Letter 12

Patrick Higgins
Consulting Fisheries Biologist
791 Eighth Street, Suite N
Arcata, CA 95521
(707) 822-9428
phiggins@humboldt1.com

July 30, 2009

Mr. Allen Robertson
California Department of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460

Re: Comments on Artesa Vineyard Conversion Draft Environmental Impact Report (SCH# 2004082094)

Dear Mr. Robertson,

Enclosed you will find a compact disc with my Artesa Vineyard DEIR comments and related Appendices. These files were all sent between 4:16 PM and 4:33 PM on Tuesday, July 28 via electronic mail in time to meet the comment deadline.

12-1 The files were transmitted from my wife Diane Higgins' computer and I BCCed myself and my clients on the same transmission. My personal computer and those of my clients all received the files, but your computer's spam filter caused my transmissions to be rejected. I am supplying proof of both transmission and reception through showing screen images from sending and receiving computers. Therefore, please make sure that these comments are put into the record and recognized as meeting the comment deadline.

Sincerely,

Patrick Higgins

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July 28, 2009

Mr. Allen Robertson
California Department of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460

Re: Comments on Artesa Vineyard Conversion Draft Environmental Impact Report (SCH# 2004082094)

Dear Mr. Robertson,

I provide the comments below on the Artesa Vineyard Conversion Draft Environmental Impact Report (DEIR)(Monk and Assoc. 2009) at the request of the Friends of the Gualala River. The emphasis of my comments will be on cumulative watershed effects from the project activities and likely impacts to coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*Oncorhynchus mykiss*), although I also touch on impacts to other native fish species, the western pond turtle (*Clemmys marmorata*) and the yellow-legged frog (*Rana boylii*). 12-2

Summary

While the DEIR for the proposed Artesa Vineyard is quite lengthy, there are major flaws in its scientific assumptions and the discussion of fisheries, water quality, hydrology and cumulative effects lack scientific credibility. Ecological problems and watershed and water quality conditions are more aptly characterized than in earlier drafts (Higgins 2003), but the DEIR falsely states that all problems from the project itself will be eliminated through use of best management practices (BMPs) or implementation of mitigation measures: 12-3

> "The DEIR found significant impacts related to air quality, biological resources, cultural resources, geology, hydrology and water quality, hazards, transportation and circulation, and noise. All of these impacts were reduced to a less-than-significant level through the implementation of mitigation measures."

Numerous studies of northern California logging impacts over the last decade (Ligon et al. 1999, Dunne et al. 2001, Collison et al. 2003) point out that on-site mitigation cannot prevent downstream damage when too great a watershed area is disturbed in too short a period, which is the case with the Gualala River and Patchett Creek watershed in which the project is taking place. While the DEIR presents alarming statistics on land use that indicate extremely rapid and extensive disturbance and development (i.e. 28% timber harvest in 10 years, > 6 miles of road/square mile), the cumulative effects significance is never discussed and instead old logging activities are blamed for the current aquatic conditions. Evidence presented regarding Patchett Creek indicates advanced cumulative effects that the project will most certainly exacerbate. 12-4

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12-5 In some cases the actual effects of the project are misrepresented, such as the claim that installation of tile drains and storage of runoff in a 73 acre foot reservoir will not alter groundwater recharge or base flow in Patchett Creek. Similarly, the likelihood that invasive and

12-6 voracious bullfrogs will colonize their pond and likely extirpate native yellow-legged frogs is also overlooked. The DEIR admits that steelhead use lower Patchett Creek in reaches that have perennial flow, but then stakes out the absurd position that because they cannot access upper reaches due to natural barriers that there will be no impact from the project on the species.

12-7 Despite five years since the first draft TCP, critical data gaps remain regarding use of Patchett Creek by steelhead, flow levels in the creek, groundwater levels at the project site, connection of groundwater and surface water and whether previous development and vineyard conversions have already depleted flows.

My Qualifications

I have been a consulting fisheries biologist with an office in Arcata, California since 1989 and my specialty is salmon and steelhead restoration. I authored fisheries elements for several large northern California fisheries and watershed restoration plans (Kier Associates, 1991; Pacific Watershed Associates, 1994; Mendocino Resource Conservation District, 1992) and co-authored the northwestern California status review of Pacific salmon species on behalf of the American Fisheries Society (Higgins et al., 1992).

Over the past 20 years I have reviewed over 50 timber harvest plans and written comments on several Total Maximum Daily Load reports (NCRWQCB 2001, U.S. EPA 1998, 1999), that examine timber harvest as a pollution source. My recent comments on the proposed Threatened and Impaired Watershed Rules (Higgins 2009) summarize my findings from all those studies and characterize the current status of coho salmon in the northwestern California, including the Gualala River watershed. I am attaching these comments as an Appendix with several other

12-8 relevant documents for the record.

My other previous work in the Gualala River basin includes the *Gualala River Watershed Literature Search and Assimilation* (Higgins, 1997), which I compiled for the Redwood Coast Land Conservancy. THP and TCP comments for previous clients include the following that I wish to incorporate into the record by reference. Please let me know if you would like me to retransmit copies of these for your files.

- Artesa Timberland Conversion Permit (TCP) 02-506 and Timber Harvest Plan (THP) 1-01-171 SON (Higgins, 2003a),
- Seaview TCP 02-524 and THP1-01-223 SON (upper South Fork Gualala River) (Higgins, 2003b),
- Hanson/Whistler Timberland Conversion Permit TCP 04-530 and THP 1-04-030 SON (Little Creek) (Higgins, 2004a),
- Negative Declaration for Martin TCP 04-531 and THP 1-04-059) (Little Creek) (Higgins 2004b), and
- THP 1-04-260 MEN (Dry Creek, North Fork Gualala River)(Higgins 2007).

Since 1994 I have also been working on a regional fisheries, water quality and watershed information database system, known as the Klamath Resource Information System or KRIS (www.krisweb.com). This custom program was originally devised to track restoration success in

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the Klamath and Trinity River basins, but has been applied to another dozen watersheds in northwestern California. The California Department of Forestry (CDF) funded KRIS projects in six northern California watersheds as part of the North Coast Watershed Assessment Planning effort, including the Gualala River (IFR, 2003). Several charts and maps within this report come from KRIS Gualala and the source data and raw data that support my assumptions can be checked on-line (www.krisweb.com/krisgualala/krisdb/html/krisweb/index.htm), including complete metadata that provides contacts for data sources.

Between September 2008 and the present I have been assisting the National Marine Fisheries Service (NMFS) with coho salmon recovery planning in southwest Oregon and have become intimately familiar with scientific literature on Pacific salmon restoration (Reeves et al., 1995, Doppelt et al. 1993, Bradbury et al. 1995). I am also attaching my comments on the *Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams* (SWRCB 2008) prepared for the Redwood Chapter of the Sierra Club because they cover the Gualala River watershed and cumulative effects problems of flow depletion are manifest throughout the region.

Effects of Proposed Artesa Vineyard on Fisheries

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Instead of collecting and presenting data on fisheries, such as whether steelhead are using lower Patchett Creek, the DEIR cites the California Natural Diversity Database indicating that they aren't present within ten miles. In fact the NCRWQCB staff has confirmed their presence in the perennial lower reaches of the creek and it must be assumed for discussion that they are present and dependent on continuing summer baseflows.

12-10

The DEIR cites the same source for location of the Gualala roach (3.3 miles west), but instead should have used North Coast Watershed Assessment Program (NCWAP 2003) data that are readily available in KRIS Gualala (Figure 1).

12-11

California Department of Fish and Game (CDFG) pooled September 2001 electrofishing data indicate that the lower Wheatfield Fork Gualala River had steelhead young of the year (0+) and yearlings (1+), but Gualala roach, stickleback and sculpin were more predominant in the sample. This fish community is indicative of a highly perturbed ecosystem with very warm water temperatures, but cold water seeps and springs or small tributaries are likely allowing for steelhead survival. In the middle reach of the Wheatfield Fork, CDFG found no steelhead and instead only the species more adapted to warm water (Figure 2). The Artesa Vineyard project will further deplete flows to Patchett Creek, which is likely also contributing either surface flows or sub-surface groundwater to the lower Wheatfield Fork. The type of exploration the DEIR should have engaged in was to determine whether the NCWAP team found steelhead juveniles at or below Patchett Creek. The patches of cold water in which steelhead are residing are known as refugia and the U.S. Environmental Protection Agency (2003) counsels that all such cold water sources protected as a priority, especially in large river basins with major water temperature problems. Bradbury et al. (1995) also point out that protection of these features is a priority, if Pacific salmon species are to be successfully restored. Although there are no water temperature data for lower Patchett Creek, it must be assumed that it has very cold water temperatures due to the nearness of groundwater and the incised shady canyon through which its lower reaches flow. Also, NCWAP (2003) water temperature data include a small unnamed tributary of the Wheatfield Fork Gualala (Figure 3) that has temperatures that are fully suitable for Pacific salmon and Patchett Creek would have a naturally similar regime.

12-12

CDFG habitat typing data show that the Wheatfield Fork lost surface flow during the summer of 2001 in many of its lower reaches (Figure 4). Flow depletion in Patchett Creek from the Artesa

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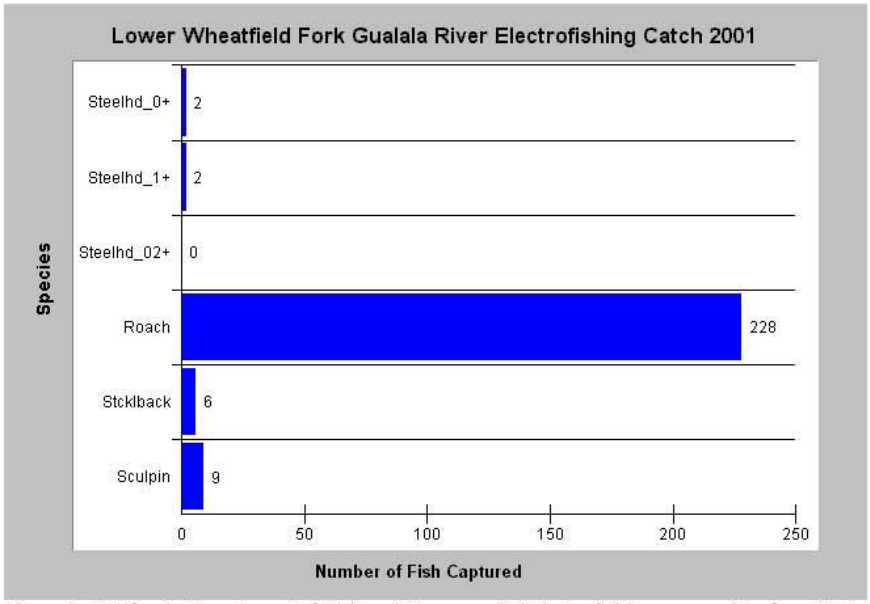

Figure 1. California Department of Fish and Game pooled electrofishing survey data from September 2001 showed that the lower Wheatfield Fork had steelhead but was dominated by warm-adapted fish. Data from CDFG and KRIS Gualala.

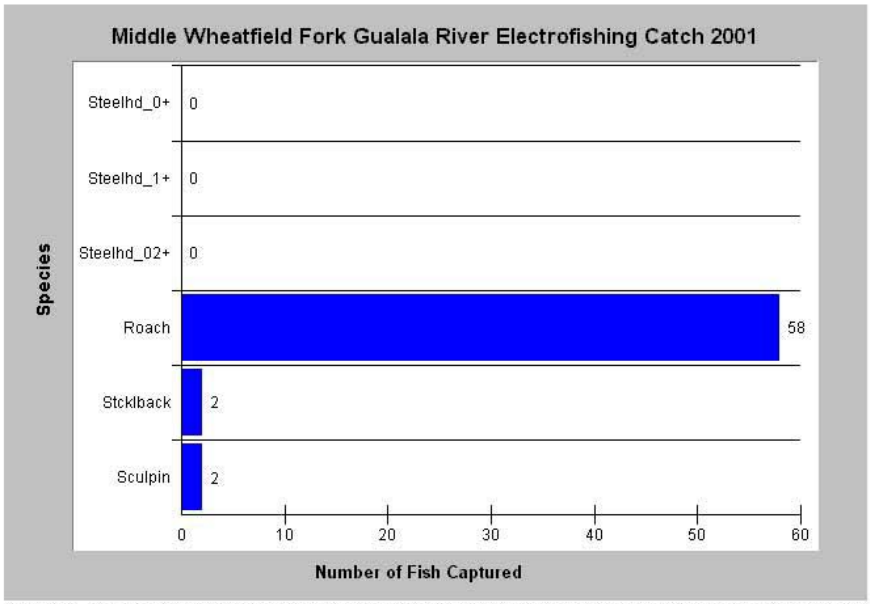

Figure 2. California Department of Fish and Game pooled electrofishing survey data from September 2001 showed that the middle reaches of the Wheatfield Fork Gualala had no steelhead and instead only warm-adapted fish species, particularly the Gualala roach. Data from CDFG and KRIS Gualala.

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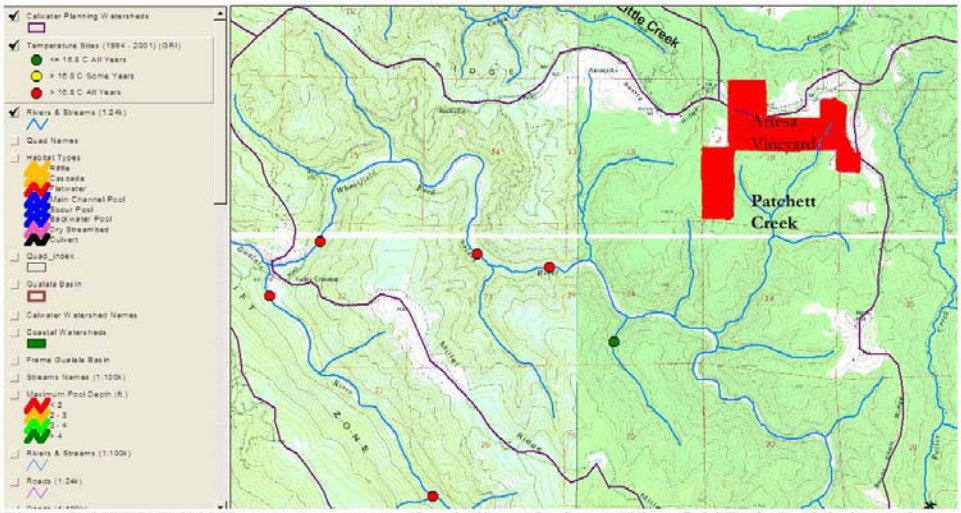

Figure 3. NCWAP (2003) water temperature data indicate the lower Wheatfield Fork Gualala is much too warm for coho salmon or steelhead but the unnamed tributary downstream of Patchett Creek was fully suitable. Data from NCWAP (2003) and KRIS Gualala.

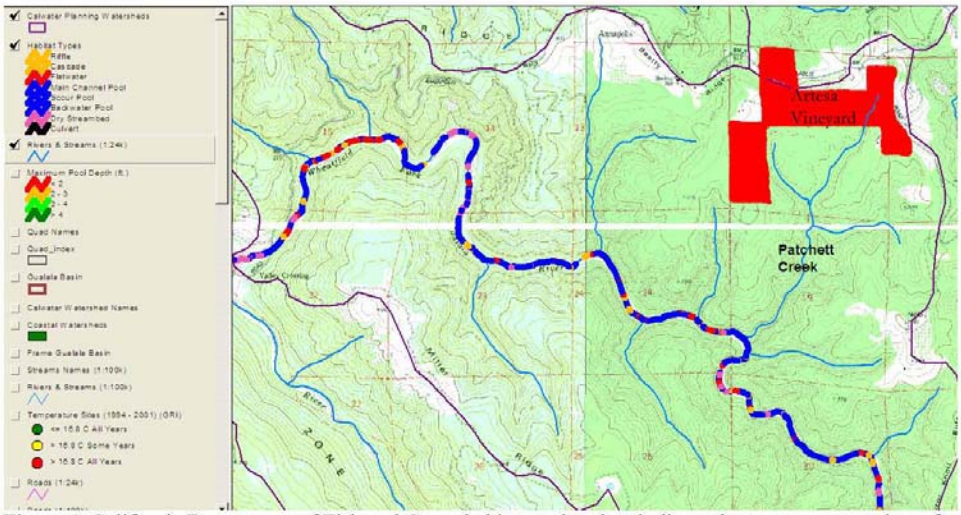

Figure 4. California Department of Fish and Game habitat typing data indicate that numerous reaches of the lower Wheatfield Fork Gualala lacked surface flow. This is indicative of cumulative effects related to aggradation, flow depletion and changes in watershed hydrology. CDFG data from KRIS Gualala.

Vineyard development with its tile drains and 73 acre foot storage reservoir will likely further deplete flows and cause additional reaches of the lower Wheatfield Fork to dry up. As surface flow is lost, even the hardy Gualala roach will decline.

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12-13 The DEIR does not mention the absence of Sacramento suckers in the Gualala River in all recent surveys, which is likely indicative of a major decline in their population, if not their wholesale disappearance. This fish is somewhat tolerant of sediment and very tolerant of warm water and its disappearance demonstrates the extent to which the Gualala River ecosystem has unraveled. As pointed out in my previous reports and comments (Higgins 1997, 2003, 2007), suckers formerly thrived in the mainstem Gualala after the 1964 flood but flow depletion has now greatly reduced viable summer mainstem habitat. The Gualala River watershed is almost homogeneously disturbed, resulting in a lack of clear water tributaries in winter leaving suckers exposed to high sediment transport levels. Suckers also deposit eggs on the surface of stream gravels and shifting bedload or fine sediment deposits likely limit hatching success.

12-14 Coho salmon are "extirpated in the Gualala River or nearly so" according to CDFG (2002), but no further degradation or additive cumulative effects stressors should be allowed if they are ever to be recovered (Kaufmann et al. 1999). DeHaven (In Press) has conducted steelhead spawner and redd counts on the mainstem Wheatfield Fork Gualala River since 2002 and has now compiled trend data for the adult population. His finding is that returns in 2009 were the lowest since surveys began and that it was down by an order of magnitude from the prior year (Figure 5). The estimated return 369 individuals is under the estimate of 500 recognized by Gilpin and Soule (1991) as a critical floor for populations to maintain genetic diversity, although there is likely genetic exchange with populations from other Gualala River sub-basins.

12-15 One of the major factors allowing steelhead to survive and for returns to sometimes be in the thousands is the critical role played by the estuary for juvenile steelhead rearing (Higgins 1997). Additional watershed disturbance, including the Artesa Vineyard project that cumulatively deplete flows and contribute sediment will ultimately lead to diminished estuarine volume and carrying capacity for steelhead, if development remains unchecked.

