



Application Form for 2024 Local Cooperative Solution for Overlying or Adjudicated Groundwater Rights in Scott River and Shasta River Watersheds

Please complete this form if you plan to implement a groundwater local cooperative solution (LCS) for the 2024 irrigation season under the Scott River and Shasta River watersheds [emergency regulation](#). A separate application should be submitted for each type of groundwater LCS proposal. **The form and attachments are due by April 15, 2024.**

How to Submit: To submit your application and associated required materials (see Section 2) you can:

- Use the online form
- Email: DWR-ScottShastaDrought@waterboards.ca.gov
- Mail:
 - State Water Resources Control Board
 - Division of Water Rights - Instream Flows Unit 1
 - 1001 I Street - 14th Floor
 - Sacramento, CA 95814

Section 1: Applicant Information

Name	Brian Heffernan
Name of Farm, Ranch, or Business	H&H Land and Livestock Co LLC

By typing or signing your name below and submitting this form to the State Water Resources Control Board (State Water Board) you hereby certify that the submitted information is true and correct to the best of your knowledge.

Name: *Brian Heffernan* Date: 4 / 14 / 24

Section 2: Application Checklist

Below is a list of items to include with your application form:

- Application Form (paper or email submittal accepted).
- If working with a Coordinating Entity (Section 4 of application), submit a signed Binding Agreement (paper or email submittal accepted).
- Supporting Information (electronic submittal only). Submit the applicable information based on selected groundwater LCS.
 - Best Management Practices Groundwater LCS (see Section 7 of application)
 - Description of how you will implement of all required components.
 - Map(s) with each well and field labeled.
 - Graduated Groundwater Cessation Schedule LCS (see Section 8 of application)
 - Description of how you will reduce irrigation compared to standard practices on the property (e.g., practice in a similar unregulated year).
 - Map(s) designating the area where diversions will cease by the required dates and well location(s).
 - Percent Reduction Groundwater LCS (see Section 9 of application)
 - Description of verifiable water reduction actions that will be implemented.
 - Spreadsheet with monthly pumping volumes for baseline year and current year. Use one row per irrigation method per field.
 - Map(s) with each well and field labeled.
- A description of metering (Section 6 of application) in place for groundwater well extractions and an agreement to record such extractions daily and report monthly to your Coordinating Entity and/or State Water Board.
- Groundwater Well Information (see Section 5 of application) (paper or email submittal accepted).
- List of Fields, Assessor's Parcel Numbers (APNs), and Water Rights (see Section 10 of application) (paper or email submittal).

Section 3: Requirements for All Groundwater LCS Proposals

- **Deadline:** Proposals must be submitted to the State Water Board by April 15, 2024.
- **Implementation:** Proposals must be implemented during the entirety of the irrigation season (including prior to approval), unless the applicant withdraws the application.
- **Metering:** Proposals must include a description of metering that will be used to measure groundwater well extractions and information on how extractions will be recorded daily and reported monthly to the Deputy Director or Coordinating Entity, as applicable. Please note the Coordinating Entity is required to provide this data to the State Water Board.
 - Funding for Meters: The State Water Board has funding and technical support available for some amount of metering and those interested in such assistance should promptly contact State Water Board staff using the "Contact Information" at the end of this application.
 - Time Schedule for Metering: If a meter is not currently installed and may not be installed prior to the start of the irrigation season, the applicant must provide information that substantiates the applicant's efforts and actions taken to get a meter installed, and a timeline for meter installation.
 - Waivers: Proposals may include information requesting waiver of the metering provisions in the following instances:
 - Groundwater wells that irrigate less than 30 acres. Information supporting the request to waive metering provisions must be provided, including distance of the groundwater well to surface water. The State Water Board may require other information in lieu of monitoring.
 - Metering is not feasible. Substantiation for the infeasibility of installing a meter must be provided.

Section 4: Coordinating Entity

Select only one (1) box below. Please note that a Coordinating Entity is not required. If a Coordinating Entity is not selected, parties will work directly with the State Water Board to provide metering data and ensure performance of the groundwater local cooperative solution. For more information on Coordinating Entity provisions, refer to Section 875(f)(1)(G) in the [emergency regulation](#).

