

**KERN RIVER BOATERS
KERN RIVER FLY FISHERS' COUNCIL
KR3 MIF PROPOSAL
SPRING 2024**

*The Current Kern River No. 3 Hydroproject Minimum
Flow Regime Degrades the Health of the 16-Mile
Reach of the North Fork Kern Below Fairview Dam;
Here's What Contemporary Environmental Science
Says is Needed to Improve Our River and Ensure Its
Health for the Next 40 Years*

INTRODUCTION

The Kern River No. 3 run-of-river hydroproject (KR3) diverts 605 cfs out of the North Fork Kern River (NFKR) at Fairview Dam into an artificial conveyance and does not return that water to the river until it reaches the KR3 Powerhouse just north of Kernville. The result is that 16 miles of river are dewatered – 15 miles of which have been federally designated as Wild & Scenic due to their outstandingly remarkable values in aesthetics, recreation, and wildlife.¹

Since KR3 lacks any water storage, it contributes nothing to our society's needs for flood control, agriculture, recreation, or the environment, and it cannot target its generation for peak demand. Rather, it just constantly takes water out of the river – whether we need the small amount of energy it produces or not.

The current Federal Energy Regulatory Commission (FERC) license that authorizes KR3's to take water out of the North Fork Kern dewateres the river below Fairview Dam to an extent that is unrecognizable in comparison with natural inflows, severely degrading the health of the river's ecology – impairing the habitat of all fish, reptiles, birds, insects, mammals, plants, trees, and every other living thing that depends on this river's water to live and thrive.

Investor-owned utility Southern California Edison (SCE) is presently seeking a new license from FERC to encumber the North Fork Kern with KR3's diversion at Fairview Dam for the next 40 years. In response, Kern River Boaters², in association with the Kern River Fly Fishers' Council³, look at the current minimum instream flow (MIF) regime in the KR3 license, evaluate that regime's effects on the river, and propose a more effective regime based on the best contemporary science available. We urge the public, the managing agencies, and SCE itself to support the implementation of this proposal to protect and enhance the health of our river and the life it supports over the next 40 years.

THE CALIFORNIA ENVIRONMENTAL FLOWS FRAMEWORK

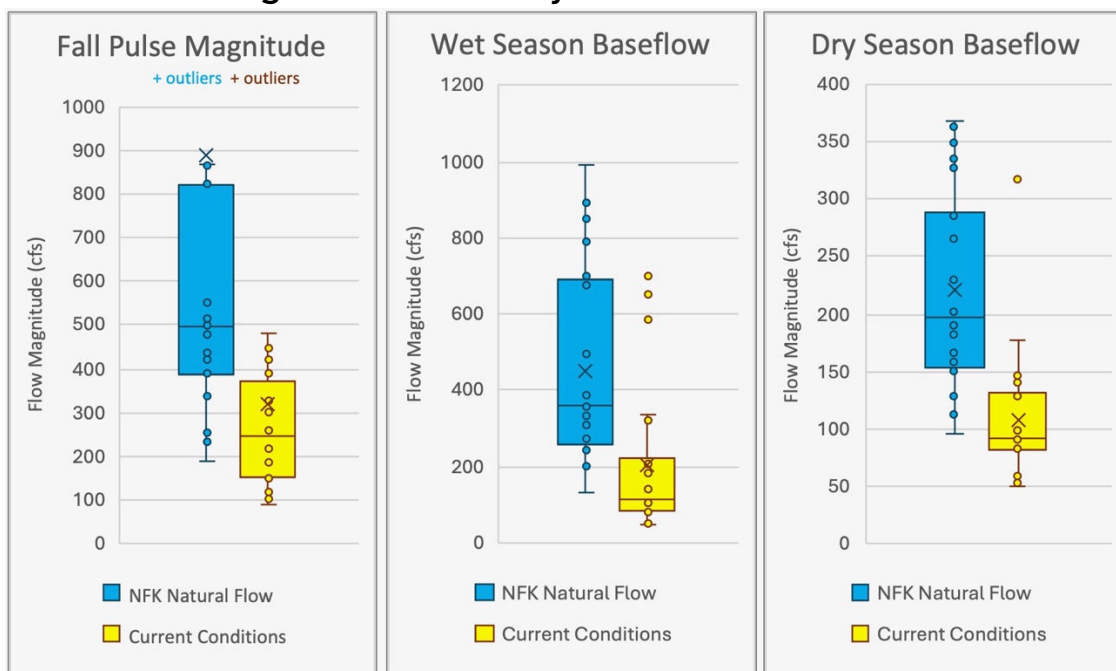
The California Environmental Flows Framework (CEFF) is a collaborative effort by environmental scientists at California Department of Fish and Wildlife (CDFW), the State Water Resources Control Board, and other academic and advocacy groups, hosted out of the University of California at Davis, to better proscribe environmental flow regimes.⁴ The CEFF offers a consistent statewide approach to minimum instream flow analysis based on the best available science to "improve the scale and pacing at which environmental flow protections can be extended to rivers and streams across the state."⁵ The CEFF has been used by CDFW to issue flow recommendation in previous FERC and other proceedings.⁶

The CEFF uses readily available data to the characterize natural instream flows of a watershed based upon five functional flow components: fall pulse flow, wet-season base flow, wet-season peak flows, spring recession flow, dry-season base flow. Ecological flow criteria are developed that correspond to these components, and minimum flow recommendations adhering to the proscribed functional metrics are environmentally sound.