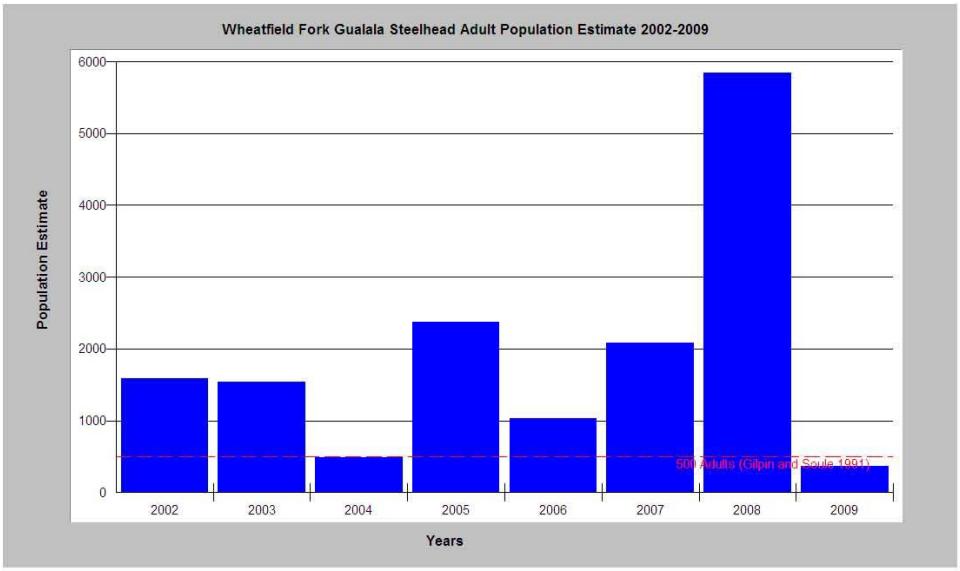

Figure 5. Adult steelhead surveys and redd counts of the Wheatfield Fork Gualala have been conducted by DeHaven (In Press) from 2002 to 2009. Trends indicate substantial fluctuation in returns.

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Despite noting that lower Patchett Creek below the proposed Artesa Vineyard has steelhead and agreeing with my assertion that it is likely naturally cold, the DEIR makes the following statement in the Biological Assessment (page 68):

> "The project site does not provide habitat for any fish species, listed or non-listed, since Patchett Creek and the tributaries onsite do not provide suitable flows or water depths for fish. Also, Patchett Creek dries almost completely in the summer months only retaining a few relatively small and shallow pools in the south central reach of Patchett Creek on the project site. While endangered fish species are known to occur in the Gualala River many miles downstream of the project site, the proposed project will not impact these species."

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This contrasts with another passage later in the Biological Assessment of the DEIR (p 143):

> "The Fisheries Assessment notes that, according to the North Coast Regional Water Quality Control Board (NCRWQCB), steelhead are found in the lower (Class I) reaches of Patchett Creek commencing about 4,800 feet downstream of the project area. Steelhead are not able to migrate above this point, as there is an impassable area to further upstream reaches."

Steelhead in lower Patchett Creek are not "many miles" downstream of the site, since the stream is only about two miles long. Patchett Creek is already suffering from extensive water extraction and development that the Artesa Project will add to and very clearly diminish if not eliminate carrying capacity for steelhead.

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Finally, the DEIR fails to mention another important, endemic anadromous fish that might be impacted by the Project, the Pacific lamprey. Lamprey use a sucking disc to hold fast to rocks and then loosen their grip and wriggle up rock waterfalls. A second order stream such as Patchett Creek would be expected to have smaller median particle size distribution suitable for lamprey spawning. Lower flows in lower Patchett Creek might also disrupt juvenile lamprey or ammocetes that remain in freshwater for up to four years. It is likely that high bedload mobility is also limiting the success of Pacific lamprey spawning and rearing in the Gualala and its tributaries, similar to problems affecting salmonids and the Artesa Vineyard will likely further degrade conditions for this species

Deficiencies of DEIR Discussion of Cumulative Effects

The Cumulative Effects section of the DEIR is riddle with scientific problems and in fact conveys the notion that somehow the Artesa Vineyards mitigation measures are so state-of-the-art that CEQA concerns do not apply:

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> The possibility exists that the "cumulative impact" of multiple projects will be significant, but that the incremental contribution to that impact from a particular project (e.g., Fairfax Conversion Project) may not itself be "cumulatively considerable." Thus, CEQA Guidelines section 15064, subdivision (h)(4), states that "[t]he mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." Therefore, it is not necessarily true that, even where cumulative impacts are significant, any level of incremental contribution must be deemed cumulatively considerable.

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The DEIR claims to be addressing cumulative impacts to fisheries at the Gualala River watershed scale, but in fact there is no candid discussion of the cause and effect relationship of land use and degraded aquatic environments at the scale of Patchett Creek or the Annapolis Calwater Planning Watershed scale let alone basinwide. The framework of the DEIS does not discuss pre-disturbance habitat conditions in Patchett Creek or the Gualala River with which Pacific salmon species like steelhead co-evolved. The historical background offered in the DEIR is telling in this regard: "The project area has historically been a rural/forested environment characterized by small farms and timber operations associated with the logging of the extensive redwood and fir forests." In fact the Gualala River watershed and this site would have historically been within the old growth redwood forest ecosystem where trees were often over ten feet in diameter (Figure 6) and stream systems profoundly different than their present condition in terms of depth, width, temperature, and habitat complexity. The changes in aquatic habitats in response to upland anthropogenic sources of stress, such as timber harvest and roads, are now well recognized by the scientific community (Reeves et al. 1993, Jones and Grant 1996, FEMAT 1993, Spence et al. 1996, NMFS 1996) and they will be discussed in sections below.

12-18

The DEIR admits that coho salmon and steelhead are in decline in the Gualala River basin but then makes repeated unsupported claims that all problems in the Gualala River watershed with regard to changes to the hydrologic regime and increased sediment yield that affect them are from past land use:

> "However, the direct factors that continue to limit the distribution and abundance of steelhead trout in the Gualala watershed, including reduced flow and increased sediment inputs and water temperature, result predominantly from the legacy of historic, improperly conducted land use practices. Present-day timber harvesting and road construction activities are subject to the water quality protection measures incorporated into the California Forest Practice Rules, while vineyards within Sonoma County are required to comply with the County Vineyard Sediment and Erosion Control Act (VESCO). It should further be noted that any future projects in the Gualala watershed and elsewhere in Sonoma County would be subject to CEQA environmental review, in which project-specific and cumulative impacts would be evaluated as part of the planning process."

12-19

Treating "modern" timber harvest practices and vineyard conversions as fully mitigated and not contributing to cumulative effects is a fantasy that has been debunked by numerous, recent northwestern California studies (Ligon et al. 1999, Dunne et al. 2001, Collison et al. 2003). Dunne et al. (2001) noted the California Department of Forestry's continuing "unquestioning and unverified reliance on mitigation" as a major impediment to recognition and prevention of cumulative effects. The following Dunne et al. (2001) quote argues against the DEIR's notion that reducing gully erosion will improve sediment conditions in Patchett Creek or that implementation of BMPs can be relied upon to prevent damage to downstream reaches:

12-20

> "While there are clear benefits of, say, removing unstable, eroding roads, the notion that such practices coupled with new land-use activities will avoid CWE is unsubstantiated. There has also been a reliance on untested mitigation measures rather than an effort to document CWE processes. The resulting belief that BMPs mitigate or prevent potential problems accounts for the proclivity among many THP applicants to assert that no cumulative effects will occur because they will be mitigated out of existence."

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Figure 6. Gualala supply wagon passing through old growth forest circa 1900 showing large diameter coastal redwoods typical of the pre-disturbance watershed conditions with which salmon and steelhead co-evolved. Fiscus family photo collection from KRIS Gualala.

This pattern exactly describes the DEIR with regard to the cumulative effects issue. Therefore, the DEIR is completely lacking with regard to CEQA compliance in this regard.

Hydrologic Cumulative Effects

12-21

The DEIR arguments that hydrologic cumulative effects of the Artesa Vineyard will be beneficial to steelhead is not supported scientifically. Groundwater issues are dismissed cavalierly, but the evidence of likely depletion is also presented that indicates major problems for steelhead and yellow-legged frogs downstream. The hydrologic impact of the 73 acre foot reservoir planned for the site is completely misstated and the ecological impacts are ignored (see Yellow-legged Frog Impacts).

12-22

The DEIR has little discussion of obtaining an Appropriative Water right from the State Water Resources Control Board (SWRCB) Water Rights Division (WRD) for the project or whether neighboring ponds are permitted. This constitutes a major cumulative effects omission of the DEIR with regard to illegal use of surface water in the region as documented in the *Draft North Coast Instream Flow Study* (SWRCB WRD 2008).

12-23

The Artesa Vineyard will construct a system of tile drains that is designed to prevent saturation of the soil and will also disrupt normal processes of percolation into the water table. Approximately 299 feet of upper reaches of ephemeral Patchett Creek tributaries will be filled yet the DEEIR claims that "downstream reaches will remain unaffected" and that "No proposed work in any tributary will impair, impede or obstruct flows in tributaries on the project site." Flows from the tile drain system are shunted into the agricultural storage reservoir. Based on data from Caspar Creek timber harvest and flow data, O'Connor makes the following claim in the DEIR:

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"Reduced evapotranspiration and canopy interception is the likely cause of increases in both total annual runoff and summer stream flow. Any increase in dry-season base flows would help maintain cooler water and enhance habitat that is critical to steelhead trout survival."

This argument is also hinged on the assumption that watering vineyards during the summer from the storage reservoirs will recharge groundwater throughout the summer:

12-23 Cont'd

"All water captured by this system will be recycled directly onto the vineyards on the project site. Thus, rainfall retention time on the land above the groundwater table will effectively be increased and consequently groundwater recharge will likely be increased from the proposed project."

In fact both these assumptions are not met. Grapes will be watered sparingly to conserve water and the tile drain system under them would prevent groundwater recharge. Runoff captured from the tile drain system in winter would otherwise feed the groundwater aquifer at the headwaters of Patchett Creek that sustains baseflows during late summer and fall. The DEIR acknowledges that "Any substantial change in flow in Patchett Creek would be a significant impact" but such impacts from the Project cannot be prevented.

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Band (2008) and McMahon (2008), in comments on the *Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams* (SWRCB WRD 2008), noted that the synergy between diversion impoundments in multiple tributaries causes unintended consequences on flows, fish passage and alteration of substrate quality in downstream reaches. The DEIR does not discuss cumulative effects related to operation of all reservoirs in the Gualala River basin. It notes, however, that the "first flush" of fall or early winter rains will be caught in stilling ponds or the agricultural impoundment. Band (2008) points out that this type of activity in many vineyard impoundments simultaneously may shave off the early peak of the Gualala River hydrograph that typically allowed coho salmon and early steelhead adults passage to spawning beds. McMahon (2008) shared this concern: "Dams on ephemeral streams have the potential to greatly dampen the early fall/winter freshets important for access to the upper reaches of small spawning tributaries by their capture of the entire flow within the stream until the reservoir is filled, potentially resulting in significant dewatering downstream." This is exactly the risk development of the agricultural impoundment for the Artesa Vineyard poses.

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The DEIR cites a number of different statutes from the Sonoma County General Plan but never proves sufficiency in terms of the project meeting the stated objectives. Examples are:

- Insure that land uses in rural areas be consistent with the availability of groundwater resources.
- Grading, filling and construction should not substantially reduce or divert any stream flow that would affect groundwater recharge.
- Deny discretionary applications unless a geologic report establishes that groundwater supplies are adequate and will not be adversely impacted by the cumulative amount of additional development.
- Revise procedures for proving adequate groundwater for discretionary projects by adding criteria for study boundaries, review procedures, and required findings that the area's groundwater supplies and surface water flows will not be adversely impacted by the project and the cumulative amount of

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development allowed in the area and will not cause or exacerbate groundwater overdraft.

The DEIR simply says that the use of groundwater for farm workers is so miniscule that groundwater is simply not an issue:

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"A well will be dug to provide potable water for the farm workers. Well water would not be used to irrigate vineyards. Groundwater supplies are adequate for this minor water use and thus cumulative impacts are expected to be insignificant."

In lieu of groundwater data from the site, the DEIR provides the following description of groundwater resources in the vicinity of the Project site based on data more than 30 years old:

"DWR data indicates that wells in the Annapolis area tapping the Ohlson Ranch Formation have reported yields of two to 36 gallons per minute (gpm) with drawdowns ranging from 30 to 125 feet (DWR 1975). Long-term hydrographs or other groundwater trend data are unavailable for the area (DWR 2004)."

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In fact the map provided by O'Connor Environmental of well locations and well owners in the DEIR (Figure 7) suggest strongly that groundwater resources are already likely over-demanded. Furthermore, the DEIR disclosed the following:

"Almost all of the project area is underlain by this sloping shallow aquifer. Groundwater flows are generally from west- northwest to east-southeast, toward Patchett Creek. The geometry of the aquifer and the location of the contact between the Franciscan and the Ohlson Ranch Formations to the west are uncertain. Even if the geologic contact west of the project site dips to the west, the geometry of the rock formations under the project site is relatively well-defined, and groundwater from the project site would still be expected to flow to the east-southeast."

12-28

Therefore, it is possible that some wells west of the Project may already be impacting flows in Patchett Creek. The County of Sonoma should require a full groundwater study prior to development of this project because of the substantial questions related to groundwater use and supply near the Project. CDF should also not allow the DEIR to be approved as final until the Project has a permit for an Appropriative Water Right to develop its reservoir.

Sediment and Water Quality Related Artesa Vineyard Cumulative Effects

The DEIS points out that there are two predominant soil types, including the Hugo and Goldridge Series (Figure 8), and provides the following description regarding the proposed Artesa Vineyard area:

12-29

"The runoff potential for this soil type varies from medium to very rapid and the hazard of erosion ranges from moderate at low slope to high at elevated slopes. The Goldridge Series soils are defined as "highly erodible soils" in the Sonoma County Vineyard Erosion and Sediment Control Ordinance."

Other portions of the DEIR provide slope maps for Project site and there is a substantial overlap between steeper slopes and the unstable Goldridge Series in the western lobe of the Project development area that poses a high erosion risk that is not duly noted in the DEIR.

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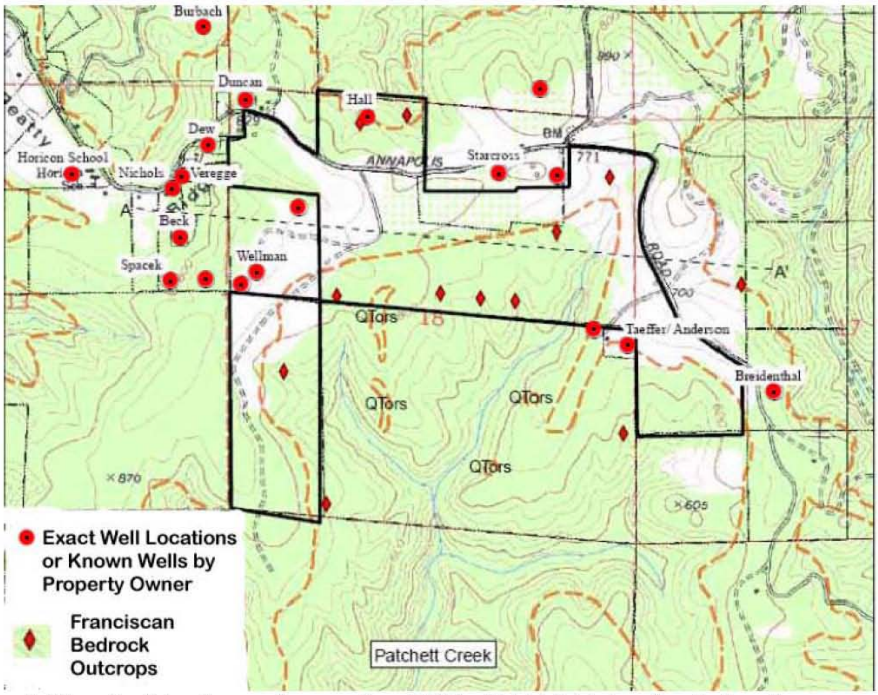

Figure 7. Map of well locations and owners from DEIR with highlights in red so that locations are more visible. Some wells to the west of the Project may be in the zone of influence of Patchett Creek headwaters due to sloping sub-surface bedrock formations.

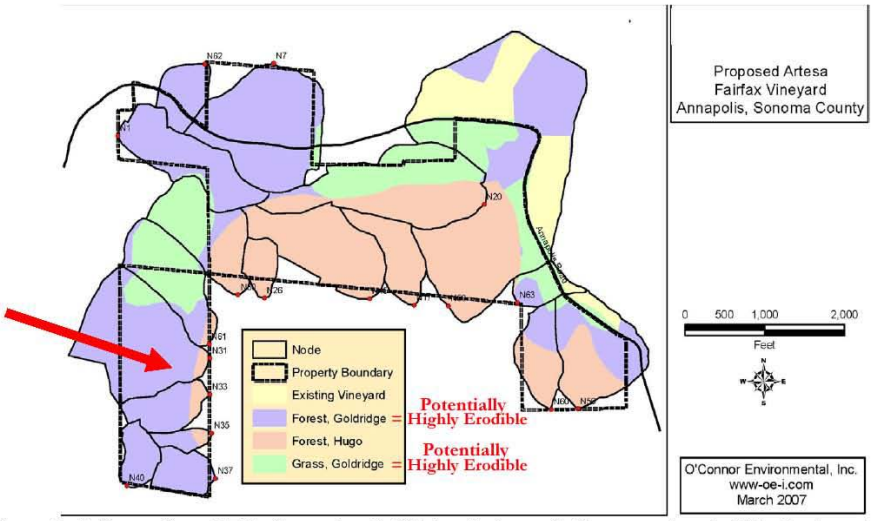

Figure 8. Soil map from DEIR shows that Goldridge Series underlies more than half the Project site with annotation in red added to indicate potential for high erosion. Red arrow highlights steep area.

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As with hydrologic effects, cumulative effects related to sediment are treated as fully mitigated. One Freudian slip can be found in the DEIR: "These measures will ensure that siltation of onsite and downstream tributaries are minimized to an imperceptible degree." I have to agree that the mitigation measures will likely not make a perceptible difference in decreasing sediment that comes from the site after development despite claims in the DEIS:

> "The project also includes post-vineyard construction BMPs including desilting catch basins at the lower ends of all drainage points discharging stormwater from the project site. First flushes from the project site will be captured in these basins and 'treated.' These basins will ensure that any silt leaving the project in stormwater flows will undergo 'stilling' and desilting prior to flowing off the site."

12-30

In fact when high intensity rainfall persists for a substantial duration basins will over-top and sediment from the project will be released downstream and offsite to the detriment of lower Patchett Creek, the Wheatfield Fork and the lower mainstem Gualala River. The claim in the DEIR that all sediment effecting the Gualala River is from post WW II land use is strongly refuted by data collected in the Gualala River basin by Knopp (1993) and by observation of channel conditions (Figure 9). Knopp (1993) found that aquatic habitat data such as median particle size distribution (D50) of stream beds and the amount of sediment in pools (V*) were strongly related to land use history. His findings with regard to Gualala River V* (Hilton and Lisle 1993)(Figure 10) serve as an example to refute the "old land use" argument.

