Sweetwater Springs WATER DISTRICT

www.sweetwatersprings.com

BOARD OF DIRECTORS MEETING

AGENDA

August 5, 2021 Regular Meeting
6:30 p.m.

Meeting link:
https://sweetwaterspringswaterdistrict.my.webex.com/sweetwaterspringswaterdistrict.my/j.php?MTID=md056a1d706a3594e792833f1c1c3dd30
Meeting number: 182 598 5526
Password: 2UXkHmuwu82

OR

Join by phone: +1-415-655-0001 US Toll
Access code: 182 598 5526
Password: 28954689

All guests that join the virtual meeting will be muted with their camera/ video turned off. Guest(s) will be unmuted and video turned on when they are speaking. Proper decorum including appearance is required.

NOTICE TO PERSONS WITH DISABILITIES: It is the policy of the Sweetwater Springs Water District to offer its public programs, services and meetings in a manner that is readily accessible to everyone, including those with disabilities. Upon request made at least 48 hours in advance of the need for assistance, this Agenda will be made available in appropriate alternative formats to persons with disabilities. This notice is in compliance with the Americans with Disabilities Act (28 CFR, 35.102-35.104 ADA Title II).

Any person who has any questions concerning any agenda item may call the General Manager or Assistant Clerk of the Board to make inquiry concerning the nature of the item described on the agenda; copies of staff reports or other written documentation for each item of business are on file in the District Office and available for public inspection. All items listed are for Board discussion and action except for public comment items. In accordance with Section 5020.40 et seq. of the District Policies & Procedures, each speaker should limit their comments on any Agenda item to five (5) minutes or less. A maximum of twenty (20) minutes of public comment is allowed for each subject matter on the Agenda unless the Board President allows additional time.

I. CALL TO ORDER ***(Est. time: 2 min.)***

A. Board members Present

B. Board members Absent

C. Others in Attendance

II. CHANGES TO AGENDA and DECLARATIONS OF CONFLICT ***(Est. time: 2 min.)***

III. CONSENT CALENDAR ***(Est. time: 5 min.)***

(Note: Items appearing on the Consent Calendar are deemed to be routine and non-controversial. A Board member may request that any item be removed from the Consent Calendar and added as an "Administrative" agenda item for the purposes of discussing the item(s)).

A. Approval of the Minutes of the July 1, 2021 Board Meeting and the July 8, 2021 Special Board Meeting

B. Approval of Operations Warrants/Online payments/EFT payments

C. Receipt of Item(s) of Correspondence.

Please note: Correspondence received regarding an item on the Administrative Agenda is not itemized here, but will be attached as back-up to that item in the Board packet and addressed with that item during the Board meeting

IV. PUBLIC COMMENT: The District invites public participation regarding the affairs of the District. This time is made available for members of the public to address the Board regarding matters which do not appear on the Agenda, but are related to business of the District. Pursuant to the Brown Act, however, the Board of Directors may not conduct discussions or take action on items presented under public comment. Board members may ask questions of a speaker for purposes of clarification.

V. ADMINISTRATIVE

A. Public Hearing; Discussion/Action re Resolution 21-13, Overruling Protests and Confirming Report on Annual Flat Charge for Sweetwater Springs Water District *(Est. time 10 min.)*

B. Discussion/Action re Resolution 21-14, Approving an Agreement with the County of Sonoma for Collection of Special Taxes, Fees, and Assessments. *(Est. time 10 min.)*

C. Discussion/Action re Actual vs. Budgeted report – FYE 2020-21 *(Est. time 15 min.)*

D. Discussion/Action re Drought update; Resolution 21-15, Declaring a Stage I Water Shortage

E. Discussion/Action re COVID-Related Re-Opening Issues *(Est. time 15 min.)*

F. Discussion/Action re PARS Account Withdrawal for FY 2021-22 and withdrawal policy for future years *(Est. time 20 min.)*

G. Discussion/Action re Contract and Task Order for Matthew Emrick, Esq. (Est. time 15 min.)

H. Discussion/Action re Update on 17748 River Lane property *(Est. time 15 min.)*

I. Discussion/Action re General Managers Performance Evaluation Form and Goals *(Est. time 20 min.)*

J. Discussion/Action re Coastland Engineering Task Order – Design for Moscow Road project *(Est. time 15 min.)*

VI. GENERAL MANAGER'S REPORT

VII. BOARD MEMBERS' ANNOUNCEMENTS

VIII. ITEMS FOR NEXT AGENDA

IX. CLOSED SESSION

A. Pursuant to Gov. Code Section 54957(b)(1) – Public Employee Performance Evaluation
Title: General Manager

ADJOURN

Sweetwater Springs Water District Mission and Goals

The mission of the Sweetwater Springs Water District (SSWD) is to provide its customers with quality water and service in an open, accountable, and cost-effective manner and to manage District resources for the benefit of the community and environment. The District provides water distribution and maintenance services to five townships adjacent to the Russian River:

- Guerneville
- Rio Nido
- Guernewood Park
- Villa Grande
- Monte Rio

GOAL 1: IMPLEMENT SOUND FINANCIAL PRACTICES TO ENSURE EFFECTIVE UTILIZATION OF DISTRICT RESOURCES

GOAL 2: PROVIDE RELIABLE AND HIGH QUALITY POTABLE WATER WITH FACILITIES THAT ARE PROPERLY CONSTRUCTED, MANAGED AND MAINTAINED TO ASSURE SYSTEM RELIABILITY

GOAL 3: HAVE UPDATED EMERGENCY PREPAREDNESS PLANS FOR ALL REASONABLE, FORESEEABLE SITUATIONS

GOAL 4: DEVELOP AND MAINTAIN A QUALITY WORKFORCE

GOAL 5: PROVIDE EXCELLENT PUBLIC OUTREACH, INFORMATION AND EDUCATION

GOAL 6: ENHANCE BOARD COMMUNICATIONS AND INFORMATION

BOARD MEETING MINUTES*

Meeting Date: July 1, 2021

(*In order discussed)

July 1, 2021
6:30 p.m.

Board Members Present:	Tim Lipinski Gaylord Schaap Larry Spillane Sukey Robb-Wilder Rich Holmer
Board Members Absent:	(None)
Staff in Attendance:	Ed Fortner, General Manager Julie Kenny, Secretary to the Board
Others in Attendance:	Rachel Hundley, Legal Counsel

I. CALL TO ORDER (6:30 p.m.)

The properly agendized meeting was called to Order by President Robb-Wilder at 6:32 p.m.

II. CHANGES TO AGENDA and DECLARATION OF CONFLICT (6:33 p.m.)

(None.)

III. CONSENT CALENDAR (6:33 p.m.)

President Robb-Wilder reviewed the items on the Consent Calendar. Discussion ensued. Director Schaap moved to approve the Consent Calendar. Director Lipinski seconded the motion. Motion carried 5-0. The following items were approved:

A. Approval of the Minutes of the June 3, 2021 Board Meeting

B. Approval of Operations Warrants/Online payments/EFT payments.

C. Receipt of items of Correspondence (None)

IV. PUBLIC COMMENT (6:33 p.m.)

Public comment was made by Lloyd Guccione. Discussion ensued.

V. ADMINISTRATIVE (6:40 p.m.) *

**in the order discussed*

V-A. **(6:33 p.m.) Public Hearing; Discussion/Action re Resolution 21-11, Approving the Local Hazard Mitigation Plan.** At 6:41 President Robb-Wilder opened the Public Hearing. The GM provided an overview. Board discussion ensued. There were no comments. At 6:49 p.m. the Public Hearing was closed. Director Schaap moved to approve Resolution 21-11, Approving the Local Hazard Mitigation Plan. Director Holmer seconded. Motion carried 5-0.

V-B. **(6:51 p.m.) Discussion/Action re Update on CDBG Application for Grant Funding for the CIP 2020-21 project.** The GM provided an overview of this item. Discussion ensued. Public comment was made by Lloyd Guccione. Further discussion ensued. No action was taken.

V-C. **(7:06 p.m.) Discussion/Action re COVID-Related Re-Opening issues.** The GM provided an overview of this item. Comments were made by Legal Counsel Rachel Hundley. Discussion ensued. Additional comments were made by Rachel Hundley. Further discussion ensued. No formal action was taken.

V-D. **(7:35 p.m.) Discussion/Action re Update on Monte Rio Bridge Project.** The GM provided an overview of this item. Board questions and discussion ensued, including comments from Legal Counsel Rachel Hundley. Public comment was made by Lloyd Guccione. Further discussion ensued. Direction was given to Legal Counsel Rachel Hundley.

V-E. **(8:04 p.m.) Discussion/Action re Drought Emergency Declaration, Flow Reduction in the Russian River, and Curtailment Order.** The GM provided an overview of this item. Board questions and discussion ensued. Public comment was made by Lloyd Guccione. Further discussion ensued. No action was taken.

V-F. **(8:30 p.m.) Discussion/Action re Proposed Subsidy Program for Flume Meter Leak Detection and Drought Pilot Program for Flume Leak Detection and Usage Devices.** The GM provided an overview of this item. Board discussion ensued, including comments from Legal Counsel Rachel Hundley. Director Homer moved to approve a pilot study and allocate $10,000 to subsidize customer flume purchases as described in the staff report. Director Spillane seconded. Motion carried 5-0.

****** At 8:57 p.m. the Board took a break. The meeting reconvened at 9:04 p.m.***

G. **(9:04 p.m.) Discussion/Action re CSDA Election.** The GM provided an overview of this item. Board discussion ensued. Director Schaap moved to authorize the General Manager to vote for Candidate Ric Lohman. Director Lipinski seconded. Motion carried 5-0.

H. **(9:08 p.m.) Discussion/Action re LAFCO Election.** The GM provided an overview of this item. Board discussion ensued. Director Holmer moved to authorize the General Manager to vote for Candidate Bill Norton. Director Schaap seconded. Motion carried 5-0.

I. **(9:18 p.m.) Discussion/Action re Resolution 21-12, Approving the Master Professional Services Agreement with The Law Offices of Matthew Emrick.** The GM provided an overview of this item. Board discussion ensued, including comments from Legal Counsel Rachel Hundley. Director Schaap moved to adopt Resolution 21-12, Approving the Professional Services Agreement with the Law Offices of Matthew Emrick for General Legal Services Related to Water Rights Issues, and Authorizing the General

Manager to Sign. Director Lipinski seconded. Director Robb-Wilder corrected the spelling of "counsel" in the last Whereas. Motion carried 5-0.

VI. GENERAL MANAGER'S REPORT (9:44 p.m.)

The GM provided a report on the following items:

1. Laboratory testing
2. Water production and sales
3. Leaks
4. Guerneville rainfall
5. In-House Construction Projects
6. Lower Russian River Community Advisory Group Governance Meeting
7. Protest Rate Class
8. Personnel
9. Gantt Chart
10. Tax Lien List Approval
11. Economic Impact of No Disconnects for Non-payment

VII. BOARD MEMBERS' ANNOUNCEMENTS/COMMENTS (9:51 p.m.)

Director Robb-Wilder shared the front page of the Sonoma Gazette featuring a painting by our Legal Counsel Rachel Hundley.

VIII. ITEMS FOR THE NEXT AGENDA (9:54 p.m.)

1. MR Bridge project
2. CDBG grant application
3. Drought issues
4. Flume subsidy update
5. Covid Office Re-Opening
6. Water rights

IX. CLOSED SESSION (9:56 p.m.)

(Postponed to Thursday 7/8 at 3 pm)

A. Pursuant to Gov. Code Section 54957(b)(1) – Public Employee Performance Evaluation
Title: General Manager
Direction was given to staff.

ADJOURN

The meeting adjourned at 10:05 p.m.

Respectfully submitted,

Julie Kenny
Clerk to the Board of Directors

APPROVED:

Gaylord Schaap: _____

Sukey Robb-Wilder: _____

Tim Lipinski: _____

Rich Holmer _____

Larry Spillane _____

SPECIAL BOARD MEETING MINUTES*

Meeting Date: July 8, 2021

(*In order discussed)

July 8, 2021
3 p.m.

Board Members Present:	Tim Lipinski Larry Spillane Sukey Robb-Wilder Rich Holmer Gaylord Schaap
Board Members Absent:	None.
Staff in Attendance:	Ed Fortner, General Manager
Others in Attendance:	(None)

I. CALL TO ORDER (3 p.m.)

The properly agendized meeting was called to Order by President Robb-Wilder at 3 p.m.

II. PUBLIC COMMENT (3:02 p.m.)

(None.)

III. CLOSED SESSION (3:03 p.m.) *

**in the order discussed*

At 3:03 p.m. President Robb-Wilder announced the Closed Session item. At 3:04 p.m. the Board went into Closed Session. At 4;05 p.m. the meeting reconvened and the following action was announced:

A. **Pursuant to Gov. Code Section 54957(b)(1) – Public Employee Performance Evaluation**
Title: General Manager
Direction was given to staff.

ADJOURN

The meeting adjourned at 4:06 p.m.

Respectfully submitted,

Julie Kenny
Clerk to the Board of Directors

APPROVED:

Gaylord Schaap: _____

Sukey Robb-Wilder: _____

Tim Lipinski: _____

Rich Holmer _____

Larry Spillane _____

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-A**

FROM: Ed Fortner, General Manager

Meeting Date: August 5, 2021
SUBJECT: RES. 21-13; PUBLIC HEARING RE ANNUAL FLAT CHARGE

RECOMMENDED ACTION:

- Open Public Hearing, hear comments, close public hearing
- Adopt Resolution 21-13, Overruling Protests and Confirming Report on the annual Flat Charge at the same level ($198 per connection) as recent years

FISCAL IMPACT:

The FY 2020-21 assessment generated $755,043 in annual revenues, plus an additional $93,155 in flat charges from new service construction.

DISCUSSION:

On an annual basis since July 1992, the District has imposed a flat charge for each separate water connection or meter to a property. The flat charge is $198 per meter, an amount unchanged since FY 2002-03.

Resolution 21-13 keeps the Flat Charge at $198 per connection. The flat charge is added to the tax bill and collected by the County, along with all other county property taxes and assessments.

The funds collected are one source of CIRF revenue used to pay for annual debt service incurred for the original purchase of the water system and subsequent capital projects, with any surplus used to help self-fund ongoing and future capital projects, a longstanding District goal normally discussed around our *operating* budget surpluses. The table on the next page shows progress towards the self-funding goal for the past four years, with budgeted numbers for FY 2021-22:

Funds for Self-Funded CIP* Goal					
	FY 2017-18	**FY 2018-19**	**FY 2019-20**	**FY 2020-21**	**FY 2021-22 (budgeted)**
Flat Charge Revenue	$750,165	$751,484	$747,073	$755,043	$750,000
New Service Construction	$15,764	$13,107	$44,511	$93,155	$27,000
CDR* Revenue	$278,615	$288,172	$296,383	$316,573	$332,402
Interest Revenue	$17,073	$32,902	$27,387	$10,722	$25,000
Equals CIRF Revenue for Debt and CIP	$1,061,617	$1,085,665	$1,115,354	$1,175,493	$1,134,402
Less Debt Principal + Interest	-$1,009,259	-$1,014,385	-$1,028,074	-$1,141,570	-$782,537
Equals CIRF Revenue Available for CIP	**$52,358**	**$71,280**	**$87,280**	**$33,923**	**$351,865**
Plus Operations transfers to CIRF (Goal: $500,000)	$320,000	$210,000	$190,000	$270,000	$430,000
Equals TOTAL available for CIP self-funding	$372,358	$281,280	$277,280	$303,923	$781,865
**CDR: Capital Debt Reduction revenue*					
**CIP: Capital Improvement Program*					

Historically the District has not counted on CIRF revenue, specifically flat charge revenue, to be available for self-funding capital improvements – it has all been needed to make our annual debt payments. As the chart shows, that has slowly been changing as the District has (1) refrained from taking on new debt; (2) restructured/refinanced existing debt; and (3) retired the two State loans. All these efforts will really pay off this fiscal year (FY 2021-22) when CIRF revenue is expected to jump to $351,865. Combined with budgeted Operations transfers to CIRF, the District should now be set up to self-fund an annual $750,000 on capital projects.

Resolution No. 21-13

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE SWEETWATER SPRINGS WATER DISTRICT OVERRULING PROTESTS AND CONFIRMING REPORT ON ANNUAL FLAT CHARGE OF $198/CONNECTION FOR SWEETWATER SPRINGS WATER DISTRICT.

WHEREAS, this Board did on July 14, 1992, adopt Ordinance No. 8 which established an annual flat charge, and authorized collection of such charge on the tax roll of the County of Sonoma, and

WHEREAS, the District has prepared a written report containing a description of each parcel of real property receiving services and facilities from the District and the amount of the flat charge for each parcel for the 2021-22 fiscal year, and

WHEREAS, said written report has been on file with the Clerk of said District, and,

WHEREAS, notice appointing the time and place of hearing protests on said report was duly given in the manner provided by law; and

WHEREAS, all written protests and other written communications were publicly read at said meeting and all persons desiring to be heard were fully heard,

NOW, THEREFORE BE IT RESOLVED, as follows:

1. That all objections to and protests against said report, if any, have been heard by this Board and that said objections and protests be, and each of them is hereby overruled.

2. That said report be, and it is hereby adopted in full with the revisions to each charge as specified therein, and that said charges shall be collected on the tax roll of the County of Sonoma, in the manner provided by law.

3. That the Clerk of this District be hereby directed to file with the County Auditor of Sonoma County, on or before the 10th day of August, 2021, a copy of said report, upon which shall be endorsed over her signature a statement that the report has been adopted by the Board of Directors of the SWEETWATER SPRINGS WATER DISTRICT.

4. That the County Auditor of Sonoma County, shall upon receipt of said report, enter the amount of the charges against the respective lots or parcels as they appear on the assessment roll.

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I hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted and passed by the Board of Directors of the SWEETWATER SPRINGS WATER DISTRICT, Sonoma County, California, at a meeting held on August 5, 2021, by the following vote.

Director	Aye	No
Sukey Robb-Wilder		
Tim Lipinski		
Richard Holmer		
Gaylord Schaap		
Larry Spillane		

Sukey Robb-Wilder
President of the Board of Directors

Attest: Julie A. Kenny
Clerk of the Board of Directors

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-B**

FROM: Ed Fortner, General Manager

Meeting Date: August 5, 2021
SUBJECT: RES. 21-14 – Agreement with the County of Sonoma for Collection of Special Taxes, Fees, and Assessments

RECOMMENDED ACTION:

- Adopt Resolution 21-14, Approving an Agreement with the County of Sonoma for Collection of Special Taxes, Fees, and Assessments.

FISCAL IMPACT:

The District pays approximately $8,000/year to the County for this service.

DISCUSSION:

On an annual basis since July 1992, the District has imposed a flat charge for each separate water connection or meter to a property. The County of Sonoma adds the flat charge to the property tax bills, collects the revenue, and tracks and collects from parcels who fail to pay.

Over the years, the County has established fees, procedures, and other rules pertaining to the collection of this charge. This year they are asking all entities to sign an Agreement which is basically a collection of all the various fees, procedures and rules that we've been following anyway over the years.

Staff recommends approval of the Agreement, which must be submitted to the County prior to the August 10 deadline for submitting our flat charges.

Resolution No. 21-14

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE SWEETWATER SPRINGS WATER APPROVING AN AGREEMENT WITH THE COUNTY OF SONOMA FOR COLLECTION OF SPECIAL TAXES, FEES, AND ASSESSMENTS AND AUTHORIZES THE GENERAL MANAGER TO SIGN.

WHEREAS, this Board did on July 14, 1992, adopt Ordinance No. 8 which established an annual flat charge, and authorized collection of such charge on the tax roll of the County of Sonoma, and

WHEREAS, the County has implanted certain procedures, rules and fees associated with the collection of District flat charges over the years on the County's tax roll, and

WHEREAS, the County wishes to consolidate these procedures, rules and fees in a single Agreement.

NOW, THEREFORE BE IT RESOLVED, as follows:

1. That the Board of the Sweetwater Springs Water District hereby approves the Agreement with the County of Sonoma for Collection of Special Taxes, Fees and Assessments and Authorizes the General Manager to Sign.

****

I hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted and passed by the Board of Directors of the SWEETWATER SPRINGS WATER DISTRICT, Sonoma County, California, at a meeting held on August 5, 2021, by the following vote.

Director	Aye	No
Sukey Robb-Wilder	_____	_____
Tim Lipinski	_____	_____
Richard Holmer	_____	_____
Gaylord Schaap	_____	_____
Larry Spillane	_____	_____

_____
Sukey Robb-Wilder
President of the Board of Directors

_____
Attest: Julie A. Kenny
Clerk of the Board of Directors

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-C**

FROM: Ed Fortner, General Manager

Meeting Date: August 5, 2021

SUBJECT: ACTUAL VS. BUDGETED (OPERATIONS AND CAPITAL) REPORT THRU JUNE 30, 2021 (100%)

RECOMMENDED ACTION:
(Discussion item only.)

FISCAL IMPACT:
(None.)

DISCUSSION:

The nice thing about the year-end report is there's not many surprises because we review our progress on a quarterly basis. Therefore, it should come as no surprise that it was a good year. We budgeted $126[1] in net income, but at FYE our actual income (on a cash basis) was $149,050.

On the revenue side, **we generated surplus revenue over budgeted amounts of $55,176.** Most of this - $47,790 – came from our non-operating revenue sources which outperformed budgeted amounts in all categories except interest. In particular, revenue from new service construction was much more than expected.

As for operating income – Water Sales -- we discussed extensively in past meetings the likelihood that the new 2-tier rate structure generated less revenue than the old 4-tier rate restructure would have. To test that theory, staff ran the old rate structure (with a 5% increase) side by side with the new rate structure. The final numbers are in: We would have generated $37,334 more in water sales had we kept our old rate structure. We sold 7.7% (19,020 units) more water in FY 2020-21 than in FY 2019-20, but water sales came in just $7,375 (0.27%) ahead of budgeted amounts.

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[1] Typically, net operating income is budgeted to be approximately $0, as any excess revenue is budgeted to be transferred to our Capital Improvement Revenue Fund (CIRF)

That said, there were good reasons to change our rate structure and good things that came out of the rate study in general. Moving forward hopefully our expectations and our budget are aligned with revenue the 2-tier structure can generate. Staff is expecting the District to sell less water in FY 2021-22 as most of our customers are no longer sheltering at home and all of us are mindful of the need to conserve in this drought year.

On the expense side, we spent $93,748 less than budgeted, mostly due to savings in the Salaries and Benefits category.

Expenses break down into three categories: Salaries & Benefits, Services & Supplies, and System/Equipment.

Salaries & Benefits came in at $66,281 less than budgeted. Both Field and Admin operated with one less employee for much of the fiscal year, which saved money but kept staff very busy. Both positions have now been filled, with our new Account Clerk starting on August 12.

Service and Supplies came in $20,422 less than budgeted. Of note in this category were the following line items:

The good news…

Maint/Repair - Facilities: $35,549 less than budgeted
Operating Supplies (Field): $9,120 less
Legal Fees: $6,370 less than budgeted

. . . and the not so good news…

Property/Liability/Vehicle Insurance: $19,391 more than budgeted
Engineering: Not budgeted, but $4,921 was spent on general engineering tasks
Electricity: $10,211 more than budgeted

System/Equipment Upgrades were $7,044 less than budgeted, with all line items – site maintenance, equipment and vehicles – coming in slightly less than budgeted.

For more detail on all the budget line items, please refer to the attached Actual vs. Budgeted breakdown provided with your packet.

Capital Budget:

The 4Q Capital Budget (Table 2) shows the Capital Budget at the end of the fiscal year. The Capital Budget came in mostly as expected with the exception of the Prior Year Flat Charges revenue shortfall of $17,317.74 and an interest revenue estimate under by $14,278.36. Also, we were able to transfer the budgeted amount of $270,000 to CIRF from Operating income.

On the expense side, we paid off the State Loan early, adding $143,438.61 and Capital Interest was down by $53,156.10. Deferring the Capital project deferred the $1,211,041.70 expense.

FUNDS AT THE COUNTY

Fund and Loan Balances show a comparison of the budgeted and 4th Quarter balances. Also attached is the County Fund Balances for the 4th Quarter. County Fund Balances include the funds at PARS and CERBT. At the end of the year, Total District Reserves were $2,867,900.41, with $2,330,239.41 reserves above policy.

The funds listed in District Policy Reserves are approximately the same. The District has ended the fiscal year in good shape. Hopefully we will hit targets that allow us to fully fund the FY 2020-2021 CIP. Looking forward to the first quarter of FY 2021-2022, we are fortunate with a water usage increase due to Covid, full paydown on unfunded pension liability, and an approved rate increase based on the Rate Study that will create available Capital funds.

Sweetwater Springs Water District
FY 2020-21 Operating Budget Variances as of June 30, 2021 (100%)

Note: Document is cumulative. Changes to text made from previous reports are *'d in the "Changed" column and underlined.