Instream flow data above and below the KR3 diversion point at Fairview Dam is readily available from SCE and USGS; flows above the dam are natural, flows below are impaired by the diversion.⁷ Applying that data to the CEFF

framework reveals that the diversion “likely alters” the fall pulse and wet- and dry-season baseflow metrics⁸:

Figure 1: KR3 "Likely Alters" CEFF Metrics



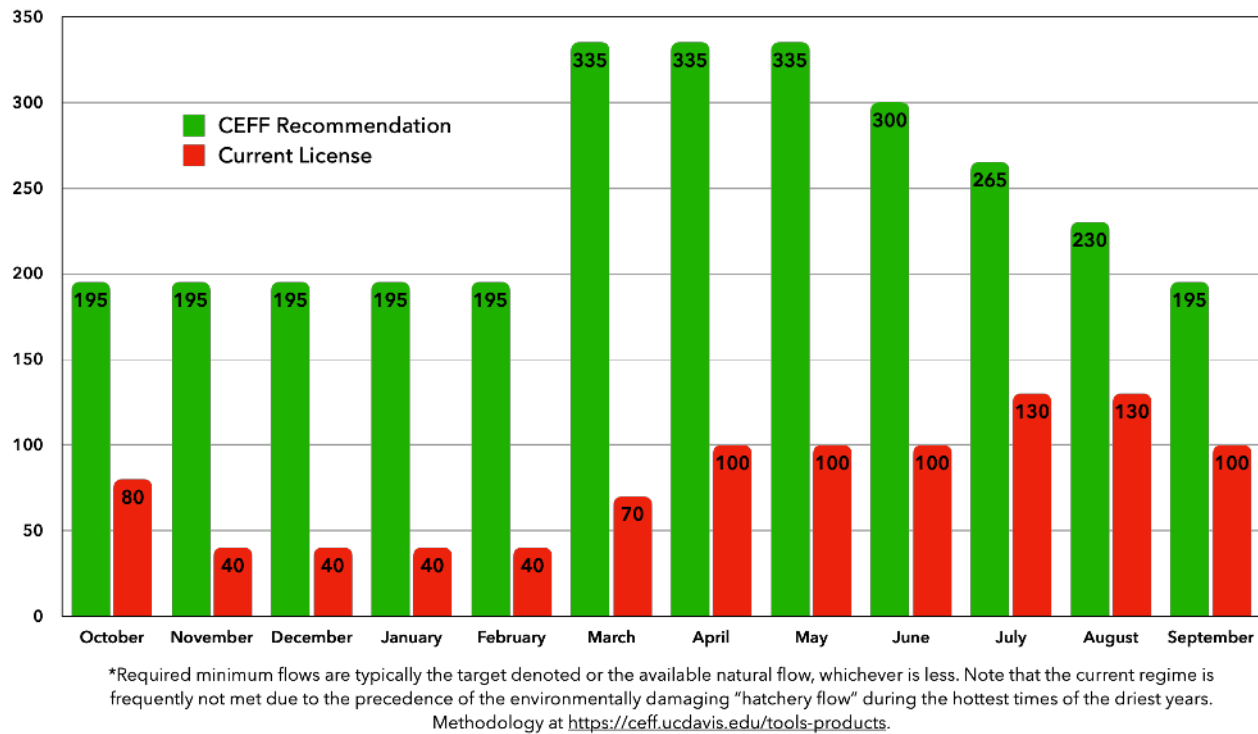
CEFF baseflows are the flows at which key ecosystem functions are maintained – such as sediment movement, water quality maintenance, and environmental cues for species migration and reproduction. Those functions are necessary to maintain ecosystem health and are broadly supportive of native freshwater plants and animals.⁹ Baseflow metrics “are used as the starting point for defining ecological flow criteria.”¹⁰

The CEFF baseflows for the NF Kern at Fairview Dam, including the fall recession flow, are as follows:

Month	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Flow (cfs)	195	195	195	195	195	335	335	335	300	265	230	195

The following chart compares the current KR3 MIF regime with the baseflows identified by the CEFF:

Figure 2: Current KR3 Current MIF v. CEFF Recommendation (cfs)



Environmental prescriptions from contemporary river science in Europe and Canada for the North Fork Kern below Fairview Dam are broadly supportive of the recommendations from the CEFF.¹¹

The CEFF allows for the modification of baseflows on ecological grounds when non-flow impairments such as altered physical habitat, poor water quality, or invasive species require further consideration. None of those special cases appear to exist in the North Fork Kern below Fairview Dam. As such, the ecological management goals of each relevant agency – USFS, CDFW, USFWS & SWRCB – should start and end with the baseflow prescriptions from the CEFF, and those baseflows should form the basis of their minimum instream flow recommendations.¹² Again, when CEFF refers to "baseflows," it is with the understanding that those flows are critical to maintaining the minimum ecological function of the river, and should accordingly be adhered to except under exceptional circumstances not present in this river. Although the CEFF baseflows framework focuses on ecologically viable flow levels, it is not

equivalent to natural flows – far from it – and thus the framework permits robust hydropower generation while at the same time sustaining scientific and ecologically sound minimum flow prescriptions.

CDFW PRESUMPTIVE STANDARD APPROACH

The CEFF’s baseflow prescriptions for the North Fork Kern below Fairview Dam are in alignment with those of the California Department of Fish and Wildlife’s (CDFW) Presumptive Standard Approach (PSA)¹³ to framing minimum instream flow issues.