Grasshopper Creek and Fuller Creek fell within Knopp's (1993) universe of samples with the former having roughly 59% (V* = 0.59) filled with fine sediment and the latter having a V* score of 37% or a little over one third filled with sediment. The NCRWQCB (2004) and the U.S. EPA (1998) recognize V* values of greater than 0.21 as impaired and Knopp (1993) found that values like those exhibited by Gualala River tributaries represented disturbed and highly disturbed watershed conditions. Northwestern California tributaries that were logged during earlier periods have shown substantial recovery, such as Brandon Gulch (0.18) in Jackson Demonstration State Forest. The latter stream was heavily logged after WW II and yet its channel is no longer sediment rich because it has had watershed rest (Kaufmann et al. 1997. What is actually occurring is that continuing waves of logging and land use such as the Artesa Vineyard are causing channels to remain perturbed. Reeves et al. (1995) and Frissell (1992) point out that it takes about 20-30 years for most stream channels to recover from logging sufficiently to support diverse communities of salmonids and that short rotation logging does not allow such a recovery. Most aquatic habitat data indicate that conditions are far outside the range for suitability of salmonids whether the criteria is pool frequency, pool depth, fine sediment in gravels, water temperature and several other metrics. I am attaching with my comments criteria developed for coho salmon recovery planning (Kier Associates and NMFS 2008) that has useful reference values that CDF should consider adopting for use in the THP/TCP process.

12-31

One DEIR illustration (Figure 11) uses a recent aerial photo backdrop indicating substantially elevated risk of sediment yield due to recent and extensive soil disturbance that is not properly addressed in the document. Discussion of impacts of the recent, adjacent vineyard development are avoided because they are considered fully mitigated, but extensive bare soil and subsequent vineyard development likely have yielded and continue to yield excess sediment. The same photo also shows evidence of recent timber harvest and yet increased erosion related to skid trails and landings is unaddressed as are any associated hydrologic perturbations. This land use may also impact water temperature, as discussed below.

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Figure 9. Wheatfield Fork Gualala River looking upstream just above convergence with SF Gualala. Note deposits of fine sediment (arrow) that were deposited on the last descending leg of the hydrograph indicating high current supply. Only willows can survive on the mainstem river bars because of constant shifting bedload due to sediment over-supply.

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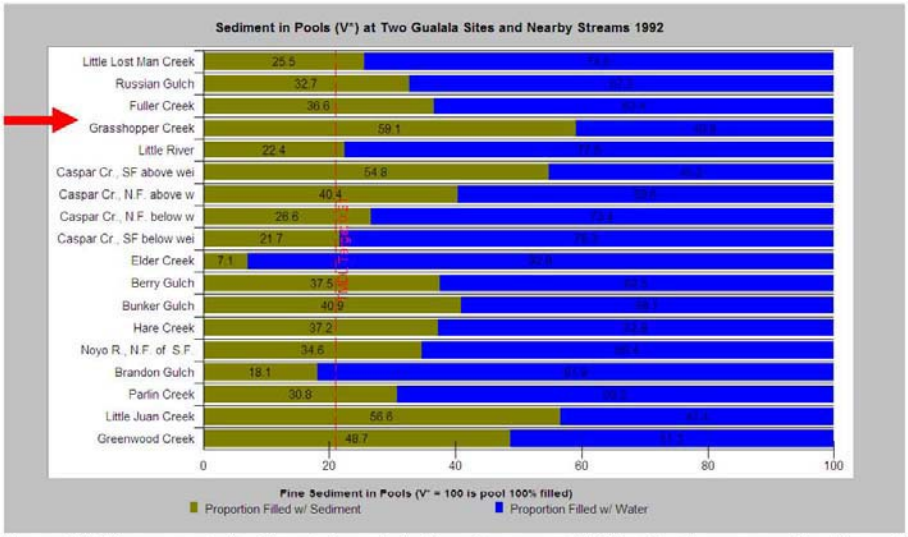

Figure 10. The amount of sediment in pools in Grasshopper and Fuller Creeks measured by Knopp (1993) indicate that Fuller is somewhat recovered from past logging but that Grasshopper Creek has major problems with erosion related to recent land use. Chart from KRIS Gualala. Units are V* X 100.

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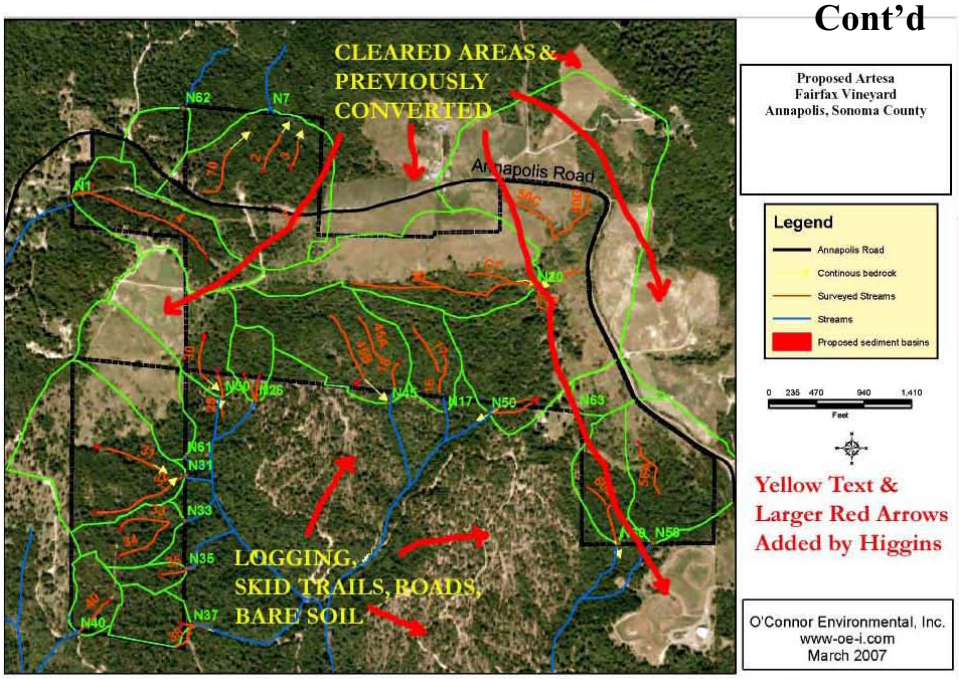

Figure 11. Illustration from DEIR shows intensive land use and yet has no companion discussion regarding issues such as increased sediment from areas cleared for or subsequently converted to vineyards and skid trails, landings and areas of bare soil due to recent logging.

Brosofske et al. (1998) found that logging reducing ground cover in headwater areas warmed stream flows, regardless of whether shade was maintained. The logging activity show in Figure 11 could be having such an effect on Patchett Creek, but the DEIR provides no stream temperature data for evaluation. Claims in the DEIR that water temperature problems in Patchett Creek and in the Wheatfield Fork Gualala are not supported by the argument presented.

The case has been made above that conversion of the Artesa Vineyard site, installation of tile drains and construction of a reservoir will decrease base flows to Patchett Creek. There is a clearly established relationship of water flow volume to flow transit time and the tendency of a stream to warm (NRC 2004). Therefore, reduction of baseflows as a result of the Project will elevate water temperatures with unknown effects to potential refugia in the lower mainstem Wheatfield Fork Gualala River (see Fisheries).

Land Use Discussions Ignore Cumulative Effects Implications

12-34 The DEIR provides statistics on timber harvest and road density, but the significance of impact levels is never discussed. Kier Associates and NMFS (2008) provide land use threshold values to gauge likelihood of "stress" being exerted on coho salmon habitat with varying scales of activity and CDF and other reviewers of these comments may go there for more background discussion.

12-35 Timber Harvest: The DEIR states that timber harvest has been light compared to the early 1990s then states that "Timber Harvest Plans filed in the Annapolis, Little Creek, and Grasshopper Creek

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watersheds…..total of 5,535 acres amounts to approximately 28.8 percent of the 19,202 acres that compose the three watersheds in which the project is located. Reeves et al. (1993) found that watersheds on the Oregon coast harvested more than 25%of their watershed area in 30 years had substantial negative cumulative effects that were manifest in 10-47% loss of pools, substantial reduction of large wood and diminished Pacific salmon diversity.

Timber harvest data from CDF from 1991 to 2001 for the Annapolis, Little and Grasshopper Creek Calwater is available from KRIS Gualala (Figures 12 & 13), and in combination with DEIR provided data, can extend the window for THP related cumulative effects to almost 20 years. Total harvest in the three Calwaters was 37%, 34% and 30%, respectively between 1991-2001. An additional 2882 acres in the three Calwaters have received permits for logging or conversion between 2002 and 2008, or approximately 15% of their combined area. Analysis over the period of 1991 to 2008 indicates that the rate of disturbance for all three Calwaters combined is over 50% or more than twice the threshold recognized by Reeves et al. (1995).

This rate of logging is equivalent to 4% of inventory per year, which is recognized by Klein (2003) as linked to substantial sediment yield to streams. Turbidity levels meet beneficial use levels when harvest rates are 1% POI or less, but over 2% POI (50% harvested in 25 years) levels would limit juvenile salmonid growth. Sigler et al. (1984) found that 25 NTU is the threshold over which steelhead juvenile growth is restricted due to limited capability to see prey items. The streams listed on Klein's chart range from 1% POI or less to more than 4% and have substantial variability of time over critical thresholds for salmonids. Control watersheds and those lightly disturbed (1% POI or less) had only 100-400 hours over 25 NTU, highly disturbed watersheds (>4% POI) exceeded this level for over 1100-1200 hours. Maximum turbidities in the highly disturbed watersheds also exceeded 500 NTU, which may directly injure salmonids and other fish exposed (Newcomb and McDonald 2001).

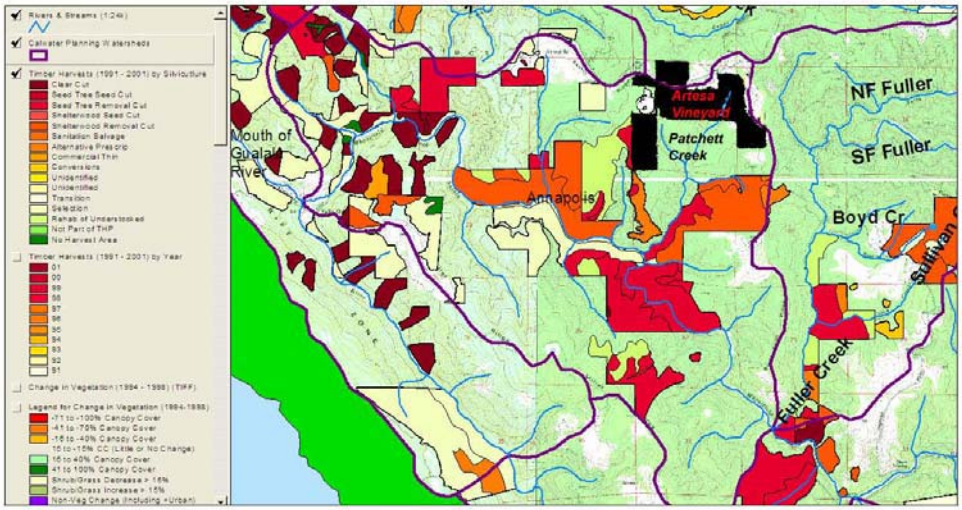

Figure 12. THPs between 1991 and 2001 by year according to CDF data show the 37% timber harvest in the Annapolis Calwater, which is well over prudent risk levels of disturbance known to cause cumulative effects and to degrade channel conditions for salmonids (Reeves et al. 1993). Black area indicating Artesa Vineyard development added for this project otherwise map is from KRIS Gualala.

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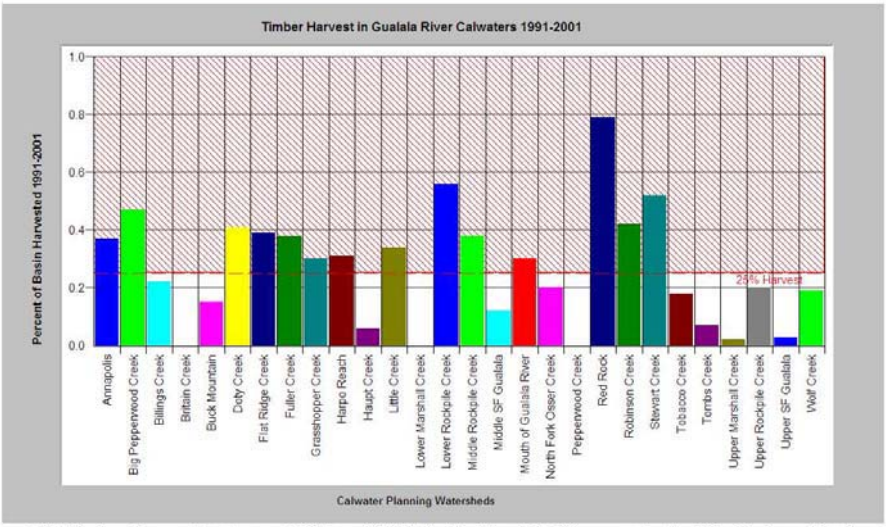

Figure 13. Timber harvest between 1991 and 2001 in the Gualala River watershed is displayed in the chart above and results show that many basins are being harvest at very high rates (>4% POI). Data from KRIS Gualala.

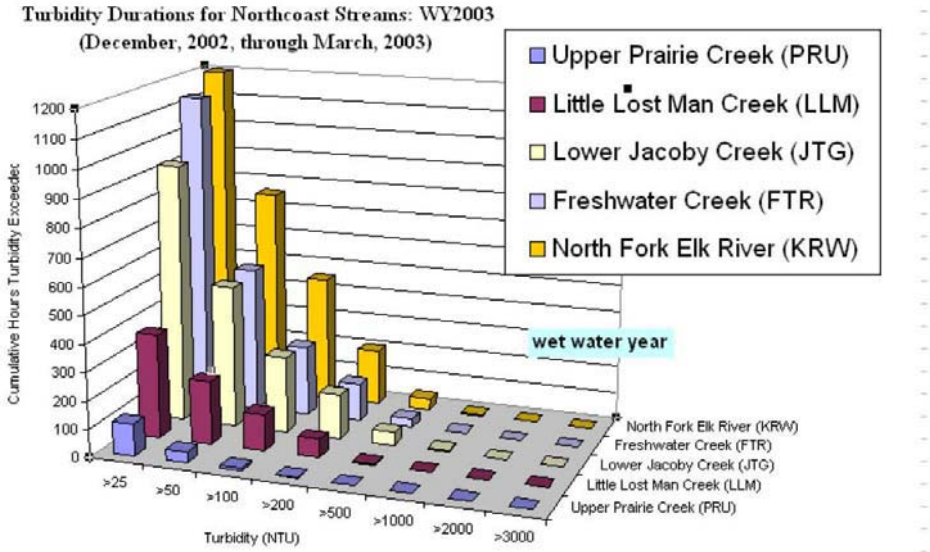

Figure 14. This chart from Klein (2003) shows the total hours over varying turbidity values with 25 NTU the threshold over which steelhead juvenile feeding is impaired (Sigler et al. 1984). Timber harvest rates for basins are as follows: PRU = Control (<1% POI), LLM = Lightly disturbed (1% POI), JTG = Disturbed (2-3% POI), FTR and KRW = Very highly disturbed (4% POI).

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Roads Density: The DEIR cites the Gualala River TMDL (NCRWQCB 2003) with regard to roads and erosion: "Road-related erosion is the major portion of the human-caused erosion, and that higher road density in a given area results in greater sediment loading from roads." It also reports that the Annapolis, Little Creek and Grasshopper Creek Calwaters all have road densities greater than 6 miles per square mile of watershed area (6.1, 6.6 and 6.4 mi/mi^2 respectively), but fails to note the significance of this statistic.

U.S. Forest Service (Quigley et al. 1996) studies in the interior Columbia River basin found that bull trout were not found in basins with road densities greater than 1.7 mi/mi^2 and they rate road density of greater than 4.7 mi/mi^2 as extremely high (Figure 16). National Marine Fisheries Service (1996) guidelines for salmon habitat characterize watersheds with road densities greater than 3 mi/mi^2 as "not properly functioning" while "properly functioning condition" was defined as less than or equal to 2 mi/mi^2 with no or few stream aide roads. NMFS (1995) set the target for road density in the Columbia River Basin as 2.5 mi./mi.^{2} to attain properly functioning watershed condition for sensitive fish species. Just as with timber harvest on the north coast, Klein (2003) found a strong correlation of road density with turbidity levels that would limit juvenile salmonid growth (Figure 17).

12-36

The extremely high levels of roads in these three watersheds indicates that CDF and other management authorities should be decommissioning roads and reducing road densities, not allowing new construction. The Artesa Vineyard project will add to sediment loads, as described above, in addition to sediment yield likely coming from roads.

Vineyards and Sediment: The DEIR once again cites the NCRWQCB (2003) with regard to vineyards and erosion: "Viticulture and the associated clearing of vegetation are likely to increase surface erosion through exposure of bare earth to rainfall and runoff. Observations made by Regional Water Board staff in conjunction with the TSD development show that conservation practices used in viticulture (cover cropping, buffer strips, terracing, etc.) have variable effects on erosion prevention." The DEIR falls back on BMPs and mitigations in claiming that highly erodible Goldridge Series soils will not yield additional sediment when converted to vineyards, including on some areas with steeper slopes.

12-37

DEIR Attempts to Narrow Agency Authority and Need for Review

The DEIR tries to argue that Regional Water Control Board staff only have "jurisdiction over 3.610 acres of waters of the State on the project site." The DEIR makes this calculation as follows:

> "In summary, impacts to RWQCB regulated areas from grading for vineyard installation total 0.414-acre enumerated as follows: impacts to approximately 0.011-acre of other waters; impacts to 0.106-acre of isolated wetland; and impacts to 0.269-acre of seasonal wetlands (Figure 3.4-7). In addition, there would be impacts to 0.001-acre of other waters and 0.027-acre of seasonal wetland from construction of infrastructural elements of the project."

12-38

In fact Pronsolino v. Nastri (F.3d. 7901, U.S. 9th Circuit Court, 2002) makes it clear that authority of the NCRWQCB staff extends to uplands and implementation of measures that prevent sediment and erosion outside wetlands and the stream channel.

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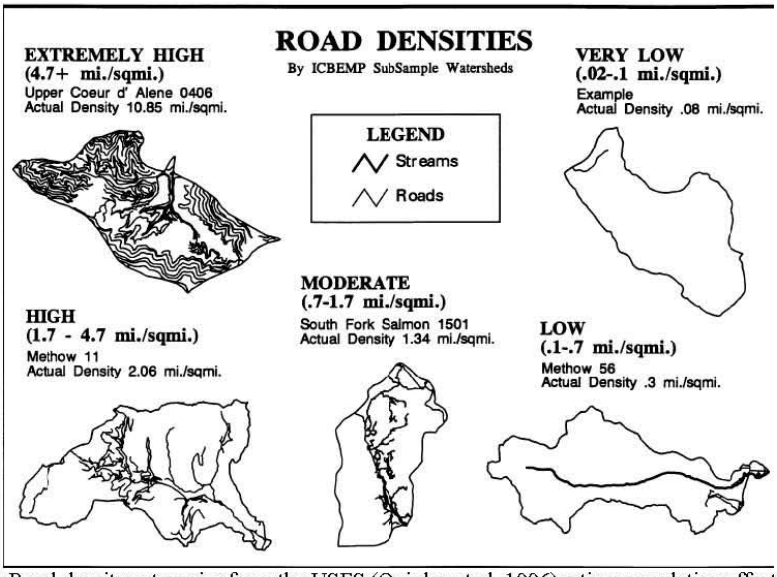

Figure 17. Road density categories from the USFS (Quigley et al. 1996) rating cumulative effects risk.

