FRIENDS OF THE EEL RIVER

Working for the recovery of our Wild & Scenic River, its fisheries and communities.

June 2, 2015

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Washington, D.C. 20426-0001

via Electronic Submittal (E-Filing)

Re: COMMENTS on Application by Pacific Gas and Electric for Temporary Variance Of Minimum Flow Requirement, Potter Valley Project (FERC Project No. 77-275); MOTION TO INTERVENE.

Dear Secretary Bose,

Friends of the Eel River (FOER) is a nonprofit citizens' group that advocates for policies and practices consistent with the protection and recovery of the Wild and Scenic Eel River's outstanding resource values, especially the three salmonid species protected under the federal Endangered Species Act. We have commented extensively on previous variance requests and other matters relevant to the Potter Valley Project (PVP), noting the potential and actual impacts of flow reductions in the Eel River below the PVP on those listed Chinook, coho, and steelhead.

Our comments, queries, and attempts to elicit information and action from FERC are offered in the public interest. As stated below, FOER has an interest in seeing flows maintained in the mainstem Eel River sufficient to protect public trust resources, including fisheries, which are the focus of our organization's concerns and the subject of important legal protections. Pursuant to Commission Rule 214, FOER hereby moves to intervene in this matter. 18 C.F.R. § 385.214(b)(1)-(2).

FOER does not oppose the proposed variance as adopted in FERC's May 18, 2015 order. We appreciate the opportunity to work with other stakeholders in the Potter Valley Drought Working Group.

We do, however, strongly support the position articulated by the Round Valley Indian Tribes in this matter. We would support additional reductions in diversions to the Russian River basin proportional to the sharp reductions in flows already suffered in the Eel. FOER is very unlikely to support further reductions in releases to the Eel from the PVP. As noted by Dr. Bill Trush, "The '9 + 3 cfs' release in PG&E's variance request is less than desirable, but dropping even more (e.g., '3 + 3 cfs') will greatly increase risks to Eel River salmonids and the river ecosystem." We hereby incorporate Dr. Trush's attached memorandum into these comments. Dr. Trush explains the rationale for maintaining ecologically appropriate flows in the mainstem Eel and suggests a monitoring effort to support more effective flow management and avoid unecessarily harmful low flows.

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FOER does wish to note for the record several points that appear to us relevant to questions of Eel River flows and Russian River diversions, but which do not appear to have been considered in FERC's appraisal of the proposed variance. These include:

Releases below Van Arsdale are likely insufficient to maintain flows for downstream water rights holders as well as fish.

As noted in comments by Mr. Jerry Albright, domestic water users downstream of the PVP can be affected by reductions in Eel River flows. It is not clear that those needs, or the cumulative impacts of diversions on the mainstem Eel, have been factored into applicant's calculations of the minimum stream flows needed to maintain effective fisheries habitat in the river.

PVID must clarify and justify the need for a minimum of 25cfs in the event that storage levels in Lake Pillsbury do not meet target levels.

We appreciate PVID's offer to inform PG&E of predicted lower irrigation demands by their customers during the one or two periods remaining this year for cutting and drying alfalfa and clover hay, so as to allow PG&E to concurrrently reduce releases from Lake Pillsbury for those periods (allowing for ramping discharges) and retain more water in storage.

However, PVID has not provided a compelling rationale or data to support limiting their minimum flows to 25cfs in the event that target storage levels in Lake Pillsbury are not met. According to PVID board members present at the May 7th stakeholders meeting, alfalfa and clover hay represent approximately 60% of their seasonal water demands. Reductions in these crops after the first cutting could yield significant reduced demands for water deliveries, and substantial savings in water storage. Yet, PVID has not offered to ask their customers to reduce acreage or forgo 2nd or even 3rd cuttings of hay, as much of California's rancher and farmers are doing this year. Given substantial cutbacks to such crops across California during the present drought, FOER questions whether such uses are reasonable under the circumstances.

It was also noted during the meeting that PVID's irrigation channels and ditches are unlined, and in fact support additional diversions via wells in the PVID service area. This inefficiency and waste must be accounted for in calculations of PVID's minimum flows as well. This situation raises additional questions as to the reasonableness of PVID's water use under these circumstances, as well as its method of use. Flows for Eel River fisheries and water rights holders downstream of PVP should not be further compromised while PVID's water use shows significant waste and inefficiency.

PG&E's operation of the storage at Lake Pillsbury remains inefficient and wasteful.