The PSA uses a percentage of a watershed’s mean annual discharge to evaluate the adequacy of instream flows on a seasonal level¹⁴:

Figure 3: CDFW PSA Metric

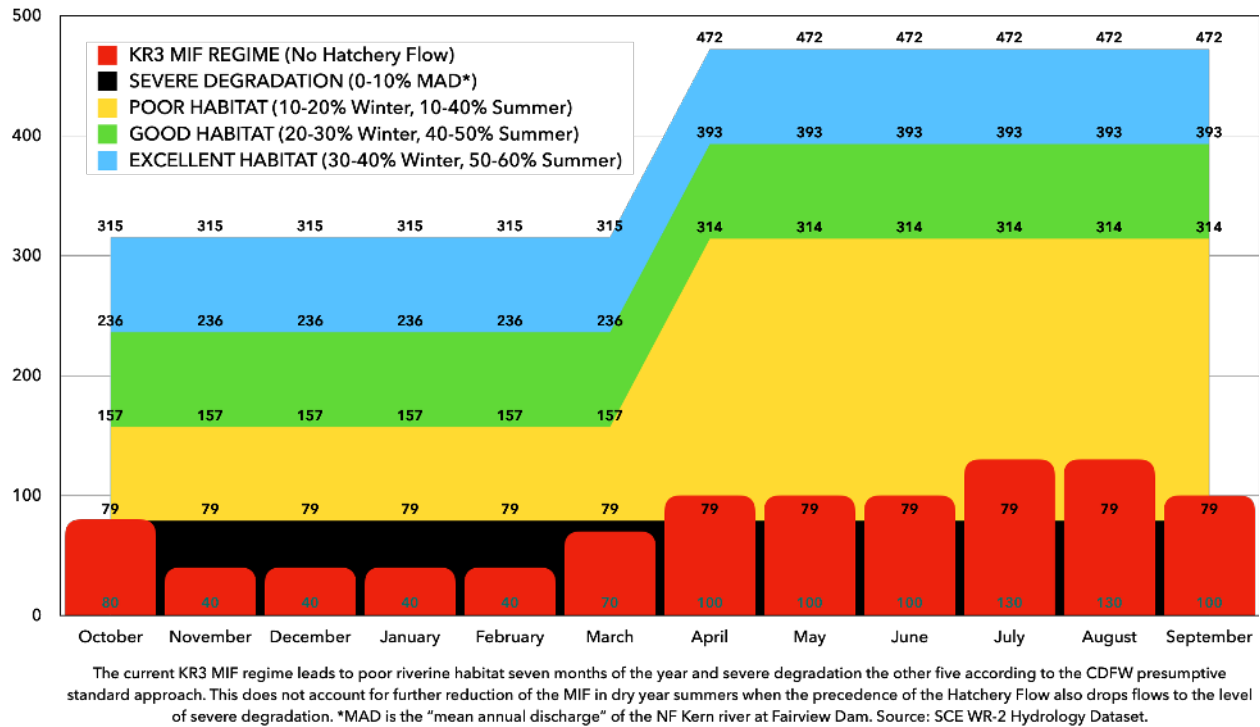
Department of Fish and Wildlife Water Branch Instream Flow Program

Tennant Method

Narrative Description of Flow	April to September	October to March
Flushing or maximum flow	200% from 48 to 72 hours	
Optimum range of flow	60-100%	60-100%
Outstanding habitat	60%	40%
Excellent habitat	50%	30%
Good habitat	40%	20%
Fair or degrading habitat	30%	10%
Poor or minimum habitat	10%	10%
Severe degradation	<10%	<10%

The Mean Annual Discharge above Fairview Dam is 787 cfs for the current license term (WY 1997-2023). Applying the PSA methodology to this figure, the current minimum instream flow regime below Fairview Dam is characterized by “Poor Habitat” (Red) from April to October and “Severe Degradation” (Black) of habitat from November to March:

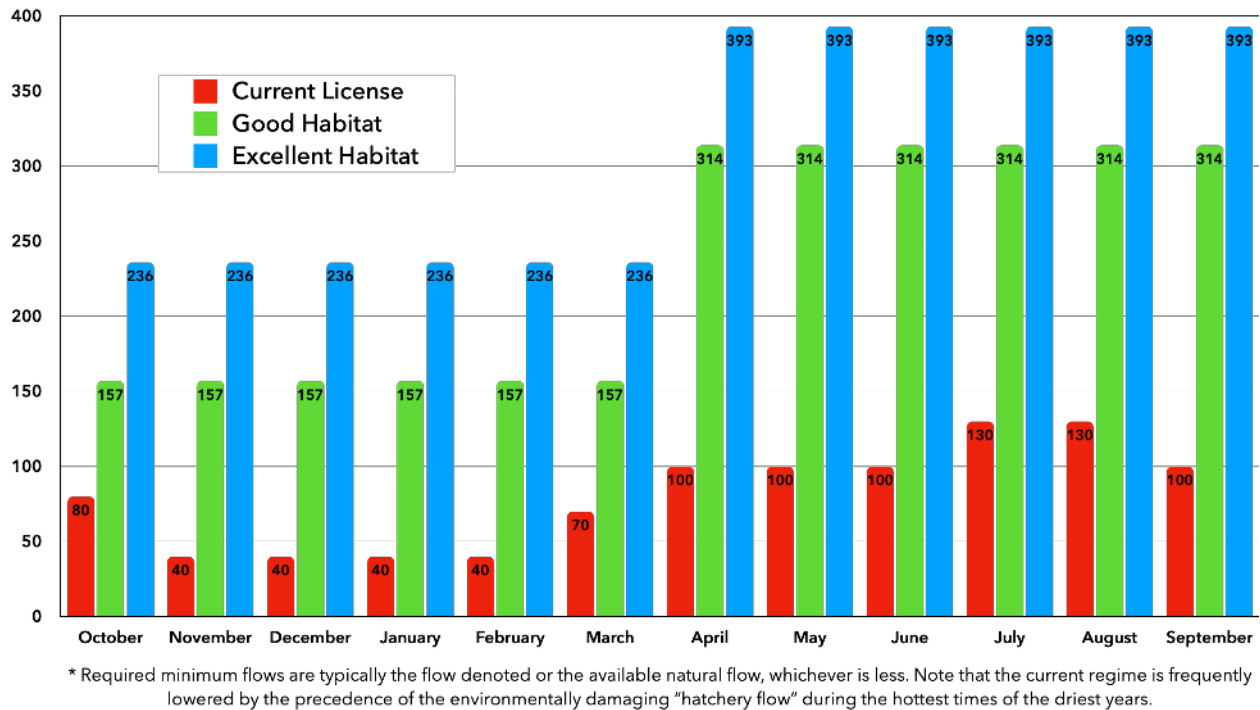
Figure 4: Current KR3 MIF as Characterized by CDFW PSA (cfs)