Figure 13. Road densities and turbidity exceedences for WY2002
(site codes identify data points)

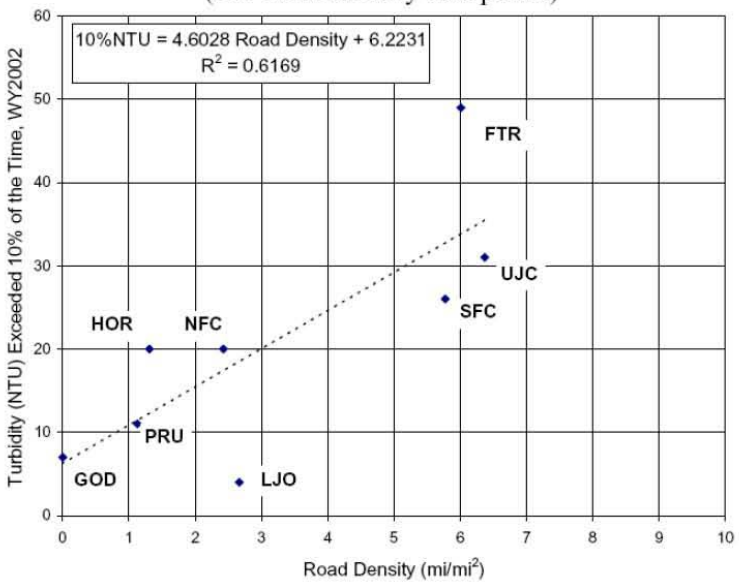

Figure 18. Regression showing string correlation of turbidity and road densities in northwestern California. Turbidities in watersheds with low road densities rarely exceeded 25 NTU while those with higher densities (>5 mi/mi2) did. Taken form Klein (2003).

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12-39

The DEIR also tries to make the case that no concurrence from NMFS is required because listed steelhead are not on the property, but as explained at length above, the Project will ve3ry likely decrease flows, increase water temperatures and negatively impact steelhead in lower Patchett Creek and possibly the lower mainstem Wheatfield Fork Gualala. Because the potential effect to Patchett Creek is so significant from the Artesa Vineyard, and the functional habitat in the lower Wheatfield Fork Gualala is already so compromised, this Project may rise to the level of a take of that sub-population. The very poor adult return in 2009 (DeHaven In Press) and low juvenile abundance and patchy distribution found in 2001 CDFG NCWAP surveys are also causes for concern. If steelhead do use lower Patchett Creek, their loss from the lower Wheatfield Fork may lead to a loss of connectivity (Williams et al. 2008), and concerns raised above about loss of its function as refugia also have bearing on maintaining salmonids (U.S. EPA 2003).

Potential Project Effects on Yellow-legged Frog and Western Pond Turtle

12-40

Although the DEIR admits there are foothill yellow-legged frogs in the Project site, they deny likely impacts from the Project. The decreased baseflows caused by tile drains and reservoirs that I provide evidence for above will decrease yellow-legged frog habitat downstream in Patchett Creek, but the biggest problem is the likely colonization of the Artesa Vineyard reservoir by the invasive and insatiable bull frog (Bury and Whelan 1984). Bury and Whelan (1984) found that man-made impoundments are perfect habitats for the species and recognized the expansion of the bullfrog in the West as having disastrous impacts on native herpetofauna. Bullfrogs can be anticipated to predate upon and out-compete native yellow-legged frogs and could have an equally devastating effect on western pond turtles due to predation on hatchlings. See also Global Invasive Species Database: http://www.issg.org/database/species/ecology.asp?si=80.

Artesa Vineyard Project: Opposite of Needed Actions for Salmon and Steelhead Restoration

12-41

Bradbury et al. (1995) point out that preservation can take place without restoration but that restoration of Pacific salmon species cannot take place without habitat protection. CDF's inability to protect aquatic resources by saying no to projects like the Artesa Vineyard is contributing substantially to the decline of Pacific salmon species in northwestern California (Higgins 2009). Reeves et al. (1995) explain that Pacific salmon populations evolved in ecosystems with varying disturbance regimes, but catastrophic habitat changes only occurred in patches or sub-basins, not entire watersheds. Once disturbed, stream channels recovered over decades or sometimes a century to productive salmonid habitat. This "patch disturbance" regime is much different than the extremely high rates of disturbance that take place across much of the landscape and scientists distinguish this as a "press disturbance" regime that is incompatible with salmonid recovery (Collison et al. 2003).

The watershed and hydrologic conditions that salmon and steelhead are now profoundly different than those of the old growth redwood forest. Instead of redwood trees up to 20 feet in diameter, 1994 Landsat data (Warbington et al. 1998) indicate that only 50% are over 24 inches in diameter at breast height (dbh)(Figure 19). This diameter represents mid-seral conditions indicating logging likely after WWI while the other half of the landscape is in smaller trees, brush, grasslands or bare soil. To guide the Gualala River watershed back towards a more normal range of variability and more suitable channel conditions for salmonids, more of the landscape needs to be restored to large trees and a multi-tiered forest canopy. Converting forests and wildland watershed to vineyard will likely eliminate steelhead from lower Patchett Creek instead of helping sustain and restore the species.

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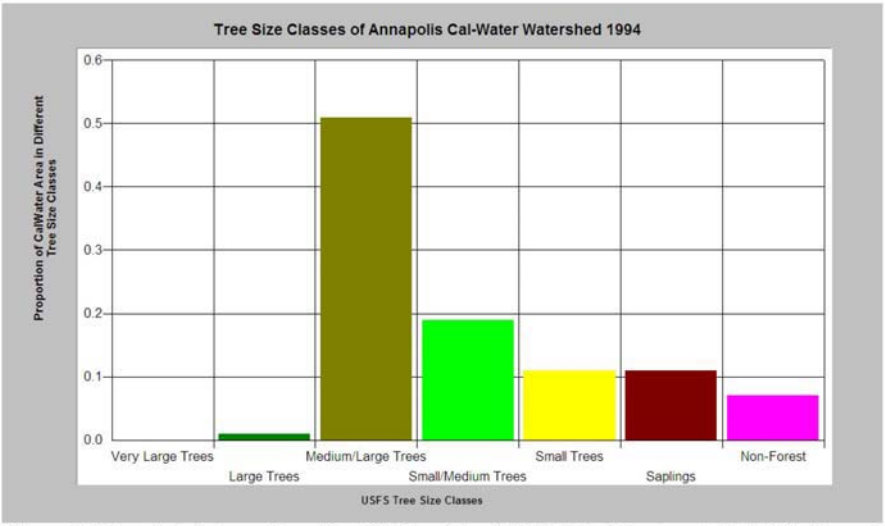

Figure 19. Landsat data analyzed by CDF and the USFS (Warbington et al. 1998) showed that over half of the vegetation in the Annapolis Calwater is less than 20 inches in diameter, indicating harvest in the last 30 years. Vegetation classifications are: Very Large Trees = >40" dbh, Large Trees = Trees 30-39.9" dbh, Medium/Large Trees = 20-29.9" dbh, Small/Medium Trees = 12-19.9" dbh, Small Trees = 5-11.9" dbh, Saplings = Trees < 5"dbh, Non-Forest = No trees, shrubs, grass, bare soil.

Conclusion

12-42 The Artesa Vineyard DEIR contradicts itself, adheres to scientifically flawed assumptions and denies impacts by claiming effectiveness of BMPs and mitigation measures. The document clearly fails CEQA tests for use of best available science and for clear analysis of cumulative effects. CDF should reject the DEIR until groundwater issues are resolved and an Appropriative Water Right is obtained by the Project proposers.

Sincerely,

Patrick Higgins

Letter 12 Cont'd

References

Band, L. 2008. Review of the Scientific Basis for the Proposed "North Coast In-Stream Flow Policy." Performed for the SWRCB WRD. Department of Geography, University of North Carolina, Chapel Hill, North Carolina. 12 p.

Bradbury, W., W. Nehlsen, T.E. Nickelson, K. Moore, R.M. Hughes, D. Heller, J. Nicholas, D. L. Bottom, W.E. Weaver and R. L. Beschta. 1995. Handbook for Prioritizing Watershed Protection and Restoration to Aid Recovery of Pacific Salmon. Published by Pacific Rivers Council, Eugene, OR. 56 p.

Brosofske, K. B., J. Chen, R. J. Naiman, and J. F. Franklin. 1997. Harvesting effects on microclimatic gradients from small streams to uplands in western Washington. Ecological Applications 7(4):1188-1200.

Bury, R.B. and J.A. Whelan. 1984. Ecology and management of the bullfrog. US Fish and Wildlife Resource Publication 155:1-23.

California State Water Resources Control Board, Water Rights Division. 2007. Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams. SWRCB WRD, Sacramento, CA.

Collison, A., W. Emmingham, F. Everest, W. Hanneberg, R. Martston, D. Tarboton, R. Twiss. 2003. Phase II Report: Independent Scientific Review Panel on Sediment Impairment and Effects on Beneficial Uses of the Elk River and Stitz, Bear, Jordan and Freshwater Creeks. Independent Science Review Panel performed analysis on retainer to the North Coast Regional water Quality Control Board, Santa Rosa, CA.

DeHaven, R. W. In Press. Draft Steelhead spawning surveys, Wheatfield Fork Gualala River, California 2002-2009. Prepared by the author, September, 2002.
http://www.dcn.davis.ca.us/vme/gualala-river/

Dunne, T., J. Agee, S. Beissinger, W. Dietrich, D. Gray, M. Power, V. Resh, and K. Rodrigues. 2001. A scientific basis for the prediction of cumulative watershed effects. The University of California Committee on Cumulative Watershed Effects. University of California Wildland Resource Center Report No. 46. June 2001. 107 pp.

FEMAT [Forest Ecosystem Management Assessment Team]. 1993. Forest Ecosystem Management: an ecological, economic and social assessment. Report of the Forest Ecosystem Management Assessment Team. 1993-793-071. U.S. Govt. Printing Office.

Gilpin, M.E. and M.E. Soule. 1990. Minimum Viable Populations: Processes of Species Extinction. In: M. Soule (ed) Conservation Biology: The Science of Scarcity and Diversity University of Michigan Press. pp 19-36.

Higgins, P.T. 1997. Gualala River Watershed Literature Search and Assimilation. Funded by the Coastal Conservancy under contract to Redwood Coast Land Conservancy. Gualala, CA. 59 pp.

Letter 12 Cont'd

Higgins, P.T. 2003a. Letter to Allen Robertson, Deputy Chief, California Department of Forestry and Fire Protection regarding Timberland Conversion Application 02-506 and Timber Harvest Plan (THP) 1-01-171 SON. May 20, 2003. Patrick Higgins, Fisheries Consultant, Arcata, CA. 10 p.

Higgins, P.T. 2003b. Letter to Allen Robertson, Deputy Chief, California Department of Forestry and Fire Protection regarding Negative Declaration for Sugarloaf Farming Corporation dba Peter Michael Winery, Timberland Conversion No. 524; THP 1-01-223 SON. December 12, 2003. Patrick Higgins, Fisheries Consultant, Arcata, CA. 10 p

Higgins, P.T. 2004a. Comments on Negative Declaration for THP 1-04-030SON, Hanson/Whistler Timberland Conversion Permit (TCP) #530. Patrick Higgins, Consulting Fisheries Biologist, Arcata, CA. 13 p. 4/14/04

Higgins, P.T. 2004b. Comments on Negative Declaration for Timber Harvest Plan (THP 1-04-055 SON) / Zapar-Roessler Timberland Conversion Permit (TCP 04-533). Patrick Higgins, Consulting Fisheries Biologist, Arcata, CA. 4 p. 8/16/04.

Higgins, P.T. 2006a. Comments on the Napa River Sediment TMDL and San Francisco Bay Regional Water Quality Control Board Basin Plan Amendment. Performed under contract to Thomas Lippe, Attorney by Patrick Higgins, Consulting Fisheries Bilogist, Arcata, CA. 21 p. 8/14/06.

Higgins, P.T. 2006b. Comments on the Proposed Mitigated Negative Declaration for Napa Canyon LLC Vineyard Project in American Canyon Creek Watershed. Performed under contract to Thomas Lippe, Attorney by Patrick Higgins, Consulting Fisheries Bilogist, Arcata, CA. 13 p. 10/7/06.

Higgins, P.T. 2007. Comments on THP 1-04-260 MEN - Robinson Creek Calwater Planning Watershed, Dry Creek, North Fork Gualala River. Performed under contract to the Friends of the Gualala River by Patrick Higgins, Consulting Fisheries Biologist, Arcata, CA. 32 p.

Higgins, P.T. 2008a. Re: Final Napa River Watershed Sediment TMDL and Habitat Enhancement Plan Negotiations. Performed under contract to Thomas Lippe, Attorney by Patrick Higgins, Consulting Fisheries Biologist, Arcata, CA. 3 p. 7/21/08

Higgins, P.T. 2008b. Comments on Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams. Prepared for the Redwood Chapter of the Sierra Club by Patrick Higgins, Consulting Fisheries Biologist, Arcata, CA. 49 p.

Higgins, P.T. 2009. Comments on Proposed Threatened and Impaired Watershed Rules. Prepared for the Center for Biological Diversity by Patrick Higgins, Consulting Fisheries Biologist, Arcata, CA. 17 p. www.biologicaldiversity.org/species/fish/coho_salmon/pdfs/CBD_Combined_T_I_Comments.pdf

Hilton, S. and T.E Lisle. 1993. Measuring the Fraction of Pool Volume Filled with Fine Sediment. Res. Note PSW-RN-414. US Forest Service, Pacific Southwest Research Station. Albany, CA . 11 p.

Letter 12 Cont'd

Institute for Fisheries Resources. 2003. KRIS Gualala database. Performed under contract to CDF as part of NCWAP. IFR, San Francisco, CA. (www.krisweb.com).

Jones, J.A. And G.E. Grant. 1996. Peak flow response to clear-cutting and roads in small and large basins, Western Cascades, Oregon. Water Resources Research, April 1996. Vol. 32, No. 4, Pages 959-974.

Kauffman, J.B., R.L. Beschta, N. Otting, and D. Lytjen. 1997. An Ecological Perspective of Riparian and Stream Restoration in the Western United States. Fisheries 22(5):12-24.

Kier Associates and National Marine Fisheries Service (NMFS). 2008. Updated Guide to Reference Values used in the Southern Oregon / Northern California Coho Salmon Recovery Conservation Action Planning (CAP) Workbook. Kier Associates, Blue Lake, CA and National Marine Fisheries Service, Arcata, CA. 31 pp.

Klein, R. 2003. Duration of Turbidity and Suspended Sediment Transport in Salmonid-Bearing Streams, North Coast California. Prepared under Interagency Agreement # DW-1495553501-0 between U.S. EPA Region IX, San Francisco, CA and Redwood National and State Parks, Arcata, CA. 45 p.

Klein, R., W. Trush and M. Buffleben. 2008. Watershed Condition, Turbidity and Implications for Anadromous Salmonids in North Coastal Watersheds. Report for the North Coast Regional Water Quality Control Board, Santa Rosa, CA. 106 p.

Knopp, C. 1993. Testing Indices of Cold Water Fish Habitat. Final Report for Development of Techniques for Measuring Beneficial Use Protection and Inclusion into the North Coast Region's Basin Plan by Amendment. September 18, 1990. North Coast Regional Water Quality Control Board in cooperation with California Department of Forestry. 57 pp. http://www.krisweb.com/biblio/ncc_ncrwqcb_knopp_1993_sediment.pdf.

Ligon, F., A. Rich, G. Rynearson, D. Thornburgh, and W. Trush. 1999. Report of the Scientific Review Panel on California Forest Practice Rules and salmonid habitat. Prepared for the Resources Agency of California and the National Marine Fisheries Service. Sacramento, CA. 181 pp. http://www.krisweb.com/biblio/cal_nmfs_ligonetal_1999_srprept.pdf

McMahon, T. 2008. Review of "Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams." Performed under contract to the SWRCB WRD. Thomas E. McMahon, Professor of Fisheries, Montana State University. 11 p.

Monk and Associates. 2009. Artesa Vineyard Conversion Draft Environmental Impact Report (SCH# 2004082094). Prepared for Cordineau Winery by Monk and Associates, walnut Creek, CA.

Montgomery, D. R. and J.M. Buffington, 1993. Channel classification, prediction of channel response, and assessment of channel condition. TFW-SH10-93-002. Prepared for the SHAMW committee of the Washington State Timber/Fish/Wildlife Agreement. Seattle, WA. 110 pp.

Letter 12 Cont'd

National Marine Fisheries Service. 1995. Endangered Species Act Section 7 Biological Opinion on the Land and Resource Management Plans for the Boise, Challis, Nez Perce, Payette, Salmon, Sawtooth, Umatilla, and Wallowa-Whitman National Forests. NMFS Northwest Region, Seattle, WA. 138 p.

National Marine Fisheries Service (NMFS). 1996. Coastal Salmon Conservation: Working Guidance for Comprehensive Salmon Restoration Initiatives on the Pacific Coast. 5 pp.

National Research Council (NRC). 2004. Endangered and threatened fishes in the Klamath River basin: causes of decline and strategies for recovery. Committee on endangered and threatened fishes in the Klamath River Basin, Board of Environmental Toxicology, Division on Earth and Life Studies, Washington D.C. 424 pp.

North Coast Regional Water Quality Control Board. 2001. Gualala River Watershed Technical Support Document for Sediment TMDL. California Regional Water Quality Control Board, Region 1, Santa Rosa, CA. 147 p.

Northcoast Watershed Assessment Program. 2003. Gualala River Watershed Assessment Synthesis Report. Complied by CDF, CDFG, NCRWQCB, and CGS. http://coastalwatersheds.ca.gov/Watersheds/NorthCoast/Gualala/GualalaBasin/tabid/98/Default.aspx

Quigley, T. M. and H. Bigler Cole, 1997. Highlighted scientific findings of the Interior Columbia Basin Ecosystem Management Project. Gen. Tech. Rep PNW-GTR-404. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station; U.S. Department of the Interior, Bureau of Land Management. Portland, OR. 47 p.

Reeves, G. H., F. H. Everest, and J. R. Sedell. 1993. Diversity of juvenile anadromous salmonid assemblages in coastal Oregon basins with different levels of timber harvest. Transactions of the American Fisheries Society. 122(3): 309-317.

Reeves, G.H., L.E.Benda, K.M.Burnett, P.A.Bisson, and J.R. Sedell. 1995. A Disturbance-Based Ecosystem Approach to Maintaining and Restoring Freshwater Habitats of Evolutionarily Significant Units of Anadromous Salmonids in the Pacific Northwest. American Fisheries Society Symposium 17:334-349, 1995.

