

**Kilarc-Cow Creek Hydroelectric Project, FERC No. 606-027**

**COMMENTS ON THE SCOPING DOCUMENT**

**for the**

**KILARC-COW CREEK HYDROELECTRIC PROJECT –  
CALIFORNIA**

**Application for License Surrender  
FERC Project No. 606-027**

Circulated by the FERC on September 16<sup>th</sup>, 2009

**Errata**

**on the Comments of**

**DAVIS HYDRO, LLC,  
A Proponent of an Alternative to  
PG&E's Proposed Decommissioning Plan**

October 16, 2009 (FERC Accession No. 20091016-5091)

FERC, Other Alternate Proponents, Reviewers, and Agencies,

Davis Hydro regrets some errors in its filing, and provides the following to facilitate your understanding,

Attachment 1 to this letter is the Errata

Attachment 2 to this letter is an excised version that also has some minor typographical errors corrected.

## Attachment 1

### ERRATA to Davis Hydro's Comments on Draft Scoping Document

Davis Hydro regrets that important errors were caused by the earlier observation that the screen at PG&E's South Cow Creek diversion was not working, and was allowing small juveniles to pass through to the forebay. Recent reports are that this previous observation was possibly in error, and that in any case the screen is currently operating correctly. Davis Hydro does not want to question whether the screen was operating correctly in the past and now assumes that it will be maintained and operated correctly under Alternatives A-1 (continuation of current operation), or the Tetrick Alternative, A-4 in the future. Under that assumption for the future, the following changes in the text are needed:

Page 1 Second Paragraph under Section 1.1. The last sentence should read "It {the upper reaches of the South Cow} has lower elevations, extensive and potentially significant salmon and (already demonstrated) excellent steelhead habitat above the project." {The screening reference is deleted.}

Page 20 Under Paragraph 5.2.1 Alternative A-1 In subsection c), Delete "Currently much of the year – especially when the water is low, most of the thousands of downward migrating juvenile salmon and trout are swept into the fields to die."

Page 20 Under Paragraph 5.2.2 Alternative A-2 In subsection c), Delete "This will have to be screened under current law, and this will save thousands of downward migrating juvenile salmon and trout."

Page 22 Under Section 5.2.3 Alternative A-4 Delete bullet containing "The old Abbott Ditch diversion to remain unscreened as it is"

Page 22 Under section 5.2.3 Alternative A-4 subsection c), Delete "This means that all downward migrating fish can (if this water is diverted into the ditch) die in the fields."

## Attachment 2

Corrected Version of Davis Hydro's  
Comments on Draft Scoping Document  
(FERC Accession No. 20091016-5091)

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Comments of

DAVIS HYDRO, LLC,  
A Proponent of an Alternative to  
PG&E's Proposed Decommissioning Plan

October 16, 2009

**From: Davis Hydro  
Davis, California**

## **Forward**

Davis Hydro (DH), along with all other known interested parties were invited to participate in the scoping process and received a Scoping Document that provided information concerning the proposed plans to surrender the project license. DH herein provides comments on that document and suggestions on FERC's preliminary list of issues and alternatives to be addressed in the upcoming EA.

For simplicity and to provide close correlation with the original document, the abbreviated unmodified document is quoted in *Italics* and the DH comments and suggestions are provided in plain text.

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## **1.0 INTRODUCTION AND GENERAL COMMENTS**

Davis Hydro is pleased to be invited to comment on the Scoping Document, for it is the scope of the analysis that will determine the preferred Alternative.

### **1.1 FOCUSING ON THE KILARC SUBPROJECT**

The Kilarc-Old Cow Facility (Kilarc) is not connected directly to the South Cow generation facility. Their only physical connection is that the Creeks on which these projects are located join together many miles downstream, and they currently have a common FERC License. DH understands that the analysis of the preferred Alternative must address the complete project. Within that comprehensive rubric, we assume that the analyses conducted under this rubric can and will foresee appropriate outcomes for the two different – disconnected facilities with zero, one, or more future licensees.

The DH Alternative assumes that a bifurcated approach to the eventual disposition is possible, and it is anticipated due to the very different nature of the two sub-project sites. Simply put, the South Cow has no significant barriers to anadromy. It has lower elevations, extensive and potentially excellent salmon and (already demonstrated) steelhead habitat above the project.

The South Cow area has extensive agricultural waste, runoff, and ranch animal-redd impact on the fish and their habitat. In contrast, the project area of Kilarc-Old Cow is bordered almost entirely by canyon walls, forest, and abandoned fields.

One caveat to the following comments is that DH's interest, and therefore our comments and suggestions, is focused almost entirely on the Kilarc – Old Cow area, and makes only indirect reference to the South Cow. Therefore, the DH suggested scoping issues addressed here focus either on overall effects, or on the Kilarc Facility, or on the effects of changes at the Kilarc – Old Cow project.

## **2.0 SCOPING ISSUES**

### **2.1 GENERAL SCOPING ISSUE: AIR QUALITY**

The FERC draft Scoping Document addresses land and water impacts on various resources. However, if this generation is demolished, the resulting replacement generation expansion will consist of some, or all, fossil generation for the indefinite future. This is because a great deal of effort is currently underway to introduce renewable energy, and the additional need for replacement power for the Kilarc will not change that level of effort.

Thus non-renewable generation will replace existing renewable generation from the Kilarc facility creating air pollution and increasing thermal pollution through atmospheric

effects. The analysis should therefore be examined in light of the destructive effects that removing renewable generation will have on our atmosphere and therefore on all life and species on the planet.

### **2.1.1 AIR QUALITY IMPACT ANALYSIS**

Analysis should include atmospheric effects – both from construction and operation. The standard argument that atmospheric effects are too hard to measure, too small, and too diffuse is no longer accurate (if it ever was) nor is it defensible in this age of incremental global warming, acid rains, mercury poisoning, and similar effects from the construction and operation of electrical power plants.

Depth of the analysis: There are two levels of analysis. The first level would address the amount of greenhouse gasses generated along with other pollution from the various alternatives. Second, if fish are an issue, this analysis should be extended to show the effects of the increased atmospheric and water temperatures and acidity on the various fish of the world. Fish are suggested here as a surrogate for certain environmental issues that are important in that they represent key non-human resource impacts would result from the removal or enhancement of the Kilarc facility. Since trout are acutely affected by temperature and they are prevalent around the temperate world, the cumulative effect on the whole population should be considered. The word “fish” here, particularly anadromous fish, captures both the natural resource, genetic, and geographic issues involved.

Some Alternatives (notably PG&E’s demolition Alternative) has extensive construction impacts on site and construction impacts from replacement power. These activities generate economic activity. The economic changes have a stimulus effect throughout our economy. The analysis of these wider actions and environmental consequences are easily analyzed using existing Leontief type I/O analyses which connect economic activity at one location to changes in total emissions.

The EA analysis requires consideration only of existing data. Existing pollution data and atmospheric effects from power plants is well documented. Global warming is recognized by responsible agencies as a critical concern. The effects of temperature and acid rains on Salmonids are well known, environmental Input/Output models are well developed, and so all elements are in place to consider these effects.

