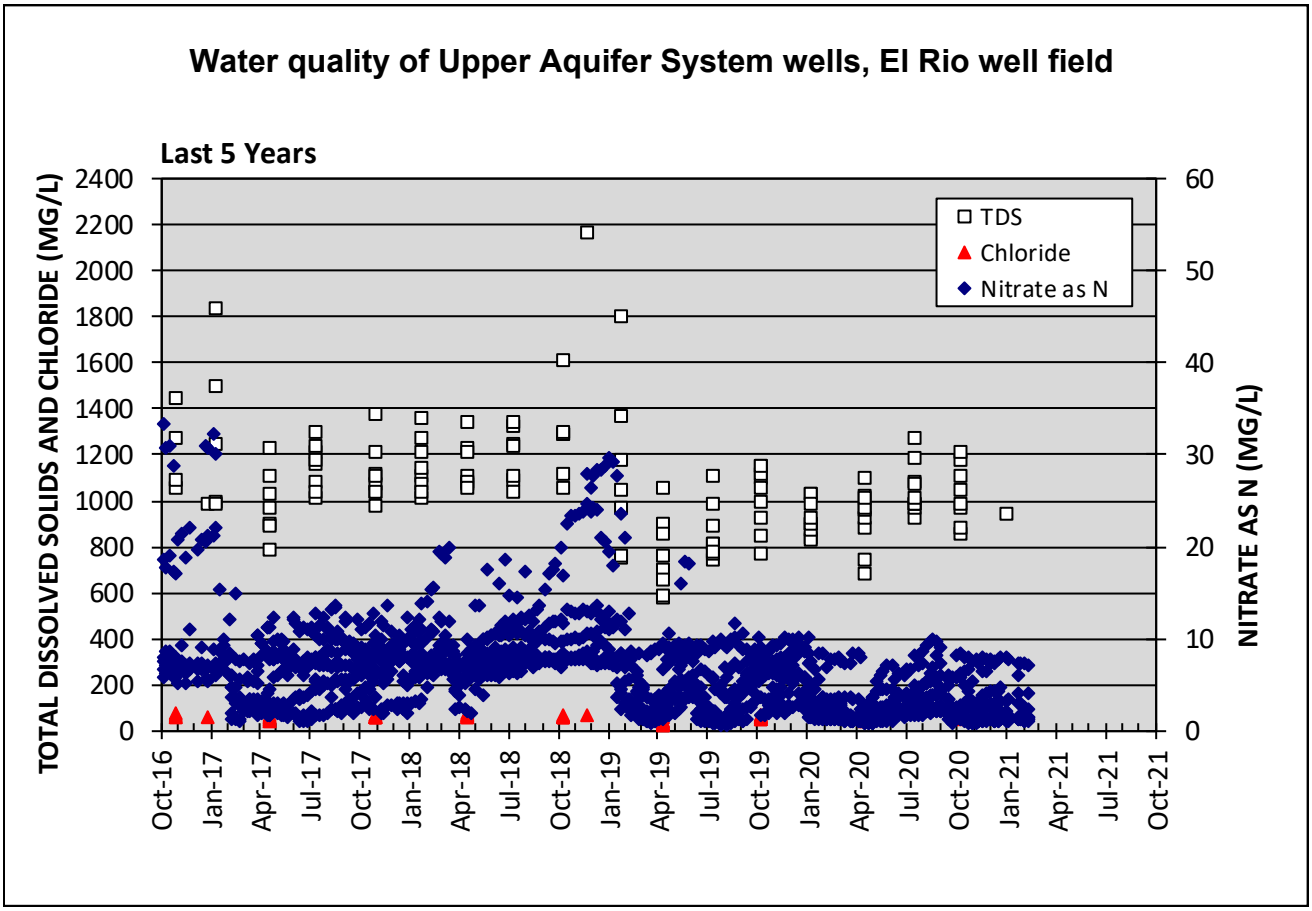


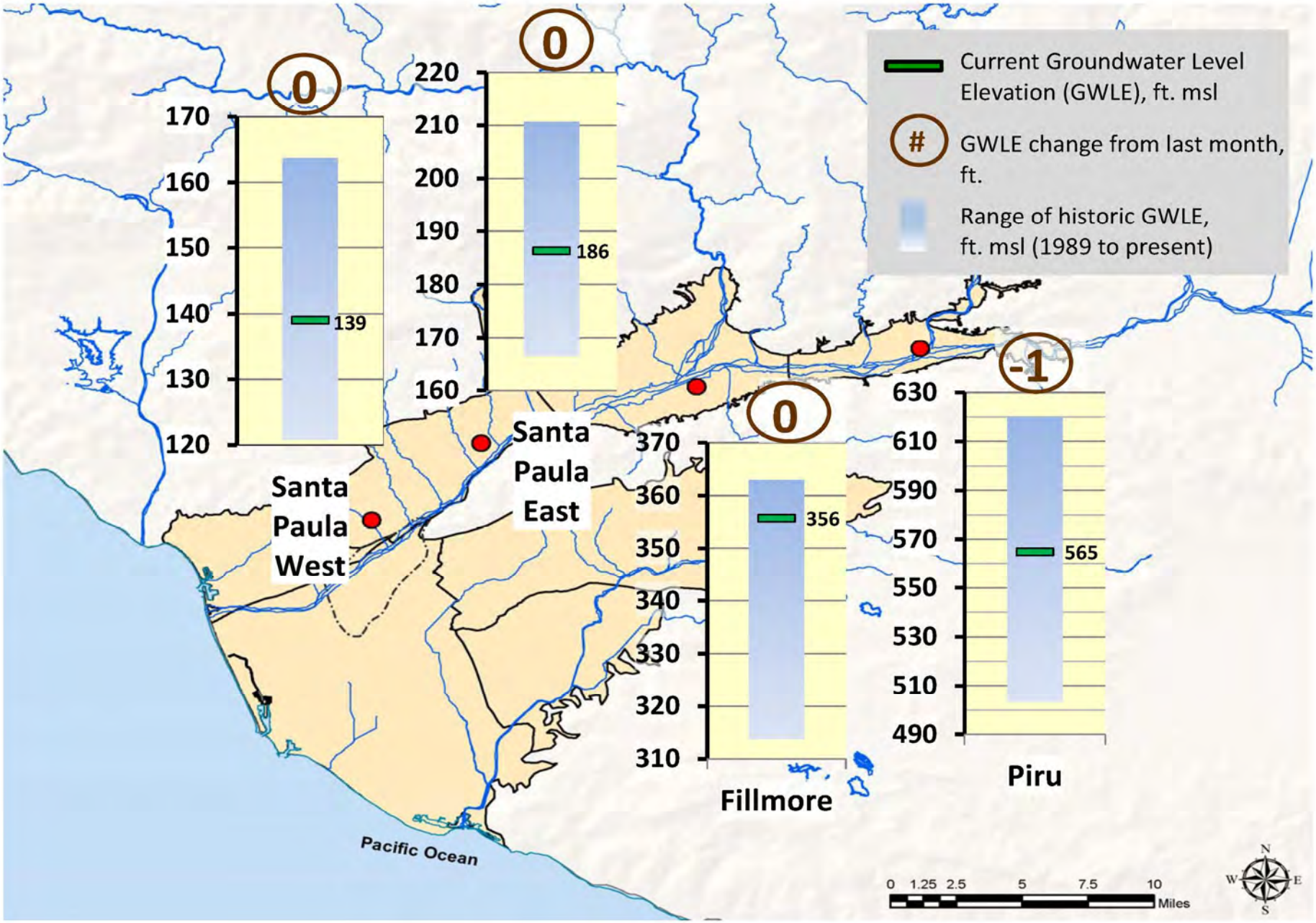

Santa Clara River water quality near Los Angeles/Ventura County line
Last 5 Years
TDS
Nitrate as N
Chloride
TOTAL DISSOLVED SOLIDS (MG/L)
NITRATE AS N and CHLORIDE (MG/L)
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
240
200
160
120
80
40
0
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Jul-19
Oct-19
Jan-20
Apr-20
Jul-20
Oct-20
Jan-21
Apr-21
Jul-21
Oct-21

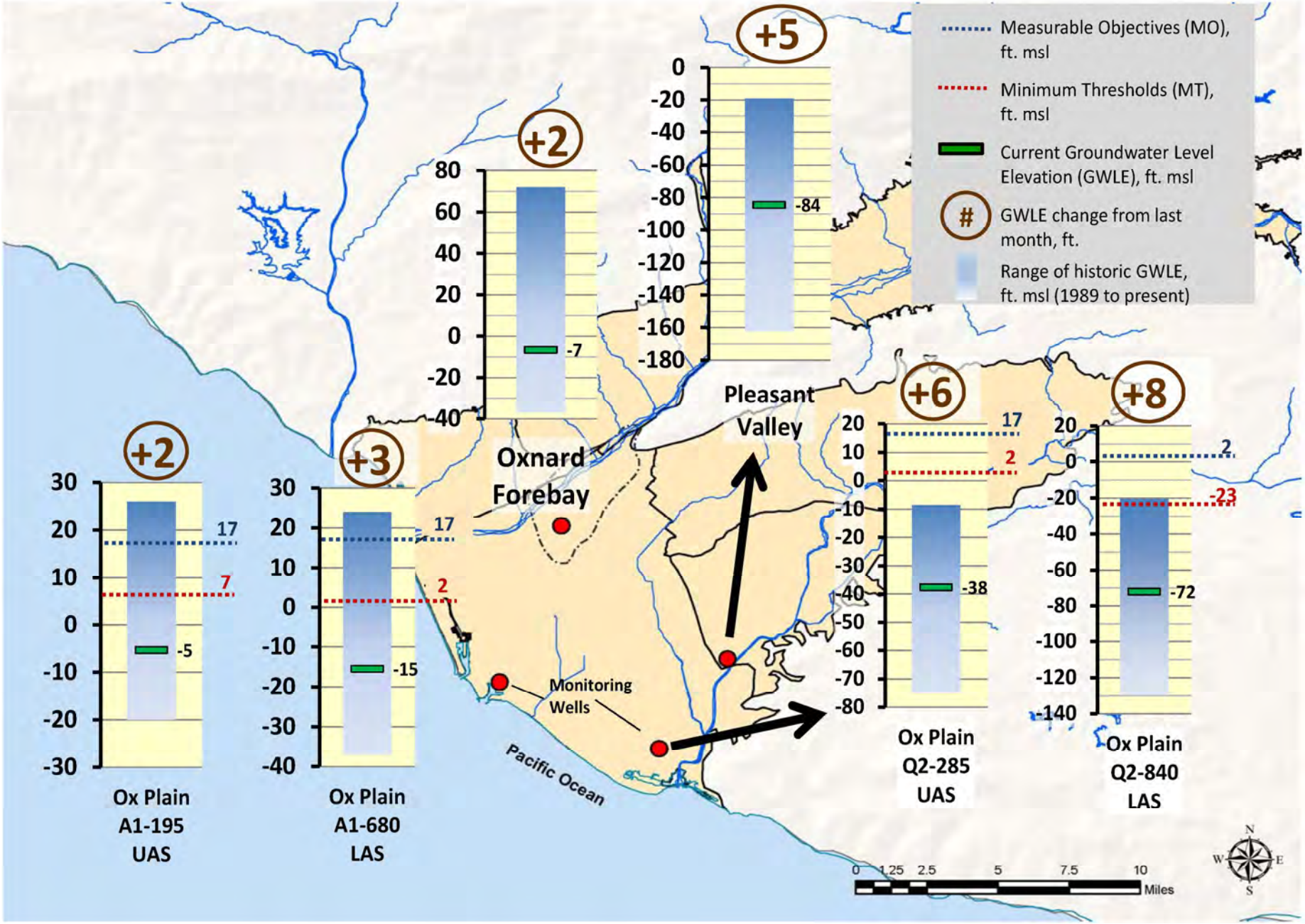

Piru Creek water quality below Santa Felicia Dam
Last 5 Years
TDS
Nitrate as N
Chloride
TOTAL DISSOLVED SOLIDS (MG/L)
NITRATE AS N and CHLORIDE (MG/L)
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
240
200
160
120
80
40
0
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Jul-19
Oct-19
Jan-20
Apr-20
Jul-20
Oct-20
Jan-21
Apr-21
Jul-21
Oct-21

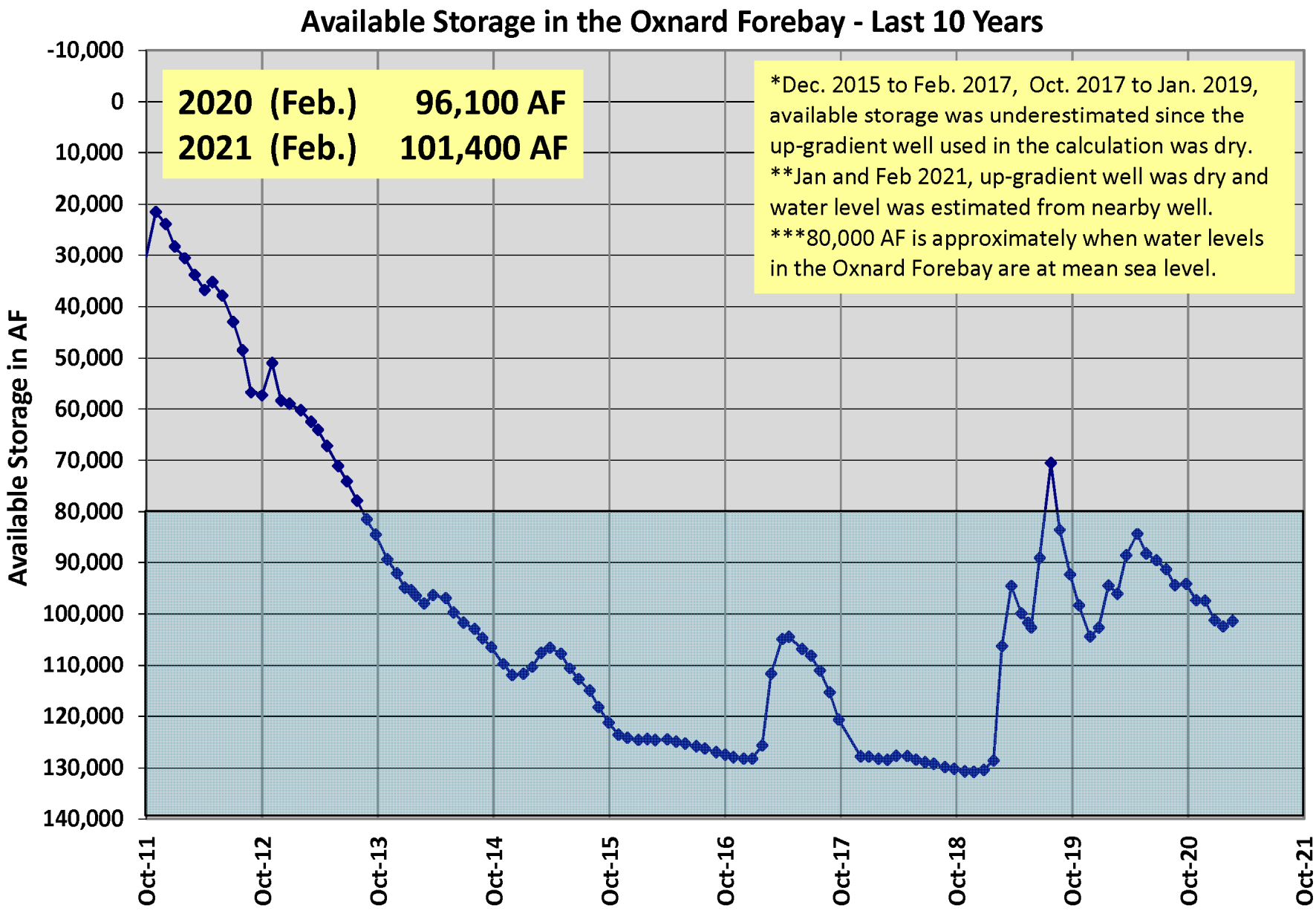

Santa Clara River water quality near Fillmore Fish Hatchery
Last 5 Years
TDS
Nitrate as N
Chloride
Reach Dry Intermittently
TOTAL DISSOLVED SOLIDS (MG/L)
NITRATE AS N and CHLORIDE (MG/L)
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
240
200
160
120
80
40
0
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Jul-19
Oct-19
Jan-20
Apr-20
Jul-20
Oct-20
Jan-21
Apr-21
Jul-21
Oct-21

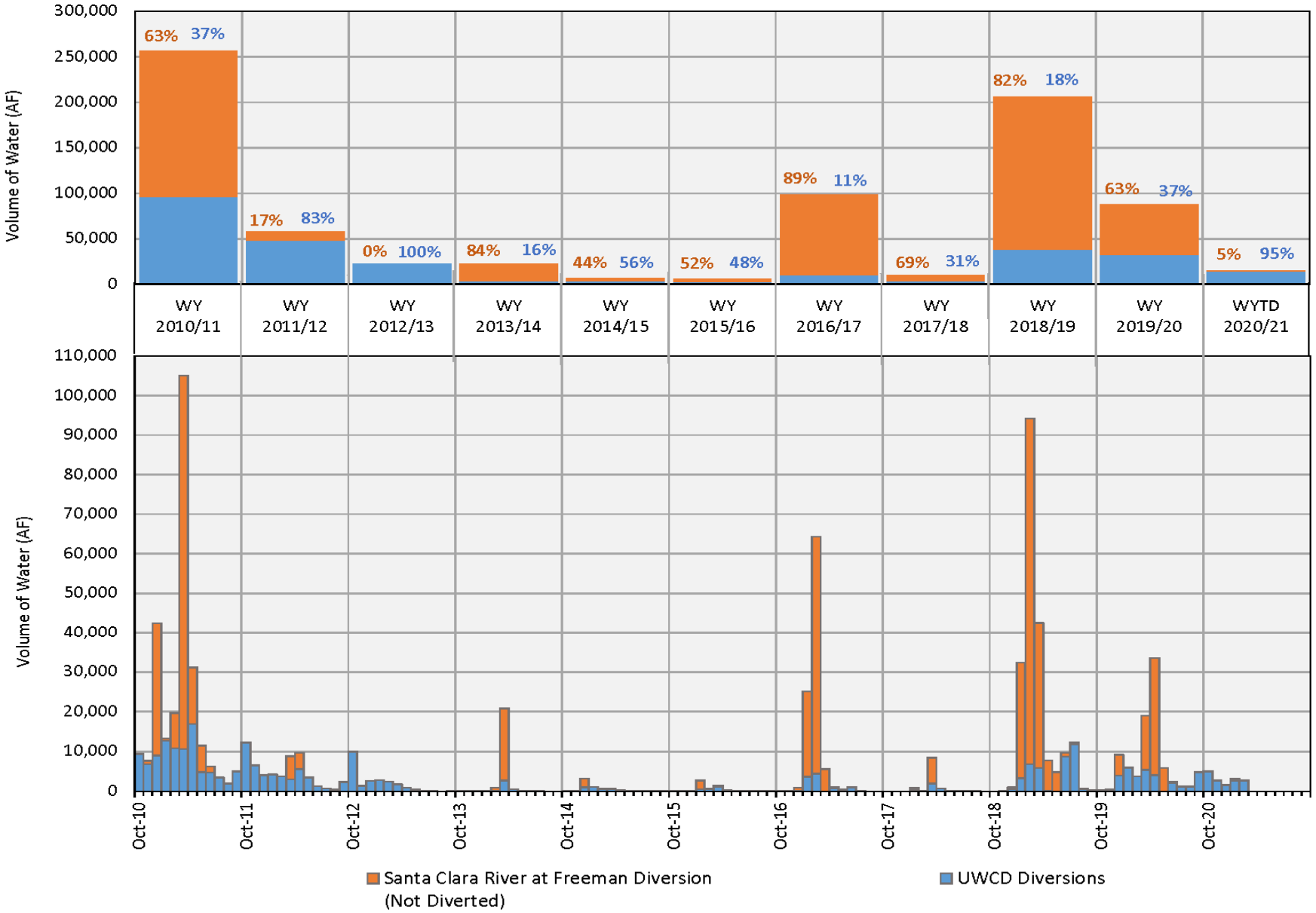

Santa Clara River water quality at Freeman Diversion
Last 5 Years
TDS
Nitrate as N
Chloride
Reach Dry Intermittently
Reach Dry Intermittently
TOTAL DISSOLVED SOLIDS (MG/L)
NITRATE AS N and CHLORIDE (MG/L)
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
240
200
160
120
80
40
0
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Jul-19
Oct-19
Jan-20
Apr-20
Jul-20
Oct-20
Jan-21
Apr-21
Jul-21
Oct-21


Water quality of Upper Aquifer System wells, El Rio well field
Last 5 Years
TOTAL DISSOLVED SOLIDS AND CHLORIDE (MG/L)
NITRATE AS N (MG/L)
TDS
Chloride
Nitrate as N
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
60
50
40
30
20
10
0
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Jul-19
Oct-19
Jan-20
Apr-20
Jul-20
Oct-20
Jan-21
Apr-21
Jul-21
Oct-21


Current Groundwater Level Elevation (GWLE), ft. msl
#
GWLE change from last month, ft.
Range of historic GWLE, ft. msl (1989 to present)
0
170
160
150
140
130
120
139
Santa Paula West
0
220
210
200
190
180
170
160
186
Santa Paula East
0
370
360
350
340
330
320
310
356
Fillmore
-1
630
610
590
570
550
530
510
490
565
Piru
Pacific Ocean
0 1.25 2.5 5 7.5 10
Miles
N
W
E
S


Measurable Objectives (MO), ft. msl
Minimum Thresholds (MT), ft. msl
Current Groundwater Level Elevation (GWLE), ft. msl
GWLE change from last month, ft.
Range of historic GWLE, ft. msl (1989 to present)
+5
+2
+2
+3
+6
+8
Pleasant Valley
Oxnard Forebay
Monitoring Wells
Pacific Ocean
Ox Plain A1-195 UAS
Ox Plain A1-680 LAS
Ox Plain Q2-285 UAS
Ox Plain Q2-840 LAS
-84
-7
-5
-15
-38
-72
17
7
2
-23
0 1.25 2.5 5 7.5 10
Miles
N
W
E
S


Available Storage in the Oxnard Forebay - Last 10 Years
2020 (Feb.) 96,100 AF
2021 (Feb.) 101,400 AF
*Dec. 2015 to Feb. 2017, Oct. 2017 to Jan. 2019, available storage was underestimated since the up-gradient well used in the calculation was dry.
**Jan and Feb 2021, up-gradient well was dry and water level was estimated from nearby well.
***80,000 AF is approximately when water levels in the Oxnard Forebay are at mean sea level.
Available Storage in AF
-10,000
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
80,000
90,000
100,000
110,000
120,000
130,000
140,000
Oct-11
Oct-12
Oct-13
Oct-14
Oct-15
Oct-16
Oct-17
Oct-18
Oct-19
Oct-20
Oct-21



Water Year (WY) = October 1 to September 30; WYTD = Water Year To Date

United Water
CONSERVATION DISTRICT

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager

From: Joseph Jereb, Chief Financial Officer

Date: **February 25, 2021 (March 10, 2021 Meeting)**

Agenda Item: **3.C Monthly (January 31, 2021) Investment Report**
Information Item

Recommendation
The Board will review and discuss the most current investment report for January 31, 2021 that is enclosed. Based on the information provided, and the ensuing discussion, provide any necessary direction to staff.

Fiscal Impact
As shown.

Discussion
Based on the information included in the attached reports, staff will present a summary and discuss key information as an overview.

Attachments: Combined Investment Report

United Water Conservation District
Monthly Investment Report
January 31, 2021

Investment Recap	G/L Balance	Weighted Avg Days to Maturity	Diversification Percentage of Total
Bank of the Sierra	3,061,897	1	6.14%
Union Bank - Bond Proceeds	19,006,791	1	38.10%
Petty Cash	1,000	1	0.00%
County Treasury	1,444	1	0.00%
LAIF Investments	27,808,927	1	55.74%
Total Cash, Cash Equivalents and Securities	**49,880,059**		**100.00%**
Investment Portfolio w/o Trustee Held Funds	**49,880,059**		
Trustee Held Funds	-		
Total Funds	**49,880,059**		

Local Agency Investment Fund (LAIF)	Beginning Balance	Deposits (Disbursements)	Ending Balance
	24,268,872	3,540,055	27,808,927
	Interest Earned YTD	**Interest Received YTD**	**Qtrly Yield**
	99,392	200,267	0.63%

All District investments are shown above and conform to the District's Investment Policy. All investment transactions during this period are included in this report
Based on budgeted cash flows the District appears to have the ability to meet its expenditure requirements for the next six months.

DocuSigned by: Mauricio Guardado 36D23F9D982745E...

Mauricio E. Guardado, Jr., General Manager — 2/24/2021 — **Date Certified**

DocuSigned by: 70D59ECE0D8D46F...

Anthony Emmert, Assistant General Manager — 2/23/2021 — **Date Certified**

DocuSigned by: Joseph Jereb 306DA3158F61440...

Joseph Jereb, Chief Financial Officer — 2/23/2021 — **Date Certified**

United Water Conservation District

Cash Position

January 31, 2021

Fund	Total	Composition	Restrictions/Designations
General/Water Conservation Fund:			**Revenue collected for district operations**
General/Water Conservation	12,919,348	3,904,652	Includes General, Rec & Ranger, Water Conservation
		1,725,000	Reserved for legal expenditures
		5,435,000	Designated for replacement, capital improvements, and environmental projects
		1,854,696	Supplemental Water Purchase Fund
General CIP Funds	3,757,637	3,757,637	Appropriated for capital projects
2020 COP Bond Funds	18,772,086	18,772,086	Reserved for CIP Projects
Special Revenue Funds:			**Revenue collected for a special purpose**
State Water Project Funds	3,256,577	3,256,577	Procurement of water/rights from state water project
Enterprise Funds:			**Restricted to fund usage**
Freeman Fund	(565,217)	(565,217)	Operations, Debt Service and Capital Projects
		-	Designated for replacement and capital improvements
		-	Reserved for legal expenditures
Freeman CIP Fund	4,370,083	4,370,083	Appropriated for capital projects
OH Pipeline Fund	1,984,195	1,984,195	Delivery of water to OH customers
OH CIP Fund	1,815,189	1,815,189	Appropriated for capital projects
OH Pipeline Well Replacement Fund	977,634	977,634	Well replacement fund
PV Pipeline Fund	443,376	443,376	Delivery of water to PV customers
PV CIP Fund	279,325	279,325	Appropriated for capital projects
PT Pipeline Fund	1,199,059	1,199,059	Delivery of water to PTP customers
PT CIP Fund	670,767	670,767	Appropriated for capital projects
Total District Cash & Investments	**49,880,059**	**49,880,059**	
	-	-	

United Water CONSERVATION DISTRICT

Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager

From: Maryam Bral, Chief Engineer
Michel Kadah, Engineer

Date: **February 23, 2021 (March 10, 2021 Board Meeting)**

Agenda Item: **4.1 Oxnard Hueneme (OH) System Backup Generator Project Construction Contract Award to Oilfield Electric & Motor**
Motion

Staff Recommendation:
The Board will consider awarding a contract to the lowest responsible bidder, Oilfield Electric & Motor, in the amount of $771,000.00 and authorizing the General Manager to execute the contract with Oilfield Electric & Motor for the construction of the Oxnard Hueneme (OH) System Backup Generator.