Rieman, B., D. Lee, J. McIntyre, K. Overton, and R. Thurow. 1993. Consideration of extinction risks for salmonids. As FHR Currents # 14. U.S. Department of Agriculture, Forest Service, Region 5 . Eureka, CA. 12 pp.

Sigler, J. W., T. C. Bjornn, and F. H. Everest. 1984. Effects of chronic turbidity on density and growth of steelheads and coho salmon. Transactions of the American Fisheries Society. 113:142-150.

Spence, B.C., G.A. Lomnicky, R.M. Hughes and R. P. Novitzki. 1996. An Ecosystem Approach to Salmonid Conservation. Funded jointly by the U.S. EPA, U.S. Fish and Wildlife Service and

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National Marine Fisheries Service. TR-4501-96-6057. Man Tech Environmental Research Services Corp., Corvallis, OR.

Stetson Engineers Inc. 2007. Potential Indirect Environmental Impacts of Modification or Removal of Existing Unauthorized Dams. Appendix to Policy for Maintaining Instream Flows in Northern California Coastal Streams Performed under contract to SWRCB WRD, December 2007. 71 p.

US Environmental Protection Agency (USEPA). 1998. (Final) Garcia River Sediment Total Maximum Daily Load. Dated 16 March 1998. USEPA, Region IX. San Francisco, CA. 51 p.

US Environmental Protection Agency (USEPA). 1999. (Final) Noyo River Total Maximum Daily Load for Sediment. USEPA, Region IX. San Francisco, CA. 87 p.

U.S. Environmental Protection Agency. 2003. EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards. EPA Project # 910-B-03-002. Region 10 U.S. EPA, Seattle WA. 57 p.

U.S. Ninth Circuit Federal Court of Appeals. 2002. Prosilino et al. vs. Nastri et al. No. 00-16026, D.C. No. CV-99-01828-WHA OPINION.

Warbington, R., B. Schwind, C. Curlis and S. Daniel. 1998. Creating a Consistent and Standardized Vegetation Database for Northwest Forest Plan Monitoring in California. USDA Forest Service. Pacific Southwest Region Remote Sensing Lab. Sacramento, CA.

Williams, T.H., B. C. Spence1, W. Duffy, D. Hillemeier, G. Kautsky, T. Lisle, M. McCain, T. Nickelson, G. Garman, E. Mora, and T. Pearson. 2008. Framework for assessing viability of threatened coho salmon in the Southern Oregon /Northern California Coast Evolutionarily Significant Unit. NMFS SW Science Center, Santa Cruz, CA. 97 p

LETTER 12: PATRICK HIGGINS – CONSULTING FISHERIES BIOLOGIST

Response to Comment 12-1

The comment is an introductory paragraph and does not address the adequacy of the DEIR.

Response to Comment 12-2

The comment is an introductory paragraph and does not address the adequacy of the DEIR.

Response to Comment 12-3

Narrative in the DEIR contains analysis from subconsultant technical reports, which are included in the Appendices of the DEIR. In addition, the Air Quality, Biological Resources, Cultural Resources, Erosion Control and Mitigation Plan, Geology, Hydrology and Sedimentation, Hazards, Noise, and Traffic reports were peer reviewed by CAL FIRE experts in their respective fields. Revisions were made to the reports as deemed necessary. The DEIR states that careful project design and implementation of required DEIR mitigation measures would reduce all impacts to a less-than-significant level. This conclusion is based upon substantial technical analysis and professional judgment, as independently reviewed by lead agency – CAL FIRE – staff.

Response to Comment 12-4

The proposed reservoir on the project site is designed to collect stormwater runoff from the surrounding Patchett Creek watershed during the winter rainy season, after significant rains have saturated soils and excess water is flowing in downhill directions. The project would capture runoff from only 39 acres (approximately 4 percent) of the 1,124-acre Patchett Creek watershed. By extension, filling the reservoir would not have a significant effect on downstream reaches of the Wheatfield Fork. Patchett Creek is a tributary of the Wheatfield Fork of the Gualala River, which has a drainage area of about 111 square miles. The project area occupies about 0.6% of the Wheatfield Fork watershed, and the Patchett Creek watershed contributes about 1.6% of the Wheatfield Fork watershed. Potential impacts to steelhead and other native fish species downstream of the project site would be minimal to none as collection of runoff would occur when flows are seasonally high and water temperatures low and within the preferred range for steelhead.

Based on the analytical studies conducted on hydrology and sediment control, the project may improve water quality conditions above existing conditions by reducing erosion and increasing summer baseflow through an increase in groundwater recharge. Any increase in summer baseflows would help maintain cooler water and enhance habitat which is beneficial to steelhead at this time of year.

Within the Gualala watershed, stream flow regimes, depth, width, temperature, and sediment loading have changed over time and are linked to previous and current land use developments. The literature available in the Klamath Resource Information System (KRIS) Gualala database strongly supports a "cause and effect" relationship between watershed development and changes in the

aquatic habitat and fish species composition. It must be emphasized, however, that the magnitude of perturbations to the aquatic ecosystem resulting from previous, and potentially improper, development in the watershed that led to significant changes in habitat conditions are not associated with this project. CEQA does not require the Fairfax Conversion project to mitigate for past practices. Notwithstanding the above, it is important to recognize that it is the combination of past and current land use practices that has created the current environmental conditions within the watershed. These current environmental conditions serve as the baseline conditions for the project hydrology and erosion analyses. Erosion processes and rates in the Patchett Creek watershed have been comprehensively assessed in the DEIR in Section 3.7, *Hydrology and Water Quality*, and DEIR Appendices M and N, including off-site vineyards and commercial forest land in the Patchett Creek watershed (see Chapter 2, *Revisions to the DEIR Text*, of this Final EIR for the changes made to Chapter 3.7 of the DEIR and the Hydrologic and Erosion Analyses prepared for the project since the release of the DEIR for public review). Erosion processes and rates were analyzed in the sediment TMDL framework developed by the North Coast Regional Water Quality Control Board, and potential project effects on erosion and sedimentation in the Patchett Creek watershed were quantitatively analyzed in relation to the TMDL desired future conditions to evaluate proposed mitigation.

The proposed project has been designed with state of the art Best Management Practices (BMPs) that will significantly control both project erosion and mobile sediment contribution to downstream environments.

The DEIR identifies specific mitigation measures to avoid and/or minimize impacts to water quality and quantity. For example, in addition to the requirement for all timber harvesting activities on the project site, including harvest-associated road construction and maintenance, to comply with California Forest Practice Rules water quality protection measures, as described in the Timber Harvest Plan prepared for the proposed project and approved by the Department of Forestry and Fire Protection (cf. MM 3.7-2(a)), the DEIR requires the project applicant to implement a detailed Post-construction Monitoring Plan that is intended to supplement the project ECP and SWPPP for the first winter season after project construction (cf. MM 3.7-2(i)). This monitoring plan shall be implemented for areas where site preparation has occurred in the prior construction season, including soil preparation, grading and drainage installation. The first-year post-construction monitoring requirement is fulfilled if the monitoring period follows all grading and drainage work, regardless of whether vineyard planting and cover crops have been established. If site preparation work is conducted, but final grading and drainage installation is not complete, this monitoring plan will extend to the subsequent winter until final grading and drainage work is complete. In addition, per Mitigation Measure 3.7-3(b), the DEIR requires a detailed Channel Erosion and Sedimentation Basin Monitoring Plan to be implemented by the project applicant. As stated in Mitigation Measure 3.7-3(b), there is no substantial evidence that hydrologic change will cause significant erosion in Class III channels draining the project area. Channel response to peak flows is controlled by the size of channels, channel substrate, and the proximity of bedrock and boulder controlled channels downstream. Grant et al. (2008) state that peak flow effects on channel morphology should be confined to stream reaches where channel gradients are less than approximately 0.02 (2 percent) and the streambeds are composed of

gravel and finer material.[29] Potential erosion of channels draining the project area is limited to varying degrees by these factors. Furthermore, peak discharge for high-magnitude, low-frequency flows (> 5 yr recurrence interval events) under current conditions indicate that the largest increases in peak flows (2 yr recurrence interval events) predicted under project conditions would be well within the range of flows transmitted by the existing channels in most locations. Hence, the potential for significant channel erosion related to peak flow change is limited by several factors.

Given the relatively high variability and complexity of hydrologic and geomorphic processes, channel response to identified potential peak flow increases is somewhat uncertain. While the predictable potential effects of the project with mitigation are not significant, unpredictable events or unexpected responses could have substantial impacts. Consequently, a monitoring program is presented in this mitigation measure. The objective of the monitoring plan is to observe and document erosion response, if any, of Class III channels draining the project area and verify that the magnitude of response does not rise to a significant level. No net increase in sediment yield from the project area is an environmental objective of the project. Central to the monitoring plan is the concept of adaptive management. If monitoring data indicate that sediment yields from the project area are greater than predicted in the pre-project analyses, either from unexpected erosion of Class III channels or higher-than expected delivery rates of sediment eroded from vineyard fields, appropriate on- and off-site erosion mitigation will be developed with oversight by CAL FIRE or an alternative regulatory authority designated by CAL FIRE.

The Erosion Analysis concluded that the project (with mitigation) is expected to reduce sediment yields by 24 to 39 t/yr. The specific objective of this monitoring plan is to determine whether potential increases in sediment yield associated with accelerated channel erosion are less than 24 to 39 t/yr. In addition, the performance of sedimentation basins will be monitored to provide measurements of vineyard field erosion and sedimentation basin trapping efficiency. These measurements are warranted because they could lead to revisions of predicted vineyard field erosion, which could either increase or decrease the threshold of significance of channel erosion. The monitoring plan has three components:

4. Detailed topographic surveys of selected channels;
5. Annual survey of erosion of "sensitive" channels; and
6. Survey of selected sedimentation basins.

Response to Comment 12-5

The comment is incorrect; the project does not include installation of tile drains. The following paragraphs and figure have been added for clarification purposes before the last paragraph of Impact 3.4-14, Impacts to special-status salmonids from project-related decreases in instream base flows, on page 3.4-147 of Chapter 3.4, *Biological Resources*, of the DEIR:

[29] Grant, G.E., S.L. Lewis, F.J. Swanson, J.H. Cissel, J.J. McDonnell. 2008. *Effects of forest practices on peak flows and consequent channel response: a state-of-science report for western Oregon and Washington*. Gen. Tech. Rep. PNW-GTR-760. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 76 p.

For the Artesa Fairfax conversion, the diversion of runoff to the irrigation reservoir will reduce stream flow during some periods of storm runoff. However, this will occur only during peak flow periods during the winter when the reduced flow will be negligible downstream. This is in accordance with CDFG/NOAA Marine Fisheries (2002) guidelines for cumulative diversions less than 5 percent during winter peak flow conditions when stream flows are generally high and when water withdrawals would be least likely to adversely affect fisheries resources. The diversion of this runoff will tend to offset predicted increases in runoff from the project area.

Vineyard irrigation water will be obtained by capture of seasonal surface runoff from normally dry upland areas. There are no existing or proposed tile drains or groundwater capture systems in the vineyard water development plan. Groundwater will therefore not be impacted by irrigation water collection and storage.

Upland vineyard surface runoff will occur in the form of non-jurisdictional diffuse sheet flow. Runoff will be captured by a system of low-slope vegetated vee ditches draining to surface drainage collection and erosion control pipes. Vee ditches will be spaced approximately 60 feet on center to eliminate the long pre-construction sheet flow runoff paths presently conducive to rill and gully erosion. Collected sheet flow will be routed to an off-channel sump where it will be pumped to the remote upland storage reservoir.

Per USDA-SCS Sonoma County Soil Survey, the local Goldridge soils have a moderately high available water holding capacity of about 0.15 inches per inch, and moderately high surface soil permeability of 0.6 – 2 inches/hour. Assuming a 36-inch rooting depth soil profile, this implies that the first 5-inch or so of rainfall will not run off, but will soak in to saturate the soil profile. Depending on the timing, duration, and frequency of subsequent rainfall events, some portion of the incremental rainfall will be expected to infiltrate and the remainder to be expressed as sheet flow runoff.

Sonoma County Water Agency design criteria assume about 40% of annual precipitation occurs as runoff and by inference about 60% goes into the profile as deep percolation. Some unknown percentage of the latter would be lost to the atmosphere due to evaporation and transpiration. For an average annual rainfall of 70 – 75 inches per Sonoma County Water Agency design criteria, about 28-30 inches would be expected as sheet flow runoff and about 42 – 45 inches less evapotranspiration would be expected as deep percolation for groundwater recharge. Using the more conservative NOAA precipitation data of about 58 inches average annual rainfall, about 23.2 inches would be expected as sheet flow runoff and the remaining 35 inches less evapotranspiration would be expected as deep percolation for groundwater recharge.

A supplemental graphic has been prepared as an aid to evaluating project impacts on groundwater recharge and on surface runoff at various points in the Patchett Creek Watershed. The reservoir and sump surface (5.5 ac) and sheet flow collection system (33.5 ac) encompass only about 39 acres of the 324-acre property. The 39-acre sheet flow collection area is limited to partial uplands of Patchett Creek. The point of confluence of the sheet flow discharge area with Patchett Creek (Node 1) is less than 200 feet downstream of it being considered “designated” by Sonoma County and showing as a blueline on the quad map. At that point the total watershed is 39+70 = 109 acres, with

the collection area representing 35.8% of the total. At Node 2, 4,800 feet downstream where the last project-related drainage enters Patchett Creek, the tributary area has grown to about 460 acres, with the catchment representing 8.5% of the total. At a point 9,400 feet downstream, Patchett Creek enters the Wheatfield Fork of the Gualala River with a tributary area of about 1,080 acres, with the catchment area representing 3.6% of the total.

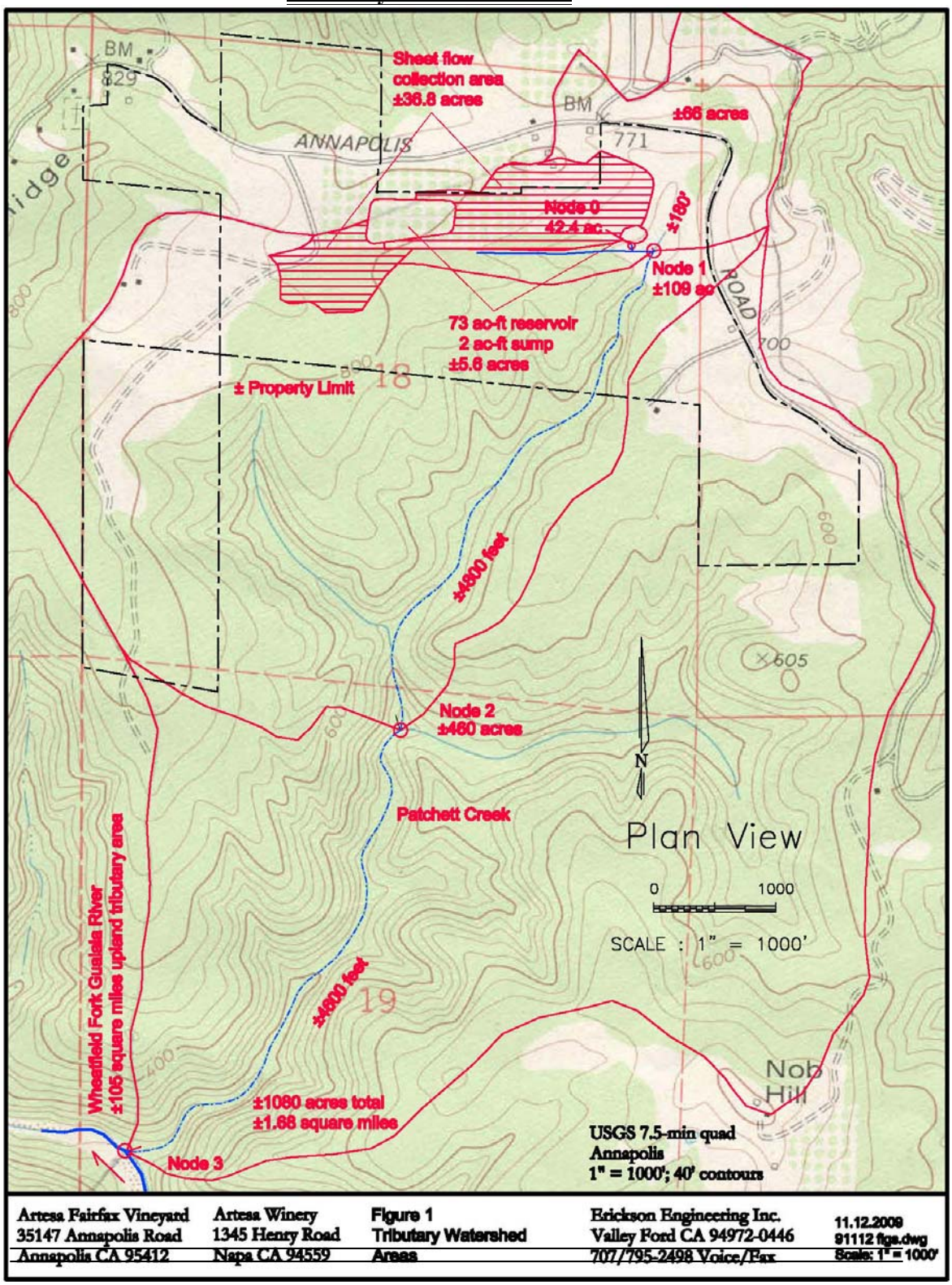
Node	Channel Length, Ft	Total Ac	39 = % of Total area	Water-shed yield Ac-ft	75 ac-ft = % of runoff	% remaining annual runoff	Deep percolation ac-ft
0	0	39	100.0	91	83	17	30
1	180	109	35.8	214	35	65	85
2	4380	460	8.5	893	8	92	359
3	9580	1080	3.6	2091	3.6	96	842

Table notes and assumptions:

- Project sheet flow capture area = 39 acres.
- Average year rainfall 70" per Sonoma County Water Agency data. and +- 58" per NOAA data . The lower value was used for a more conservative analysis.
- Project capture 0 – 75 ac-ft max; Reservoir at 73 ac-ft, sump at 1.6 ac-ft.
- Watershed yield: (58"/yr /12"/ft)*0.4 runoff* A acres =>1.93 ac-ft/ac (58*.4 = 23.2")
- From an average year watershed yield standpoint, assume 58" (4.83') rainfall, C = 1.0 for the impoundments and C = 0.4 for uplands. Then yield is Rainfall*Runoff factor*Area = 4.83*1*5.5 + 4.83 *0.4*33.5 = 90.3 ac-ft. This is sufficient to fill the reservoir and sump from bone dry conditions with average year rainfall. Once operational, residual carry-over would be expected on an annual basis, so less than 73+1.6 = 74.6 ac-ft would be needed to recharge the system.
- Evaporation, transpiration – assumed at .10"/day x 180 days (May 15-Nov15) = 18" and 0.04"/day x 185 days (Nov 15-May 15) = 7.4", total 25.4"): 2.1 ac-ft/ac
- Deep percolation: Remainder: 58 - 23.2 - 25.4 = 9.4" project area and non project area 0.78 ac-ft/ac.