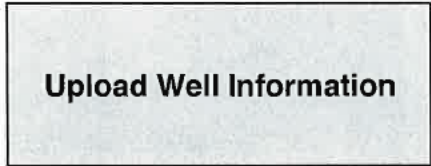
- | | |
|--|--|
| <input type="checkbox"/> California Department of Fish & Wildlife
Contact: Crystal Robinson
(530) 340-0767
crystal.robinson@wildlife.ca.gov | <input type="checkbox"/> Shasta Valley Resource Conservation District
Contact: Rod Dowse
(530) 598-1253
rdowse@svrccd.org |
| <input checked="" type="checkbox"/> Siskiyou Resource Conservation District
Contact: Evan Senf
(530) 643-1585
evan@siskiyourcd.com | <input type="checkbox"/> Scott River Water Trust
Contact: Chris Voigt
(916) 396-0131
chrisb.voigt@gmail.com |
| | <input type="checkbox"/> I select not to work with a coordinating entity. |

Section 5: Groundwater Well Information

Complete the table below or upload an attachment for groundwater wells that are part of the proposed groundwater LCS.

Well Name	Well Coordinates ¹
	Previously provided in 2022 LCS

For assistance in finding well coordinates, you can use Google Maps (www.google.com/maps).



Section 6: Metering Information

Please describe the metering for all groundwater wells covered by this groundwater LCS. Fill in the box below, upload an attachment, or email a document or spreadsheet with this information.

- a. Describe how you will record daily extractions and report monthly pumping volumes. Include a description of all water uses associated with each groundwater well that is part of this groundwater LCS.
For example, "the ranch manager will log meter readings at Well 1 and Well 2 and take a picture of the meters each week. They will note what the water is being used for - Well 1 will irrigate 50 acres of grain on fields A and B, 100 acres of pasture on fields E, G, and Z, and Well 2 will irrigate 75 acres of alfalfa on field Y. The manager will send the logs and photos to the Water Board around the first of each month."

Will be logged daily by employees and reported in accordance with the regulation

- b. For groundwater wells that are NOT currently metered, please describe the time schedule and plan to install meters and efforts to obtain a meter before the initiation of groundwater diversions covered by this groundwater LCS. If you want to file for a waiver to the metering requirement please use the box below and include information on why metering of your well(s) should be waived. Be sure to include total irrigated acres, distance of the well(s) from surface water, description of why metering is infeasible, if applicable, and any additional information that supports your waiver request.

See attached letter.

Upload Attachment

Select the type of groundwater LCS you are applying for and complete the corresponding sections of the application.

- Best Management Practices Groundwater LCS - Complete sections 7 and 10
- Graduated Groundwater Cessation Schedule LCS - Complete sections 8 and 10
- Percent Reduction Groundwater LCS - Complete sections 9 and 10

Section 7: Best Management Practices Groundwater LCS

1. Provide the total amount of all irrigated acreage (with units) covered under your proposal for a Best Management Practices Groundwater LCS:
2. Upload an attachment, write in the box, and/or email a description of the irrigation system that will be used under this proposal, specifying details of your low-energy precision application system, soil moisture sensors, and any corners that will be irrigated. (Refer to Section 875(f)(4)(D)(vii) of the [emergency regulation](#).)

see 2022 LCS

3. Provide a map(s) of each field with labels for well(s), type of best management practice, and field crop type. Upload as an attachment or email.

Upload Map(s)

4. Certify the following by initialing or checking each box:

- See ATTACHES*
- a. I certify the use of a low-energy precision application (LEPA) system on all irrigated acreage covered under this groundwater LCS.
 - b. I certify to not use end guns for irrigation for the duration of the season.
 - c. I certify to cease irrigation of corners after June 15, 2024.
 - d. I certify to use soil moisture sensors to inform irrigation timing, and maintenance of such records, which I will make available for inspection by the Coordinating Entity, if applicable, and/or the State Water Board.
 - e. I certify that I will further limit irrigation based on water year, in the event of the hydrologic condition noted in i or ii below. If this requirement is triggered, the State Water Board will inform all Best Management Practices Groundwater LCS applicants for the applicable watershed(s). Please note, a yes certification is required for a Groundwater Best Management Practices LCS to be accepted.