Discussion:
The District is planning to install a new 800 kW backup emergency generator at the El Rio Water Treatment and Groundwater Recharge Facility to maintain the supply of safe and cost-effective drinking water to all OH Pipeline System customers during the Public Safety Power Shutoffs (PSPS) events.

The existing 750 kW diesel generator, engine, controls, panels, and feeders would be removed and disposed of by the District prior to start of the construction and a new 800kW generator would be furnished by the District to be installed by the contractor.

The construction of the OH System Backup Generator Project (Project) would be partially funded by the California Office of Emergency Services (CalOES) Hazard Mitigation Grant Program (HMGP). The grant funding of $646,537.00 equivalent to 75% of the total construction cost was awarded on November 10, 2020. This grant amount that was based on the 2019 Project cost estimates and included in the CalOES grant application needs to be amendment to take account of the updated Project cost. Staff is in the process of submitting a budget increase request to CalOES for approval. The CalOES HMGP requires the Project completion by August 26, 2021.

Staff advertised the Invitation to Bid for the OH System Backup Generator construction project on January 15, 2021. The notice inviting bids was posted on the District website and five (5) qualified contractors with experience in high voltage projects, including Diener Electric, High Volt Electric, Oilfield Electric & Motor, Pacific Industrial Electric, and Taft Electric were invited to bid the

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project. On February 22, 2021, the bid due date, Staff received three (3) bids with the lowest responsible bid provided by Oilfield Electric & Motor. A summary of the bid results is as follows:

- Oilfield Electric & Motor $ 771,000.00
- Pacific Industrial Electric $1,084,036.00
- Taft Electric $1,094,404.00

Oilfield Electric & Motor is well qualified to perform the work and has successfully completed several projects for the District.

Staff recommends the Board to authorize the General Manager to award the construction contract to Oilfield Electric & Motor to install a new 800kW backup diesel-powered generator.

To ensure a timely project completion by the due date on August 26, 2021, Staff has placed an order in the amount of $203,159.65 with Quinn Company, Inc. for a new 800kW generator. The cost of the new generator is not included in the construction contract.

Fiscal Impact:
The total construction cost of $771,000.00 is included in the Fiscal Year 2020-21 Budget (CIP Project Account 451-400-81060-8036). In addition, the grant funding would also be available to support the construction project. No additional funding is requested.

United Water CONSERVATION DISTRICT

Is Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager

From: Brian Collins, Chief Operations Officer

Date: **February 23, 2021 (March 10, 2021 Meeting)**

Agenda Item: **4.2 Execution of a Contributed Funds Agreement Amendment for the Physical Modeling of the Freeman Diversion Rehabilitation Project with the Bureau of Reclamation.**
Motion

Staff Recommendation:
The Board will consider authorizing the General Manager or his designee to execute a Contributed Funds Agreement (CFA) amendment with the Bureau of Reclamation (Bureau) for the physical modeling of the two proposed project alternatives for the Freeman Diversion Rehabilitation Project, currently under engineering design by Stantec and Northwest Hydraulic Consultants.

Discussion:
In response to National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW) comments received from the initial modeling plan submitted by the District on November 23, 2020, District and Bureau staff have worked to develop an amended physical modeling plan to hydraulically model both the hardened ramp and the vertical slot project proposals within the Bureau's Technical Service Center (TSC) in Denver, Colorado.

In accordance with the Court ordered stipulation, the District submitted the final Physical Modeling Plan on February 8, 2021 and is currently awaiting formal feedback comments from NMFS and CDFW for District consideration and potential inclusion within the finalized Physical Modeling Work Plan. Comments from NMFS and CDFW are due by March 10, 2021.

The current Physical Modeling Plan's schedule proposes to initiate work on the hardened ramp on February 15, 2021 and to conclude the vertical slot modeling by August 15, 2023.

Fiscal Impact:
Approval of this item would result in a budgeted expenditure of up to $2,156,955. These proposed activities were included within Fiscal Year 2020-21 Budget (421-400-81020 Project 8001) and sufficient funds are currently available.

Attachment A - Physical Modeling Plan DRAFT

BUREAU OF RECLAMATION

Physical Hydraulic Modeling Plan for Fish Passage at Vern Freeman Diversion Dam

Background

United Water Conservation District (United Water) contacted the Bureau of Reclamation's (Reclamation) Hydraulics Laboratory to establish a qualified path to accomplish court-mandated physical hydraulic modeling of two proposed fish passage alternatives for the Vern Freeman Diversion Dam (Freeman Dam) facility. Freeman Dam is a 28-ft-high, 1,200-ft-long roller compacted concrete gravity structure with an existing Denil fish ladder and diversion facilities. United Water currently diverts up to 375 cfs, but it plans to file for a water right to divert up to 750 cfs from the Santa Clara River.

The goal of both fish passage designs is to provide for successful upstream passage of adult steelhead during river flows of 45 to 6,000 cfs with little or no delay at Freeman Dam. It is desired to also provide successful upstream passage of adult Pacific lamprey. The Santa Clara River has a gravel-cobble bed with a characteristic slope of about 0.002. The river experiences high sediment loads with transport of very fine sand to medium boulders depending on the flow event. Medium sand is the bulk of the material transported during 2- to 100-year flow events (corresponding to 9,784 to 226,000 cfs, respectively, AECOM 2014). Transport of debris such as clumps of Arundo and smaller floating vegetative debris have been observed at discharges above 800 cfs, while larger floating debris such as tree-sized woody debris occurs at flows above about 6,000 cfs. Large-scale channel morphology is dependent on major flow events. Key concerns for the Freeman Dam fish passage project by the National Marine Fisheries Service (NMFS) and the California Department of Fish and Wildlife (CDFW) are the ability to maintain safe and effective fish passage while managing sediment and debris in and around fishway features.

Northwest Hydraulic Consultants specifies the 30% design for the hardened ramp fishway in their Design Development Report (2020) along with initial suggestions on a physical hydraulic modeling approach. The hardened ramp is designed to provide continuous upstream fish passage for steelhead and Pacific lamprey at river flows of 45 to 6,000 cfs without shutdown for sediment flushing operations. The 90-ft-wide and 420-ft-long hardened ramp is designed at a 5% slope with an asymmetric cross section to provide fish passage at acceptable water depths and velocities over a range of flow conditions. A 30-ft-wide triangular roughened low-flow section contains approximately 1- to 2-ft-diameter rocks with larger 3-ft-diameter rocks placed every 20 ft. The 60-ft-wide baffled ramp on a 30:1 cross slope contains 5-ft-wide vee-shaped sloped steel baffle plates with a 2.5-ft slot width. Four crest gates control flow into the hardened ramp. The design also contains a 15-ft-wide sediment flushing channel and a 1.5-ft-deep fixed ogee-shaped notch in the dam over 400

ft length to the right of the hardened ramp. More detailed information and drawings on the hardened ramp design can be found in Northwest Hydraulic Consultants' Design Development Report (2020).

The 30% design for the vertical slot fish passage design is documented in Stantec's Design Development Report (2020) and through technical communications on the amended design. The vertical slot fishway alternative includes construction of a vertical slot fish ladder, north and south fish ladder entrances, an auxiliary water system and associated fish screens, and crest gates. The fish ladder is designed to pass 34 cfs at the design upstream water level of 161.5 ft. The fish ladder flow ranges from 34-37 cfs over the design flow range. The auxiliary water system is designed to pass up to 570 cfs for a total of 600 cfs of attraction flow to the fishway entrance, which is 10 percent of the design river flow of 6,000 cfs. The dam will be notched about 10 ft deep and 73 ft long to accommodate new rubber bladder-style crest gates designed to control the forebay elevation and concentrate spill over the diversion crest to improve attraction to the ladder entrance. The downstream face of the dam below the crest gate will contain a fish transport tunnel which allows fish entering the north entrances to move into the fish ladder. The existing 15-ft-wide sediment flushing channel will be maintained from the existing features. More detailed information and drawings on the vertical slot fish ladder can be found in Stantec's Design Development Report (2020).

Physical Modeling Approach

Due to the importance of sediment and debris movement over a wide range of storm events in the Santa Clara River and the potential for adverse sediment and debris impacts in and around the proposed fishway features, this physical model plan includes a two-model approach to meeting modeling objectives. Two physical hydraulic models will be constructed and tested in Reclamation's Hydraulics Laboratory to assess the performance of the hardened ramp fishway and vertical slot fishway alternatives. A mobile bed model of the river and project features will be constructed at a 1:24 Froude scale and a primarily fixed bed model focusing on the left bank will be constructed at a 1:12 Froude scale. The latter model will include some movable sediment zones to enable evaluation of localized scour and deposition issues. There will be some overlap in the modeled river discharges between the two physical models to ensure continuity of boundary conditions.

The hardened ramp fish passage alternative will be tested first. The hardened ramp will be installed in the 1:24-scale model box, followed closely by installation in the 1:12-scale model box. Both models of the hardened ramp alternative will be available concurrently in the laboratory. When testing of the hardened ramp is complete, the hardened ramp will be removed and replaced with the vertical slot fish passage alternative in the 1:24-scale model box, followed closely by installation in the 1:12-scale model box. Both models of the vertical slot fish passage alternative will be available concurrently in the laboratory.

1:24-Scale Physical Hydraulic Model

The 1:24-scale physical model will include a larger section of the river width and length and will focus on higher flow events and movement of larger material in the river. The primary goal of the 1:24 Froude scale physical hydraulic model is to observe hydraulic, sediment, and debris conditions in a large section of the river channel and through project features for river flows up to the 100-year

storm event (226,000 cfs). The model will simulate the distribution of flows through project features over a range of flow rates and operational scenarios. Hydraulic conditions including fishway attraction flows and exit conditions will be assessed in and around project features. Bed load transport will be modeled to identify locations of sediment deposition and erosion, formation of sand bars, and other bed changes. Accumulation of sediment and debris in and around proposed project features will be observed. Sediment flushing operations will be assessed to determine how fish passage operations may be impacted during sediment management. Design modifications may be recommended to improve fish passage performance based on general hydraulic and sediment trends. The 1:24-scale model will be used to identify the most appropriate bathymetry to use for each alternative tested in the 1:12-scale model.

The 1:24-scale model was described as a "comprehensive" model in the draft model plan proposed by NHC for the hardened ramp alternative. The 1:24-scale model has the same maximum discharge and will achieve the same model goals. The 1:24-scale model will include all fish passage project features and a section of the river width. The model will contain approximately 1,100 ft of river upstream of the dam, 620 ft of river downstream of the dam, and 300 ft of the dam crest to the right of the project features. For comparison, the draft model plan for the hardened ramp alternative proposed by NHC included approximately 200 ft of river upstream of the dam, 200 ft downstream of the ramp (equivalent to about 390 ft downstream of the dam), and 250 ft of the dam crest to the right of the ramp.

The physical model will represent river flow rates from approximately 5,000 cfs (less than 2-year event) to 226,000 cfs (100-year event) for both the hardened ramp and vertical slot fish passage alternatives. Since the physical model does not include the full river width, the corresponding model flow rates will be approximately 5,000-85,000 cfs in the modeled section.

Boundary condition hydraulics (flow rate and water surface elevations) for the selected model extents will be based on numerical model results provided by the respective design consultants to ensure that the modeled section experiences appropriate inflow conditions. Testing will generally be conducted under steady state flow conditions; however, the model discharges will be ramped up to, and ramped down from, higher flow conditions to avoid abrupt changes in model discharge.

The 1:24-scale model will be constructed with a fully mobile bed except in the hard topography areas that define the left bank of the channel. Baffling will be required to still the incoming flow into the model and the bathymetry just downstream of the baffle will be fixed to ensure that excessive erosion does not occur at the upstream boundary. The 1:24-scale model will focus on bed load movement of larger materials such as medium boulders, gravels, and coarse sands at higher flow rates. Sediment transport rates and material sizes entering the model will be set according to findings from sediment transport analyses (Hydroscience & Engineering LLC 2021, AECOM 2014) during various flow events. Larger material will be loaded manually, and smaller sediments will be introduced through a recirculating sediment pump system.

1:12-Scale Physical Hydraulic Model

The 1:12-scale physical model of the left bank will focus more closely on the performance of specific features for each fish passage alternative at flows rates that are typical of regular operations while allowing for overlap in modeled river discharges with the 1:24-scale model. The primary goals of the 1:12-scale model are to assess overall hydraulic performance of the proposed fishway designs,

measure and observe localized hydraulic conditions in and around the proposed features, and identify issues related to sediment and debris movement and accumulation near project features. More detailed modifications to the existing designs may be recommended in the 1:12-scale model to improve design features and better meet fisheries objectives. If modifications are recommended that may create larger impacts to the river channel, the proposed modifications could be evaluated in the concurrent 1:24-scale model.

The 1:12-scale model was described as a "section" model in the draft model plan proposed by Northwest Hydraulic Consultants for the hardened ramp alternative. The Northwest Hydraulic Consultants draft model plan suggested a model scale of about 1:8 with a focus on obtaining detailed hydraulic and sediment information in the upstream section of the hardened ramp. The proposed model by Northwest Hydraulic Consultants included the full 90-ft width of the hardened ramp and the diversion intake, but only upstream 270 ft of the ramp length and none of the dam crest.

Although a 1:8-scale model can be achieved in Reclamation's Hydraulics Laboratory, the modeling team determined that a 1:12-scale model serves the same general function as the model proposed by Northwest Hydraulic Consultants while also providing key information about areas surrounding the hardened ramp. Modeling the full width and length of the hardened ramp in addition to adjacent project features allows modelers to better understand the hydraulic and sediment processes at the fishway entrance and assess how the fish passage system will work together.

The maximum expected river discharge in the 1:12-scale model is 18,900 cfs, which is equivalent to a model discharge of 10,000 cfs. Hydraulic performance data can be obtained inside the hardened ramp such as the interaction between the roughened low flow section and the baffled ramp, hydraulic drop, turbulence, and eddies. Baffles at the upstream and downstream ends of the ramp are most likely to require modifications; however, all baffles will be adjustable. The hardened ramp will be able to pass river flows from 45 to 6,000 cfs, but shallow water depths in the hardened ramp may preclude some direct hydraulic measurements at low flows. A flow rate of about 150 cfs prototype with a corresponding model water depth of approximately 1 inch is the minimum flow that can be passed through the hardened ramp without experiencing scale effects due to low Reynolds number. If detailed hydraulic data is needed at flows less than 150 cfs, data can be obtained from the existing Northwest Hydraulic Consultants CFD model of the hardened ramp and used in conjunction with general observations from the physical model as flows less than 150 cfs could only be used for qualitative purposes only.

Although a 1:12-scale model was originally proposed only for the study of the hardened ramp alternative, the modeling team has decided that a 1:12 Froude scale is also advantageous for the vertical slot fish passage alternative. This scale allows for a more detailed study of the vertical slot fishway with its auxiliary water system, crest gates, and sediment flushing channel and the localized conditions around these features.

The 1:12-scale model will have a fixed bed bathymetry based on results from the 1:24-scale model which will likely differ for the hardened ramp and vertical slot alternatives. Movable bed sections will be included upstream and downstream of project features to identify erosive and depositional areas. The model will focus on localized conditions due to suspended sediment movement, deposition, and erosion at lower flow rates. The modeled material will be largely sand which will be introduced through a recirculating sediment pump system. Details of the sediment pumping system will be

developed in the final model design process and shared with project partners. Sediment transport rates and associated material sizes will be introduced to the model according to findings from sediment transport analyses (Hydroscience & Engineering LLC 2021 and AECOM 2014) during low flow events.

Hardened Ramp Fish Passage Alternative

1:24-Scale Physical Hydraulic Model

Model Objectives

1) Observe hydraulic, sediment, and debris conditions in and around project features for river flows up to the 100-year event
2) Identify locations of sediment deposition and erosion, formation of sand bars, and other river bed changes up to the 100-year event
3) Identify most appropriate bathymetry to use for the 1:12-scale model of the hardened ramp
4) Evaluate flow distribution and flow patterns near diversion intake, flushing channel, and hardened ramp exit
5) Observe downstream fishway attraction flows and entrance conditions, and upstream fishway exit conditions
6) Observe sediment flushing capability with and without construction of a flushing channel.
7) Determine if fish passage operations can be maintained while managing sediment.
8) Observe impacts of closing fishway exit gates at high flows
9) Observe qualitative sediment deposition and erosion patterns near diversion intake, flushing channel, hardened ramp entrance and exit, and inside the diversion
10) Observe debris transport and determine locations of debris accumulation, potential impact of debris on fishway operation, and potential flushing alternatives
11) Recommend design modifications to improve fish passage performance

Model Layout

For the 1:24-Froude scale physical hydraulic model of the hardened ramp, model features will include the hardened ramp with low-flow roughened section and baffled section, control structure crest gates, approximately 300 ft of the dam to the right of the hardened ramp (with 1.5-ft-deep notch), and canal headgates (piers and trashrack). Model testing will occur with and without the sediment flushing channel constructed adjacent to the hardened ramp (Figure 1). All baffles on the hardened ramp will be included. The canal fish screen and associated sediment jetting system will not be included in the 1:24-scale model; however a detailed model of these components may be considered at a scale ranging from 1:4 to 1:8 should the hardened ramp alternative be considered viable following physical modeling under the current test plan.

The hardened ramp physical model will be able to pass river flows from less than the 2-year event to the 100-year storm event. The model can be used to identify flow patterns, qualitative sediment deposition and erosion areas, and locations of debris accumulation. Due to the model scale, low flow depths and corresponding low Reynolds numbers limit the ability to collect detailed hydraulic data inside the hardened ramp at low flow rates. More detailed localized measurements of smaller-scale features (e.g. baffles) will be completed in the 1:12-scale model.

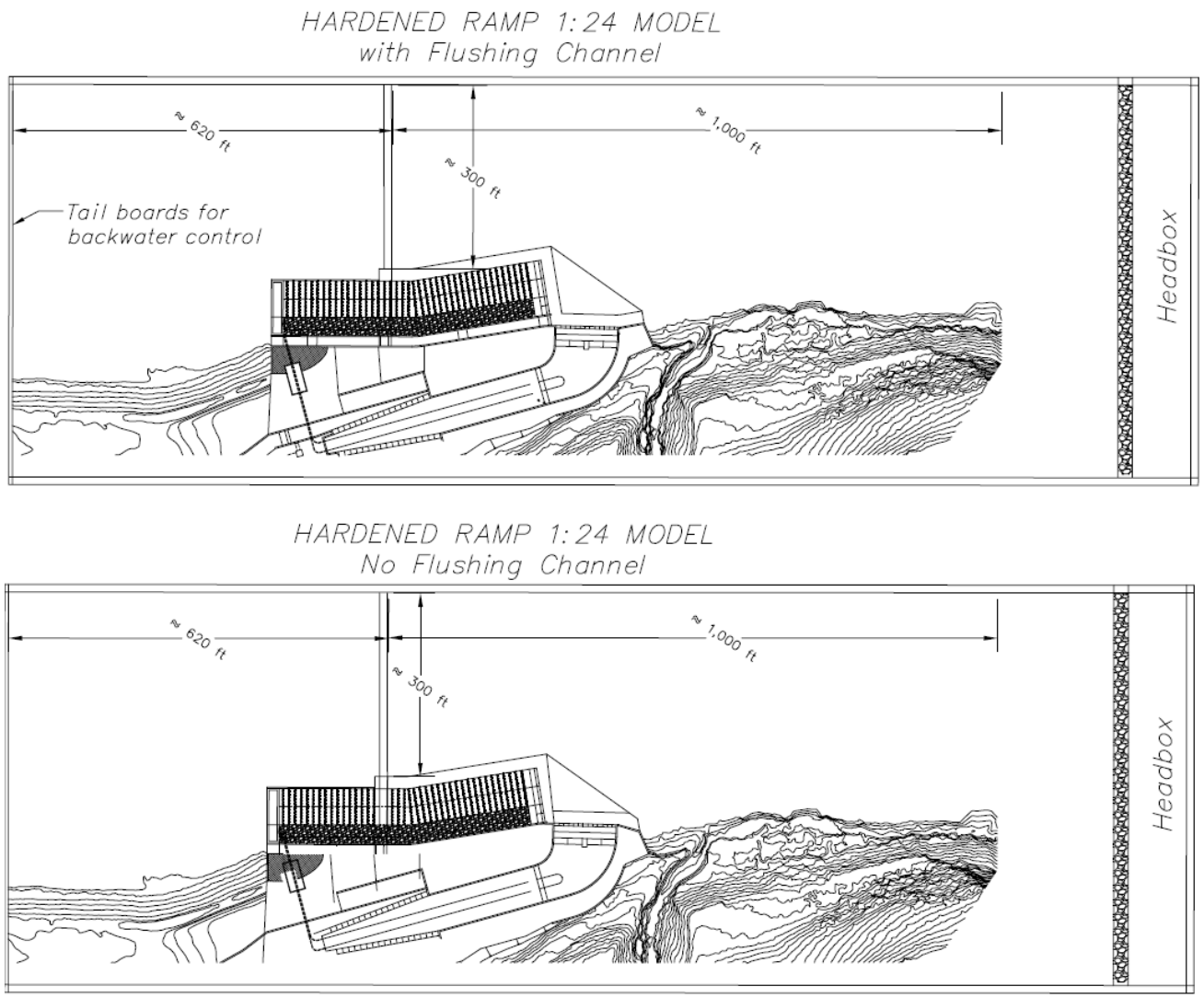

Figure 1. Proposed layout and features of the 1:24-scale mobile bed physical model with the hardened ramp fishway alternative based on the 30% design by NHC. The model box, headbox, and tailboards are depicted. Areas without topography will be a fully mobile bed. Model testing will occur with (top) and without (bottom) a sediment flushing channel. Flow is from right to left. Dimensions are in prototype ft.

Test Matrix

Testing will be completed over a range of relevant flow rates and operational conditions at a 1:24 model scale. Testing will be conducted with the existing dam crest and a flushing channel adjacent to the canal intake structure. Testing will also be conducted with a 1.5-ft ogee crest-shaped dam notch over the dam section to the right of the hardened ramp and no flushing channel. When the flushing channel is not constructed, the canal intake entrance structure will be moved out into the river and the flushing channel will be blocked off. Testing will generally be conducted under steady state flow conditions; however, the model discharges will be ramped up to, and ramped down from, higher flow conditions to avoid abrupt changes in model discharge.

The test runs have been organized into several categories (Table 1). Table 2 shows an example of a test matrix that includes key scenarios. The test matrix will be refined prior to the start of model testing with input from project partners. The modeling team expects the model testing to be an adaptive process with model results and observations informing additional model simulations. Changes to the model test matrix will be shared with project partners throughout the modeling program.

Table 1. Model test scenarios for 1:24-scale physical model of the hardened ramp alternative.

Scenario	Description
1. Run hydrologic scenarios with known field conditions to ensure that the physical model is appropriately replicating river conditions.	Flow rates of 6,000 cfs, 30,000 cfs, and 70,000 cfs will be modeled with the flushing channel open to replicate known river conditions.
2. Run scenarios up to and including the 100-year flow event to examine channel morphology, hydraulic patterns, and sediment movement and deposition with the hardened ramp fish passage alternative constructed.	Flows rates of 6,000 cfs, 30,000 cfs, 70,000 cfs, and 226,000 cfs will be modeled with various gate configurations to understand how sediment will move and deposit under high flow conditions.
3. Run debris scenarios with known field conditions to ensure that the physical model is appropriately replicating debris conditions.	Flow rates of 6,000 cfs, 30,000 cfs, and 70,000 cfs will be modeled with debris loading informed by the debris memorandum (United Water 2021). Model will be compared to known field conditions to ensure the physical model will replicate river conditions.
4. Run scenarios up to and including the 100-year low event to examine debris movement and accumulation with the hardened ramp fish passage alternative constructed.	Flow rates of 6,000 cfs, 30,000 cfs, 70,000 cfs, and 226,000 cfs will be modeled with debris loading informed by the debris memorandum (United Water 2021). Accumulated debris will be noted to ensure functionality of the fish passage facility at lower discharges.
5. Run scenarios to examine hydrodynamics in and around the hardened ramp including exit conditions, attraction flows, and dynamics between project features during high flow events.	Attraction flow will be observed at flow rates of 6,000 cfs. Comparisons to the 1:12-scale model will be observed. A model run at 10,000 cfs will also be considered to determine the maximum discharge at which the fishway may provide passage.
6. Run scenarios to examine sediment and debris management in and around the hardened ramp including operation of flushing channel during high flow events.	Flow rates of 6,000 cfs, 30,000 cfs, and 70,000 cfs will be modeled to examine sediment and debris accumulation and management in and around the fish passage, crest gates, flushing channel, and diversion intake. Various gate operations, and potential use of a debris boom, will also be assessed to determine how management of sediment and debris may be accomplished.

Table 2. Example test matrix showing key scenarios for the hardened ramp alternative in the 1:24-scale physical model.

Test #	Scenario #	Flow Exceedance in %*	River Flow (cfs)	Ramp Flow Estimated (cfs)	Diversion Flow (cfs)	Flushing Channel Flow (cfs)	Dam Crest (cfs)	Modified Dam Notch Flow (cfs)	S - Sediment D - Debris
R-1	2, 4, 5, 6	1.31%	6,000	3,030	750	1,745	475		S/D
R-2	1, 2	0.73%	10,000	4,000	0	0	3,000	3,000	
R-3	4, 5, 6	0.37%	18,900	Maximum			Remainder		S/D
R-4	2, 4, 5, 6	0.18%	30,000	Open	0	Closed			S/D
R-5	2, 4, 5, 6	0.18%	30,000	Closed	0	Closed			S/D
R-6	1, 2, 3, 4, 5, 6	0.18%	30,000	Closed	0	Open			S/D
R-7	2, 4, 5, 6	0.06%	70,000	Open	0	Closed			S/D
R-8	2, 4, 5, 6	0.06%	70,000	Closed	0	Closed			S/D
R-9	1, 2, 3, 4, 5, 6	0.06%	70,000	Closed	0	Open			S/D
R-10	2, 4, 5, 6	0.00%	226,000	Open	0	Closed			S/D
R-11	2, 4, 5, 6	0.00%	226,000	Closed	0	Closed			S/D
R-12	2, 4, 5, 6	0.00%	226,000	Closed	0	Open			S/D

* Exceedance based on average daily total river flow at the Freeman Diversion during primary migration period from January 1 to May 31.

