

French Creek Ranch Request for an Individual Cooperative Solution

March 21, 2022

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Introduction:

This is a request for an Individual Cooperative Solution (ICS) for the French Creek Ranch (Michael and Betsy Stapleton) as allowed under provision CCR 875(f)(4)(C) of the Scott-Shasta Drought Emergency Regulation. The regulation states that the provision may be approved in the absence of an approved tributary-wide or watershed-wide Local Cooperative Solution (LCS). We are requesting an individual cooperative solution that takes the form of a binding agreement between an individual diverter (Stapleton) and CDFW to perform actions for the benefit of anadromous salmonids, and CDFW makes a recommendation for exemption from curtailment based on an assessment that the benefits of these actions in a specific time period are equal to or greater than the protections provided by their contribution to flow over the same specified time period.

The specific actions undertaken by the French Creek Ranch for the benefit of salmonids starting in 2020 include:

Irrigation Improvements, water management, and soil moisture management since 2020:

We started our water conservation efforts in 2020 by the installation of a center pivot to replace a very inefficient traveler big gun system. Therefore, we are utilizing 2019 as a baseline for our water use. On-going investments in irrigation water efficiency and reduction in water use culminated with the installation of a second pivot occurred in April 2022. The sum of our long-term investment in irrigation efficiency shows a substantive reduction of approximately 40% in water use. Our water use reduction started in 2020, offering benefit in that drought year and prior to any regulatory pressure to do so. We used the following methodology to evaluate our total water use reduction over baseline.

- a. Prior to 2020 we utilized our adjudicated water right of 0.32 CFS¹ until first priority status was reached, and then 0.11 CFS for the rest of the season². We estimate that 1st priority status was reached at 9/1. Therefore total use over the season was 103 acre feet³. See 2019 Bascase in Attachment 1 for calculations.

¹ Please note that all flow rates are averaged over 24 hrs and may have variations as the pump ramps up and or slows down, or electric demand on the grid changes which can result in slight variations in pump pressure with resulting flow variations.

² If the actual date of first priority was reached later, total use would be slightly higher and if reached earlier, total use would be slightly lower.

³ Total acre feet is a weighted average representing use over the entire season.

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- b. In 2022, our new equipment will use 0.2 CFS⁴ (weighted average). We guess that 1st priority status will be reached 7/1 due to the drought conditions. Once first priority is reached, or curtailment is imposed, we will cease surface diversion and utilize our groundwater well (see discussion in section 7 below) with a flow rate of 0.14, resulting in a total season use of 61⁵ acre feet. See 2022 calculations in Attachment 1. Details of the 2022 irrigation schedule with equipment, days, and flow rates for both surface use and groundwater use are shown in the 2022 Detail Schedule.

Additional Detail on Irrigation Water Efficiency Actions:

1. The 2020 installation of a center pivot irrigation system that reduced water usage by 22.44% over 8 acres, of our total 13 irrigated acres, per the water savings tool calculator (Attachment 2: French Creek Ranch water savings calculator). The actual reduction was greater as the reduction calculated in this tool was based on a comparison to a wheel line (which we were not using, but the calculator tool did not have as an option the traveler and a wheel line was the closest approximation), whereas we were actually using the traveler big gun, which used considerably more water than a wheel line. The reductions calculated above in the first section of this document are actual, but the water savings tool calculator is shown as an item of interest. The pivot is a new and improved “wobbler” irrigation sprinkler head technology that provides more uniform water distribution, delivered under lower pressure and utilizing larger, but fewer water droplets that are less prone to evaporation and wind drift, thereby reducing total usage over previous irrigation head designs of older pivots used by many in the valley. The “end gun” is a low pressure device which has less water evaporation and wind drift compared to conventional high pressure end guns. Not completely pertinent to water conservation, but perhaps of interest, the pivot installation was associated with the installation of a solar power system which has made our irrigation system carbon neutral.
2. Associated with the installation of the above center pivot, soil moisture meters were installed to guide water application for the highest efficiency.

⁴ Please note again, that these flow rates are averaged and instantaneous rates may vary and be higher or lower depending on the equipment being used during our irrigation schedule and the factors mentioned before. They are not a “not to exceed” number and do not represent a commitment to operate at that rate.

⁵ Acre feet represent a weighted average total for the entire season. See 2022 detail schedule for details of the calculations.