Total sheet flow capture watershed area at Node 0, at sump outfall, is about 39 acres. Of the 83-acre-feet of average year runoff expected, about 91% (75 ac-feet) will be captured during the first year bone-dry startup conditions. In subsequent years with residual water storage, this value may be considerably reduced. The runoff retained during the winter runoff season would otherwise eventually be lost to beneficial use by discharge to the ocean. Within the vineyard, about 30-acre-feet will not be captured or lost to evapotranspiration, and will be available for groundwater recharge. This is equivalent to the volume needed to serve about 30 single-family residences for a year.

Figure 3.4-8
Tributary Watershed Areas



Node 1 is located where project overflow first enters Patchett Creek, about 180 feet downstream of where the creek is first considered "designated," according to County statutes and per blue-line rendering on the Annapolis Quadrangle map. At this point, vineyard impacts to surface runoff are already reduced to 35% of the total, and groundwater recharge due to deep percolation is about 85-acre-feet. Patchett Creek in the non-designated reach above Node 1 will have nearly 100% of pre-project runoff at all times. Below Node 1 Patchett Creek will have a minimum annual runoff at 65% of pre-project conditions, including first flush runoff from non-vineyard areas. Runoff timing is therefore not affected by project implementation. Between Nodes 1 and 2 the ratio of pre- and post-project runoff will rapidly increase from 65% to 92%.

Node 2 is the last point on Patchett Creek potentially impacted by upland vineyard development. At that point there will be about 842-acre-feet of deep percolation theoretically available for late season recharge and residual flows within the creek. Surface runoff impacts are reduced to 8% of the total and annual runoff will be about 92% of pre-project conditions. Since annual flows vary by more than 7%, the inherent background noise in runoff data would make it scientifically difficult to measure project impacts on channel flows at this point.

Node 3 is the confluence of Patchett Creek with the Wheatfield Fork of the Gualala River. At this location, some 1.8 miles below the project discharge location, watershed yield is over 2,080-acre-feet, and project sheet flow capture is about 3.6% of the total. Again, with 96% of pre-project runoff present, project impacts would be imperceptible in terms of measurements relative to inherent variability in background data. Also, about 842-acre-feet of deep percolation is expected, some fraction of which would be expressed as residual flows throughout the dry season.

Per O'Connor's work, the Wheatfield Fork tributary area above the confluence with Patchett Creek is about 105 square miles. The 1.68 square mile Patchett Creek drainage thus comprises about 1.6% of the Wheatfield Fork drainage below the confluence. Hydrologic impacts to the lower drainage due to project implementation are extremely small and immeasurable at 1.6% of 3.6%, equivalent to about 1 part in 1,740.

This simplified evaluation is a worst-case scenario that neglects expected increases in runoff associated with forest conversion and still demonstrates negligible impacts to groundwater resources. All the Caspar Creek research cited by O'Connor in Appendix M to the DEIR indicates increases in both peak flow and annual yield, which would increase values noted for runoff and groundwater recharge.

It is also appropriate to note here that the total runoff/precipitation capture area for the proposed project is incorrectly listed on page 3.7-82 of the DEIR. Rather than using a 47-acre total runoff/precipitation capture area, O'Connor Environmental used a 43-acre total runoff/precipitation capture area, consistent with the assumptions in the *Erosion Control and Mitigation Plan* prepared for the project by Erickson Engineering. However, since the release of the DEIR for public review in June 2009, various adjustments to the vineyard blocks have occurred and the sump size/location has been slightly adjusted, as described in detail in Chapter 1, *Introduction*, of this Final EIR. Therefore, as presented in the above additional DEIR text, the reservoir and sump surface (5.5 ac) and sheet flow collection system (33.5 ac) now encompass

approximately 39 acres of the 324-acre property. As a result, page 3.7-82 of the DEIR should be clarified as follows:

3.7-6 Project-related impacts to groundwater storage and recharge.

The proposed project would result in the removal of approximately 171 acres of timber for vineyard development. All surface runoff from a 36-acre watershed would be captured and stored in a proposed 73 acre-foot reservoir for vineyard irrigation. With inclusion of the reservoir and sump areas, the Hydrologic Effects Analysis identified total runoff/precipitation capture area for the proposed project as ~~47~~39 acres.

In addition, page 3.7-84 of the DEIR similarly needs to be clarified as follows:

Effects of Proposed Irrigation System

With implementation of the proposed project, diffuse upland sheet flow and direct precipitation captured from a ~~36~~33.5-acre area would flow into a two acre-foot sump pond, and would then be pumped into the proposed on-site reservoir. The reservoir would be recharged by a combination of captured sheet flow and direct precipitation on an annual basis. The vineyard would be irrigated during the vine establishment phase (probably the first three summers) by means of a drip system supplied by the proposed reservoir. The applicant expects that irrigation demands would be reduced following the grapevine establishment period, due to the fact that excess irrigation of mature vines tends to result in undesirable grape characteristics.

The proposed runoff capture system would not be expected to adversely affect neighboring wells, or general groundwater availability or recharge in the area. This is in part because the project would capture runoff from only ~~47~~39 acres (approximately 4 percent) of the 1,124-acre Patchett Creek watershed. In addition, as shown in Figures 3.7-6, existing wells are located to the west and north of the project area, and groundwater in the project area flows away from these areas.

As discussed above under the "Table notes and assumptions," the revised 39-acre collection area is still more than sufficient to fill the reservoir, as follows: from an average year watershed yield standpoint, assume 58" (4.83 feet) rainfall, C = 1.0 for the impoundments and C = 0.4 for uplands. Then yield is Rainfall*Runoff factor*Area = 4.83*1*5.5 + 4.83 *0.4*33.5 = 90.3 ac-ft. This is sufficient to fill the reservoir and sump from bone dry conditions with average year rainfall.

The reservoir is expected to fill under dry year conditions as well. Based on the computational method noted above, the watershed runoff would match reservoir and sump capacity of 74.6 acre feet with a seasonal rainfall of 47 inches, some 11 inches less than the average rainfall. 47/58 => 81% of normal. From the USDA Sonoma County Soil Survey, Table 13, Probability of Receiving Total Annual Precipitation Indicated for Fort Ross, a prorated probability of 47 inches of precipitation at Annapolis can be estimated.

% Probability	3	5	10	25	27	33	50	67	75	90	95
Fort Ross		22.5	25.5	31.7		34.3	39.5	45.1	48.4	57.3	63.5
Pct of avg		56.9	64.5	80.2		86.0	100				
Annapolis	31				47		58				
Pct of avg	53				81		100				

For Annapolis, the estimated annual probability of a year with an 11-inch rainfall deficit is on the order of 30% or less.

Once operational, the reservoir would likely not be completely dewatered on an annual basis. Assuming a 1/3 residual of 24.9 acre feet means that 49.7 acre feet of rainfall capture and runoff would be needed for complete recharge. This could be generated in a rainfall year with only 31 inches of precipitation, 27 inches below normal and 27/58 * 100 = 46% of average rainfall.

For Annapolis, the estimated annual probability of a year with a 27-inch rainfall deficit is on the order of 5% or less.

It should also be noted that the reduction in vineyard area in the project and the reduction in the reservoir collection area detailed above do not substantially alter the findings of the hydrologic analysis prepared for the Fairfax Conversion project (DEIR Appendix M). Small reductions in vineyard acreage in sub-drainages N45, N63 and N7 reduce potential changes in runoff, thereby reducing potential impacts. Similarly, the reduction in area draining to the reservoir collection system has a small effect on predicted changes in runoff in subdrainage N20, which already had a small predicted change in runoff. In other words, the hydrologic analysis is conservative, and the minor changes in project design do not increase potential impacts.

Response to Comment 12-6

Please see Response to Comment 7-8.

Response to Comment 12-7

The North Coast Regional Water Quality Control Board (NCRWQCB) states that steelhead are found in the lower reaches of Patchett Creek. The DEIR does not take the "absurd" position, as stated by the commenter that, because of an impassable upstream barrier below the project site, there would be no impact to steelhead in lower Patchett Creek. On the contrary, the DEIR (Appendix J, page 4) uses changes to lower Patchett Creek and/or Wheatfield Fork of the Gualala River water quality and/or quantity that could cause a reduction in species abundance as a criterion in assessing potentially significant project-related impacts.

With respect to flow levels in Patchett Creek, there is little to no surface flow contribution from the project site to lower Patchett Creek or the Wheatfield Fork of the Gualala in mid- to late-summer. During these months Patchett Creek is reduced to a series of isolated pools. Little to no

flow exits the project site that would either positively or negatively impact downstream steelhead and rearing habitat.

The proposed reservoir on the project site is designed to collect stormwater runoff from the surrounding Patchett Creek watershed during the winter rainy season, after significant rains have saturated soils and excess water is flowing in downhill directions. The project would capture runoff from only 39 acres (approximately 4 percent) of the 1,124-acre Patchett Creek watershed. By extension, filling the reservoir would not have a significant effect on downstream reaches of the Wheatfield Fork. Patchett Creek is a tributary of the Wheatfield Fork of the Gualala River, which has a drainage area of about 111 square miles. The project area occupies about 0.6% of the Wheatfield Fork watershed, and the Patchett Creek watershed contributes about 1.6% of the Wheatfield Fork watershed. Potential impacts to steelhead and other native fish species downstream of the project site would be minimal to none as collection of runoff would occur when flows are seasonally high and water temperatures low and within the preferred range for steelhead.

Based on the analytical studies conducted on hydrology and sediment control, the project may improve water quality conditions above existing conditions by reducing erosion and increasing summer baseflow through an increase in groundwater recharge. Any increase in summer baseflows would help maintain cooler water and enhance habitat which is beneficial to steelhead at this time of year.

Within the Gualala watershed, stream flow regimes, depth, width, temperature, and sediment loading have changed over time and are linked to previous and current land use developments. The literature available in the KRIS Gualala database strongly supports a "cause and effect" relationship between watershed development and changes in the aquatic habitat and fish species composition. It must be emphasized, however, that the magnitude of perturbations to the aquatic ecosystem resulting from previous, and potentially improper, development in the watershed that led to significant changes in habitat conditions are not associated with this project. CEQA does not require the Fairfax Conversion project to mitigate for past practices. Notwithstanding the above, it is important to recognize that it is the combination of past and current land use practices that has created the current environmental conditions within the watershed. These current environmental conditions serve as the baseline conditions for the project hydrology and erosion analyses. Erosion processes and rates in the Patchett Creek watershed have been comprehensively assessed in the DEIR in Section 3.7, *Hydrology and Water Quality*, and DEIR Appendices M and N, including off-site vineyards and commercial forest land in the Patchett Creek watershed. Erosion processes and rates were analyzed in the sediment TMDL framework developed by the North Coast Regional Water Quality Control Board, and potential project effects on erosion and sedimentation in the Patchett Creek watershed were quantitatively analyzed in relation to the TMDL desired future conditions to evaluate proposed mitigation.

The proposed project has been designed with state of the art Best Management Practices (BMPs) that will significantly control both project erosion and mobile sediment contribution to downstream environments. For example, project sedimentation basins as designed are predicted to reduce sediment yield by 50 percent, primarily by capturing sand and fine gravel greater than 0.1 mm diameter. Finer suspended sediment that passes through the sediment basins is relatively

mobile in energetic stream systems such as Patchett Creek. Most of the sediment from the project site, following treatment in sedimentation basins, is expected to remain in the water column as the sediment is transported through Patchett Creek with relatively little deposition. As shown in Table 3.7-20 of the DEIR, as revised in Chapter 2 of this Final EIR, the sedimentation basins (and the reservoir collection system) reduce the predicted increase in sediment yield of about 5 to 7 t/yr to a net decrease of about 8 to 13 t/yr. There is an estimated net decrease at the project area boundary draining to Patchett Creek of approximately 10 to 13 percent. Additional reductions in sediment yield by erosion BMPs designed to repair and control gully erosion at five sites in the project area is expected to reduce erosion rates by at least 16 t/yr (low range estimates) to 27 t/yr (high range estimates). These estimated sediment savings result in net decreases in sediment yield under project conditions of 24 to 39 t/yr.

The DEIR identifies specific mitigation measures to avoid and/or minimize impacts to water quality and quantity. For example, in addition to the requirement for all timber harvesting activities on the project site, including harvest-associated road construction and maintenance, to comply with California Forest Practice Rules water quality protection measures, as described in the Timber Harvest Plan prepared for the proposed project and approved by the Department of Forestry and Fire Protection (cf. MM 3.7-2(a)), the DEIR requires the project applicant to implement a detailed Post-construction Monitoring Plan that is intended to supplement the project ECP and SWPPP for the first winter season after project construction (cf. MM 3.7-2(i)). This monitoring plan shall be implemented for areas where site preparation has occurred in the prior construction season, including soil preparation, grading and drainage installation. The first-year post-construction monitoring requirement is fulfilled if the monitoring period follows all grading and drainage work, regardless of whether vineyard planting and cover crops have been established. If site preparation work is conducted, but final grading and drainage installation is not complete, this monitoring plan will extend to the subsequent winter until final grading and drainage work is complete. In addition, per Mitigation Measure 3.7-3(b), the DEIR requires a detailed Channel Erosion and Sedimentation Basin Monitoring Plan to be implemented by the project applicant. As stated in Mitigation Measure 3.7-3(b), there is no substantial evidence that hydrologic change will cause significant erosion in Class III channels draining the project area. Channel response to peak flows is controlled by the size of channels, channel substrate, and the proximity of bedrock and boulder controlled channels downstream. Grant et al. (2008) state that peak flow effects on channel morphology should be confined to stream reaches where channel gradients are less than approximately 0.02 (2 percent) and the streambeds are composed of gravel and finer material. Potential erosion of channels draining the project area is limited to varying degrees by these factors. Furthermore, peak discharge for high-magnitude, low-frequency flows (> 5 yr recurrence interval events) under current conditions indicate that the largest increases in peak flows (2 yr recurrence interval events) predicted under project conditions would be well within the range of flows transmitted by the existing channels in most locations. Hence, the potential for significant channel erosion related to peak flow change is limited by several factors.

Given the relatively high variability and complexity of hydrologic and geomorphic processes, channel response to identified potential peak flow increases is somewhat uncertain. While the predictable potential effects of the project with mitigation are not significant, unpredictable events or unexpected responses could have substantial impacts. Consequently, a monitoring

program is presented in this mitigation measure. The objective of the monitoring plan is to observe and document erosion response, if any, of Class III channels draining the project area and verify that the magnitude of response does not rise to a significant level. No net increase in sediment yield from the project area is an environmental objective of the project.

As explained above, the Erosion Analysis concluded that the project (with BMPs) is expected to reduce sediment yields by 24 to 39 t/yr. The specific objective of this monitoring plan is to determine whether potential increases in sediment yield associated with accelerated channel erosion are less than 24 to 39 t/yr. In addition, the performance of sedimentation basins will be monitored to provide measurements of vineyard field erosion and sedimentation basin trapping efficiency. These measurements are warranted because they could lead to revisions of predicted vineyard field erosion, which could either increase or decrease the threshold of significance of channel erosion. The monitoring plan has three components:

4. Detailed topographic surveys of selected channels;
5. Annual survey of erosion of "sensitive" channels; and
6. Survey of selected sedimentation basins.

Topographic Surveys of Selected Class III Channel Reaches

This element of the monitoring plan would include detailed topographic surveys using a total survey station to measure changes in channel elevation for sample sections of selected Class III stream channels. This study approach has been previously implemented by O'Connor Environmental for Class III streams in Humboldt County to fulfill monitoring requirements of the Pacific Lumber Company Habitat Conservation Plan. The strength of this approach is that it develops accurate, objective quantitative data documenting the dimensions and elevation of channels before the project and three years after project completion. This will provide statistical measures (using parametric techniques), of channel erosion rates that can be extrapolated to assess the magnitude of channel erosion in the project area. The study will be designed so that a range of hydrologic change is observed that will indicate whether peak flow change is correlated with channel erosion rate. Specifically, six channels (2, 20, 31, 40, 45B and 60A; see Hydrologic Analysis, Figure 6, for locations of these channels, and Table 6 for the magnitude of expected peak flow change) would be monitored to determine erosion rates over a 3-year period.

Annual Surveys of Class III Channels

This annual survey would be conducted for the 18 channels considered to be moderately sensitive to peak flow (Hydrologic Analysis, Table 12). The survey technique to be employed would systematically observe and measure the surface area and depth of fresh channel and bank erosion features as a measure of annual erosion rates. This technique, while objective, requires field estimates that have only moderate levels of precision. The advantage of this approach is that it allows for broad coverage of the monitoring sites and is likely to detect significant changes in the rates of channel and bank erosion. Statistical tests for change would most likely utilize techniques for non-parametric data. These surveys would be conducted four times: once prior to project implementation to document baseline conditions, and then annually in late winter/early spring when annual erosion features are relatively easy to detect and measure. These annual

surveys developed over a broad project area are also important in that they would likely detect unexpected rates of change in a time frame that would allow for timely response, if necessary.

Annual Surveys of Selected Sedimentation Basins

This annual survey would measure the volume of accumulated sediment and the grain size distribution of accumulated sediment in a sample of about 25% of the sedimentation basins in the project. By comparison to grain size distribution of the vineyard soils, the deposited sediment size distribution and volume can be used to estimate the erosion rate of the vineyard fields and the sedimentation basin trapping efficiency (see Reid and Dunne, 1996, Rapid Evaluation of Sediment Budgets, p. 49). The monitoring would be comprised of annual measurements of depth of accumulated sediment in selected basins and collection and laboratory analysis of samples of accumulated sediment. The selection of basins for monitoring would include a range of sediment basin sizes. Data analysis would include comparison of pre-project estimates of vineyard erosion rates and sediment trapping efficiency to measured rates and efficiency.

Adaptive Management

If monitoring data indicate that sediment yields from the project area are greater than predicted in the pre-project analyses, either from unexpected erosion of Class III channels or higher-than expected delivery rates of sediment eroded from vineyard fields, additional on- and off-site erosion mitigation will be developed with oversight by CAL FIRE or an alternative regulatory authority designated by CAL FIRE to ensure compliance with the DEIR's identified performance standards.

On- and off-site erosion mitigation, if deemed necessary and appropriate, may include identification of additional and presently unidentified erosion sites on the project site or on other property in the Patchett Creek watershed. Potential erosion sites could include road-related erosion sites, gullies, eroding stream banks, eroding landslide deposits, or other erosion sites delivering or potentially delivering substantial quantities of sediment to the stream channel network. Off-site projects should be developed in cooperation with any property owner involved, and should include an appropriate level of contribution from each property owner. Disused or informally abandoned logging roads and skid trails are probably the most appropriate type of erosion site to target for off-site mitigation, however, other types of sites should be considered if identified. If suitable or practical sites cannot be located in the Patchett Creek watershed, then sites in the Wheatfield Fork Gualala River watershed should be considered.