Data Collection

The following data will be collected during testing:

- Water surface elevation upstream and downstream of the dam (headwater, tailwater), at top and bottom of hardened ramp, and in the canal diversion entrance
- Total model flow rate, canal diversion flow rate, fish bypass flow rate, and calculated fishway and dam crest flow rate
- Water surface elevations and point velocities at key locations, as needed
- Surface velocity maps of key locations, such as fishway attraction flow area
- Observations of general hydraulic conditions upstream and downstream of the hardened ramp to assess attraction flow, and downstream of dam notch to assess nuisance attraction flow
- Observations of sediment behavior and operational strategies to limit adverse impacts
- Observations of debris movement and accumulation and operational strategies to limit adverse impacts
- Bathymetric maps showing locations and extents of sediment deposition and erosion

1:12-Scale Physical Hydraulic Model

Model Objectives

1) Observe flow patterns within and around the hardened ramp including areas upstream and downstream of the hardened ramp and measure point water depths and velocities as needed.
2) Observe baffle performance and interaction of roughened low-flow channel with sloped baffle portion of the ramp.
3) Determine if baffle design or configuration should be modified to improve hydraulic performance and ensure that passage is available over a range of flows.
4) Observe recirculation zones or other adverse hydraulic conditions that may impact to attraction flow to the hardened ramp.
5) Observe sediment deposition and erosion patterns within and around the hardened ramp. If deposition occurs, determine how hydraulic conditions for fish passage are impacted.
6) Determine if sediment can be flushed from the ramp under certain flow conditions or with modified gate operations.
7) Determine hydraulics and sediment deposition in and around the flushing channel. Assess conditions with and without construction of a flushing channel.
8) Determine flow patterns related to notch in dam during hardened ramp operation to identify nuisance attraction flow. Modify notch as needed.
9) Observe debris collection or accumulation within and around the hardened ramp.

Model Layout

The 1:12-scale physical model of the hardened ramp alternative will contain approximately 530 ft of river upstream of the dam, 320 ft of river downstream of the dam, and 135 ft of the dam crest to the right of the project features (Figure 2). The model will have a fixed bed bathymetry based on results from the 1:24-scale model for the hardened ramp alternatives. The fixed bed may be constructed at

least partially with material sized large enough to remain immobile at the highest modeled discharges.

The 1:12-scale physical model will represent river flow rates from 150 cfs to 18,900 cfs (10,000 cfs in model section) for the hardened ramp alternative. Boundary condition hydraulics for the selected model extents will be based on numerical model results provided by the respective design consultants to ensure that the modeled section experiences appropriate inflow conditions. Results from the 1:24-scale model can also be used to check hydraulic boundary conditions. Boundary conditions for sediment and debris will be obtained through sediment transport and debris studies as well as results from the 1:24-scale model.

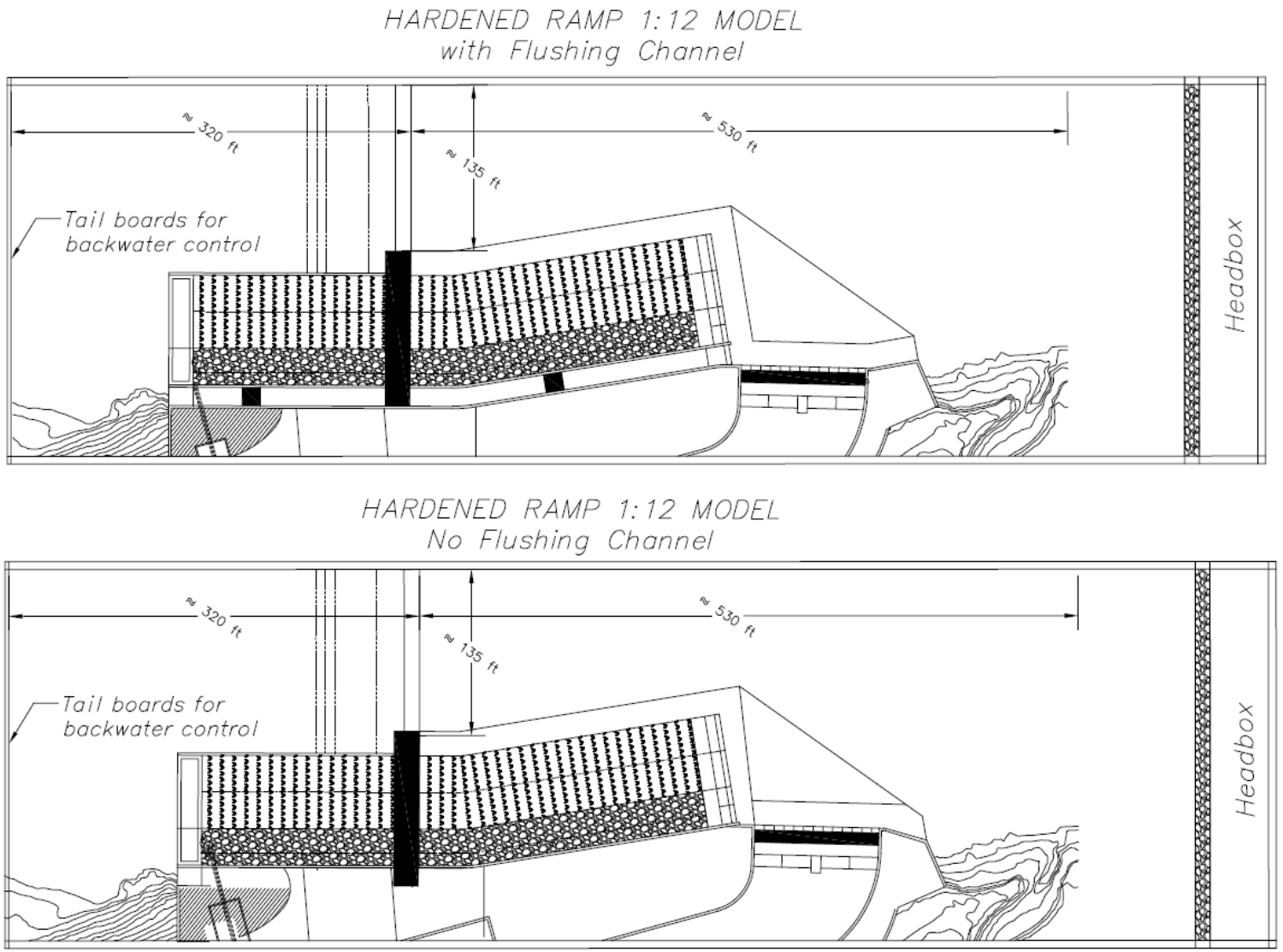

Figure 2. Proposed layout and features of the 1:12-scale fixed bed physical model with the hardened ramp fishway alternative based on the 30% design by NHC. The model box, headbox, and tailboards are depicted. Areas without topography will be mobile bed sections. Model testing will occur with (top) and without (bottom) a sediment flushing channel. Flow is from right to left. Dimensions are in prototype ft.

Test Matrix

Testing will be completed over a range of relevant flow rates and operational conditions at a 1:12 model scale. Testing will be conducted with the existing dam crest and a flushing channel adjacent to the canal intake structure. Testing will also be conducted with a 1.5-ft ogee crest-shaped dam notch over the dam section to the right of the hardened ramp and no flushing channel. When the flushing channel is not constructed, the canal intake entrance structure will be moved out into the river and the flushing channel will be blocked off. Testing will be conducted during steady state flow conditions.

Test runs have been organized into several categories (Table 3). Table 4 shows an example of a test matrix that includes key scenarios. The test matrix will be refined prior to the start of model testing with input from project partners. The modeling team expects the model testing to be an adaptive process with model results and observations informing additional model simulations. Changes to the model test matrix will be shared with project partners throughout the modeling program.

Table 3. Model test scenarios for 1:12-scale physical model of the hardened ramp alternative.

Scenario	Description
1. Run flow scenarios that overlap with conditions observed in the 1:24-scale model to ensure that the 1:12-scale physical model is appropriately replicating hydraulic and sediment conditions near project features.	Flow rates of 6,000 cfs, 10,000 cfs, and 18,900 cfs will be run on both models to verify that hydraulic, sediment, and debris are well replicated.
2. Run scenarios to examine hydrodynamics in and around project features including ramp hydraulics, exit conditions, attraction flows, and dynamics between project features during standard operating conditions.	Flow rates of 6,000 cfs, 10,000 cfs, and 18,900 cfs will be run to assess hydrodynamics in and around project features. Flow rates of 575 cfs, 1,500 cfs, 3,000 cfs, and 6,000 cfs will be run to ramp hydraulic conditions and attraction flow using various gate configurations including the flushing channel, crest gates, and the ramp itself.
3. Run scenarios to examine sediment and debris movement and accumulation in and around the hardened ramp and diversion intake during standard operating conditions.	Accumulation of debris will be analyzed at higher flow ranges including 18,900 cfs, 10,000 cfs, 6,000 cfs, and 1,500 cfs. Various amounts and sizes of debris will be added in accordance with the debris flow plan. Sediment will also be examined in the same flow ranges to determine the potential accumulation in and around the fish passage system and the diversion intake. Additionally, sediment will be analyzed at discharges of 410 cfs, 250 cfs, and 150 cfs to help determine how the bedload will pass the system during baseflow conditions and conservation releases.
4. Run scenarios to examine sediment and debris management in and around the hardened ramp including operation of flushing channel during standard operating conditions.	See #3

Table 4. Example test matrix showing key scenarios for the hardened ramp alternative in the 1:12-scale physical model.

Test #	Scenario #	Flow Exceedance in %*	River Flow (cfs)	Ramp Flow Estimated (cfs)	Diversion Flow (cfs)	Flushing Channel Flow (cfs)	Dam Crest (cfs)	Modified Dam Notch Flow (cfs)	S -Sediment D - Debris
R-13	3, 4	38.80%	150	150					S
R-14	3, 4	26.52%	250	50	200				S
R-15	3, 4	26.52%	250	200	50				S
R-16	3, 4	15.17%	410	45	375				S
R-17	2	13.68%	575	575	0				
R-18	3, 4	8.69%	950	200	750				S
R-19	2	5.51%	1,500	1,125	375				
R-20	3, 4	5.51%	1,500	750	750				S/D
R-21	3, 4	5.51%	1,500	1,500					S
R-22	3, 4	2.54%	3,000	1,787.5	750	Remainder			S
R-23	2	2.54%	3,000	1,787.5	750		Remainder		
R-24	2	2.54%	3,000	1,787.5	750			Remainder	
R-25	2	2.54%	3,000	3,000	0	0	0	0	
R-26	3, 4	2.54%	3,000	3,000					
R-27	3, 4	2.54%	3,000			3,000			
R-28	2, 3, 4	1.31%	6,000	3,030	750	1,745	475		S/D
R-29	2, 3, 4	1.31%	6,000	3,600	750	0	1,650	0	S/D
R-30	2, 3, 4	1.31%	6,000	3,600	0	0	2,400	0	S/D
R-31	2, 3, 4	1.31%	6,000	2,900	750	0		2,350	
R-32	1,2,3,4	1.31%	6,000	3,030	750	1,745	475		S/D
R-33	1,2	0.73%	10,000	4,000	0	0	3,000	3,000	
R-34	1,2,3,4	0.37%	Model Maximum (18,900)	Maximum			Remainder		S/D

* Exceedance based on average daily total river flow at the Freeman Diversion during primary migration period from January 1 to May 31.

Data Collection

The following data will be collected during testing:

- Water surface elevation upstream and downstream of the dam (headwater, tailwater), at top and bottom of hardened ramp, and in the canal diversion entrance
- Total model flow rate, canal diversion flow rate, fish bypass flow rate, and calculated fishway and dam crest flow rate.
- Water surface elevations and point velocities around fishway baffles to assess performance and identify resting zones
- Point velocities in front of the canal intake structure and upstream and downstream of the hardened ramp
- Surface velocity maps of key flow conditions, as needed
- Observations of hydraulic conditions inside the hardened ramp, and upstream and downstream of hardened ramp
- Observations of hydraulic conditions downstream of dam notch to assess nuisance attraction flow
- Observations of sediment behavior and operational strategies to limit adverse impacts
- Mapped locations of sediment deposition and erosion with approximate lateral extents and depths
- Observations of debris movement and accumulation and operational strategies to limit adverse impacts

Schedule for Hardened Ramp Fish Passage Alternative

The hardened ramp fishway alternative will be constructed inside the 1:24-scale model box first, followed by construction in the 1:12-scale model box. Model design drawings and ordering of materials for the 1:24-scale model is expected to commence on February 15, 2021 with model construction initiating around April 15, 2021. As testing on the 1:24-scale model occurs, construction of the 1:12-scale model will begin. The models will be available concurrently.

For both the 1:24- and 1:12-scale models, shakedown of physical model instrumentation, components, and test procedures will occur during the first two weeks after model construction. Clear-water tests will be run to measure hydraulic conditions in the model, followed by sediment testing and debris testing. During the test period, a site visit will be planned for United Water and project partners to view the physical models in person and/or via remote streaming. The model schedule may be revised if unanticipated changes to the model plan and test matrix are required.

Table 5. Estimated physical modeling schedule for hardened ramp fish passage alternative.

Physical Model Study Tasks	Start Date	End Date
1:24-Scale Model Design Drawings and Order Materials	2/15/2021	4/15/2021
1:24-Scale Model Review of Model Design Drawings by United Water and Project Partners	4/1/2021	4/8/2021
1:24-Scale Model Construction	4/15/2021	7/15/2021
1:24-Scale Model Shakedown and Testing	7/15/2021	12/15/2021
1:24-Scale Project Partner Site Visit	8/1/2021	12/15/2021
1:12-Scale Model Design Drawings and Order Materials	4/15/2021	7/15/2021
1:12-Scale Model Review of Model Design Drawings by United Water and Project Partners	7/1/2021	7/15/2021
1:12-Scale Model Construction	8/15/2021	11/15/2021
1:12-Scale Model Shakedown and Testing	11/15/2021	4/15/2022
1:12-Scale Project Partners Site Visit	12/1/2021	4/15/2022
Draft Report	4/1/2022	5/1/2022
Submit Revised Draft Report to Project Partners for Comment	5/1/2022	6/1/2022
Finalize Report	6/1/2022	6/15/2022
Submit Final Report to United Water and Project Partners		6/15/2022

Vertical Slot Fish Passage Alternative

1:24-Scale Physical Hydraulic Model

Model Objectives

1) Observe hydraulic, sediment, and debris conditions in and around project features for river flows up to the 100-year event
2) Identify locations of sediment deposition and erosion, formation of sand bars, and other bed changes up to the 100-year event
3) Identify most appropriate bathymetry to use for the 1:12-scale model of the vertical slot fishway
4) Evaluate flow distribution and flow patterns near diversion intake, vertical slot fishway exit, and crest gates
5) Observe fishway attraction flows at the north and south fish entrance pools with and without crest gate spill
6) Observe qualitative sediment deposition and erosion patterns near the south entrance, on the apron adjacent to the entrance structure, and near the north entrance.
7) Observe qualitative sediment deposition and erosion patterns near the diversion intake, flushing channel, fishway exit, and inside the diversion
8) Determine how flushing channel operations impact downstream flow conditions
9) Observe debris transport and determine locations of debris accumulation, potential impact of debris on fishway operation, and potential flushing alternatives
10) Evaluate the potential benefit of widening the spillway
11) Recommend design modifications to improve fish passage system performance

Model Layout

For the 1:24-Froude scale physical hydraulic model of the vertical slot fishway, model features will include the vertical slot fishway and control structure, north fishway entrance and tunnel, south fishway entrances, auxiliary water system, crest gates, flushing channel, canal headgates (piers and trashrack), and independently operated auxiliary water and canal control gates (Figure 3). All vertical slot elements will be included. The canal and auxiliary fish screens and associated sediment jetting systems will not be included; however, a detailed model of these components may be considered at a scale ranging from 1:4 to 1:8 should the vertical slot fish passage alternative be considered viable following physical modeling under the current test plan.

The vertical slot physical model will be able to pass river flows from less than the 2-year event to the 100-year storm event. The 1:24-scale model can be used to identify flow patterns, qualitative sediment deposition and erosion areas, and locations of debris accumulation. Due to the model scale, low flow depths and corresponding low Reynolds numbers limit the ability to collect detailed hydraulic data inside vertical slot fish passage components such as auxiliary water system and fishway exit. More detailed localized measurements of smaller-scale features will be completed in the 1:12-scale model.

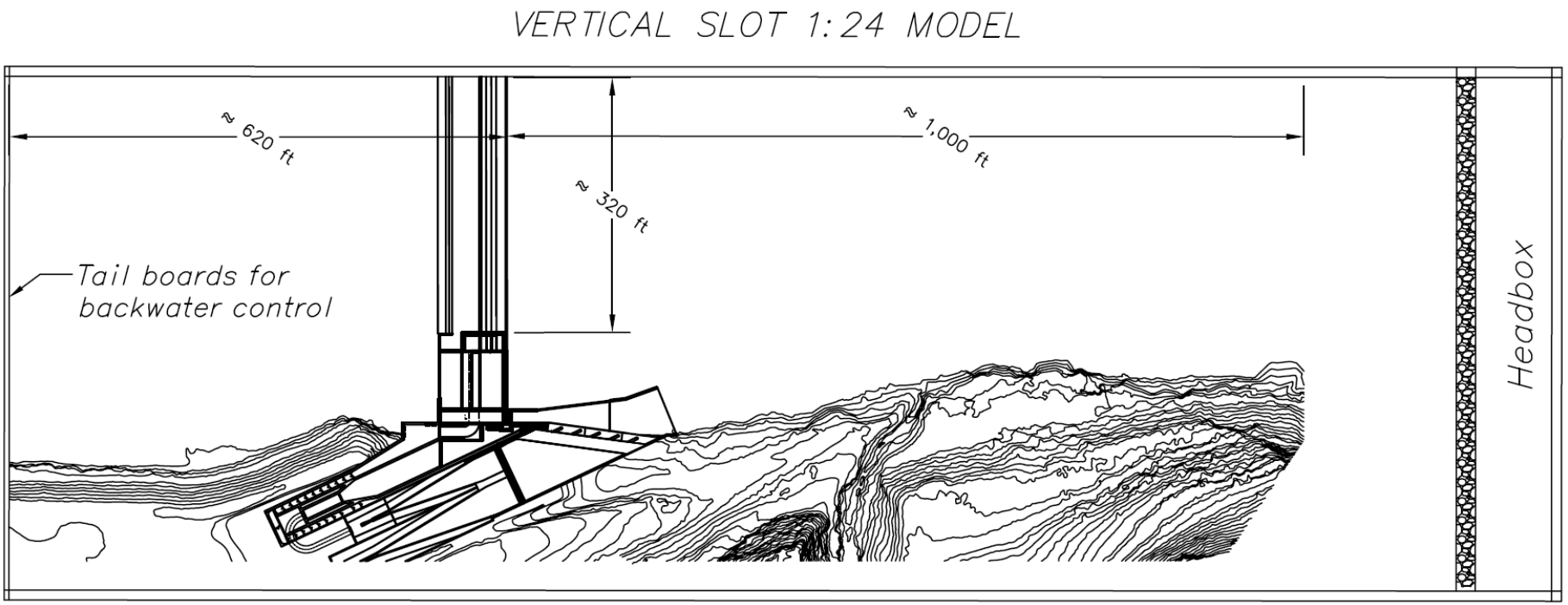

Figure 3. Proposed layout and features of the 1:24-scale mobile bed physical model with the vertical slot fishway alternative based on the 30% design by Stantec. The model box, headbox, and tailboards are depicted. Areas without topography will be a fully mobile bed. Model testing will occur with and without operation of the sediment flushing channel. Flow is from right to left. Dimensions are in prototype ft.

Test Matrix

Testing will be completed over a range of relevant flow rates and operational conditions for the vertical slot fish passage alternative at a 1:24 model scale. Testing will be conducted with and without operation of the flushing channel. The flushing channel gates will simply be closed during testing without the flushing channel. In the 1:24-scale model, the crest gates will be either in the up or down position. Testing will generally be conducted under steady state flow conditions; however, the model discharges will be ramped up to, and ramped down from, higher flow conditions to avoid abrupt changes in model discharge.

The test runs have been organized into several categories (Table 6). Table 7 shows an example of a test matrix that includes key scenarios. The test matrix will be refined prior to the start of model testing with input from project partners. The modeling team expects the model testing to be an adaptive process with model results and observations informing additional model simulations. Changes to the model test matrix will be shared with project partners throughout the modeling program.

Table 6. Model test scenarios for 1:24-scale physical model of the vertical slot fish passage alternative.

Scenario	Description
1. Run hydrologic scenarios with known field conditions to ensure that the physical model is appropriately replicating river conditions.	Flow rates of 6,000 cfs, 30,000 cfs, and 70,000 cfs will be modeled with the flushing channel open to replicate known river conditions.
2. Run scenarios up to and including the 100-year flow event to examine channel morphology, hydraulic patterns, and sediment movement and deposition with the vertical slot fish passage alternative constructed.	Flow rates of 6,000 cfs, 30,000 cfs, 70,000 cfs, and 226,000 cfs will be modeled with various gate configurations to understand how sediment will move and deposit under high flow conditions.
3. Run debris scenarios with known field conditions ensure that the physical model is appropriately replicating debris conditions.	Flow rates of 6,000 cfs, 30,000 cfs, and 70,000 cfs will be modeled with debris loading informed by the debris memorandum (United Water 2021). Model will be compared to known field conditions to ensure the physical model will replicate river conditions.
4. Run scenarios up to and including the 100-year low event to examine debris movement and accumulation with the vertical slot fish passage alternative constructed.	Flow rates of 6,000 cfs, 30,000 cfs, 70,000 cfs, and 226,000 cfs will be modeled with debris loading informed by the debris memorandum (United Water 2021). Accumulated debris will be noted to ensure functionality of the fish passage facility at lower discharges.
5. Run scenarios to examine hydrodynamics in and around the vertical slot fish passage and crest gate features including exit conditions, attraction flows, and dynamics between project features during high flow events.	Attraction flow will be observed at flow tests runs of 6,000 cfs. Comparisons to the 1:12 scale model will be observed. A model run at 10,000 cfs will also be considered to determine the maximum discharge at which the fish ladder may provide passage.
6. Run scenarios to examine sediment and debris management in and around the vertical slot fish passage and crest gate features including operation of flushing channel during high flow events.	Flow rates of 6,000 cfs, 30,000 cfs, and 70,000 cfs will be modeled to examine sediment and debris accumulation and management in and around the fish passage, crest gates, flushing channel, and diversion intake. Various gate operations, and the potential benefit of a debris boom, will also be assessed to determine how management of sediment and debris may be accomplished.

Table 7. Example test matrix showing key scenarios for the vertical slot fish passage alternative in the 1:24-scale physical model.

Test #	Scenario #	Flow Exceedance in %*	River Flow (cfs)	Ladder Flow (cfs)	Diversion Flow (cfs)	Canal Fish Bypass Flow (cfs)	Auxiliary Water Flow (cfs)	Auxiliary Water Fish Bypass Flow (cfs)	Crest Gate Flow (cfs)	Flushing Channel Flow (cfs)	Dam Crest Flow (cfs)	River Flow Downstream (cfs)	S -Sediment D - Debris
VS-1	5	1.31%	6,000	34	750	24	570	24	4,598			5,250	
VS-2	5	1.31%	6,000	34	0	0	570	24	5,372			6,000	
VS-3	1, 2	1.31%	6,000	0	0	0	0	0	0	Open	Remainder	6,000	S
VS-4	2	1.31%	6,000	0	0	0	0	0	Open	0	Remainder	6,000	S
VS-5	2	1.31%	6,000	0	0	0	0	0	Open	Open		0	S
VS-6	3, 4	1.31%	6,000	34	750	24	570	24	4,598			5,250	S/D
VS-7	2, 5	0.73%	10,000	34		0	570	24	9,372			10,000	S
VS-8	1, 2, 3, 4, 5	0.18%	30,000	0	0	0	0	0	Open	Open		30,000	S/D
VS-9	1, 2, 3, 4, 5	0.06%	70,000	0	0	0	0	0	Open	Open		70,000	S/D
VS-10	2	0.00%	226,000	0	0	0	0	0	Open	Open		226,000	S/D

* Exceedance based on average daily total river flow at the Freeman Diversion during primary migration period from January 1 to May 31.

Data Collection

The following data will be collected during testing:

- Water surface elevation upstream and downstream of the dam (headwater, tailwater), upstream and downstream of vertical slot fishway, and in the canal diversion entrance
- Total model flow rate, canal diversion flow rate, auxiliary water system flow rate, fish bypass flow rate, and calculated fishway and dam crest flow rate
- Water surface elevations and point velocities at key locations, as needed
- Surface velocity maps of key locations, such as fishway attraction flow area
- Observations of general hydraulic conditions upstream and downstream of the vertical slot fishway
- Observations of flow patterns, eddies, or adverse hydraulic conditions downstream of crest gates during operation and the associated impact on approach conditions to the north and south fish entrances
- Observations of sediment behavior and operational strategies to limit adverse impacts
- Observations of debris movement and accumulation and operational strategies to limit adverse impacts
- Bathymetric maps showing locations and extents of sediment deposition and erosion

1:12-Scale Physical Hydraulic Model

Model Objectives

1) Evaluate attraction flow conditions to north and south fish entrances with and without crest gate spill.
2) Evaluate hydraulics within and downstream of auxiliary water system (e.g. stilling area, diffuser) to determine if adverse impacts such as eddies occur in the south fishway entrance pool and to assess the probable zone of passage from the entrance gates and tunnel to the ladder.
3) Observe hydraulics in the north fish entrance pool and in the tunnel to the north fish entrance.
4) Observe qualitative sediment deposition and erosion downstream of the fishway near the south entrance, on the apron adjacent to the entrance structure, and in front of and within the north fishway entrance. Observe if sediment deposits can be resuspended and flushed away from north and south fishway entrances.
5) Observe qualitative sediment deposition or erosion upstream of crest gates to the mouth of the approach channel.
6) Observe qualitative sediment deposition in the fishway exit channel, within the auxiliary water system, in the canal entrance channel between the trashrack and auxiliary water system and canal control gates, and near the fish screens.
7) Determine how flushing channel operations impact downstream flow conditions.
8) Evaluate strategic operation of crest gates by opening and closing specified gates to minimize impacts on sediment deposition and attraction flows.
9) Evaluate vanes, interior guide walls, or other modifications to maintain sufficient flow depth on the spillway during low spillway flows.

Model Layout

The 1:12-scale physical model of vertical slot alternative will contain approximately 530 ft of river upstream of the dam, 330 ft of river downstream of the dam, and 80 ft of the dam crest to the right of the project features (Figure 4). The model will have a fixed bed bathymetry based on results from the 1:24-scale model which for vertical slot alternatives. The fixed bed may be constructed at least partially with material sized large enough to remain immobile at the highest modeled discharges.

The 1:12-scale physical model will represent river flow rates from 150 cfs to 10,000 cfs for the vertical slot alternative. Boundary condition hydraulics for the selected model extents will be based on numerical model results provided by the respective design consultants to ensure that the modeled section experiences appropriate inflow conditions. Results from the 1:24-scale model can also be used to check hydraulic boundary conditions. Boundary conditions for sediment and debris will be obtained through sediment transport and debris studies as well as results from the 1:24-scale model.