During the May 7th meeting, PG&E staff noted that dam operators had to release a large volume of water flowing into the Lake Pillsbury reservoir during a significant rain event in February 2015, even though no additional storms were on the weather horizon. Apparently, according to the Department of Safety of Dam's rule curve for management of flood storage levels, the Scott Dam's gates could not be closed during that event. Because the current rule curve does not account for actual weather events and the current knowledge of tracking and predicting atmospheric rivers, a great deal of water that could have – and should have – been stored for this year's dry season was discharged instead.

Facing similar problems under the rule curve constraints with the Corps of Engineers at Coyote Valley Dam, the Sonoma County Water Agency has been working diligently with the Army Corps of Engineers, National Marine Fisheries Service, the US Geological Survey, Scripps and others to design new modeling and new rule curves to maximize water storage in Lake

Mendocino. This multi-year, multi-stakeholder work is taking advantage of much more accurate predictive weather data to maximize existing water supply pool storage, while being able to much more effectively manage storage and releases in anticipation of predicted storm events.

FERC should direct PGE to update the storage management of Lake Pillsbury to be more sensitive to currently available and developing models of storm predictions (particularly for atmospheric rivers), or to explain why they are not doing so.

Conclusion

Under the specific circumstances presented with this variance request, FOER does not object to the variance as adopted. However, as we have pointed out in comments on previous variance requests, it is clear to us that there are reasonable measures that could and should have been taken to avoid coming to this pass in the first instance.

Flows releases to the mainstem Eel River must not be allowed to go below 9+3 cfs. As air temperatures increase in late summer and early Fall, water temperatures are likely to increase to harmful levels, while river flows will be reduced by evaporation, evapotranspiration, and diversions by water rights holders (including senior water rights holders).

If target storage levels at the Pillsbury reservoir are not being met, such that releases from the PVP must be further curtailed, flows released to the PVID and East Branch Russian River must be proportionally reduced in lieu of any additional cuts to Eel River flows. Where the Eel below Cape Horn would otherwise be subject to 75% reductions in PGE Variance Table 2, PVID and EBRR releases must be reduced by 75% instead. (PVID gets 25% of 50cfs = 12.5cfs; EBRR gets 25% of 40cfs = 10cfs). Such an adjustment would allow Eel flows to remain at 9+3cfs and prolong storage in the Pillsbury reservoir.

Thank you for your careful consideration of these comments.

Sincerely yours,

Robert Scott Greacen
Executive Director
Friends of the Eel River

Cc: Neva Geldard, PG&E

Humboldt State University River Institute

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1 Harpst Street, Arcata, CA 95521-8299

Date: 01June2015

From: Bill Trush, Co-Director Humboldt State University River Institute

To: Scott Greacen, Friends of the Eel River

Re: Comments on Application by Pacific Gas and Electric for Temporary Variance of Minimum Flow Requirement, Potter Valley Project (FERC Project No. 77-275)

Scott,

Evaluating the PG&E variance, as requested, required consideration of how unimpaired and impaired spring-through-summer recession streamflows operate in Mediterranean ecosystems as the Eel's. The '9 + 3 cfs' release in PG&E's variance request is less than desirable, but dropping even more (e.g., '3 + 3 cfs') will greatly increase risks to Eel River salmonids and the river ecosystem.

My recommendations are:

- Maintain riverflow threshold for Complete Section Control (9 +3 cfs) above the Outlet Creek confluence through 15August, then re-evaluate the hydrologic capability of the mainstem and contributing tributaries to sustain 9+3 cfs later into the recession season.
- Establish a record, starting as soon as feasible, of the receding limb of the hydrograph on the mainstem Eel below the PVP. This would require streamflow measurement every 10 days at: (1) Mainstem Eel River at Hearst Bridge, (2) Mainstem Eel River just upstream of the Outlet Creek confluence, (3) base of Outlet Creek, and (4) Mainstem Eel River at Dos Rios.

Stress is the Mediterranean Norm

River ecosystems in a Mediterranean climate experience a predictable spring-through-early-autumn receding hydrograph each year (Figure 1). Naturally receding streamflows elevate stress on juvenile salmonids as water temperatures warm significantly, overall stream productivity drops, prime rearing habitats become scarce, and drying riffles may eventually isolate one pool from the next. Each stressor changes in magnitude, duration, rate, and timing as spring becomes summer and then autumn. Anadromous salmonid populations cannot be protected/restored, if the river ecosystem won't be protected. A diversion strategy from spring-through-early-autumn must strive to maintain a river ecosystem's capacity for self-renewal, or health. If properly executed, juvenile salmonids will be stressed … but to no significantly greater extent than they would experiencing the naturally, unimpaired receding hydrograph.