- i. Scott River Watershed: Snow pack of 80% or less of the Department of Water Resources California Data Exchange Center's first May snow water equivalent station average (or the average of the first April measurement if May snow pack measurements are not gathered) in Scott River watershed.
- ii. Shasta River watershed: A water year determination of dry or very dry in the Shasta River watershed, as determined under Table 2 of the March 2021 Montague Water Conservation District water operation plan.

Section 8: Graduated Groundwater Cessation Schedule LCS

A Graduated Groundwater Cessation Schedule LCS may be approved if the applicant provides evidence that irrigated acreage is reduced compared to standard practice on the property (e.g., practice in a similar unregulated year). If applicable, please take crop rotation and number of alfalfa cuttings into account. Under this groundwater LCS type, the applicant must select one of two potential irrigation schedules, listed below. See section 875(f)(4)(D)(vi) of the [emergency regulation](#).

1. Provide the total amount of irrigated acreage (with units) under your proposal for a Graduated Groundwater Cessation Schedule LCS:
2. Select the irrigation schedule you certify to implement.

Option 1: By the dates below, pumping to irrigate the following percentages of irrigated acres shall cease:

- 15% by July 15,
- 50% by August 15, and
- 90% by August 31, with a maximum of 8 inches of water to be applied to the remaining 10% of irrigated acres during the remainder of the irrigation season. This 10% can be on land previously fallowed.

Option 2: By the dates below, pumping to irrigate the following percentages of irrigated acres shall cease:

- 20% by July 20,
- 50% by August 20, and
- 95% by September 5, with a maximum of 6 inches of water to be applied to the remaining 5% of irrigated acres during the remainder of the irrigation season. This 5% can be on land previously fallowed.

4. Please upload an attachment, write in the box, or email a description that demonstrates that the proposal reduces irrigation as compared to standard practices on the property (e.g., practice in a similar unregulated year). If applicable, please take crop rotation and number of alfalfa cuttings into account.

Upload Attachment

5. Please upload or email a map(s) that identifies which well(s) and field(s) are associated with each cessation date covered by this groundwater LCS.

Upload Map(s)

Section 9: Percent Reduction Groundwater LCS

The applicable percent reduction in groundwater pumping noted below must be demonstrated for the Percent Reduction Groundwater LCS consistent with section 875(f)(4)(D)(v) of the [emergency regulation](#), and summarized below.

- **Scott River Watershed:** A net groundwater pumping reduction of 30% throughout the irrigation season (April 1 – October 31) and a monthly reduction of 30% between July 1 through October 31.
- **Shasta River Watershed:** A net groundwater pumping reduction of 15% throughout the irrigation season (March 1 – November 1) and a monthly reduction of 15% between June 1 through September 30.
- The relevant water use reduction shall be based on a comparison to a baseline irrigation season (i.e., 2020, 2021, 2022, or 2023).

o BUT, if the previous year baseline is higher than the following applied water rates:

- 33 inches per year for alfalfa,
- 14 inches per year for grain, or
- 30 inches per year for pasture

❖ Then the above values shall be used as the baseline UNLESS the applicant provides sufficient additional information supporting an alternative baseline.

- Please provide the total amount of irrigated acreage (with units) under your proposal for a Percent Reduction Groundwater LCS.

- If you are proposing a Percent Reduction Groundwater LCS, attach or email the following files to the State Water Board and your Coordinating Entity.

a. A description of practices that reduces groundwater pumping and how the State Water Board (or Coordinating Entity, if applicable) can verify those actions.

see 2022 LCS

Upload Attachment

b. A spreadsheet with monthly pumping volumes for the selected baseline year and current year. Use one row per irrigation method per field.

Upload Baseline Pumping

c. Map(s) with each field labelled.

Upload Map(s)

*2 SEPARATE
LCS's
① 65 acres of
corn
② 25 acres
w/Heu*

Section 10: List of Fields, APNs, and Water Rights

List the fields associated with this groundwater LCS application, if each property is owned or leased, and the assessor's parcel number (APN) that contains each field. If a field is on multiple parcels, provide the APN that contains the majority of the field. Alternatively, you may also electronically submit a document or spreadsheet with this information. Each field can only have **one (1)** type of groundwater LCS associated with it.