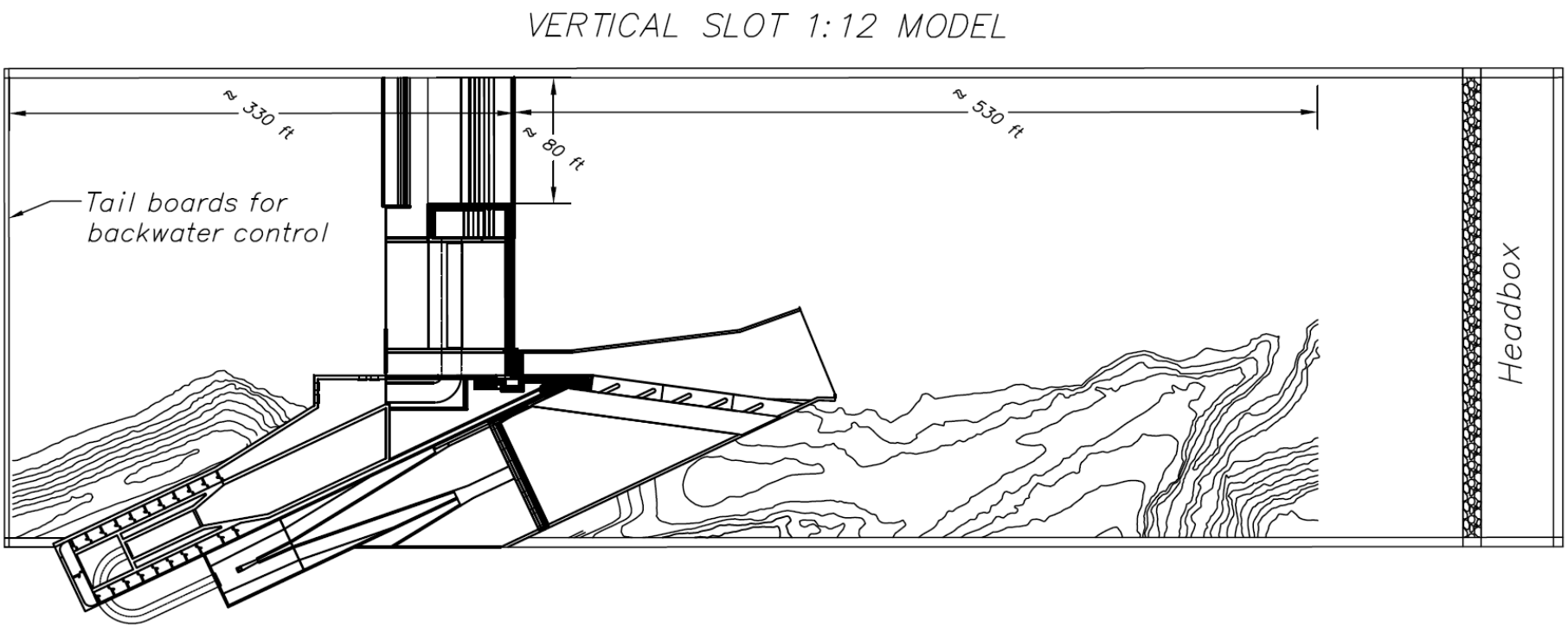

Figure 2. Proposed layout and features of the 1:12-scale fixed bed physical model with the vertical slot fish passage alternative based on the 30% design by Stantec. The model box, headbox, and tailboards are depicted with a fully functional fishway and AWS pipe. Areas without topography will be mobile bed sections. Model testing will occur with and without operation of a sediment flushing channel. Flow is from right to left. Dimensions are in prototype ft.

Test Matrix

Testing will be completed over a range of relevant flow rates and operational conditions for the vertical slot fish passage alternative at a 1:12 model scale. Testing will be conducted with and without operation of the flushing channel. The flushing channel gates will simply be closed during testing without the flushing channel. Variable gate operation for the crest gates will be completed for flow rates less than 6,000 cfs, although details of the gate operation have not yet been determined. Testing will be conducted during steady state flow conditions.

The test runs have been organized into several categories (Table 8). Table 9 shows an example of a test matrix that includes key scenarios. The test matrix will be refined prior to the start of model testing with input from project partners. The modeling team expects the model testing to be an adaptive process with model results and observations informing additional model simulations. Changes to the model test matrix will be shared with project partners throughout the modeling program.

Table 8. Model test scenarios for 1:12-scale physical model of the vertical slot alternative.

Scenario	Description
1. Run flow scenarios that overlap with conditions observed in the 1:24-scale model to ensure that the 1:12-scale physical model is appropriately replicating hydraulic and sediment conditions near project features.	Flow rates of 6,000 cfs and 10,000 cfs will be modeled in both the 1:12 model and the 1:24 model to ensure that sediment, debris and, hydrodynamics are consistent between the two scales.
2. Run scenarios to examine hydrodynamics in and around project features including vertical slot and crest gate hydraulics, entrance and exit conditions, attraction flows, and dynamics between project features during standard operating conditions.	Flow rates of 6,000 cfs, 10,000 cfs and 18,900 cfs will be run to assess hydrodynamics in and around project features.
3. Run scenarios to examine sediment and debris movement and accumulation in and around the vertical slot fish passage features, crest gate, and diversion intake during standard operating conditions.	Accumulation of debris will be analyzed at higher flow ranges including 18,900 cfs, 10,000 cfs, 6,000 cfs, and 1,500 cfs. Various amounts and sizes of debris will be added in accordance with the debris flow plan. Sediment will also be examined in the same flow ranges to assess potential accumulation in and around the fish passage system and the diversion intake.
4. Run scenarios to examine sediment and debris management in and around the vertical slot fish passage features and crest gate including operation of flushing channel during standard operating conditions.	See # 3

Table 9. Example test matrix showing key scenarios for the vertical slot fish passage alternative in the 1:12-scale physical model.

Test #	Scenario #	Flow Exceedance in %*	River Flow (cfs)	Ladder Flow (cfs)	Diversion Flow (cfs)	Canal Fish Bypass Flow (cfs)	Auxiliary Water Flow (cfs)	Auxiliary Water Fish Bypass Flow (cfs)	Crest Gate Flow (cfs)	Flushing Channel Flow (cfs)	Dam Crest Flow (cfs)	River Flow Downstream (cfs)	S - Sediment D - Debris
VS-1	2	31.43%	200	34	40	24	0	102	0	0		160	
VS-2	2	10.30%	800	34	0	24	570	24	148	0		800	
VS-3	2	10.30%	800	34	375	24	343	24	0	0		425	
VS-4	2, 3, 4	10.30%	800	0	0	0	0	0	800	0		800	S
VS-5	3, 4	5.51%	1,500	34	750	24	168	24	500	0		750	S
VS-6	2, 3, 4	5.51%	1,500	34	375	24	168	24	875			1,125	S
VS-7	3, 4	5.51%	1,500	0	0	0	0	0	0	open		1,500	S
VS-8	3, 4	5.51%	1,500	0	0	0	0	0	open	open			S
VS-9	2	2.54%	3,000	34	750	24	570	24	1,598			2,250	
VS-10	2	2.54%	3,000	34	375	24	570	24	1,973			2,625	
VS-11		2.54%	3,000	34	375	24	570	24	1,973			2,625	
VS-12		1.31%	6,000	34	375	24	570	24	4,973			5,625	
VS-13	2, 3, 4	2.54%	3,000	34	750	24	300	24	1,868			2,250	S
VS-14	1, 2, 3, 4	1.31%	6,000	34	750	24	300	24	4,868			5,250	S
VS-15		1.31%	6,000	34	750	24	570	24	4,598			5,250	
VS-16	1	1.31%	6,000	34	0	0	570	24	5,372			6,000	
VS-17	1, 3, 4	1.31%	6,000	34	750	24	570	24	4,598			5,250	S/D
VS-18	1, 2, 3, 4	0.73%	10,000	34		0	570	24	9,372			10,000	S

* Exceedance based on average daily total river flow at the Freeman Diversion during primary migration period from January 1 to May 31.

Data Collection

The following data will be collected during testing:

- Water surface elevation upstream and downstream of the dam (headwater, tailwater), upstream and downstream of vertical slot fishway, inside fishway entrance and exit, and in the canal diversion entrance
- Total flow rate entering the model box, through the auxiliary water system, through the fish bypass, and through the canal diversion
- Point velocities in front of the canal intake structure, upstream and downstream of the vertical slot fishway, and at the fishway entrance at auxiliary water system diffuser
- Surface velocity maps during key flow conditions, as needed
- Observations of hydraulic conditions inside auxiliary water system stilling area and through the auxiliary water system diffuser
- Observations of hydraulic conditions in north fishway entrance and tunnel
- Observations of flow patterns, eddies, or adverse hydraulic conditions downstream of crest gates during operation and the associated impact on approach conditions to the north and south fish entrances. Remedial options to improve attraction flows during crest gate operation will be explored.
- Observations of sediment behavior and operational strategies to limit adverse impacts
- Mapped locations of sediment deposition and erosion with approximate lateral extents and depths
- Observations of debris movement and accumulation and operational strategies to limit adverse impacts

Schedule for Vertical Slot Fish Passage Alternative

When model testing of the hardened ramp is complete, the vertical slot fishway alternative will be constructed inside the 1:24-scale model box, followed by construction in the 1:12-scale model box. As testing on the 1:24-scale model occurs, construction of the 1:12-scale model will begin. The models will be available concurrently.

For both the 1:24- and 1:12-scale models, shakedown of physical model instrumentation, components, and test procedures will occur during the first two weeks after model construction. Clear-water tests will be run to measure hydraulic conditions in the model, followed by sediment testing and debris testing. During the test period, a site visit will be planned for United Water and project partners to view the physical models in person and/or via remote streaming. The model schedule may be revised if unanticipated changes to the model plan and test matrix are required.

Table 10. Estimated physical modeling schedule for vertical slot fish passage alternative.

Physical Model Study Tasks	Start Date	End Date
1:24-Scale Model Design Drawings and Order Materials	4/15/2022	6/15/2022
1:24-Scale Model Review of Model Design Drawings by United Water and Project Partners	6/1/2022	6/8/2022
1:24-Scale Model Construction	6/15/2022	9/15/2022
1:24-Scale Model Shakedown and Testing	9/15/2022	2/15/2023
1:24-Scale Project Partner Site Visit	10/1/2022	2/15/2023
1:12-Scale Model Design Drawings and Order Materials	8/15/2022	10/15/2022
1:12-Scale Model Review of Model Design Drawings by United Water and Project Partners	10/1/2022	10/15/2022
1:12-Scale Model Construction	11/1/2022	2/1/2023
1:12-Scale Model Shakedown and Testing	2/1/2023	6/1/2023
1:12-Scale Project Partners Site Visit	2/15/2023	6/1/2023
Draft Report	6/1/2023	7/1/2023
Submit Revised Draft Report to Project Partners for Comment	7/1/2023	8/1/2023
Finalize Report	8/1/2023	8/15/2023
Submit Final Report to United Water and Project Partners		8/15/2023

Sediment Modeling Approach

1:24-Scale Physical Hydraulic Model

The 1:24-scale model will have a fully mobile bed except in hard topography areas that define the left bank of the channel as shown in Figures 1 and 3. The primary objectives of sediment modeling at this scale will be to simulate deposition and scour within the river channel during moderate to high discharge (up to 100-yr) flow events that may affect the entrance and exit areas of the fish passage features, including important attraction flow zones of the river channel near the fishway entrances. The gradation of bed material used in the model will be scaled with the primary objective of accurately simulating incipient motion of bed material and transport rates at moderate to high discharges.

The prototype bed material size range is very broad, ranging from fine sand to boulders (approximately 0.3 mm up to 700 mm), with the bulk of sediment transport volume involving medium sand. The coarsest material in the gradation is likely to be geometrically scaled, while the sizes of finer material may be adjusted to account for nonlinear effects of viscosity (grain Reynolds number) as depicted on the Shields critical shear stress diagram. The coarsest portion of the bed material gradation will not be mobile even at 100-yr discharges, so exact scaling of these particle sizes will not be crucial. At a 1:24 scale, the model material gradation may not include some of the finest material in the gradation, since that material would act primarily as wash load (passing through the model domain in continuous suspension) at the flow rates of interest. Low-density sediment surrogates (crushed coal or walnut shells) will be used if necessary, but standard quartz-based sediment is likely to work well at this model scale. Adjustment of the model slope will also be

considered, if necessary, to achieve proper inception of motion and sediment transport. Details of the sediment modeling will be refined in final model design and informed by the supplemental sediment analysis (Hydroscience & Engineering LLC).

1:12-Scale Physical Hydraulic Model

The 1:12-scale model will have a primarily fixed bed with mobile bed zones near the upstream and downstream ends of the fishways (Figures 2 and 4). The primary objectives of sediment modeling in the 1:12-scale model will be to simulate local deposition and scour around the fishway entrance and exit areas and deposition within the fishways at operational discharges. The gradation of sediment material used in the model will be determined primarily by considering settling velocity of sediment particles, with the objective of achieving settling velocities that are scaled down by the square root of the model length scale ($12^{0.5}$=3.46). This maintains dynamic similarity with water flow and accurately reproduces the distribution of suspended sediment within the water column. Incipient motion of prototype and modeled particles will be compared to ensure that initiation of sediment movement is appropriately simulated.

Although exact representation of the entire gradation is not expected, the bulk of the gradation will be represented. The smallest prototype particles may not be included in the model gradation or may be adjusted to avoid causing cohesive soil behavior in the model that is not representative of the prototype. The largest prototype particles (cobbles and boulders) will not be mobile in the 1:12-scale model.

Sediment used for the model will be selected based on availability from local quarries. Alternate model materials such as coal or ground walnut shells are not expected to be needed for this model, which will simplify construction and operation of the model and enable testing of more flow scenarios. The model is expected to indicate qualitative trends, patterns, and locations of deposition or degradation in the field but not accurately represent actual quantities or rates of accumulation.

For sediment test runs, material will be located in the movable bed sections. Additional sediment will be introduced into the model flow via a conveyor or hopper system at the inlet to the model box, or via a closed loop system of recirculated sediment laden flow depending on material size. Detailed design of the model sediment feeding system will be completed during final model design and shared with project partners.

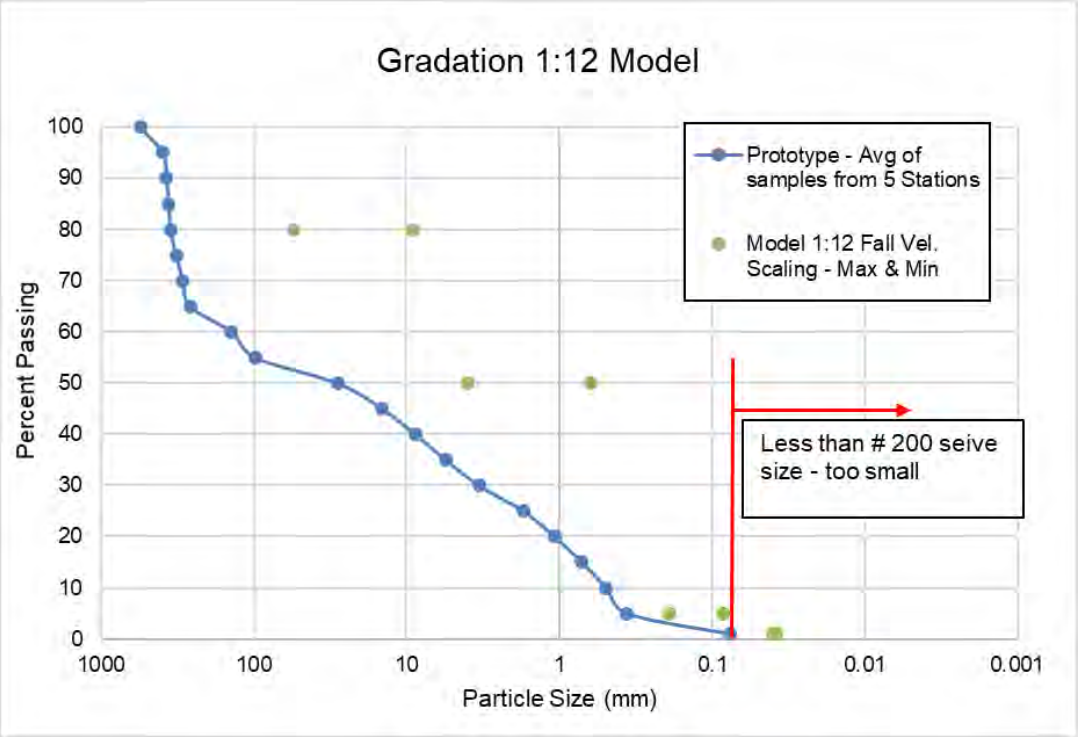

Figure 5. Sediment gradation curves representing the prototype (average of 5 river station samples from AECOM Sediment Transport Analysis-Santa Clara River at Freeman Diversion, 2014) in blue. The green dots represent the range of acceptable sediment sizes at d_{80}, d_{50}, and d_5 that meet fall velocity scaling requirements at the proposed model scale of 1:12.

Debris Modeling Approach

Transport of debris such as clumps of Arundo and smaller floating vegetative debris have been observed at discharges above 800 cfs, while larger floating debris such as tree-sized woody debris occurs at flows above about 6,000 cfs (United Water 2021). In the 1:24-scale model, floating and neutrally buoyant medium to large debris elements mimicking woody debris and clumps of Arundo will be introduced at the upstream end of the model for river flow rates from 6,000 to 226,000 cfs. In the 1:12-scale model, small to medium size debris elements mimicking floating vegetation (watercress and cattails) and clumps of Arundo will be introduced at the upstream end of the model for river flow rates from 1,500 to 6,000 cfs.

Debris will be manually loaded into the model as individual pieces or in integrated mats. Debris type, size, composition, and quantity will be based on river flow rate (United Water 2021). Modeled debris elements may be natural material or artificial material depending on material properties. Debris transport will be observed along with locations of debris accumulation and recruitment. Potential debris management options such as flushing operations and debris booms will be explored to avoid adverse impacts to fish passage operation.

Instrumentation

The following instrumentation is planned for physical measurements during model testing. Final instrument selection will be completed during the model design process. Modifications to

measurement methods and/or instrumentation may be required during shakedown testing as determined by the modeling team.

Water Surface Elevations – Water depths will be measured with down-looking ultrasonic meters with an accuracy to within ±0.25%.

Model Flow Rate – Measurements will be acquired using the laboratory flow measurement system (Venturi meters) calibrated to within ±0.5%.

Feature Flow Rates – In-line flowmeters or open channel flow measurement structures will be used for direct flow measurements.

Velocities – Point velocities can be measured using acoustic Doppler velocity meters (ADV) at specific locations. Surface velocities will be measured with particle tracking using large-scale particle image velocimetry (LSPIV) in critical areas.

Gate Position – Crest gate position will be determined using templates or string position sensors to set proper gate openings.

Flow Patterns – Flow patterns and recirculation zones will be observed using dye tracing or surface tracking particles. Results will be documented with photographs and videos.

Sedimentation – Sedimentation patterns and trends will be observed using physical measurements of lateral extents and depths, photographs and videos, and/or photogrammetry or laser scanning.

Overall Observations – All model runs will be documented using photographs and videos.

Limitations

The diversion intake will be included in both the hardened ramp and vertical slot fish passage models, but the fish screens and associated sediment jetting systems will not be modeled in detail. General information about sediment deposition areas may be identified inside the diversion, but detailed information about sediment accumulation and sediment management at the fish screens cannot be determined. For the vertical slot fish passage alternative, the vee-screen for the auxiliary water system is a critical component of the fishway attraction system and excessive sediment accumulation has the potential to impact fishway operation. If the vertical slot fishway is deemed a viable alternative following testing in the 1:24- and 1:12-scale models, a smaller scale physical hydraulic model focused strictly on fish screen performance may be considered. A smaller scale physical model of the fish screening system may also be appropriate for the hardened ramp alternative if this option is deemed viable after 1:24- and 1:12-scale model testing.

Bed load and suspended sediment will be added to the model inflow water during sediment tests. Sediment results will provide qualitative information about erosive and depositional zones and transport patterns within and near modeled features and can provide comparative data between different flow configurations and operational scenarios. Results from sediment tests are not quantitative and cannot be used to predict the depth of sediment erosion or deposition. Due to scaling limitations, armoring and sediment sorting processes are unlikely to be accurately represented in the models.

Predictions of the amount of time required to flush sediment from in front of the canal headworks would require information about exact sediment quantities that deposit in this location. Since the physical model can only provide qualitative information about sediment deposition, relative flushing channel timing can be assessed, but exact sluiceway operational duration will not be determined. Additional documented field observations of the existing flushing conditions, combined with model simulations, should be used to inform future flushing operations.

Impact forces will not be measured in the physical model and damage assessment will not be conducted. Structural assessment requires appropriate representation of materials and material properties at model scale. Evaluation of sediment deposition and areas of debris accumulation can be used as an indicator of potential damage locations.

Both models will include a portion of the channel width. The models will require appropriate boundary conditions for hydraulics, sediment, and debris which will be provided from existing CFD model results and information provided through sediment transport and debris studies. Uncertainty in modeled boundary conditions will affect model accuracy.

Communication Plan

A communication plan has been developed to ensure that the model decision-making process is transparent and pertinent information is shared with project partners throughout the modeling progress.

The physical modeling team consists of Reclamation modeling staff, United Water, and United Water's Senior Advisor, Dr. Larry Weber. The modeling team will be responsible for the day-to-day operation of the models. The modeling team will ensure that the physical modeling efforts address model objectives and modeling activities meet professional engineering standards.

Project partners include NMFS, CDFW, and United Water's design consultants, Northwest Hydraulic Consultants and Stantec. Project partners have been given the opportunity to review and comment on the physical model plan and test matrix. Project partners will be given the opportunity to review model drawings and provide input on boundary conditions and sediment and debris loadings prior to model construction.

A total of four project partner model visits will be conducted with the physical modeling team at Reclamation's Hydraulics Laboratory. Site visits will be conducted in person and/or via remote streaming. NMFS, CDFW, and Northwest Hydraulic Consultants will be invited to observe the 1:24- and 1:12-scale models of the hardened ramp alternative. NMFS, CDFW, and Stantec will be invited to observe the 1:24- and 1:12-scale models of the vertical slot fish passage alternative.

Reclamation will provide a weekly email update to project partners on modeling progress. As preliminary data becomes available at various modeling milestones (e.g. shakedown testing, hydraulic testing, sediment and debris testing) for each modeled alternative, project partners will be provided with data and meetings will be scheduled as needed.

As modeling progresses, modifications may be recommended by the physical modeling team. Modifications may be physical changes to design elements or layouts based on model data and observations. Modifications to the test matrix will likely be made as certain flow or operational scenarios may be less consequential than expected while other operational scenarios appear to be

more significant. The modeling team expects the model testing to be an adaptive process with model results and observations informing additional model simulations. United Water will share recommended model modifications with applicable project partners.

Deliverables

Two peer-reviewed model reports will be produced: (1) hardened ramp fish passage alterative and (2) vertical slot fish passage alternative.

Draft modeling reports will undergo internal independent peer-review according to quality control guidance in Reclamation's Technical Service Center Operating Guidelines. Reclamation will submit draft model reports to United Water and United Water's Senior Advisor for initial review and comment. United Water will submit a revised draft model report to project partners for review and comments. Edits and comments will be incorporated, or if not incorporated, a rebuttal will be provided to describe why changes were not made.

The final peer-reviewed model report will be submitted to United Water. All collected data including spreadsheets, text documents, photographs, and videos will be delivered to United Water.

Risk Register for Physical Model Schedule

The risk register shows anticipated risks to project schedule along with potential ways to manage risk.

Table 11. Risk Register for physical modeling projects.

Risk	Risk Description & Potential Impacts	Severity (H, M, L)	Probability (H, M, L)	Risk Mitigation
Building Closure or Staff Illness Due to COVID-19 Pandemic	Temporary laboratory closure or limitation of the number of staff allowed on-site due to COVID-19 restrictions would impact schedule. Significant loss of key staff due to illness would impact schedule.	H	M	There is no way to mitigate a building closure due to mandatory orders. If this situation arises, communication with the client will occur immediately and updates will be provided on a time frame for re-opening, as available. There will be redundancy in qualified staff where possible to limit staff-related impacts due to illness.
Late Changes to Model Test Plan	Model schedule assumes that model planning can begin on February 15, 2021. Late changes to the model scale, extents, major features, and test plan by regulatory agencies could impact model drawings or ordered materials.	H	L	Clear communication is required to ensure that project partners agree on major features of the model study. If unanticipated late changes to the test plan occur, a Change Order to adjust schedule will be required.

Material Availability	Availability of model materials and sediment depends on current stock and delivery times which have been considerably longer due to COVID-19 impacts.	M	L	Materials will be ordered in February after the final test plan is submitted to regulatory agencies to provide substantial time for delivery.

Points of Contact

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United Water CONSERVATION DISTRICT

Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager
Anthony A. Emmert, Assistant General Manager

From: Joseph Jereb, Chief Financial Officer
Josh Perez, Human Resources Manager
Zachary Plummer, Information Technology Administrator
Kris Sofley, Executive Administrative Coordinator/Clerk of the Board

Date: **February 17, 2021 (March 10, 2021 meeting)**

Agenda Item: **5.1 Monthly Administrative Services Department Report**
Informational Item

Staff Recommendation:
The Board will receive the monthly Administrative Services Department report and presentation regarding staff activities for the month of February, 2021.

Discussion:
Activities that took place during the month of February 2021 include:

Finance:

- Met with Department Managers to review their FY 21-22 Budget Templates and Preliminary Requests. Staff working to combine requests into a FY 21-22 draft Budget.
- Processed large volume of groundwater statements received.
- Auditors began the FY 20-21 Internal Controls audit on February 22. Staff has spent significant time on the first week being interviewed by auditors and providing them with requested backup documentation.
- Senior Accountant provided Incode training to Environmental Services team to assist them with budget and expense monitoring.

Administration:

- Admin staff training on new MySites online reservation system for Lake Piru Recreation Area
- Compilation of visitors' email addresses culled from inquiries about camping, boating and day use activities at Lake Piru Recreation Area; emailed all with new website link and notice of reopening of overnight camping beginning March 11, 2021
- Assisted in launch of new ExploreLakePiru.com website in mid-February
- Social Media promotion regarding the new online reservation system and reopening of Lake Piru Recreation Area for camping (beginning March 11)

- Preparation and coordination of UWCD Committee meetings
- Preparation and coordination of Fillmore and Piru Basins GSA and Mound Basin GSA Board meetings and public workshops

Human Resources:

- Completed and submitted SDRMA Renewal Questionnaire on schedule for FY 2021-22.
- Processed employee evaluations and step increases that were scheduled for February.
- Completed multiple verifications of employment for staff members.
- Worked with O&M Department with onboarding Intern O&M staff.
- Working on onboarding for several Recreation positions.
- Processed employee payroll changes into Incode (address change, tax changes, changes in deductions, base pay, cash out requests)
- Processed several enrollment applications and contribution changes for staff in District's 457b Plans.
- Worked with Tony Huynh on ordering, updating, and posting 2021 Compliance Posters for all District facilities.
- Assisted Finance Department in obtaining HR information for CalPERS audit.