## 2.2 GENERAL SCOPING ISSUE: AGENCY PURVUE

The draft scoping document draft is looking to define the area impacted by the alternatives. This must include all areas that are affected by the alternative choice. DH suggests that the minimal Project Area for impact analysis is planet-wide, for the following reasons:

NOAA, as NMFS, is here because of possible planet-wide endangered species – notably the steelhead behavior of rainbow trout. The Federal agencies – and to some extent the state agencies are not focused solely on the small inaccessible Kilarc bypass in northern California, but rather on the aggregate effects of these types of local decisions have on fish in general and steelhead in particular. It is the geographic reach of NMFS that authorizes its intrusion into local decisions, so their larger geographic purview must be the domain of their analysis. Decisions made here will not only affect fish in Cow Creek and the Sacramento River, but through the direct consequential effects of replacement generation on a potentially larger number of fish world wide – possibly statistically destroying far more fish, including *O. mykiss* around the world.

NOAA is here likewise, because it is charged with the protection of the atmosphere and oceans. West Coast electric generation expansion composition will change as a result of any demolition. The removal of this green power source will have the direct effect of requiring substitute power from other sources. All possible effort is currently underway to build green power sources; very high prices are being paid and any renewable power that can be built under our existing socio-political constraints is being built. Since renewable energy is not coming on line fast enough to meet current demand, any current expansion of the generation system caused by demolishing local generation will be fossil.

### 2.2.1 SUBSTITUTE GENERATION CONSTRUCTION AND OPERATION

Since the Kilarc generation infrastructure exists, the industrial activity needed for its removal will have a stimulus effect on the construction industry in the area. This, through standard I/O modeling<sup>1</sup>, will have a stimulus effect on all other industries, each of which will respond with a corresponding change in activity due to this increased activity in the construction sector. The world economy will respond slightly to this stimulus creating global effects. For example, much of the construction equipment now comes from China and Japan. Global economic stimulation has global environmental effects on our atmosphere and subsequently on all waters of the planet<sup>2</sup>, which in turn negatively affect *O. mykiss* and many other similar species of fish.

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<sup>1</sup> These models exist and are commonly now used around the world to evaluate environmental effects of local decisions. At a minimum, consider the RIMS II model for the US.

<sup>2</sup> The coefficient vectors connecting the output of the I/O models to the environmental burden are available through EPA and other agencies worldwide.

The increase in fossil generation for example, will emit carbon dioxide and various sulfur, vanadium, and mercury compounds that will pollute, through acid rain, the salmon and steelhead fisheries across Northern California, the Mid-west and all across northern Asia and Europe – such is the domain of the species. The chemicals, especially CO<sub>2</sub> are opaque in the infrared and blanket our planet with global warming. The temperature effects alone would have a profound effect on habitat for steelhead in habitats in Northern California<sup>3</sup>, and similar effects on steelhead and salmon populations worldwide. This is not an issue of looking at the air quality changes in Whitmore – the effects of this program would contribute directly to global warming acid rains and incrementally impact all fish world wide.

### 3.0 PROPOSED ACTION AND ALTERNATIVES

*In accordance with NEPA guidelines, the EA will consider, at a minimum, the following alternatives: (1) the licensee's proposed action; (2) alternatives to the proposed action; and (3) the no-action alternative.*

{Sections 3.1. and 3.2 are not specifically discussed here}

DH Comment: This list could be improved by specifically addressing, under (3.2) above, at least one and possibly two alternatives that have been proposed:

- The Davis Hydro Alternative focusing on improvements to the Kilarc Facility and off-site fish habitat enhancement projects enabled by Kilarc income and,
- Steve Tetric's Alternative which focuses on improvements in Hooten Gulch region funded by potential Kilarc income,

In summary then there are four Alternatives discussed here for analysis.

A-1 – No Action – Continue operations under annual FERC Licenses

A-2 – PG&E Demolition of all facilities

A-3 – Davis Hydro's Kilarc only with new spawning channel and Fish Resource Trust fund for off project outreach. – Demolish South Cow.

A-4 = Tetric Plan for Hooten Gulch habitat improvements. Continue the Kilarc operation as-is.

(for more information on these see respective FERC filings)

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<sup>3</sup> Lisa Thompson's paper shows this effect dramatically for Salmonids in the Cow Creek. See Thompson, Lisa C., Larry Forero, Yukako Sado and Kenneth W. Tate, Impact of Environmental Factors on Fish Distribution Assessed in Rangeland Streams in California Agriculture, Volume 60, Number 4, pp. 200-206 available at [http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0090%20Lisa%20Thompson\\_Paper\\_Impact%20on%20Fish.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0090%20Lisa%20Thompson_Paper_Impact%20on%20Fish.pdf) and to be filed shortly on the FERC eLibrary under P-606 for reference in this proceeding.

### **3.3 No Action**

*Under the no-action alternative, PG&E would not surrender the license for operation of the Kilarc-Cow Creek Project and project facilities would not be decommissioned. The Kilarc-Creek Project would continue to operate under the terms and conditions of the existing license. There would be no disturbance of existing environmental conditions at the site. The no-action alternative is the status quo and it will serve as our baseline conditions for comparing the effect of the licensee's proposal and other alternatives.*

Comment: The Kilarc *status quo* is dominated by a community that has been built around it, and dependent from its inception on the presence of the Kilarc forebay and its recreation. If the forebay were removed, impacts would include a loss of fire protection, some water supply, employment, and most important in this area, fishing and handicapped recreation. From a fish resource perspective, the current conditions are unacceptable at the Kilarc facility.

## **4.0 SCOPE OF CUMULATIVE EFFECTS ANALYSIS AND ENVIRONMENTAL ISSUES**

*According to the Council on Environmental Quality's regulations for implementing NEPA (50 CFR §1508.7), an action may cause cumulative effects on the environment if its effects overlap in space and/or time with the effects of other, past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time, including hydropower and other land and water development activities.*

### **4.1 Cumulative Effects {Over time}**

*Based on information in the license surrender application, agency comments, other filings related to the project, and preliminary staff analysis, we have preliminarily identified the resources that have the potential to be cumulatively affected by the cessation of operation and decommissioning of facilities at the Kilarc-Cow Creek Project. Those resources are water quality and fisheries.*

Once again, DH suggests that additionally Air Resources must be considered. Otherwise review agencies actively choose to ignore generation construction and operation effects as well as the negative fish resource impacts that will be the consequence of any demolition. To ignore Air Resources and Air Quality impacts condemns this planet to global warming and its cold water fish to a very grim future.

**4.1.1 Geographical Scope**

*The geographic scope of the analysis defines the physical limits or boundaries of the proposed action's effects on the resources. Because the proposed action would affect the resources differently, the geographic scope for each resource would vary. For water resources, the change in flow to the bypass reaches following decommissioning of the project will affect water use and water quality, particularly water temperature.*

*Therefore, we propose that the geographic scope considered for analysis of the Cow Creek Development should extend from the pools at the upstream diversion dams on Mill Creek and South Cow Creek to the first diversion on South Cow Creek downstream of Hooten Gulch to include Wild Oak Development and Abbott Diversion. For the Kilarc Development the proposed geographic scope for water resources should extend from the project diversion dams at North Canyon Creek, South Canyon Creek, and Old Cow Creek downstream to the head pool of the Olsen Project downstream of the Kilarc tailrace on Old Cow Creek.*

*For fisheries resources, we propose that the geographic scope of analysis should extend from the upstream end of the action area downstream to the confluence of Cow Creek and the Sacramento River because availability, access, and quality of fish spawning and nursery habitat for the listed Central Valley species units of steelhead trout and Chinook salmon would be affected in the Cow Creek Basin by this proposed action.*

**Generation Expansion Adjustment of Scope**

The FERC-suggested geographical scope described in italics above is incomplete and inadequate. A major impact of decommissioning this project will be the construction or expansion of other power generation facilities to make up for the lost power. Either one assumes that people will stop using electricity as a result of the decommissioning, or one assumes that the electricity will have to be produced in plants that are either built or expanded to make up for this loss. Since all generation – and especially fossil generation, has an extensive construction and operation environmental footprint, the analysis at a minimum must include all geography affected by the destruction and the construction and operation of new replacement facilities.