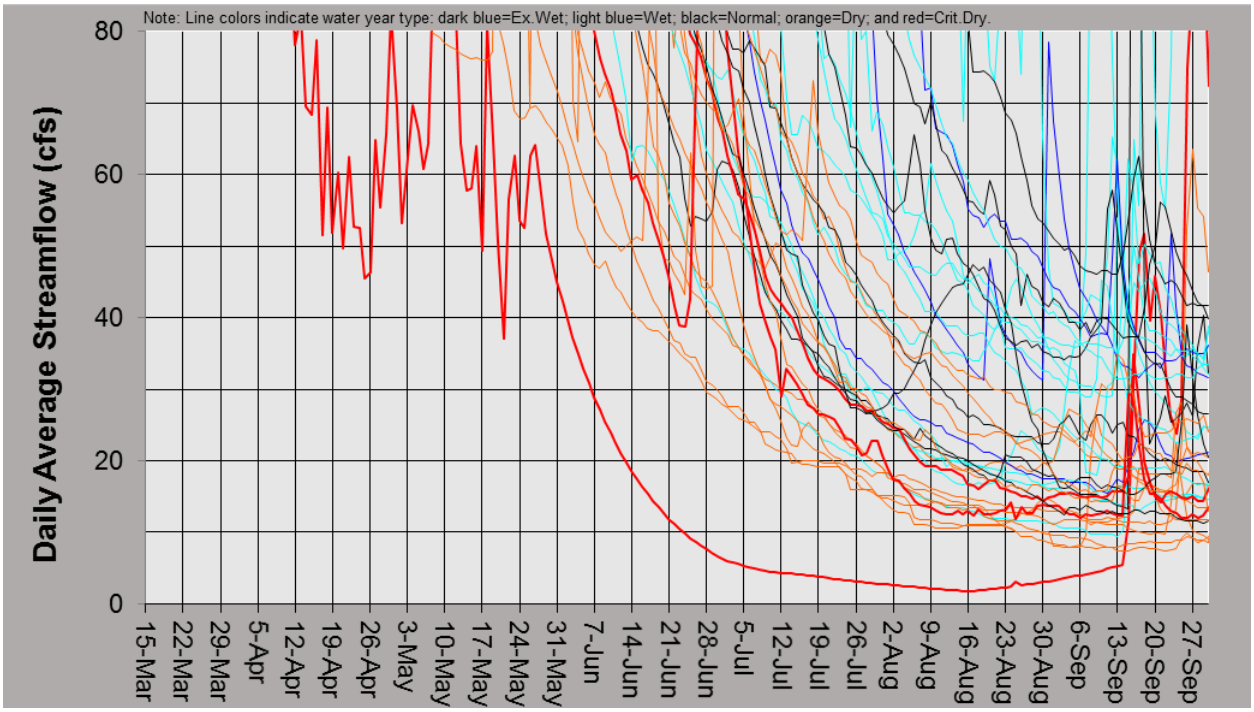

Figure 1. Estimated unimpaired spring-through-summer recession hydrographs at Van Arsdale from WY1977 to WY2011.

Under the Reasonable and Prudent Alternative (RPA) of NMFS' Biological Opinion for project operations, Table 1 outlines **summer flow** (SF) releases as a function of WY type. The potential adverse impacts of these prescribed SF releases will depend on the natural, unimpaired recession hydrograph each SF is intended to replace.

For example, a Dry SF = 9 cfs prescribed to 'replace' the two lowest orange-coded, Dry recession limbs **from August 23 to September 27** in Figure 1 would not have adverse impacts, whereas prescribing a Dry SF = 9 cfs to replace the two greatest orange-coded Dry recession limbs **in July and August** would have highly adverse impacts on the level of juvenile salmonid rearing success once attainable with the unimpaired recession hydrographs. Similarly, a Wet SF

= 15 cfs would have highly adverse impacts if/when prescribed for most blue-coded recession limbs, when unimpaired baseflows in late-summer were considerably greater.