To provide "Excellent Habitat" over the course of a water year, the PSA calls for a minimum flow regime of at least 236 cfs starting in October rising to 393 cfs in April. Aiming for excellent habitat is consistent with the federal Wild and Scenic River status afforded our river. But as seen in the above chart, the present regime fails to come close to providing "good" habitat let alone excellent.

The following chart compares the CDFW framework for excellent and good habitat recommendations with the current regime:

Figure 5: Current KR3 MIF v. CDFW PSA Recommendations



As demonstrated by the methodologies of both the CEFF and CDFW, the current minimum instream flow regime for the KR3 diversion at Fairview Dam falls woefully short of satisfying the most basic requirements of contemporary environmental science. The results of that failure on the 16 miles of the North Fork Kern below the diversion point are well known to managing agencies and recreationists: regular water quality violations, an unhealthy fishery, poor fishing conditions, unsafe bacteria concentrations, and poor aesthetics. All of these issues can be greatly improved for the next 40 years by implementing a modern MIF based on contemporary environmental science – namely, the CEFF recommendations.

BENEFITS OF OUR PROPOSAL OVER THE CURRENT MIF REGIME

1. Fewer, and Less Severe, Water Quality Violations. As a result of the diversion of water out of the North Fork Kern at Fairview Dam, the waters below routinely violate state water quality standards. Diverting water out of a river reduces the amount of thermal mass available to resist high

environmental temperatures, and thus the water that remains increases in temperature above its unimpaired state. Increased water temperatures entail a second negative environmental effect: higher water temperatures tend to lower concentrations of dissolved oxygen (DO). SCE has conceded that its diversion increases water temperatures and lowers DO concentrations below Fairview Dam.¹⁵

Waters that routinely violate these water quality standards stress fish and contribute to mortality. When tested, the waters below Fairview Dam have been routinely found to violate both temperature and DO standards. Further, although there are times when the incoming water at Fairview Dam is already in violation of these standards, usually during the warmest parts of the year, the diversion exacerbates the violation, adding fuel to the fire, so to speak, by further increasing temperatures and lowering concentrations of DO. Substantially higher minimum instream flows over the next KR3 license term would go a long way towards eliminating the water quality violations caused by the diversion and tempering the diversion's exacerbation of the violations that naturally occur.

2. A Healthier Fishery in Low and Moderate Water Years. According to the United States Forest Service, the National Parks Service, and CDFW, the North Fork Kern below Fairview Dam "is capable of producing a self-sustaining wild trout fishery," but does not do so because of the low flows and high temperatures caused by the KR3 diversion.¹⁶ Those agencies explained:

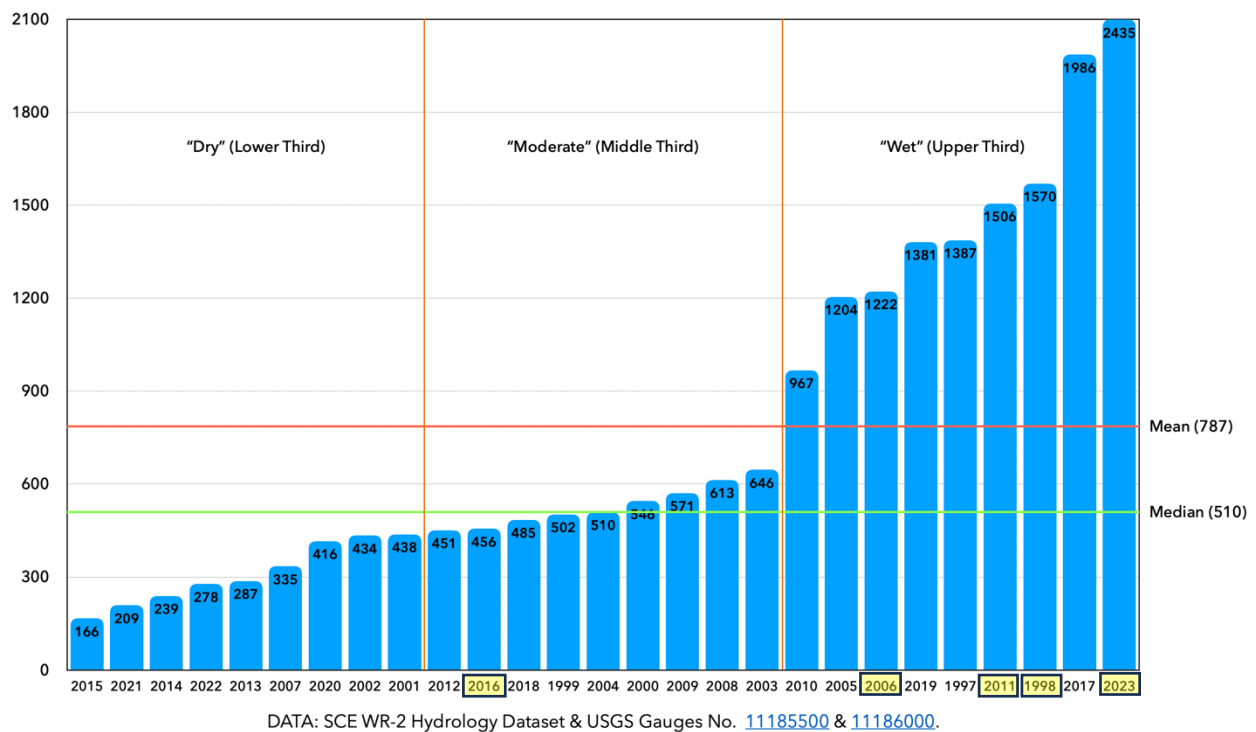
The water diversion that has the greatest impact on the trout fishery occurs in [the project's dewatered reach]. Water is diverted by Southern California Edison Company at Fairview Dam for hydroelectric power generation at Kern River Number 3 Powerhouse. There is potential for improving habitat for trout during low flow periods by reducing water temperatures by increasing flow releases from Fairview Dam. The various agencies and the public should work through the relicensing