**Environmental Boundary Conditions**

Since all new green generation in California is now well funded, but limited by environmental restrictions, it can be reasonably assumed under a constrained optimization of a generation expansion analysis that any replacement power will have an identical environmental footprint to that which is being removed. This is because the first order conditions of any such solution will show that under binding environmental constraints (the conditions in California) an optimal generation expansion path will require equality of marginal environmental losses, however measured, for any type of power. Since a hydro plant is being considered for demolition, the incremental environmental losses will be those of a new or expanded hydro plant. The environmental

consequences of the replacement power can be approximated by a similar new or expanded dam and plant, along with construction impacts and the associated expansion in all needed transmission expansion to bring it to market.

### **Economic / Environmental Impact Stimulus Effect**

The destruction of the existing facility and the incremental increase in replacement generation will have a stimulus effect far remote from the confines of either the existing project boundaries or the immediate work area. The industrial and resulting economic activity will have environmental consequences on water, land and air resources around the globe – both direct effects emitting pollution into the streams and atmosphere and indirect effects through the economic multipliers.

### **Negative Pressure on Resources by Displaced Fishermen**

Further, this facility provides recreation to thousands of people every year. Almost entirely this is a “Put and Take” facility of the Kilarc Forebay. If this facility is destroyed, these fishermen will travel to fish in other streams such as the Cow Creek proper or Battle Creek nearby which are full of the very fish that we are trying to protect. Either one assumes that people will stop fishing, or one has to include the intended and unintended negative impacts on target steelhead and salmon in the Upper Sacramento as the result of this increased fishing as a result of removal of the fishing in the Kilarc forebay and the resulting compensatory actions by fishermen.

Under the reasonable assumption that planted rainbow trout are less valuable than wild possibly anadromous fish, and fish are an issue here, we must extend the analysis to address the geographical area that these fishermen may access – roughly that of this Steelhead DPS. Thus, at a minimum, we have to consider the area and fish that will be impacted by the displaced recreation.

A more complete analysis would look at the change in driving by fishermen and consider adding the negative environmental impacts of that transportation change to the effects of the demolition. This can be accomplished using a similar I/O model used to address the industrial effects above<sup>4</sup>.

### **Generalization and Principle**

The FERC in proposes a scope confined to the immediate waters and downstream. This is a NIMBY definition of impact area, unworthy of any state or federal agency involved. FERC is here because of the larger – national implications of balancing electric power benefits and the environmental consequences of generation.

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<sup>4</sup> The analyst will recognize that quantity I/O matrices rather than dollar volume will be preferred here.

It is the wider, historically national, scope that gives FERC the mandate to examine local decisions within a national context. Yet, the proposed geographic scope is not based on a national perspective, only a narrow local one. Likewise, NOAA is an agency responsible for our atmosphere and oceans. This is an existing green power source. The greenhouse effect of fossil generation, and the pollution from the demolition and new source construction activities throughout our economies is destroying our planet, yet, with a geographic scope so narrow these small incremental effects can irresponsibly be ignored. It is exactly these incremental atmospheric and global effects that are important. By destroying sustainable/renewable power sources, project by project, we are destroying our planet. These fall under the purview of NOAA. If a policy of ignoring them is and remains extant then a) our planet is doomed, and b) NOAA has no reason to be here.

Likewise, NMFS (an agency of NOAA) has a specific charge to be concerned about marine fish. Including human predation, no other effect on our oceans is as profoundly and rapidly destroying species as is global warming. The effects on marine life from warming and acidifying seas have been recently documented in the worldwide destruction of corals. Many thousands of species are becoming extinct from the wanton destruction of our atmosphere and consequential warming engendered by destruction of renewable projects such as the Kilarc facility. Included in the calculus of evaluating steelhead behavior impacted by man, has to be the destruction and extinction of many other land and marine species as a result of destroying projects like these.

Thus any analysis by NMFS should include on a global scale all species that are being destroyed should this project be removed. This should include the thousands of species of corals, fish, birds and other creatures that will be affected by the removal of this project. In summary, the geographic scope of the analysis should include as a very minimum the area governed by the authority of NOAA and its Oceanographic and Atmospheric credentials, and/or that of the FERC and its national responsibility,, or by the very footprint of the renewable resource destruction so strongly advocated by these agencies.

#### **4.1.2 Temporal Scope**

*The temporal scope of our cumulative effects analysis in the EA will include past, present, and future actions and their possible cumulative effects on each resource. The temporal scope will look into the future, concentrating on the effect of reasonably foreseeable future actions on the resources. The historical discussion will, by necessity, be limited to the amount of available information for each resource.*

As discussed above the following temporal scope should be considered:

- The length of time that the fossil generation which will be built or expanded to replace this generation, will operate and pollute our atmosphere.
- The length of time the planet will suffer from the global warming caused by agency policies that encourage incremental local actions such as these.
- The length of time the planet will take to recover from the incremental industrial activity caused by this renewable generation destruction.
- The length of time it will take to replace the recreation in a handicapped fishing place as beautiful as the Kilarc.
- The length of time for other programs to be enabled that will be as effective at restoring anadromous fish as those proposed in the DH Alternative.

## **4.2 Resource Issues**

*In this section we present a preliminary list of environmental issues to be addressed in the EA. We identified the issues, which are listed by environmental resource area, through our review of the license surrender application and the Commission's record for the Kilarc-Cow Creek Project. This list is not intended to be exhaustive or final, but it is an initial listing of issues that have been raised and could be significant. After scoping is complete, we will review the list and determine the appropriate level of analysis needed to address each issue.*

### **4.2.1 Geology and Soils**

*Effects of proposed decommissioning activities on the geology and soils of the area including increased use or improvement of access roads, bank instability, erosion, and/or sedimentation.*

None of these are significant issues at the Kilarc – Old Cow project under any alternative. Since there are few fish in the affected bypass reach, the Kilarc diversion dam small and partially natural, and the roads distant from the Old Cow Creek, the winter floods erosion debris completely overwhelms any runoff from the demolition if only modest measures are taken. What will be significant going forward will be the runoff from the increased prevalence of fires in the area if the forebay were removed.

*Effect of breaching diversion dam on redistribution of sediment accumulated behind diversion dams.*

There is little behind the dam and almost no fish downstream.

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*Effect of downstream dispersal of accumulated sediment on fish spawning gravel and pools in bypass reaches.*

There is little material behind the Kilarc dam – certainly relative the huge transport in large winter storms. There are few spawning gravels, and fewer fish.

*Effect of erosion and sedimentation associated with deconstruction of canals, diversions, and access roads on water quality*

There are few fish in the bypass currently, and the Kilarc roads and canal are generally far from the streams. Requiring extensive runoff mitigation measures in this instance costs PG&E considerable expense and collateral damage in their implementation, and will not be taken seriously by concerned people.