	FY 2020-21 Actual	2020-21 Budget	$ Over Budget for the Year	% of Budget	Notes (Underlined notes reflect changes since last report)	*=Changed
Ordinary Income/Expense						
Income						
OPERATING REVENUE						
4031 · Water Sales						
4031.10· Base Rate	1,737,694	1,728,369	9,325	100.54%		
4031.11· Current Charges	697,378	700,541	-3,163	99.55%		
4031.12· Capital Debt Reduction Charge	317,797	316,573	1,224	100.39%		
Total 4031 · Water Sales	2,752,868	2,745,483	7,385	100.27%	This is a cash water sales figure.	
Total OPERATING REVENUE	2,752,868	2,745,483	7,385	100.27%		
NON-OPERATING REVENUE						
1700 · Interest	4,869	16,000	-11,131	30.43%	-	
4448 · Policy Reserve Loan Proceeds	500,000	500,000	0	100.0%		
3600 · Construction New Services	31,782	7,000	24,782	454.03%	There were an unusual amount of new services requested this year	*
3601 · Construction - Service Upgrades	14,615	3,000	11,615	487.17%	This line item was underbudgeted this year.	
4032 · Rent	119,915	110,810	9,105	108.22%		
4040 · Miscellaneous Income	14,920	1,500	13,420	994.66%		
Total NON-OPERATING REVENUE	686,100	638,310	47,790	107.49%		
Total Income	3,438,969	3,383,793	55,176	101.63%		
Expense						
OPERATING EXPENSES						
SALARY & BENEFITS						
Salary						
5910 · Wages	805,607	835,000	-29,393	96.48%	Office and Field were understaffed for a portion of the year	*
5912 · Overtime	40,184	37,000	3,184	108.61%	Walbridge Fire and field staff training this year	*
5916 · On-Call Pay	39,030	37,000	2,030	105.49%	Field staff training this year	*
5918 · Extra help - Contract	37,030	36,000	1,030	102.86%		
Total Salary	921,851	945,000	-23,149	97.55%		
Benefits						
5500 · Flex Spending (Flex spending monies	-5,374	0	-5,374	100.0%		
5920 · Retirement net employee share	68,732	87,000	-18,268	79.0%	This line item was overbudgeted this year.	
5920.4 · Retirement - UL Mandatory	34,552	34,854	-302	99.13%	In the 1Q, the mandatory UL payment was paid for the year.	
5920.5 · Retirement - UL Extra payment	500,000	500,000	0	100.0%	-	
5922 · Payroll Taxes - Employer Paid	14,018	16,000	-1,982	87.61%		
5930 · Health/Dental/Vision/AFLAC Ins.	239,043	240,000	-957	99.6%	In the 1Q, Health ins. Pd thru October.	
5931 · Retiree Health	11,043	9,800	1,243	112.68%	In the 1Q, annual contribution to CERBT ($3,000) made.	
5941 · Life insurance - GM	1,000	1,000	0	100.0%	-	
5940 · Workers Comp Insurance	20,508	38,000	-17,492	53.97%	In the 1Q, workers' compensation insurance was paid for the year. This item was overbudgeted this year.	
Total Benefits	883,521	926,654	-43,133	95.35%		
Total SALARY & BENEFITS	1,805,373	1,871,654	-66,281	96.46%		
SERVICES & SUPPLIES						
Communications						
6040-I · Internet service	3,315	2,700	615	122.78%		
6040-C · Cell Phones	4,431	4,600	-169	96.32%		
6040-P · Pagers & Radios	203	200	3	101.35%		

Sweetwater Springs Water District
FY 2020-21 Operating Budget Variances as of June 30, 2021 (100%)

Note: Document is cumulative. Changes to text made from previous reports are *'d in the "Changed" column and underlined.

	FY 2020-21 Actual	2020-21 Budget	$ Over Budget for the Year	% of Budget	Notes (Underlined notes reflect changes since last report)	*=Changed
6040-T · Telephones	23,457	24,000	-543	97.74%	-	
Total Communications	31,406	31,500	-94	99.7%		
Insurances						
6101 · Gen. Liability	65,391	46,000	19,391	142.15%	In the 1Q, paid for the year. Underbudgeted this year.	
Total Insurances	65,391	46,000	19,391	142.15%		
Maint/Rep - Office & Vehicles						
6140 · Vehicle Maintenance	27,396	21,000	6,396	130.46%	In the 4Q both the dump truck and backhoe needed larger repairs	*
6151 · Office Maintenance	5,173	6,000	-827	86.21%		
Total Maint/Rep - Office & Vehicles	32,569	27,000	5,569	120.63%		
Maint/Repair - Facilities						
6085 · Janitorial Services	8,784	9,000	-216	97.6%		
6100 · SCADA system	1,313	5,000	-3,687	26.26%		
6180 · Distribution System Repairs	37,995	50,000	-12,005	75.99%	Overbudgeted for the year.	*
6235 · Treatment Sys/Well Repairs	55,593	75,000	-19,407	74.12%	In the 4Q emergency work on MR Well 4 controls replaced a well rehab at a lesser cost, but the rehab will need to be done in a future year.	*
6143 · Generator Maintenance	3,766	4,000	-234	94.15%		
Total Maint/Repair - Facilities	107,451	143,000	-35,549	75.14%		
Miscellaneous Expenses						
6280 · Memberships	9,751	11,000	-1,249	88.65%		
6303 · Claims	295	1,500	-1,205	19.67%		
6593 · Governmental Fees	18,981	19,000	-19	99.9%		
Total Miscellaneous Expenses	29,028	31,500	-2,472	92.15%		
Office Expense						
6410 · Postage	15,404	19,000	-3,596	81.07%		
6430 · Printing Expense	10,185	8,000	2,185	127.31%	In the 4Q envelopes were ordered for FY 2021-22 and our local printshop closed.	*
6461 · Office Supplies	6,847	6,000	847	114.12%	-	
6800 · Subscriptions/Legal Notices	2,232	1,100	1,132	202.94%		
6890 · Computers/Software	4,597	2,500	2,097	183.9%	In the 1Q the District purchased laptops and VPN equipment to prepare for the possibility of working at home during Covid. ($2,644). These expenses were not budgeted.	
Total Office Expense	39,265	36,600	2,665	107.28%		
Operating Supplies						
6300 · Chemicals	14,911	20,000	-5,089	74.56%	-	
6880 · Tools and Equipment	3,097	7,000	-3,903	44.25%		
6881 · Safety Equipment	1,872	2,000	-128	93.6%		
Total Operating Supplies	19,880	29,000	-9,120	68.55%		
Professional Services						
6514 · Lab/Testing Fees	7,532	12,500	-4,968	60.26%		
6570 · Consultant Fees	54,472	52,000	2,472	104.75%	-	
6590 · Engineering	4,921	0	4,921	100.0%	In the 2Q, the District contracted with Coastland for task-related engineering services.	
6610 · Legal	23,630	30,000	-6,370	78.77%		
6630 · Audit/Accounting	35,033	35,000	33	100.1%		

Sweetwater Springs Water District
FY 2020-21 Operating Budget Variances as of June 30, 2021 (100%)

Note: Document is cumulative. Changes to text made from previous reports are *'d in the "Changed" column and underlined.

	FY 2020-21 Actual	2020-21 Budget	$ Over Budget for the Year	% of Budget	Notes (Underlined notes reflect changes since last report)	*=Changed
Total Professional Services	125,588	129,500	-3,912	96.98%		
Rents & Leases						
7913 · Policy Reserve Loan	135,000	135,000	0	100.0%		
6820 · Equipment	1,408	3,300	-1,892	42.66%		
6840 · Building & Warehouse	31,152	32,000	-848	97.35%	1Q Bldg. rent paid thru October.	
Total Rents & Leases	167,560	170,300	-2,740	98.39%		
Transportation & Travel						
7120 · Seminars & related travel	1,115	5,000	-3,885	22.3%		
7201 · Vehicle Gas	23,909	24,000	-91	99.62%		
7300 · Travel Reimbursements	6,459	7,000	-541	92.28%		
Total Transportation & Travel	31,483	36,000	-4,517	87.45%		
Uniforms						
6021.1 · Boots	1,618	1,500	118	107.84%		
6021.3 · T-shirts	1,618	1,800	-182	89.9%	In the 1Q, t-shirts were purchased for the year.	
6021.4 · Jackets	93	240	-147	38.61%		
Total Uniforms	3,328	3,540	-212	94.02%		
Utilities						
7320 · Electricity	125,211	115,000	10,211	108.88%	-	
7321 · Propane	3,358	3,000	358	111.93%		
Total Utilities	128,569	118,000	10,569	108.96%		
Total SERVICES & SUPPLIES	781,518	801,940	-20,422	97.45%		
Total OPERATING EXPENSES	2,586,891	2,673,594	-86,703	96.76%		
FIXED ASSET EXPENDITURES						
8511.1 · Tank/Facilities Sites	22,608	24,000	-1,392	94.2%		
8511.2 - Leasehold Improvements	0	0	0	0.0%	-	
8517 · Field/office equipment	6,170	9,500	-3,330	64.95%	In the 2Q the District purchased a (budgeted) color copier ($6,170)	
8573 · Vehicles	47,677	50,000	-2,323	95.36%	-	
Total FIXED ASSET EXPENDITURES	76,456	83,500	-7,044	91.56%		
Total Expense	2,663,346	2,757,094	-93,748	96.6%		
Net Ordinary Income	775,622	626,699	148,923	123.76%		
Other Income/Expense						
Other Expense						
TRANSFERS TO OTHER FUNDS						
8620.7 · Tfers to CIRF for CDR Revenue	316,573	316,573	0	100.0%		
8620.3 · Tfers to CIRF	270,000	270,000	0	100.0%		
8620.5 · Tfers to Building Fund	15,000	15,000	0	100.0%		
8620.2 · Tfers to In-House Constr	25,000	25,000	0	100.0%		
Total TRANSFERS TO OTHER FUNDS	626,573	626,573	0	100.0%	-	
Net Income	**149,049**	**126**	**148,923**			

Sweetwater Springs Water District
FY 2020-21 Capital Budget Variances as of June 30, 2021 (100%)

	Jul 20 - Mar 21	Budget	$ Over Budget	% of Budget	Notes
Income					
New Construction flat charges revenue	93,154.90	27,000.00	66,154.90	345.02%	
CY Direct Charges	732,360.49	710,000.00	22,360.49	103.15%	
PY Direct Charges	22,682.26	40,000.00	-17,317.74	56.71%	
Interest Revenue	10,721.64	25,000.00	-14,278.36	42.89%	
Guernewood Park proceeds	5,000.00	0.00	5,000.00	100.0%	
Grant proceeds (CDBG)	93,283.35	0.00	93,283.35	100.0%	
Tfer from Operations - CDR	316,573.00	316,573.00	0.00	100.0%	
Tfer from Operations - In House Constr.	25,000.00	25,000.00	0.00	100.0%	
Tfer from Operations - Surplus Income	270,000.00	270,000.00	0.00	100.0%	
Total Income	1,568,775.64	1,413,573.00	155,202.64	110.98%	
Expense					
In-House Construction	30,937.20	25,000.00	5,937.20	123.75%	
CIP 2021 (Main repl: Old River Rd; Woodland)	114,958.30	1,326,000.00	-1,211,041.70	8.67%	
Main St MR Emergency Line	129,222.00	0.00	129,222.00	100.0%	
Guernewood Park Project	1,080.00	0.00	1,080.00	100.0%	
Principal - State Loans	282,726.61	139,298.00	143,428.61	202.97%	
Principal Pymt -USDA Bonds	53,278.00	54,278.00	-1,000.00	98.16%	
Principal - Priv. Placemnt Loan	170,813.73	167,650.00	3,163.73	101.89%	
Principal-2013 Cap One Rev Bond	368,000.00	368,000.00	0.00	100.0%	
Capital Interest	266,751.90	319,908.00	-53,156.10	83.38%	
Total Expense	1,417,767.74	2,400,134.00	-982,366.26	59.07%	
Net Capital Income	151,007.90	-986,561.00	1,137,568.90	-15.31%	

Non-Operating Balances FY 2020-21 and Reserves Above Policy

Beginning balances:
(Note: Warrants requested in FP 12 for last fiscal year are not subtracted from Cash until FP 1 of the next year. They are instead recorded as "Vendors Payable")

												TOTAL at COUNTY ↓	GRAND TOTAL: COUNTY + USDA + PARS/CERBT	FY 2020-21 Policy Reserves: $1,402,661 Reserve Loans Outstanding: $365,000 (Oct. 2019) $500,000 (Nov 2020)
	$47,203.17	$221,675.97	$15,691.50	$40,850.00	$622,991.00	$39,096.86	$884,672.93	$ 0.00	$147,272.38	$730,925.86	$149,332.13	$2,481,500.53	$2,899,711.80	
NAME	CERBT (Contributions are part of Reserves)	PARS (Contributions are part of Reserves)	Operations	Bldg Fund (part of Policy Reserves)	FY 2020-21 POLICY RESERVES: $1,402,661	In-house Construction	Capital Improvements	Guernewood Project Escrow Funds	State Loan 58340	Cap One Bonds and Citizens Bank Loan Debt	USDA Bond Debt (at WestAmerica)			POLICY RESERVES NET RESERVE LOANS:
	CONTRIBUTIONS:	CONTRIBUTIONS:			($257,293)									$537,661
Fund	$39,518	$200,000	76751	76752	76753	76755	76756	76757	76759	76762				
Dep't			7106 0100	7106 0200	7106 0300	7106 0500	7106 0600	7106 0700	7106 0900	7106 1200				Reserves Above Policy:
FP1-Jul	$47,203.17	$221,675.97	$15,691.50	$40,850.00	$622,991.00	$39,096.86	$884,672.93	$0.00	$147,272.38	$622,604.65	$149,334.66	$2,373,179.32	$2,791,393.12	**$1,888,732.12**
FP2-Aug	$47,203.17	$236,316.81	$15,691.50	$40,850.00	$622,991.00	$38,738.55	$884,672.93	$0.00	$147,272.38	$115,478.23	$149,337.19	$1,865,694.59	$2,298,551.76	**$1,395,890.76**
FP3-Sept	$52,881.70	$231,619.37	$15,691.50	$40,850.00	$622,991.00	$38,738.55	$877,819.43	$0.00	$73,963.37	$182,229.44	$85,054.97	$1,852,283.29	$2,221,839.33	**$1,319,178.33**
FP4-Oct	$52,881.70	$228,921.10	$67,758.39	$40,850.00	$757,991.00	$38,738.55	$730,910.55	$0.00	$214,646.84	$182,229.44	$85,056.36	$2,033,124.77	$2,399,983.93	**$1,362,322.93**
FP5-Nov	$52,881.70	$246,276.17	$214,758.39	$40,850.00	$257,991.00	$38,738.55	$709,447.15	$0.00	$0.00	$182,229.44	$85,057.80	$1,444,014.53	$1,828,230.20	**$1,290,569.20**
FP6-Dec	$58,694.23	$253,019.12	$23,185.39	$40,850.00	$257,991.00	$17,103.47	$1,440,505.27	$0.00	$0.00	$182,229.44	$42,789.77	$1,961,864.57	$2,316,367.69	**$1,778,706.69**
FP7-Jan	$58,694.23	$252,865.54	$24,508.20	$40,850.00	$257,991.00	$17,103.47	$1,415,550.43	$5,000.00	$0.00	$73,908.23	$42,790.45	$1,834,911.33	$2,189,261.55	**$1,651,600.55**
FP8-Feb	$58,694.23	$256,801.04	$124,508.20	$40,850.00	$257,991.00	$13,770.39	$1,404,531.23	$4,520.00	$0.00	$851.33	$42,791.11	$1,847,022.15	$2,205,308.53	**$1,667,647.53**
FP9-Mar	$59,949.00	$261,010.87	$124,508.20	$40,850.00	$257,991.00	$13,770.39	$1,555,141.78	$4,520.00	$0.00	$851.33	$42,791.88	$1,997,632.70	$2,361,384.45	**$1,823,723.45**
FP10-Apr	$59,949.00	$268,423.78	$245,151.63	$40,850.00	$257,991.00	$8,159.76	$1,087,959.11	$4,520.00	$0.00	$655,421.33	$166,762.20	$2,300,052.83	$2,795,187.81	**$2,257,526.81**
FP11-May	$59,949.00	$270,496.11	$135,151.63	$55,850.00	$257,991.00	$278,159.76	$1,101,174.59	$3,920.00	$0.00	$655,421.33	$166,764.76	$2,487,668.31	$2,984,878.18	**$2,447,217.18**
FP12-Jun	$59,949.00	$273,549.20	$134,361.63	$55,850.00	$257,991.00	$33,159.76	$1,243,918.49	$3,920.00	$0.00	$655,421.33	$149,780.00	$2,384,622.21	$2,867,900.41	**$2,330,239.41**
FP 13 (FINAL)														

** Available Funds: 76758 and 76759 (State Loan reserve funds); 76754 (Fed Loan); 76757 (Guernewood Park); 76761 (Cap and Debt policy reserve) (These columns are hidden)
*** Starting FY 2017-18, Bldg Fund and PARS considered part of Reserves; Starting FY 2019-20, CERBT is also part of reserves, but only the contributions (not earnings) to PARS and CERBT are included

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-D**

FROM: Ed Fortner, General Manager

Meeting Date: August 5, 2021

SUBJECT: Discussion / Action re Drought Emergency Declaration, Flow Reduction in the Russian River, and Curtailment Order

RECOMMENDED ACTION: Receive report on the drought conditions and the Drought Emergency Declaration declared for Sonoma and Marin Counties, the State Water Board approved reduction in Russian River flows, and the Curtailment Order issued by the State Water Board. Approve Resolution 21-15, Adopting Approval of Phase I of the Water Shortage Contingency Plan.

FISCAL IMPACT: $172,837.00 if a 20% reduction is achieved for the balance of the calendar year.

DISCUSSION:

The last two years have been record drought years. Guerneville rain totals in 2019/2020 were just over sixteen inches, and in the 2020/2021 rain year (October 2020 – October 2021) have been just over fifteen inches. The average annual rainfall for Guerneville is forty-four inches. These record dry conditions have resulted in record low levels in Lake Sonoma and Lake Mendocino, the two primary lakes that release into the Russian River. These conditions are the worst on record, dating back to the 1930s dust bowl era. Sweetwater Springs pumps from the underflow of the Russian River in Guerneville at the el Bonita well station and the Monte Rio well station.

Due to the record two-year drought, Governor Newsome issued a drought emergency declaration on April 21, and the Sonoma County Board of Supervisors declared a drought emergency on April 27.

The California State Water Resources Control Board ordered reductions on June 14 on minimum instream flows and (diversions on the Upper Russian River) from the Russian River as drought conditions worsen in the river's watershed. The temporary order lowers instream flow requirements to 35 cfs in the lower and 25 cfs in the upper Russian River through the end of the calendar year. It requires the Sonoma County Water Agency and its contractors to reduce diversions from

the river by 20 percent from last year's usage between July 1 and mid-December 2021.

The State Water Board meeting on June 16 approved a Resolution to adopt Emergency Regulations to address water shortages in the Russian River Watershed. The approved Curtailment Order is attached. The final order was issued the first week of July. I spoke with Sam Boland-Brien, the chief Engineer in the Water Rights group working on this issue, to discuss the impacts on Sweetwater and help them understand our unique situation. The curtailment order does include the lower Russian River but does have exemptions for minimum human health and safety usage. There are references to 55 gallons per capita per day limits on this type of usage. We should receive the curtailment order letter in late early August. The District must respond within seven days after receipt of the letter and begin the waiver process for human health and safety. If a twenty percent reduction is seen for the District for the balance of the calendar year, we could see a decrease in revenue of $172,837.00.

I have been participating in the Russian River Drought Response Group meetings facilitated by the State Water Board and the Sonoma Interagency Drought Task Force facilitated by SCWA to stay current on the Russian River drought conditions, the Curtailment Order, and water rights issues related to the drought. I picked up water conservation signs from SCWA on July 6. These signs have been posted around the service area. If any Board members want yard signs, we have them at the office. We are also promoting the Flume devices and have updated our website conservation links.

I attended the Russian River Drought Response Group meeting with the State Water Control Board on July 28. The big news from that meeting is that the State will issue the Curtailment Order for the Upper Russian River on August 2 (Monday), based on Lake Mendicino levels. The Lower Russian River Curtailment Order will be issued on August 9, based on USGS and other flow data related to supply and demand. This data will be available on Monday, August 2, on the State website. All diversions must cease upon receipt of the order, except for waivers for Human Health and Safety. Sweetwater will apply for this waiver and be granted the ability to divert up to 55 gallons per capita per day. We will have seven days to reply to the Curtailment order.

To qualify for the human health and safety waiver of the curtailment order limiting the District to 55 gallons per capita usage, the District must enact our Water Shortage Contingency Plan (WSCP). Tonight, we ask the Board to approve Phase I of the WSCP.

Resolution 21-15

A Resolution of the Sweetwater Springs Water District Declaring a Stage I Water Shortage

WHEREAS, the California State Water Resources Board has issued a directive calling for curtailment of water use on the Russian River; and

WHEREAS, the reservoirs in the Russian River system and the flows in the River are low and projections indicate that conditions will deteriorate further later in the summer and fall of 2021; and

WHEREAS, it is in the District's and all regional water purveyors' interest that a cooperative effort be developed to address the water shortage situation in the Russian River system and statewide; and

WHEREAS, the District adopted the 2020 Urban Water Conservation Plan (the "Plan") by Resolution 21-09 on June 3, 2021, which includes a water shortage contingency element: and

WHEREAS, the Plan's voluntary and mandatory rationing stages may be triggered by a water supply shortage; and

WHEREAS, the direction from the California State Water Resources Board indicates a water supply shortage exists thereby triggering the rationing stage provisions of the Plan; and

WHEREAS, the Plan has a three-stage response plan and provides that Stage I voluntary rationing should be declared when the conservation goal target is between 15-25%; and

WHEREAS, Stage I voluntary conservation by District customers may be achieved by adjustment to their interior or exterior water use, but still requires concerted effort by District staff; and

WHEREAS, the Plan contains programs and activities that will help the District and its customers achieve a conservation target of up to 20% based on the 2020 average usage; and

WHEREAS, the Curtailment order allows for a waiver for Human Health and Safety for 55 gallons per capita per day; and

WHEREAS, attached as Exhibit A is a list of the programs and activities that will be undertaken by the District to assist its customers in achieving water savings under the voluntary Stage I conservation program.

NOW, THEREFORE BE IT RESOLVED that the Board of Directors of the Sweetwater Springs Water District declares the implementation of Stage I of the District's 2020 Water Shortage Contingency Plan and directs staff to begin implementation the programs and activities listed in Exhibit A with a goal of decreasing water production to achieve 55 gallons per capita per day usage

.

I hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted and passed by the Board of Directors of the SWEETWATER SPRINGS WATER DISTRICT, Sonoma County, California, at a meeting held on August 5, 2021, by the following vote.

Director	Aye	No
Sukey Robb-Wilder		
Tim Lipinski		
Richard Holmer		
Gaylord Schaap		
Larry Spillane		

Sukey Robb-Wilder
President of the Board of Directors

Attest: Julie A. Kenny
Clerk of the Board of Directors

Exhibit A
Resolution 21-15
Sweetwater Springs Water District Water Shortage Contingency Plan
Stage I Water Shortage
August 5, 2021

Reduction Target is 15-25% to achieve 55 gpcd usage. According to 2020 Urban Water Management Plan, this is Stage 1 of the Water Shortage Contingency Plan

Triggering Mechanism is State Board Order directing curtailment on the Upper and Lower Russian River with a waiver for use of 55 gpcd for Human Health and Safety.

The approach/strategy is voluntary conservation whereby District customers are encouraged and offered resources to use water wisely, and to search for and fix leaks on their property. The District will continue with its capital projects aimed at reducing system losses, pay attention to water wasting in the District, fix surfacing leaks as quickly as possible, and look for other opportunities to reduce system losses.

Plan Elements:

- Public Education/Information
    - Work with SCWA and other water providers in the region for coordinated message
    - Information on website
    - Notice on Bills
    - Water Conservation Signs
    - Flume rebate program
    - Home Water Audits – self and assisted:
        - Instructions on meter reading.
        - Check for leaks inside and outside.
        - Evaluate all water uses in your facility or home.
        - Provide information on rebates, incentive programs, and water conservation strategies for residents/businesses.
    - Office Display with handouts – rebates, low flow showerheads, faucet aerators
    - Water Wise Gardening
    - Media Spots – press releases, PSA's done on a regional basis?
    - Connect with Statewide effort
- Waste of Water Prohibited, staff will be alerted to be on the lookout for wastage of water.
- Rate incentives – rates have financial incentive to reduce water use (steep incline to tiered rates).
- Capital Improvement Program – FY 2020-2021 CIP is replacing water distribution mains as part of program to reduce system losses.
- District staff fix reported and found leaks on a priority basis and continue to implement the District effort to decrease water losses.

State of California
Office of Administrative Law

In re:
State Water Resources Control Board

Regulatory Action:

Title 23, California Code of Regulations

Adopt sections: 877, 877.1, 877.2, 877.3, 877.4, 877.5, 877.6, 878, 878.1, 879, 879.1, 879.2
Amend sections:
Repeal sections:

NOTICE OF APPROVAL OF EMERGENCY REGULATORY ACTION

Government Code Sections 11346.1 and 11349.6

OAL Matter Number: 2021-0630-01

OAL Matter Type: Emergency (E)

The proposed emergency regulation would provide the State Water Resources Control Board's Division of Water Rights and users within the Russian River watershed a methodology for determining the extent to which water is unavailable for diversion at water users' priority of right. It would also authorize the Deputy Director to issue curtailment orders requiring recipients to cease diversions unless and until (1) they have authorization to continue diverting pursuant to one of the exceptions enumerated in the regulation, or (2) they receive notice that the curtailment order has been lifted.

The emergency regulation would provide the State Water Resources Control Board's Deputy Director for the Division of Water Rights authority to implement curtailment actions in the event that Lake Mendocino storage targets are not met (for Upper Russian River watershed curtailments) or when flows are insufficient to support all water right priorities (for Lower Russian River watershed curtailments). The proposed regulations also: define non-consumptive uses and minimum human health and safety needs; provide a pathway to allow for continued diversions for non-consumptive uses; provide procedures for authorizing continued diversion to meet minimum human health and safety needs; and establish reporting requirements for water right holders issued a curtailment notice.

OAL approves this emergency regulatory action pursuant to sections 11346.1 and 11349.6 of the Government Code.

This emergency regulatory action is effective on 7/12/2021 and, pursuant to Water Code section 1058.5(c), will expire on 7/12/2022. The Certificate of Compliance for this action is due no later than 7/11/2022.

Date: July 12, 2021

Dale P. Mentink
Senior Attorney

Original: Eileen Sobeck, Executive Director
Copy: Andrew Deeringer

For: Kenneth J. Pogue
Director

EMERGENCY

STATE OF CALIFORNIA—OFFICE OF ADMINISTRATIVE LAW
NOTICE PUBLICATION/REGULATIONS SUBMISSION

STD. 400 (REV. 10/2019)

For use by Secretary of State only

ENDORSED - FILED
In the office of the Secretary of State
of the State of California
JUL 12 2021
1:18 PM

OAL FILE NUMBERS	NOTICE FILE NUMBER	REGULATORY ACTION NUMBER	EMERGENCY NUMBER
	Z-	2021-0630-01E	

For use by Office of Administrative Law (OAL) only

2021 JUN 30 P 1:47
OFFICE OF ADMINISTRATIVE LAW

NOTICE | REGULATIONS

AGENCY WITH RULEMAKING AUTHORITY: State Water Resources Control Board

AGENCY FILE NUMBER (If any):

A. PUBLICATION OF NOTICE (Complete for publication in Notice Register)

1. SUBJECT OF NOTICE	TITLE(S)	FIRST SECTION AFFECTED	2. REQUESTED PUBLICATION DATE
Diversion Curtailment, Russian River Watershed	23	877	

3. NOTICE TYPE	4. AGENCY CONTACT PERSON	TELEPHONE NUMBER	FAX NUMBER (Optional)
☒ Notice re Proposed Regulatory Action ☐ Other	Andrew Deeringer	(916) 539-2132	

OAL USE ONLY	ACTION ON PROPOSED NOTICE	NOTICE REGISTER NUMBER	PUBLICATION DATE
	☐ Approved as Submitted ☐ Approved as Modified ☐ Disapproved/ Withdrawn		

B. SUBMISSION OF REGULATIONS (Complete when submitting regulations)

1a. SUBJECT OF REGULATION(S)
Emergency Actions to Protect Water Supplies and Threatened and Endangered Fish in the Russian River Watershed

1b. ALL PREVIOUS RELATED OAL REGULATORY ACTION NUMBER(S)
0m per agency request 7/12/21

2. SPECIFY CALIFORNIA CODE OF REGULATIONS TITLE(S) AND SECTION(S) (Including title 26, if toxics related)

SECTION(S) AFFECTED (List all section number(s) individually. Attach additional sheet if needed.)