Safety and Risk Management:

- Updated COVID-19 Prevention Program
- Disseminated COVID-19 vaccine update and registration best practices to staff
- Continued to partner with O&M Leadership on update O-H System Emergency Response Plan
- Delivered monthly safety meeting, covering Hand & Power Tool safety as well as COVID-19 updates
- Implemented & Delivered training on new Safety Data Management system with staff
- Completed CPR/AED/First Aid renewal training in preparation for instructor course next month to establish internal ability to certified new and existing District staff
- Coordinated annual fire sprinkler system inspection at District HQ
- Coordinated with elevator vendor to resolve letter from Cal/OSHA elevator unit
- Attended CSDA - USC Emergency Preparedness Summit
- Reviewed & provided feedback on FERC cyber security policy documents with internal stakeholders
- Stored & delivered emergency preparedness meals for District facilities
- Disseminated IT Advisories via SMS text via mass notification system

Information Technology Provided IT Support for the following virtual meetings:

- UWCD Water Resources Committee Meeting (Feb 2)
- UWCD Recreation Committee Meeting (Feb 3)
- Engineering and Operations Committee (Feb 4)
- UWCD Finance and Audit Committee (Feb 9)
- UWCD Board of Directors Monthly Meeting (Feb10)
- UWCD Host AWAVC Waterwise Breakfast Zoom (Feb 17)

- FPB GSA Board Meeting (Feb 18)

General IT Helpdesk/Cyber Support:

- Setup computer access for newly hired O&M Intern.
- Provided IT support and assisted staff working from home to upgrade to a more recent version of VPN and Security software.
- Reviewed Cybersecurity Bulletin from Information sharing partners on Oldsmar Water Treatment Facility Cyber Intrusion.
- Completed renewal of United's Secure Certificates (SSL) for Exchange/E-mail Servers and applied renewed security certificates to UWCD E-mail servers.
- Coordinating the refresh of O&M and Environmental Services PC equipment with Laptops. Supporting UWCD's flex requirements associates with COVID-19 protocols.
- Remediated an issue with latest IT Security Antimalware solution that was intermittently causing network interruption between staff computers and network file shares and print services.
- Renewed and applied the Checkpoint Security annual licensing for all products (Firewall's, PC Endpoint Protection, Management Software and Enterprise based support on Checkpoint hardware and software)
- Registered the renewal of United's Secure Certificates (SSL) for Exchange/E-mail Servers. Including Applying the renewed security certificates to UWCD E-mail servers.
- Addressed a UWCD internet and IP phone services while UWCD's primary service providers experienced a systematic wide area outage on 2/22 – 2/23

IT Meetings and Events:

- Continuous Threat Detection Software Demonstration with Rockwell Automation.
- Cradle Point Demo and Case Study with AT&T FirstNet and Cradle Point Teams.
- Checkpoint 21-22FY licensing review with Novacoast & Checkpoint.
- UWCD/SCADA Nutanix Storage Project with Novacoast and Nutanix
- Website PCI Compliance meeting with CV Strategies.
- 6-Week reoccurring Cyber Security program development meeting with UWCD FERC Team.
- Webinar: Modernize Your Network Security Strategy - Microsoft Azure (Cloud Platform)
- Veeam Backup for Office 365 Demonstration
- UWCD Account review with Dell/EMC Technologies (licensing, support and strategy discussion).
- Monthly Multi-State Information Sharing and Analysis Center (MS-ISAC) Presentation
- Monthly FBI Energy and Water Cyberwatch Meeting
- MBGSA GSP Workshop Zoom Webinar Rehearsal
- Archive Social Introductions and Demonstration Meeting

Ticket Metrics:

- 23 ticket service requests received in February

United Water CONSERVATION DISTRICT

Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager

From: Maryam A. Bral, Chief Engineer
Craig A. Morgan, Senior Engineer
Robert J. Richardson, Senior Engineer
Michel Kadah, Engineer
Adrian Quiroz, Associate Engineer
Erik Zvirbulis, GIS Analyst

Date: **March 1, 2021 (March 10, 2021 meeting)**

Agenda Item: **5.2 Monthly Engineering Department Report**
Information item

Staff Recommendation:
The Board will receive the monthly Engineering Department report and presentation regarding staff activities for the month of February, 2021.

Discussion:
As noted in our previous staff reports, the majority of staff continue to work from home and communicate via teleconferencing products during the Covid-19 pandemic.

1. Santa Felicia Dam Safety Improvement Projects
   - Spillway Improvement Project
     - Staff continued the review of the Technical Memoranda prepared by GEI and the revised spillway heel drain cleanout 60% plans.
     - Following discussions with the Project consultants, GEI and Catalyst, the management and FERC, Staff filed a letter with FERC requesting a time extension with FERC on February 23. The proposed project schedule, detailing the design phases, construction phase and the critical environmental permitting milestones, was filed along the letter. FERC has indicated that the request for time extension will be evaluated and a formal response will be provided to the District.
     - Staff submitted the hydrologic model and the 2015 seismic deformation study prepared by GEI to FERC in February in response to FERC request for receiving the above-mentioned documents.
     - Staff reached out to Gannett Fleming (GF), the Part 12D Independent Consultant and requested (GF) to reevaluate the liquefaction potential that was included in the 2017 Part 12D Independent Consultant recommendations. GF has indicated that the 2015

seismic deformation study satisfies the concerns regarding this issue. GF will be submitting a written response to Staff's request in March.

- Outlet Works Improvement Project
  - Staff met with Operations Staff on February 10 to follow-up on discussions regarding the 30% design plans to compile responses to the recommendations on several design alternatives and safety measures presented in the January 6 workshop with GEI. A meeting summary along with Staff comments/recommendations will be submitted to GEI to be incorporated in the current design phase.
  - The above updates reported for the Spillway Improvement Project also apply to the Outlet Works Improvement Project.
- FERC License Amendment Application and NEPA Documentation
  - Staff attended a conference call with the State Water Resources Control Board (Water Board) and the District's consultant, Catalyst on January 21 to discuss the USEPA's new regulations, including a request for a pre-filing meeting with the Water Board, the certifying authority, at least 30 days before submitting the 401 Water Quality (WQ) certification application.
  - Staff submitted a letter to the Water Board on January 26 requesting a pre-filing meeting. A pre-filing meeting with the Water Board took place on February 22 during which the scope and status of the SFD Safety Improvement Project as well as the filing requirements for the 401 WQ certification application were discussed. The Water Board met with Staff and Catalyst again on February 25 and requested the District to proceed with the refiling of the 401 WQ certification application to the Water Board and defer the filing of the 404 certification to the Army Corps of Engineers by approximately nine months after the 410 WQ certification is filed. Staff submitted the 401 WQ certification application to the Water Board on March 3 and notified FERC of the filing.
- Santa Felicia Dam Safety
  - Staff have received a proposal from Encompass Consultant Group (ECG) for the 2021 Santa Felicia Dam Biennial Monitoring Survey. The purpose of this survey is to detect vertical or horizontal movement of the dam structure. The 2020 survey will include a baseline survey of four monitoring points on the crest of the SFD spillway ogee structure. These monitoring points on the spillway will serve as useful control points during construction and allow Staff to monitor horizontal and vertical movement of the spillway ogee structure in the future. Staff will proceed with issuing a Professional Services Agreement (PSA) to ECG in March. The monitoring survey is scheduled to be conducted in May 2021.

2. Santa Felicia Dam Sediment Management Project
   - Staff plan to execute a PSA with GEI for the Santa Felica Dam Sediment Removal Study in March 2021. The study will analyze the feasibility of a sediment removal project and compare underwater dredging methods to in the dry sediment removal with traditional

excavation equipment. As part of this Study, Staff will conduct a Lake Piru Reservoir sediment sampling program that will determine laboratory analyzed physical and chemical properties of the lake bottom sediment at various locations and depths. GEI will provide the sediment sampling plan two weeks after the Notice to Proceed is issued and will submit the results of the sediment removal feasibility study to the District three months after the sediment sample laboratory data become available.

3. Pothole Trailhead Parking Area
   - Staff conducted a coordination meeting with the Forest Service on February 22, 2021 to discuss any updates from the Forest Service regarding the opening of the Juan Fernandez Gate and Piru Canyon Road beyond. The Forest Service decided to move forward with opening of the Juan Fernandez Gate on March 01, 2021 (See Figure 1). The Pothole Trailhead Parking area will now be accessible to the public by motorized vehicle. District Ranger Staff are prepared to operate and maintain the facility as well as patrol the newly open stretch of Piru Canyon Road on a frequent basis. The District is responsible for the operation and maintenance of the facility in perpetuity. A Notice of Completion was e-filed with FERC on March 01, 2021 to provide confirmation that the District has fulfilled its obligations per Article 411 of the FERC License. The next steps would be for the District to execute an easement to the Forest Service in perpetuity for the public use of the trailhead parking area as well as the stretches of the Pothole Trail that traverse District Property. In addition, staff have been working with the Forest Service to develop content for an interpretative sign structure. The sign structure will be installed in April 2021.

4. Lake Piru Water Treatment Plant Slope Evaluation
   - In 2019, Staff retained Oakridge Geoscience to provide geotechnical recommendations to stabilize the soil materials at the Lake Piru Water Treatment Plant access road and piping yard. Staff will work with the O&M Department to determine the depths of the existing water and irrigation pipelines and provide this information to Oakridge. This information will help Oakridge determine the depth to which the surficial materials can be excavated without compromising the integrity of the pipelines below. Staff will also retain ECG to perform a topographic survey of the area. Both the survey and the geotechnical recommendations will be utilized to design drainage improvements at this location. The topo survey and geotechnical recommendations will be received in March 2021. The design of the drainage improvements will subsequently be pursued.

5. Freeman Diversion Rehabilitation/Fish Passage Facility
   - On February 8, Staff delivered USBR's updated Physical Model Plan to NMFS and CDFW

6. Grand Canal
   - The construction is planned to start in March.

7. Freeman Diversion and Lower River System Quagga Mussel Control Project)
   - Staff updated the project budget for the next Fiscal Year.

8. Iron and Manganese Removal at the El Rio Water Treatment Plant
   - February 4, 2021 – Staff attended a product demonstration of BidNet Direct which is an electronic procurement service. The District is considering the service as a highly effective and efficient means to solicit the project for construction bids.
   - February 9, 2021 – Engineering and Operations staff performed fire flow testing and submitted passing results to the Ventura County Fire Department as part of the fire flow verification process and permitting effort for the proposed building.
   - February 10, 2021 – Staff provided comments on the Prop 1 Integrated Regional Water Management (IRWM) Implementation Grant draft agreement exhibits and coordinated with the grant administrator (Calleguas Municipal Water District).
   - February 16, 2021 – Engineering, Finance and Assistant General Manager met to discuss the project schedule and the bids solicitation timeline for the construction phase. The consensus was to advertise for construction bids in April 2021.
   - February 22, 2021 – Engineering and Operations staff performed a count of existing fixtures connected to the El Rio sewer (CSA 34) as part of a sewer connection approval effort with the County of Ventura.
   - February 25, 2021 – Engineering and Finance staff attended the Prop 1 IRWM Implementation Grant Management Kickoff Meeting hosted by the Department of Water Resources.
   - Staff continues to perform pre-construction surveys of the project site as part of CEQA document described "avoidance and minimization measures."
   - Staff continued to review the stamped and signed final 100% design plans, specifications and estimate from Kennedy/Jenks Consultants.
   - Staff continued to develop a bid process plan and prepare for solicitation.
   - Staff prepared a draft Request for Qualifications/Proposals (RFQ/P) for Construction Management (CM) Services. The RFQ/P is anticipated to be issued to select consultants in March 2021.
   - The tentative schedule for the project is as follows:
     - April 1, 2021 – Advertise for construction bids
     - May 6, 2021 – Open construction bids

- June 9, 2021 – Award construction contract (pending Prop 1 grant agreement execution)
- June 26, 2021 – Notice to Proceed for construction

9. El Rio Well Replacement
   - A contract with Best Drilling and Pump Inc. was executed for the construction of El Rio Water Well No. 19. Construction is slated to start in early March and to be complete by mid-May. Well No. 19 will be sited adjacent to Well No. 6 and Operation Staff has prepared the well pad for construction.

10. OH Backup Generator at the El Rio Booster Plant
    - CalOES Hazard Mitigation Grant Program (HMGP) Administration
      - On January 15, Staff submitted the first quarterly report to CalOES as part of the CalOES HMGP requirements.
      - On February 1, Staff submitted a reimbursement request in the amount of $2,160.29 to CalOES. The reimbursement notification letter is expected to be received by mid-March, approximately 45 after the date of the reimbursement request submittal.
    - Procurement of a New 800 kW Generator
      - To expedite the completion of the project by the due date, August 26, 2021, set forth by the CalOES HMGP, Staff decided to procure the long lead backup generator.
      - On January 15, Staff released a request for Quotations (RFQ) for a new 800 kW diesel powered emergency generator. On February 1, Staff received two quotations, one from Quinn Electric (Quinn) and one from Cummins. After completing the selection process, Staff accepted Quinn's quotation which was $12,162.69 less than Cummin's quote on February 1 and issued a purchase order in the amount of $203,159.65 to Quinn on February 24 for the purchase of the generator.
    - Generator Installation – Construction Contract
      - On January 15, Staff released a notice inviting bids for the Construction of the OH System Backup Generator project. Addendum No. 1 to the bid documents was issued on January 19 which included the structural design documents.
      - On January 25, Staff held a mandatory pre-bid job walk inspection meeting for the OH System Backup Generator Project. Only one contractor was in attendance.
      - On January 28, Staff postponed the bid due date to February 22 via Addendum No. 2 to ensure the receipt of several bids. As part of Addendum No. 2, Staff included the District's COVID 19 pandemic response plan in the bid documents and requested hard copy bid submittals.
      - On February 17, Staff issued Addendum No. 3 which shifted the responsibilities related to the removal of the existing 750 kW diesel generator from the Contractor to the District.

- On February 22, the District received three bids from Oilfield Electric, Pacific Industrial Electric and Taft Electric. Staff has identified the lowest responsive bidder and made recommendations to the Board of Directors (Please refer to the motion item on the Board agenda).

11. PTP Turnout Metering System Improvement

- Total number of meters installed: 22 of 61 installed, 36% (+3.3% change)
- One (1) additional meter installation is planned in March 2021, and another seven (7) meter installations planned before the end of Fiscal Year 20-21.
- O&M staff is making progress to resolve communication issues with the equipment supplier and radio manufacturer and has set-up a test site at PTP Well No. 2.
- Easement acquisition completion: 11 of 41 obtained, 27% (no change)
- All owner-signed easements have been recorded with the County Recorder's office.

12. Recycled Water Update

- Staff prepared a data request to assist in the quantification of available recycled water within the Camrosa Water District (Camrosa) and Camarillo Sanitary District (CSD) service areas. The data request will facilitate future discussions with Camrosa, CSD and the Pleasant Valley County District (PVCWD).
- January 26, 2021, the Ventura Water Commission moved to approve the proposed five-year water and wastewater base rates which included the Ventura WaterPure recycled water project.
- The City of Santa Paula is moving forward with its plan to construct an Advanced Water Treatment Facility to supplement its existing wastewater treatment facility. The facility will produce 2,500 to 3,000 acre-feet per year of recycled water with a reduced chloride concentration. Engineering design is currently underway and expected to be complete by summer 2021. The City is in the process of applying for Clean Water State Revolving Fund (SRF) funds.
- Camrosa executed a new recycled water agreement with PVCWD.

13. State Water Project (SWP) Interconnection Project

- Staff received the official final draft copy of the SWP Interconnection Joint Agencies Agreement (Agreement) from the City of Ventura on February 16. The Agreement includes United's the latest comments by United, Casitas Municipal Water District and Calleguas Municipal Water District. The City Staff presented the Agreement to the Ventura Water Commission on February 23 and was requested to add two revisions to the Agreement, a "Dispute Resolution" clause and a better definition for "reasonable judgement" in Section

11- Protection of Facilities of the Agreement. The Water Commission otherwise recommended the City Council to consider approving the revised Agreement.

- The City Staff will modify the Agreement accordingly and is planning to present it to the City Council in April. The City has invited the other three parties to provide their suggestions for the requested revisions.
- In addition, the final hearing for the CWIN lawsuit is scheduled for 8:20 am on March 15. United is not the party on interest in this lawsuit.

14. Coastal Brackish Water Treatment Plant

- On February 18, 2021, Maryam Bral and Nathan Jacobsen (U.S. Navy staff) presented a project update to the Association of Water Agencies of Ventura County.
- Engineering staff assisted Environmental Services staff in preparation of a Request for Proposals (RFP) for consultant services for CEQA/NEPA documentation and processing.
- On February 23, 2021, Engineering, Water Resources and Environmental staff met with U.S. Navy staff to discuss recent meetings and provide an update on CEQA/NEPA consultant selection process and groundwater modeling efforts under the Proposition 1 grant. Additionally, Navy staff provided information on potential sea level rise and climate change impacts at Naval Base Ventura County Point Mugu.

15. Asset Management

- On February 4, 2021 Robert Richardson and Erik Zvirbulis met to discuss the next step in mapping the Districts Facilities into a GIS Database for implementation into ESRI's Small Utility Enterprise.
- On February 25, 2021 Robert Richardson and Erik Zvirbulis met to discuss the CIP budget for the next fiscal year and goals for the Asset Management project in the next fiscal year.

16. 2020 Urban Water Management Plan

- On February 8, Staff received the Administrative Draft copy of the 2020 UWMP Update (Chapters 1-9) and Water Shortage Contingency Plan (WSCP; Chapter 8 in the UWMP) from Stantec for review. On the same day, Staff held a progress meeting with Stantec to discuss the Administrative Draft.
- On February 11, Staff held an Internal Workshop to discuss various aspects of the UWMP and WSCP.
- On February 17, Staff held a progress meeting with Stantec to discuss the Administrative Draft and plan the release of Public Draft and Notices, Public Hearing, and UWMP adoption by the Board of Directors.
- On February 18, Staff distributed the Administrative Draft to UWCD Departments for their opportunity to review and comment on pertinent sections with unresolved questions from Stantec.

- On February 26, Staff provided the first set of comments on the Administrative Draft to Stantec.
- The following is the proposed UWMP timeline:
    - March 5, Staff will receive a complete Public Draft copy of Chapters 1-9 and the Water Shortage Contingency Plan (Chapter 8 of the UWMP) from Stantec.
    - March 12, Staff will release the complete Public Draft copy for public review, release a Notice of Public Hearing at the May 12, 2021 Board Meeting, and a Notice of the Public Draft copy of the UWMP availability for public review.

17. Other Topics, Meetings and Training
    - February 3, 2021- Maryam Bral and Robert Richardson participated in two sessions of IDE's advanced reverse osmosis courses – Pretreatment 101 and How to Properly Plan & Design a Desal Facility
    - February 4, 2021 – Engineering Staff participated in a BidNet Sourcing System Training
    - February 8, 2021 – Maryam Bral and Craig Morgan met with Operations and Recreation to assess the Lake Piru Water Treatment Plant and campground
    - February 8, 2021 – Maryam Bral participated in a coordination project development meeting for IRWMP and SGMA
    - February 16, 2021 – Maryam Bral attended the AWA Water Issues Committee Meeting
    - February 17, 24, 2021 –Robert Richardson participated in sessions of IDE's advanced reverse osmosis courses – O&M of Large-Scale Desal Plants and Guided Tour of IDE's Facility in Hadera
    - February 18, 2021- Maryam Bral and Nathan Jacobsen the USNBVC presented updates on the Coastal BGWTP Project at the AWA Waterwise Breakfast Meeting
    - February 18, 2021 – Maryam Bral participated in the FCGMA Board Meeting
    - February 19, 2021 – Maryam Bral met with Mike Swiger to discuss the FERC Financial Assurances NOI
    - February 23, 2021 – Engineering participated in an ASDSO webinar – Drilling Plans and Hazard Evaluations for Dams and Levees

United Water CONSERVATION DISTRICT

Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager
Anthony Emmert, Assistant General Manager

From: Linda Purpus, Environmental Services Manager

Date: **March 1, 2021 (March 10, 2021 Meeting)**

Agenda Item: **5.3 Monthly Environmental Services Department Report**
Information Item

Staff Recommendation:
The Board will receive the Monthly Environmental Services Department report and presentation on staff activities for the month of February, 2021.

Discussion:

1. Santa Felicia Project Operations and Federal Energy Regulatory Commission (FERC) License Support

    - Water Release Plan

      Under the Water Release Plan and FERC license for the Santa Felicia Project, United is required to make certain water releases from Santa Felicia Dam for steelhead habitat and migration, when specific triggers are met. Triggers for habitat water releases are based on cumulative rainfall within the water year (beginning October 1 each year) as recorded at Ventura County Watershed Protection District's rainfall station No. 160, located at Lake Piru (see table below). United evaluates whether the trigger is met on the first day of each month, between January and June. The table below presents trigger criteria for each month and minimum required releases if those triggers are met. Each month that the trigger is not met, the minimum required habitat water release is 7 cubic feet per second (cfs). The trigger was not met on March 1, 2021. The minimum required habitat water release for the month of March will remain at 7 cfs.

2021 Habitat water release trigger date	Trigger criteria (total cumulative precipitation on trigger date)	Minimum required water release if trigger is met	2021 Measured cumulative precipitation	Actual minimum required habitat water release for month
January 1	4.80 inches	15 cfs	1.73 inches	7 cfs
February 1	8.10 inches	20 cfs	3.27 inches	7 cfs
March 1	12.00 inches	20 cfs	3.28 inches	7 cfs
April 1	14.90 inches	20 cfs	TBD	TBD
May 1	16.30 inches	10 cfs	TBD	TBD
June 1	17.50 inches	9 cfs*	TBD	TBD

*If triggered, the minimum required water release will remain at 9 cfs through October 1, at which time, minimum required water release will be 7 cfs through January 1 of next calendar year.

United has implemented measures outlined in the Water Release Plan and the Water Release and Ramping Rate Implementation Plan since 2012. During that time, several issues that warrant revision and updates have been recognized. United consulted with National Marine Fisheries Service (NMFS) and FERC to develop revisions related to the migration water release trigger criteria. The primary proposed revision to the plans is intended to enhance the efficacy of the migration water release by including assessment of a secondary (afternoon) forecast to confirm conditions that form the basis for the decision. On February 4, 2021, staff submitted a revised Water Release Plan to NMFS and FERC for review. The Water Release and Ramping Rate Implementation Plan will also be revised to reflect the change related to the migration water release trigger and incorporate updates to outdated implementation measures.

- Santa Felicia Dam Safety Improvement Project (SFDSIP)

  On February 1, 2021, United submitted a request for concurrence on a finding of no adverse effect for the SFDSIP to the California Office of Historic Preservation (OHP). This request was the final step in the Section 106 Consultation of the National Historic Preservation Act for the SFDSIP. On February 11, 2021, OHP responded with a "no objection" to the finding of no adverse effects to the Santa Felicia Dam.

  The SFDSIP team is moving forward to acquire necessary state and federal environmental permits. On February 22, 2021, United hosted a pre-filing meeting for an application for Water Quality Certification (under section 401 of the Clean Water Act), with the State Water Resources Control Board. On February 23, 2021, United hosted a pre-filing meeting for an application for Lake and Streambed Alteration Agreement, with California Department of Fish and Wildlife (CDFW).

- Historical Properties Management Plan (HPMP)

  On May 15, 2020, United submitted a draft HPMP to FERC and the California OHP for the Santa Felicia Project. In a meeting held on July 10, 2020, FERC and OHP provided guidance to United requesting further development of certain elements of the HPMP. In response, on August 5, 2020, United filed a request for an extension of time to file the HPMP with FERC for review until February 5, 2021, which FERC approved in an order dated January 15, 2021. In pursuit of finalizing the document, United held two (2) meetings with California OHP staff, October 22, 2020, and December 22, 2020. The draft HPMP is currently being reviewed and further developed by Environmental Services staff to encompass California SHPO's requests and formalize a survey strategy and cultural protective measures. On February 4, 2021, United requested an additional 6-month extension of time to conclude Section 106 consultation, finalize the document, and resubmit the HPMP to FERC for review by August 6, 2021.

- Annual U.S. Forest Service (Forest Service) Consultation

  On February 18, 2021, Environmental Services, Recreation, and Engineering staffs hosted an annual consultation meeting with Los Padres National Forest Service staff in accordance with the FERC license 4(e) conditions. Staff provided updates on past activities and future plans related to United's projects that affect Forest Service lands or have special interest for the Forest Service.

- Arroyo Toad Protection Plan and Herpetological Monitoring Plan

  On February 25, 2021, Environmental Services staff hosted an annual consultation meeting with agency representatives from Forest Service, CDFW, and US Fish and Wildlife Service (USFWS) to provide an update on activities conducted under the subject plans during the 2020 calendar year. In accordance with the FERC license, United will file minutes from the meeting with FERC within 60 days of the meeting.

- California Department of Water Resources (DWR) and Los Angeles Department of Water and Power (LADWP) FERC License (No. 2426) - South State Water Hydropower Project (Pyramid Lake)

  On February 23, 2021, Environmental Services staff met with U.S. Geological Survey (USGS) Western Ecological Research Center (WERC) scientists to discuss evaluations that United will need to complete in support of eliminating the 3,150 AF limit for State Water Project deliveries to United from Pyramid Lake under Article 52 of the South State Water Project FERC License. Staff and USGS are in the process of developing the assessment framework regarding effects to Endangered Species Act listed species including arroyo toad, least Bell's vireo, and southwestern willow flycatcher from the elimination of the 3,150 AF State Water Project delivery limit.

On February 24, 2021, Environmental Services staff met with staff from DWR's FERC licensing and CEQA planning departments to discuss the CEQA compliance process related to United's proposal to eliminate the 3,150 AF State Water Project delivery limit. Moving forward, United is developing a strategy for the completion of CEQA and incorporation into DWR's FERC relicensing process.

2. Freeman Diversion Facility Operations

- On January 29, 2021, a waning atmospheric river event resulted in runoff of approximately 300 cfs arriving at the Freeman Diversion. Due to concerns about this peak flow bringing sediment into the Freeman Diversion facility and potentially inundating infrastructure, Operations and Maintenance staff opened the roller gate, allowing the sediment laden flows to bypass the facility. Environmental Services and Hydrology staff consulted with NMFS staff regarding current conditions and foreseeable future scenarios, considering uncertainty at that time. In an effort to minimize the potential risk to downstream migrating steelhead smolts that may have been present at the time, United provided three full days of screened bypass flows (approximately 30 cfs) and Environmental Services staff conducted accompanying stranding surveys in the reach of the Santa Clara River downstream of the Freeman Diversion. No *O. mykiss* were observed during the surveys.