As planned, the proposed project would not create adverse environmental conditions downstream of the project site which would have a substantial impact on steelhead in lower Patchett Creek and/or Wheatfield Fork Gualala. Therefore, the potential project-related impacts to steelhead discussed above would be less-than-significant through project design and implementation of the rigorous erosion control measures included in Chapter 3.7 of the DEIR, as discussed in Impacts 3.4-11 through 3.4-14 of Chapter 3.4 of the DEIR, *Biological Resources*.

Response to Comment 12-8

The commenter lists his qualifications and does not address the adequacy of the DEIR.

Response to Comment 12-9

As a result of the comment, Table 3.4-3, contained on page 3.4-31 of Chapter 3.4, *Biological Resources*, of the DEIR has been revised on the following page to correct the inadvertent omission and reflect the occurrence of steelhead 4,800 feet below the project site, as reported by the NCRWQCB and addressed in Impact 3.4-11, Sedimentation impacts to special-status salmonids, of the DEIR.

While the DEIR evaluation for Impact 3.4-11 assumed for discussion purposes that steelhead are present downstream of the project site and dependent on continuing summer baseflow to maintain juvenile rearing habitat, there is little to no surface flow contribution from the project site to lower Patchett Creek or the Wheatfield Fork of the Gualala in mid- to late-summer. During these months Patchett Creek is reduced to a series of isolated pools (See Response to Comment 12-7 above). The project may improve summer baseflows through an increase in groundwater recharge, which would benefit steelhead rearing at this time of year. Therefore, steelhead in lower Patchett Creek would not be adversely affected from changes in summer baseflow and the impact would be less-than-significant.

Response to Comment 12-10

Gualala roach have been collected below the project site in the upper, middle, and lower Wheatfield Fork by CDFG (2001) as reported in the KRIS Gualala database. Gualala roach are relatively more abundant in the lower reaches of the watershed. The Fairfax Conversion project site does not provide suitable habitat for Gualala roach; and their ability to access the site is restricted by an impassable barrier to upstream migration located below the project site.

As a result of the comment, Table 3.4-3, *Special-Status Wildlife Species Potentially Occurring on the Project Site*, starting on page 3.4-31 of Chapter 3.4, *Biological Resources*, of the DEIR is hereby revised on the following page to provide more locational specifics for the Gualala roach.

Species	Status	Habitat	Closest Locations	Potential for Occurrence
Steelhead – Northern California ESU *Oncorhynchus mykiss*	Fed: FT State: Other:	Coastal basins from Redwood Creek south to the Gualala River, inclusive. Does not include summer-run steelhead.	~~No records within 10 miles of the project site.~~ According to the North Coast Regional Water Quality Control Board (NCRWQCB), steelhead are found in the lower (Class I) reaches of Patchett Creek commencing about 4,800 feet downstream of the project area. Steelhead are not able to migrate above this point, as there is an impassable area to further upstream reaches.	**None.** No suitable habitat present on project site. Water is intermittent and too warm in summer months to support fry. Downstream diversions and blockages stop anadromous fish from reaching the project site. Largest tributary on site (Patchett Creek) dries over most of its reach on the project site in the summer months, with perennial pools remaining in some locations. Not suitable rearing habitat for anadromous fish.

The above change serves to correct an inadvertent omission in the DEIR. This change does not present significant new information as the reported presence of steelhead in the lower (Class I) reaches of Patchett Creek commencing about 4,800 feet downstream of the project was clearly stated and evaluated as such in Impact 3.4-11 of the DEIR, Sedimentation impacts to special-status salmonids, which determined that through project design and implementation of the rigorous erosion control measures included in Chapter 3.7 of the DEIR, impacts to steelhead would be less-than-significant.

Species	Status	Habitat	Closest Locations	Potential for Occurrence
Gualala roach *Lavinia symmetricus parvipinnus*	Fed: State: CSC Other:	Found only in the Gualala River.	Record for this species located ~~3.3 miles west of the project site (Occurrence No. 1).~~ approximately 2 miles below the project site in the Upper Wheatfield Fork of the Gualala River (KRIS Gualala Database).	**None**. No suitable habitat for this species is present in Patchett Creek. This species was not detected during appropriately-timed surveys.

In addition, page. 3.4-40 of the DEIR is hereby revised to clarify locational data for the Gualala roach:

The closest known record for Gualala roach is located approximately ~~3.3~~ 2 miles ~~southwest of~~ below the project site~~, and 6.2 miles downstream from the project site.~~ in the Upper Wheatfield Fork of the Gualala River (KRIS Gualala Database). ~~This record is at the confluence of the South fork and the Wheatfield fork of the Gualala River, along Annapolis Road in wide and fast water.~~ The project site does not provide suitable habitat for Gualala roach, because the tributaries onsite do not provide suitable flows or water depths for fish. Careful surveys were conducted in all aquatic habitats on the project site for amphibian larvae. Fish were not observed in pools in Patchett Creek or anywhere else on the project site. Patchett Creek is only partially perennial on the project site. In the summer, it dries down to just a few pools that persist in heavily shaded habitats. Records of fish on the project site do not exist.

Response to Comment 12-11

The commenter states that the *"type of exploration the DEIR should have engaged in was to determine whether the NCWAP team found steelhead juveniles at or below Patchett Creek"***.** This statement contrasts with the commenter's statement in Comment 12-7 which states *"The DEIR admits that steelhead use lower Patchett Creek in reaches that have perennial flow..."*

The DEIR states that steelhead is known from lower Patchett Creek (see Impact 3.4-11 and page 3.4-56 of Chapter 3.4, *Biological Resources*). Furthermore, CDFG (2002) collected three steelhead ages 0+, 1+, and 2+ in the upper Wheatfield Fork of the Gualala River. Therefore, their presence downstream of the project site is confirmed. The Fairfax Conversion project site does not provide habitat for steelhead and their ability to access the site is restricted by an impassable barrier to upstream migration located below the site.

With respect to water temperature impacts, this environmental parameter is critical when considering habitat quality for steelhead downstream of the project site. Preferred water temperatures for steelhead range between 15-18^{o}C and can be lethal above 24^{o}C (Moyle 2002). While water temperature data for Patchett Creek is unavailable, the commenter states "*it must be assumed that it has very cold water temperatures due to the nearness of groundwater and the incised shady canyon through which its lower features flow."* The DEIR does not contest this assumption as is evidenced on page 11 of the *Fisheries Assessment for the Fairfax Conversion Project* (Appendix J to the DEIR), which states in relevant part *"*Water temperature data for Patchett Creek was not available for this review although Higgins (2003) states 'it is likely that Patchett Creek flow provide potential islands of cool water near their mouths for juvenile steelhead trout in their lower reaches'."

However, the Fairfax Conversion project will not significantly increase water temperature or deplete flows in lower Patchett Creek or the Wheatfield Fork of the Gualala River. There is little to no surface flow exiting the project site in mid- to late-summer that would benefit steelhead downstream of the project site when water temperatures are high and stressful for this species. Therefore, the project would have no substantial effect on summer rearing habitat downstream of

the project site. During the winter months, the project would also not have significant adverse effects on flows and water temperature.

Notwithstanding the above, as noted on page 3.7-27 of the DEIR, as well as pages 3-5 of Appendix M to the DEIR, *Hydrologic Analysis, Artesa Fairfax THP and Conversion*, watershed experiments at Caspar Creek indicate substantial increases in annual water yield, summer minimum flows, and storm runoff following clearcut harvest in the North Fork Caspar Creek. Reduced evapotranspiration and canopy interception are the likely causes of increases in both total annual runoff and minimum summer stream flow. More specifically, the increase in summer baseflows in the creek have been attributed to reduced canopy interception of precipitation during the rainy season and reduced evapotranspiration from forest vegetation during the growing season, resulting in increased soil moisture. In other words, more rainfall reaches the soil surface following harvest, and forest vegetation draws less water from the soil via its root system and more of the rain water that enters the soil during the wet season remains in the soil and moves by gravity into surface channels, shallow sub-surface channels, or percolates to groundwater aquifers. Consequently, the possibility exists that a greater percentage of the on-site winter precipitation entering the site soils will ultimately makes its way into Patchett Creek in the summer, thereby, contributing more towards summer baseflows as compared to the site's current level of contribution to summer baseflows. Moreover, any sub-surface water making its way into Patchett Creek during the summer -- be it from groundwater aquifers or shallow sub-surface channels – would be of sufficiently cool temperatures (typically 50 to 55 degrees F), so as not to cause any adverse effects to steelhead. Increase in summer baseflows would help maintain cooler water and enhance habitat.

It should be noted that refugia categories by subbasin in the Gualala River presented by CDFG (2002) ranked the Wheatfield subbasin, which includes Patchett Creek, as providing low quality potential refugia.

Response to Comment 12-12

As noted in Response to Comment 12-5 above, there are no existing or proposed tile drains or groundwater capture systems in the vineyard plan. Groundwater will therefore not be impacted by irrigation water collection and storage. Regarding summer flows, please see Response to Comment 12–11 above.

Response to Comment 12-13

The commenter provides results of recent surveys noting the absence of Sacramento sucker in the Gualala River. According to Moyle (2002) Sacramento suckers are a common, widely distributed species in central and northern California.

The commenter states that because Sacramento sucker have not been captured in recent surveys *"its disappearance demonstrates the extent to which the Gualala River ecosystem has unraveled."* That one cannot necessarily assume the decline or disappearance of a particular fish is a direct result of increases in sedimentation and water temperature is supported by considering the current status of Gualala roach, which is noted by this commenter as a "hardy" species (see

Comment 12-12 of this letter). As seen on page 2 of the *Fisheries Assessment for the Fairfax Conversion Project* (Appendix J to the DEIR), in 1991 Entrix, Inc. conducted a fisheries survey and habitat assessment from the vicinity of the Wheatfield Fork and South Fork Gualala River confluence downstream to the confluence of the South Fork and North Fork Gualala River (Entrix Inc., 1991). The three most abundant species collected were Gualala roach, threespine stickleback, and juvenile steelhead trout (See Table 1).

Table 1
Total number of the three most abundant fish species collected between the confluence of the Wheatfield Fork and South Fork Gualala River downstream to the Sea Ranch Wells in July and October 1991 by Entrix, Inc.

Species	Total number collected
Gualala roach	4,569
Threespine stickleback	2,039
Steelhead trout	1,072

It follows that it is highly speculative to imply that any contribution to its apparent decline or disappearance would be made by the proposed project.

However, while CEQA does not require an analysis of species which have no special-status, such as Sacramento sucker, the intent of the DEIR is to avoid and/or minimize impacts to native fish species and potentially improve habitat conditions downstream of the project site.

The proposed project has been designed with state of the art Best Management Practices (BMPs) that will significantly control both project erosion and mobile sediment contribution to downstream environments.

The DEIR identifies specific mitigation measures to avoid and/or minimize significant impacts to water quality and quantity. For example, in addition to the requirement for all timber harvesting activities on the project site, including harvest-associated road construction and maintenance, to comply with California Forest Practice Rules water quality protection measures, as described in the Timber Harvest Plan prepared for the proposed project and approved by the Department of Forestry and Fire Protection (cf. MM 3.7-2(a)), the DEIR requires the project applicant to implement a detailed Post-construction Monitoring Plan that is intended to supplement the project ECP and SWPPP for the first winter season after project construction (cf. MM 3.7-2(i)). This monitoring plan shall be implemented for areas where site preparation has occurred in the prior construction season, including soil preparation, grading and drainage installation. The first-year post-construction monitoring requirement is fulfilled if the monitoring period follows all grading and drainage work, regardless of whether vineyard planting and cover crops have been established. If site preparation work is conducted, but final grading and drainage installation is not complete, this monitoring plan will extend to the subsequent winter until final grading and

drainage work is complete. In addition, per Mitigation Measure 3.7-3(b), the DEIR requires a detailed Channel Erosion and Sedimentation Basin Monitoring Plan to be implemented by the project applicant. As stated in Mitigation Measure 3.7-3(b), there is no substantial evidence that hydrologic change will cause significant erosion in Class III channels draining the project area. Channel response to peak flows is controlled by the size of channels, channel substrate, and the proximity of bedrock and boulder controlled channels downstream. Grant et al. (2008) state that peak flow effects on channel morphology should be confined to stream reaches where channel gradients are less than approximately 0.02 (2 percent) and the streambeds are composed of gravel and finer material. Potential erosion of channels draining the project area is limited to varying degrees by these factors. Furthermore, peak discharge for high-magnitude, low-frequency flows (> 5 yr recurrence interval events) under current conditions indicate that the largest increases in peak flows (2 yr recurrence interval events) predicted under project conditions would be well within the range of flows transmitted by the existing channels in most locations. Hence, the potential for significant channel erosion related to peak flow change is limited by several factors.

Given the relatively high variability and complexity of hydrologic and geomorphic processes, channel response to identified potential peak flow increases is somewhat uncertain. While the predictable potential effects of the project with mitigation are not significant, unpredictable events or unexpected responses could have substantial impacts. Consequently, a monitoring program is presented in this mitigation measure. The objective of the monitoring plan is to observe and document erosion response, if any, of Class III channels draining the project area and verify that the magnitude of response does not rise to a significant level. No net increase in sediment yield from the project area is an environmental objective of the project.

The Erosion Analysis concluded that the project (with mitigation) is expected to reduce sediment yields by 24 to 39 t/yr. The specific objective of this monitoring plan is to determine whether potential increases in sediment yield associated with accelerated channel erosion are less than 24 to 39 t/yr. In addition, the performance of sedimentation basins will be monitored to provide measurements of vineyard field erosion and sedimentation basin trapping efficiency. These measurements are warranted because they could lead to revisions of predicted vineyard field erosion, which could either increase or decrease the threshold of significance of channel erosion. If monitoring data indicate that sediment yields from the project area are greater than predicted in the pre-project analyses, either from unexpected erosion of Class III channels or higher-than expected delivery rates of sediment eroded from vineyard fields, appropriate on- and off-site erosion mitigation will be developed with oversight by CAL FIRE or an alternative regulatory authority designated by CAL FIRE.

The project would not have an adverse effect on Sacramento suckers as a result of flow depletion or increased sediment loading.

Response to Comment 12-14

The project would not have a substantial adverse effect on coho salmon abundance; and the significance of the project in relation to other projects in the basin and stress on coho salmon would not result in a substantial cumulative impact above existing conditions.

Please see Response to Comment 12-7.

Response to Comment 12-15

The commenter does not provide any project-specific scientific evidence that the Fairfax Conversion project would cumulatively add to depleted flows and sediment loading that will lead to diminished estuarine volume and carrying capacity for steelhead. The project would not have a significant effect on the estuary because Patchett Creek within the project area has little to no natural flow in mid- to late-summer, which might contribute to sustaining juvenile rearing habitat in the estuary. In addition, potential impacts from collecting storm water runoff in winter would have minimal, if any, impact on steelhead below the project site or its carrying capacity in the estuary. See Response to Comment 12-5 above, which in summary, demonstrates that negligible impacts to groundwater resources/flows would occur as a result of the project. The Caspar Creek research cited by O'Connor Environmental, Inc. in Appendix M to the DEIR indicates increases in both peak flow and annual yield, which would increase values noted for runoff and groundwater recharge.

The proposed project has been designed with state of the art Best Management Practices (BMPs) that will significantly control both project site erosion and mobile sediment contribution to downstream environments. The DEIR identifies specific mitigation measures to avoid and/or minimize significant impacts to water quality and quantity. Please see Response to Comment 12-7.

The commenter states that a contrast exists between select passages in the *Biological Resources* Chapter of the DEIR, contained on pages 3.4-68 and 3.4-143 (assumed to be 3.4-142 because this is where the commenter's reference actually occurs). Technically, the third paragraph on page 3.4-68, which refers to *"while endangered fish are known to occur in the Gualala River many miles downstream of the project site, the proposed project will not impact these species,"* is correct. This is a correct statement as coho salmon is a **federally endangered species** located *"many miles"* downstream of the project site.

Page 3.4-142 of the DEIR states "*the fisheries assessment notes that, according to the North Coast Regional Water Quality Control Board, steelhead are found in the lower (Class I) reaches of Patchett Creek commencing about 4,800 feet downstream of the project site."* This is also a correct statement as steelhead is a **federally threatened species.**

The commenter states that *"development of the Artesa Project will add to and very clearly diminish if not eliminate carrying capacity for steelhead"* in Patchett Creek. This statement is not based on any project-specific scientific data. On the contrary, the project may improve water quality conditions above existing conditions, which would benefit steelhead.

Response to Comment 12-16

The DEIR does not fail to mention the presence of Pacific lampreys, a California Species of Special Concern, downstream of the project site. As noted on page 3.4-56 of Chapter 3.4,

Biological Resources, of the DEIR (as well as page 2 of Appendix J to the DEIR, *Fisheries Assessment for the Fairfax Conversion Project*):

> In July and October 1991 Entrix, Inc. conducted a fisheries survey and habitat assessment on a stretch of the Gualala River from the Wheatfield Fork/South Fork Gualala River confluence downstream to the confluence of the South Fork and North Fork Gualala River. Seven species of fish were collected during the surveys, including steelhead trout, coastrange sculpin, prickly sculpin, Pacific lamprey, threespine stickleback, green sunfish, and Gualala roach. Coho salmon were not collected during the study. The three most abundant species over all sampling stations (both upstream and downstream) were juvenile steelhead trout, Gualala roach, and threespine stickleback.

The commenter describes the Pacific lamprey as *"endemic."* Endemic refers to a species exclusively native to a certain region. According to the USFWS (2009) Pacific lampreys are the most widely distributed lamprey species on the west coast of the United States.[30] Pacific lampreys are not ***"****endemic"* to the Gualala River basin. As stated by the U.S. Fish and Wildlife Service (USFWS 2009), there is great similarity in ecology between lampreys and salmonids, including spawning habitats. The substrate in lower Patchett Creek may be suitable for lamprey spawning and rearing. However, the determination made by the commenter that the *"Artesa Vineyard will likely further degrade conditions for this species"* is unfounded and without any project-specific scientific data to justify the statement. The minor reduction in stormwater runoff from the project site to fill the reservoir in the winter months is not considered significant in relation to the entire Patchett Creek and Wheatfield Fork watershed area and resultant winter flows. Lampreys would not be affected by reduced flows in the spring and summer months since the reservoir would not be collecting runoff in these months. During mid- to late-summer, little to no natural flows occur within Patchett Creek on-site and there would be no downstream impacts to lampreys. The project will not disrupt juvenile lampreys or ammocetes, which remain in freshwater for up to four years.

As stated by the commenter *"It is likely that high bedload mobility is also limiting the success of Pacific lamprey spawning and rearing in the Gualala and its tributaries, similar to problems affecting salmonids and the Artesa Vineyard will likely further degrade conditions for this species."* Please see Response to Comment 12-7 for a detailed discussion of the state of the art Best Management Practices (BMPs) that will significantly control both project erosion and mobile sediment contribution to downstream environments, as well as specific mitigation measures identified in the DEIR to avoid and/or minimize impacts to water quality and quantity.

In summary, the project would not have an adverse effect on Pacific lamprey as a result of decreased flows or increased sediment loading in Patchett Creek.