Irrigated Field Name(s) or Number(s)	Is the parcel owned or leased?	Assessor Parcel Number(s)	Water Right(s)	Groundwater LCS Type
See 2022 LCS				

Upload Attachment

Submission of Groundwater LCS Proposal to State Water Board

A groundwater LCS may require the applicant to attach or email additional information, such as descriptions, spreadsheets, maps, or other relevant information. State Water Board staff request descriptions be submitted as Microsoft Word (.docx, .doc) or Adobe PDF (.pdf) files as these file formats are easiest for staff to work with applicants to review and revise, if needed. For the same reasons, staff request that applicants submit spreadsheets as Microsoft Excel files (.xlsx, .xls).

Submitting documents in other formats, such as photographs of narratives or narratives via traditional mail may lengthen the review process. If you need assistance, please contact your Coordinating Entity (see Section 4) or State Water Board staff identified in the Contact Information section below.

To submit your application with all required materials (see Section 2), you can:

- Use the online form 
- Email DWR- ScottShastaDrought@Waterboards.ca.gov
- Mail:
State Water Resources Control Board
Division of Water Rights - Instream Flows Unit
1001 I Street - 14th Floor
Sacramento, CA 95814

Contact Information for State Water Board Staff

- Kevin DeLano
Phone: (916) 319-0631
Email: Kevin.DeLano@waterboards.ca.gov
- Shahab Araghinejad
Phone: (916) 319-0975
Email: shahab.araghinejad@waterboards.ca.gov
- Division of Water Rights – Scott-Shasta Phone Line and Email
Phone: (916) 327-3113
Email: ScottShastaDrought@waterboards.ca.gov

What's Next?

State Water Board staff will review each groundwater LCS application. If staff identify errors, a need for additional information, or changes that need to be made, they will contact the applicant. Once staff determine the application is substantially complete, it will be posted as pending on the State Water Board's [Local Cooperative website](#) for the Scott River and Shasta River watersheds emergency regulation.



April 14, 2024

Via Email

**State Water Resources Control Board
1001 I St.
Sacramento, CA 95814**

Re: 2024 Cooperative Solution - H&H Land and Livestock Company LLC

To Deputy Director:

As authorized by 23 CCR §§ 875(f)(4)(D) (the "Regulation"), the H&H Land and Livestock Company LLC ("H&H") is providing this letter to describe its proposed local cooperative solutions ("LCS") for the 2024 irrigation season for agricultural real property owned and operated by the H&H and located at 6732 Eastside Rd., Fort Jones, CA 96032 and known as APN's 24-260-110, 130, 170 and 180 (collectively, the "H&H Property").

LCS Proposal

In 2022, an LCS (the "2022 LCS") was previously submitted by H&H and approved by the State Water Resources Control Board ("SWRCB"). The fields, irrigation methods, crops and farming practices described in the 2022 LCS all remain unchanged. As described in the 2022 LCS, the H&H utilizes three general irrigation practices.

1. Center Pivots with LEPA Systems (as described and approved in the 2022 LCS). 230 Acres (the "Pivot Fields").
2. Wheelines (as described and approved in the 2022 LCS). 25 Acres (the "Wheelline Field")
3. Corners (as described and approved in the 2022 LCS). 65 acres. Irrigated with a combination of K-Line, big guns and handline (the "Corners")

The H&H proposes that the Pivot Fields be subject to a Best Management Practice (“BMP”) LCS and the Wheeline Field and the Corners be each subject to separate individual Percent Reduction LCSs (i.e. three separate LCS’s). However, in the event the Department of Water Resources (“DWR”) May snow water equivalent measurements are less than 80% and additional limits on irrigation are triggered based on said measurement, then the H&H reserves the right, at its discretion by written notice to the Coordinating Entity, to (i) convert the BMP LCS for the Pivot Fields immediately to a percent reduction LCS and (ii) merge the revised Pivot Field LCS with the Wheeline LCS and/or the Corners LCS (an “LCS Merger”).¹

In the event of an LCS Merger or in the event of termination by the H&H of any LCS, the H&H will reduce its irrigation hours and amend its irrigation schedule (a water savings strategy previously approved by SWRCB in the 2022 LCS) to achieve the required percentage reduction requirements under the Regulation, all to the reasonable satisfaction of the Coordinating Entity.