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Also installed was an in-line flow meter in order to accurately measure to 1/100 of a CFS our actual water usage.

3. A second center pivot was installed on 4/20/22 to cover an additional 3 acres with a similar reduction of water use. Associated with the pivot is a fully automated cloud connected weather station with additional soil moisture sensors to refine and guide water application. We funded ~70% the cost of this total project, with emergency drought funding from the National Resource Conservation Service (NRCS) covering ~30% of the cost. As part of the NRCS practice, we will be generating and submitting irrigation management reports to NRCS for the next 5 years.
4. Flow rate reduction from surface diversion rate to groundwater rate will be accomplished by a change in irrigation nozzles on k-line pods, pivots, and irrigation guns that physically restrict the flow rates.
5. We will cease irrigation on 9/15/2022.
6. In spring of 2022, compost, compost and biochar, and biochar alone were applied to a portion of the pasture to improve soil moisture retention, thereby further reducing water demand. The application was undertaken as part of an NRCS Conservation Innovation Grant (CIG) project to investigate the applicability and extent of benefits of the compost/biochar conservation practice. If the practice is determined to be cost-efficiently beneficial it will be incorporated into a statewide NRCS practice and have large-scale impacts.
7. We keep a ~4" residual height on our post grazing/haying grass height in order to improve soil organic mass with associated water retention capability.
8. We have negotiated the terms of the renewal of our Lake and Streambed Alteration Agreement (LSAA) agreement for a diversion that requires a minimum 90% bypass flow at all times and includes resource protection measures that ensure that our management of the instream diversion infrastructure minimizes any risk to salmonids.
9. We will forgo surface water use when the drought emergency regulation is in effect and/or when French Creek is in first priority status (assuming written notification of such by the Scott Shasta Watermaster District-SSWD) as a drought mitigation measure. This is the known "conjunctive use" strategy for preservation of surface flow in late season.
10. We maintain compliance with our Regional Water Board TMDL compliance waiver document.
11. While installed prior to 2020, we have two solar stock water systems that do not require winter/spring/fall surface water diversion and are highly efficient.

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12. We have a total of 7 different locations in the fields with soil moisture meters to maximize location specific water application.

Ecological restoration actions undertaken for the benefit of salmonids.

We have been highly active restoration partners both on French Creek Ranch and across the watershed. The benefits of our actions have more than offset the impact of our minimal water use. The positive impacts of our actions are of particular importance due to the location of French Creek Ranch on mid-French Creek, which, as is widely known, is a critically important reach of a key Coho spawning and rearing tributary of the Scott River. Many of our restoration actions enumerated below were initiated prior to 2020, however the benefits extend, and possibly compound, into the period under discussion.

1. The 2017 installation of BDAs in a naturally occurring side-channel that has supported the over-winter utilization by juvenile Coho Salmon with superior growth as compared to unrestored habitats (Attachment 4: French Creek Side Channel BDA Ponds – Catch Summary – April 26 and May 4, 2021).
2. The 2018 Installation of “French Creek Instream and Off Channel Enhancement Project”. This project consisted of the installation of a side-channel habitat, the installation of three engineered log-jams in the main French Creek channel and the introduction of spawning gravel. The sum total impact of these actions has benefited all life stages of Coho as documented in the project [Report](#). Improvement of conditions for Coho from this project extends into the present and into the foreseeable future.
3. The 2019 installation of large wood and gravel into the lower extent of the “BDA side channel”, resulting in extensive use by spawning adult Coho and both over-wintering and over-summering juvenile Coho (Attachment 5: MidFrenchCreek_LowerMinersCreek spawning map). This map shows year over year increases in Coho Redds in the side channel and generally across mid-French Creek, indicating the compounding beneficial impact of restoration undertaken in Mid French Creek as a result of our efforts.
4. Design of an additional restoration project for Mid-French Creek, lying solely on French Creek Ranch, which will consist of the construction of Engineered Log Jams, introduction of more spawning gravel, the activation of a latent high flow channel, the removal of invasive riparian vegetation and the planting of native species. The project has proceeded to the 100% design stage. A funding proposal was prepared and submitted to the Bureau of Reclamation’s Klamath Restoration Fund solicitation.