Classification			Summer Flow *SF*	
Water Year Classification	Probability Range	CLP as of May 15 (ac-ft)	Singular	Serial
Very Dry	0-20%	Less than 171,600	3 cfs	5 cfs
Dry	20-50%	171,600 to 309,400	9 cfs	20 cfs
Wet	50-80%	309,400 to 598,400	15 cfs	25 cfs
Very Wet	80-100%	More than 598,400	30 cfs	35 cfs

Table 1. Summer flow (SF) guidelines by water year classification (FERC Order Amending License, Project No. 77-110, January 28, 2004, p. 60).

PG&E Variance Request

PG&E is requesting a decrease in SF for the remainder of WY2015 and into WY2016 (PG&E Potter Valley Project Request for 2015 Flow Variance, May 13, 2015). The SF variance request for the mainstem Eel River below Cape Horn Dam is reproduced here:

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Under the RPA, flows in the Eel River below Cape Horn Dam during mid- to late summer of the current year would need to be approximately 14 cfs to meet downstream minimum flow requirements (i.e., Eel River below Cape Horn Dam, 9 cfs Dry water year flow + 5 cfs buffer). Under the proposed variance, flows would be approximately 12 cfs (i.e., Eel River below Cape Horn Dam, 9 cfs Dry water year flow + 3 cfs buffer).

Habitat Analysis

A reduction in summer flow from 14 cfs to 12 cfs would be expected to reduce juvenile steelhead rearing habitat in the Eel River below Cape Horn Dam by about 12%. The instream flow study evaluated available habitat for juvenile steelhead in this stream reach over flows ranging from 8 to 500 cfs. The amounts of available habitat, reported as AHA, at the subject flows of 14 and 12 cfs were determined through extrapolation of the modelled flows. The AHA for the 14 cfs flow condition was 28,853 square feet, which represents 1.4% of the peak AHA modeled for this reach. The AHA calculated for the 12 cfs flow condition was 25,272 square feet, which is 1.2% of the peak AHA. Note that these relatively low levels of AHA compared to peak values are representative of the natural flow condition in late summer.

PG&E does not provide a habitat analysis for the flow variance request, computing only a single percentage habitat reduction but not scientifically justifying why the 12.4% juvenile steelhead habitat reduction should be considered insignificant. The relevant statistic is the percent decline in AHA, not the weighted habitat abundance relative to 100% AHA (i.e., peak AHA). Figure 1 shows that 14 cfs, or 12 cfs, may be the 'natural flow condition' in only the driest WYs.

PG&E does not address how/whether a 12 cfs release will maintain its magnitude down to the Middle Fork Eel River confluence through summer and into fall. As the recession limb extends through summer, flow contributions from tributaries below Van Arsdale will attenuate. With

tributaries contributing only minor inflow by mid-summer downstream of Van Arsdale, the mainstem channel is likely a losing reach downstream to the Middle Fork Eel River confluence. If, to what extent, and how frequent are extremely important to quantify.

On May 28, 2015 just upstream of Hearst Bridge, the measured mainstem riverflow was 63.3 cfs at 10:45AM. The daily average release below Van Arsdale on May 28 was a reported 59 cfs. Therefore, this segment of mainstem channel was still gaining riverflow. However, the contributing drainage area from Van Arsdale downstream to Hearst Bridge is approximately 115 mi^2, producing a contributing unit runoff (i.e., per square mile) of only 0.037 cfs/mi^2. As summer progresses, unit runoff will continue declining, thus highlighting the importance of mainstem riverflows above Van Arsdale for preventing/delaying mainstem dewatering.

A daily release of '9 cfs + 3 cfs buffer' might not be sustainable down to the Middle Fork Eel River confluence. **A '3 cfs + 3 cfs buffer' release below Van Arsdale in the fall would likely de-water much of the mainstem Eel River downstream to the Middle Fork Eel River confluence.** 'De-water' means losing functional connectivity between pools/runs, i.e., basically drying-up riffles, with residual pools and deeper portions of runs exhibiting surface water (i.e., maintained by very slow flow through the alluvium).

Hydraulic Channel Controls and Drought

Relatively small riverflow changes account for significant changes in flow depth. Below 7 cfs to 9 cfs, AHA drops sharply in each channel reach type (Table 2). This drop-off in habitat abundance, and possibly why steelhead juvenile rearing habitat was not quantified below 8 cfs in the VTN study, is the outcome of the mainstem Eel River being under complete section control. Under the hydraulic influence of complete section control, downstream riffle crests function as in-channel weirs that offer considerable low-flow resistance. The pool or run immediately upstream of the riffle crest adjusts to increasing baseflows (from 0 cfs up to complete section control at approximately 7 to 9 cfs), and to the hydraulic resistance imposed by the downstream riffle crest, primarily by increasing cross-section depth rather than velocity. A flow increase from 3 cfs to 5 cfs can double mainstem Eel River riffle crest thalwegs from 0.30 ft to 0.60 ft deep. Greater depth keeps more of the channelbed inundated with very slow velocities. Streamflows exceeding 7 to 9 cfs will begin to drown-out the hydraulic resistance of the riffle crest. In response, the immediate upstream pool/run begins to adjust by increasing cross-section velocities.