*Effects of heavy metals and contaminants in accumulated sediments behind Kilarc diversion dam on downstream water quality and sediment quality.*

The only metal observed is natural copper from the extensive lava flows, and the amount of material is negligible. This is a non-issue under any alternative. While there appears to be extensive hydraulic mining and gold exploration in the area, DH is unaware of any Hg or other metallic pollution not originating in the pyroclastic outflows forming the walls of the Old Cow bypass canyon.

*Effect of new hydrograph on streambank erosion above diversion dams and in bypass reaches.*

On the Kilarc site, the bypass channel is generally highly incised and cuts rapidly into high adjacent banks. Any increase in summer flow will only very slightly increase the rate of erosion and contribute to the mud/sand/gravel mix prevalent in the bypass.

#### **4.2.2 Water Resources**

*Effects of new flow regime on water temperature in bypass reaches.*

In the Kilarc bypass, the temperature of the important part of the bypass is controlled primarily by the flows from the cold springs on the north side of the bypass reach. The flow of this cold water is invariant other than that which is diverted out of North and South Canyon to the project.

However, since there are currently few fish in the bypass reach due to inaccessibility and predation by chordates such as snakes and bears, and since all the water in this area is fairly cold, temperature effects here may not be an issue.

*Effects of new flow regime on water temperature below tailraces.*

The extensive fish habitat areas far below the Kilarc facility are limited primarily by agricultural runoff and temperature. The Kilarc facility injects colder water into the tailrace causing the stream temperature to be cooler, and due to the reaction generation physics, better aerated than the bypass water. This cold well-oxygenated water from the hydro operations slightly decreases temperature in the downstream areas, slightly increasing their extent and habitat quality. If the generation were removed, the water would be slightly warmer due to its slow passage at lower elevations. This would negatively impact fish large juvenile salmon and steelhead habitat downstream.

*Effects of new flow regime on dissolved oxygen in bypass.*

The bypass reach of the creek is well aerated due to the myriad small falls and riffles, the lack of instream vegetation, and the near complete lack of agricultural runoff. The differential oxygen effects are unknown, but not expected to be large.

*Effects of new flow regime on coliform bacteria in bypass.*

Other than bear and deer, there are few significant sources of upstream coliform.

*Effects of new flow regime on hydrographs of Old Cow and South Cow Creeks.*

While there is some surging during hydro start-up and load rejection, these are slow and relatively rare events. These surges are expected to be comparable to similar surges seen before and after seasonal storms.

*Effects of proposed changes in water diversion on water availability to German Ditch and Abbott Ditch.*

The Davis Hydro alternative intends to approach the German Ditch Association with resources for various improvements that will maintain their diversion while screening out passing steelhead and salmon juveniles. These improvements and consequential support of the steelhead population in the South Cow are part of the DH alternative. While initial discussions have been started, nothing has been proposed or agreed to by any party at this time.

***Water for Fire Protection***

The town was built up under the *de facto* protection of the fire protection provided by helicopter fire fighting water from the Kilarc forebay. Whatever measures are installed to make up for the loss of fire protection (more ponds, more fire trucks, more clear cutting,

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more fire-set backs, more firemen stationed in the area) will all have an effect on the local and global economy and therefore environment. This is not a question of responsibility of PG&E to provide fire protection; it is simply an important feature of the community to be considered when considering Alternatives. The indirect effects are again the environmental effects on what the community does to compensate for the loss of fire protection. Whatever they do, new trucks, new reservoirs, new firebreaks, etc, the damage from the industry of their creation will be widespread.

The appropriate analysis geography for the local effects of the demolition extends at least as far as the coverage of fires by helicopter from the Kilarc reservoir and all areas to which fire could spread. The increased prevalence of these fires will ruin streams and will have a recurring negative effect on fish habitat into the indefinite future.

Examples may be of use: the immediate effects will be a statistical increase in the prevalence of fire in the area. The runoff from these fires will intermittently poison the streams and rivers that flow through them. That effect is local. It will only affect the waters and fish downstream of the fires.

*Effects of decommissioning on water uses including effects of proposed removal of water conveyance system on South Cow Creek and termination of Lake Kilarc on downstream water use for irrigation, ranching, and farming.*

At least one house obtains some of its water from Kilarc canal leakage – the Todd Wroe house. It draws from two different small creeks that come down off the area below the canal and forebay, one directly and one at some distance. There may be others.

*Effects of decommissioning on water uses including effects of proposed decommissioning on hydroelectric operations.*

(Repeating the above arguments) There is very little new hydroelectric generation being proposed in California, since the opposition for local “environmental” reasons is so high. This difficulty of small hydro development means that if the Kilarc facility is demolished, the replacement generation expansion will still have to expand in some manner with similar or greater environmental burden. Since fossil and nuclear generation expansion options are facing different but equivalent environmental barriers, it is expected that the incremental environmental consequences of the replacement power will be similar – no matter what the source<sup>5</sup>.

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<sup>5</sup> While this quasi-static equilibrium argument for analysis extent may seem obscure, the results are easily verified. As an example, due to the difficulty and cost of building small hydro power type facilities, PG&E has been endeavoring to allow the importation of this type of power from Canada where the environmental burden is higher

### 4.2.3 *Aquatic Resources*

*Effect of proposed decommissioning activities including diversion dam removal on anadromous fish migration and spawning habitat (steelhead trout, and fall-run Chinook).*

If we were to increase the trout fertility of the Old Cow bypass as the result of its having more water in the summer – and that is (a very big “if”), the fish that will be produced will be derived from the current upstream resident-adapted<sup>6</sup> trout population. If these resident (not steelhead) trout reproduce and emit juveniles downstream, these “resident-adapted<sup>6</sup>” juvenile rainbow will grow in the habitat areas of the Cow and compete with the possibly anadromous<sup>6</sup> trout and endangered salmon for habitat resources thereby applying pressure to squeeze out any anadromous fish (both steelhead and salmon) in the area. Since upstream migration to the Kilarc project area of any returning fish is at best intermittent and difficult<sup>7</sup>, the Old Cow bypass may become a significant depressant on populations of fish with anadromous tendencies throughout the Cow.

This again raises the geographic region issue. On the correct global scale of analysis, steelhead trout are now common across the central US, all across northern Asia, and northern Europe. If by increasing fossil emissions from the replacement power we increase global temperatures slightly, the tiny effect of this applied across the hundreds of millions of acres of steelhead habitat around the planet may be profound and very damaging to the species.

*Effect of released sediment behind diversion dams on fish passage.*

There is no observed fish passing upstream at Kilarc, unlike the South Cow. There are barriers of varying difficulty Whitmore Falls, another small hydro project in Whitmore, many small falls in the river, and one fall about half way up the bypassed region called the “impassable falls” for the perceived difficulty of fish jumping vertically over 11 feet from an 18” pool. The diversion dam at Kilarc is on natural rock and only about 5 feet

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due to transmission but the institutional and agency barriers against renewable energy are lower. This effort could be looked on as a case of exporting our environmental burden, as far as the wires will stretch, or could be seen as constructing renewable resources where possible on the planet. In any case, as the incremental cost of this transmission defines a minimum additional cost for the regulatory barriers against renewable energy faced in this state. Thus, examining the environmental footprint of these new facilities in Canada plus the incremental burden of the transmission line sets a floor for the “local” part of a full analysis of alternatives.