process, or other methods if practical, to obtain these water allocations during this critical low flow period.¹⁷

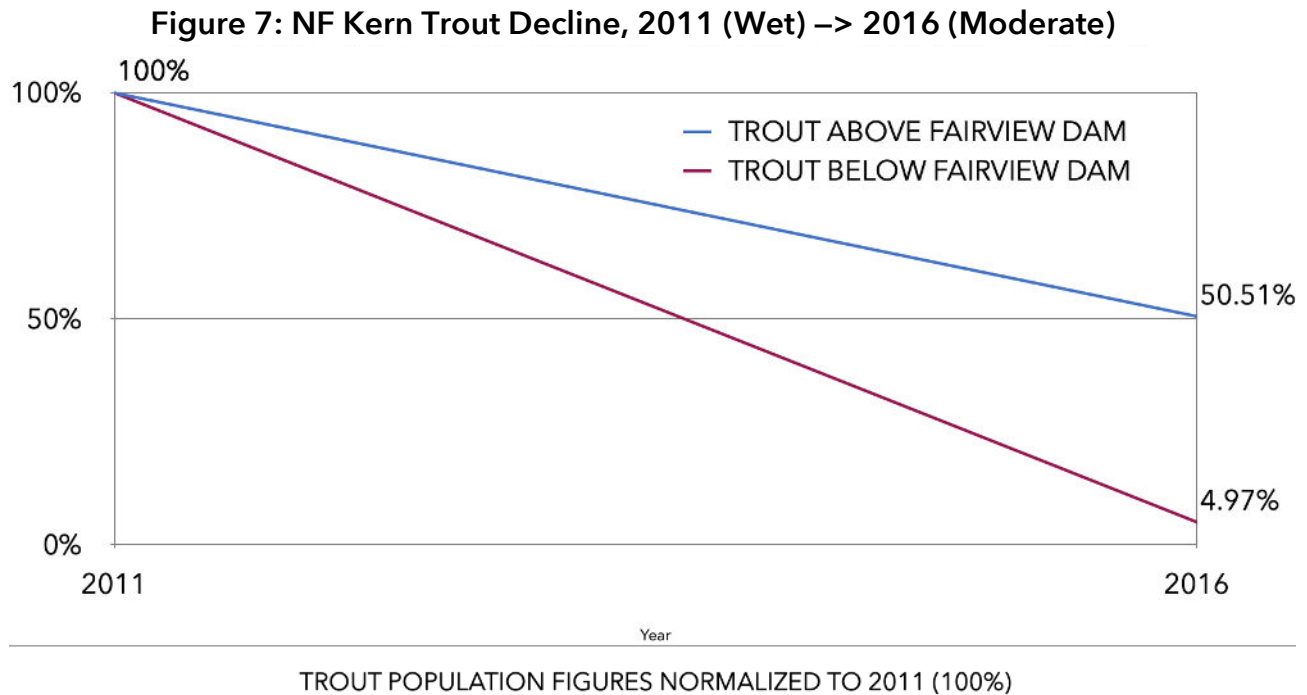
The Forest has also recognized that the KR3 diversion constitutes one of the “greatest impacts on fish habitat” in the North Fork Kern.¹⁸

During the present license term, Edison has conducted five fish monitoring studies. All but one of those studies occurred during a high-water year. Indeed, those conducted in 1998, 2006, 2011 & 2023 occurred in four of the seven highest water years (study years highlighted in yellow)¹⁹:

Figure 6: Mean Inflow at Fairview Dam (cfs), WY 1997-2023

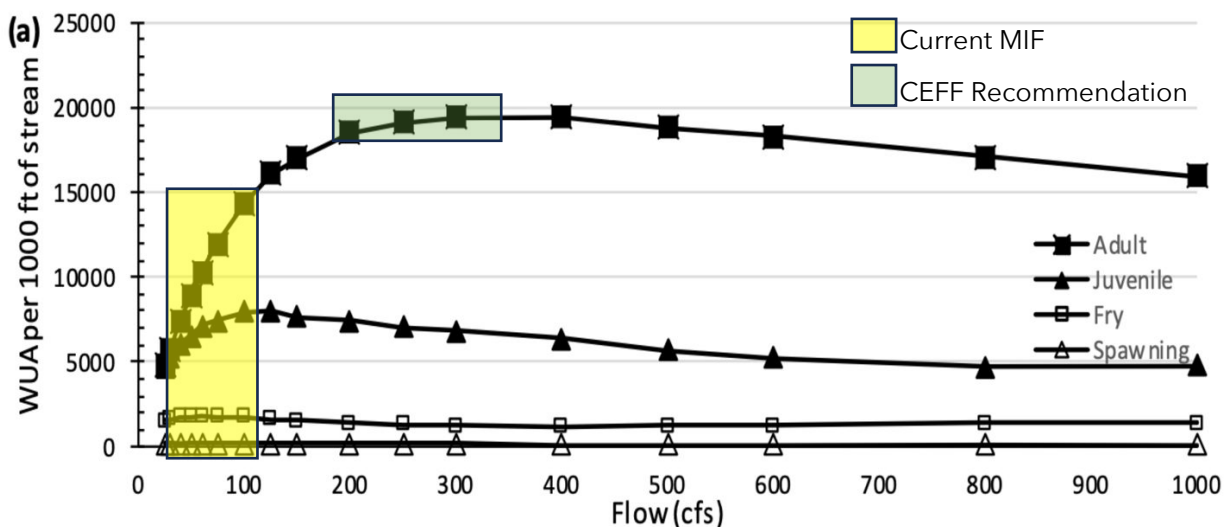


2016 was not a low water year; it was a moderate year, with about 90% of the median flow. Nevertheless, the conclusion of that study was shocking:



The 2016 study showed that the project's dewatering of the river below Fairview Dam resulted in an extreme reduction of the trout population by more than 95% below the dam – compared with a reduction of just 50% above the dam. That result is completely consistent with SCE's 1991 IFIM study. It shows a steep and significant drop-off in adult trout habitability below Fairview Dam at flows below 200 cfs, with that decrease accelerating radically when flows fall below 100 cfs, as they did in 2016²⁰:

Figure 8: 1991 IFIM NFKR Habitat Study



Through a series of postponements, Edison cancelled scheduled studies that could have provided further devastating results of its project's effects in 2021 & 2022 – low water years when conditions were at their least favorable to the fishery. The most reasonable inference from the record is that the diversion disproportionately kills trout in the reach below Fairview Dam in moderate and low water years. Increasing minimum flows can improve the health of the fishery and riverine environment below Fairview Dam.

3. Better Angling Conditions. Dewatering the river at Fairview Dam narrows the waters below, reduces water speeds, lowers pool heights, enables increased predation, eliminates many riffle sections, increases the incidence of silt and algae, raises temperatures, and lowers DO concentrations to levels that stress and kill fish. That makes for poor fishing – an observation that has been seconded both by the members of the Kern River Fly Fishing Club²¹ – the oldest club focused on angling in the Kern watershed – and its most analytical member and frequent blogger, Rich Arner.²²

Mr. Arner has repeatedly written that low flows imposed by the project are inadequate for enjoyable fishing. Consider:

Flows (50 cfs) are very low on section 5 [the river below Fairview Dam] and there is lots of wadable water there, however, the

extremely low flows have given natural predators a distinct advantage over unwary rainbows. (11/20/19.)

Also the low flow section has been dropped to just 45 cfs. That's nearly a trickle and natural predators are having easy pickings on trout that surface often and do not find good lies in deeper pools with cover. (11/07/19.)

Section 5 is flowing very low (just 85 cfs) and deeper hiding water is becoming less abundant. Dries not getting as many grabs. Shallower water is giving herons a distinct advantage in spotting unwary planters. (10/22/19.)

We love section 5 to wade but flows have dropped down to just 86 cfs, above Fairview on section 6 flows are holding steady at 350 cfs. . . . There is a lot more moss in the river, especially on section 5 where water temps exceeded 70 degrees the last month of summer. This moss had larvae strewn in it. Did this lunker consume the moss to get at the aquatic insects or just dive into the moss containing larvae trying to evade landing? Who knows? (10/03/19.)

We hit a favorite spot on section 5 that should have been stocked last week. Water was very low and 50 degrees. We hit every spot that has held trout in the past with nary a tug nor rise. There was quite a bit of moss covering the river rocks (1/4 - 1/2" thick) that I can't say I've ever seen before. Made traction better but did not seem to provide more aquatic insect activity? Not sure what biologically is going on. It was pretty obvious to us that the water on section 5 is too low to sustain trout for long. If trout planted on much of this section weren't harvested by fishers it sure would be easy pickings for herons and hawks. There is very little holding water more than 3' deep with these very low flows around 50 cfs. We tried another social media posted spot further up river on section 5 to see if there were any

trout left there but no trout tugs were procured. So up to section 6 where there has been some catching reported the last month . . . We tried another often stocked area low on section 5 on the way home and covered a good 1/2 mile stretch with no grabs nor trout seen scooting. The water is just too low to hold trout for long. (11/8/18.)

The complaints of Mr. Arner and his fellow anglers are entirely flow-related. Increasing the minimum flows below Fairview Dam can improve angling enjoyment.

4. Safer Bacterial Conditions. According to USFS, NPS, and CDFW, there is an “environmental concern” about concentrations of coliform bacteria in the dewatered reach below Fairview Dam: “At certain times of the year when the flow in the river are low, there appears to be a health concern due to high levels of coliform bacteria.”²³ According to the state water board, concentrations become elevated due to the diversion at Fairview Dam and could be solved through dilution *via* a reduced diversion: “increased fecal coliform levels and potential solutions to the problem were flow-related.”²⁴ USFS and FERC agree that dilution is a solution to the problem: “Flows in the bypassed reach can influence bacteria counts through dilution.”²⁵ Increasing the minimum flows below Fairview Dam can contribute to the dilution of dangerous bacterial concentrations.