Velocity, depth, and substrate preference criteria for quantifying juvenile steelhead rearing habitat (Table 2) target those portions of the wetted mainstem channelbed that contribute significantly to overall river productivity (i.e., shallow, favorable channel bed composition, and relatively fast flowing with turbulence). Although not ideal, AHA of juvenile steelhead rearing habitat offers a coarse quantitative evaluation of productive channelbed abundance as a function of streamflow. Approximately a third of the total AHA occurs by 12 cfs (Table 2) and approximately a quarter by 8 cfs. Below 8 cfs, AHA must drop sharply because of hydraulic section control.

TABLE G-20. AVAILABLE HABITAT AREA (AHA) (SQ. FT.) FOR EACH REACH TYPE AND TOTAL AHA FOR ALL REACH TYPES COMBINED FOR STEELHEAD TROUT JUVENILE AT VARIOUS FLOWS IN THE EEL RIVER FROM CAPE HORN DAM TO OUTLET CREEK.

AVAILABLE HABITAT AREA(SQ. FT.) FOR STEELHEAD TROUT JUVENILE

FLOW RELEASE (CFS)	REACH TYPE IV (CAPE HORN)	III (TODD)	I (EMANDAL)	II (CAVANAUGH)	I (BIG BEND)	TOTAL	PERCENT OF PEAK TOTAL AHA
8.	53612.	192401.	79908.	158975.	216048.	700944.	21.
12.	70124.	255858.	131790.	195658.	356322.	1009752.	31.
15.	78992.	288484.	171498.	218930.	463680.	1221584.	37.
20.	91486.	334730.	239274.	241940.	646925.	1554354.	47.
25.	102151.	382518.	307377.	252216.	831056.	1875317.	57.
30.	110695.	417695.	394150.	256342.	1065664.	2244546.	68.
40.	124040.	460657.	511983.	250589.	1384250.	2731520.	83.
50.	137823.	477847.	566446.	235779.	1531502.	2949397.	90.
60.	148271.	484835.	601553.	217240.	1626420.	3078320.	94.
75.	163067.	482992.	637163.	194146.	1722701.	3200069.	97.
85.	170586.	481055.	652740.	180739.	1764815.	3249935.	99.
100.	179049.	479721.	665593.	161324.	1799566.	3285254.	100.
125.	195534.	463790.	670572.	131271.	1813027.	3274194.	100.
150.	213156.	439586.	656068.	111850.	1773814.	3194474.	97.
175.	226985.	414872.	625345.	97227.	1690749.	3055178.	93.
200.	236251.	386520.	589714.	83550.	1594413.	2890449.	88.
225.	245640.	359162.	553439.	75218.	1496335.	2729794.	83.
250.	250517.	332339.	517701.	70510.	1399711.	2570779.	78.
300.	250278.	293856.	449411.	64145.	1215073.	2272762.	69.
350.	248091.	269931.	400705.	62993.	1083387.	2065106.	63.
400.	241613.	262723.	368042.	64263.	995076.	1931717.	59.
500.	234520.	257841.	318931.	72126.	862294.	1745712.	53.

Table 2. Steelhead juvenile rearing habitat (AHA weighted ft^2) by reach type (Potter Valley Project Fisheries Study Final Report Appendix (1982), Table G-20).

Summary

Preventing complete section control, when it should not be happening naturally, will keep as much of the channelbed wetted as possible by relatively low streamflows, and in turn provide an important buffer to drought impacts. Although more field surveys are planned, preliminary assessments indicate that 9 cfs, though not ideal, could be this important streamflow threshold. However, a Cape Horn Dam release of '9 cfs + 3 cfs buffer' must prevail against downstream cumulative withdrawal by evapotranspiration and many small domestic and agricultural diversions. A '3 cfs + 3 cfs buffer' release below Van Arsdale in the fall would likely de-water much of the mainstem Eel River downstream to the Middle Fork Eel River confluence.