<sup>6</sup> If there is a difference between trout which may migrate to sea and those who are adapted to land, we use the “anadromy adapted” and “resident adapted” distinction. If there is no difference, then all trout can adapt anadromy and this particular effort has no definable significant value as there are millions of rainbow trout, and there is no fishing in this river. As one biologist expressed it, “either all trout can migrate or only some; one or the other, and if only some will migrate, we better propagate only those, as the others will never return and bung up the system”.

<sup>7</sup> This is simply a study of numbers. If there are only a few anadromous fish coming upstream a large number of resident-adapted fish coming downstream, the genetic pool will continue to be predominately resident-adapted.

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high. Just upstream, the steepness increases very rapidly off a lava field. The Old Cow rises 400 feet vertically in a giant cascade just upstream of the Kilarc diversion.

There is no significant sediment behind the Kilarc facility relative to that eroding rapidly off the canyon walls. There are few downstream fish to protect. This is a creek that is rapidly eating in to the canyon walls throughout most of its length.

*Effects of discontinued flows on fish community in canals, flumes, and forebays.*

At the Kilarc facility, there is significant spawning in the headrace, currently by brown trout<sup>8</sup>. This has been observed by DH staff and biological consultants. There may be rainbow trout spawning, but it is unlikely to be currently common, and has not been observed by DH or their consultants.

In the DH Alternative about one third of the Kilarc headrace will be modified into a large number of spawning beds. These beds will be primarily for the natural in-gravel breeding and growth of young steelhead. The origin of these fish will be gravid females and non-sterile males taken from trout stocks with observed anadromous tendencies. The fish will be allowed and encouraged to reproduce naturally in the beds, making their own redds, and covering the eggs naturally. These redds will be protected.

At the end of the headrace will be seasonal screens directing most fry into a small Creek that comes up close to the forebay that will allow the fish to return to the Old Cow – thereby populating it with anadromous juveniles<sup>9</sup>. Screens will also be used to keep the brown trout under control.

*Effects of new flow regime on fish community in bypass reaches.*

To repeat: the emphasis of the DH Alternative is to increase the concentration of anadromous fish in the area. This contrasts to other Alternatives which will encourage flooding the area with resident-adapted fish.

This question of the **fish community** raises a new interesting dimension to the question of scope. We have spoken in this summary of land, water, and air resources, but the one resource that is in acute shortage in this area is none of these, but a purported genetic

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<sup>8</sup> These brown trout are aggressive predators and every effort will be made to keep them from breeding in the new spawning beds under the DH alternative.

<sup>9</sup> Current release designs actually have three release points with the intent of inseminating the whole reach with anadromous fish as there is some reasonable juvenile and adult habitat on the reach.

resource, that of a propensity for anadromy in rainbow trout. As is identified by the FERC below, it is this behavior-related resource (should any exist) that is in apparent short supply. Since this behavior is engaging the endangered species list, anadromous-predisposition, adaptation, or enablement must be addressed as driving issues in this discussion.

This is a scoping study and a key issue here – due to the near complete lack of public access to the streams for fishing - is that of genetic composition of juveniles emitted downstream. Therefore, the scope of the analysis must include this genetic dimension of these animal resources. Specifically, how each alternative will, or will not, increase the concentration of anadromous fish in the Cow. Since the ESA issues are based on this resource issue, it must be recognized as a key element in any the scope of any analysis.

#### **4.2.4 Terrestrial Resources**

*Effects of proposed decommissioning activities on terrestrial wildlife and botanical resources including removal of diversion dams, grading and filling, disturbance, mortality or injury, and habitat loss and/or enhancement.*

In close examination of 4 piles of bear scat this fall in the bypass region no obvious fish bones were seen. Predation of fish by birds (in the forebay) and water snakes (in the bypass reach) was observed. Himalayan Blackberries are both sustaining the local bear and birds, and destroying the lateral cover over much of the lower half of the Kilarc bypass reach.

#### **4.2.5 Threatened and Endangered Species**

*Effects of proposed decommissioning activities on federally listed threatened, endangered, or candidate species or critical habitat in the project area, if any. These species may include the threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) and the California red-legged frog (*Rana aurora draytonii*). Aquatic species may include Central Valley steelhead (*Oncorhynchus mykiss*) distinct population unit; and Central Valley fall-run, late fall-run, and spring-run Chinook salmon (*O. tshawytscha*) population units.*

DH has no knowledge of these issues on the South Cow, and has only focused on the fish of the Kilarc. The population, and more important, composition of *O. mykiss* will be potentially affected by changes in the project. As summarized elsewhere:

- If the project is demolished the resident-adapted trout may emit more resident-adapted juveniles downstream crowding out salmon and steelhead.
- IF the DH Alternative is chosen, the possibility of many anadromous juveniles to be naturally reared in the Kilarc headrace is enabled, and

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- If the DH Alternative is chosen, fishing pressure will remain satisfied at the Kilarc forebay partially protecting in-stream salmon and steelhead in the Cow and nearby streams.
- If the DH Alternative is chosen, and there are any profits from project operations, 25 – 33 % of those profits will go into fish enhancement measures – in a way that they are most cost effective.
- If the DH Alternative or the demolition Alternative is chosen the new Abbott ditch diversion will be screened under new regulations and many more downstream migrating fish - possibly anadromous fish will survive by not being swept into the Abbot ditch.

#### **4.2.6 Recreational Resources**

*Effects of proposed decommissioning activities on public access (including access for the disabled) to project lands and waters. {Specifically,} the effects of the proposed termination of Kilarc forebay on recreation use of and recreational facilities at the project.*

Without the project, there may be no access in that the timber companies have been closing off roads due to destruction of roads, banks, and streams by four-wheelers. Further, hiking, and informal camping is done along the upper parts of the canal which are exceptionally beautiful. These would be less accessible without the project. The amount of the loss or recreation would be controlled by the timber companies and their exclusion of access by the public.

The extensive picnic and public park areas around the forebay would not be available the public. These are heavily used by fishing and non-fishing visitors alike. Last Sunday, for example, (Sept. 23<sup>rd</sup>) there were nearly a hundred people up in the Kilarc park areas at a community picnic – only a dozen or so were fishing.

*Effects of proposed decommissioning activities on angling opportunities at the project.*

The direct effects of the removing the Kilarc facility include:

- Elimination of fishing for rainbow near the Kilarc diversion, and for trout in a few spots along the canal.

- Destruction of the best, friendliest handicapped fishing in (at least) northern California<sup>10</sup>.
- Displacement of fishermen to more remote locations increasing auto travel leading to air pollution, global warming, and fish destruction across the globe.
- Displacement of fishermen from the family oriented, environmentally benign, Put-and-Take operation in the Kilarc forebay to the fish habitat areas downstream. There they will then catch the trout, steelhead, and salmon we all are trying to protect.

#### **4.2.7 Land Use, Aesthetics and Socioeconomics**

DH has no comments at this time on these issues, other than to say the loss of the views and ambiance for handicapped fishing would be tragic. The loss to the town's aesthetics would be profound, and would be a small decrease in employment in the area.