ADOPT: 877, 877.1, 877.2, 877.3, 877.4, 877.5, 877.6, 878, 878.1, 879, 879.1, and 879.2
AMEND:
REPEAL:
TITLE(S): 23

3. TYPE OF FILING

- ☐ Regular Rulemaking (Gov. Code §11346)
- ☐ Certificate of Compliance: The agency officer named below certifies that this agency complied with the provisions of Gov. Code §§11346.2-11347.3 either before the emergency regulation was adopted or within the time period required by statute.
- ☐ Emergency Readopt (Gov. Code, §11346.1(h))
- ☐ Changes Without Regulatory Effect (Cal. Code Regs., title 1, §100)
- ☐ Resubmittal of disapproved or withdrawn nonemergency filing (Gov. Code §§11349.3, 11349.4)
- ☐ File & Print
- ☐ Print Only
- ☒ Emergency (Gov. Code, §11346.1(b))
- ☐ Resubmittal of disapproved or withdrawn emergency filing (Gov. Code, §11346.1)
- ☐ Other (Specify)

4. ALL BEGINNING AND ENDING DATES OF AVAILABILITY OF MODIFIED REGULATIONS AND/OR MATERIAL ADDED TO THE RULEMAKING FILE (Cal. Code Regs. title 1, §44 and Gov. Code §11347.1)

5. EFFECTIVE DATE OF CHANGES (Gov. Code §§ 11343.4, 11346.1(d); Cal. Code Regs., title 1, §100)

- ☐ Effective January 1, April 1, July 1, or October 1 (Gov. Code §11343.4(a))
- ☒ Effective on filing with Secretary of State
- ☐ §100 Changes Without Regulatory Effect
- ☐ Effective other (Specify)

6. CHECK IF THESE REGULATIONS REQUIRE NOTICE TO, OR REVIEW, CONSULTATION, APPROVAL OR CONCURRENCE BY, ANOTHER AGENCY OR ENTITY

- ☐ Department of Finance (Form STD. 399) (SAM §6660)
- ☐ Fair Political Practices Commission
- ☐ State Fire Marshal
- ☐ Other (Specify)

0m per agency request 7/12/21

7. CONTACT PERSON	TELEPHONE NUMBER	FAX NUMBER (Optional)	E-MAIL ADDRESS (Optional)
Andrew Deeringer	(916) 539-2132		Andrew.Deeringer@waterboards

8. I certify that the attached copy of the regulation(s) is a true and correct copy of the regulation(s) identified on this form, that the information specified on this form is true and correct, and that I am the head of the agency taking this action, or a designee of the head of the agency, and am authorized to make this certification.

SIGNATURE OF AGENCY HEAD OR DESIGNEE: Eileen Sobeck — Digitally signed by Eileen Sobeck, Date: 2021.06.30 10:51:00 -07'00'
DATE: June 30, 2021

TYPED NAME AND TITLE OF SIGNATORY:
Eileen Sobeck, Executive Director, State Water Resources Control Board

For use by Office of Administrative Law (OAL) only

ENDORSED APPROVED
JUL 12 2021
Office of Administrative Law

Curtailment of Diversions to Protect Water Supplies and Threatened and Endangered Fish in the Russian River Watershed

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In Title 23, Division 3, Chapter 2, Article 24, add Sections 877, 877.1, 877.2, 877.3, 877.4, 877.5, 877.6, 878, 878.1, 879, 879.1 and 879.2 to read:

Article 24. Curtailment of Diversions to Protect Water Supplies and Threatened and Endangered Fish in the Russian River Watershed

§ 877 [Reserved]

§ 877.1 Definitions

(a) "Curtailment Order" refers to an order from the Deputy Director of the Division of Water Rights ordering a water right holder to cease diversions.

(b) "Deputy Director" refers to the Deputy Director of the Division of Water Rights, or duly authorized designee, at the State Water Resources Control Board.

(c) "Flood Control District" refers to the Mendocino County Russian River Flood Control and Water Conservation Improvement District.

(d) "Lower Russian River" refers to the surface waters, including underflow and subterranean streams, of the Russian River downstream of the confluence of Dry Creek and the Russian River.

(e) "Lower Russian River Watershed" refers to the area in Sonoma County that drains towards Dry Creek and the area downstream of the confluence of the Russian River and Dry Creek that drains towards the outlet of the Russian River to the Pacific Ocean.

(f) "Mainstem of the Upper Russian River" refers to the surface waters, including underflow and subterranean streams, of the Upper Russian River downstream of Lake Mendocino and upstream of the confluence of Dry Creek and the Russian River.

(g) "Minimum human health and safety needs" refers to the amount of water necessary for prevention of adverse impacts to human health and safety, for which there is no feasible alternate supply. "Minimum human health and safety needs" include:

(1) Indoor domestic water uses including water for human consumption, cooking, or sanitation purposes. For the purposes of this article, water provided outdoors for human consumption, cooking, or sanitation purposes, including but not limited to facilities for unhoused persons or campgrounds, shall be regarded as indoor domestic water use. As necessary to provide for indoor domestic water use, water diverted for minimum human health and safety needs may include water hauling and bulk water deliveries, so long as the diverter maintains records of such deliveries and complies with the reporting requirements of Section 879, and so long as such provision is consistent with a valid water right.

(2) Water supplies necessary for energy sources that are critical to basic grid reliability, as identified by the California Independent System Operator, California Public Utilities Commission, California Energy Commission, or a similar energy grid reliability authority.

(3) Water supplies necessary to prevent tree die-off that would contribute to fire risk to residences, and for maintenance of ponds or other water sources for fire fighting, in addition to water supplies identified by the California Department of Forestry and Fire Protection or another appropriate authority as regionally necessary for fire preparedness.

(4) Water supplies identified by the California Air Resources Board, a local air quality management district, or other appropriate public agency with air quality expertise, as necessary to address critical air quality impacts to protect public health.

(5) Water supplies necessary to address immediate public health or safety threats, as determined by a public agency with health or safety expertise.

(6) Other water uses necessary for human health and safety which a state, local, tribal or federal health, environmental, or safety agency has determined are critical to public health and safety or to the basic infrastructure of the state. Diverters wishing to continue diversions for these uses must identify the health and safety need, include approval or similar relevant documentation from the appropriate public agency,

describe why the amount requested is critical for the need and cannot be met through alternate supplies, state how long the diversion is expected to continue, certify that the supply will be used only for the stated need, and describe steps taken and planned to obtain alternative supplies.

(h) "State Water Board" refers to the State Water Resources Control Board.

(i) "Upper Russian River" refers to the surface waters, including underflow and subterranean streams, of the Russian River upstream of the confluence of the Russian River and Dry Creek and includes both the East and West Forks of the Russian River.

(j) "Upper Russian River Watershed" refers to the area located in Mendocino and Sonoma Counties that drains towards the confluence of Dry Creek and the Russian River.

Authority: Sections 1058, 1058.5, Water Code

Reference: Cal. Const., Art., X § 2; Sections 100, 100.5, 104, 105, 106.3, 275, 1058.5, Water Code; *Environmental Defense Fund v. East Bay Muni. Util. Dist.* (1980) 26 Cal.3d 183.

§ 877.2 Emergency Curtailments Due to Lack of Water Availability in the Lower Russian River Watershed

(a) This section applies to water diversions in the Lower Russian River Watershed.

(b) After the effective date of this regulation, when flows in the Lower Russian River Watershed are insufficient to support all diversions, the Deputy Director may issue curtailment orders to water right holders, requiring the curtailment of water diversion and use.

(c) In determining the extent to which water is available under a diverter's priority of right or when rescinding curtailment orders, the Deputy Director shall consider:

(1) Relevant available information regarding date of priority, including but not limited to claims of first use in statements of water diversion and use, judicial and State Water Board decisions and orders, and other information contained in the Division of Water Rights files;

(2) Monthly water right demand projections based on reports of water diversion and use for permits and licenses, or statements of water diversion and use, from 2017 through 2019.

(3) Water availability projections based on one or more of the following:

(A) Outputs from a United States Geological Survey's Precipitation Runoff Modeling System model, calibrated by State Water Board staff to estimate current or historical natural cumulative runoff throughout the watershed, as well as forecasts of monthly supplies;

(B) Climatic estimates of precipitation and temperature from the Parameter-elevation Regressions on Independent Slopes Model, commonly referred to as PRISM;

(C) Historical periods of comparable conditions with respect to daily temperatures, precipitation, or surface flows;

(D) Outputs from the Santa Rosa Plain Hydrologic Model developed by United States Geological Survey; or

(E) Stream gage data, where available.

(4) The Deputy Director may also consider additional pertinent and reliable information when determining water right priorities, water availability, and demand projections.

(5) Evaluation of available supplies against demands may be performed at the downstream outlet of the Lower Russian River, or at a smaller sub-watershed scale using the Drought Water Rights Allocation Tool, or comparable tool. Use of the Drought Water Rights Allocation Tool will be in accordance with the formulations document for the Drought Water Rights Allocation Tool (March 2, 2020) and Drought Water Right Curtailment Analysis for California's Eel River (November 20, 2017), which are hereby incorporated by reference.

(d) Water users and water right holders are responsible for checking the State Water Board's drought announcements website and signing up for the email distribution list referenced in subdivision (e)(2) to receive updated water supply forecasts. It is anticipated that forecasts of water supplies available to meet water rights demands will be updated on a monthly basis until cumulative rainfall

of greater than 0.5 inches occurs as measured at Healdsburg, California. Following this precipitation event, it is anticipated that forecasts of supplies will be updated on a weekly basis until rescission of all curtailment orders under this section.

(e) (1) Initial curtailment orders will be sent to each water right holder or the agent of record on file with the Division of Water Rights. The water right holder or agent of record is responsible for immediately providing notice of the curtailment order(s) to all diverters exercising the water right(s) covered by the curtailment order(s).

(2) The State Water Board has established an email distribution list that water right holders may join to receive drought notices, water supply forecasts, and updates regarding curtailments. Notice provided by email or by posting on the State Water Board's drought web page shall be sufficient for all purposes related to drought notices and updates regarding curtailment orders.

(f) Rescission of curtailment orders shall be announced using the email distribution list and web page described in subdivision (e).

Authority: Sections 1058, 1058.5, Water Code

Reference: Cal. Const., Art. X, § 2; Sections 100, 100.5, 104, 105, 275, 1058.5, Water Code; *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419; *Stanford Vina Ranch Irrigation Co. v. State of California* (2020) 50 Cal.App.5th 976.

§ 877.3 Emergency Curtailment Where Insufficient Flows are Available in the Upper Russian River Watershed

(a) This section applies to water diversions in the Upper Russian River Watershed.

(b) (1) The Deputy Director may issue a curtailment order upon a determination that the conditions in subdivision (c) are occurring. Curtailment orders shall be effective the day after issuance.

(2) If maintaining minimum flows required for the protection of minimum human health and safety needs, fish and wildlife, or further preserving stored water in Lake Mendocino for human health and safety needs would require curtailment of uses otherwise exempt from curtailment under this article, then the Deputy

Director shall consider whether those uses should be allowed to continue based on the most current information available regarding fish populations, human health and safety needs, and the alternatives available to protect both human health and safety and threatened or endangered fish. Curtailment of water uses under this subdivision (b)(2) and any updates regarding such curtailments shall be noticed as described in subdivision (d).

(c) When storage levels in Lake Mendocino are below those specified in section 877.4, and Sonoma County Water Agency is making Supplemental Storage Releases to satisfy Inbasin Uses, diversion of water within the Upper Russian River Watershed that does not meet an exemption identified in section 878 or section 878.1 constitutes an unreasonable use of water and is prohibited.

(1) Inbasin Uses are defined as diversions from the Mainstem of the Upper Russian River to meet minimum human health and safety needs, Reach Losses, and minimum flows required for protection of fish and wildlife as required by a water right permit or license term, including any enforceable modifications of the foregoing. Export diversions, deliveries scheduled by the Flood Control District pursuant to License 13898, and Reach Losses associated with those exports and deliveries are specifically excluded from the definition of Inbasin Uses.

(2) Supplemental Storage Releases are defined as water released from Lake Mendocino which is in excess of inflows to Lake Mendocino, as calculated on a daily basis, to satisfy Inbasin Uses.

(3) Reach Losses are defined as water that is lost from the Mainstem of the Upper Russian River due to riparian habitat, evaporative losses, or percolation to groundwater.

(d) (1) Initial curtailment orders will be sent to each water right holder or the agent of record on file with the Division of Water Rights. The water right holder or agent of record is responsible for immediately providing notice of the curtailment order(s) to all diverters exercising the water right(s) covered by the curtailment order(s).

(2) The State Water Board has established an email distribution list that water right holders may join to receive drought notices, water supply forecasts, and updates regarding curtailments. Notice provided by email or by posting on the State Water Board's drought web page shall be sufficient for all purposes related to drought notices and updates regarding curtailment orders.

Authority: Sections 1058, 1058.5, Water Code

Reference: Cal. Const., Art. X, § 2; Sections 100, 100.5, 104, 105, 275, 1058.5, Water Code; *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419; *Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463; *Stanford Vina Ranch Irrigation Co. v. State of California* (2020) 50 Cal.App.5th 976.

§ 877.4 Lake Mendocino Storage Levels

Curtailment orders for diversions in the Upper Russian River Watershed shall not be issued unless storage levels in Lake Mendocino fall below the following levels prior to the specified dates:

(a) 29,315 acre-feet before July 1.

(b) 27,825 acre-feet before July 15.

(c) 26,109 acre-feet before August 1.

(d) 24,614 acre-feet before August 15.

(e) 22,745 acre-feet before September 1.

(f) 21,251 acre-feet before September 15.

(g) 20,000 acre-feet on any date while the regulation is in effect.

Authority: Sections 1058, 1058.5, Water Code

Reference: Cal. Const., Art. X, § 2; Sections 100, 100.5, 104, 105, 109, 275, 1058.5, Water Code; *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419; *City of Barstow v. Mojave Water Agency* (2000) 23 Cal.4th 1224; *Stanford Vina Ranch Irrigation Co. v. State of California* (2020) 50 Cal.App.5th 976.

§ 877.5 Rescission of Curtailment Orders in Upper Russian River Watershed

(a) Following issuance of curtailment orders pursuant to section 877.3, the Deputy Director will notify water right holders of the extent to which curtailment orders will be rescinded following a determination by the Deputy Director that Sonoma County Water Agency is no longer making

Supplemental Storage Releases to satisfy Inbasin Uses and natural or abandoned flows are available.

(b) In determining the extent to which water is available under a diverter's priority of right when rescinding curtailment orders, the Deputy Director shall consider:

(1) Relevant available information regarding date of priority, including but not limited to claims of first use in statements of water diversion and use, judicial and State Water Board decisions and orders, and other information contained in the Division of Water Rights files;

(2) Monthly water right demand projections based on reports of water diversion and use for permits and licenses, or statements of water diversion and use, from 2017 through 2019.

(3) Water availability projections based on one or more of the following:

(A) Outputs from a United States Geological Survey's Precipitation Runoff Modeling System model, calibrated by State Water Board staff to estimate current or historical natural cumulative runoff throughout the watershed, as well as forecasts of monthly supplies.

(B) Climatic estimates of precipitation and temperature from the Parameter-elevation Regressions on Independent Slopes Model, commonly referred to as PRISM.

(C) Historical periods of comparable conditions with respect to daily temperatures, precipitation, or surface flows.

(D) Outputs from the Santa Rosa Plain Hydrologic Model developed by United States Geological Survey; or

(E) Stream gage data, where available.

(4) The Deputy Director may also consider additional pertinent and reliable information when determining water right priorities, water availability and demand projections.

(5) Evaluation of available supplies against demands may be performed at the downstream outlet of either the Upper Russian River or the

Lower Russian River, or at a smaller sub-watershed scale using the Drought Water Rights Allocation Tool, or comparable tool. Use of the Drought Water Rights Allocation Tool will be in accordance with the formulations document for the Drought Water Rights Allocation Tool (March 2, 2020) and Drought Water Right Curtailment Analysis for California's Eel River (November 20, 2017), which are hereby incorporated by reference.

(c) Water users and water right holders are responsible for checking the State Water Board's drought announcements website and signing up for the email distribution list referenced in section 877.3, subdivision (e)(2), to receive updated water supply forecasts. It is anticipated that forecasts of water supplies available to meet water rights demands will be updated on a monthly basis until cumulative rainfall of greater than 0.5 inches occurs as measured at Ukiah Municipal Airport precipitation stations within the watershed. Following this precipitation event, it is anticipated that forecasts of supplies will be updated on a weekly basis until rescission of all curtailment orders under this section.

(d) Rescission of a curtailment order shall be announced using the email distribution list and web page described in section 877.3, subdivision (e)(2).

Authority: Sections 1058, 1058.5, Water Code

Reference: Cal. Const., Art. X, § 2; Sections 100, 100.5, 104, 105, 275, 1058.5, Water Code; *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419; *Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463; *Stanford Vina Ranch Irrigation Co. v. State of California* (2020) 50 Cal.App.5th 976.

§ 877.6 Rediversion of Water Previously Stored in Lake Mendocino

(a) Rediversion by the Flood Control District of previously stored water released from Lake Mendocino shall be an unreasonable use of water and subject to the enforcement provisions described in section 879.2 unless such rediversion meets the requirements of this section.

(b) The Flood Control District shall schedule all deliveries of water pursuant to License 13898 at least one week in advance of release of the water.

(c) The timing of rediversion activities relative to release of water shall be based on

a travel time of water along the Russian River agreed upon between the Flood Control District and Sonoma County Water Agency.

(d) The Flood Control District shall provide a monthly schedule of rediversions by the first day of each month and shall confirm by noon on Friday of each week whether those diversions will occur in the following week or have changed.

(e) No rediversions shall occur following September 1 unless Sonoma County Water Agency and the Flood Control District have jointly submitted an executed agreement to the Deputy Director specifying the amount of water stored in Lake Mendocino pursuant to License 13898, the amount of water that will remain stored in Lake Mendocino for use in 2022, and a methodology acceptable to the Deputy Director for determining how inflows to Lake Mendocino are attributed to the Flood Control District and SCWA's respective water rights.

Authority: Sections 1058, 1058.5, Water Code

Reference: Cal. Const., Art. X, § 2; Sections 100, 100.5, 104, 105, 275, 1058.5, Water Code; *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419; *Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463; *City of Barstow v. Mojave Water Agency* (2000) 23 Cal.4th 1224.

§ 878. Non-Consumptive Uses

Diversion and use described in this section under any valid basis of right may continue after issuance of a curtailment order without further approval from the Deputy Director, subject to the conditions set forth in this section. Diversions described in this section may not be required to curtail in response to a curtailment order under this article if their diversion and use of water does not decrease downstream flows. Any diverter wishing to continue diversion under this subdivision must submit to the Deputy Director a certification, under penalty of perjury, which describes the non-consumptive use and explains, with supporting evidence, how the diversion and use do not decrease downstream flows in the applicable watershed. The Deputy Director may request additional information or disapprove any certification if the information provided is insufficient to support the statement or if more convincing evidence contradicts the claims. If a certification submitted pursuant to this section is disapproved, the diversions are subject to any curtailment order issued for that basis of right. This section applies to:

(a) Direct diversions solely for hydropower if discharges are returned to the Russian

River or its tributaries and water is not held in storage.

(b) Direct diversions dedicated to instream uses for the benefit of fish and wildlife pursuant to Water Code section 1707, including those that divert water to a different location for subsequent release, provided the location of release is hydraulically connected to the Russian River.

(c) Direct diversions where the Deputy Director, the California Department of Fish and Wildlife, and the Executive Officer of the North Coast Regional Board have approved a substitution of releases of either stored water or groundwater into the Russian River or a tributary thereof for the benefit of fish and wildlife such that there is not a net decrease in stream flow as a result of the diversion at the next downstream USGS gage. The rate of releases made pursuant to this subdivision must be measured daily using a device or measurement method approved by the Deputy Director and provided to the Deputy Director on a monthly basis. Proposals involving the release of groundwater shall provide sufficient data and information to reasonably quantify any depletions of surface water caused by the groundwater pumping, the potential time lags of those depletions, and if additional groundwater releases beyond the diversion amounts are able to offset those depletions. The release of water does not have to be conducted by the owner of the water right proposed for the continued diversions, provided an agreement between the water right holder and the entity releasing the water is included in the proposal.

(d) Other direct diversions solely for non-consumptive uses, if those diverters file with the Deputy Director a certification under penalty of perjury demonstrating that the diversion and use are non-consumptive and do not decrease downstream flows in the watershed.

Authority: Sections 1058, 1058.5, Water Code

Reference: Cal. Const., Art. X, § 2; Sections 100, 187, 275, 348, Water Code

§ 878.1 Minimum Human Health and Safety Needs

(a) Diversions described in this section under any valid basis of right may be authorized to continue after issuance of a curtailment order, subject to the conditions set forth in this section. A diversion that would otherwise be subject to curtailment may be authorized if:

(1) The diversion is necessary for minimum human health and safety needs;

and therefore,

(2) The diversion is necessary to further the constitutional policy that the water resources of the state be put to beneficial use to the full extent they are capable, and that waste and unreasonable use be prevented, notwithstanding the effect of the diversions on more senior water rights or instream beneficial uses.

(b) (1) Diversions for minimum human health and safety needs under any valid basis of right of not greater than 55 gallons per person per day may continue after issuance of a curtailment order without further approval from the Deputy Director, subject to the conditions set forth in this section. Any diverter wishing to continue diversion under this subdivision must submit to the Deputy Director certification, under penalty of perjury, of compliance with the requirements of subdivisions (b)(1)(A)-(E), below. The Deputy Director may request additional information or set additional requirements on continued diversion.

(A) Not more than 55 gallons per person per day will be diverted under all bases of right.

(B) The diversion is necessary to serve minimum human health and safety needs as defined in section 877.1, subdivision (g), after all other alternate sources of water have been used. To the extent other water sources are available, those sources will be used first and the total used will not exceed 55 gallons per person per day.

(C) The diverter and all end users of the diverted water are operating under the strictest existing conservation regime for that place of use, if such a plan exists for the area or service provider, or shall be operating under such regime within 30 days. If additional approvals are required before implementation of the conservation regime, the diverter must certify that all possible steps will be taken immediately to ensure prompt approval.

(D) If the diverter is distributor of a public water supply under Water Code sections 350 et seq., that it has declared a water shortage emergency condition and either already has adopted regulations and restrictions on the delivery of water or will adopt conservation and water delivery restrictions and regulations within a timeframe specified by the Deputy Director as a condition of certification.

(E) The diverter has either pursued steps to acquire other sources of water, but has not yet been completely successful, as described in an attached report, or the diverter will pursue the steps in an attached plan to identify and secure additional water.

(2) To the extent that a diversion for minimum human health and safety needs requires more than 55 gallons per person per day, the continued diversion of water after issuance of a curtailment order for the diversion requires submission of a petition demonstrating compliance with the requirements of subdivisions (b)(2)(A)-(F), below, and approval by the Deputy Director. The Deputy Director may condition approval of the petition on implementation of additional conservation measures and reporting requirements. Any petition to continue diversion to meet minimum human health and safety needs of more than 55 gallons per person per day must:

(A) Describe the specific circumstances that make the requested diversion amount necessary to meet minimum human health and safety needs, if a larger amount is sought.

(B) Estimate the amount of water needed.

(C) Certify that the supply will be used only for the stated need.

(D) Describe any other additional steps the diverter will take to reduce diversions and consumption.

(E) Provide the timeframe in which the diverter expects to reduce usage to no more than 55 gallons per person per day, or why minimum human health and safety needs will continue to require more water.

(F) As necessary, provide documentation that the use meets the definition of minimum human health and safety needs provided in subdivision (g) of section 877.1.

(c) For public water systems with 15 or greater connections and small water systems of 5 to 15 connections, gallons per person per day shall be calculated on a monthly basis and the calculation methodology shall be consistent with the State Water Board's Percentage Residential Use and Residential Gallons Per Capita Daily Calculation (PRU and R-GPCD Calculation), dated September 22, 2020, which is hereby incorporated by

reference.

(d) Diversions for minimum human health and safety needs that cannot be quantified on the basis of an amount per person per day require a petition and approval from the Deputy Director. The Deputy Director may approve a such a petition under this subdivision or subdivision (b)(2) upon a finding that the petition demonstrates that the requested diversion is in furtherance of the constitutional policy that the water resources of the state be put to beneficial use to the full extent they are capable, and that waste and unreasonable use be prevented, notwithstanding the effect of the diversion on senior water rights or instream beneficial uses, and may condition approval as appropriate to ensure that the diversion and use are reasonable and in the public interest.

(e) To the extent necessary to resolve immediate public health or safety threats, a diversion subject to a curtailment order may continue while a petition under subdivision (b)(2) or (d) is being prepared and is pending. The Deputy Director may require additional information to support the initial petition, information on how long the diversion is expected to continue, and a description of other steps taken or planned to obtain alternative supplies.

(f) Notice of certification, petitions, and decisions under this section and section 878 will be posted as soon as practicable on the State Water Board's drought webpage. The Deputy Director may issue a decision under this article prior to providing notice.

(g) Diversion and use within the Russian River Watershed that deprives water for minimum human health and safety needs in 2021, or which creates unacceptable risk of depriving water for minimum human health and safety needs in 2022, is an unreasonable use of water. The Deputy Director shall prevent such unreasonable use of water by implementing the curtailment methodology described in section 877.2 for diversions in the Lower Russian River Watershed and sections 877.3, 877.4, 877.5, and 877.6 for diversions in the Upper Russian River Watershed.

