

Ms. Kimberly Burr, Esquire:
P.O. Box 1246
Forestville, CA 95436

9 November 2008

N C R W Q C B

MAR 16 2009

Dear Ms. Burr:

Here is my declaration in relation to the proposed Henry Cornell Winery negative declaration.

<input type="checkbox"/> EO	<input type="checkbox"/> WMgmt	<input type="checkbox"/> Admin
<input type="checkbox"/> Reg/NPS	<input type="checkbox"/> Timber	<input type="checkbox"/> Legal
<input type="checkbox"/>	<input type="checkbox"/> Cleanups	<input type="checkbox"/> Date

Qualifications

I am Stacy K. Li, Ph.D. and have recently retired from the National Marine Fisheries Service (NMFS), where I served as a salmon and steelhead ecologist, an Instream Flow Specialist and the Water Rights Specialist for the Habitat Conservation Division of the South West Region from 12 February 2001 to 30 September 2008. I also served briefly as the Enforcement Biologist for the South West Region of the Office of Law Enforcement, National Marine Fisheries Service. I was the first and thus far the only Enforcement Biologist for the Office of Law Enforcement. I was awarded a NOAA Bronze Medal for superior federal service in April 2008 for a section 9 (Take under the Endangered Species Act) investigation involving timber harvest rules for a timberland conversion to vineyard, resulting sedimentation, and take of steelhead in Mendocino County.

Previous to federal service, I ran my own consulting business, Aquatic Systems Research, from 1989 to 2001. I was the California Department of Fish and Game's expert witness on instream flow flows for tributaries to Mono Lake in the historic State Water Resources Control Board Hearing on Mono Lake in the early 1990s and was part of the Mono Basin Streams Restoration Team. Prior to forming my own consulting firm, I worked for a number of environmental consulting firms, Beak Consultants (Sacramento), Holton Associates (Berkeley), EIP Associates (San Francisco), and D. W. Kelley and Associates (Newcastle). I began my professional biological career in 1980.

In addition to my experience as a biologist, I also participated in applied planning. I served as the Chairman of the Loomis Planning Commission in Placer County. The town's first general plan was created when I was chairman. I also helped develop storm water management guidelines for Placer County and participated on the Loomis general plan update committee.

I was educated at the University of California at Davis where I earned a Ph.D. in 1976 for work emphasizing animal behavior, ecology and evolution, a M.A. in 1971 in psychobiology, a B.A. in 1969 in psychology and a B.S. in 1968 in zoology.

Proposed Negative Declaration

I have read Sonoma County Planning Department's proposed negative declaration, dated September 2008, for the Henry Cornell Winery, located at 245 Wappo Road in Santa

Rosa, File Number UPE07-008 and have first hand knowledge of upper Mark West Creek where this project is proposed having visited twice as an employee of NMFS. In that proposed negative declaration, potential project related adverse effects to biological resources were not checked. Therefore, the proposed negative declaration is inadequate because I have observed severe adverse impacts from deposited sediments from the Cornell property that has adversely affected federally threatened steelhead trout (*Oncorhynchus mykiss*) and their habitat in Mark West Creek.

I understand from North Coast Regional Water Quality Control Board (NCRWQCB) inspection reports and conversations with neighbors that a substantial pile of fill material from the Cornell property was pushed into a low lying area near North Fork (NF) Mark West Creek in order to repair a landslide. The stored fill material resulting from the landslide entered the NF Mark West Creek and then into Mark West Creek during the winter of 2005-2006. Mr. Paul Keiran, NCRWCB, estimated the sediment volume from the Cornell property at 10,000 cubic yards.

Because I have inspected Mark West Creek when I worked for NMFS on at least two previous occasions prior to the sediment spill reaching the Caplinger property, I saw more clearly the adverse effects to steelhead trout and steelhead habitat from this large volume of sediment spill. I have reviewed pictures of the sediment spill taken by local residents and Mr. Keiran. The turbidity of the water appears to be sufficiently high to kill steelhead if steelhead were exposed to it for a day. The sediment from this release could be detected by its size composition (small gravel and finer) and its color (brownish) for over 4,000 lineal feet downstream of NF Mark West Creek in Mark West Creek during a habitat inventory survey that I conducted on 20, 21, and 30 October 2008.

The Cornell property is evidently prone to landslides. I do not recommend any activity that would tend to make these slides active. Upslope development will inevitably result in some loss of soil. Best management Practices are imperfect at best and do not eliminate soil loss or sediment deposition.

Description of Affected Reach of Mark West Creek

The reach of Mark West Creek from the Tarwater Bridge upstream to its confluence NF Mark West Creek consists mostly of a consistent gradient (approximately four percent) stream flowing through a narrow bedrock confined canyon. Long and deep pools occur at periodic nick points, but they are not many. Within the steeper segments of the stream are many small step pools and step pocket pools with steep cascades in between these juvenile rearing areas. On one hand, these rearing areas are more sensitive to degradation by sedimentation because of their small size they are easily filled. On the other hand, sediment travels through these habitat types more quickly because they are small and within steeper portions of the stream. Stream banks and tributaries other than NF Mark West Creek show little evidence of contributing substantial amounts of sediment to the stream. Riparian canopy and topographic shade were extensive.

Adverse Effects of Sedimentation from the Cornell Landslide on Mark West Creek

The adverse effects of sedimentation are so well known that monographs have been written on the subject (see Waters 1995¹).