#### **4.2.8 Cultural Resources**

*Effects of proposed decommissioning activities on the eligibility of National Register of Historical Places (NRHP) and cultural resources at the project. Effects of proposed decommissioning activities on cultural resources at the project that have not been evaluated for listing on the NRHP.*

DH has uncovered evidence of hydraulic mining and gold working in the upper part of the bypass region. There are sluices, pipes, and a settlement basin. The first part of the Kilarc canal was probably constructed originally as a hydraulic mining water source.

That being a good possibility from the field evidence, and because the canal and artifacts would pre-exist hydropower and licensing, is it appropriate to demolish the diversion and destroy the old canal simply because it was later was used for hydropower?

*Effects of proposed decommissioning activities on any tribal resources that may be present at the project.*

Not a known issue at Kilarc.

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<sup>10</sup> This is entirely DH hear-say as we have no expertise in this area. We have asked all wheelchair visitors we come across in the past two years, and the basis of our statement is that none of them have suggested that any site is as nice as the Kilarc forebay for handicapped fishing.

## 5.0 REQUEST FOR INFORMATION

*The Commission staff requests... any information that will assist it in conducting an accurate and thorough analysis of the site-specific and cumulative effects of surrendering the license and decommissioning facilities at the Kilarc-Cow Creek Project. Types of information requested include, but are not limited to:*

### 5.1.1 Information,

Davis Hydro is in the process of developing and will supply GIS-located photographs of the following *Information*

- Photographs of the entire Kilarc bypass taken every 50 to 100 meters. The photos focus on the falls, barriers, cover and condition of the stream bottom. They include photographs of the gold working artifacts from the Kilarc bypass.
- Photographs of ospreys in the forebay and snakes eating fish in the Old Cow.
- GIS located gravel samples from the lower half of the Kilarc bypass.
- Mosaiced low altitude aerial high resolution photographs of the Kilarc canal and bypassed Old Cow Creek.

### 5.1.2 Quantified data

- Note that very little thorough data is available on fish in this area. There is much anecdotal data concerning rainbow on the Old Cow, and similar data is available on salmon and steelhead in the South Cow.
- See PG&E /Entrix reports and data cited below on resources.
- Limited data taken by Whitmore residents on temperatures of the water from the hydro and from the bypass showing significant difference in temperature.
- Stocking reports by CDFG include stocking of Old Cow Creek including Kilarc reservoir and Buckhorn Lake.

### 5.1.3 or Professional Opinions

Several biologists, stream restoration firms, and engineering consultants have conceptually reviewed the feasibility of the DH alternative. Their papers are available on eLibrary and in the document section of [WWW.Kilarc.Info](http://WWW.Kilarc.Info) (see “Bibliography and Sources” at the end of this document). Agencies have also expressed opinions on local issues and possibilities for fish introduction that are also available on these two sites.

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*that may contribute to defining the geographical and temporal scope of the cumulative effects analysis and identifying significant environmental issues; identification of, and information from, any other environmental assessment, environmental impact statement, or similar documents of studies (previous, ongoing, or planned) relevant to the surrender of license for the Kilarc-Cow Creek Project; existing information and any data that may aid in describing the past and present actions and effects of the project and other developmental activities on water quantity and quality, fish and wildlife resources, cultural resources, recreation resources, socioeconomics, or land use;*

PG&E, and through them Entrix, have supplied previous studies<sup>11</sup>. These and other relevant studies, information requests by agencies, letters, related studies (such as the Thompson water temperature study), and prior opinions are available at [http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/docs.htm](http://kilarc.info/Docs_Maps_Drawings/Documents/docs.htm).

*documentation that would support a conclusion that the proposed surrender of project license does or does not contribute to cumulative adverse or beneficial effects on resources (natural and social) and, therefore, should be excluded from further study or included for further consideration of cumulative effects.*

The request by the FERC quoted immediately above could be construed to support a conclusion that the PROPOSED surrender of project license ... should be excluded from further study. We answer that request by addressing the PG&E's demolition Alternative, and we have generalized the request by providing reasoning and documentation why other Alternatives also should be excluded from further study. This analysis follows.

## **SUPPORT FOR SELECTION OF DAVIS HYDRO ALTERNATIVE**

Documentation and reasoning that Alternatives need not be considered further addresses the currently known and cited four Alternatives within PG&E's license surrender process,

1. (A-1) No Change: Continued Operation under annual FERC licenses,
2. (A-2) PG&E's Proposed Demolition Plan,
3. (A-3) Davis Hydro's Fish Spawning Channel and Fish Resource Improvement Trust Fund,
4. (A-4) Steve Tetrick's Fish Habitat Enhancement Plan for Hooten Gulch,

Of these, Alternatives 1, 2, and 4 can be eliminated because they are inferior to at least one other alternative. The documentation and reasoning follows in the order listed above.

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<sup>11</sup> For Example [PG&E's Draft License Surrender Application](#), see detailed reference in "Bibliography and Sources" section of this document.

**5.2.1 Alternative 1 (A-1) - No Change: Continued Operation**

Examining Alternative 1, “No Change” This Alternative does nothing to improve the fish resource. It continues the current operation with no changes. In contrast, Alternative A-3 continues the current operation into the future. A-3 meets all known resource objectives, and has the significant possibility of producing a significantly enhanced fish resource through:

- a) A-3 has new spawning/production activities with the return channel in the headrace, - Alternative A-1 does not have this.
- b) A-3 will use of about 30 percent of profits for fish resources enhancement under the guidance of a biological technical committee in the Cow Creek area,
- c) Alternative A-1 unlike A-2, does not force the creation of a new Diversion in the South Cow for the Abbott Ditch users.
- d) A-3 adds experimental research on spawning beds, fish screens, and similar research projects as best needed to enhance the target fish resources,
- e) A-1 provides no education or outreach elements,
- f) A-1, unlike A-3, does not use profits, and hydro operation personnel for diversion maintenance and other local projects needing constant monitoring, and
- g) A-1 does not concentrate on known anadromous fish. It does not, if necessary introduce from other sources on the Sacramento, of *O mykiss* with history of anadromy. In fact, it does nothing to enhance fish stocks other than to supply cold water downstream, and take fishing pressure off nearby streams.

**5.2.2 Alternative 2 (A-2) Demolition of Whole Project**

Examining Alternative 2: “Demolition” A-2, is inferior to at least one other Alternative, and may not need to be examined further. Specifically it is inferior to A-3. The following factors are relevant:

- a) Alternative A-3 provides fish spawning areas along with an active fish production component leading to a high probability of spawning success with known anadromous fish. In contrast, Alternative A-2 provides the newly created “natural channel” with limited spawning areas and little, if any, anadromous stock for reproduction. At best this will lead to an increase in non-anadromous fish.
- b) Extensive local and remote damage to our atmosphere and planet, and therefore, in passing, global fish resources due to direct and indirect effects of demolition activity and replacement power; Alternative A-3 has none of these.
- c) This alternative forces the creation of a new Diversion in the South Cow for the Abbott Ditch users.

- d) Alternative A-2 destroys all community services provided by the Kilarc canal and forebay. PG&E has done an excellent job integrating these services with the community and providing them at no cost. These include, but are not limited to:
- i. Slightly colder water delivered downstream to the extensive temperature limited fish habitats of the Cow. With alternative A-2 the water below the project will be warmer in the summer due to its slower passage at lower altitudes, thereby incrementally destroying fish resources.
  - ii. The best handicapped fishing in Northern California. This has no substitute.
  - iii. Extensive irreplaceable fishing and picnicking recreational use of the area. Due to its unique setting and easy access, there is no local substitute.
  - iv. Fire protection for the Whitmore Community. – Any substitute will be energy intensive and costly. (see County’s comments appended to the Tetrick Alternative FERC filing).
  - v. Water supply, to at least one house.
  - vi. Minor amounts of employment and non-fishing related recreation.