Authority: Sections 1058, 1058.5, Water Code

Reference: Cal. Const., Art. X, § 2; Sections 100, 100.5, 104, 105, 106.3, 275, 1058.5, Water Code; *Environmental Defense Fund v. East Bay Muni. Util. Dist.* (1980) 26 Cal.3d 183; *Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463; *Stanford Vina Ranch Irrigation Co. v. State of California* (2020) 50 Cal.App.5th 976.

§ 879. Reporting

(a) All water right holders issued a curtailment order under this article are required, within seven calendar days, to submit under penalty of perjury a certification of one or more of the following actions taken in response to the curtailment order, certifying, as applicable, that:

(1) Diversions under the water right(s) identified have ceased;

(2) Any continued use is under other water rights not subject to curtailment, specifically identifying those other rights, including the basis of right and quantity of diversion;

(3) Diversions under the water right(s) identified continue only to the extent that they are non-consumptive uses for which a certification for continued diversion has been submitted as specified in section 878;

(4) Diversions under the water right(s) identified continue only to the extent that they are to provide for minimum human health and safety needs, a certification has been filed as authorized under section 878.1, subdivision (b)(1), and the subject water right authorizes the diversion in the absence of a curtailment order; or

(5) Diversions under the water right(s) identified continue only to the extent that they are consistent with a petition filed under section 878.1, subdivision (b)(2) or (d), and diversion and use will comply with the conditions for approval of the petition.

(b) All water users or water right holders whose continued diversion may be authorized under section 878.1 are required to submit, under penalty of perjury, information identified on a schedule established by the Deputy Director as a condition of certification or petition approval. The required information may include, but is not limited to, the following:

(1) The water right identification numbers under which diversions continue.

(2) How the diverter complies with any conditions of continued diversion, including the conditions of certification under section 878.1, subdivision (b)(1);

(3) Any failures to comply with conditions, including the conditions of certification under section 878.1, subdivision (b)(1), and steps taken to prevent further violations;

(4) Conservation and efficiency efforts planned, in the process of implementation, and implemented, as well as any information on the effectiveness of implementation;

(5) Efforts to obtain alternate water sources;

(6) If the diversion is authorized under an approved petition filed pursuant to section 878.1, subdivision (b)(2), progress toward implementing the measures imposed as conditions of petition approval;

(7) If the diversion is authorized under section 878.1, subdivision (d):
(A) The rate of diversion if it is still ongoing;

(B) Whether the water has been used for any other purpose; and

(C) The date diversion ceased, if applicable.

(8) The total water diversion for the reporting period and the total population served for minimum human health and safety needs. The total population must include actual or best available estimates of external populations not otherwise reported as being served by the water right holder, such as individuals receiving bulk or hauled water deliveries for indoor water use.

(9) Diversion amounts for each day in acre-feet per day, maximum diversion rate in cubic feet per second, and anticipated future daily diversion amounts and diversion rates.

(c) The Deputy Director, or delegee, may issue an order under this article requiring any person to provide additional information reasonably necessary to assess their compliance with this article. Any person receiving an order under this subdivision shall provide the requested information within the time specified by the Deputy Director, but not less than five (5) days.

Authority: Sections 348, 1058, 1058.5, Water Code

Reference: Sections 100, 187, 275, 348, 1051, 1058.5, 1841 Water Code

§ 879.1. Conditions of permits, licenses and registrations

Compliance with this article, including any conditions of certification or approval of a petition under this article, shall constitute a condition of all water right permits, licenses, certificates and registrations for diversions in the Russian River Watershed.

Authority: Sections 1058, 1058.5, Water Code

Reference: Cal. Const., Art. X, § 2; Sections 275, 1253, 1058.5, Water Code; *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419.

§ 879.2. Compliance and Enforcement

(a) A diverter must comply with a curtailment order issued under this article, any conditions of certification or approval of a petition under this article, and any water right condition under this article, notwithstanding receipt of more than one curtailment order. To the extent of any conflict between applicable requirements, the diverter must comply with the requirements that are the most stringent.

(b) Diversion or use of water in the Upper Russian River Watershed in violation of this article constitutes an unreasonable use of water and is subject to any and all enforcement proceedings authorized by law.

(c) Diversion or use of water in the Lower Russian River Watershed in violation of this article is a trespass under Water Code section 1052 and shall constitute evidence of diversion or use in excess of a water user's rights.

(d) All violations of this article shall be subject to any applicable penalties under Water Code section 1058.5. Nothing in this section shall be construed as limiting the enforceability of or penalties available under any other applicable provision of law.

Authority: Sections 1058, 1058.5, Water Code

Reference: Cal. Const., Art. X, § 2; Sections 275, 1052, 1055, 1058.5, 1825, 1831, Water Code; *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419.

DROUGHT WATER RIGHTS ALLOCATION TOOL
MARCH 2, 2020

RIPARIAN FORMULATION

$$0 \leq P_k \leq 1$$

for all basins, *k*

Basin proportions *Pk* are between 0 and 1.

$$A_i = P_k u_i$$

for all *i* users, in each basin *k*

Each user's allocation A_i is user *i*'s basin proportion P_k, of *i*'s demand u_i.

$$\sum_{i \in k} A_i \leq v_k - e_k$$

for all *i* users that are within each basin *k*

Mass Balance: within every basin *k*, the sum of all users' allocations are less than or equal to flow v_k in basin *k*, less any environmental instream flow requirement e_k.

$$P_j \leq P_k$$

for all basins *j* and all basins *k*

Upstream basin proportions P_i cannot exceed downstream basin proportions P_k.

$$w_k = \frac{n_i}{n_{i\ at\ basin\ outlet}}$$

for all users, *i*

A basin penalty w_k is applied that increases with the ratio of the number of users n_i upstream of basin *k*, to the number of users at the watershed outlet $n_{i\ at\ basin\ outlet}$.

Why?

- Because if upstream basins are not allowed to exceed downstream basins, then some offset is required so that downstream basins are not allocated more than upstream, to conform with the riparian doctrine of shared shared shortage.

$$\alpha < Min\left(\frac{w_k}{u_k}\right)$$

for all basins, *k*

The basin scalar α is the minimum of the ratios between downstream penalties w_k and basin-wide demands u_k.

Why?

- Because.

Riparian Objective Function:

$$\text{Minimize } z = -\sum_i A_i + \alpha \sum_k w_k P_k$$

For all users *i*, and all basins, *k*

Minimize shortage (left term) + but make the slightly modified sum of basin proportions as large as possible (right term).

APPROPRIATIVE FORMULATION

$$0 \leq A_i \leq u_i$$

for all users, *i*

Each appropriative user's allocation A_i must be between 0 and her reported demand u_i

$$\sum_{i \in k} A_{i,(appropriative)} \leq v_k - e_k - \sum_{i \in k} A_{i,(riparian)}$$

for all users *i*, in all upstream basins *k*

Mass Balance: the sum of all appropriative allocations $A_{i,appropriative}$ that are in basin *k*, must be less than or equal to available flow *vk*, less any environmental instream flow requirement e_k, less the sum of all upstream riparian allocations, $A_{i,riparian}$.

Appropriative Objective Function:

$$\text{Minimize } z = \sum_i p_i(u_i - A_i)$$

for all users, *i*

Minimize the difference between demand and allocation, or shortage, $(u_i - A_i)$ weighted by the inverse of the priority of user *i*.

Drought Water Right Curtailment Analysis for California's Eel River

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Abstract: Water users in California's hybrid water rights system have different legal priorities to available surface water in times of water scarcity. A set of two linear programming models was developed to determine curtailments of water use under drought conditions according to riparian and appropriative water right doctrines with spatially varying water availability and water rights within a basin. The models were implemented in spreadsheets and extended to estimate water right reliability and factors of safety in water rights administration. Alternate methods for calculating water use curtailments are discussed. Curtailments from the models are compared with actual water shortage notices issued by the state for the Eel River, California for June 30, 2014. Analyzing water use curtailments with an algorithm in spreadsheet software offers a mechanistic, transparent, accessible, and precise approach derived from legal doctrines to support water rights administration during drought. **DOI: 10.1061/(ASCE)WR.1943-5452.0000820.**

Introduction

Droughts often require users to curtail their water right diversions. Escriva-Bou et al. (2016) reviewed the curtailment of water rights, requiring some water rightholders to cease or reduce diversions, in various western states and arid countries. The present paper provides mathematical formulations and an example application of formal methods to fully allocate limited water supplies in California's hybrid system of surface-water rights. The proposed approach mathematically represents the logic of riparian and appropriative water law doctrines for a basin with spatially varying available water supply and water demands. By representing California's water rights law as an allocation algorithm using linear programming, this drought water rights allocation tool (DWRAT) provides a precise, timely, and transparent analytical framework for the complicated and often controversial process of curtailing water rights use during drought.

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California's Water Rights and Drought

Surface-water rights in California predominantly follow prior appropriation and riparian water law doctrines. Riparian rights were introduced by the adoption of English common law under California's constitution. Riparian rightholders are equal in priority and entitled to the natural flow of the water body for direct uses on their riparian land, without storage, so long as downstream users are not "unreasonably affected." The doctrine of prior appropriation was developed for resolving water claim disputes for available water among miners diverting water from streams for uses sometimes far from the point of diversion, possibly involving diversions to storage. The principle of "first in time, first in right" determines priority among appropriative water rights; early diverters have a higher priority than later diverters (Kanazawa 2015). To resolve growing conflicts among water rightholders, the 1886 California Supreme Court Case *Lux v. Haggin* ruled that riparian water rights categorically have a higher priority than appropriative water rights.

The 1913 California Water Commission Act (effective in 1914) established the predecessor of today's State Water Resources Control Board (SWRCB) to organize all new appropriations of water. All appropriative water right claims after this Act came into effect are post-1914 appropriative water rights. Rights with dates of first use before January 1, 1914, are known as pre-1914 rights. Riparian rights are established as a class, share shortages proportionally among each other, and have higher priority than any appropriative rights (Kanazawa 2015; Attwater and Markle 1987).

Over the next century, the SWRCB granted water right allocations exceeding five times the state's mean annual runoff (Grantham and Viers 2014). Water rights in basins with particularly high allocations relative to natural availability, such as the Scott River, have been explicitly adjudicated as a result of legal conflicts among rightholders. Overallocation (allocating more water than is normally available), coupled with the extensive impoundment of California rivers, decreases flow variability, which in turn damages aquatic and riparian ecosystems (Kondolf and Batalla 2005). Grantham et al. (2014) demonstrated the need for transparent strategies during drought water years to preserve environmental flow protections while reducing water use in an equitable manner.

Despite longstanding legal authority, the SWRCB first declared water shortages in 1977, and then not again until 2014. The year

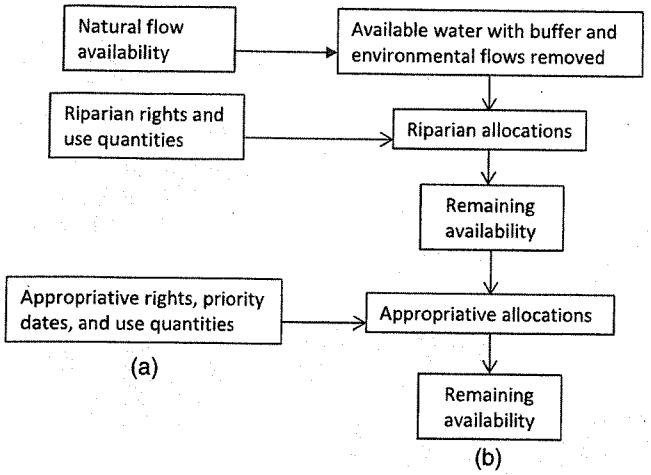

Fig. 1. DWRAT data flow: (a) input data; (b) allocation models

2014 was the third consecutive year of drought in California, and the SWRCB issued mandatory curtailments (formally called water shortage notices), supported by a declaration of drought emergency by Governor Jerry Brown. In May 2014, the Scott River was the first watershed with issued curtailments. In the following months, junior right holders in the Sacramento, San Joaquin, Russian, and Eel River Basins also were curtailed.

Water Allocation Models

Several previous water allocation models have used water rights for prioritizing users and demands (Wang et al. 2007). The Texas water availability modeling (WAM) system (Wurbs 2005) allocates streamflow and reservoir storage among rightholders with a prior appropriation doctrine. Many models represent priority-based water operations with different delivery, flow, and storage priorities (Sigvaldson 1976), such as *CalSim* (Draper et al. 2004) and *ModSim* (Fredericks et al. 1998). Linear or network flow optimization often are used to represent priority-based operations. Appropriative water right priorities can be represented through cost coefficients, with junior lower-priority rights having lower penalties for shortage. Israel and Lund (1999), Ferreira (2007), and Chou and Wu (2014) extended this approach with algorithms for determining cost coefficients accounting for return flows.

Despite an extensive body of literature on mathematically allocating water under the appropriative doctrine, few published methods exist on allocation under the riparian doctrine. In California, riparian water rightholders (riparians) are equal in priority to each other but categorically have a higher priority than appropriative water rightholders (appropriators).

Drought Water Rights Allocation Tool Formulation

DWRAT allocates water for rights under both major doctrines using spreadsheets and a free and open-source solver platform. DWRAT operates in two phases. The first phase distributes available water proportionally among riparian rightholders. The second phase allocates remaining available surface water by strict priority among appropriative rightholders. In both phases, water users are scattered over a network of subbasins with local water availabilities (initially without return flows). Total flow v into subbasin k is represented by v_k. Each user i has a normal use of u_i and receives water allocation A_i. Riparian users have unranked equal priority. Curtailment decisions among riparians limit diversions to a proportion of normal individual use varying by subbasin P_k, with a weighted penalty coefficient of w_k. These proportions determine a user's shortage. The shortage penalty weight per subbasin w_k increases with the number of upstream basins u_k to balance proportions across subbasins. Appropriative users have fixed priorities established by water right seniority. The unit shortage penalty p_i increases with seniority of right; minimizing shortages to senior rightholders reduces total penalty more than to junior rightholders. To assess allocations having mixed riparian and appropriative water rights, the riparian linear program is run first, followed by the appropriative linear program.

This overall approach represents the logic of each water law doctrine mathematically to allow implementation in software. Fig. 1 illustrates DWRAT's data flow. DWRAT models are run for a single daily time step, large enough to avoid issues of hydrologic routing for small basins.

Riparian Allocation Formulation

Riparian rightholders are equal in priority with water shortages distributed by restricting use proportionally across all basin users. Locally varying water availability can lead to differing proportional shortages within a basin. The following equations represent the logic of riparian water allocation. The allocation A_i for a riparian user i is defined in Eq. (1)

$$A_i = P_k u_i, \quad \forall\ i, i \in k \tag{1}$$

where all users in a subbasin k receive the same allocation proportion P_k of demand u_i, where P_k = decision variable. The subbasin allocation proportion P_k is constrained between zero and one [Eq. (2)], enforcing allocations between zero and normal use

$$0 \le P_k \le 1, \quad \forall\ k \tag{2}$$

The sum of all allocations (net diversions) upstream of a subbasin outlet cannot exceed the total availability of water leaving the subbasin. Total availability is inflows upstream of the subbasin outlet v_k minus environmental outflow flow requirement e_k and buffer outflow b_k [Eq. (3)]. Environmental flows, specified by the user, occur as a constraint. Alternatively, environmental flows could be represented as a water right with a relative priority. Buffer flow is used as a factor of safety to incorporate errors in water availability and actual uses

$$\sum_{i \in k} A_i \le v_k - e_k - b_k, \quad \forall\ k \tag{3}$$

The riparian objective function [Eq. (4)] maximizes total water allocations, with a weighting term to enforce allocation proportionally among water users

$$\text{Minimize } z = \alpha \sum_k w_k P_k - \sum_i A_i \tag{4}$$

In drought, maximizing only total allocations for all riparian users can yield multiple optima. Upstream users could receive zero allocations despite local availability while downstream users receive full allocations. Alternatively, water available in upstream reaches could be allocated entirely to upstream users, with large shortages occurring downstream. Both outcomes fail to distribute water proportionally among riparian users. Therefore, weights are included in the objective function to enforce equitable proportional allocation of shortage among riparian rightholders. The following constraints define how equal proportionality of shortage with full allocation of available water is met.

Upstream users cannot have a lower shortage (higher P_k) than downstream users. If upstream users have less shortage than downstream users, some upstream use could be allocated downstream so both sets of users receive the same proportion of shortage. This constraint is implemented in Eq. (5), where the allocation proportion in any upstream subbasin j cannot exceed the proportion of any downstream subbasin k

$$P_j \leq P_k, \quad \forall\, k, j \in k \tag{5}$$

This constraint would need to change for cases where natural flow decreases downstream from net losses to groundwater or lake and wetland evaporation.

All riparian users with local non-zero availability should receive allocations greater than zero. To prevent upstream users receiving zero allocations despite local availability and downstream users receiving large allocations because of increased availability (from not allocating that same water upstream), a weight is given to increasingly penalize high allocation proportions in downstream basins [Eq. (6)]. The downstream penalty w_k increases with the number of subbasins n_k upstream of subbasin k's outlet

$$w_k = \frac{n_k}{n_{k,\text{system outlet}}} \tag{6}$$

The sum of the products of these weights and allocation proportions is further weighted in the objective function to allocate all available water proportionally. To prioritize allocating all water, the equality terms are given less weight. The weigh α cannot exceed the minimum of all subbasin ratios of unit downstream penalty to total upstream demand [Eq. (7)]

$$\alpha < Min\left(\frac{w_k}{u_k}\right) \quad \forall\, k \tag{7}$$

Eqs. (5)–(7) provide counteracting weights to distribute a shortage equally across a watershed while maximizing total allocations to riparian users.

Riparian Allocation Example

The example watershed in Fig. 2 was created to test and demonstrate the riparian allocation linear program. Each of the eight subbasins (denoted A–H) has local inflows. Available streamflow is given for the outlet of each subbasin, with a fixed fraction for environmental flows. Flow characteristics are given in Table 1 and user demands in Table 2.

Tables 2 and 3 provide user and basin results from the riparian water rights allocation model. Comparing allocations in Subbasins A and B offers insight into the riparian allocation mechanics. Basin A has a total upstream demand of 18 and a local availability of 5.6. If all flow available in A is allocated to users in A, users would receive an allocation proportion of 0.31 (ratio of upstream demand to availability). Basin B has a local availability of 5.6 and upstream demand of 8. If B's availability was completely allocated locally, User 3 would receive an allocation proportion of 0.7, which exceeds downstream ratios of supply to demand. Thus, B is curtailed further to reduce the shortage proportion downstream. No greater shortages occur downstream of Basin A, so all available flow is allocated locally. If unallocated flow is zero, upstream shortage exceeds potential downstream shortages. Availability directly limits upstream allocation and constraint Eq. (3) binds. If unallocated flow exists, water is retained to minimize more severe shortages downstream.

The allocation proportion of 0.67, dictated by binding water availability (no unallocated flow) in Catchment F, is extended upstream to Catchments B, C, D, and E, showing an even allocation of shortage across the larger area. Basins A and G have lower allocation proportions from more severe local shortages. Basin H has a binding water availability that forces an allocation proportion of 0.7, but this does not extend upstream because of still tighter shortages upstream. All available flow was allocated to users, with no nonenvironmental flow leaving the system.

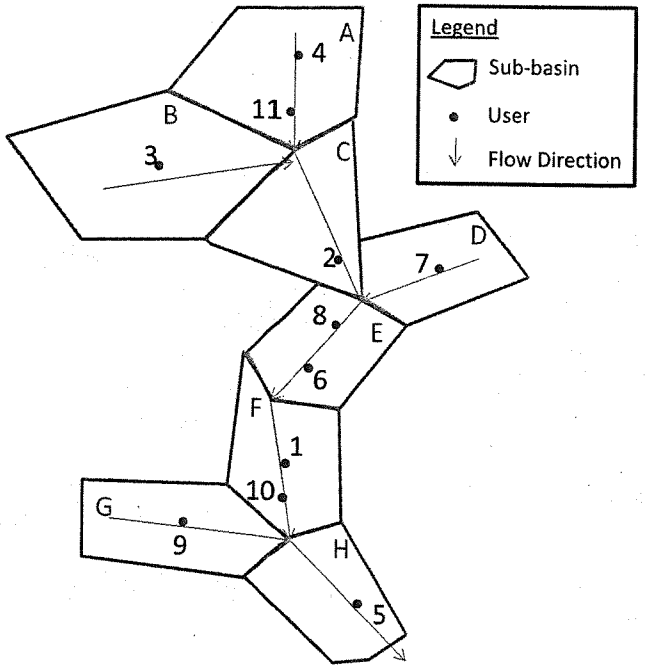

Fig. 2. Example watershed subbasins and users

Table 1. Subbasin Hydrology

Subbasin	Local inflow	Cumulative flow (v)	Environmental flow (e)	Flow available to allocate
A	7	7	1.4	5.6
B	7	7	1.4	5.6
C	7	21	4.2	16.8
D	7	7	1.4	5.6
E	7	35	7	28
F	7	42	8.4	33.6
G	7	7	1.4	5.6
H	7	56	11.2	44.8

Note: Flow units are volume/time.

Table 2. Riparian Model Results by User

User	Demand	Allocation	Proportion
R1	7	4.7	0.67
R2	4	2.7	0.67
R3	8	5.3	0.67
R4	8	2.5	0.31
R5	8	5.6	0.70
R6	4	2.7	0.67
R7	3	2.0	0.67
R8	9	6.0	0.67
R9	9	5.6	0.62
R10	7	4.7	0.67
R11	10	3.1	0.31

Note: Flow units are volume/time.

Table 3. Riparian Model Results by Basin

Basin	Allocation proportion	Availability	Upstream demand sum	Upstream allocation sum	Unallocated flow
A	0.31	5.6	18.0	5.6	0
B	0.67	5.6	8.0	5.3	0.3
C	0.67	16.8	30.0	13.6	3.2
D	0.67	5.6	3.0	2.0	3.6
E	0.67	28.0	46.0	24.2	3.7
F	0.67	33.6	60.0	33.6	0
G	0.62	5.6	9.0	5.6	0
H	0.70	44.8	77.0	44.8	0

Note: Flow units are flow/time.

Appropriative Allocation Formulation

After riparian water rightholders receive allocations, remaining available water is allocated to appropriative rightholders by strict priority. The following mathematical formulation represents the logic of priority-based appropriative water rights, without return flows. Allocation for a user i is given by the decision variable A_i, between a maximum use u_i and a minimum of zero

$$0 \le A_i \le u_i, \quad \forall\ i \tag{8}$$

Where a portion of use returns quickly to the subbasin, each use u_i can be adjusted to represent net consumptive diversion. More complex cases have been discussed by Israel and Lund (1999) and Ferreira (2007).

Similar to the mass balance for riparian users [Eq. (3)], the sum of all allocations upstream of a basin outlet cannot exceed the total water availability remaining after riparian allocations

$$\sum_{i \in k} A_i \le v_k - e_k - b_k - \sum_{i \in k} A_{\text{upstream riparian users } i}, \quad \forall\ k \tag{9}$$

Unlike riparian rights, appropriative water rights are curtailed by strict individual priority. The earliest right in a basin has the highest priority, and the most recent right has the lowest. Priority establishes unit shortage penalties for all users. The unit shortage penalty (p_i) equals the number of users minus priority rank, so the highest priority user has the highest unit shortage penalty. Shortage for a user is the difference between demand u_i and allocation A_i.

The objective function minimizes total shortage penalty for all users [Eq. (10)]. Senior users have more weight in the objective function and are more likely to receive a full allocation. Likewise, junior users are less likely to receive an allocation

$$\text{Minimize } z = \sum_i p_i(u_i - A_i) \tag{10}$$

Appropriative Allocation Example

An appropriative allocation model was developed for the aforementioned example watershed (Fig. 2), with the same user and basin characteristics (Tables 1 and 2). Here, all users have appropriative rights, with User 1 having the highest priority and User 11 the lowest. User and basin results from the appropriative water rights allocation model appear in Tables 4 and 5. User 1, on the main stem and with the highest priority, receives a full allocation, whereas User 3, with a high priority but in the upper watershed, has less flow available. Thus, User 3 receives all flow available in Subcatchment B, but still sees shortage, running out of water before running out of right. User 4 similarly receives all available flow in Catchment A. User 11 in Catchment A has a low priority and receives no water. As demands of senior users are met, remaining available flow is allocated to junior users by priority. All available water was allocated to users, with no nonenvironmental flow leaving the system.

Table 4. Appropriative Model Results by User

User/priority	Demand	Allocation	Shortage
A1	7	7.0	0
A2	4	4.0	0
A3	8	5.6	2.4
A4	8	5.6	2.4
A5	8	8.0	0
A6	4	4.0	0
A7	3	3.0	0
A8	9	4.4	4.6
A9	9	3.2	5.8
A10	7	0	7.0
A11	10	0	10.0

Note: Flow units are volume/time.

Table 5. Appropriative Model Results by Basin

Basin	Availability	Upstream demand sum	Upstream allocation sum	Unallocated flow
A	5.6	18.0	5.6	0
B	5.6	8.0	5.6	0
C	16.8	30.0	15.2	1.6
D	5.6	3.0	3.0	2.6
E	28.0	46.0	26.6	1.4
F	33.6	60.0	33.6	0
G	5.6	9.0	3.2	2.4
H	44.8	77.0	44.8	0

Note: Flow units are volume/time.

Combining Water Allocation Methods

To assess allocations for basins with both riparian and appropriative water rights, the riparian linear program is run first, followed by the appropriative linear program. Riparians, having a higher priority overall, are less likely to be curtailed than appropriators (California has some rare cases of very old appropriative rights with potentially higher priority than riparian users; these can be handled by preallocation of water to such users before riparian allocations in very dry circumstances). Riparian rightholders in upper parts of the watershed are much more vulnerable to curtailment than downstream users. If any riparian is curtailed, all upstream riparians are consequently curtailed. Appropriators in upstream portions of watersheds are also more vulnerable to shortage because of low water availabilities and being curtailed to help meet downstream riparian demands.

Model Limitations

All users within a subcatchment k are assumed to have physical access to all inflow (v_k). But some local inflow will enter downstream of some local users, restricting their access to some flow. This misrepresentation is reduced with increasing the spatial resolution of subcatchments. Ideally, each user would have a defined subbasin, but this would greatly enlarge the problem. Error also could be reduced by restricting each user to the percentage of total subbasin outflow available at the user's point of diversion. Also, some users have multiple points of diversion.