5. Better Aesthetics. The North Fork Kern below Fairview Dam was designated Wild and Scenic, in part, for its aesthetics. “The outstandingly remarkable values for [the diverted reach] include fishing, camping, picnicking, Whitewater boating, hiking, driving for pleasure, and enjoying the scenic beauty.”²⁶ Many times, however, the river’s aesthetics are degraded due to inadequate flows. Dewatering the river at Fairview Dam narrows the waters below, dries the riverbanks, exposes rocks that would otherwise be covered, reduces water speeds, lowers pool heights, eliminates many riffle sections, and increases

areas covered with algae and silt. Natural flows above Fairview Dam fall below 125 cfs about 5% of the time. Flows that low are objectively rare for this river corridor. But flows *below* Fairview Dam fall below 125 cfs a whopping 44% of the time due to the KR3 diversion. It is reasonable to expect such profound dewatering to have a negative effect on the river aesthetics: the river was formed under natural flows; flows radically impaired by the KR3 diversion render that formation aesthetically displeasing, making the river appears to be small, slow, stunted, and sad.

Figure 9: The Dewatered Kern; 600 cfs Above Fairview, Only 50 Below (Pictured)



Increasing minimum flows below Fairview Dam can help improve river aesthetics in the 16 miles below for campers, hikers, anglers, sightseers, boaters, and all whose lives take them to the North Fork Kern River.

THE "HATCHERY FLOW"

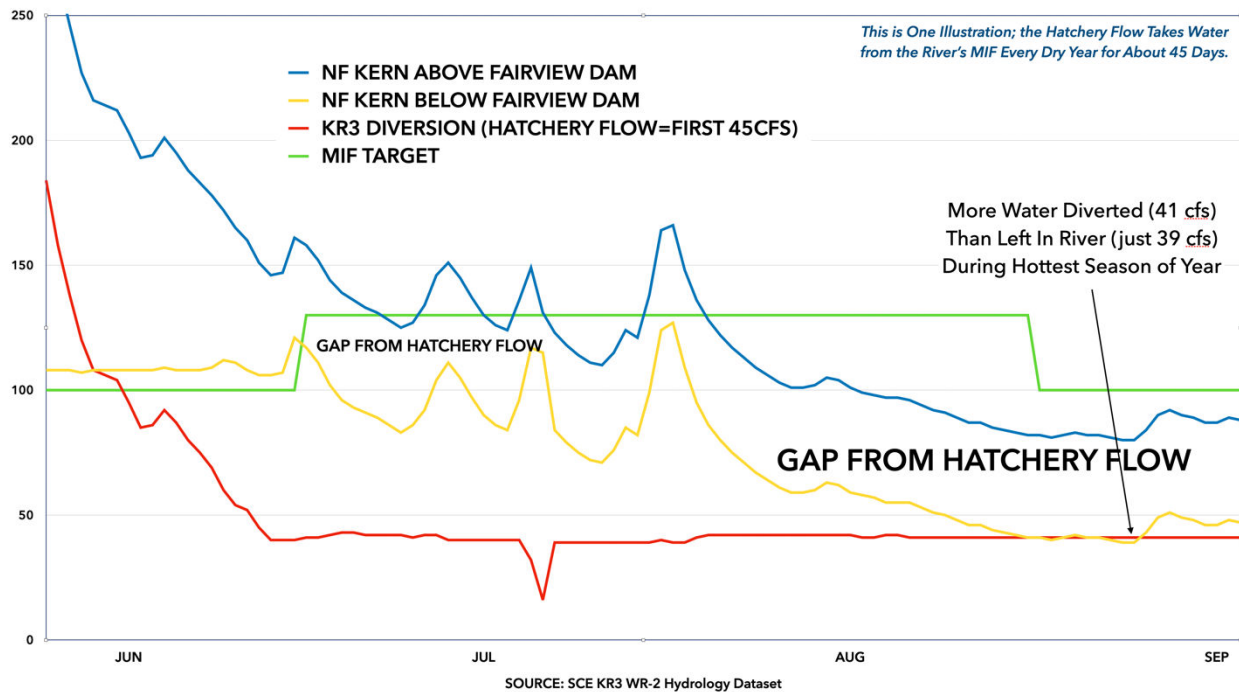
The Kernville Hatchery uses about 25 cfs of diverted water for operations – diverted water is a few degrees cooler than that which has travelled 16 miles of river. Since it takes about 20 cfs more to spin one of KR3's turbines, SCE got

FERC to raise the “hatchery flow” to 45 cfs. What many people do not realize is that this diversion takes precedence over the MIF. That means if there is not enough inflow at Fairview Dam to satisfy both the hatchery flow and the MIF, the shortfall comes out of the MIF – unlike every other river in America, the MIF isn’t really a minimum; it can be reduced by the “hatchery flow.”

Giving priority to the hatchery flow over the MIF is environmentally devastating for the river below Fairview Dam. The hatchery flow takes water from the MIF during the hottest months of the driest years – precisely the times when the river below Fairview Dam needs every drop of available water to keep temperatures, DO concentrations, and other key water quality metrics as close to satisfactory as nature will allow. Taking water away from the MIF exacerbates the environmental challenges our river faces during the hot summer months of dry water years.

Below is an example of the “hatchery flow” in action from the summer of 2021. The gap between the blue line (flows above Fairview Dam) and the yellow line (flows below Fairview Dam) from July on represents water being diverted for the hatchery flow at the expense of the MIF. In fact, at one point in late August, the “hatchery flow” reduced the MIF by *more than half*, all the way down to 39 cfs:

Figure 10: Hatchery Flow Illustration (cfs) 2021 (Low Water Year)



It is time to end the precedence of the “hatchery flow” over the MIF. No one would propose building a dam 16 miles away to dewater a river when it is at-risk just to lower operational costs of a small hatchery. We agree that the hatchery should be able to use the water diverted into the project; but such a diversion should *not* take precedence over the MIF. A minimum instream flow regime established to protect the riverine environment should be just that: a “hands-off” *minimum* flow left in the river over all other uses.