- The large pools downstream of NF Mark West Creek were filled in with sediment, some to more than $\frac{1}{2}$ to $\frac{3}{4}$ of their original volume, reducing living space and escape cover, degrading holding and rearing habitat for steelhead trout. Some pool depths were reduced from over eight feet to less than two feet. Smaller step pools and step pocket pools within steeper slopes of the stream were also filled or buried with sediment, reducing juvenile steelhead rearing habitat. Low gradient riffles were generally so clogged with sediment that the space between the dominant bed elements were filled. This embedded condition greatly reduces benthic aquatic invertebrate production, which is used as food by steelhead.
- Steelhead spawning has been adversely affected by the sediment spill. Finer gravels of the Cornell sediment release that are ill suited for steelhead spawning have buried spawning gravel. The appropriate spawning material is hidden and unavailable. The smaller material from the Cornell sediment spill is easily scoured away by modest flows and would have reduced percolation through the redd's (fish nest) egg pocket.
- Deposits of sediment from the Cornell property have interrupted surface flow in four places of Mark West Creek to fragment steelhead habitat, interrupt fish food delivery, and create upstream and downstream fish passage barriers.
- I saw five adult steelhead stranded in Mark West Creek since June 2008. I find the number of stranded adults to be unusually high. Could the effects of the sediment spill or water diversion delay the adults and trap them in the stream?
- I also located an adult steelhead skeleton lying on the bank near the pool where three adult steelhead were stranded. There is a lack of space in the large pools for effective escape from predators since the sediment spill.

Eased on my observations of the condition of Mark West Creek in this reach prior to the sediment spill, the current state of the same reach degraded by the massive sediment plume, and my 28 years of professional experience assessing salmonid habitat and salmonids populations in California, Oregon, and Washington, the observed cumulative adverse habitat conditions on steelhead in the affected reach of the stream could easily reduce steelhead production in Mark West Creek by at least an order of magnitude.

¹ Waters, Thomas F. 1995. Sediment in Streams – Sources, Biological Effects and Control. American Fisheries Society Monograph 7, Bethesda, Maryland: 251 pp.

Streamflow as a Limiting Factor

Streamflow in Mark West Creek in late October 2008 was very low, on the order of 0.01 cubic feet per second (cfs). This is about the same volume as the full flow from a garden hose. Water diversion under these very low flow conditions could easily drain the stream. Water diversion purposes such as frost protection or heat control would be particularly debilitating because water need for these conditions is on a regional rather than an individual basis, so water demand is large and simultaneous. The 2008 frost protection season was the worst in recent history. There were at least two incidences where frost protection diversions killed federally listed species. In one case endangered coho salmon were killed because the small creek where they lived was sucked dry. Some pools in this small creek were three feet deep. The other incident occurred not in a small stream, but the mainstem of the Russian River. Close to 37% of the Russian River's flow as measured at the Hopland USGS gage was directly diverted and used for frost protection. That volume of diversion was sufficient to expose a gravel bar in the mainstem Russian River and kill recently emerged and threatened steelhead fry living there.

Groundwater extraction as occurring and proposed can also reduce streamflow in streams. Streams with low base flows such as Mark West Creek would be particularly susceptible. The adverse effects are delayed because water percolation underground takes more time to show its effects, but groundwater is part of the hydrologic cycle.

Endangered Species Status

Steelhead trout inhabit Mark West Creek. These fish are part of the Central California Coast Steelhead Distinct Population Segment that was listed as a threatened species under the U.S. Endangered Species Act (ESA) on August 18, 1997; the threatened status was reaffirmed on January 5, 2006 (71FR834). This Steelhead DPS includes all naturally spawned anadromous *Oncorhynchus mykiss* (steelhead) populations below natural and manmade impassable barriers in California streams from the Russian River (inclusive) to Aptos Creek (inclusive), and the drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chippis Island at the confluence of the Sacramento and San Joaquin Rivers. Tributary streams to Suisun Marsh including Suisun Creek, Green Valley Creek, and an unnamed tributary to Cordelia Slough (commonly referred to as Red Top Creek), excluding the Sacramento-San Joaquin River Basin, as well as two artificial propagation programs: the Don Clausen Fish Hatchery, and Kingfisher Flat Hatchery/ Scott Creek (Monterey Bay Salmon and Trout Project) steelhead hatchery programs.

A final designation of Critical Habitat was published on September 2, 2005 with an effective date of January 2, 2006 (70FR52488) and final revised protective regulations (4d rules) were issued for this DPS on June 28, 2005 (70FR37160).

The sediment deposit from the Cornell property is massive and will remain in the stream and continue to degrade steelhead habitat until sufficiently large flows can cleanse the Mark West stream channel. Until that time, steelhead production in Mark West Creek

will remain low. The sediment deposits have degraded all facets of steelhead life history from upstream adult passage impediments, reduction of available spawning gravels, reduced quality of spawning sites, reduced porosity in the interstitial embryo environments, reduced alevin (fry) emergence from the gravel from sediment clogged interstitial space, diminished rearing habitat quantity and quality, downstream migration barriers to both juveniles and adults, and increased incidence of adult stranding. Before any further development is permitted in this area this property, streamflow should be studied and restored, sediments removed naturally and anthropogenic sediment inputs eliminated.

Without regard for the adverse impacts from further development, the culvert on NF Mark West Creek and under Saint Helena Road is inadequate. It is undersized and has backwatered during high flows. If the backwater lasts sufficiently for the roadbed to become saturated the road will fail and send additional sediment to Mark West Creek. In addition, the culvert is also not at grade with the stream, and is therefore a fish passage impediment. Replacement of the culvert would be a project related mitigation. National Marine Fisheries Service has guidelines for culvert replacement.

I, Stacy K. Li, Ph.D., declare the above statements to be true.

Stacy K. Li
Signature

12 Nov 08
Date

Citations

Waters, Thomas F. 1995. Sediment in Streams – sources, biological effects and control. American Fisheries Society Monograph 7, Bethesda, Maryland: 251 pp.