The maximum allocation for each user is their previous use u_i, reported under historical flow conditions. These may be less relevant during drought. Ideally, during drought water users would announce or call diversions for their right before each time period, allowing water right administrators to make more accurate and timely water allocations.

In times of drought, curtailed water users often replace lost surface-water allocations with groundwater. However, DWRAT only includes surface-water allocations and omits groundwater depletion effects on surface-water availability. This may overestimate water availability, especially in longer droughts.

DWRAT currently omits return flows back to surface water. This reduces downstream water availabilities. Water uses such as hydropower and flood irrigation have high return flows to surface water. Israel and Lund (1999), Ferreira (2007), and Chou and Wu (2014) presented methods for developing priority-based penalty coefficients for network flow and linear programming models of water resources systems with return flows and appropriative rights. These algorithms could serve as preprocessors to account for return flows while preserving water rights priorities, or net surface-water diversions could be used, assuming local return flows.

Another limitation is that estimates of water availability, use, and return flows are imperfect. Buffer flow represented in the mass balances [Eqs. (3) and (9)] can provide a factor of safety by modifying availability. Positive buffer flow values decrease availability and increase curtailments, but reduce likelihood of overpromising water. Conversely, negative buffer values reduce curtailments, but are likely to overpromise water and increase likelihood of senior rightholders being deprived of water. Errors cannot be entirely eliminated or even entirely known without extensive monitoring. Higher buffer values increase the likelihood of false curtailments (when water is actually available), whereas lower (or negative) buffer flows increase false promises (when water is not actually available for a noncurtailed rightholder). Effects of uncertainty can be explored by varying the buffer flow to see the range of curtailments generated.

Estimating Water Right Reliability

This section introduces a preliminary approach for estimating water supply reliability for individual water rightholders given hydrologic variability. By varying the flow and conducting probabilistic analysis of results from DWRAT, the reliability of water allocations can be estimated for a set of users. The presented methods estimate the probability of water right curtailment in a basin given an uncertain basin outflow hydrology, with known net diversions and a fixed spatial distribution of water availability.

Any unimpaired outlet flow Q_n with a known distribution of local subbasin inflows has a corresponding legally required set of curtailments $[C_n]$ composed of binary values 0 or 1 for each water rightholder i, calculated by the methods discussed earlier. When $C_i = 1$, user i is curtailed and receives less than their full water allocation. Uncurtailed users ($C_i = 0$) receive full allocations. Monte Carlo analysis and implicit stochastic optimization were used to estimate the probabilities of curtailment for individual users.

In Monte Carlo analysis, model input parameters are sampled from a probability distribution. For each sample, model output is recorded. This process is repeated many times to sample a large range of possible input values with realistic relative frequencies. Frequency analysis on the full set of model outputs can estimate the likelihood of a given curtailment solution over the range of possible input values.

For small or simple basins, water right reliability can be estimated by varying inflow over a probability distribution. For each outlet flow, the optimal curtailment set $[C_n]$ is calculated. The reliability of each right is the probability that there is a corresponding outflow which supplies that right, calculated either by numerical integration or by the ratio of samples where user i is curtailed divided by the total number of Monte Carlo samples.

Operating water systems under uncertainty can be complex and computationally intensive. Numerical estimation of uncertainty can be prohibitively complex. Implicit stochastic optimization (ISO) can reduce these problems by applying deterministic modeling over a representative range of input parameters. Initially, a representative range of model input parameters is generated. For each set of inputs, the model generates a single solution set. The probability of any solution is the probability of its corresponding inputs. Frequency analysis over the set of solutions estimates probabilities of curtailment.

Perhaps more useful, the full solution set can help establish a set of rules for real-time system curtailments. Administrators could observe current conditions and look up the corresponding optimal curtailments from the ISO results without additional model runs. ISO is most often used to identify operating rules for reservoirs with uncertain inflows (Young 1967; Lund and Ferreira 1996). Operations are optimized over a long representative time-series of inflows with perfect foresight using deterministic methods. The results are then used to infer optimal operating rules.

For this application of ISO, stochastic operation of a water rights system is considered from administrator and user perspectives. To estimate water right reliability with ISO, a range of outlet flows Q_n is selected. DWRAT calculates $[C_n]$ for each outlet flow Q_n. The probability of a curtailment occurring is the probability of the lowest Q_n when the curtailment occurs. For simple systems, each user i has a corresponding curtailment threshold flow Q_{ti}. When the outlet flow is below Q_{ti}, user i is curtailed and receives less than a full allocation. By stepping through a range of Q_n values and solving the allocation models, the curtailment threshold flow can be identified for each user. The probability of a user curtailment is the probability of Q_{ti}.

Example Basin

The example watershed in Fig. 2 was extended to test and illustrate these methods with a mix of riparian and appropriative users. The basin has eight subbasins (denoted A–H), with local flow availability v_k equal to the outlet flow (Basin H) multiplied by the ratio of upstream drainage area (a_k) to total basin drainage area [Eq. (11)]

$$v_k = Q_n * \frac{a_k}{a_{k,\text{outlet}}} \tag{11}$$

Outlet flow is normally distributed (for illustration) with a mean of 60 and standard deviation of 30, truncated at zero. Other flow distributions could be used. Local inflows to each subbasin are assumed to be a fixed fraction of unimpaired outlet flow. Users R1 through R5 have riparian rights (equal priority). Users A1 through A11 have appropriative rights and with priority given by their label number (A1 has highest priority). Fig. 3 shows the users' locations and Table 6 provides demand for each user (method results are in lower rows).

Another way to represent the system is to view cumulative demand ranked by priority, as indicated in the second-to-bottom row of Table 6. For a riparian user, cumulative demand is the sum of all riparian demand. For an appropriative user, cumulative demand equals the summed demand of higher priority users.

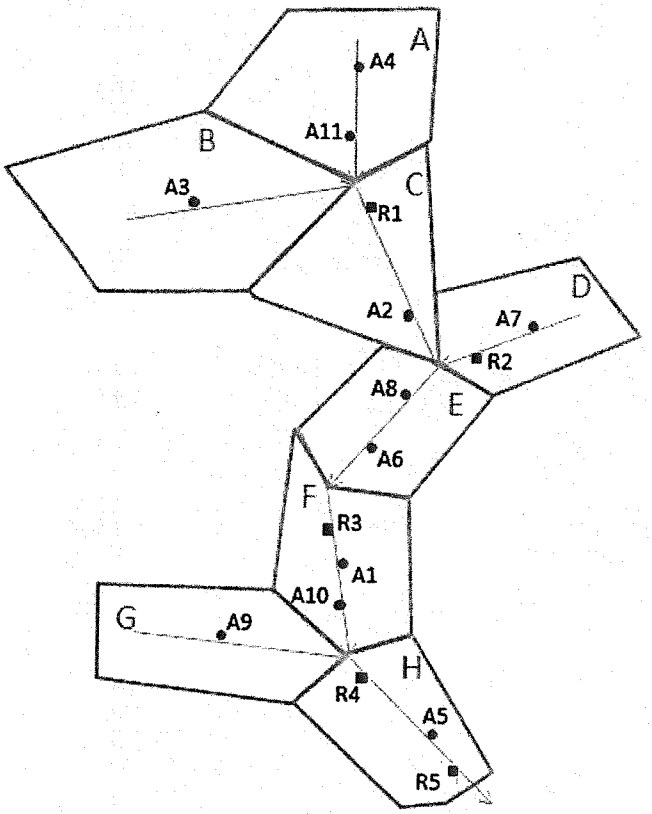

Fig. 3. Example basin with users

If all users had equal access to outlet flow, cumulative demand for user i would be the total amount that must be allocated before user i receives any water. However, the spatial variability of supply disrupts this relationship. This metric is most useful for appropriative rightholders because of their clear relative prioritization.

Monte Carlo Analysis Application

For the Monte Carlo analysis, $[C_n]$ was calculated for a randomly sampled Q_n from the normal error distribution. This process was repeated 500 times to form a statistically representative set. Frequency analysis over all sets of $[C_n]$ determined the reliability of water allocation for each user. The results of the frequency analysis appear in the lowest row of Table 6.

Table 6. Example Users and Demand

User (ordered by priority)	Demand	Cumulative demand	Probability of shortage, Monte Carlo
R1	4	27	0.105
R2	6	27	0.390
R3	8	27	0.105
R4	2	27	0.105
R5	7	27	0.105
A1	7	34	0.190
A2	4	38	0.230
A3	8	46	0.555
A4	8	54	0.555
A5	8	62	0.535
A6	4	66	0.565
A7	3	69	0.630
A8	9	78	0.75
A9	9	87	0.80
A10	7	94	0.875
A11	10	104	0.995

Probability of curtailment increases as priority decreases, with some deviations. Riparian users have the lowest probability of curtailment. However, User R2 is on a tributary branch and is much more likely to face local shortages than other riparian users. Similarly, Users A3 and A4, high in the watershed, have higher probabilities of shortage than A5, with lower priority but on the main stem near the outlet. Users A3 and A4 have the same shortage probability, despite A3's higher priority. Both users are on separate tributaries with independent availabilities, so the availability in Basin A is less affected by water availability or curtailments in Basin B, and vice versa. Users A3 and A4 are limited by availability and location, whereas User A5 is limited by priority.

Implicit Stochastic Optimization Application

To estimate water right reliability with implicit stochastic optimization, $[C_n]$ was calculated for each outlet flow Q_n ranging stepwise from 0 to 150 in increments of 1. As outlet flow increases, fewer users are likely to be curtailed, as shown in Fig. 4. Each step in Fig. 4 corresponds to a user or set of users receiving a full allocation. The flow value corresponding to the step at which a user receives a full allocation is the curtailment threshold flow Q_{ti}. When outlet flow is below Q_{ti}, user i is curtailed. If all users have access to outlet flow, the curtailment threshold would be the cumulative demand for all users. Varying spatial flow availability disrupts this relationship.

Fig. 5 shows the cumulative demand and curtailment threshold for each user, assuming fixed ratios for subbasin inflows to total basin unimpaired outflow. As a user's priority decreases, the corresponding cumulative demand and curtailment threshold increases. Users along the main branch of the river basin (Subcatchments C, E, F, and H) have more access to flow and are less likely to see local supply shortages. Curtailment for these downstream users is generally dictated by priority. In Fig. 5, cumulative demand and curtailment threshold values for these users are nearly equal. Users in the upper portions of the basin (Subcatchments A, B, D, and G) are more likely to face curtailment from local flow shortages. This effect occurs for R2, A3, and A11, whose curtailment threshold significantly exceeds cumulative demand. User R2, despite sharing the highest priority with other riparians, diverts in a subbasin (Basin D) that is more likely to receive shortage. Because local flow availability is proportionate to outlet flow, User R2's curtailment flow threshold is the outflow sufficient in Basin D to meet R2's demand. Their upstream locations make them more vulnerable to curtailment than similar priority users downstream.

The probability of curtailment for a user i is then calculated as the probability that Q_n is less than or equal to Q_{ti}, the cumulative probability distribution function for Q. Fig. 6 shows the probability of curtailment for each user, calculated by the ISO method. The Monte Carlo and ISO methods yield nearly identical curtailments. With more Monte Carlo iterations, the results should converge.

The probability of a individual water right curtailment depends primarily on priority and location in the watershed. The results represent the probability that a water right should be curtailed given the forecast water availability Q and normally distributed error σ. However, actual probabilities of curtailment will differ from errors in estimating water demands, overall water availability, and its spatial distribution.

The presented methods might provide curtailment rules for water right administrators. When flow or forecasted flow at a

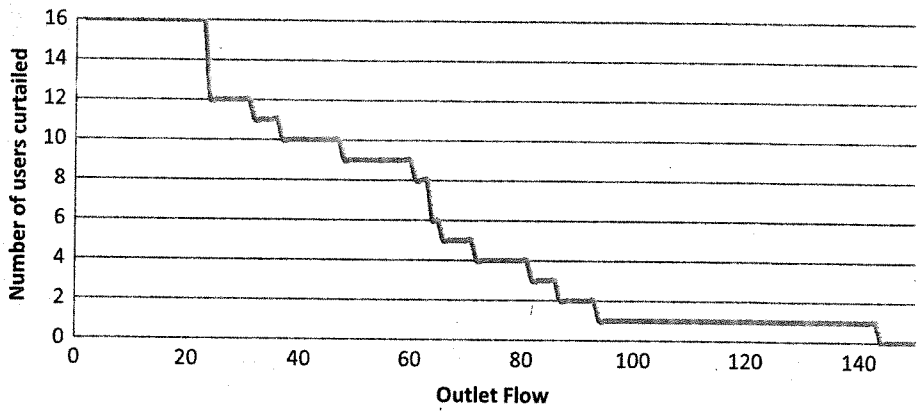

Fig. 4. Total number of curtailed users by outlet flow value

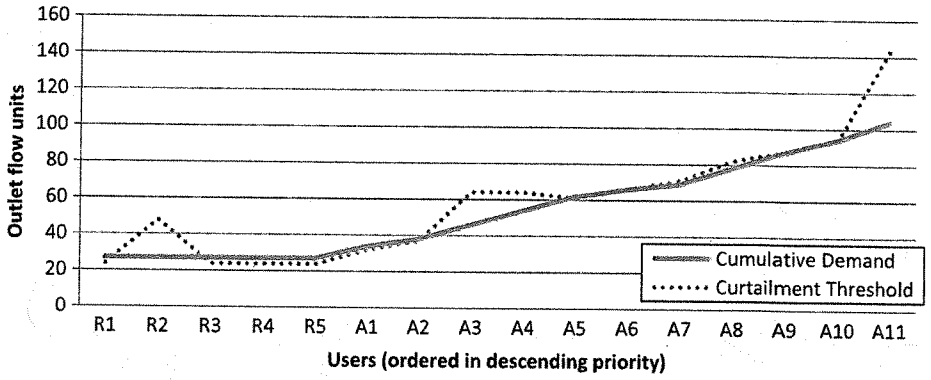

Fig. 5. Cumulative demand and curtailment threshold for all users

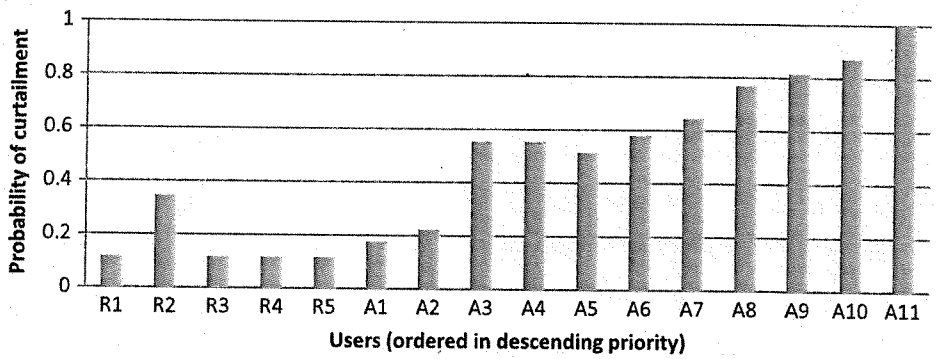

Fig. 6. Probability of curtailment for each user from implicit stochastic optimization method

nearby gauge is below a specified value, some users are not allowed to divert water. This method of assigning curtailments has several advantages. DWRAT would no longer need to be run every time period for an entire basin, given known curtailment thresholds based on flow rates. Users would benefit from knowing the probability of curtailment, allowing for better planning of diversions.

Buffer Flows

Uncertainty in hydrologic forecasting can increase curtailment errors. Curtailments are likely to be calculated in advance based on a forecasted available flow and anticipated user diversions. However, actual flow and diversions may differ significantly, leading to errors in allocations. Including buffer flows can adjust curtailments for forecasting uncertainty by artificially reducing (or increasing) water availability. A higher positive buffer flow is a safety factor for senior rightholders to reduce the chance that water will be unavailable for them or environmental flows. However, this buffer requires additional curtailments for more junior rightholders. The methods discussed next review errors caused by uncertainty and provide a framework for balancing buffer flow values and uncertainties.

False Promises

When actual flow is less than forecasted, some users will be promised a full allocation, but will not have enough water available. Such false promises of water decrease with greater buffer flows. The average number of false promises $E(FP)$ can be defined

$$E(FP) = \int_0^{\infty} P(Q_{act}) FP(Q_{for}, Q_{act}, B) dQ_{act} \quad (12)$$

where

$$FP(Q_{for}, Q_{act}, B) = \text{Maximum}\begin{cases} C(Q_{act}) - C(Q_{for} - B) \\ 0 \end{cases} \quad (13)$$

Eq. (12) is the expected number of false promises over possible actual outlet flows Q_{act}, given a forecasted outlet flow Q_{for} and an outlet buffer flow B. False promises for a particular circumstance are defined in Eq. (13) as the difference between number of curtailments with the actual flow and number of curtailments with the forecast flow minus the buffer.

False Curtailments

Buffer flows increase cases when some users suffer curtailments, when the basin had sufficient flow for them to take water. These false curtailments increase with buffer flow values. Given the nomenclature defined earlier, the expected false curtailments $E(FC)$ can be defined

$$E(FC) = \int_0^{\infty} P(Q_{act}) FC(Q_{for}, Q_{act}, B) dQ_{act} \quad (14)$$

where

$$FC(Q_{for}, Q_{act}, B) = \text{Maximum}\begin{cases} C(Q_{for} - B) - C(Q_{act}) \\ 0 \end{cases} \quad (15)$$

Eq. (15) defines false curtailments as the difference between forecasted curtailments including buffer flow, and the ideal optimal curtailments with the actual outlet flow. Given uncertainty in water availability, there is always a likelihood of false promises and false curtailments, the balance of which is implicit in water rights administration policies and methods.

Example Basin Application

Eqs. (12) and (14) were applied to the example basin with varying buffer flows and an outlet flow forecast of 60. Fig. 7 illustrates the effect of increasing buffer flows. With no buffer flow, 1.1 false promises and 2.6 false curtailments can be expected. Larger buffer flows make false curtailments more likely and false promises less likely. At a buffer flow exceeding 40, only 20 units of flow are available for allocation and the number of false promises and curtailments stabilizes as all users are curtailed.

Selecting a proper buffer flow may vary with the policy balancing of water rights administrators. If a basin administrator seeks to minimize total falsities, a buffer flow of zero would be optimal. However false promises may be more damaging than false curtailments (or vice versa). In this situation, a buffer flow that would decrease the probabilty of false promises would be optimal, but at the cost of increasing false curtailments.

Here, only positive buffer values are evaluated. Negative buffer values, which would increase supply, would reduce the number of false curtailments and increase the number of false promises. If a water rights administrator seeks to minimize falsities, a range of buffer flow values should be explored. Also, only uncertainty in outflow is examined here. Other sources of uncertainty should be explored, such as subbasin flow distribution and water demand.

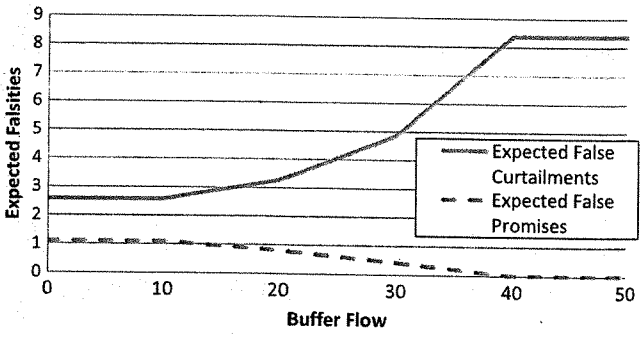

Fig. 7. Expected false promises and curtailments with varying buffer flow

Methods for identifying probability of curtailment could be extended further. Monte Carlo analysis could identify users most likely to face false curtailments or false promises. False promises could result from upstream users withdrawing more than allocated, resulting in a physical absence of water for downstream users.

Applying DWRAT in the Eel River

The Eel River is the first basin for which DWRAT has been developed for application. The Eel River watershed on California's North Coast region has rugged terrain and a low human population density. The basin has an average annual precipitation of 1,524 mm (60 in.), largely from November through March, and is mostly undeveloped. Lake Pillsbury and its forebay, Van Arsdale Reservoir, are the only significant storage projects. At Van Arsdale Reservoir, flow is diverted to the Russian River watershed via the interbasin Potter Valley Project (PVP).

Water Availability and Demands

The USGS operates 11 gauges in the Eel. The lowest elevation gauge, at Scotia, has records dating back to 1911, with a mean annual flow of 35,524,224 m^3 (28,800 acre/ft/day).

Allocations in DWRAT rely on natural surface-water flow estimates at the 12-degree Hydrologic Unit Code (HUC12) scale. The National Weather Service (NWS) operates flood gauges quantifying natural flow at three locations in the Eel River: Scotia, Fort Seward, and immediately downstream of Lake Pillsbury (ordered from downstream to upstream). A statistical model extrapolates these unimpaired NWS flows to all ungauged HUC12 outlets using ratios of gauged to ungauged flow from a random forest model based on the USGS Gauges-II database that predicts historical monthly flows at ungauged HUC12 locations (Carlisle et al. 2010). A series of scaling factors was calculated using these historical monthly flows. The scaling factors were then used to predict flow at ungauged locations with measured or forecasted flow at gauged locations (Lord 2015).

Water rights information on type of right, date of first use, and 2010–2013 monthly reported withdrawals for the Eel River is available from the SWRCB's Electronic Water Rights Information Management System (2014). The data set contains 206 riparian, 30 pre-1914 appropriative, and 447 post-1914 appropriative rights. Average monthly consumptive water demand is estimated by averaging the 4 years of use data and removing hydropower and other fully nonconsumptive diversions. Daily demand is estimated in DWRAT by dividing the average monthly reported use by the number of days per month. This introduces some error because water

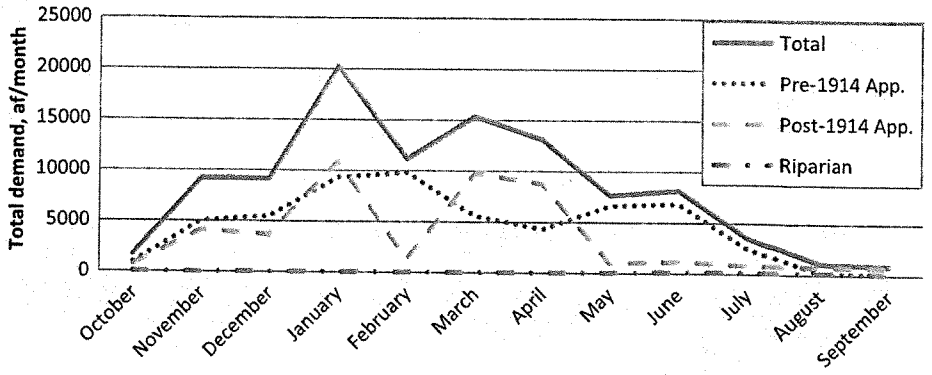

Fig. 8. Monthly water demand in the Eel River Basin according to Howard (2014)

users rarely divert the same amount each day of a month. Fig. 8 shows total average monthly demand for each water right category.

June 30, 2014, Curtailments

On June 30, 2014, the SWRCB announced curtailments for all post-1914 water rights in the North Fork Eel River, Main Stem Eel River, and Van Duzen Tributary, with some exceptions. Curtailments could only be lifted once the SWRCB determined that "water is legally available for diversion under [a user's] priority of right" (SWRCB 2014).

Table 7 summarizes the demand, by user group, for June 30. Of the 683 rights, 419 have non-zero demand for the day and are considered active. The remaining 264 inactive rights have zero demand are excluded from the model. Pre-1914 appropriative rights are most use by volume, followed by post-1914 rights and riparian rights. Fig. 9 shows the June 30 cumulative demand for all rights in the Eel River.

Table 7. Eel River Water Demand, June 30

Right type	Number of active users (% of total)	Demand, af/d (% of total)
Riparian	158 (38%)	4.6 (2%)
Pre-1914 appropriative	25 (6%)	228.0 (84%)
Post-1914 appropriative	236 (56%)	39.5 (14%)
Total	419 (100%)	272.2 (100%)

Water use volume for June 30 in the Eel River is dominated by a few rights owned by the Pacific Gas and Electric Company (PG&E) for the PVP, which transfers water from the Eel's headwaters to the Russian River's East Fork for hydroelectric power. The two largest rights are Applications S001010 (231st in priority, first use in 1905 with June 30 estimated demand of 223.8 acre-ft/day—82% of total demand) and A006594 (249th in priority, first use in 1930 with June 30 estimated demand of 15.5 acre-ft/day).

DWRAT was used to estimate optimal curtailments for June 30, 2014, in the Eel River, with no buffer or environmental flows. A total of 126 rights were curtailed (30% of all users). Curtailments included 46 riparian rights (29% of riparians), 6 pre-1914 rights (24% of pre-1914s), and 74 post-1914 rights (31% of post-1914s). In total, 24.9 acre-ft of water were allocated. Most curtailments were in HUC12 basins where supply is calculated using the NWS gauge at Lake Pillsbury, which had an unimpaired flow of zero. This resulted in zero water available for allocation in all dependent HUC12s. Approximately 75% of curtailed rights are in this part of the watershed, including the large Potter Valley Project diversions.

The SWRCB curtailed diversions for all post-1914 appropriative users, regardless of location in the watershed. The curtailments proposed in DWRAT incorporate spatial variability of flow and limit allocations where supplies are lowest. Many post-1914

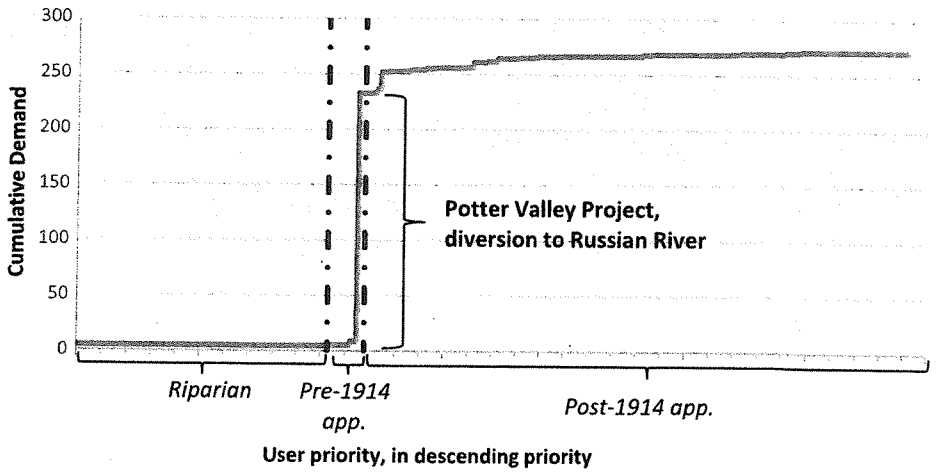

Fig. 9. June 30 cumulative water demand

appropriative users received full allocations using DWRAT, particularly in downstream locations. The shortage was allocated nearly proportionately among user classes and depended more on location than priority of right.