Baseline Irrigation Amounts

As the H&H and others discovered in 2022, reducing irrigation levels below certain critical levels causes permanent damage to perennial pasture crops and therefore an existential economic threat to our operations. In addition to direct pasture damage, under-irrigating pasture causes us to use significantly more herbicide to control the weeds (including noxious weeds) that overtake stressed pasture grasses, as well as use more diesel for unnecessary tilling, replanting and other operations. The proposed baseline irrigation level for pasture in the Regulation of 30 inches applied water per year is simply not tenable. It is 25% below the evapotranspiration rate (“ET”) for healthy pasture in Scott Valley and does not consider reasonable losses attributable to irrigation efficiency. The H&H proposes 46 inches for the pasture in the Pivot Fields and 49.5 inches for pasture in the Corners and Wheeline Field as described in the attached support.

Meters

The H&H has purchased flow meters and is awaiting delivery. Model numbers and specifications can be found at <https://www.technoflo.com/seametrics-ag90-irrigation-solution>. The H&H will endeavor to install all meters prior to June 1, 2024 and will report data, all in accordance with the Regulation.

Coordinating Entity

Siskiyou Resource Conservation District (binding agreement pending).

Conclusion

Please note that this proposal is offered in good faith in connection with the 2024 irrigation season only. All rights, claims and defenses with regard to the matters described herein are

¹ The LCS program was originally advertised as a program to provide more certainty to irrigators to make critical financial decisions with regard to planting, stocking and other operational matters. There is no certainty in a Regulation that requires LCS application submission on April 15 but uses later snow measurements to trigger additional later season limits on irrigation under a BMP LCS. The potential later season irrigation limits have a material impact on whether a BMP LCS is the right choice for any irrigator.

hereby expressly reserved. Moreover, and as this plan is offered voluntarily (without any current legal obligation to undertake the matters described herein), should any governmental or NGO funds later become available for any forbearance or improvement efforts to which the H&H Land and Livestock Co LLC would otherwise be entitled, nothing herein shall be construed to limit the availability of such funds to the H&H Land and Livestock Co LLC provided that we materially perform the 2024 undertakings described herein.

Please timely advise as to your decision on the acceptability of this plan in lieu of regulatory curtailment as contemplated by 23 CCR §§ 875 and thank you for your consideration in this matter.

Please feel free to contact me with any questions.

Regards,

The H&H Land and Livestock Company LLC

A handwritten signature in black ink, appearing to read 'BH', is written over a horizontal line. The signature is stylized and extends to the right of the line.

Brian Heffernan, Manager

CORNERS - K-line, big guns, handline			
Total Corners Acres	65.00		
Corners % Total Acres	20.31%		
Corners Seasonal shift from 24 hour sets to 16 hour sets - savings %	33.33%		
Corners July-October	0.00%		
Corners Total Annual (AF) April-October	268.125		
Corners Monthly Average (AF) April-October	38.30		
	Corners AF (baseline)	2024 Corners Reduction AF	Total Corners Reduction %
April	19.15	6.38	33.33%
May	28.73	9.57	33.33%
June	38.30	12.77	33.33%
July	52.67	17.55	33.33%
August	62.24	20.75	33.33%
September	47.88	15.96	33.33%
October	19.15	6.38	33.33%
	268.125	89.37	

WHEELLINE			
Total Wheelline Acres	25.00		
Wheelline % Total Acres	7.81%		
Wheelline Savings (%) (reduce daily irrigation time from 24 to 16 hrs - (i.e. 2 X 8 hour sets))	33.30%		
Wheelline Total Annual (AF) April-October	103.125		
Wheelline Monthly Average (AF) April-October	14.73		
	Wheelline AF (baseline)	2024 Wheelline AF Reduction	Wheelline % Reduction
April	7.37	2.45	33.30%
May	11.05	3.68	33.30%
June	14.73	4.91	33.30%
July	20.26	6.75	33.30%
August	23.94	7.97	33.30%
September	18.42	6.13	33.30%
October	7.37	2.45	33.30%
	103.125	34.34	