- On February 8, 2021, Environmental Services staff met onsite with our consultant, Rincon Consultants, Inc. to conduct a jurisdictional delineation (i.e., wetland delineation) at the Freeman Diversion in support of developing the permit application packages for a sediment management program. Environmental Services field staff participated in the effort to gain training and experience regarding these specific protocols.

3. Multiple Species Habitat Conservation Plan (MSHCP)

- Staff continued to coordinate with NMFS and CDFW in an effort to progress in the MSHCP planning process. Staff participated in meetings with CDFW's Habitat Conservation, Engineering, and Hydrology departments regarding compliance with Fish & Game Code sections 5901 and 5937, outstanding comments on the MSHCP, and worked on developing an approach to resolve outstanding issues as the fish passage facility design and MSHCP process continues.

- GEI Consultants Inc. (GEI) completed drafts of the biological assessment, cultural resources inventory, and regulatory application packages in support of the geotechnical investigations for the fish passage facility engineering design. United staff is currently reviewing the draft materials prior to finalization and submittal to the regulatory agencies. United staff completed a required pre-application meeting with the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and CDFW ahead of permit application/ notification submittals. The draft Initial Study – Mitigated Negative Declaration is currently

in development by GEI, which will fulfill the California Environmental Quality Act (CEQA) analysis requirements for the project.

4. Quagga Mussel Management

- Monitoring
  - Environmental Services staff continues to conduct routine monitoring under the Quagga Mussel Monitoring and Control Plan (Plan) comprising: monthly water quality sampling; monthly veliger (microscopic planktonic larvae) sampling; monthly artificial substrate sampling in Lake Piru (plate sampling); and natural substrate sampling in Piru Creek (surface surveys). Surface surveys were also performed at locations accessed through Rancho Temescal property.

  - Staff continues to implement the Lower System Quagga Mussel Veliger Monitoring Program. Specifically, staff conducts monitoring activities in the lower water delivery system, including the Pleasant Valley (PV) and Pumping Trough Pipeline (PTP) reservoirs. All data collected under the quagga mussel monitoring program are being compiled and evaluated and will be summarized in the 2020 annual report.

  - On February 17, 2021, Environmental Services staff provided a tour of Lake Piru and Piru Creek to CDFW Scientific Aids who conduct quagga mussel early detection surveys in Southern and Central California. Staff provided background on United's monitoring program and demonstrated tactile survey methods.

  - Continuous training is being implemented to ensure staff have the support and tools necessary to complete all monitoring surveys and analysis.

5. Miscellaneous

- On February 10, 2021, staff escorted Dr. Sean Anderson, chair of the Environmental Science and Resource Management Department at the University of California Channel Islands, on a tour of the Freeman Diversion. Dr. Anderson conducted a drone flight to collect video and still imagery of the facility for the purpose of developing a virtual facility tour for classroom groups in lieu of an on-site tour (historically hosted annually) under COVID-19 restrictions.

- On February 18, 2021, Environmental Services staff attended the AWA Waterwise Breakfast Series. United's Chief Engineer and a representative of the U.S. Navy co-presented on the Coastal Brackish Water Treatment Plant project.

- On February 23, 2021, Environmental Services staff conducted a snorkel survey of lower Piru Creek, below Santa Felicia Dam. No *O. mykiss* were observed.

United Water CONSERVATION DISTRICT

Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager
Brian Collins, Chief Operations Officer

From: John Carman, Programs Supervisor

Date: **February 26, 2020 (March 10, 2020 Meeting)**

Agenda Item: **5.4 Monthly Operations and Maintenance Department Report**
Information Item

Staff Recommendation:
The Board will receive and file the summary report from the Operations and Maintenance Department report regarding its activities for the month of February, 2021.

1. Water Releases, Diversions and Deliveries
   - Lake Piru rose 5.01 feet in February to 17,789 acre-feet (AF) of storage.
   - 2620 AF of water was diverted by the Freeman Diversion facility in February.
   - 0 AF of water was diverted to the Saticoy recharge basins in February.
   - 1738 AF of surface water was delivered to the El Rio recharge basins in February.
   - 410 AF of surface water was delivered to the PTP system in February.
   - 363 AF of surface water was delivered to Pleasant Valley County Water District in February.

2. Major Facilities Update
   - **Santa Felicia Dam**
     - Lake Piru rose 5.01 feet February 1, 2021 through March 1, 2021, to 17,789 AF of storage.
     - On March 1, 2021 the lake level was 77.1 feet below the spillway lip.
     - On February 1, 2021, the cumulative rainfall measured at rain station 160 was 3.28 inches which does not exceed the 12 inch trigger; habitat water releases from Santa Felicia Dam (SFD) were maintained at 7 cubic feet per second (cfs), for the month of February, as per the Water Release and Ramping Rate Implementation Plan for lower Piru Creek.
     - Staff managed pump barge and recreation marina adjustments with the arrival of purchased State Water from Lake Pyramid.
     - On February 22, 2020 State Water Resource Control Board, Department of Drinking Water conducted Sanitary Survey tri-annual inspection for Lake Piru filtration plant.

- **Freeman Diversion, Saticoy, and El Rio Recharge Facilities**
  - Flows at the Freeman Diversion averaged 47 cfs for the month of February, with 56 cfs of surface water being diverted on January 1, 2021.
  - During the month of February, 2620 AF of surface water deliveries were made to the Saticoy Recharge Facility.
  - During the month of February, 1738 AF of surface water deliveries were made to the El Rio Recharge Facility.
  - Staff mobilized heavy equipment and graded pad for new OH Well 19 site.
  - Static water levels (distance of water from the well pad to the water table):

	2021	2020	2019
Saticoy	125.3'	113.4'	103.7'
El Rio	115.4'	112.14'	132.12'
PTP	100' - 132'	98' - 138'	100' - 137'

- **Noble/Rose/Ferro Basins**
  - 0 AF of surface water was delivered to the Noble & Rose basins during February.

- **Oxnard-Hueneme (OH) Delivery System**
  - Staff isolated Oceanview pipeline for City of Oxnard emergency repairs.
  - Staff working with Criterion Environmental for asbestos remediation of OH Wellfield generator.
  - Took delivery of Ventura County Sheriff's emergency water tank trailer, to be stored next to OH Booster Plant clearwell #2.

- **Pleasant Valley County Water District (PVCWD)**
  - During the month of February PVCWD received 363 AF of surface water from United and PVCWD continued to receive surface water from the Conejo Creek Project and also received some highly treated recycled water from the City of Oxnard's Advanced Water Purification Facility (AWPF).
  - District staff installed rebuilt PV flow meter on February 11, 2021.
- **Pumping Trough Pipeline (PTP)**
  - During the month of February, the majority of the PTP system demand was met with surface water deliveries from the Freeman Diversion facility and was supplemented with PTP wells, as needed during peak demands.
  - Staff installed new Endress Hauser meters and piping assembly at users #112 and #157.
  - Staff troubleshot distribution system wide pressure fluctuation issues, determined cause was customer C-1 malfunction well.

- **Instrumentation**
  - Instrumentation staff and contractor Diener Electric drilled and set six communication poles for PTP meter upgrade project.

- Staff working with contractor United Controls upgrading PLC's at OH #4 and PTP mainline meter.
- Staff configured meters, assembled solar panel structures, and wired PTP meters #112 and #157.
- Staff built new Saticoy SCADA control computer with updated 911 Callout software.

- **Lake Piru Water System**
  - All chlorine residuals and turbidity readings for the drinking water system were within proper ranges for the month of February.
  - Monthly pH, turbidity and coliform samples were obtained for Lake Piru, as part of the Long Term 2 Enhanced Surface Water Treatment Rule compliance monitoring.

3. Operations and Maintenance Projects Update
   - Engineering and Operations staff continue with FEMA OES grant funded El Rio Facility Wellfield emergency generator project. Staff preparing old generator & foundation for removal. Installation contract awarded to Oilfield Electric.

4. Other Operations and Maintenance Activities
   - The Santa Felicia Dam Emergency Action Plan sirens located in Piru were exercised on February 5, 2020.
   - Submitted annual off road regulations (ROAR) report.
   - On February 16, 2020 staff attended the Santa Paula Chamber of Commerce board meeting remotely.
   - The monthly inspection of Santa Felicia Dam was performed.
   - Monthly bacteria samples were obtained for the PTP system.
   - OH Booster Plant post analyzer relocation project drain, water supply, and electrical service phase complete.
   - Crated and shipped PTP Mainline and TID meters to Mcrometer for bi-annual service.
   - Monthly meter readings were obtained for the OH, PTP, and PV Pipelines.
   - Completed and electronically transmitted the monthly OH Pipeline report to the State Water Resources Control Board Division of Drinking Water.
   - Static water levels were obtained for all El Rio, Saticoy, and PTP wells.
   - Weed abatement continued throughout the District.
   - Action priority update biweekly meetings for operations staff were continued.

5. Safety and Training
   - During the month of February approximately 3,100 hours of work, within the O & M department, were performed with no reportable accidents. The YTD safety record is 0 recordable injury.
   - Two separate safety meetings were conducted on February 25 and 26 utilizing the Microsoft Teams application, to maintain social distancing practices and to accommodate the separately scheduled teams. Three videos, developed by WorkSafe BC, were provided to staff entitled *Nail Gun Safety, Circular Saw Kickback, and Circular Saw*

Guarding. An AWWA safety handout entitled "Holding onto Hand Safety" was also briefed to staff. The primary objective was to provide awareness and share Hand and Power Tool safety with staff, with the emphasis on safe operations. Additionally, a COVID-19 update was provided to staff as well as training on the District's new Safety Data Sheet (SDS) management system.

- Tailgate safety meetings were conducted at all individual O&M field locations and the topics included refresher training on equipment used at the various O&M locations. The online Target Safety assignment for February was "*Water Industry: Hand and Power Tool Safety."*

Attachments: A - Operations Log for February

OPERATIONS LOG

DATE	SANTA FELICIA DAM								FREEMAN DIVERSION**					RECHARGE					IRRIGATION						O-H	
	SFD El.	Stor.	Surface	Evap.	Inflow Balance	Outflow USGS	Hydro	Rain 106E	River	Diverted	Fish*** Facility	Bypass Channel	Crest	El Rio	Saticoy Facility		Noble/ Rose	Piru	T.I.D.	P.T.P.	PVCWD		L.P.	Saticoy Wells	Total	Cl2
	Ft.	A/F	Acres	Inches	Av. CFS	Av. CFS	Kw	Inches	Av. CFS	Av. CFS	Av. CFS	Av. CFS	Av. CFS	Av. CFS	Misc CFS†	Weir CFS	Av. CFS	Av. CFS	A/F	A/F	A/F	%	A/F	A/F	A/F	Lbs.
A/F*		15184			2,802	12,162		3.27	12,518	11,914	141	460		7,115	1768		0	0.0	3,031	2,123	1,004		0.0	0	4,798	37,996
2/1/21	978.26	15209	491.10	0.051	21	7.52	0	0.00	86	56	30.7	0	0	56.22	-3	0	0	0.0	4.2	4.2	0.0	0.00	0.0	0.0	27.5	223
2/2/21	978.28	15219	491.30	0.050	13	7.52	0	0.00	73	61	12.1	0	0	50.16	7	0	0	0.0	7.7	7.7	0.0	0.00	0.0	0.0	28.1	229
2/3/21	978.31	15233	491.70	0.065	15	7.54	0	0.00	68	65	2.8	0	0	56.54	7	0	0	0.0	3.9	3.9	0.0	0.00	0.0	0.0	7.6	301
2/4/21	978.33	15243	491.90	0.097	14	7.56	0	0.00	67	64	2.8	0	0	53.76	5	0	0	0.0	9.8	9.8	0.0	0.00	0.0	0.0	36.7	296
2/5/21	978.32	15238	491.80	0.107	6	7.58	0	0.00	66	64	2.9	0	0	51.33	7	0	0	0.0	10.4	10.4	0.0	0.00	0.0	0.0	37.6	283
2/6/21	978.38	15268	492.50	0.123	24	8.03	0	0.00	64	62	2.8	0	0	49.53	3	0	0	0.0	18.1	18.1	0.0	0.00	0.0	0.0	37.1	292
2/7/21	978.38	15268	492.50	0.097	9	7.98	0	0.00	62	59	2.8	0	0	53.97	3	0	0	0.0	4.7	4.7	0.0	0.00	0.0	0.0	33.8	270
2/8/21	978.39	15273	492.70	0.089	11	7.93	0	0.00	61	59	2.8	0	0	46.9	6	0	0	0.0	11.5	11.5	0.0	0.00	0.0	0.0	40.3	300
2/9/21	978.41	15283	492.90	0.079	14	7.79	0	0.00	61	58	2.9	0	0	45.74	5	0	0	0.0	13.9	13.9	0.0	0.00	0.0	0.0	35.6	306
2/10/21	978.43	15292	493.10	0.068	13	7.69	0	0.00	59	56	2.9	0	0	45.86	5	0	0	0.0	10.3	10.3	0.0	0.00	0.0	0.0	41.3	329
2/11/21	978.42	15287	493.00	0.069	6	7.67	0	0.00	58	55	2.8	0	0	42.84	6	0	0	0.0	11.3	11.3	0.0	0.00	0.0	0.0	32.1	277
2/12/21	978.46	15307	493.50	0.042	18	7.58	0	0.01	56	53	2.8	0	0	39.97	4	0	0	0.0	17.7	17.7	0.0	0.00	0.0	0.0	31.5	253
2/13/21	978.57	15361	494.90	0.102	36	7.57	0	0.00	54	51	2.8	0	0	40.53	4	0	0	0.0	12.8	12.8	0.0	0.00	0.0	0.0	30.2	246
2/14/21	978.81	15480	497.80	0.133	69	7.57	0	0.00	54	52	2.8	0	0	43.73	8	0	0	0.0	0.5	0.5	0.0	0.00	0.0	0.0	28.2	228
2/15/21	979.08	15615	501.20	0.117	77	7.58	0	0.00	54	51	2.8	0	0	35.66	7	0	0	0.0	15.5	15.5	0.0	0.00	0.0	0.0	33.9	260
2/16/21	979.42	15787	505.80	0.088	95	7.6	0	0.00	50	47	2.8	0	0	31.21	6	0	0	0.0	18.4	18.4	0.0	0.00	0.0	0.0	31.6	261
2/17/21	979.91	16037	512.40	0.134	135	7.6	0	0.00	45	42	2.8	0	0	26.37	8	0	0	0.0	14.6	14.6	0.0	0.00	0.0	0.0	33.3	267
2/18/21	980.30	16237	515.70	0.085	110	7.64	0	0.00	42	39	2.8	0	0	18.74	-21	0	0	0.0	82.4	17.8	64.6	0.83	0.0	0.0	32.6	261
2/19/21	980.69	16439	518.30	0.220	112	7.68	0	0.00	40	38	2.7	0	0	13.87	-2	0	0	0.0	50.6	19.9	30.7	0.41	0.0	0.0	35.7	279
2/20/21	981.03	16616	520.70	0.133	99	7.69	0	0.00	40	38	2.7	0	0	14.16	-2	0	0	0.0	50.5	19.2	31.3	0.42	0.0	0.0	32.8	259
2/21/21	981.33	16772	522.70	0.147	88	7.66	0	0.00	40	37	2.8	0	0	22.54	-8	0	0	0.0	44.1	7.1	37.0	0.50	0.0	0.0	30.4	239
2/22/21	981.69	16961	525.10	0.155	105	7.64	0	0.00	41	38	2.8	0	0	20.92	-8	0	0	0.0	49.0	23.7	25.3	0.34	0.0	0.0	45.4	336
2/23/21	982.02	17134	527.30	0.193	97	7.66	0	0.00	37	35	2.8	0	0	16.8	-8	0	0	0.0	50.2	25.9	24.3	0.35	0.0	0.0	44.0	360
2/24/21	982.36	17314	529.90	0.106	100	7.69	0	0.00	36	33	2.8	0	0	7.77	-1	0	0	0.0	51.6	22.6	29.0	0.44	0.0	0.0	46.0	374
2/25/21	982.70	17494	532.60	0.180	101	7.71	0	0.00	33	31	2.8	0	0	12.2	-12	0	0	0.0	60.2	28.0	32.2	0.53	0.0	0.0	41.1	360
2/26/21	982.89	17596	534.10	0.219	62	7.72	0	0.00	31	28	2.8	0	0	1.2	-2	0	0	0.0	56.2	29.0	27.2	0.49	0.0	0.0	44.6	349
2/27/21	983.06	17687	535.40	0.140	55	7.78	0	0.00	31	28	2.8	0	0	3.5	2	0	0	0.0	43.8	22.2	21.6	0.39	0.0	0.0	44.1	375
2/28/21	983.25	17789	536.90	0.231	62	7.79	0	0.00	30	27	2.7	0	0	6.2	3	0	0	0.0	34.1	12.3	21.8	0.41	0.0	0.0	40.3	326
TOTAL CFS					1567	215		0.01	1439	1323	116	0	0	908	32	0	0	0.0								
AVERAGE CFS					56	8			51	47	4	0	0	32	1	0	0	0.0								
TOTAL A/F					3102	426			2848	2620	229	0	0	1798	63	0	0	0.0	758	413	345		0	0.0	983	8139
MONTHLY REVENUE TO DATE (approx.)							$0	K																		
AVERAGE A/F					111	15			102	94	8	0	0	64	2	0	0	0.0	27	15	12	18%	0	0.0	35	291
WATER YEAR TOTALS A/F					5,904	12,588		3.28	15,366	14,534	370	460	0	8,913	1,831		0	0.0	3,789	2,536	1,349		0	0	5,781	46,135

* Input total A/F previous month

** Daily averages imported from Ranch Systems

*** Fish facility flows include Denil fishladder, aux pipe and smolt bypass pipe

† Includes Ponds A, C, E, and I overflows, temporary storage in the desilting basin and Pond B, JLB diversions, losses between meters. Negatives mean prior storage from pond B or desilting basin is discharging to other metered sources.

United Water
CONSERVATION DISTRICT

Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager

From: Clayton W. Strahan, Chief Park Ranger

Date: **February 21, 2021 (March 10, 2021 Meeting)**

Agenda Item: **5.5 Monthly Park and Recreation Department Report**
Information item

Staff Recommendation:
The Board will receive this summary report from the Park and Recreation Department staff regarding its activities for the month of February 2021.

Discussion:
The month of February brought about exceptional opportunities for growth to the Lake Piru Recreation Area (Recreation Area). As always, regular maintenance, patrols, and contacts with the public consumed much of the Recreation Area staff's time.

Additionally, staff worked diligently to secure contracts for needed supplies and services, trained employees on new technology systems and cash handling practices, and began all preparations required to fully reopen the Recreation Area to the public. A vendor was brought in by staff to assist with the diagnosis and repair of several failures in the irrigation system located in the day use area. Over the course of the month, staff worked with our selected vendor to complete our new and greatly improved reservation and point of sale systems to increase our efficiency and effectiveness in handling Recreation Area operations both for day use and camping. A request for proposal was completed and has now been disseminated to identify and complete a negotiated agreement to run our Lake Piru Marina and storefront operations.

Eventually, District leadership determined that the Recreation Area was prepared to reopen, and camping reservations were launched with a target opening date of March 11, 2021. As of February 21, camping reservations had brought in more than $7,000 of revenue in two days. Staff continue to work hard to prepare the campground and facilities for the public and hold high hopes for the coming months.

1. **Staff Tasks and Activities**
   - **February 1, 2, 18:** Tailored, decontaminated, and transported the District work barge to vendor for repairs to the trim mechanism.

- **February 1:** Pressure washed marina, day use restrooms, and, in preparation for painting, the Connex storage container.
- **February 2:** Removed downed tree branches from wind events that were blocking fire access.
- **February 3, 15:** Cleaned the two floating restrooms on the lake to ensure public health for guests of the Recreation Area.
- **February 4:** Cleaned-up refuse along Piru Canyon Road and around the Recreation Area as part of ongoing maintenance efforts.
- **February 6:** With assistance from O&M staff, repaired two leaking water lines in the Oak Lane camping area.
- **February 6:** Repaired a screen covering protecting the domestic water tank from contamination by foreign objects and debris.
- **February 7, 9:** With assistance from O&M staff, isolated and repaired a section of leaking water line along Residence Row in the Olive Grove campground.
- **February 7, 9, 15:** Sprayed approximately 200 gallons of herbicide in in an ongoing effort to stop weed growth in the Olive Grove campground, marina area, and roadsides of the Recreation Area.
- **February 8:** Assisted O&M personnel in the maintenance of communication technology at the Lake Piru Water Treatment Plant.
- **February 9:** Installed a radio antenna for the Ranger's Office to allow improved communications between personnel throughout the Recreation Area.
- **February 10:** Posted "No Swimming" signs at several locations in the Recreation Area adjacent to the lake shoreline.
- **February 11, 17, 21:** Moved the courtesy dock to accommodate rising lake levels because of the inflow of state water from Pyramid Lake.
- **February 15:** Repaired a leaking seal on the domestic prefilter vessel at the Lake Piru Water Treatment Plant.
- **February 15:** Cleaned the pump barge in preparation for a sanitary inspection from the State Water Resources Control Board.
- **February 16:** Removed accumulated vegetation debris and trash from the Olive Grove campground.
- **February 15-19:** Pacific Vista Landscapes, a contracted landscape firm, was onsite assessing the day use irrigation system and making repairs. Their work included tracing wires to restore the functionality of the day use irrigation system, making three main line repairs, five lateral line repairs, replacing a valve and identifying future upgrades needed to restore the automation of the system.
- **February 16, 18:** Completed maintenance and repairs to the dump trailer to return the dump mechanism to operational status.
- **February 17, 21:** Moved the marina to account for rising water levels because of the inflow of state water from Pyramid Lake.
- **February 18:** Cleaned the marina and day use restrooms to ensure public health for guests of the Recreation Area.
- **February 19:** Installed bird deterrents on the pump barge to reduce the need for frequent cleaning of the barge.

- **February 20:** Repaired and tightened the safety buoy line surrounding the pump barge for the Lake Piru Water Treatment Plant.
- **February 21:** Completed monthly testing of the satellite phone to ensure reliable communications in the event of an emergency.
- **February 22-26:** Pacific Vista Landscaping was onsite repairing the group camp two tree irrigation system and replanting 11 sycamore trees that died. The replanting of these trees is a requirement of a previous mitigation measure associated with the construction of the Park Ranger facility in 2019, in which the District planted 44 trees and was required to maintain those trees for a five-year period. Unfortunately, 11 of the trees did not survive. It is believed that the irrigation improvements, as a part of this project, will ensure the survival of the new plantings.

2. <u>Staff Training/Meetings/Events</u>

- **February 4:** Received training from a representative of House Sanitary Supply regarding safe and effective use of cleaning products and chemicals in the Recreation Area.
- **February 8-12:** Park Ranger Cadet Danny Helton attended Inland Boat Operator training in Lake Havasu, Arizona. The training, which is hosted by California Department of Boating and Waterways, prepares attendees to safely operate vessels in an inland environment, respond to emergencies, and make enforcement stops.
- **February 8:** Met with members of the Piru Neighborhood Council and the Heritage Valley Tourism Bureau to engage both organizations to better promote the Recreation Area in the Santa Clara Valley and the surrounding areas.
- **February 14:** Held an interdepartmental meeting to provide feedback on the FY 21-22 budget.
- **February 17:** Coordinated a training for the Finance and Administrative Services Divisions to participate in a virtual review of the MySites.com reservation system for the Recreation area. The training, which was hosted by members of Southeast Publications (MySites.com), was approximately three hours longs and provided a review of the financial reporting practices of the system and the overall functionality of the system.
- **February 17:** Attended and participated in the Piru Neighborhood Council meeting for the community of Piru. Staff also provided an update to the community on ongoing activities at the Recreation Area.
- **February 19, 26:** Participated in a virtual review of the MySites.com reservation system for the Recreation area. The training, which was hosted by members of Southeast Publications (MySites.com), was approximately three hours longs and provided a review of the systems reporting functionalities, the point-of-sale functions of the system and a review of the reservation functions needed to process camping reservations.
- **February 24:** Participated in the CCWUC water operators monthly virtual training as part of their efforts to obtain continuing education units (CEU) for the water treatment operator certifications. The topic of review was that of the "History of Pump Efficiency Testing in California". The training provided one CEU for each attendee.

3. Revenue & Visitation Recap

2021 Day Use Revenue Recap and Comparison	
2021 Day Use Revenue (Jan. 1-Feb. 23, 2021)	$ 27,414.50
2020 Day Use Revenue (Jan. 1-Feb. 29, 2020)	$ 6,380.30
Total Revenue Increase/Decrease from Prior Year	**$ 21,034.20**
Annual Increase in %	**330%**
2021 Camping Revenue Recap and Comparison	
2021 Camping Revenue (Feb. 19-23, 2021)	**$10,437.00****
2020 Camping Revenue (Jan. 1-Feb. 29, 2020)	$52,643.00

** *Camping Revenue has been impacted by the park closure order due to COVID-19. Camping reservations resumed on February 19, 2021.*

2021 Total Visitation Figures				
Month	**# Nights/Sites**	**# People**	**# Vehicles**	**# Vessels**
January	0	2627	1196	219
February (1-23)	0	1657	858	114

4. Incidents/Arrests/Medicals

- **February 3:** On February 3, 2021, Rangers and Ventura County Sheriff's deputies responded to the Recreation Area after hours in response to 911 calls from a woman who was lost in the area around the lake. The missing individual was located by staff. Responding Sheriff's Deputies and staff ensured she was safely transported back to her vehicle.
- **February 9:** While completing unrelated maintenance tasks, staff encountered a young girl who had fallen off her bike and was complaining of pain in her knee. Staff completed a brief assessment of the girl, determined that no serious injuries existed, and provided an ice pack to mitigate the pain after instructing the girl's parents to seek medical attention if her condition did not improve.
- **February 18:** Staff assisted in the safe extraction of a guest's vehicle which had become stuck in a muddy area of the shoreline. The guest did not realize that the area they drove into was so slick and they were grateful for the assistance.

5. Citations/Enforcement Summary

No enforcement action was taken during the month of February.

6. Grants

Staff is continuing to actively monitor and evaluate all available grant opportunities. There is currently nothing to report on this matter.

United Water CONSERVATION DISTRICT

Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager

From: Maryam Bral, Chief Engineer
Dan Detmer, Supervising Hydrogeologist

Date: **March 1, 2021 (March 10, 2021, meeting)**

Agenda Item: **5.6 Monthly Water Resources Department Report**
Information Item

Staff Recommendation:
The Board will receive and file this summary report from the Water Resources Department regarding activities for the month of February 2021.

Discussion:

As noted in our previous staff reports, the majority of staff continue to work from home and communicate via teleconferencing during the Covid-19 pandemic.