Extended DWRAT Application

DWRAT was used to calculate June 30 curtailments in the Eel River for previous historical years. The NWS only began providing unimpaired gauge flow estimates in 2014, so an alternative source of unimpaired flows was developed. Three USGS impaired flow gauges near the NWS sites were selected. The gauge at Scotia has the longest record, dating to 1911. The other two stations, at Fort Seward and Lake Pillsbury, have much shorter records. Regression analysis was used to develop a trend for the overlapping records between these two stations and the Scotia gauge. The trend was extended over the entire historical record to generate the synthetic impaired flows, with estimated diversions then returned to estimate 102 years of unimpaired flows (Lord 2015). DWRAT was then used to estimate curtailments for June 30 of each year using the synthetic unimpaired flows from 1911 to 2014.

Of the 102-year synthetic unimpaired streamflow record, 88 years would have some curtailments on June 30. By comparison, the SWRCB has only issued curtailments once before 2014. The more frequent curtailments of DWRAT are caused by several factors. DWRAT evaluated curtailments with average 2010–2013 monthly demand over the entire period. Historical water use rates may have been much less. Also, DWRAT omits surface-water return flows, resulting in decreased availability. However, most of the large appropriative rights are fully consumptive to the basin, and most other water use is in the northern part of the basin near the outlet where supplies are plentiful, reducing the potential benefit from return flows. The high frequency of curtailments also is affected by DWRAT's exclusion of water released from storage, underestimating flow availability for appropriative rightholders. Errors also occur in gauge flow estimates and the spatial distribution of flows.

Most curtailments occur in subbasins dependent on the Lake Pillsbury gauge flow for flow extrapolation. It was found that 2014 is the only year with zero flow at this gauge, as well as the only year with a NWS unimpaired flow value. The PVP is in this group of basins. The combination of low predicted flows and a nearby extremely large, senior water right results in consistent curtailments for this part of the watershed. If the highly senior PVP right is curtailed, almost all other appropriative water rights in this region also will be curtailed.

Implicit Stochastic Optimization

The method developed in preceding sections to estimate curtailment thresholds was applied to the Eel River. To simplify analysis, flows at Fort Seward and Lake Pillsbury were calculated as a function of flow at Scotia, using regression equations, and assuming constant proportionality of flow in all subbasins, making flow in all HUC12 subbasins a function of Scotia flow (Lord 2015). Optimal curtailments were calculated for a range of flows at Scotia. Fig. 10 shows the number of users curtailed over the range of flows.

The function shown in Fig. 10 was expected to decrease monotonically, with the total number of curtailed users never increasing with additional supply. Although the curtailments predominantly decrease with increasing unimpaired flow at Scotia, the number of curtailed users increases slightly at 12 points. This behavior occurs at flows ranging from 50 to 100 and 800 to 850. However, the total volume of curtailed water (difference between total demand and total allocations) always decreases monotonically. The cause

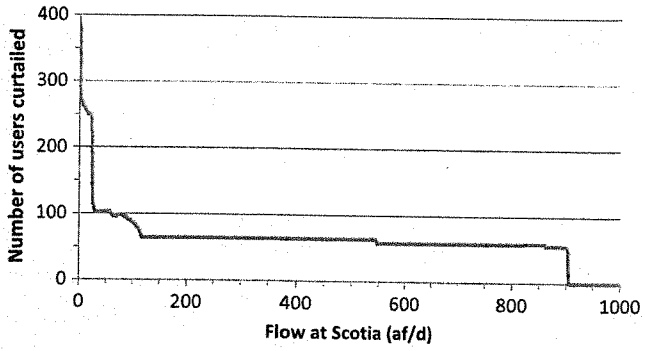

Fig. 10. Number of users curtailed by flow at Scotia, June 30

of the rising curtailments with increased supply is unclear. Rights experiencing this curtailment with increased water availability are mostly appropriative. Further work is needed to determine why curtailment numbers (but not volumes) sometimes increase slightly with increased water availability.

Calculated curtailment thresholds had little correlation with cumulative demand or priority, particularly for appropriative users. Optimal curtailments in the Eel are largely determined by location in the watershed rather than priority of right. Water rights for the PVP dominate allocations. Users downstream of the PVP have low curtailment thresholds and low probabilities of curtailment. Users upstream of the PVP are much more likely to be curtailed to preserve flow for senior downstream users. Basinwide curtailments by priority date will not allocate the most water possible because of spatial variability in water availability, priority, and demand in the Eel. To ensure maximum allocations, curtailments could be issued at a finer spatial scale by priority date. The presented methods could locate areas of large basins likely to face shortage, minimizing the likelihood of downstream false curtailments.

This representation of the Eel River's hydrology is greatly simplified. Flow for the entire river is calculated from availability at Scotia. A better hydrologic model could improve calculations of optimal curtailments and probabilities. Also, return flows should be incorporated. Assuming all use is consumptive artificially reduces availability and increases curtailments. Using past reported water use as a basis for estimated water demands is also a source of error, as found by Grantham and Viers (2014).

Conclusions, Limitations, and Further Research

DWRAT enables precise calculation of water right curtailments during drought by incorporating spatial variability of flow, demand, and priority into a mathematical framework representing the logic of California water law. Although the 2014 drought was significant, more dry years will occur. DWRAT provides an explicit, transparent, mechanistic, and rigorous method for calculating water right curtailments in a mixed water right system using public data and software. It can help support more transparent curtailments and prepare water right administrators for future dry conditions. The curtailment threshold method may be an alternative timely means for issuing curtailments. All users in smaller basins could be told of a specified curtailment threshold value for a nearby gauge. When gauge flow falls below that value, a user will know not to withdraw water to preserve downstream supply.

DWRAT is structured for any temporal or spatial scale large enough where dynamics and hydraulic routing are unimportant. However, curtailments calculated by DWRAT are only as good

as the data used. Improvements can be made in both water supply and demand data.

Currently, only monthly withdrawals are available through the SWRCB's databases. Daily demand is estimated in DWRAT by dividing the monthly demand by number of days. This may be reasonable for some users, such as municipalities, but it can be unreliable. Irrigation is rarely distributed evenly across a month. However, asking rightholders to report daily use is unrealistic today. Instead, large users could call use of their rights in advance of an expected curtailment date during extreme dry periods. DWRAT could estimate curtailments based on the updated demand data. Both the SWRCB and users would benefit from this arrangement. Users would benefit from the ability to plan water use in advance and fuller basin water use. The SWRCB would benefit from a transparent and flexible system with explicit and timely water rightholder input.

Limited data exist on return flows. Rights associated with in-stream hydropower uses have zero consumptive demand in DWRAT, but nonconsumptive use from other sources is not yet considered. For rights with return flows rejoining the basin near the point of diversion, allocations could be based on consumptive use rather than total withdrawal. Rights where return flows return to supply far from the point of diversion, such as interbasin transfers through hydropower, present a larger challenge, but might just be considered as fully consumptive from surface-water availability. Several studies (Israel and Lund 1999; Ferriera 2007; Chou and Wu 2014) have presented methods for adjusting penalty coefficients for appropriative users to address this problem, but the method may be too complex for large systems, and data on return flow locations may be difficult to acquire.

Water availability is estimated statistically, using discrete NWS full natural flow forecasts and a spatial extrapolation model. DWRAT does not include water released from reservoirs, which is available for appropriative rightholders. In large systems with multiple reservoirs, such as the Sacramento River, this can be an important supply source. Current versions of DWRAT lack this capability, but reservoir releases could be added to appropriative availability.

DWRAT is an algorithm for implementation of water rights law in California. By accounting for spatial variability in demand, supply, and priority, curtailments can be suggested with greater precision. Given that California faces future droughts, tighter water rights administration will be necessary. Tools such as DWRAT can add transparency, rigor, and accuracy to better address the needs in future dry years.

Acknowledgments

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References

Attwater, W. R., and Markle, J. (1987). "Overview of California water rights and water quality law." *Pac. Law J.*, 19, 957.

Carlisle, D. M., Falcone, J., Wolock, D. M., Meador, M. R., and Norris, R. H. (2010). "Predicting the natural flow regime: Models for assessing hydrological alteration in streams." *River Res. Appl.*, 26(2), 118–136.

Chou, F. N., and Wu, C. W. (2014). "Determination of cost coefficients of a priority-based water allocation linear programming model: A network flow approach." *Hydrol. Earth Syst. Sci.*, 18(5), 1857–1872.

Draper, A. J., et al. (2004). "CalSim: Generalized model for reservoir system analysis." *J. Water Res. Plann. Manage.*, 10.1061/(ASCE) 0733-9496(2004)130:6(480), 480–489.

Escriva-Bou, A., et al. (2016). *Accounting for California's water: Technical appendix*, PPIC Water Policy Center, San Francisco, 177.

Ferreira, I. (2007). "Deriving unit cost coefficients for linear programming-driven priority-based simulations." Ph.D. dissertation, Univ. of California, Davis, CA.

Fredericks, J. W., Labadie, J. W., and Altenhofen, J. M. (1998). "Decision support system for conjunctive stream-aquifer management." *J. Water Resour. Plann. Manage.*, 10.1061/(ASCE)0733-9496(1998)124:2(69), 69–78.

Grantham, T. E., Mezzatesta, M., Newburn, D. A., and Merenlender, A. M. (2014). "Evaluating tradeoffs between environmental flow protections and agricultural water security." *River Res. Appl.*, 30(3), 315–328.

Grantham, T. E., and Viers, J. H. (2014). "100 years of California's water rights system: Patterns, trends and uncertainty." *Environ. Res. Lett.*, 9(8), 084012.

Howard, T. (2014). "Notice of unavailability of water and immediate curtailment for those with post-1914 water rights diverting water in the North Fork Eel River, Mainstem Eel River, and the Van Duzen Tributary." California State Water Resources Control Board, Sacramento, CA.

Israel, M. S., and Lund, J. R. (1999). "Priority preserving unit penalties in network flow modeling." *J. Water Resour. Plann. Manage.*, 10.1061 /(ASCE)0733-9496(1999)125:4(205), 205–214.

Kanazawa, M. (2015). *Golden rules: The origins of California water law in the gold rush*, University of Chicago Press, Chicago.

Kondolf, G. M., and Batalla, R. J. (2005). "Hydrological effects of dams and water diversions on river of Mediterranean-climate regions: Examples from California." *Dev. Earth Surf. Process.*, 7, 197–211.

Lord, B. (2015). "Water rights curtailments for drought in California: Method and Eel River application." Masters' thesis, Univ. of California, Davis, CA.

Lund, J. R., and Ferreira, I. (1996). "Operating rule optimization for the Missouri River reservoir system." *J. Water Resour. Plann. Manage.*, 10 .1061/(ASCE)0733-9496(1996)122:4(287), 287–295.

Sigvaldson, O. T. (1976). "A simulation model for operating a multipurpose multireservoir system." *Water Resour. Res.*, 12(2), 263–278.

State Water Resources Control Board (SWRCB). (2014). "Electronic water rights information management system (eWRIMS)." (https://www .waterboards.ca.gov/waterrights/water_issues/programs/ewrims/) (Oct. 15, 2017).

Wang, L., Fang, L., and Hipel, K. (2007). "Mathematical programming approaches for modeling water rights allocation." *J. Water Resour. Plann. Manage.*, 10.1061/(ASCE)0733-9496(2007)133:1(50), 50–59.

Wurbs, R. A. (2005). "Texas water availability modeling system." *J. Water Resour. Plann. Manage.*, 10.1061/(ASCE)0733-9496(2005)131:4(270), 270–279.

Young, G. K. (1967). "Finding reservoir operating rules." *J. Hydraul. Div.*, 93(6), 297–322.

PRU and R-GPCD Calculation

September 22, 2020

This document contains suggested methods for estimating Percentage Residential Use (PRU), and explains how daily residential per capita water use (R-GPCD) is calculated by Water Board staff. As of October 1st, 2020, the R-GPCD is automatically calculated in the reporting tool. The methodology outlined here has not changed since the initial guidance was developed for the emergency conservation regulations.

When estimating PRU, we recommend using billing data to determine the volume of water provided to residential customers as a percentage of Total Monthly Potable Water Production. In cases where billing periods are not based on calendar month, the urban water supplier should use discretion in selecting the most comparable and appropriate billing period. PRU, rather than residential use volume, is requested in the monthly conservation report because it can be calculated using the previous year's data if current billing data is not available.

Example PRU Calculation: Using recent billing data to estimate PRU

Total Production (T): 1543.98 Acre-feet (AF)

Commercial Agriculture (C): 20 AF

Residential Use (R)[1]: 1001.42 AF

1. Subtract Commercial Agriculture (if any) from Total Production

$$Total\ Production, minus\ Agriculture\ (TPA) = T - C$$

$$TPA = 1543.98 - 20 = 1523.98\ AF$$

2. Divide Residential Use by (Total Production – Commercial Agriculture)

$$PRU = \frac{R}{TPA} \times 100$$

$$PRU = \frac{1001.42}{1523.98} \times 100 = 65.71\%$$

If you do not have billing data for the current reporting month, use last year's data (**BOTH** residential use and total potable production) for the month that corresponds to the reporting month. For example, if you do not currently have October 2020 billing data available, use October 2019 data. **This calculated PRU using last year's data should be entered in the "Preliminary" column when submitting a report.**

[1] When estimating "Residential Use," we recommend using billing data to determine the volume of water provided to residential customers. In cases where billing periods are not based on calendar month, the urban water supplier should use discretion in selecting the most comparable and appropriate billing period.

PRU and R-GPCD Calculation

September 22, 2020

Once you have current billing data, re-calculate the PRU using current numbers and enter the new value in the "Final" column of the edited report.

Example PRU Calculation: Bi-Monthly Billing Cycle Initial Estimate

Total Production (T) Over Billing Cycle: 3002.15 AF

Commercial Agriculture (C) Over Billing Cycle: 35 AF

Residential Use (R) Over Billing Cycle: 1900.23 AF

Length of Billing Cycle: 61 days

Reporting Month: May

Days in May: 31 days

1. Subtract Commercial Agriculture (if any) from total production

$$Total\ Production, minus\ Agriculture\ (TPA) = T - C$$
$$TPA = 3002.15 - 35 = 2967.15\ AF$$

2. Calculate Residential Use for Reporting Month (RM) and Total Production for Reporting Month (TPM)

$$TPA\ for\ May\ (TPM) = \frac{TPA \times days\ in\ May}{days\ in\ billing\ cycle}$$
$$TPM = \frac{2967.15 \times 31}{61} = 1507.90\ AF$$
$$R\ for\ May\ (RM) = \frac{R \times days\ in\ May}{days\ in\ billing\ cycle}$$
$$RM = \frac{1900.23 \times 31}{61} = 965.69\ AF$$

3. Divide Residential Use for Reporting Month by (Total Production – Commercial Agriculture) for Reporting Month

$$PRU = \frac{RM}{TPM} \times 100$$

$$PRU = \frac{965.69}{1507.90} \times 100 = 64.04\%$$

Please note in the "Qualification" box that the billing data is bi-monthly. As with the previous PRU calculation example, if you do not have billing data that encompasses the current reporting month, please use billing data from the previous year to estimate PRU and enter the value in the "Preliminary" column.

PRU and R-GPCD Calculation

September 22, 2020

Example Residential Gallons Per Capita Daily (R-GPCD) Calculation

The updated reporting tool automatically calculates the monthly R-GPCD value. The calculation methodology is outlined below.

Original Units	Conversion Factor (CF) from Original Units to Gallons
Gallons (G)	1
Million Gallons (MG)	1000000
Hundred Cubic Feet (CCF)	748.052
Acre Feet (AF)	325851

Total Production (T): 1543.98 AF

Commercial Agriculture (C): 20 AF

Percentage Residential Use (PRU): 65.71%

Population (P): 69078 people

Month: May

Days in Month: 31 days

Conversion Factor (CF): 325851

1. Subtract Commercial Agriculture (if any) from Total Production

$$Total\ Production, minus\ Agriculture\ (TPA) = T - C$$

$$TPA = 1543.98 - 20 = 1523.98\ AF$$

2. Convert (Total Production-Commercial Agriculture) to Gallons, using the Conversion Factor

$$TPA\ in\ Gallons\ (TG) = TPA \times CF$$

$$TG = 1523.98 \times 325851 = 496590407\ G$$

3. Multiply the Total Production Gallons by Percentage Residential Use to get Residential Use in Gallons

$$Residential\ Use\ in\ Gallons\ (RG) = TG \times \frac{PRU}{100}$$

$$RG = 496590407 \times \frac{65.71}{100} = 326313708\ G$$

4. Divide Residential Use by (Population x Days in Month) to get R-GPCD

$$R - GPCD\ for\ May = \frac{RG}{P \times days\ in\ May}$$

$$R - GPCD\ for\ May = \frac{326313708}{690798 \times 31} = 152.38\ GPCD$$

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-E**

FROM: Ed Fortner, General Manager

Meeting Date: August 5, 2021

SUBJECT: DISCUSSION/ACTION RE COVID RELATED REOPENING ISSUES

RECOMMENDED ACTION: Discussion and direction from Board.

FISCAL IMPACT: none

DISCUSSION:

The District has followed Public Health direction from Federal, State, and Local Health Agencies. These guidelines are referenced in our Emergency Response Plan and Resolution 21-06. California relaxed many guidelines on June 15, including relaxing mask requirements. The California Cal OSHA met on June 17 and approved similar relaxed requirements for the workplace. Vaccinated employees can now choose not to wear masks outside or inside. Non-vaccinated employees must continue to wear masks outside when near others and wear masks in the office. The District will document vaccination status through self-attestation. The District continues to navigate these new guidelines and apply them to the District workplace and workforce.

Among these issues is virtual vs. in-person Board meetings. The Governor issued an Executive Order that ends the waiver of Brown Act Public Meeting requirements on September 30.

The District has closely followed what the County policies are on COVID. On July 26, 2021, Paul Gullickson, the County Spokesperson, stated that at this time, “we are requiring the wearing of masks indoors at county facilities for the vaccinated and unvaccinated. Dr. Mase is also encouraging people to wear masks indoors at public locations regardless of whether they are vaccinated or not. But at this point, that is just a strong recommendation.” The California Department of Public Health issued some stronger language on July 26, requiring State employees and all medical personnel to be vaccinated or be tested weekly if they are not vaccinated. The Governor also asked private businesses to follow suit on this new mandate. These new orders are due to the many-fold increases in cases, hospitalizations, and deaths due to the Delta variant.

Governor Newsom's Executive Order N-42-20, known as the water shutoff moratorium, prevented public agencies from discontinuing water service during the COVID-19 pandemic. Under the Governor's reopening plan, the shutoff moratorium provisions within Executive Order N-42-20 will also be lifted on September 30. Local agencies will still be required to adhere to all existing state laws and regulations related to utility shutoffs. This lifting of the moratorium might preclude the need for the District to implement the tax lien procedure to collect delinquent bills. In consideration of Board meetings being held at the District offices, space is quite limited for social distancing. I did speak with Danny with Ferrellgas, and he is following up on the maintenance of the air handling equipment.

Staff feedback on reopening the office space has ranged from deferring to office staff to open support of full reopening with no masking.

On July 27, the CDC and State made recommendations for everyone to wear masks inside. The County has also made this recommendation. This may become mandatory due to the spread of the Delta variant.

Also, our Emergency Response Plan Covid section allows 14 days administrative leave if someone is positive for Covid or has been in contact with someone positive. Since some have chosen not to get vaccinated, should this policy be changed?

Reopening Plan: Due to the constantly changing circumstances of the virus, lack of vaccinations of staff and a significant percentage of the public, and the risk due to the much more transmittable Delta variant, I recommend at this time to stay the course with no foot traffic and continued masking requirements as they evolve. If the desire of the Board is for the District to follow County guidelines on masking, please refer to the earlier quote from Mr. Gullickson.

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-F**

FROM: Ed Fortner, General Manager

Meeting Date: August 5, 2021

SUBJECT: PARS Account Withdrawal for FY 2021-22 and withdrawal policy for future years

RECOMMENDED ACTION:

Make a motion to approve withdrawal of $10,000 from our PARS account, and discuss the merits of adding a permanent PARS safe withdrawal strategy to the District's Policies and Procedures.

FISCAL IMPACT:

$10,000 transferred to operations revenue from our PARS account in FY 2021-22, and the potential for similar amounts in future years.

DISCUSSION:

In November of 2017 the District put $200,000 of the policy reserve funds in PARS with the goal of earning better returns on reserve funds the District does not earmark for spending. A copy of the staff report containing logic and background behind that decision is attached. At the time, the focus was on whether or not to move any money to PARS at all. Little thought was put into if and how we would withdraw invested funds.

It's been almost four years. The $200,000 originally invested has grown to $273,549 as of June 30, 2021, with particularly extraordinary returns (23.4%) in FY 2020-21. Staff is suggesting that this year might be a good year to withdraw some funds, and is suggesting a strategy for doing so not just this year but on an ongoing basis.

In-house, we have discussed different options for use of the PARS funds. One option is to do nothing and let our PARS balance continue to grow or shrink without interference. Another is to let the funds stockpile for use when our unfunded liability with PERS rises. A third option discussed is to use allowed disbursements to add to Operations revenue in years when we are buying a new truck. At the end of the day, however, staff is recommending a **safe withdrawal strategy** that would provide for an annual income stream while maintaining and even slowly growing our PARS account balance.

Here's how it would work:

PROPOSED PARS SAFE WITHDRAWAL STRATEGY:

Rule 1: At FYE, if returns on our PARS investment exceed 2% for the year, then withdraw 3.5% of the PARS balance as of June 30, rounded to the nearest thousand dollars. (Staff estimates this rule would trigger a withdrawal three out of every four years.)

Rule 2: At FYE, if returns on our PARS investment are 2% or less, then do not make a withdrawal.

Rule 3: At FYE, if returns on our PARS investment are 0% or less, then consider depositing additional policy reserve funds into PARS equal to 3.5% of the balance as of June 30, rounded to the nearest thousand dollars.

Below is an example of the proposed PARS Safe Withdrawal Strategy using actual returns from our CERBT account, which gets similar rates of return to our PARS account but we have a history of returns back to FY 2013-14.

The table below illustrates the strategy in action over a 8-year period using actual investment returns from our CERBT funds:

YEAR	Balance Start of FY	Investment Return	Balance FYE	Action	Withdrawal amount	Rounded to nearest $1000
1	$200,000	5.50%	$211,000	Rule 1: Withdraw 3.5%	$7,385	$7,000
2	$204,000	-0.23%	$203,531	Rule 3: Consider depositing 3.5% Board decides not to deposit additional funds.	$0	$0
3	$203,531	1.00%	$205,566	Rule 2: Do not withdraw	$0	$0
4	$205,566	10.44%	$227,027	Rule 1: Withdraw 3.5%	$7,946	$8,000
5	$219,027	7.48%	$235,410	Rule 1: Withdraw 3.5%	$8,239	$8,000
6	$227,410	6.35%	$241,851	Rule 1: Withdraw 3.5%	$8,465	$8,000
7	$233,851	3.47%	$241,966	Rule 1: Withdraw 3.5%	$8,469	$8,000
8	$233,966	26.25%	$295,382	Rule 1: Withdraw 3.5%	$10,338	$10,000

The strategy staff has outlined above will allow the District to get some use from the PARS account while continuing to take advantage of the higher-risk/higher yield investment vehicles available to those funds. By adopting a PARS safe withdrawal policy for future years, the Board could secure a new annual income stream for the District for many years that is on simple automatic pilot as to the amount to withdraw (or deposit) to protect the fund's balance. These same attributes – regular attention, simple rules,

disciplined but flexible – have made our District Reserve Policy so useful to the District's financial wellbeing.

If the Board wishes to proceed, a motion at this meeting could use the suggested strategy to authorize a withdrawal from PARS for FY 2021-22 of $10,000:

$273,549 X 3.5% = $9,679; Rounded: $10,000

Staff can bring a resolution to add a permanent policy to our District Policies and Procedures to the September Board meeting.

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-C**

FROM: Steve Mack, General Manager

Meeting Date: September 7, 2017

SUBJECT: Resolution 17-15, Approving the Adoption of the Public Agencies Post-Employment Benefits Trust Administered by Public Agency Retirement Services (PARS)

RECOMMENDED ACTION: Approve Resolution 17-15.

FISCAL IMPACT: Move $200,000 of District Policy Reserves from low-risk investment at the County of Sonoma to higher-risk investment with PARS with the idea of getting higher long-term returns on investment.

DISCUSSION:

The District (and Board) have been considering participation in the PARS Rate Stabilization program for the last few months. The District became aware of the program as part of the discussion of ways to become more active in addressing CalPERS retirement unfunded actuarial liability (UAL).

In May 2017 we made an accelerated one-time payment on our UAL directly to CalPERS in the sum of $60,000 and plan to continue making extra payments for the foreseeable future. An additional approach to addressing UAL is to try to offset CalPERS costs with higher investment returns -- and therefore riskier ones -- on remaining District funds. This is a very similar approach to our participation in CERBT to offset UAL in our retiree health costs. The PARS program and CERBT both offer a solution to the District's limited investment choices.

At the June 2017 meeting, we received a presentation from Rick Icasio of PARS on the various programs provided by PARS, its setup and examples of how it can be used. As a reminder, the PARS "Pension Rate Stabilization Program" provides a vehicle for higher returns by way of a IRC Section 115 Trust. Elements of the program, or any Section 115 Trust, are:

- Can be used by local governments to fund essential governmental functions (i.e., retiree healthcare, pension)
- Trust is irrevocable and designed to pre-fund retirement plan obligations

- Once contributions are placed into trust, assets from the trust can only be used for retirement plan purposes:
    - Reimburse District for CalPERS contributions
    - Assets can be transferred to CalPERS at anytime for pension
    - Up to 2 years of pension costs can be withdrawn for other expenses.