OUR KR3 MIF PROPOSAL

The North Fork Kern below Fairview Dam deserves a minimum instream flow regime supported by the best contemporary science available. Raising the MIF to levels supported by the CEFF will greatly improve the current problems of water quality, fishery health, angling enjoyment, bacteria, and aesthetics on the North Fork Kern. Accordingly, we propose that the following minimum instream flow condition be included in the license to operate KR3 for the next 40-years:

During the operation of the facilities authorized by this license, the Licensee shall allow below Fairview Dam the following continuous, instantaneous, minimum instream flows, or the natural inflows to that dam, whichever are less, as measured at USGS gauges 11185000 & 11186000:

Month	Flow (cfs)
January	195
February	195
March	335
April	335
May	335
June	300
July	265
August	230
September	195
October	195
November	195
December	195

The Licensee shall provide 25 cfs diverted at Fairview Dam for the California Department of Fish and Wildlife (CDFW) Kern River Planting Base, when available. Neither this 25 cfs, nor any other diversion, shall take precedence over the minimum instream flow regime described above.

We ask that you urge the managing agencies (FERC, USFS, CDFW, USFWS, and CSWRCB) to implement the “KRB KR3 Minimum Instream Flow Proposal,” and please spread the word to support our river!

ENDNOTES

¹ The Forest Service has noted “the variety of opportunities [the river below Fairview Dam] offers to a vast majority of citizens who live within a short distance of this major river (3-4 hours driving distance from the Southern

California basin).” [North & South Forks Kern River Wild and Scenic River Record of Decision](#), USFS (1994) at 10

² [Kern River Boaters](#) is a California Public Benefit Corporation with federal 501(c)3 status representing the interests of noncommercial recreationists on the North Fork Kern, including their interests – shared by so many others who love and cherish this river, including anglers, campers, hikers, and sightseers – in protecting and improving the environmental health of the watershed

³ [Kern River Fly Fishers’ Council](#), also with federal 501(c)3 status, is the oldest club organized around angling in the Kern River watershed

⁴ <https://ceff.ucdavis.edu>

⁵ [California Environmental Flows Framework Version 1.0 Technical Report](#), California Environmental Flows Working Group (2021) at 1

⁶ See, e.g., Devil Canyon Project in the Mojave River watershed (FERC Project No. 14797, FERC Accession No. 20210909-5090)

⁷ See: [SCE](#) & USGS Gauges [11185500](#) & [11186000](#)

⁸ [Environmental Flow Analysis on the NF KERN](#), E. Duxbury (2021)

⁹ [California Environmental Flows Framework Version 1.0 Technical Report](#), California Environmental Flows Working Group (2021) at 3

¹⁰ [California Environmental Flows Framework Version 1.0 Technical Report](#), California Environmental Flows Working Group (2021) at 4

¹¹ [Environmental Flow Analysis on the NF KERN](#), E. Duxbury (2021); see generally, [EA Guidance for run-of-river hydropower development](#) (2017) Environment Agency, Technical Report, LIT 4122, 747_12, Version 6; DFO. (2013) Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2013/017

¹² The [CEFF explains](#): that where “non-flow limiting factors are not a concern, the user may only need to implement the steps in Section A [foundational functional flow metrics] to obtain ecological flow criteria for their study area. The Section A ecological flow criteria can be readily translated into environmental flow recommendations in section C and, in many cases, will help avoid resource-intensive, site-specific flow studies.”

¹³ [Assessing Aquatic Habitat Connectivity and Low-flow Ecological Thresholds](#), Robert Holmes (2014) California Department of Fish and Wildlife

¹⁴ <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=93597> at p. 20

¹⁵ [KR3 Pre-Application Document](#), SCE (2021) at 5-43 through 5-45

-
- ¹⁶ [Upper Kern Basin Fisheries Management Plan](#), USFS, NPS & CDFW (1995) at IV-4
- ¹⁷ [Upper Kern Basin Fisheries Management Plan](#), USFS, NPS & CDFW (1995) at V-3
- ¹⁸ [North & South Forks Kern River Wild and Scenic River Comprehensive Management Plan](#) (1994) at 24, 48-49 [directing USFS to “maintain or enhance viable populations of native wildlife and fish species,” conduct an “active program of stream habitat improvement,” maintain a “riffle to pool ratio [of] approximately 1:1,” and manage the area to “maintain or achieve adequate user safety and experience levels.”]
- ¹⁹ Chart, methodology, and supporting data available at [KRB’s Apple website](#) (Sheet 5, “NFKR Water Year Types, 97-23”)
- ²⁰ [KR3 Application for New License](#), SCE (December 1991) at E-3-74 [.pdf p. 655] [accelerated decline at current MIF levels highlighted]
- ²¹ See FERC Accession No. 20220531-5308
- ²² <http://www.kernriverflyfishers.com/fishreports.htm>
- ²³ [Upper Kern Basin Fisheries Management Plan](#), USFS, NPS & CDFW (1995) at V-3
- ²⁴ [KR3 Environmental Analysis](#), FERC & USFS (1996) at 26
- ²⁵ *Ibid.*
- ²⁶ [North & South Forks Kern River Wild and Scenic River Final Environmental Impact Study](#), USFS (1994) “Affected Environment” at 61 [.pdf 113]; see also “Affected Environment” at 2 [.pdf 50] [ORVs: “Scenic, Recreation, Wildlife”]