Calculating Baseline Irrigation Application Amounts for Scott Valley Irrigated Pasture

Scott Valley Agriculture Water Alliance

4/13/24

Sources:

1. California Water Exchange Center. Department of Water Resources. Monthly average precipitation at Fort Jones, CA. [Dam Profile for \(ca.gov\)](#)
2. Orloff, S. et al. UC Cooperative Extension Siskiyou County and LAWR UC Davis. [Alfalfa Water Use in the Scott Valley: Resolving the Discrepancy Between Theory and Practice.](#)
3. University of California Agriculture and Natural Resources. [Drought Tip: Field Irrigation Water Management in a Nutshell.](#) September 2019.
4. Zaccaria, Daniele, PhD. Agriculture Water Management Specialist, UC Davis. Personal communication, 4/12/24.

Overview: Approximate irrigation baselines for Scott Valley irrigated pasture can be determined based on three factors:

1. The evapotranspiration (ET) of pasture (how much water the plants use) during growing season.
2. Irrigation application efficiency rates for different irrigation systems.
3. Rainfall occurring during the growing season (and resulting infiltrated rainfall into the crop root zone).

Approximate baseline for water application can be determined by dividing crop ET by the application efficiency rate, then subtracting 75 percent of the total rain that occurred during the growing season (Zaccaria, personal communication).

Establishing Pasture evapotranspiration (ET): Pasture ET was determined in 8 fields across 4 years in the Scott and Shasta valleys by Orloff et al. (2007-2010). See Figure 1 below. Because “Reference ET” (far right column) is a determination of well-watered, unstressed, irrigated grass pasture, it can be used synonymously with “pasture ET.” The average cumulative pasture ET for Scott and Shasta was on average 40 inches for the growing season over the course of the study period. This is the amount of water the irrigated grass pasture used during the growing season under well-watered, non-stressed conditions.

Region	Site	Year	Age of Alfalfa	Seasonal ET (inches)	Reference ET (inches)
Scott Valley/Shasta Valley	EN	2007	2	39.6	44
	EN	2008	3	32.8	42.6
	EN	2009	4	33.8	40.4
	FI	2009	5	36.1	37.4
	SH	2009	4	38.8	40.4
	AP	2010	5	37.3	37.4
	FI	2010	2	34.7	37.4
	FA	2010	6	38.8	41.1
				Ave: 36.5	Ave. 40.1

Figure 1. Orloff et al recordings of Alfalfa ET and Reference grass ET (ETo) for Scott and Shasta valleys at 8 sites between 2007-2010.

Establishing application efficiency: The UC Davis Drought Tips Fact Sheet titled “Irrigation water management in a nutshell” outlines application efficiency rates for various irrigation systems. See Figure 2 below. Efficiencies range from 90 percent (LEPA pivot systems) to 45 percent (furrow irrigation). “Side-roll” refers to “wheel line” systems.

Box 1 – Application Efficiency

Some extra water must be added to the soil in addition to the amount needed to adequately replenish water used by the crop since the last irrigation or rainfall. Such extra water is required to compensate for losses from the irrigation systems that occur through deep percolation, surface runoff, evaporation, wind-drift, and nonuniform water application. Because of losses occurring during irrigation application, application efficiency is always less than 100 percent.

Application efficiency is defined as the ratio of **water beneficially used by the crop to the total water applied**, where “beneficial use” includes water used for crop evapotranspiration, frost protection, salt leaching, canopy cooling, etc. Application efficiency provides an indication of how well an irrigation system performs its objective of applying water in adequate amounts and uniformly throughout the field, and allowing it to be stored in the crop root zone to meet the crop water requirements. No irrigation system can achieve 100% application efficiency, but adequate system design, regular maintenance, and careful irrigation management can minimize water losses, thus increasing the relative portion of applied water that is beneficially used by plants. Some irrigation methods perform relatively better than others in terms of the water application rate matching the soil intake rate and for the evenness with which water is distributed throughout the field (distribution uniformity). Table 3 shows potential values of application efficiency for properly-designed and well-managed irrigation systems.