The staff vision of using PARS is fund it using a portion of District Reserves, with the goal of earning better returns on principal funds the District has no intention of using absent a dire emergency. PARS has investment portfolios with different risk scenarios that, on average, should get rate of returns similar to what CalPERS aims for (4-8 percent) and much higher than the County funds get (currently in the 1% vicinity). Staff's recommendation of investing $200,000 -- approximately two years of retirement costs -- with PARS was met with approval by the Board at the August meeting.

The first step towards formalizing our participation in the PARS Rate Stabilization Program is approval of Resolution 17-15, adopting a Post-Employment Benefits Trust administered by PARS which names the General Manager the Plan Administrator. Upon receipt of an adopted Resolution, PARS would forward a final Agreement to be executed. A draft copy of that Agreement is attached for your review.

It should be noted the Resolution references a Trust for the purpose of prefunding "pension obligations **and/or OPEB obligations**..." (emphasis added). The District currently utilizes CERBT to prefund District OPEB obligations. I have been assured by PARS that adoption of Resolution 17-15 will not require us to move our CERBT funds to PARS.

At the October Board meeting, staff anticipates requesting a check to fund our PARS account as well as making a decision regarding the PARS investment choices available for District funds.

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-G**

FROM: Ed Fortner, General Manager

Meeting Date: August 5, 2021

SUBJECT: The Law Offices of Matthew Emrick Master Professional Services Agreement

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RECOMMENDED ACTION: Receive report from the General Manager. Review Master Professional Services Agreement and Task Order One with The Law Offices of Matthew Emrick.

FISCAL IMPACT: N/A

DISCUSSION:

I have been in discussions with Matt Emrick with the Law Offices of Matthew Emrick about the District's water rights in light of the recently approved temporary urgency change to Sonoma County Water Agency's (SCWA) water rights that lowered the flows in the lower Russian River to 35 cfs, and the recently issued Emergency Curtailment Order by the State Water Conservation and Resources Board (SWCRB) for the Upper and Lower Sections of the Russian River due to the current drought conditions.

In light of these recent events, it has become evident that the District needs to better understand our water rights and our path forward to protect our rights. SCWA has postured such that they threaten our water rights during low flow conditions. These issues are complex and require expert council. Matt Emrick has consulted with the District before, in 2016 and 2017, and understands our water rights issues.

Matt, Steve Mack, and I have met. Matt and I are exploring historical documents and maps with promising results.

The executed Professional Services Agreement and Task Order One and Two are attached for review.

Law Offices of Matthew Emrick

A Professional Corporation
3881 Scenic Court
El Dorado Hills CA 95762
(916) 337-0361 (Direct)
matthew@mlelaw.com
www.mlelaw.com

July 2, 2021

Ed Fortner
General Manager
Sweetwater Springs Water District
17081 Hwy 116 (P. O. Box 48)
Guerneville, CA 95446

Re: Task Orders 1 and 2 – Water Rights

Dear Ed:

Pursuant to your request and for your review, I am presenting the following proposed task orders relating to work associated with the District's water rights on the Russian River. Initially, the combined legal fees for both tasks would not exceed $5,000.00 unless otherwise approved in writing by the District.

TASK No. 1

Working with the District's General Manager, the Law Offices of Matthew Emrick will assist the District with:

- Indentifying strategies to strengthen and reinforce the District's existing water rights.
- Assisting with the identification, location and collection of documents and information to support and strengthen the District's existing water rights.
- Preparing legal analysis regarding the District's water rights as necessary.

- Working with the State Water Resources Control Board regarding the District's water rights as may be necessary.

TASK No. 2

Assist the District through its General Manager with developing strategies to protect the District's water rights with respect to the potential upcoming hearing(s) before the State Water Resources Control Board on Sonoma County Water Agencies' expired water rights permits. This task would include:

- Preparing written protests and comments if applicable.
- Reviewing documents and other information presented to the SWRCB to identify potential areas of concern with respect to the District's water rights.
- Assisting the District with oral testimony to the SWRCB if necessary.
- Working with District's consultants to prepare evidence that may be presented on behalf the District to the SWRCB necessary to protect the District's water.

Please review and let me know any comments you might have. Thank you.

Very truly yours,

LAW OFFICES OF MATTHEW EMRICK

Matthew Emrick

By: _____

Matthew L. Emrick

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3881 Scenic Court
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June 21, 2021

Sweetwater Springs Water District
17081 Hwy 116 (P. O. Box 48)
Guerneville, CA 95446

Re: Fee Agreement – Water Rights

Dear Sweetwater Springs Water District:

I am very pleased to have the opportunity to provide you ("Client" or "You") with this Proposal for Legal Services relating to the District's water rights and other matters as may be determined by the Client.

Fees. As a general matter, the Law Offices of Matthew Emrick ("Firm") bills for our services based on the hourly rate of the attorney working on any given project. Our fee schedules are generally revised on an annual basis. All such rates are negotiable by the Client. The following hourly fee is proposed for this representation: Matthew L. Emrick - **$195** an hour. Associates, contract attorneys (if needed), and paralegals are proposed to be billed at $175 an hour. No retainer fee is required.

Costs and Travel. Items such as travel, courier or messenger services, filing fees, photocopying and computerized legal research

will be billed separately on our statements as "costs." We do not bill for telephone related costs or in-house photocopying and faxes. Travel costs such as lodging when necessary and mileage will be charged. Meals are not charged.

Experts and Consultants. Any fees and costs associated with any experts, consultants and investigators retained by the Firm for work under this agreement as may be necessary (with prior Client approval) shall be paid by the Client.

Licensing. The Firm shall maintain all required licenses, insurance, continuing legal education, etc. necessary to perform its services under this Agreement.

Disclaimer of Guarantee. Nothing in this Agreement or in our statements to the Client, express or implied, shall be construed as a promise or guarantee about the outcome of the matter.

Duties. Client agrees to cooperate with the firm and to keep the firm informed of any information or developments related to this matter. Client agrees to pay in a timely manner. The firm agrees to keep the Client informed of all developments in this matter and to provide the Client with all related information necessary for the Client to assess the matter.

Billings. Invoices may be sent via email or mail, or both. We will prepare our statements to describe the nature of the services rendered and the respective costs of each activity. Billings are in 1/10th of an hour increments. At your request, we will break down our fees on a particular project basis. Our statements generally will be prepared and mailed the first part of each month. Payments are due **15 days** after the invoice date. Payments not received within 30 days after the statement date may result in suspension or termination of the Firm's services.

Termination of Representation. Either of us may terminate our engagement and relationship at any time for any reason. All unpaid fees and costs for our legal services become due and payable at the time our representation concludes. The Client has the right to require the firm to return all files. If at that time the Client does not request the return of its files, Firm will retain Client's files for a period of (5) five years, after which the Firm may have the files destroyed.

Disputes. We do not anticipate having any disagreements about the quality, cost or appropriateness of our services. If any concerns about these matters arise, please notify us immediately. We endeavor to resolve any disagreements in a fair and amicable manner. You have the right to submit any dispute regarding our fees to the local bar association pursuant to Business and Professions Code sections 6200 et seq.

I am very excited about the opportunity to work with the District. If you have any questions or need any additional information, please call me at (916) 337-0361 or email me at matthew@mlelaw.com.

If this proposed Fee Agreement meets with your approval, please sign as indicated below.

June 22, 2021

Very truly yours,
LAW OFFICES OF MATTHEW EMRICK

Matthew Emrick
By: _____
Matthew L. Emrick

- **PLEASE SIGN TWO (2) COPIES OF THIS AGREEMENT BELOW. KEEP ONE FOR YOUR RECORDS AND RETURN THE OTHER COPY TO THIS OFFICE** (***return via either mail or email by scanned .pdf is acceptable***).

Dated: 07/06/22, 2021

Ed Ford
_____
For Sweetwater Springs Water District

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-H**

FROM: Ed Fortner, General Manager

Meeting Date: August 5, 2021

SUBJECT: REAL PROPERTY NEGOTIATION 17448 RIVER LN.

RECOMMENDED ACTION: Receive report from the General Manager. Discussion and possible action.

FISCAL IMPACT: none

DISCUSSION:

The Russian River Recreation and Parks District (RRR&PD) applied to Sonoma County Permit and Resource Management Department (PRMD) for a determination for legal non-conforming determination for 17448 River Ln in 2019. This application included the letter from the Sweetwater Springs Water District Board and many other letters confirming the historical use of the property as a pathway to the Russian River dating back to the 1950s. The GM signed the application as the Owner, and Paige MacDonell signed as the RRR&PD applicant. This reclassification should smooth the pathway to the sale of the property while keeping the historical use.

On July 12, 2021, PRMP approved the legal non-conforming use allowing public access to the river through this parcel. Unfortunately, on July 16th, RRR&PD was contacted by PRMP and informed that since the California State Lands Commission's (CSLC) revised survey findings published September 25, 2020, were not included in the approval, RRR&PD will be required to re-apply for the legal non-conforming determination. PRMD staff has changed, and lines of communication have suffered. The CSLC 2020 survey was discussed at length with prior PRMD staff. This re-application will delay the determination process for an unknown amount of time. RRR&PD remains committed and asks Sweetwater also to stay committed to the process.

July 12, 2021 **SENT VIA EMAIL**

Russian River Recreation & Park District
PO Box 195
Guerneville, CA 95446

Sweetwater Springs Water District
PO Box 48
Guerneville, CA 95446

Re: File No.: ORD19-0011
Address: 17448 River Lane, Guerneville
APNs: 071-220-068

Dear Russian River Recreation and Park District,

On 25 December 2019, the Russian River Recreation and Park District filed an Ordinance Determination (ORD19-0011) requesting a legal non-conforming determination of the subject property's historic use as a public access point to the Russian River. The Russian River Recreation and Park District intends to purchase and maintain the lot as a public access point to the Russian River in perpetuity.

The subject site is zoned Low-Density Residential (R1 B6 1) with a one unit per acre density, and designated with the following combining districts: Floodway (F1), Floodplain (F2), Riparian Corridor (RC50/50, 50' setback development/50' agriculture) and Valley Oak Habitat (VOH). The Low-Density Residential base zone allows for parks and similar uses with a Use Permit pursuant to Section 26-20-20(e) of the Zoning Code. Section 26-02-140 of the Zoning Code does define park or trails. The proposed use of a beach access and trail is similar to a 'park' use in that trails and access points to a beach and/or the Russian River and/or a park are both reasonably used for recreation and therefore considered similar in nature. Additionally, the Riparian Corridor combining zone, Section 26-65-040(L) allows for certain activities and uses within the streamside conservation area. Those certain uses include, 'Bikeways, trails, and parks on publicly owned land or public use easements or on private lands subject to a zoning permit. Therefore, the Riparian Corridor combining zone does not preclude public trail access to the Russian River on the subject property. Additionally, this legal non-conforming determination would not include any new structures or development onsite, therefore the presence of the Floodway and Floodplain combining zones do not preclude the public access trail to the Russian River.

Sonoma County Code Article 94 (Non-Conforming Uses) Section 26-94-010, discusses the limitations on non-conforming uses and states:

> *The lawful use of land existing on the effective date of the ordinance codified in this chapter although such use does not conform to the regulations specified by this chapter for the district in which such land is located, may be continued but shall not be enlarged or increased, nor be extended to occupy a greater area than that occupied by such use at the time of the adoption of said ordinance, and that if any use ceases, the subsequent use of such land shall be in conformance with the regulations specified by this chapter for the district in which such land is located provided that:*

(a) *A legal nonconforming use may be replaced by a use of the same or less intensity upon obtaining a use permit or a use permit waiver;*
(b) *Pursuant to policy LU-1f of the general plan, a legal nonconforming use may be expanded one time not to exceed ten percent (10%) of the total existing floor area for any structures subject to lot coverage and setback requirements and to all other applicable requirements of the this code, and provided that such structures are not located within a designated redevelopment project area;*
(c) *A legal nonconforming use consisting of a mobile home may be replaced with a newer and larger mobile home in the same location, subject to Article 82.*

The application documents, specifically affidavits submitted by the public substantiate the historic use of the subject parcel as a 'passive recreation area' and that the use has not ceased or been closed for more than a year.

The subject parcel provides trail access to and includes a portion of a beach located on the Russian River, widely known as Vacation Beach. Vacation Beach encompasses the following neighboring parcels, APN: 071-220-067, 071-220-018, 071-220-019, and 071-220-020, specifically APN: 071-220-067 is located between the parcel in question, APN: 071-220-068 and the Russian River corridor. The subject parcel was created by Vacation Beach Subdivision No. 3 recorded on June 3, 1936, Sonoma County Records Book 50, Page 38-40, Block A, Lot 1. The tract of land subdivided by Vacation Beach Subdivision No. 3 was previously owned by A. Genelly, and was held in Genelly family ownership since the early 1900's until the property was transferred to Citizens Utility in 1953. Affidavit submitted by Herbert A. Genelly substantiates that the subject property has been historically used as a point of access for recreation to the Russian River.

Ownership transfer of the subject property has occurred twice since parcel creation, from 1) Genelly to Citizens Utility and from 2) Citizens Utility to Sweetwater Springs Water District (DN 1992-0041217). Included in application submittals were a total of fifteen public affidavits of those who have historically used the subject property for river access, which further authenticates the fact the site has been used as such dating back to at least 1950. Affidavits submitted are significant in staff's determination as they are written statements of facts to be used as evidence, voluntarily made by the public regarding the historic use of the property. Affidavit submitted by Herbert A. Genelly Jr. indicates that the property was used as an access point to Vacation Beach by the public during his family's ownership of the property from the early 1900's to 1953. Affidavit submitted by Xenia Zabelin a resident of the vacation beach subdivision since 1951 further substantiates the generational and continuation of use of Vacation Beach since the beginning of her residency in 1951. Affidavit submitted by Jack Bushgen, a former employee of Citizens Utility, who began his employment with the utility company in 1988, confirms that the subject property was used as an access point to the Russian River since at least 1988. Affidavit submitted by Ed Fortner, the General Manager of Sweetwater Springs Water District (property owner) states that to the Water District's knowledge the subject property has been used as a river access point since the District's acquisition of the property in 1992. A further summary of all public affidavits submitted is included below.

Due to the parcels location along the Russian River, the California State Lands Commission has jurisdiction over portions of the property. Commission surveyors completed a field survey at Vacation Beach and adjacent parcels to determine jurisdictional boundaries on July 26, 2016 and August 29, 2016. The State Lands Commission has opined, based on the information presented, that a Public Trust easement exists at this location between the ordinary high and low watermarks and therefore the public would not be trespassing if they accessed the river on the subject property and remained below the ordinary high water mark.

Permit Sonoma has determined the pertinent documents submitted with ORD19-0011 on file with Permit Sonoma in conjunction with available historic zoning maps substantiate the historic use of the property as a public access point to the Russian River. Our determination is based on the following findings:

1. The first zoning designation of the property was R1-Single-Family Residential in 1961 per Sonoma County Ordinance 698, which would have required a Use Permit for the creation of a public access trail. Prior to 1961, Ordinance 230 adopted in 1945, Section 7.1 classified unincorporated areas of the County not included under the terms of Ordinance 230 as U-Unclassified District. Per Section 12.2(a) of Ordinance 230 the U district allowed uses permitted within any A, K, R, R-R, C or H-1 districts. Per Section 14.1(b) of Ordinance 230, public uses were allowed as permitted uses within the A-Agriculture District. Therefore, prior to 1961 the use of the subject parcel as a 'passive recreation area' would not have required a Use Permit.
2. Credible evidence in the form of affidavits further summarized below, were included in the application submittal regarding the historic use of the property for a publically accessed 'passive recreation area' since the 1950's, which pre-dates 1961 zoning. Therefore, this historic use is considered pre-code and legal non-conforming, subject to Sonoma County Code Chapter 26 Article 94. – Nonconforming Uses.

Affidavit Name & Date	***Affiliation***	***Date Range***
Herbert A Genelly Jr.	Previously owned (until 1953) & Family of original Subdivision	Early 1900's
Richard Deering (8/9/2019)	Russian River Resident since 1966	1940's
Nick Mironov (10/4/2019)	Vacation Beach user	1950
Vera Mironov (10/7/2019)	Vacation Beach user	1950
Katherine Meyer (10/2/2019)	Vacation Beach user	±1950
Xenia Zabelin (10/3/2019)	Resident of the Vacation Beach Subdivision as of 1951 Generational use of Vacation Beach	1951
Laura Clemens (11/14/2019)	Generational use of Vacation Beach	1955
Laura Gilfether (9/15/2019)	Family owned property in Vacation Beach Subdivision 17754 Orchard Avenue since the 1930's Generational use of Vacation Beach	Over 50 years ±1969
Margaret Dodderer (9/29/2019)	Generational use of Vacation Beach	Over 60 years ±1959
Vic Teshin (11/14/2019)	Vacation Beach user	1955
Jack Bushgen	Citizens Utility (previous property owner) employee	1988

Ed Frortner	Sweet Water Springs Water District (current property owner)	1992
Hans Bruhner (11/11/2019)	Property owner within the Vacation Beach Subdivision as of 2003	2003
John Harreld (10/4/2019)	Property owner and full time resident of Guerneville	2004
Howard & Suarez (9/12/2019)	Property owners within the Vacation Beach Subdivision since 2014	2014
Angelina Lavroushin (10/21/2019)	Generational use of Vacation Beach	Not specified.

3. The current use of the property is substantially unchanged.
4. The use of the property is subject to Sonoma County Code Chapter 26 Article 94. – Nonconforming uses.

This legal nonconforming determination does not grant approval of any permits, including but not limited to design review, building, well & septic, or grading permits. In addition, approvals from agencies outside of Permit Sonoma may be required. Additionally, in accordance with Sonoma County Code Chapter 26 Article 94, this legal nonconforming determination does not allow for future expansion of the use.

This decision may be appealed in writing, along with an appeal fee, within 10 (ten) calendar days of the date of this letter.

If you have any more questions regarding this or need further information, please contact the project planner, Marina Herrera at Marina.Herrera@sonoma-county.org or by phone at 707-565-2397.

Sincerely,

Cecily Condon
Project Review Division Manager
Permit Sonoma

ec:

County of Sonoma
Permit & Resource Management Department

MEMO

DATE: July 20, 2021

TO: Russian River Recreation & Park District

FROM: Permit Sonoma, Project Review Manager, Cecily Condon

SUBJECT: ORD19-0011

The Department hereby rescinds determination ORD19-0011 issued on July 12, 2021, in order to review additional information.

Please contact Project Planner, Marina Herrera for additional information at (707) 565-2397 or Marina.Herrera@sonoma-county.org

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-I**

FROM: Ed Fortner, General Manager

Meeting Date: August 5, 2021

SUBJECT: DISCUSSION/ACTION RE GENERAL MANAGER'S PERFORMANCE EVALUATION

RECOMMENDED ACTION: Discussion and direction from Board.

FISCAL IMPACT: none

DISCUSSION:

The GM performance evaluation process started in April 2021. Sukey, Gaylord, and I met and discussed the GM performance and goals for the past year and the coming year.

At the July 8 Special Board Meeting, two committees were formed to establish goals and consider contract changes for the GM. Larry, Gaylord, and I met twice to discuss the SMART goals and establish a standard performance evaluation document. That document is attached.

Sweetwater Springs Special Water Disrict

General Manager Goal and Evaluation Form - FY_____

Name: Ed Fortner Date:_____

Board Initials: SWR_____; RH_____; GS_____; TL_____; LS _____;

Goals Section

GOAL 1: IMPLEMENT SOUND FINANCIAL PRACTICES TO ENSURE EFFECTIVE UTILIZATION OF DISTRICT RESOURCES

1A - Completion of Audit, Presentation to Board and Submission to State Boards.
Completion Date _____.

1B - SWOT analysis of financial practices annually.
Completion Date _____.

GOAL 2: PROVIDE RELIABLE AND HIGH-QUALITY POTABLE WATER WITH FACILITIES THAT ARE PROPERLY CONSTRUCTED, MANAGED AND MAINTAINED TO ASSURE SYSTEM RELIABILITY

2A - Completion and Submission of Annual Customer Confidence Report.
Completion Date _____.

2B - Completion and Submission of Annual AWIA report.
Completion Date _____.

GOAL 3: HAVE UPDATED EMERGENCY PREPAREDNESS PLANS FOR ALL REASONABLE, FORESEEABLE SITUATIONS

3A - Completion of updates in the Emergency Response and Preparedness Policy Book.
Completion Date _____.

3B - Annual Local Hazard Mitigation presentation.
Completion Date _____.

GOAL 4: DEVELOP AND MAINTAIN A QUALITY WORKFORCE

4A - Oversight and Encouragement of certification and skills development programs for employees.

Completion Date _____.

4B - Develop a schedule for employee rotation of presentations at the Board meetings.

Completion Date _____.

GOAL 5: PROVIDE EXCELLENT PUBLIC AND GOVERNMENTAL OUTREACH, INFORMATION AND EDUCATION

5A - Release 4 Press Releases during Fiscal Year for Outreach and Community Education.

Completion Date _____.

5B - Update Sweetwater Website monthly to maintain current and accurate information

Completion Date _____.

GOAL 6: ENHANCE BOARD COMMUNICATIONS AND INFORMATION

6A - Provide Outing for Board members to familiarize and encourage interaction with Staff and Facilities.

Outing Dates _____.

6B - Ensure that Board members attend all regular and special meetings.

Completion Date _____.

Achievements Section

1 - Ed secured the Community Development Block Grant of $115,920.00 for design and planning of the FY 2020-2021 CIP.

2 - Led response to Walbridge Fire and COVID-19 Declared Emergencies.

3 - Prepaid $500,000 annually for two years to zero out our Unfunded Liability to CalPERS.

4 - Developed a debris removal FEMA project at Mt. Jackson and coordinated CalFire with sharing 40% of the project at no cost.

5 - Managed a Local Hazard Mitigation Plan to near completion to qualify for FEMA disaster mitigation grant funding.

Evaluation Section

ASSISTING BOARD WITH ITS POLICY-MAKING ROLE

A. Providing Information	Strong				Improve
1 - Does the General Manager keep you informed, in a timely manner, of the things you want to know about?	5	4	3	2	1
2. Do reports provide adequate information and analysis to help you make sound decisions?	5	4	3	2	1
3. Does the General Manager regularly consult with the Board before setting the agenda to determine appropriate topics and timing?	5	4	3	2	1
B. Providing Advice					
1. Does the General Manager have adequate knowledge of Water Management affairs?	5	4	3	2	1
2. Does the General Manager plan ahead, anticipate needs and recognize potential problems?	5	4	3	2	1

INTERNAL ADMINISTRATION

A. Financial Management					
2. Is the General Manager effective in controlling costs through economical utilization of manpower, materials and equipment?	5	4	3	2	1
3. Does the General Manager have sufficient knowledge of financial matters?	5	4	3	2	1
4. Does the General Manager provide you with sufficient information on the financial status of the Water Management?	5	4	3	2	1
B. Personnel Management					
3. Does the General Manager develop and motivate personnel so that they are increasingly effective in performing their duties?	5	4	3	2	1

6. Does the General Manager respond to Board suggestions on employee training, work priorities and productivity? Are the decisions explained to Board?	5	4	3	2	1
8. Does the General Manager ensure that every employee receives a written annual performance review?	5	4	3	2	1

C. Getting the Job Done

1. Does the General Manager organize, prioritize and assign work so that it is performed efficiently and effectively?	5	4	3	2	1
2. Does the General Manager put in sufficient time and effort to perform to your expectations?	5	4	3	2	1
3. Docs the General Manager develop and carry out short and long-term action plans?	5	4	3	2	1

EXTERNAL RELATIONS

A. Customer Relations

3. Does the General Manager have appropriate visibility or identity in the community?	5	4	3	2	1
2. Is he effective in handling disputes or complaints involving customers?	5	4	3	2	1
6. Does the General Manager think and act in a manner reflecting an attitude that client (Board, staff or customers) perceptions and satisfactions are key?	5	4	3	2	1

B. Intergovernmental Relations

I. Is the General Manager effective representing the District's interests in dealing with other agencies?	5	4	3	2	1
2. Docs the General Manager participate in enough intergovernmental activity to have an impact on behalf of the District?	5	4	3	2	1

PERSONAL CHARACTERISTICS

A. Personality

1. Is the General Manager's personality suited to effective performance of his duties?	5	4	3	2	1

B. Communications

1. Is the General Manager easy to talk to? and a good listener?	5	4	3	2	1
2. Does the General Manager show sensitivity to the concerns of others?	5	4	3	2	1

C. Management Style

1. Does the General Manager demonstrate interest and enthusiasm in performing his duties	5	4	3	2	1
2. Does he have sufficient leadership characteristics to command respect and good performance from employees?	5	4	3	2	1
3. Does the General Manager show initiative and creativity in dealing with issues, problems and unusual situations?	5	4	3	2	1
5. Does the General Manager create an atmosphere in which employees can enjoy working for the District?	5	4	3	2	1
6. Is the General Manager honest and ethical?	5	4	3	2	1
OVERALL RATING	**5**	**4**	**3**	**2**	**1**

Board Member_____

Date_____

General Manager_____

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-J**

FROM: Ed Fortner, General Manager

Meeting Date: August 5, 2021

SUBJECT: Coastland Engineering Task Order for Design and Coordination of Moscow Rd. Slide Bridge and Water Main Attachment

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RECOMMENDED ACTION: Receive report from the General Manager. Review Task Order with Coastland Engineering.

FISCAL IMPACT: undetermined

DISCUSSION:

We have been in discussions with the County Public Works about the road slide repair project at Mosco Rd damaged during the 2019 floods. This project is FEMA-funded. Sweetwater's eight-inch water main serving Cal Water was not damaged during the flood but will need to be relocated and attached to the west side of the proposed bridge. Coastland is engaged in the design for the attached water main and tie-ins for $17,465.00. We are hopeful that FEMA will reimburse the District for the design and that the construction will be included in the FEMA funding of the overall project. The Task Order is attached for review. The initial cost estimate for construction is $86,000.00.