It might be argued that “natural conditions are best”. However, there are no natural conditions in that this site has been operating for over a hundred years and the streams have changed the landscape significantly in that time as witnessed by the controversy over the Abbott Ditch on the South Cow. Equally important, there is no evidence that in this case “natural conditions” will be best due to the current saturation of the area with non-anadromous fish and the limited fish return possibilities.

Perhaps two relevant scoping questions are raised by this expression “natural conditions are best”: What are “Natural Conditions” in the Kilarc context? and what does “best” mean in this case? Perhaps a starting point is to ask if there is very little public fishing access to the bypass reach, is the fish resource value of this project is primarily how many fish can be emitted downstream to the large accessible fish habitats below the project. Alternative A-3 maximizes this number and especially maximizes the number of anadromous fish emitted.

### 5.2.3 Alternative 4 (A-4) The Tetrick Alternative

Examining Alternative 4:<sup>12</sup> The Tetrick Alternative<sup>13</sup>, A-4, consists of several elements:

- Operation of South Cow as current. (*id* p.2)

<sup>12</sup> The following summary is derived from P-606 filing assigned FERC accession No. 20090713-5165. The page numbers refer to the typed page numbers in that document)

<sup>13</sup> Ibid page 1 The Tetrick Alternative refers to Tetrick Ranch, each of the Abbott Ditch Users, and Shasta County. For simplicity, and in concert with local parlance – without intended slight to Shasta County or unnamed Abbott Ditch users, we refer to Alternative 4 as the Tetrick Alternative.

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- Operation of the Kilarc as current. (p.2)
- Use of hydro revenues for improvement and operation of the existing Hooten Gulch fish habitat area (p. 27-28).
- Possibly curtailing the Poulton hydro project in Hooten Gulch. (p. 27, 28)
- County operation of the Kilarc facility, which would receive a portion of the costs of maintaining the Kilarc recreation features from hydro revenues (p. 15).

Evidence that this alternative can be eliminated from further consideration when compared to at least one other Alternative is embedded in the description and the current stewardship of Hooten Gulch:

- a) The South Cow above the project is currently prime steelhead habitat. Not enhancing access to this area would be a great negative impact when viewed against Alternatives that rewater Wagoner Canyon to provide better anadromous access to this region. Hooten Gulch with its interruptible flows from tenuous hydro operation cannot compare to the natural spawning and juvenile grounds upstream.
- b) Likewise, the large forested fish habitat areas South Cow above the project is almost-accessible salmon habitat that has been cut off by the project. Not enhancing access to this area would be a great negative impact when viewed against Alternatives that rewater Wagoner Canyon with steady water flow and facilitate fish passage up and down stream.
- c) Currently, water diversions such as the Abbott Ditch are allocated more water than is in the Creek during parts of the year. By providing more flow in a benign channel, and a new screen on a new diversion, (p.32) more seaward migrating fish will be available to be swept downstream past the diversion. Because of the upstream habitat in the South Cow – even now filled with steelhead and the very occasional salmon, every effort should be made to allow enough screened water for downstream migration. Alternatives A-2 A-3 creates the need for a new screened diversion, A-1 and A-4 does not.
- d) Much of Hooten Gulch existing fish habitat above the Abbott Ditch is currently filled with cattle walking in the stream and destroying whatever habitat and redds there are. It is uncertain how this practice enhances existing fish habitat and enhancement going forward.
- e) Alternative A-3 specifically takes over all recreation obligations as PG&E does such a good job now. This compares with the partial support of the County take-over as included in the A-4 proposal.
- f) Alternative A-3 has a very pro-active fish spawning and anadromous epi-genotype enhancement and production program. This is not present in Alternative A-4.
- g) Hooten gulch flow will detract upstream migrants into the small Hooten Gulch habitat under A-4. This will continue to denude the much larger habitat of upstream habitat of migrants because of the diminution of attraction flow from the

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South Cow. This is the current situation, and will continue under A-4. This diverting attraction flow is eliminated under A-3.

## BIBLIOGRAPHY AND SOURCES

Virtually all documents filed with the FERC on this Docket are available at the FERC Web Site at <http://www.ferc.gov/docs-filing/elibrary.asp>

Others – some news articles, and perhaps simpler to access to most documents are available from Davis Hydro at [http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/docs.htm](http://kilarc.info/Docs_Maps_Drawings/Documents/docs.htm)

Diagrams and photographs of the Kilarc site are available from Davis Hydro at: [http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/docs.htm](http://kilarc.info/Docs_Maps_Drawings/Documents/docs.htm)

Local Community Website with news releases and other community filings is available at <http://savekilarc.org/>

PG&E is providing some of their larger documents, environmental reports, and response to the FERC's additional information request (AIR) filings at: <http://www.kilarc-cowcreek.com/default.aspx>. The latest AIR data are currently only available at the FERC WEB site or as a CD from PG&E.

### **Of particular applicability to this filing**

The following are found in the FERC eLibrary filed under P-606:

FERC Accession No. 20090619-5008

Davis Hydro. 2009a. The Kilarc Steelhead Project. An Alternative to the Demolition of the Kilarc Hydropower Project. Davis, CA. June 2009. Also available at: [http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0432\\_Davis\\_Hydro\\_Alternative\\_20090619-5008\(20985259\).pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0432_Davis_Hydro_Alternative_20090619-5008(20985259).pdf)

FERC Accession No. 20090713-5112

Davis Hydro. 2009b. Project Scope and Studies. Davis Hydro Working Paper, K-4. Davis, CA. July 2009. Available at: [http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0460\\_Davis\\_Hydro\\_Supplemental\\_20090713-5112\(22071630\).pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0460_Davis_Hydro_Supplemental_20090713-5112(22071630).pdf)

FERC Accession No. 20090713-5165

Tetric motion to intervene, outlining his Alternative is at [http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0458\\_Tetric\\_Alternative\\_20090713-5165\(22073407\).pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0458_Tetric_Alternative_20090713-5165(22073407).pdf)

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while additional information provided to the community at the 2009 Kilarc Annual Community picnic is described at

[http://www.myoutdoorbuddy.com/fishing\\_hunting\\_water\\_report.php?water=1077](http://www.myoutdoorbuddy.com/fishing_hunting_water_report.php?water=1077)

## **Additional Sources Providing Context for Analysis**

Presentation by Desiree D. Tullos, California Water Board, July 23, 2007, "The Science and Practice of Restoration - Ghosts of Rivers Past, Present, and Future" slides available at

[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0262%20Tullos\\_Deseree\\_Stream%20Restoration%20July%202007.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0262%20Tullos_Deseree_Stream%20Restoration%20July%202007.pdf)

FERC Accession No. 20070731-5001

A Scoping Paper on the Kilarc and South Cow License Surrender Study Plans Suggested Project Surrender Alternatives and Derived Recommended Studies Presented to FERC P-606 Stakeholders including The Save Kilarc committee, The Friends of Cow Creek Preserve, The Cow Creek Watershed Management Group, Associated Ranchers and Water Rights Holders, and The People of Greater Whitmore Draft for Comment and Consideration, July 2007 by Davis Hydro, from which both the Tetrick and Davis Hydro alternatives have evolved.