Table 3. Ranges of potential application efficiency (Eff_A) of well-designed and well-managed irrigation systems

Irrigation method/system	Potential Eff _A (%)
Sprinkler	
LEPA	80–90
linear move	75–85
center pivot	75–90
traveling gun	65–75
side-roll	65–85
hand-move	65–85
solid-set	70–85
Surface	
furrow (conventional)	45–65
furrow (surge)	55–75
furrow (with tailwater reuse)	60–80
basin	60–75
precision level basin	65–80
Microirrigation	
bubbler (low head)	80–90
microspray	85–90
micropoint source	85–90
microline source	85–90
surface drip	85–95
subsurface drip	90–95

Source: Adapted from Howell 2003.

Figure 2. Application efficiency rates as found in UC-ANR Drought Tips Fact Sheet published in 2019.

Establishing total water needs of pasture: The equation for calculating total water needs during the growing season is: pasture ET / application efficiency, minus 75 percent of total rainfall (not all rain will percolate into the soil; some will run off. This is referred to as “Effective Rainfall”) (Zaccaria, personal communication, 4/12/24).

Establishing effective rainfall for Scott Valley during growing season: According to California Data Exchange Center, average rainfall occurring during the growing season is 5.33 inches. Effective Rainfall is generally calculated as 75% of total rainfall. Thus: $5.33 \times .75 = 4$ inches.

Calculating applied water needs for pasture: ET / application efficiency rate, minus Effective Rainfall).

Scenario 1: pasture irrigated by wheel line sprinkler system.

Crop ET: 40 inches

Application efficiency rate: 75%

Total water need for growing season: 53.5 inches (40/0.75)

Effective Rainfall to subtract: 4 inches

Total irrigation water needed for growing season: $53.5 - 4 = 49.5$ inches

Scenario 2: pasture irrigated by center pivot sprinkler system.

Crop ET: 40 inches

Application efficiency rate: 80%

Total water need for growing season: 50 inches (40/0.80)

Effective Rainfall to subtract: 4 inches

Total irrigation water needed for growing season: $50 - 4 = 46$ inches

Scenario 3: pasture irrigated by flood irrigation (basin irrigation)*

Crop ET: 40 inches

Application efficiency rate: 55 %

Total water need for growing season: 73 inches (40/0.55)

Effective Rainfall to subtract: 4 inches

Total irrigation water needed for growing season: $73 - 4 = 69$ inches

*Note that flood irrigation often applies more water, but has no wind drift and can have low evaporation loss. If runoff rates are low, then a high percentage of water unused as ET will percolate back into the water table.

Scenario 4: pasture corners irrigated by K-line or traveling gun.

Crop ET: 40 inches

Application efficiency rate: 75%

Total water need for growing season: 53.5 inches (40/0.75)

Effective Rainfall to subtract: 4 inches

Total irrigation water needed for growing season: $53.5 - 4 = 49.5$ inches



Scott River Water Trust

P.O. Box 591 ~ Etna, CA 96027
530-643-2395 scottwatertrust@gmail.com

Month, Day, Year
4/15/24

APPLICATION TO SCOTT RIVER WATER TRUST AS COORDINATING ENTITY for the SCOTT VALLEY GROUNDWATER REDUCTION LOCAL COOPERATIVE SOLUTION

The following request is being submitted pursuant to Section 875.5, , subdivision (a)(1)(A)(ix) [Scott River] of the Scott-Shasta Drought Emergency Regulation of the State Water Resources Control Board (SWB). The purpose of this Local Cooperative Solution (LCS) is to document the applicant's proposed reduction in use of overlying or adjudicated groundwater use by a certain amount over the entire irrigation season.

Applicant's Name: Brian Heffernan

Owner of property (if different): H&H Land and Livestock CO LLC
Leaseholder of property (if different): NA
Other Contact Info:

Total irrigated acres to be included in this agreement: 320

► Attach curtailment plan and map of properties to be included in plan

I agree to pay SRWT for its time to help prepare my water reduction plan at the rate of \$75/hr. When your LCS plan is complete, a Binding Agreement will need to be signed with the SRWT as your designated Coordinating Entity. SRWT will need to verify that the plan's actions are being met.

Brian Heffernan

Brian Heffernan (Apr 16, 2024 10:23 PDT)

► Applicant signature

4/15/24

Date:

Christopher Voigt

Date: 4/16/2024

Scott River Water Trust signature