Staff Activities

In addition to the Department's routine, ongoing groundwater monitoring and reporting program and its support of Groundwater Sustainability Agencies (summarized in a separate staff report), notable efforts and activities conducted by staff during the past month included the following:

- Groundwater modeling:
  - Staff has expanded the active domain of United's numerical groundwater flow model to incorporate the Piru, Fillmore and Santa Paula basins. The model was calibrated through 2015 and validated through the 2016-2019 period. Now that the expanded model has been validated, staff are preparing model documentation and applying the model for a number of urgent tasks, as described below and in the SGMA update staff report.
  - Staff has worked with Ventura County Watershed Protection District staff to use their existing HSPF surface water flow model to simulate runoff from the upper Santa Clara River watershed for future model runs in support of area Groundwater Sustainability Agencies (GSAs).

  - Staff has completed the work required to apply climate change factors to historical streamflow and rainfall records, as required to simulated future hydrology for the local GSAs. Forward modeling runs with climate change factors have been executed and delivered to the Mound and Fillmore-Piru Basin GSAs

- Staff continue to help the Environmental Services Department (ESD) evaluate effects of existing and potential future surface-water flow conditions at the Freeman Diversion.
  - Staff are assisting ESD in evaluating fish passage modifications under consideration for United's Habitat Conservation Plan (HCP).
- Staff continue to assist with planning and coordination for release of Table A water and supplemental State Water Project water acquired from the Santa Clarita Valley Water Agency, the City of San Buenaventura and Casitas Municipal Water District.
- Staff has entered available lithologic information from wells in the Mugu area into a RockWorks database and has constructed cross-sections in order to map the continuity of confining units in the vicinity of the proposed Coastal Brackish Groundwater Extraction and Treatment Project. Aquifer and confining unit picks from individual borings can now be used to generate surfaces and layer thicknesses for local model refinements.
- Staff are analyzing sediment load at the Freeman Diversion and removal options for accumulated sediment from the desilting basin.
- Staff is assisting in the design of a study of sediment size-class distribution and transport in the Santa Clara River at the Freeman Diversion
- Staff continue to collaborate with the Engineering Department to continue develop t and design a portfolio of new or improved water-supply projects within the District's service area.
- Staff supported the Engineering Department and a consultant in developing the 2021 updates to United's Urban Water Management Plan for its OH and Lake Piru water-supply systems.
- Field staff completed the monthly monitoring run for groundwater elevations and sampling of the non-coastal monitoring wells.

United Water CONSERVATION DISTRICT

Staff Report

To: **UWCD Board of Directors**

Through: Mauricio E. Guardado, Jr., General Manager

From: Maryam Bral, Chief Engineer
Dan Detmer, Supervising Hydrogeologist

Date: **March 1, 2021 (March 10, 2021, meeting)**

Agenda Item: **5.7 Update on Groundwater Sustainability Agencies (GSAs) and Sustainable Groundwater Management Act (SGMA)**
Information Item

Staff Recommendation:
Receive a summary report of Water Resources Department activities related to the Sustainable Groundwater Management Act (SGMA) and Groundwater Sustainability Agencies (GSAs) for the groundwater basins within District boundaries.

Discussion:

Fox Canyon Groundwater Management Agency (FCGMA)
Staff continue to monitor and, where appropriate, participate in the FCGMA's groundwater sustainability planning and implementation efforts in the Oxnard, Pleasant Valley, and Las Posas Valley (western management area) basins, as follows:

Board of Directors meetings – The FCGMA Board held a regular meeting online on January 27. Notable topics included:

- The Board approved a contract with Dudek to prepare groundwater sustainability plan (GSP) annual updates for the Las Posas Valley basin, Oxnard basin, and Pleasant Valley basin. The contract also included support of preliminary feasibility studies for new water supply projects. United staff participated in a call with Dudek on February 3 to provide an update on United's groundwater flow model and to share relevant information that could help them with their GSP updates.
- The Board approved a contact with Jarvis Fay & Gibson to provide services related to the development and adoption of groundwater augmentation fees consistent with Prop 26 and Prop 218 requirements for the Oxnard and Pleasant Valley (OPV) basins.

- Staff provided the Board an update on plans to continue stakeholder engagement in the OPV basins. The OPV Stakeholder Group Work Plan meeting schedule for January through April was presented. The Work Plan concludes with a report submitted to the board in April. Key elements of the report will include the OPV starting allocation, sustainable yield, and the ramp-down/minimum allocation.

Board of Directors meetings – The FCGMA Board held a regular meeting online on February 24. Notable topics included:

- The Board adopted changes to the groundwater reporting periods for groundwater extractions from the Las Posas Valley basin in order to facilitate a change to water year reporting.
- Board member representation on the Executive, Operations and Fiscal Committees was determined for the 2021 calendar year, and a Board meeting schedule for the year was adopted.

The FCGMA Board held a special meeting online on February 8. Notable topics included:

- Board approved staff to work with the Executive Committee on policy issues related to replenishment fees and develop recommendations for the Board.
- Board approved the second extension of a sub-award agreement with the Nature Conservancy for a Natural Resources Conservation Service (NRCS) Conservation Innovation Grant for implementation of a water market and advanced metering infrastructure system.

OPV Core Stakeholder Group meetings –

The OPV Core Stakeholder Group held meetings on February 2 and 16.

Notable topics of the February 2 meeting included:

- Introduction of the new facilitators (Hallmark Group) to the stakeholders, and presentation of the goals and schedule for the Stakeholder process.
- Review and preliminary discussion of key technical issues, including sustainable yield, starting allocation, rampdown, and minimum allocations.

Notable topics of the February 16 meeting included:

- Additional discussion of starting allocations, rampdown, and minimum allocations.

Selected United staff and counsel also attended the February 3, 10 and 19 meetings of the Legal *Ad Hoc* Committee of the OPV Core Stakeholder Group. Discussions by this committee are subject to a non-disclosure agreement.

Fillmore and Piru Basins Groundwater Sustainability Agency (FPBGSA)

Staff continue to participate in FPBGSA activities supporting SGMA compliance and GSP preparation for the Fillmore and Piru basins, as follows:

Board of Directors meetings – The FPBGSA held a regular Board meeting on February 18 at 5:00 pm. Notable topics included:

- Board received a draft Sustainable Groundwater Management Criteria matrix from Daniel B. Stephens & Associates.
- Board considered holding a special Board meeting in early March to receive public comments on the draft Sustainable Groundwater Management Criteria matrix.

GSP preparation – Consultant DBS&A have reported progress on various work products in support of GSP development. A number of technical references are available on the agency's website, along with a web-based data management and mapping system that includes well construction information and available water level and water quality records for wells within the Piru and Fillmore basins.

Modeling – Staff have completed the hydrostratigraphic conceptual model for the Santa Paula, Fillmore, and Piru basins, and have completed calibration of the active domain of United's numerical groundwater flow model for the base period years 1985-2015. Staff has completed a model update for the years 2016-2019 and performed a model validation exercise. Staff has worked with Ventura County Watershed Protection District staff to use their existing HSPF surface water flow model to simulate runoff from the upper Santa Clara River watershed for future model runs in support of area GSAs. Staff has completed the work required to apply climate change factors to historical streamflow and rainfall records, as required to simulated future hydrology in the study area. Future runs applying 2030 and 2070 climate change factors and forecasted groundwater pumping have been completed and provided to the technical consultant for the GSA.

Mound Basin Groundwater Sustainability Agency (MBGSA)

Staff continue to participate in MBGSA activities supporting SGMA compliance and GSP development for the Mound basin, as follows:

Board of Directors meetings –

The MBGSA Board held a regular meeting on February 18. Notable topics of discussion included:

- The Board received a presentation from the GSP development team regarding modeling of future groundwater conditions and implications for sustainable management.

GSP preparation – United staff continue to compile and review data to support preparation of the Mound basin GSP, in general accordance with United's agreement with the MBGSA. United has

delivered model runs for potential future groundwater levels and flows in Mound Basin under various future climate change scenarios and is developing draft text, tables, and figures in support of the water-budget section of the GSP.

Santa Paula Basin Technical Advisory Committee (TAC)

Staff continue to participate in the Santa Paula basin TAC in support of the Santa Paula Basin Judgment and in conformance with SGMA reporting requirements for adjudicated basins, as follows:

- Staff are preparing a draft version of the Santa Paula Basin Annual Report for 2020.
- The TAC meeting scheduled for June 2020 has been postponed; a specific date and time have not been selected yet. It is anticipated that the Technical Working Group of the TAC will meet prior to the next TAC meeting, to discuss the current status of United's groundwater flow model expansion and how the effectiveness of the proposed yield-enhancement measures might be forecasted using the model. The Technical Working Group is also expected to discuss the "Triggers" proposal/memorandum at an upcoming meeting.

THE PRESS-ENTERPRISE

$650 million Santa Ana River plan adds fish-saving methods to water-saving projects

The Upper Santa Ana River Habitat Conservation Plan outlines 85 new water-capture projects

February 24, 2021

By Steve Scauzillo

Biologists Kai Palenscar, right, and Chris Jones, with the San Bernardino Valley Municipal Water District, survey the Sunnyslope Creek at the Louis Robidoux Nature Center in Jurupa Valley on Thursday, Feb. 18, 2021. The water district will release its habit conversation plan for the upper Santa Ana River and its tributaries next month. (Photo by Watchara Phomicinda, The Press-Enterprise/SCNG)

The San Bernardino Valley Municipal Water District has decided to join them, not fight them.

Stymied by environmental barriers and losses in court for 11 years, the large water wholesaler serving 700,000 residential and business customers from Fontana to Yucaipa is on the precipice of releasing an environmentally based plan that would nearly double its supply of water by

diverting billions of gallons from the Upper Santa Ana River, while mitigating the effects on 20 indigenous fish and bird species.

Water managers in both San Bernardino and Riverside counties describe this two-sided effort as balanced, ecologically friendly and massive in scope, but also necessary to keep up with the water demands of a growing Inland Empire.

Engineers turning green

"It is a ground-breaking plan. No one is doing something this big," said Heather Dyer, San Bernardino Valley water district CEO and general manager.

The 50-year Upper Santa Ana River Habitat Conservation Plan (HCP) covers 850,000 acres of the river and riparian habitat in Riverside and San Bernardino counties. If approved, it could allow for about 85 new water-capture projects that would add 87,000 acre-feet of water on average to the supplies of 12 cooperating agencies. That's equal to water used by about 175,000 households per year, or more than 500,000 people.

But for every gallon of water taken from the river for human use, there would be less for the fish, amphibians and birds that live there. That's why the plan emphasizes creating new ways for these animals not only to survive, but thrive, Dyer said.

"It's an amazing way of interlinking environmental benefits with engineering projects," she said. "There will have to be engineering solutions if you want to have native species remain in the river."

Dyer, a biologist hired by the district about five years ago, was once considered "the enemy," according to people who follow the issue, because she worked for the U.S. Fish & Wildlife Service, the agency that in 2009 blocked the San Bernardino Valley district and the Western Municipal Water District in Riverside from moving forward on proposed projects because they failed to show how they would protect the endangered Santa Ana sucker fish and other threatened river species.

The "fish over people" mantra no longer applies, Dyer said, adding she believes the HCP can deliver benefits for both.

"We are working together to get all the necessary permits to build water supply projects over the next 50 years," she said, referring to the consortium of agencies partnered on the HCP, which includes the Inland Empire Utilities Agency, Metropolitan Water District of Southern California, Riverside Public Utilities, San Bernardino Valley Water Conservation District, Southern California Edison and others.

The plan, the projects

The HCP has been eight years in development and is ready for release to the general public in March 2021, Dyer said. After a comment period, a final draft would be created that must be approved by Fish & Wildlife.

The question remains: Will it be acceptable to the agency and to environmental groups who have sued to stop projects in the past.

“I do think it (HCP) is an improvement over the status quo,” said Ileene Anderson, senior scientist at the Center for Biological Diversity, a group that has sued on varying occasions to stop water agencies from building projects that would imperil the Santa Ana sucker fish.

“One would hope it would improve the functioning of that river system,” Anderson said of the plan.

A major emphasis of the HCP includes caring for the Santa Ana sucker fish, listed as threatened under the federal Endangered Species Act, as well as other threatened and non-listed species. A recent survey found about 6,000 of the algae-eating fish clustered in a 3-mile up-river section. The fish are also found in the San Gabriel River and a tributary to the Los Angeles River.

So-called mitigation projects would satisfy environmental regulations, smoothing the way for more storm-water diversion into side basins — pooling water for percolation into the San Bernardino aquifer. It also allows for more recycling of wastewater to be recharged into the aquifer for storage, which is later piped up for use by retail water districts, water companies and city water departments, Dyer said.

The San Bernardino Valley Municipal Water District imports about 100,000 acre-feet of water from the State Water Project, a pipeline that delivers water from the Sacramento-San Joaquin River Delta in Northern California.

The state water source is heavily reliant upon melting snowpack from the Sierra Nevada. The amount of snowpack was about 68% of average for this time of year, while major state reservoirs are around 69% to 71% of their historical averages for Feb. 17, according to the state Department of Water Resources. But most of the state’s urban counties are in a two-year drought.

Water managers are concerned about irregularity in snowfall due to global climate change, which could reduce snowpack in future years and result in less imported water for Southern California agencies to buy.

“With climate change, it creates so much uncertainty,” Dyer said. “That’s why we are focused on having a diverse supply. If we don’t have enough State Water Project water, we can shift to the (local) ground water basin.”

One of the partners in the HCP, the Inland Empire Utilities Agency, is hoping the plan will allow the building of a project to divert water from the Santa Ana River and inject it into the ground. Because water from storms or mountain snow melt “comes in gulps,” it can be difficult to capture and often gets wasted, said Sylvie Lee, manager of strategic planning for the IEUA.

“So in drier years, we will have that water stored in the aquifer and you can use it during the drought years,” Lee said.

Proposed projects in the plan include:

• Erecting rubber dams that can be inflated during the rainy season to pool water in the river and deflated during the dry months to allow water to pass through to support the sucker fish, explained Joanna Gibson, wildlife biologist with San Bernardino Valley district. A rubber dam is proposed for the river in southern Colton.

• Ground-water recharge projects at tributaries to the river, including at Plunge Creek near Highland. Riverside Public Utility plans recharge projects at Columbia Basin at the corner of Marlborough and Chicago avenues; west of Northgate Street in Highgrove; and at Spring Brook Channel between West La Cadena Drive and Orange Street. San Bernardino Valley district proposes enhancing water recharge just below Seven Oaks Dam located near Highland and near Devil Canyon behind Cal State San Bernardino.

Capital costs for all storm-water capture and recycled water projects in the HCP total about $650 million over 50 years, Dyer said.

“But we would be saving $945 million by capturing more water because we wouldn’t have to buy imported water,” she said.

Fish gotta swim, birds gotta fly

To get to the project phase, the 12 agencies involved in the HCP have identified multiple ways to protect and even grow the Santa Ana sucker population through restoring habitat and even breeding the little fish in concrete river “raceways,” then relocating them into the wild river.

A key way is to clean out tributaries of trash and debris, widening them, then adding a permanent water source from recycled water plants, said Gibson, the wildlife biologist. These include Anza Creek, about 2 miles downstream from Mount Rubidoux, and Hidden Valley Creek, less than a mile from the Van Buren Boulevard Bridge in Riverside, among others.

Once restored, biologists can begin the tricky task of translocating sucker fish to new homes — in river creeks. Now, the threatened species congregate in one stretch of the Santa Ana River, making them susceptible to a tanker crash leaking toxic chemicals or some other event, such as a fire, that could wipe out the species, Gibson said.

“This way, we don’t have all the eggs in one basket,” she said.

On a recent weekday, San Bernardino Valley district biologists Chris Jones and Kai Palenscar waded into Sunnyslope Creek in Jurupa Valley where the 46 fire in October 2019 charred brush and burned down a nature center. The creek contained plastic bags and fast-food containers washed in from street storm drains.

“We are trying to make the stream more suitable for the native fish species to live, like the Santa Ana sucker and other species covered by the HCP, like the arroyo chub,” a native, chunky fish listed as “vulnerable,” Jones said.

The biologists also do bird surveys. The least bell's vireo, listed as endangered, and the California gnatcatcher, a threatened species that is small and likes to eat insects, are present along the river banks.

The plan calls for restoring 221 acres of riparian habitat for the vireo, an olive-gray songbird, and 222 acres of alluvial fan sage scrub for the gnatcatcher and the San Bernardino Merriam's kangaroo rat, an endangered species.

Taking out palm trees and arundo — giant reeds that suck up water and choke out native plants — is part of the plan for coaxing the vireo to stick around, even nest, Gibson said.

For the gnatcatcher and the kangaroo rat, thick, invasive grasses must be removed by hand.

"Grasses have been there for decades," Gibson said. "It is very, very challenging for anybody embarking on that kind of habitat restoration."

Innovative techniques include using sheep and goats, she said.

The kangaroo rat, which hop on two feet, can't move through the thick grasses, preventing them from getting food or finding a mate, she said.

Mitigation plans for all 20 species will cost about $200 million, Dyer said. But the projects can't move forward without those efforts.

"I believe the species of the Santa Ana River are better with, than without, us," Dyer said.

The Sentinel

Hurtado introduces bill to improve California's water resilience

By Julissa Zavala

Feb 24, 2021 Updated Feb 24, 2021

Melissa Hurtado

SACRAMENTO — Senator Melissa Hurtado (D-Sanger) has introduced the State Water Resiliency Act of 2021 – legislation that could provide up to $785 million to restore the capacity of California's critical water delivery infrastructure and repair aging roads and bridges.

The new legislation, Senate Bill 559, could fund repairs to the Friant-Kern Canal, Delta-Mendota Canal, San Luis Canal and California Aqueduct – California's main state and regional water conveyance infrastructure.

"An investment made in the Central Valley and California's water infrastructure is an investment made for the nation and all Californians," Hurtado said. "This investment is critical for our country's food supply chain, public health and ultimately the livelihoods of our farmworkers and families in rural communities. Restoring this infrastructure is essential to withstanding the long-lasting impacts of climate change while delivering clean, reliable, affordable water for hundreds of disadvantaged communities across California."

During the last legislative session, Hurtado authored legislation (also numbered Senate Bill 559) that would have — in its original form — invested $400 million to restore the Friant-Kern Canal

to its designed capacity. The bill was amended in the State Assembly to require the California Department of Water Resources to report on a proposal for the state to pay a share of the cost to fix the canal.

The proposal was approved by the Legislature on a bipartisan basis, but ultimately vetoed by Gov. Gavin Newsom. In his veto message, Newsom recognized the need for added infrastructure repair to California's major canal systems and called for "funding that provides water supply and conveyance for the entirety of the state, not one project at a time."

This year's SB 559 responds to the governor's veto, and would bring clean water to urban and rural communities throughout California. For example, residents and communities in Kings County rely heavily on the State Water Project (SWP) for clean, affordable drinking water.

"Thank you Senator Hurtado for your unwavering support of critical water infrastructure that transports the lifeblood of our region," said Craig Pedersen, chair of the Kings County Board of Supervisors. "This critical issue has been bypassed for far too long, SB 559 will provide vital funding to ensure our communities, businesses and more importantly our children will have the opportunity to live, work and raise their families in the place we call home!"

Parts of the State Water Project (SWP) and Central Valley Project (CVP) infrastructure have lost anywhere between 15-60% of their carrying capacity over time due to subsidence – resulting in an additional $15-30 million per year in higher operational and power costs, damaging infrastructure and threatening water supply for millions of people, farms and businesses at a time when its needed most.

"Let's face it, our climate is changing," Jennifer Pierre, general manager of the State Water Contractors, said. "As we seek to increase our resiliency to climate change, restoring the capacity of California's water conveyance systems will help to secure our state's limited water resources, both now and into the future."

Conveyance improvement work has already begun and can be completed through additional funding partnerships between the federal government, local public water agencies and the state of California – all of whom stand to benefit from the increased resiliency of the state's water conveyance system.

"We applaud Senator Hurtado for introducing SB 559," said Federico Barajas, executive director of the San Luis and Delta-Mendota Water Authority. "This bill will directly benefit nearly 3 million Californians who receive water from the Delta Mendota Canal, 1.2 million acres of irrigated agriculture in the San Joaquin, Santa Clara and San Benito Valleys, and nearly 200,000 acres of wetlands important to at-risk species, migratory waterfowl and the Pacific Flyway."

"Governor Newsom emphasized in his veto message for SB 559 last year that he wanted California's major water conveyance facilities to be looked at holistically as the state considers upgrading its water infrastructure to address the future challenges we face. Senator Hurtado's bill answers this request by focusing on investments in not only the Friant-Kern Canal, but three other major water conveyance facilities that are critically important for achieving state policy

objectives for groundwater sustainability and clean drinking water," Jason Phillips, CEO of Friant Water Authority, said.

By repairing subsidence damage to these four key segments of California's water delivery system, SB 559 would help to:

- Provide affordable, clean water to at least 31,000,000 people in the state, including approximately 1,250,000 people living in disadvantaged communities served by the CVP and 3/4 of all disadvantaged communities that receive some or all of their water from the SWP.
- Irrigate nearly 2,500,000 acres of farmland that receive water from the CVP and over 750,000 acres of farmland that receive water from the SWP.
- Maintain the state's $3 trillion economy, protect thousands of jobs annually and create hundreds of new state jobs each year.
- Bolster California's resilience to the impacts of climate change by helping local public water agencies to develop additional sources of water supplies, recharge groundwater basins, generate renewable energy and reduce reliance on water from the Sacramento-San Joaquin Delta in dry years.
- Support critical habitat and ecosystem restoration efforts already underway to protect California's threatened and endangered species.

"The SWP and CVP are the backbone of our state's water delivery infrastructure that must be maintained for future generations. But, despite the system's significance, it has become easy to not fully appreciate the momentous work being done behind the scenes every day to keep water flowing to California's agricultural economy, business community and residents," said a press release from Hurtado. "SB 559 will provide the funds needed to support that work, so that Californians can continue to rely on our state's water delivery infrastructure to run their homes, farms and businesses, now and for years to come."

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Castaic Lake, Pool Programs to Return as Supes Restore Parks & Rec Funding

Stephen K. Peeples | Wednesday, Feb 24, 2021

Programs at the Castaic Lake Recreation Area and pool are set to return after the Los Angeles County Board of Supervisors on Tuesday approved a motion to restore the budget for the county's Department of Parks and Recreation.

"After a year of decreased social and physical activity for families across Los Angeles County, our renewed focus on programs, staff, and services at local parks and nature centers provides an opportunity to rejuvenate our residents," said Barger, whose 5th District includes the Santa Clarita Valley, and who co-authored the motion with Chair Hilda L. Solis.

"Parks programs are a fundamental part of wellness for our neighborhoods and provide opportunities to play, grow, and create lasting memories," she said.

The cost of restoring recreation programming is $2,120,000 in the fiscal year 2020-2021 and $8,586,000 of ongoing cost. The motion approved funding for hiring, training, and staffing hours previously cut back because of the pandemic, which will enable the department to provide

safe opportunities and places for youth to play, including sports clinics and access to nature and open space.

Additionally, the motion allows the department to restore aquatics programming, including swimming lessons, recreational swim, pool access, lakes, and therapy and wellness. The cost of restoring swimming days at Santa Fe Dam and Castaic Lake Recreation Area is $243,000 in the fiscal year 2020-2021 and $580,000 in ongoing costs. The budget will resume community pool operations in Arcadia, Granada Hills, Altadena, Littlerock, Quartz Hill, and Castaic.

“The pandemic has proven that parks are an important place for our vulnerable residents to seek refuge, rest, and recreation,” Barger said. “In many of our neediest areas, Parks and Recreation is the sole provider of affordable and accessible youth recreation and after-school programs.”

The motion enables the Parks Department, CEO, and other partner departments to identify and allocate funding for the Parks After Dark program, which is particularly important given the increase in crime and mental health stresses presented over the last year. This program was hosted at 33 parks before the pandemic and cost $6,832,000.

Low-income families and communities are most impacted by the pandemic and are also those who most benefit from the Department of Parks and Recreation’s services and activities. Restoring recreation programs addresses the devastating impact of COVID-19 and provides much-needed healing and community connection. Physical and mental health benefits through social connection provide a lifeline to youth who need support.

Because of the public health crisis, Parks and Recreation was required to cut eight percent of its costs last fiscal year, which was a $12.9 million reduction in Net County Cost funding, plus an extra $9.9 million because of revenue shortfalls. This led to a massive cut in staff, as the department significantly reduced its recurrent and temporary staff by 857 employees, recreation services staff were cut by 43 percent, lake lifeguards were reduced by nine positions, and pool lifeguard positions were completely eliminated.

“Restoring the Department of Parks and Recreation’s budget also allows hundreds of hard-working, passionate staff to return to work,” Barger said.

KQED

California Lawmakers Propose Ban on Fracking, Other Oil Drilling Methods

Ted Goldberg
Feb 17, 2018

The bill, authored by state Sens. Scott Wiener, D-San Francisco, and Monique Limón, D-Santa Barbara, would prohibit new permits for hydraulic fracturing, known as fracking, and block companies from renewing existing permits for the controversial technique. *(David McNew/Getty Images)*

Two state lawmakers unveiled a proposal Wednesday that would gradually bring to a halt drilling methods that have produced about a fourth of California's petroleum production in its oil fields.

The bill, authored by state Sens. Scott Wiener, D-San Francisco, and Monique Limón, D-Santa Barbara, would prohibit new permits for hydraulic fracturing, known as fracking, and block companies from renewing existing permits for the controversial technique.

The proposal would do the same for several other oil production methods, but not for traditional oil and gas drilling, which is responsible for most petroleum production in California.

The techniques subject to the moratorium would be barred altogether starting in 2027.

"It is time that California's leaders take on the state's behemoth oil industry," Ann Alexander, a senior attorney at the Natural Resources Defense Council, said in a statement announcing the proposal along with the two state lawmakers.

'Extracting massive amounts of oil, particularly with destructive techniques such as fracking, is totally inconsistent with California's commitment to a sustainable climate future. '*State Sen. Scott Wiener, D-San Francisco*

The council is one of six environmental groups that supports the bill. The organizations have emphasized for years that oil drilling poses dangers to the environment and public health — especially to communities of color and low-income residents. They note that some of the methods, like fracking, can cause earthquakes, water contamination and oil spills.

"Extracting massive amounts of oil, particularly with destructive techniques such as fracking, is totally inconsistent with California's commitment to a sustainable climate future," Wiener said.

"It's time to transition away from these oil extraction methods, protect our community's health and water supply, and create a brighter future for out state and our planet," he added.

Industry groups representing oil companies will likely lobby aggressively against any new limits on oil production.

The Western States Petroleum Association and the California Independent Petroleum Association have said in the past that proposals to ban fracking and other drilling techniques will mean oil workers will suffer and California's reliance on fuel from sources outside of the country will increase.

The groups say bans on oil drilling will hurt consumers; that demand for gasoline in the state is too high to cut down on oil production; and that California is not set up yet energize enough electric cars and will need to rely on fossil fuel for years.

They also say environmentalists have misled the public about the dangers of well stimulation often done deep under the ground, far away from drinking water sources, and in remote parts of Kern County.

Hours after the proposal was released, the head of the California Independent Petroleum Association called the bill "legally questionable" and said it would kill thousands of union jobs.