[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0235%20Davis%20Hydro%20Scoping%20Study%20Plan%20Draft%20II.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0235%20Davis%20Hydro%20Scoping%20Study%20Plan%20Draft%20II.pdf)

FERC Accession Nos. 20070427-5112, 20070517-0080 and 20070531-3003

Notification of Intent to Seek A New License for FERC Project No. 606 Kilarc-Cow Creek of Davis Hydro LLC (denied by the FERC)

[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0070%20KC%20LLC%20%20NOI.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0070%20KC%20LLC%20%20NOI.pdf) and

[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0170%20FERC%20rejection%20of%20request%20to%20hold%20for%20filing%20of%20NOI.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0170%20FERC%20rejection%20of%20request%20to%20hold%20for%20filing%20of%20NOI.pdf)

preceded by Letter of Davis Hydro to FERC General Counsel Re: Future Licensing Options and Priority for FERC Project No. 606 Kilarc-Cow Creek (not available on eLibrary, but only at link below)

[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0060%20FERC%20General%20Counsel.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0060%20FERC%20General%20Counsel.pdf)

## **Environmental Studies**

PG&E's Biological Assessment (Internal Draft) August 2009, Available from FERC – E-library

Pacific Gas and Electric Company (PG&E). 2007. Kilarc-Cow Creek Project, FERC No. 606, Aquatic Habitat and Fisheries Resource Report. Prepared by Entrix, Inc., Concord, CA. November 2. Available at:

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[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0328%20Aquatic%20Habitat%20from%20PG&E%20Dec4%202007.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0328%20Aquatic%20Habitat%20from%20PG&E%20Dec4%202007.pdf)

Cow Creek Final Watershed Assessment 2001 This is available at [http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0007%20Cow%20Creek%20Final%20Watershed%20Assessment%202001.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0007%20Cow%20Creek%20Final%20Watershed%20Assessment%202001.pdf). It is 25 Megabytes.

Regarding temperature effects on salmonid habitats in northern California, see Thompson, Lisa C., Larry Forero, Yukako Sado and Kenneth W. Tate, *Impact of Environmental Factors on Fish Distribution Assessed in Rangeland Streams in California Agriculture*, Volume 60, Number 4, pp. 200-206.

[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0090%20Lisa%20Thompson\\_Paper\\_Impact%20on%20Fish.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0090%20Lisa%20Thompson_Paper_Impact%20on%20Fish.pdf)

and

[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/KC0260%20Thompson\\_Lisa\\_%20July\\_2007\\_Restoration\\_Paper.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0260%20Thompson_Lisa_%20July_2007_Restoration_Paper.pdf) “Stream Ecology from a Fish’s Perspective: Habitat, Connectivity, and Flow” – a collection of 57 slides presented by Lisa Thompson and to be filed shortly on the FERC eLibrary under P-606 for reference in this proceeding.

Studies commissioned by Davis Hydro, from which both the Tetrick and Davis Hydro alternatives have evolved, include:

FERC Accession No. 20080707-5045 (4 documents found at pages 25-41 of FERC-generated .pdf)

Kawabata, “Feasibility of a Fish Production Facility in the Kilarc Canal, A Field Report, June 2008” also available at

[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/Alternative\\_1\\_June\\_20\\_2008/KC0336k%20Research\\_papers.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/Alternative_1_June_20_2008/KC0336k%20Research_papers.pdf)

Cramer Fish Sciences (Joseph Merz & Bradley Cavallo), “Fishery evaluation for South, Old Cow Creek Hydroelectric Facilities” also available at

[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/Alternative\\_1\\_June\\_20\\_2008/KC0336f%20Cavallo%20Fish%20Biologist%20Report%20043008.pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/Alternative_1_June_20_2008/KC0336f%20Cavallo%20Fish%20Biologist%20Report%20043008.pdf)

StreamWise Stream Assessment and Restoration (Rick Poore), “Observations made during our April 2, 2008 site visit to the South Cow Creek (Tetrick Ranch) and Old Cow Creek (Kilarc) project areas” also available at

[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/Alternative\\_1\\_June\\_20\\_2008/KC0336g%20Poore%20Restoration%20assessment.doc](http://kilarc.info/Docs_Maps_Drawings/Documents/Alternative_1_June_20_2008/KC0336g%20Poore%20Restoration%20assessment.doc)

Todd Sloat Biological Consulting, Inc. “Summary of observations made on 2 April 2008, at the Kilarc project area” also available at

[http://kilarc.info/Docs\\_Maps\\_Drawings/Documents/Alternative\\_1\\_June\\_20\\_2008/KC0336h%20Sloat%20Endangered%20Species%20Winter%20Report%2004-14-08.doc](http://kilarc.info/Docs_Maps_Drawings/Documents/Alternative_1_June_20_2008/KC0336h%20Sloat%20Endangered%20Species%20Winter%20Report%2004-14-08.doc)

Davis  
Hydro

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Scoping Comments

## Maps

Davis Hydro and PG&E maps at various resolutions are available from Davis Hydro at: [http://kilarc.info/Docs\\_Maps\\_Drawings/Maps/Maps.htm](http://kilarc.info/Docs_Maps_Drawings/Maps/Maps.htm).

In particular, electronic .pdf versions of the GIS maps shared at the September 27, 2009 Second Annual Community Picnic at Kilarc Reservoir, that will also be distributed at the site visit and FERC scoping meetings next week, are found at the following links:

Figure 1 - The whole Kilarc canal showing major features

[http://kilarc.info/Docs\\_Maps\\_Drawings/Maps/Other%20Maps/Figure\\_1\\_Labled\\_The\\_Kilarc\\_Alternative.pdf](http://kilarc.info/Docs_Maps_Drawings/Maps/Other%20Maps/Figure_1_Labled_The_Kilarc_Alternative.pdf)

Figure 2 - The section of the canal showing the first two Upper Spawning sections and fish return features. (not readily accessible from the picnic at the forebay)

[http://kilarc.info/Docs\\_Maps\\_Drawings/Maps/Other%20Maps/Figure\\_2\\_Labled\\_Alternative-Diversion\\_Area.pdf](http://kilarc.info/Docs_Maps_Drawings/Maps/Other%20Maps/Figure_2_Labled_Alternative-Diversion_Area.pdf)

Figure 3 - The Lower Section of the canal showing the fish return options.

[http://kilarc.info/Docs\\_Maps\\_Drawings/Maps/Other%20Maps/Figure\\_3\\_Labled\\_Alternative-End\\_of\\_Study%20Area.pdf](http://kilarc.info/Docs_Maps_Drawings/Maps/Other%20Maps/Figure_3_Labled_Alternative-End_of_Study%20Area.pdf)

## Forthcoming Data

Davis Hydro is in the process of developing and will supply GIS-located photographs of the following *Information*

- Photographs of the entire Kilarc bypass taken every 50 to 100 meters. The photos focus on the falls, barriers, cover and condition of the stream bottom. They include photographs of the gold working artifacts from the Kilarc bypass.
- Photographs of ospreys in the forebay and snakes eating fish in the Old Cow.
- GIS located gravel samples from the lower half of the Kilarc bypass.
- Mosaiced low altitude aerial high resolution photographs of the Kilarc canal and bypassed Old Cow Creek.

Document Content(s)

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