PROJECT SPECIFIC TASK ORDER
MOSCOW ROAD SLIDE REPAIR PROJECT

WHEREAS, the Sweetwater Springs Water District (herein referred to as "Agency") entered into a Master Services Agreement on October 5, 2020 ("Public Agency Agreement") with Coastland Civil Engineering, Inc. (herein referred to as "Consultant") to provide City Engineering Services; and

WHEREAS, said Public Agency Agreement for District Engineering allows for additional project specific engineering services to be assigned by the Agency on an as-needed basis; and

WHEREAS, the Agency has determined that the Agency needs Professional Engineering Services for the Moscow Road Slider Repair Project (hereinafter referred to as "Project"); and

WHEREAS, the Agency does not have the current staff with expertise to provide these services and needs to retain a consultant with the appropriate experience for this work; and

WHEREAS, Consultant has experienced staff with the proper experience and background to carry out the duties involved for this work; and

WHEREAS, Agency wishes to retain Consultant for the performance of services associated with said Project, subject to all the terms and conditions as set for in the original Public Agency Agreement with Consultant.

THEREFORE, Agency and Consultant mutually agree to the scope of work and additional fee as follows:

Scope of Work

All work associated with the Project shall be per the scope of work attached as Exhibit "A".

Payment Terms

For Consultant Services associated with Project, Agency agrees to pay Consultant in accordance with the payment terms provided on Exhibit "B" attached hereto and incorporated herein by this reference.

Other Applicable Terms

This Project Specific Task Order is made subject to the terms of the Master Agreement, the terms of which are incorporated by reference herein.

IN WITNESS HEREOF, the parties have caused their authorized representative to execute this amendment on July 28, 2021.

SWEETWATER SPRINGS WATER DISTRICT

BY: _____
General Manager

COASTLAND CIVIL ENGINEERING, INC.

BY: Heidi E. Utterback
Heidi Utterback, Corporate Secretary

Exhibit "A"
SCOPE OF WORK

Project Understanding

The County is currently designing a slide repair project on Moscow Road at PM 10.84. Proposed improvements include a new bridge to span the slide area, replacement of a 36-inch CMP culvert, restoration of the roadway approaches and paving. It is understood that the project is being funded through FEMA disaster repair monies.

The District owns and maintains an 8-inch C900 PVC water main that runs through the project site. To facilitate construction of the new bridge the water main will need to be relocated to the new bridge. During construction a temporary water line will be required to provide continued water service to District customers.

We assume any environmental clearances and documentation will be done by the County's design engineers (ADKO) as part of the bridge design environmental efforts. Additionally, we assume the design engineers will coordinate with the County PRMD to obtain an Encroachment Permit for work within County right of way which would include the watermain relocation improvements.

All topographic survey and background mapping has been completed for the County's bridge project and will be provided to the District for use in the improvement plans for the watermain relocation. We don't anticipate any additional topographic survey will be required.

Based on our understanding of the project we propose the following scope of work.

Task 1 – Meetings & Coordination

Coastland will coordinate with the County and their design engineering consultant to coordinate our design work efforts. We will attend up to four design progress meetings with the District. We have also included efforts for coordination with the County, the design team, and FEMA. Coordination efforts is anticipated to include phone calls, video conferencing, and email correspondence.

Task 2 – Preliminary Design

We will develop preliminary design documents for the water line relocation. We will prepare preliminary plans that can be inserted into the bridge plans being prepared by ADKO.

We will provide the District with two (2) sets of full-size of the preliminary plans, estimate of probable construction costs, and specifications. We will also provide electronic files of the plans and estimate documents (PDF plans and an engineer's estimate Excel File) to both the District and ADKO.

Task 3 – Final Design

Following the review of the preliminary submittal, Coastland will prepare the final construction drawings, technical specifications and estimate. We will provide a 100% submittal to the District and County for a final review to verify comments have been addressed prior to producing the final bid documents. Upon final County and District review, we will provide stamped and signed drawings and specifications for inclusion into the bid documents for the slide repair project.

We will provide the District with two (2) sets of full-size plans, technical specifications, and an engineer's estimate of probable construction costs. We will also provide electronic files of the PS&E documents (PDF plans, technical specifications Word file and engineer's estimate Excel File) to both the District and ADKO.

Task 4 –Bid Support

During the bidding process of the County's Slide Repair project, we will answer questions relating to the watermain relocation improvements that may arise. If needed, we will assist with the preparation of one addendum as it relates to watermain related items.

OPTIONAL TASKS

The following work is not included in our proposal. However, Coastland would be pleased to provide these services if the District desires:

- Geotechnical investigations.
- Potholing of utility locations, associated survey or coordination.
- Public participation efforts.
- Meetings beyond those noted above.
- Construction Management and Inspection services

EXHIBIT "B"
PAYMENT TERMS

Based on the scope of work, the services associated with this project will be completed for a not-to-exceed amount of $17,465. This assumes that all of the work for this project will fall under the scope of work as described herein. If additional work is necessary that falls outside of this scope of work, the scope and cost will either be renegotiated, or the additional services will be provided on a time and materials basis per the current schedule of hourly rates.

DESIGN WORK ESTIMATE

Moscow Road Slide Repair	Proposal for Engineering Services	Sweetwater Springs Water District

Task Information	Project Role & Rate					
TASK	Princ. Engr	Sr. Engr.	Sr. CAD Technician	Admin	TOTAL HOURS	TOTAL FEE
	$210	$180	$150	$95		
1 Meetings & Coordination						
County Meetings (4)	4	4			8	$1,560
District Meetings (4)	4	4			8	$1,560
Coordination	2	24			26	$4,740
Subtotal					**42**	**$7,860**
2 Preliminary Design						
Improvement Plans	2	4	12	1	19	$3,035
Specifications		4		1	5	$815
Cost Estimate		2	2		4	$660
Subtotal					**28**	**$4,510**
3 Final Design						
Improvement Plans	1	2	8	1	12	$1,865
Specifications		2		1	3	$455
Cost Estimate		1	1		2	$330
Subtotal					**17**	**$2,650**
4 Bid Support						
Bid Questions	1	4			5	$930
Addenda (1)		4	4	1	9	$1,415
Subtotal					**14**	**$2,345**
Direct Costs (repro, mileage, etc.)						**$100**
Total Design Cost	14	55	27	5	101	$17,465

SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. VI**

FROM: Ed Fortner, General Manager

Meeting Date: August 5, 2021

Subject: GENERAL MANAGER'S REPORT

RECOMMENDED ACTION: Receive report from the General Manager.

FISCAL IMPACT: None

DISCUSSION:

1. **Laboratory Testing/ Regulatory Compliance:** Water quality tests confirm that all SSWD water meets all known State and Federal water quality standards.

2. **Water Production and Sales:** Water sales in June were 21,558 units (49.5 AF Guerneville cycle), and production was 63.9 AF. Compared to one year ago, sales were higher, and production was higher (51.2 AF and 79.6 AF, respectively). Figure 1 shows sales, production, and % difference for the combined systems; the water loss trend was down this month as a running twelve-month average (20.4%). Looking at the data over the last ten years, water production has dropped approximately 29%, and sales have dropped 18%, although water sales and production are up during the COVID period. The water loss percentage was around 30% and now is in the 15-20% range. Much of the production and water loss drop can be attributed to capital projects.

3. **Leaks:** In July, we had nine total leak repairs with 47 hours on them. Six leaks were in Guerneville, two were in Monte Rio, and one was in Rio Nido. All leaks were in older lines. That is more leaks and more person-hours than the prior month and less leaks and less person-hours than June one year ago (13 and 133). Figure 2 shows service and main leaks separately with a total leak line as well. For Calendar Year 2020, total leaks were 99, up from 78 in 2019. That was a drought year following a very wet year, and many of the repairs were due to ground shifting. Also, 52 leaks were on mains, and 48 were on service lines. In 2019 47 leaks were on mains, and 31 were on service lines. Leaks may go up during this second consecutive drought year. Looking at the leaks chart over the last ten

years, we have come down from around 300 leaks per year to under 100 - quite a difference and very noticeable in what the field crews are able to do - address ongoing issues with in-house projects instead of chasing leaks every day.

4. **Guerneville Rainfall:** July rainfall was .00", which is lower than the long-term average month and puts the yearly total (15.73") well below the long-term annual average. We are experiencing a second consecutive drought year in 2021. Governor Newsom declared a drought emergency for Sonoma and Mendocino Counties, and Sonoma County has issued a drought emergency also. We expect declared mandatory reductions in water use soon. I have posted an updated notice on our website.

5. **In-House Construction Projects:** There were two in-house construction projects in July. A one-inch meter upgrade was done at 17504 Neeley Rd in Guerneville, with 43 hours dedicated, and a relocated meter at 15885 Wright Drive in Guerneville, with four hours dedicated.

6. **Lower Russian River Community Advisory Group Governance Meeting:** There was a virtual meeting of the LRRCAG on July 22nd to discuss Wastewater solutions for Monte Rio and Villa Grande. The RFP is out for the Feasibility Study consultant.

7. **Personnel:** The Account Clerk I position was offered to Andrea Crites. Andrea should start August 12.

8. **Monte Rio Bridge:** I met with Johannes Hoevertsz with Sonoma County Public Works, and he assured me that their funding will not pay for the water main attachment. I also requested he search their records for any agreements or encroachment permits for our water main attachment dating back to 1934 when the existing bridge was constructed. We did discuss improving coordination and communication of County projects going forward.

9. **Flume Pilot Project:** We kicked off the Flume water leak detection device pilot program and have advertised on Next Door. I have a press release to the local papers. We also have a notice on our website and a blurb on our bills. The Sonoma West online publication had our press release included.

10. **Gantt Chart:** The Gantt Chart is updated for August 2021.

11. **Tax Lien List Approval:** We continue to take a wait-and-see position on tax liens for delinquent bills with the new executive order lifting the moratorium on customer cut-offs for delinquent payment at the end of September 2021.

12. **CDBG Funding:** I wrote a letter to Supervisor Hopkins on July 22 asking for our full funding to be approved at the July 27 BOS meeting. I did not receive a response to the

letter. At the July 27 BOS meeting, HUD did not approve the other projects, and the District was included in the annual CDC plan with $705,000 funding for the project. Public comment is open until August 5, and the plan will be submitted to HUD on August 16.

13. **Economic Impact of no Disconnects for Non-payment:** The total uncollected amount in this Guerneville billing cycle due to non-payment with the non-Disconnect Executive Order is **$3,542.24.** This amount is tracking downward. We will continue to follow this amount.

Figure 1. Water Production and Sales 12 Month Moving Averages
Sweetwater Springs Water District Since September 2008

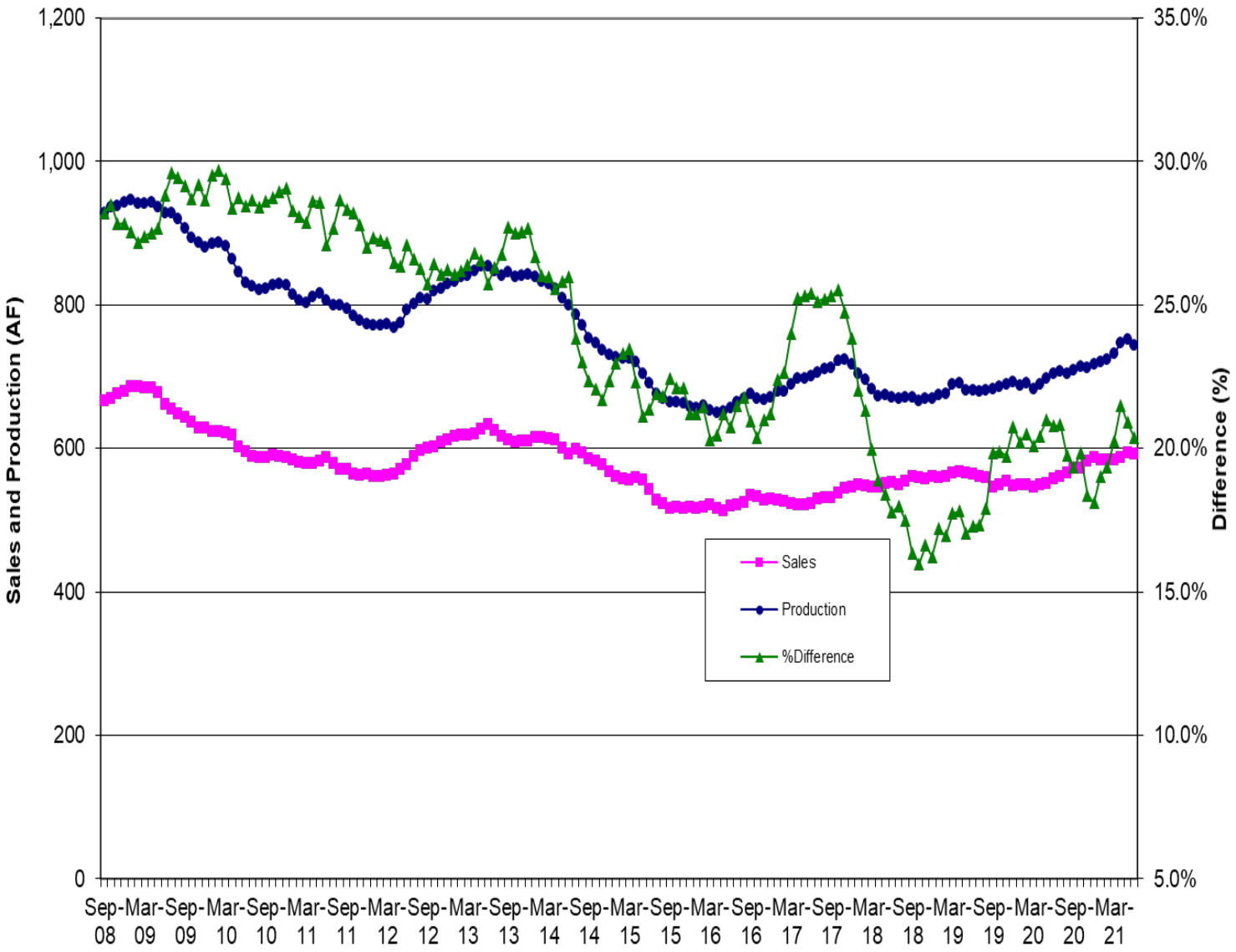


Figure 2. Sweetwater Springs Water District Main and Service Pipeline Breaks Moving Annual Average Since September 2008

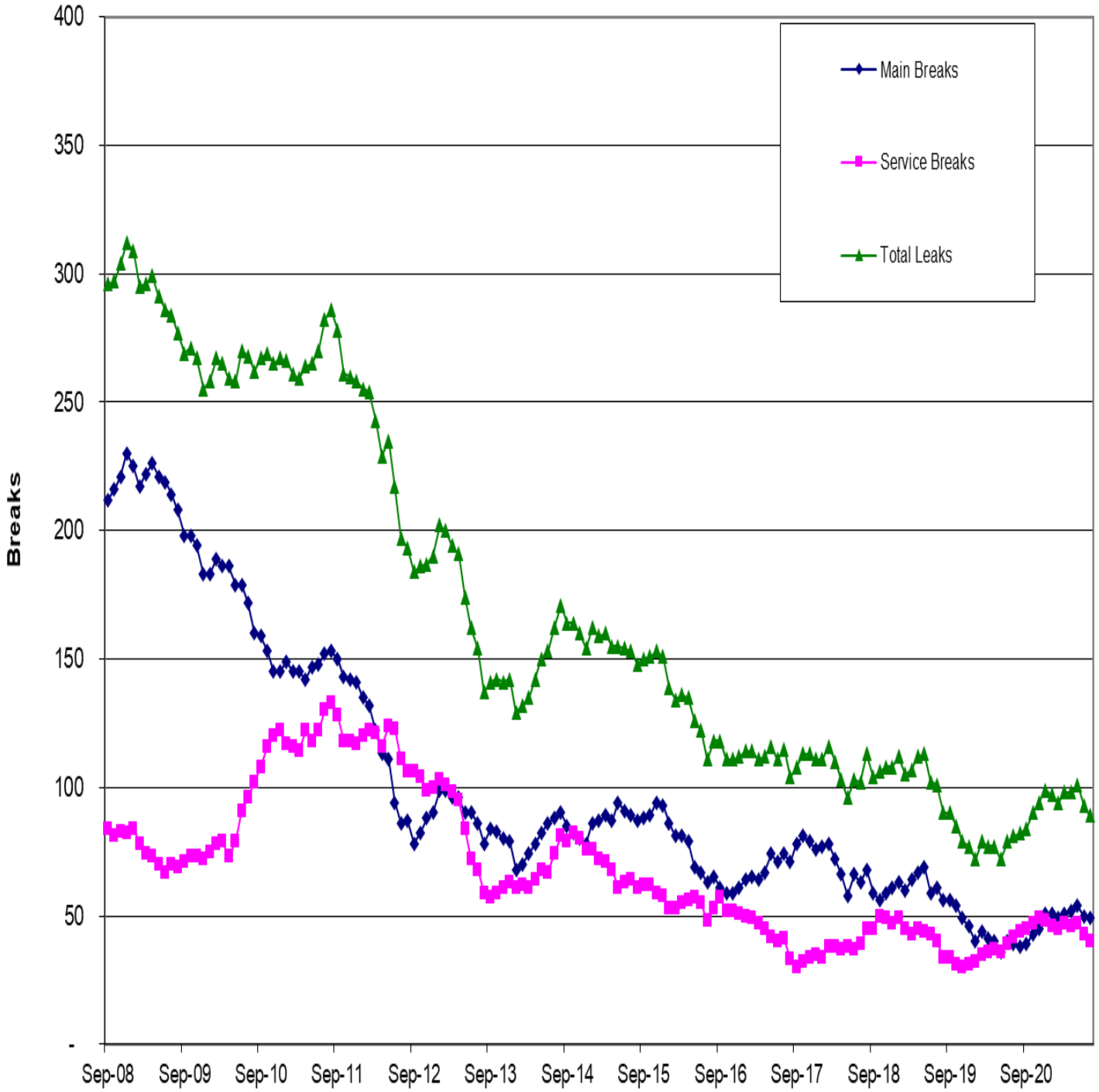
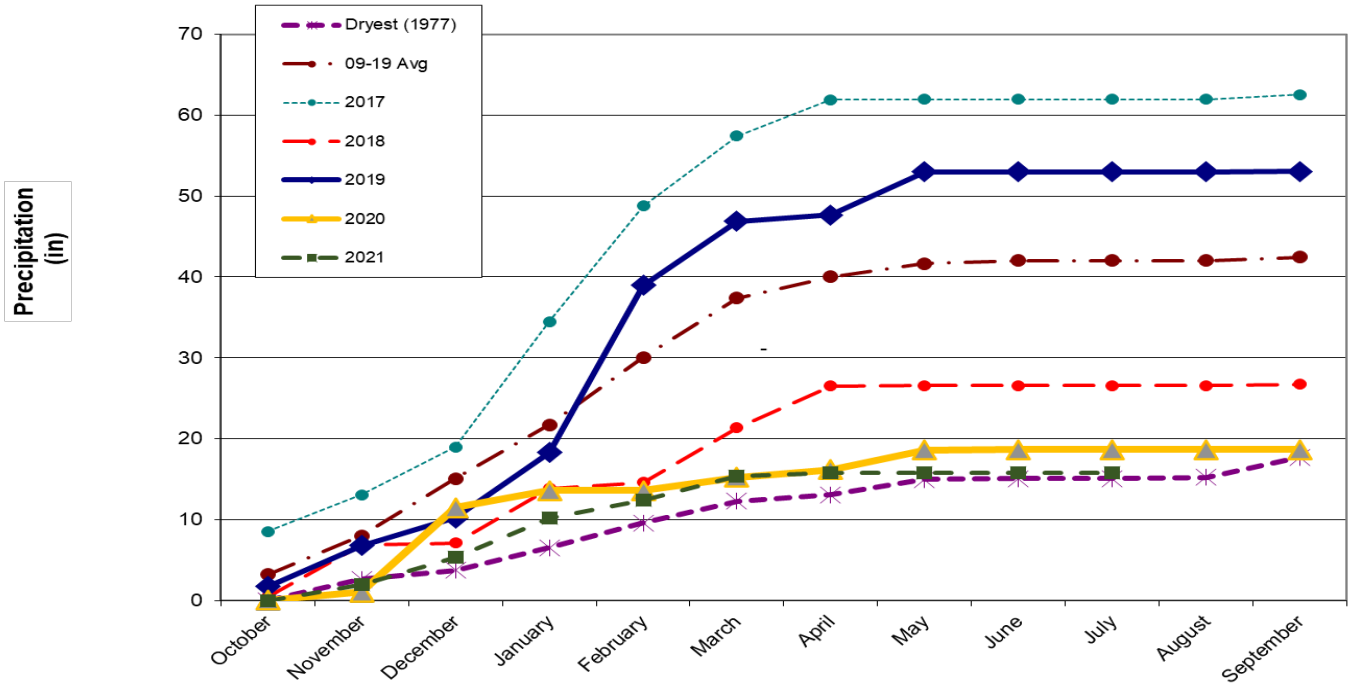
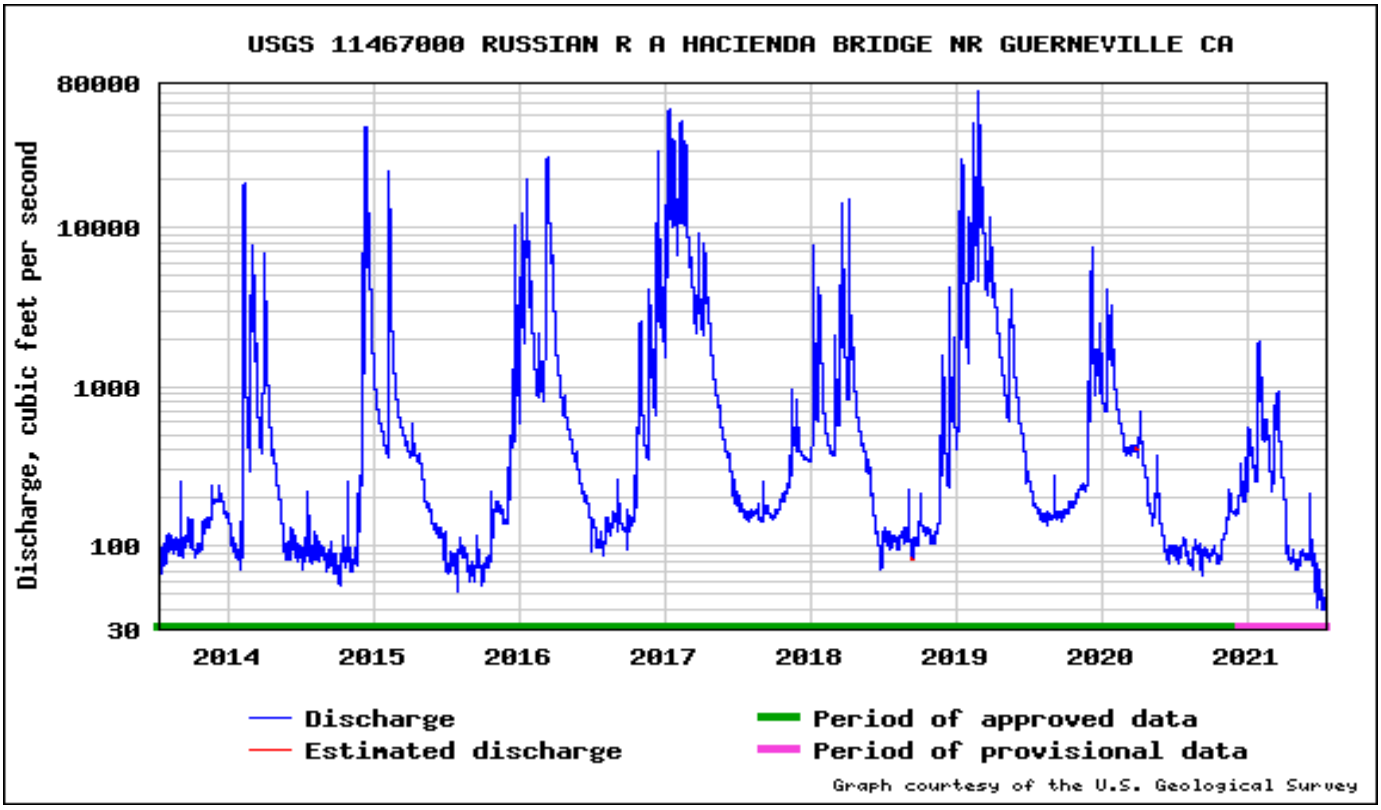


Figure 3. Guerneville Cumulative Monthly Rainfall





Tracking the Economic Impact of Suspending Water Disconnects for Non-payment					
EVEN CYCLE			**ODD CYCLE**		
Billing Date	**# of Customers whose prior bill was still unpaid when next bill mailed**	**$ Value of Past Due Amounts** (including unpaid customer deposits)**	**Billing Date**	**# of Customers whose prior bill was still unpaid when next bill mailed**	**$ Value of Past Due Amounts** (including unpaid customer deposits)**
2/15/2020 (Historical disconnect procedure)	0	$0	3/15/2020 (SB 998 extends time before disconnect)	10	$1,565
4/15/2020 (Exec. Order N-42-20: Disconnects completely suspended)	24	$4,096	5/15/2020	5	$594.02
6/15/2020	9	$2,947.56	7/15/2020	8	$1,261.02
8/15/2020	7	$2,464.32	9/15/2020 (Suspended delinquency process due to wildfire.)	57	$7,646.52
10/15/2020	16	$5,094.43	11/15/2020	18	$4,406.13
12/15/2020	23	$7,260.48	1/15/2021	20	$3,766.59
2/15/2021	35	$11,140.50* ($3,555 of this total is one customer)	3/15/2021	18	$6,203.05
4/15/2021	28	$11,762.54	5/15/2021	16	4040.58
6/15/2021	19	$8,670.96	7/15/2021	7	$3,542.24

As of 7/15/2021, 8 customers are in COVID-19 Agreements. These customers are not included in the numbers above if their COVID Agreements are in good standing.

Figure 4. Sweetwater Springs WD Calendar Gantt Chart		Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	FY23+
Ongoing Activity														
Board Action														
Other Milestone														
Current Month														
By Activity														
Action Item/Milestone	**Projected Completion/ Milestone Date**													
Budget Preparation														
· Capital Improvement Program Board Discussion														
· Staff Budget Preparation Begins														
· Ad Hoc Budget Committee Reviews Draft Budget														
· Draft Budget to Board for Discussion/Action														
· Approve Budget														
Capital Projects														
· Update/Review District CIP														
· 2021 CIP Planning														
· 2021 CIP Design														
· 2021 CIP Construction														
Water Rights	SCWA													
Emergency Response Plan Review														
Policies and Procedures														
· Other Policy														
· Overall Review														
District Annual Review														