"Shutting down energy production under the toughest regulations on the planet will devastate the economies of oil producing regions — especially the Central Valley — and make the Saudi royal family even richer while eliminating the industry that is investing in the innovation needed to

significantly reduce the state's carbon footprint," said Rock Zierman, the association's president, in a statement.

Labor unions that represent oil industry employees have also raised concerns that the state curtailing petroleum production could hurt quality, high-paying blue-collar jobs.

The Wiener and Limón bill would also bar all new or modified permits for all oil and gas production, including the most traditional methods, from taking place within 2,500 feet of homes, schools, health facilities, dormitories and prisons by 2022.

"Oil production in and near our communities has had long-lasting health impacts," Limón said.

A similar effort to create buffer zones around oil and gas wells failed in the state Legislature last year after pushback from the oil industry and labor unions.

The bill also calls for the California Geologic Energy Management Division (CalGEM), which regulates the industry, to help transition oil employees away from drilling. The division would offer incentives to well remediation contractors to hire former oil workers.

Last September, Gov. Gavin Newsom called on state lawmakers to develop legislation that would eliminate new fracking licenses by 2024 — but at least one top state lawmaker wants to go further.

State Sen. Henry Stern, D-Los Angeles, chair of the Natural Resources and Water Committee, told KQED that state lawmakers needed to create a package of legislation that limits multiple kinds of oil drilling, not just fracking.

That's in part because the technique makes up a small portion of oil field production. The controversial oil well stimulation method works to get fuel out of the ground by using water and chemicals to crack open geological formations, injections that allow petroleum under the ground to flow more freely.

Hydraulic fracturing led to the production of 2.3 million barrels of oil in California, or 1.5% of the state's oil production, in 2019, according to CalGEM's most recent available data.

The state started issuing fracking permits in 2016 under Senate Bill 4. Last July, the state put in place a months-long moratorium on new fracking permits while independent experts conducted a review of the agency's pending well stimulation permits.

Cyclic steaming, which would also eventually be banned under the new bill, accounted for 21% of California's oil production in 2019. That method was the one used in connection with a massive petroleum release in a Kern County oil field, prompting state officials to issue a $2.7 million fine against Chevron.

But traditional oil and gas drilling, which the proposal would not ban unless it takes place near local communities, made up 77% of California's oil product in 2019.

Still, environmental groups praised the effort.

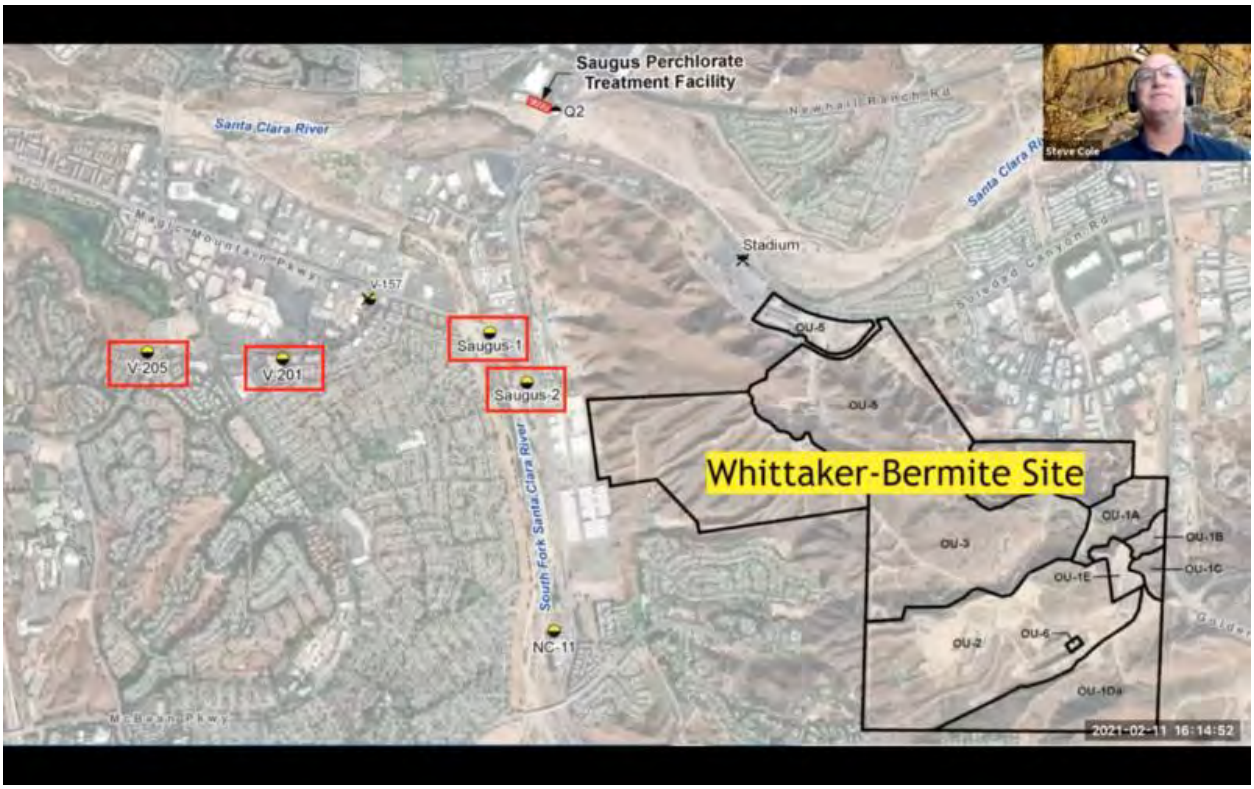
"The state should focus its attention on the drilling techniques that are most dangerous for California," said Juan Flores, community organizer with the Center on Race, Poverty and the Environment, which sponsored the bill.

Flores notes that oil production in California has been on the decline.

"Propping up a failing industry will hurt local economies, workers and residents in the long run," he said.

SCV Water hosts meeting on Saugus aquifer

- Emily Alvarenga
- February 16, 2021

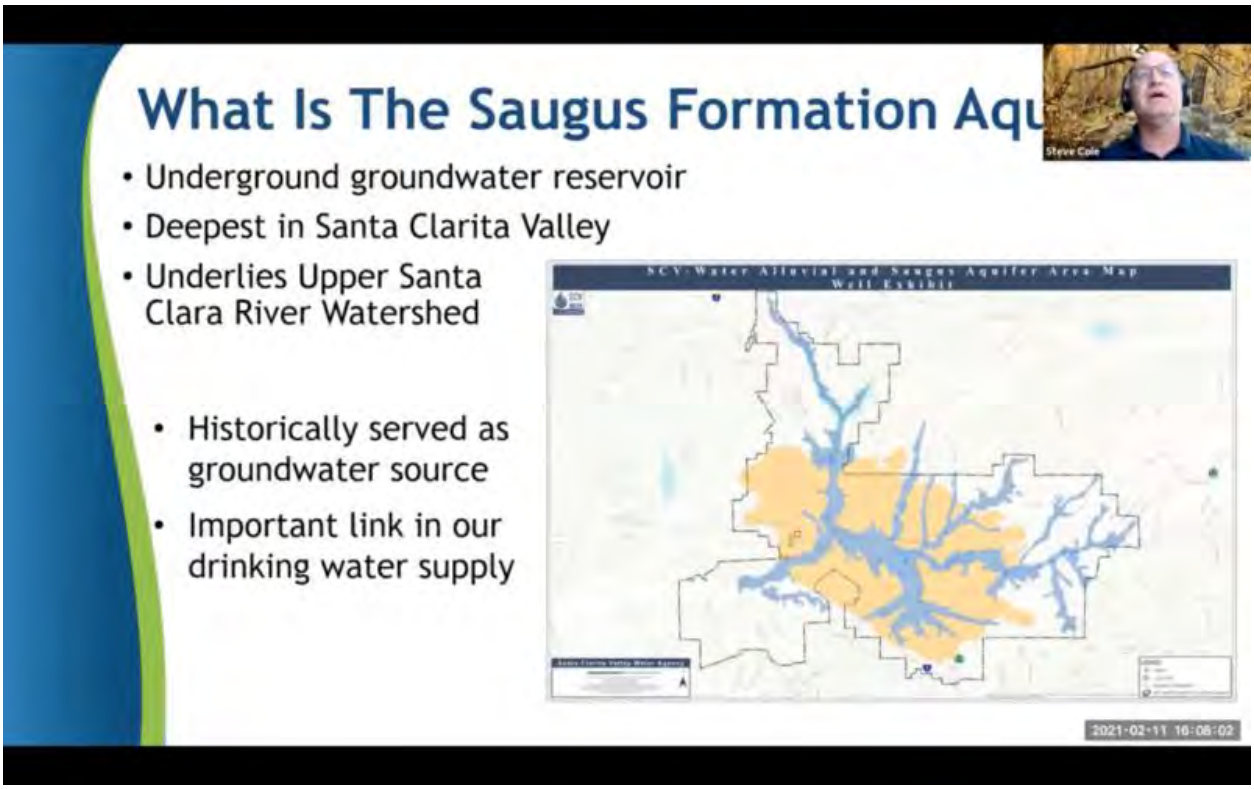


Steve Cole, assistant general manager at the SCV Water Agency, discusses the Saugus Formation Aquifer during a virtual public meeting on Thursday, Feb. 17, 2021.

As the Santa Clarita Valley Water Agency works to remove hazardous substances from the Saugus Formation Aquifer, the agency hosted a virtual public meeting to inform residents of the process and gather community input Thursday.

The aquifer is the deepest of the SCV's underground groundwater reservoirs that lies in the upper Santa Clara River watershed, near Magic Mountain Parkway, according to Steve Cole, assistant general manager at SCV Water.

"The Saugus Formation goes down several thousand feet, and it's historically been used as a groundwater resource for the community, especially during dry times," Cole said.



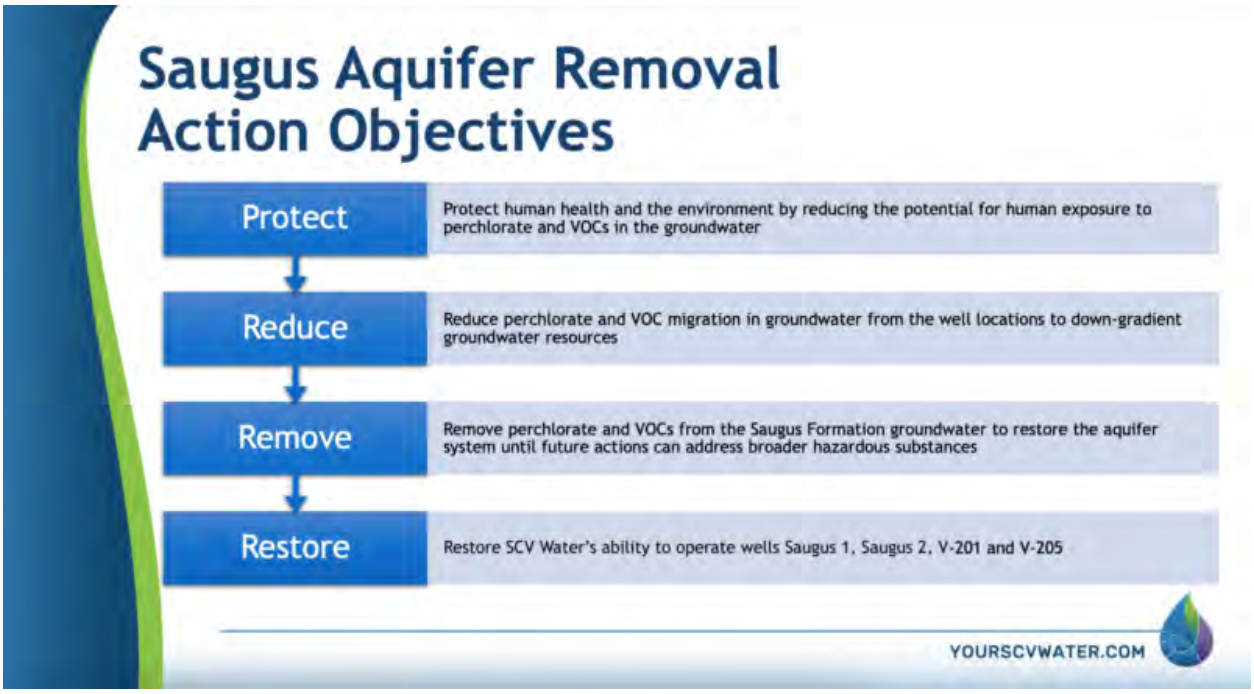
Steve Cole, assistant general manager at the SCV Water Agency, discusses the Saugus Formation Aquifer during a virtual public meeting on Thursday, Feb. 17, 2021.

Over many decades, hazardous substances, such as perchlorate and volatile organic compounds, were released by entities, including the Whittaker Corp. at the nearby Whittaker-Bermite facility along with the Saugus Industrial Center, formerly known as the Keysor-Century Corporation Facility, and entered into four production wells, Saugus 1 and 2, V-201, and V- 205, Cole added.

In 1997, Saugus 1 and 2 were shut down when perchlorate was detected, and only returned to service after the Saugus Perchlorate Treatment Facility was installed in 2011.

“Low levels of VOCs have consistently been detected at that treatment plant,” Cole said, adding that additional treatment is needed to meet state requirements.

Similarly, V-201 was shut down in 2010, and a wellhead perchlorate treatment system was installed, while V-205 was shut down in 2012 and has remained so since.



The SCV Water Agency discusses the Saugus Formation Aquifer during a virtual public meeting on Thursday, Feb. 17, 2021.

To keep the SCV's water supply safe for drinking, the preferred plan includes groundwater treatment for both perchlorate and VOCs to fully address and reduce the public health and environmental effects of hazardous substances identified in the aquifer, while complying with regulatory requirements, according to Steve Winners, an environmental consultant with Advisian.

The public is invited to review and comment on the engineering evaluation/cost analysis dated January 2021 regarding SCV Water's proposed non-time-critical removal action for the Saugus aquifer and the associated community involvement plan. To watch the meeting or for more information, visit yourscvwater.com/removal-action.

The 30-day public comment period runs until 5 p.m. Feb. 24, with comments accepted if postmarked or emailed by the deadline. Comments can be submitted to Jim Leserman, senior engineer, via email at jleserman@scvwa.org or by mail addressed to Leserman at SCV Water, located at 26521 Summit Circle, and should include "Saugus Aquifer CIP, EE/CA Comment" in the subject line.

Ventura Water

Posted on: February 14, 2021

Guest Column: Suzanne McCombs, Water Commissioner

Rarely do we think about the value of water. We turn on the faucet to fill a glass without considering everything that is required to bring safe, reliable water to our homes: 385 miles of water lines, 290 miles of sewer lines; nineteen pump stations, eleven lift stations, ten wells or all the treatment processes required. We hop in the shower without a thought about where the wastewater goes when it enters the drain or how it is cleaned before being released to the environment.

Ventura's water and wastewater systems are vital to our community's health and well-being and allow our local economy to thrive.

Approximately every five years, the City must evaluate water and wastewater rates to ensure rates that are fair for all City users and to generate sufficient revenue to maintain and operate our existing systems and invest in improvements and new facilities. The Water Commission plays a key role in this process on behalf of the residents of the City, working with City staff and outside consultants to consider key assumptions in the rate study and evaluating how proposed rates will affect our residents and businesses. Ultimately, City Council must decide on whether or not to proceed with rate increases based upon the analysis presented.

Results of the most recent rate study being finalized show that an annual rate increase of seven percent for water service and six percent for wastewater service is needed in each of the next five years to secure our water supply, replace and repair aging infrastructure, improve water quality, and meet legal and environmental regulations.

For an average homeowner, this increase will be a monthly increase of $7.76 on an average basis in each of the next five years. While this may seem expensive, we have been fortunate that it has been more than three years since the last increase in water rates. Ventura rates are lower than the average in nearby communities and will continue to be even if the proposed increases are implemented.

We can no longer afford to defer critical investment to maintain our water and wastewater infrastructure, as it puts us at risk for loss of service and more expensive "repairs" in the future. Responsible investment now allows Ventura Water to address needed projects proactively, not reactively—and keep the cost of water affordable for current and future customers.

Setting rates is a lengthy process with a clear goal: keep rates fair while ensuring safe and reliable services. As a City we need to invest in the right solutions at the right time. The City is currently facing many challenges such as increasingly demanding environmental regulations, new legal mandates, aging infrastructure and vulnerable water sources.

In the next six years, Ventura Water has more than fifty water and wastewater improvement projects planned to address these challenges and requirements, including ambitious initiatives such as the State Water Interconnection Project and VenturaWaterPure Project.

Through the rate study, City staff and an experienced financial consultant, establish how to fund and finance capital improvement projects, routine maintenance and operational needs. Alternatives are presented to Water Commission for review and evaluation. We consider how to best meet the objectives of fair water rates for all customer classes, drought surcharges, and wastewater charges so that total projected revenue will recover costs.

Over the past year, the Water Commission has extensively reviewed and evaluated the data provided by City staff and the financial consultant. We believe that the current proposed rate increases are needed to meet our community's needs to have safe, reliable drinking water and to responsibly clean and recycle its wastewater.

My colleagues and I have asked hard questions, explored various scenarios, and considered input from the public. We have carefully considered the impacts of rate increases on low-income residents, our business community, high and low water users; all while seeking solutions that are fair to all customers.

The Water Commission has worked diligently to make responsible policy recommendations. I hope you will join me in supporting necessary investments in our water and wastewater future.

Learn more about proposed rate changes at www.VenturaWaterRates.net.

Suzanne McCombs, Ventura Water Commissioner

Los Angeles Times

California's aging dams face new perils, 50 years after Sylmar quake crisis

By Louis Sahagún
Feb. 10, 2021 6 AM PT

It was a harrowing vision of the vulnerability of aging California dams — crews laboring feverishly to sandbag and drain the lower San Fernando Reservoir, as billions of gallons of Los Angeles drinking water lapped at the edge of a crumbling, earthquake-damaged embankment that threatened catastrophe on the neighborhoods below.

Although the 1971 San Fernando earthquake and the near failure of the Lower Van Norman Dam have given rise to construction improvements — the much newer Los Angeles Dam survived an equivalent shaking in the 1994 Northridge quake — the overwhelming majority of California dams are decades past their design life span.

And while earthquakes still loom as the greatest threat to California's massive collection of dams, experts warn that these aging structures will be challenged further by a new and emerging hazard: "whiplashing shifts" in extreme weather due to climate change.

"The biggest issue facing dam safety in California is aging infrastructure and lack of money to fund repairs and retrofits of dams," said Sharon K. Tapia, who leads the Division of Safety of Dams at the California Department of Water Resources. "Many older dams were built using construction methods considered outdated by today's standards."

Federal engineers have found that three major dams in Southern California — Whittier Narrows, Prado and Mojave River — are structurally unsafe and could collapse in a significant flood event and potentially inundate millions of people downstream.

Federal engineers have found that the Mojave River Dam could collapse in an extreme flowing event and flood nearby communities.
(Gina Ferazzi / Los Angeles Times)

Each has been reclassified as "high urgency structures" amid growing concerns that they were designed and built on 20th century assumptions and hydrological records that did not anticipate the region being hit more frequently by storms that were previously regarded as once-in-a-lifetime events.

“Even if engineers had made risk assessments that were accurate at the time these structures were built, they aren’t accurate now, and won’t be anymore due to climate change,” said Daniel Swain, a UCLA climatologist.

These extreme weather events compound problems posed by earthquakes, which are inherently unpredictable and can cause safety problems that remain hidden or hard to identify.

Such was the case when the San Fernando, or Sylmar, quake struck before dawn 50 years ago this week and nearly collapsed the Lower Van Norman Dam in Granada Hills.

The 1,100-foot dam, which began construction in 1912, held 3.6 billion gallons of water on the morning of Feb. 9, 1971. Due to earthquake concerns identified five years earlier, the reservoir was ordered to be kept below full capacity, and on that morning the water level measured 36 feet below the lip of the dam.

The top 30 feet of the rolled earth dam crumbled and sank into the reservoir, leaving the water only six feet from the top with fresh chunks of earth falling off with each aftershock. Not since 1925, when a 6.8-magnitude quake destroyed the Sheffield Dam and sent 30 million gallons of water coursing through Santa Barbara, had California faced such a seismic-related crisis.

Authorities ordered the evacuation of 80,000 people living below the dam in an area bounded by the San Diego Freeway on the east, Victory Boulevard on the south, Balboa Boulevard on the west and Rinaldi Street on the north.

Engineers spent the next three days pumping water from the dam through a 24-inch hole cut in an aqueduct pipe.

Scientists later estimated that collapse of the dam would have killed as many as 123,400 people.

The brush with catastrophe prompted seismic reevaluations and retrofits of dams throughout the state, most of them built for a 50-year life span. The average age of a California dam, state dam safety officials say, is 70.

Today, about 75% of the 1,250 dams regulated by the state Department of Safety of Dams are more than 50 years old. In addition, 250 are classified as "extremely high hazard," indicating that their failure or misoperation is expected to result in loss of life and economic damage.

A scenario published by the U.S. Geological Survey warns that a rare mega-storm, or what experts call an Arkstorm, could last for weeks, causing structural and economic damage that would amount to $725 billion statewide.

Until only recently, it was thought that a flood of the magnitude similar to the one that hit California during the rainy season of 1861-62 and dropped 36 inches of rain on Los Angeles, could only occur every 1,000 to 10,000 years.

Recent studies, however, suggest that the chances of seeing another flood of that size over the next 40 years are about 50-50.

The U.S. Army Corps of Engineers has determined that the aging Whittier Narrows Dam could fail in the event of heavy rains, placing 1.25 million people in 25 working-class, mostly Latino communities downstream at risk of catastrophic flooding.
(Irfan Khan / Los Angeles Times)

Now, the U.S. Army Corps of Engineers' top priorities in Southern California include spending an estimated $600 million to upgrade the 62-year-old Whittier Narrows Dam, built in a natural gap in the hills about 11 miles east of downtown Los Angeles.

The earthen dam was placed in the agency's highest risk category when it determined three potential failure modes threatened more than 1 million people downstream from Pico Rivera to Long Beach. They included the premature opening of the San Gabriel River Spillway gates, erosion resulting from water piping through the foundation of the dam and overtopping during an extreme flood event.

Federal engineers say that while the first would result in downstream flooding, the latter two could result in catastrophic failure of a structure built to rein in one of the steepest rivers in the U.S. From its boulder-strewn forks in the San Gabriel Mountains, the river plunges some 9,900 feet to Irwindale.

The modifications to prevent the dam from failing if overtopped include placing roller-compacted concrete on the crest and downstream slope of the embankment and improving the seepage control system with trench drains and other features.

The project is expected to be completed by 2026, officials said, with environmental monitoring extending through 2031.

In 2019, the Army Corps determined that a significant flood event could compromise the concrete slab of the spillway of the 80-year-old Prado Dam on the Santa Ana River, potentially flooding an estimated 1.4 million people in dozens of Orange County communities from Disneyland to Newport Beach.

Untamed, the Santa Ana River has been as fickle as it has been destructive.

It took what has been called the "storm of the century" in March of 1938 to spur action. Devastating rains lashed Southern California, leaving 119 people dead, 2,000 homeless and 68,400 acres under water, and bringing President Roosevelt west to survey the wreckage.

Prado Dam, located next to the 91 Freeway on the border of Riverside and Orange counties, was originally designed to control a flood 2½ times the size of a major inundation in 1938.
(Allen J. Schaben / Los Angeles Times)

Prado Dam, located next to the 91 Freeway on the border of Riverside and Orange counties, was originally designed to control a flood 2½ times the size of the 1938 inundation.

The risk factor for the 50-year-old Mojave River Dam protecting the high desert communities of Victorville, Hesperia, Apple Valley and Barstow was heightened from "low" to "high urgency action" in 2019 because of "performance concerns."

Federal engineers say failure of the 200-foot-tall earthen dam on the northern flanks of the San Bernardino Mountains could send water rushing down the Mojave River channel, inundating 16,000 people and $1.5 billion in property as far as Baker, more than 100 miles northwest.

The Army Corps is evaluating risk-reduction measures including hardening the dam to prevent erosion and collapse if water flows over the top.

Storm water flows down the Santa Ana River channel from Prado Dam while hydrologic technicians conduct high-flow velocity and volume measurements in Corona in 2016.
(Allen J. Schaben / Los Angeles Times)

The lessons of dam vulnerabilities are often written in lost lives and economic devastation.

One of California's worst disasters was the collapse of the St. Francis Dam in northern Los Angeles County on March 12, 1928. Its failure prompted the creation of the California Dam Safety Program.

A muddy wall of water as high as 70 feet carved a 70-mile path of destruction in a 5½-hour rampage from San Francisquito Canyon to the Pacific Ocean near Oxnard, killing more than 450 people.

More than 900 buildings were destroyed, 300 heavily damaged and almost 24,000 acres of agricultural land were washed away.

The dam was full to the spillway from spring rains when two sides of the 700-foot-long dam collapsed, spewing out 12 billion gallons of water.

A state commission reported the dam failed because it was poorly constructed and located on a geologically unstable site.

The Baldwin Hills Reservoir, which was constructed by the Los Angeles Department of Water and Power, was not subject to state safety oversight when nearly 250 million gallons of water burst through its northern wall in late 1963.

Five people were killed and $15 million in property damages occurred as a result of the breach, which was attributed to subsidence beneath the dam that allowed water to seep into the shear zones in the underlying rock causing erosion to worsen rapidly.

The concrete spillway of the 700-foot-tall Oroville Dam fell apart during the release of water after heavy rains in February 2017.
(Marcus Yam / Los Angeles Times)

The clues to the spillway failure at Oroville Dam in 2017, however, were embedded deep in the record files and unrecognized by officials before the structure broke apart.

A chronicle of problems when the spillway was used — cracking in the concrete surface and unexpectedly large amounts of water exiting drains under the deck — suggested something was wrong.

But annual inspections gave the state false confidence that the spillway could handle a big flood event.

Water flows past the main spillway of the Oroville Dam on Feb. 19, 2017, 12 days after it was breached.
(Marcus Yam / Los Angeles Times)

On Feb. 7, 2017, the concrete spillway of the 700-foot-tall dam fell apart during the release of water after heavy rains.

The erosion of its emergency spillway, which was basically a hill of dirt that federal engineers believed would rarely, if ever, be used, triggered the evacuation of more than 180,000 people.

The head of the California Water Resources Department, which operates the dam, was removed after an independent probe found the failure was the result of a lax safety culture.

“Emerging data of massive simulations of flooding suggest that existing flood control systems are a ticking time bomb,” said Brett Sanders, a professor of civil engineering at UC Irvine. “Southern California, in particular, is completely unprepared to deal with the consequences.”

“Once the water goes outside of the structures intended to rein it in, it will go everywhere,” he said, “and there will be little time to get out of its way.”

“Unfortunately, much of the ongoing research is focused on climate change and engineering strategies,” he added. “We ought to start spending more time studying the potential catastrophic risks to working-class communities in the floodplains.”