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5. On-going restoration physical and biological monitoring performed by the Scott River Watershed Council under the direction of Principal Investigator Michael Pollock, PhD, NOAA Northwest Science Center. Biological monitoring has included spawning ground surveys, juvenile snorkel surveys, mark and recapture surveys, and passive array PIT Tag monitoring with associated biometric data. A summary report is currently in prep with anticipated release in early 2023. Physical monitoring consists of extensive ground and surface water elevation monitoring, water quality monitoring (temperature) and stream flow monitoring.
6. Support for beaver populations on the property with riparian planting, caging of high value large stream-shading cottonwood trees to mitigate their negative impacts. The important beneficial impact of the beaver dams for stream conditions and Coho on French Creek Ranch has been documented (Attachment 6: Beaver Dam Effects on Water Surface Elevation).
7. Riparian planting has resulted in increased streamside trees and shade, and a Scott River TMDL waiver criteria. The last round of planting, consisting of 57 cottonwood poles and 57 willow bundles was undertaken in the spring of 2021. In addition to riparian shade (and habitat for birds and other terrestrial species), the vegetation will reduce erosion and sediment delivery to French Creek during high flows and flood events.
8. Our upland management practices have potential indirect positive effects on instream conditions. We have performed thinning on our upland 20 acres to reduce stem counts and favor larger diameter trees, thereby reducing tree soil moisture demand, improving run off and reaching optimum canopy cover for snow to reach the ground (avoiding sublimation off of the tree tops), but sufficient shade to reduce melting. We have performed a prescribed burn on ~7 acres, with an additional ~5 acres prepared for burning when it comes into a burn prescription this year, with additional acreage in future years. The combination of thinning and prescribed burning reduces the risk of catastrophic wildfire reaching French Creek and harming the vitally important Coho habitat it supports. This has been a personal project.
9. Less tangible, and without quantifiable results, is the impact of our participation in restoration in French Creek and across the region. While perhaps not eligible to be formally included in the calculation of the offset of water use impacts, it should, in our estimation, be considered. A brief description of these actions includes:
 - a. Our continued commitment to, and participation in, active physical restoration in French Creek, Michael's service, past (over 10 years) and on-going, on the Scott Groundwater Advisory Committee.

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- b. Michael's 8 years of service on the Scott Shasta Watermaster Service.
- c. Betsy's 10 years of service on the Scott River Watershed Council Board of Directors as Board Chair
- d. Betsy's continuing approximately 40 hr/week unpaid service to SRWC in multiple capacities including project development, grant writing and monitoring. Betsy's impact has extended beyond French Creek Ranch, beyond French Creek, and even beyond the Scott River as evidenced by her being the primary driving force behind the revitalization of the Klamath Basin PIT Tag Database. The database will allow for the whole basin monitoring and management of Coho Salmon, with the intended eventual inclusion of other fish species.

Our specific request is that we be allowed to continue to irrigate even when the Scott Curtailment is in effect under the following terms:

1. Prior to French Creek reaching first priority status, we use surface water in our highly efficient pivot systems on 85% of our irrigated acres and existing other sprinkler systems on the residual acreage.
2. When we are notified in writing by the SSWD that French Creek stream flow for all users has reached first priority status, and/or the State Water Board removes the suspension of the Scott Curtailment, we will cease surface diversion and utilize groundwater at a rate not to exceed an averaged 100 gallons per minute, as measured and documented by our taking weekly pictures of the installed in-line flow gauge.
3. The sum total of these actions will result in a water savings of approximately 40% over baseline.
4. We will take photos at every irrigation set change with flow rate and cumulative acre feet of water documented. Photos available upon request by CDFW.

The sum total of the benefit of our highly efficient agricultural water management, ecological restoration, and community volunteer restoration commitment has resulted in improvement to Coho habitat and populations that far outweighs that impact of our small agricultural water use. We have undertaken these actions because of our principles, not because of regulatory pressure. We request that the value of these actions should be acknowledged by CDFW, State Waterboard and NOAA with the issuance of an ICS.

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Michael and Betsy Stapleton

Attachments;

1. Stapleton Water Savings Calculation spreadsheet
2. French Creek Ranch Irrigation Efficiency Calculator Tool
3. French Creek Side Channel BDA Ponds – Catch Summary – April 26 and May 4, 2021
4. MidFrenchCreek_LowerMinersCreek spawning map
5. Beaver Dams Water Surface Elevation.