However, as a result of the comment, CAL FIRE has recognized the need to clarify Table 3.4-3, *Special-Status Wildlife Species Potentially Occurring on the Project Site*, on page 3.4-32 of Chapter 3.4, *Biological Resources*, of the DEIR, as follows:

[30] Streif, B., 2008. *Fact Sheet Pacific Lamprey* (*Lampetra trientata*). USFWS Portland, Oregon.

Species	Status	Habitat	Closest Locations	Potential for Occurrence
Pacific Lamprey *Entosphenus tridentatus*	Fed: State: CSC Other:	Coastal basins along the Pacific west coast	Upper Wheatfield Fork	**None**. No suitable habitat on the project site. Patchett Creek dries over most of its reach on the project site in the summer months.

The above changes serve to clarify the fact that Pacific lamprey were considered in the fisheries analysis completed for the proposed project as clearly evidenced on page 3.4-56 of Chapter 3.4, *Biological Resources*, of the DEIR, as well as page 2 of Appendix J to the DEIR, *Fisheries Assessment for the Fairfax Conversion Project*. This change does not present significant new information as the DEIR determined that sedimentation impacts would not occur to special-status salmonids because of the project design and implementation of the rigorous erosion control measures included in Chapter 3.7 of the DEIR. These conclusions for anadromous salmonids would also apply to anadromous lamprey.

Response to Comment 12-17

As stated on page 4-1 of the DEIR,

> "The possibility exists that the "cumulative impact" of multiple projects will be significant, but that the incremental contribution to that impact from a particular project (e.g., Fairfax Conversion Project) may not itself be "cumulatively considerable." Thus, CEQA Guidelines Section 15064, subdivision (h)(4), states that "[t]he mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." Therefore, it is not necessarily true that, even where cumulative impacts are significant, any level of incremental contribution must be deemed cumulatively considerable."

The lead agency should generally undertake a two-step analysis. The first question is whether the combined effects from both the proposed project and other projects would be cumulatively significant. If the agency answers this inquiry in the affirmative, the second question is whether "the proposed project's incremental effects are cumulatively considerable." (*Communities for a Better Environment, supra, 103 Cal.App.4th at p. 120* (emphasis added).) Agencies should not merely compare the incremental effect of a proposed project against the collective impacts of all other relevant projects, yielding the proposed project's "relative" impact vis-á-vis the impacts of the other projects. Rather, in making the first required inquiry, the lead agency must add the project's incremental impact to the anticipated impacts of other projects. (*Communities for a Better Environment*, supra, 103 Cal.App.4th at pp. 117-121.)

For example, the lead agency for Project A must evaluate whether that project, in combination with Projects B, C, and D, would create a significant cumulative effect. If so, then the next step is to consider whether Project A's "incremental" contribution to that combined significant cumulative impact would be "cumulatively considerable." The agency should not merely compare the impacts of Project A against those of Projects B, C, and D. The required two-step approach is evident from CEQA Guidelines Section 15064, subdivision (h)(1), which states that "[w]hen assessing whether a cumulative effect requires an EIR, the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable."[31] A negative statement of this same two-step principle is evident from CEQA Guidelines Section 15130, subdivision (a)(2), which provides that "[w]hen the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and is not discussed in further detail in the EIR." [32]

[31] As is evident from the citation, Section 15064(h)(1) of the CEQA Guidelines pertains to the point in time in the environmental review process when the lead agency is determining whether an EIR is required.

[32] As is evident from the citation, Section 15130 of the CEQA Guidelines assumes that an EIR is already required and in the process of being prepared. Therefore, this section of the Guidelines refers to how to prepare an appropriate cumulative impacts analysis in an EIR.

Response to Comment 12-18

Within the Gualala watershed, stream flow regimes, depth, width, temperature, and sediment loading have changed over time and are linked to previous and current land use developments. The literature available in the KRIS Gualala database strongly supports a "cause and effect" relationship between watershed development and changes in the aquatic habitat and fish species composition. It must be emphasized, however, that the magnitude of perturbations to the aquatic ecosystem resulting from previous, and potentially improper, development in the watershed that led to significant changes in habitat conditions are not associated with this project. CEQA does not require the Fairfax Conversion project to mitigate for past practices. Notwithstanding the above, it is important to recognize that it is the combination of past and current land use practices that has created the current environmental conditions within the watershed. These current environmental conditions serve as the baseline conditions for the project hydrology and erosion analyses. Erosion processes and rates in the Patchett Creek watershed have been comprehensively assessed in the DEIR in Section 3.7, *Hydrology and Water Quality*, and DEIR Appendices M and N, including off-site vineyards and commercial forest land in the Patchett Creek watershed. Erosion processes and rates were analyzed in the sediment TMDL framework developed by the North Coast Regional Water Quality Control Board, and potential project effects on erosion and sedimentation in the Patchett Creek watershed were quantitatively analyzed in relation to the TMDL desired future conditions to evaluate proposed mitigation (See Response to Comment 12-7 above for further discussion).

Response to Comment 12-19

See Response to Comment 12-7.

Response to Comment 12-20

The commenter cites three studies that critique the State of California's approach to evaluating cumulative effects for Timber Harvest Plans (THPs). The commenter quotes from Dunne et al. (2001) to emphasize their critique that beneficial mitigation measures do not necessarily eliminate potential cumulative effects nor do they necessarily contribute to an understanding of processes that may contribute to cumulative effects. The commenter has taken this critique of the cumulative effects review process applied to THPs out of context; the critique is not applicable to the much more detailed environmental analysis embodied by the EIR process. The DEIR for the project includes site-specific analysis of potential project effects; this includes the modeling of likely project effects at the watershed scale, so as to provide a quantitative assessment of the project's incremental contribution to cumulative effects that Dunne et al. (2001, p. 1-7) argues should be employed for this purpose. Project erosion and hydrologic effects were analyzed in detail by the DEIR (See DEIR Section 3.7, *Hydrology and Water Quality,* for the project-level analysis, and Chapter 4, *Cumulative Impacts*, for cumulative analyses of hydrology; and DEIR Appendices M, N and O). Subsequently, these physical processes that could potentially contribute to cumulative watershed effects were evaluated by professional biologists (See DEIR Appendices I and J) to determine whether these processes would likely have significant effects on water quality and habitat in the downstream aquatic ecosystem. The results of these technical analyses are included in Section 3.4, *Biological*

Resources, and Chapter 4, *Cumulative Impacts*, of the DEIR. Furthermore, DEIR Mitigation Measure 3.7-3(b) requires monitoring of sedimentation basins and stream channels to further evaluate the effectiveness of proposed mitigation and to observe potential hydrologic impacts on channel erosion near the project site. The critiques cited by the commenter refer to a significantly less detailed level of environmental analysis that is often applied in routine CEQA review of THPs, not the EIR process used for this project.

Response to Comment 12-21

Please see Response to Comment 12-11 above regarding groundwater concerns and Response to Comment 12-5 regarding proposed reservoir concerns.

The commenter provides no scientific basis for his assertion that the proposed project will have negative hydrologic cumulative effects to steelhead, yellow-legged frogs and other aquatic species. The DEIR provides a sound scientific analysis of anticipated project impacts, based on an assessment of hydrological conditions that exist on the project site now and that are anticipated to occur after the project is completed. Based on these analyses, the proposed project's reservoir will collect runoff during periods when project site soils are saturated to an extent that water is flowing over the site in downhill directions. These flows are in excess of the expected groundwater infiltration rate. See Response to Comment 12-5 for a more detailed discussion of groundwater.

Response to Comment 12-22

The comment does not relate to the DEIR or analysis of the proposed project impacts because the commenter made an incorrect assumption that the proposed project requires an Appropriative Water Right. Under applicable law, the proposed project does not require an Appropriative Water Right from the State Water Resources Control Board's Water Rights Division, which does not have jurisdiction over the type of stored off-channel upland sheet flow proposed by the project for agricultural purposes (Water Code, § 6004, subd. (a)). See Chapter 3.7, *Hydrology and Water Quality*, and Chapter 4, *Cumulative Impacts of the DEIR*, for further discussion on project-specific and cumulative water supply impacts.

Response to Comment 12-23

The proposed project does not include the construction of a system of tile drains (See Response to Comment 12-5 above). A comprehensive sheet flow runoff system would be constructed to control erosion and allow for groundwater recharge. As vineyard rows do not constitute impervious surfaces the project would not prevent ground water recharge and in fact should promote ground water recharge via hydromodification that temporarily retains waters in constructed sediment collection basins. Greater retention time would allow greater infiltration potential.

The project site supports 19,494 lineal feet of tributaries, of which only 0.6 percent (299 lineal feet) would be impacted by the proposed project, and the impacts would be minor and as follows:

- 78 lineal-feet would be temporary impacted by construction of pipeline trenches. Impacted tributaries would be restored to existing grade upon completion of construction.
- 35 lineal-feet of site drainages would be impacted associated by construction of a spillway and rocked ford crossing. Features would be built within the stream bed would not affect stream channel hydraulics.
- 186 lineal-feet of impacted drainages consist of erosional gullies that have formed as a result of historical grazing and agricultural (orchard) practices on the project site. The functions and values of the erosional features are minimal.

Response to Comment 12-24

Please see Response to Comment 12-5 above. The proposed reservoir on the project site is designed to collect stormwater runoff from the surrounding watershed during the winter rainy season. It is not the intent to fill the reservoir by capturing the entire "first flush" within the project site until the reservoir is filled as the commenter implies. The statement by the commenter that "*This is exactly the risk development of the agricultural impoundment for the Artesa Vineyard poses"* is incorrect. The filling of the reservoir would occur during several storm events and not only the "first flush," thereby not having a significant effect on "shaving" off the early peak of the hydrograph and/or impacting seasonal hydrological contributions to downstream reaches of Patchett Creek and/or the Wheatfield Fork. The reservoir watershed area is negligible in comparison to the entire Patchett Creek and Wheatfield Fork Gualala watersheds.

Response to Comment 12-25

As is clear from the *Project Description* chapter of the DEIR, Chapter 2, the project does not include the use of groundwater for irrigation purposes. For example, as stated on page 2-9 of Chapter 2, *Project Description*, of the DEIR, under the California Water Code, collection of sheet flow or diffused surface flow does not require an appropriative permit from the State Water Resources Control Board. Because the proposed reservoir would be located off-channel and would be used for agricultural purposes, the reservoir would be exempt from regulation and permitting pursuant to California Water Code §6004(a). The proposed reservoir would not impact or draw down neighboring wells or divert stream flow (See Response to Comment 17-6).

Response to Comment 12-26

As stated on page 2-9 of Chapter 2, *Project Description*, of the DEIR, and clarified in Response to Comment 10-50, water for washing and other incidental needs of vineyard workers would be provided by a small, low-yield well located at the corporation yard on the north side of Annapolis Road. The applicant would install a 1,000- to 5,000-gallon water tank, although water use would be of a seasonal nature and be unlikely to exceed 20 gallons per day for off-season use during about 11 months out of the year.

Peak use would be at harvest, with water demand projected as follows: For a 30-day harvest season, average picking rate would be 130-acre net vineyard/30 days = 4.3 acres/day. If this were to be completed in a daily morning 4-hour time block, about 1.1 acres per hour would need to be picked. If a worker fills a 40 lb lug in 10 minutes, that is a picking rate of 240 lb/hour (2,000/240 =

8.3 laborers can pick a ton an hour). A high yield of 4 tons per acre for premium grapes would therefore require 8.3 laborers to remove the fruit in a 4-hour period. Assuming a driver and foreman, and reducing the picking rate by 10% to account for breaks and inefficiencies increases the required labor pool to 8.3*1.1 + 2 => +-11-man crew. If the picking rate was doubled, a 22-man crew could cover the property in 15 days.

Grapes are typically harvested before noon to take advantage of cooler weather and the required transportation and handling later at the winery. Assuming 2 gal/worker/day x 22 workers is still only about 44 gal/day for labor needs, assuming no liquids are brought on site. Assuming laborer washup at 2 gpd would add another 44 gal/day for peak season needs.

Equipment washup or dust removal might be practiced on an occasional basis, at perhaps 100 gal/day once or twice a week. For 210 gal/week over 7 days, this would add about 30 gpd to the design load.

The peak season well demand for a 15-day period would therefore be on the order of 44+44+30 = 118 gpd, and much less during most of the year. Sonoma County regulations for residential well yield would not apply, but are never-the-less instructive. Sonoma County regulations require a well yield of 1 gpm. Based on this minimum yield, the design volume would be provided within 2 hours of operation in a 24-hour period. During winter months, with a 5-person crew and a consumptive use of 1 gpd, the rate would decline to 5*(1+2) = 15 gpd for staff and perhaps 30 gpd for other incidental uses.

Annual well demand at 120 gpd for 1 month and 20 - 45 gpd for another 11 months totals less than 20,000 gal/year, equivalent to about 0.057-acre foot (326,264 gal = 1-acre foot) On-site deep percolation in only the +-33.5-acre vineyard sheet flow collection area is estimated at 26-acre feet. Projected well demand and associated potential for overdraft is therefore insignificant in terms of local groundwater supplies and recharge potential.

The proposed well is located hundreds of feet from any existing neighboring wells. For such wells, the County considers performance data confidential. Productivity data would be obtained by the driller during installation and is not likely to represent actual well capacity due to type and condition of pumping and plumbing apparatus, use history of the well, and other unknown geologic factors that may affect capacity over time. There would be no way to independently assess accuracy of anecdotal information provided by adjoining well owners; and more localized impacts have been demonstrated to be insignificant in terms of groundwater impacts.

Response to Comment 12-27

The responsible professional, (Dr. Matt O'Connor, CEG #2449), evaluated potential groundwater impacts in the Fairfax Conversion DEIR and is qualified to conduct such evaluations. Dr. Matt O'Connor has prepared more than twenty-five groundwater studies in the County of Sonoma in accord with General Plan Policy WR-2e (formerly RC-3h), as well as similar studies of water availability in other jurisdictions in northern California. The analysis of potential effects of the project on groundwater in the DEIR is more than adequate in evaluating the significance of potential impacts. The analysis of potential groundwater impacts of the

project is consistent with "Guidelines for Groundwater Investigation Reports, Board for Geologists and Geophysicists" (1998); and the introductory section of the Guidelines states that:

> *Individual reports may include the topics discussed in this outline as appropriate. Purposes of investigations vary and may require that portions of these guidelines be either omitted or addressed briefly…The professional performing, supervising or reviewing each investigation has a responsibility to determine what is appropriate and necessary in each case.*

As described in the DEIR, the dominant water use of the project is collection and storage of winter surface runoff for vineyard irrigation during the growing season. In addition, groundwater would not be used for irrigation purposes.

As stated in the DEIR, an onsite well would be used to provide potable water for workers for drinking water and cleanup. The DEIR provided an estimated groundwater use rate of 20 gallons per day (gpd). However, as stated in Response to Comment 10-50 of the FEIR, the estimated annual groundwater demand is 120 gpd for one month during harvest season and 20-45 gpd for another 11 months and totals less than 20,000 gallons per year, equivalent to about 0.057 acre-feet. For comparison, annual domestic water use for a single family home is approximately 0.5 to 1 acre-feet/year. Anticipated annual groundwater use for the proposed project would be less than 10 percent of a typical single family home.

The California Department of Water Resources estimated that the aquifer in this area stores about 3.1 acre-feet/acre (See page 8 of Appendix M to the DEIR). The project site includes approximately 100 acres of aquifer material, which could store approximately 300 acre-feet of groundwater storage. The proposed project annual demand would be approximately 0.03 percent of estimated aquifer storage. Furthermore, because the topographic and groundwater gradients in the project area flow away from most neighboring wells through the project site towards Patchett Creek and the project is anticipated to increase water available for infiltration and percolation, the impacts to wells in the vicinity would be minimal, if any (See pages 3.7-16 through 3.7-19 of Chapter 3.7, *Hydrology and Water Quality*, of the DEIR and pages 7-12 of Appendix M to the DEIR).

Response to Comment 12-28

The proposed project does not require an Appropriative Water Right. See Response to Comment 12-22.

Response to Comment 12-29

Page 2 of the Erosion Control Plan prepared for the proposed project (See Appendix D to the DEIR and Appendix D of this Final EIR for a slightly revised version of the ECP), notes that the Goldridge soil would be considered the limiting condition with regard to site development. However, as noted on page 3.7-40 of Chapter 3.7, *Hydrology and Water Quality*, of the DEIR, both Goldridge Fine Sandy Loam and Hugo Very Gravelly Loam characteristics are contained in

the RUSLE2 database and were modeled by O'Connor Environmental, Inc. for the project site Hydrologic and Erosion Analyses.

In addition, O'Connor Environmental developed slope lengths based on the Erosion Control Plan prepared by Erickson Engineering. The slopes were calculated by Erickson using 100-foot transects perpendicular to the contour within approximately 100-foot grid cells. This methodology resulted in a representative slope over about 0.70-acre on average, and an average slope of 11.7 percent for the entire site. This slope determination methodology is acceptable per the Sonoma County Vineyard Erosion and Sediment Control Ordinance; however, other techniques may yield different results. The methodology used to develop the average site slope does not describe maximum or minimum slopes because of the averaging nature of the procedure. However, Erickson Engineering estimated that the minimum slope ranges from zero to three percent and the maximum slope ranges from 35 to 40 percent based on previous experience and knowledge of the site. Maximum slopes are located in small isolated areas, generally due to rock outcrops and topography irregularities. Areas with slopes exceeding 50 percent do not exist on the project site.

As defined by the Sonoma County Vineyard Erosion and Sediment Control Ordinance, the proposed project is a Level II Planting. This is because the average slope is between 10 and 15 percent, and the dominant soil series on the project site (Goldridge soils) are highly erodible.

Slope data was analyzed in conjunction with soil type, vegetative cover, and watershed to which drainage and eroded soil would be delivered. Estimated erosion rates provided in Table 3.7-10 of the DEIR were applied to acreages (See Tables 4 and 5 of the revised O'Connor Environmental Erosion Analysis contained in Appendix A of this Final EIR) to determine estimated annual sediment yield from the project area.

For the proposed project conditions (shown in Table 3.7-16), a substantial portion of the drainage area runoff (and eroded soil) would be routed to receiving watersheds via proposed sedimentation basins, or to the reservoir. Sedimentation basins were designed by Erickson Engineering to capture sediment greater than approximately 0.1 mm in diameter. Consequently, runoff routed through the sediment basins is expected to reduce sediment yield by about 50 percent. More importantly, sedimentation basins should reduce delivery of the sediment size fraction (sand and fine gravel) that tends to have the greatest potential for impairment of spawning habitat. Finer suspended sediment that passes through the sediment basins is relatively mobile in energetic stream systems such as Patchett Creek. Most of the sediment from the project site, following treatment in sedimentation basins, is expected to remain in the water column as the sediment is transported through Patchett Creek with relatively little deposition. As shown in Table 3.7-20 of the DEIR, as revised in Section 3.7, *Hydrology and Water Quality*, of Chapter 2, *Revisions to the DEIR Text*, of this Final EIR, the sedimentation basins (and the reservoir collection system) reduce the predicted increase in sediment yield of about 5 to 7 t/yr to a net decrease of about 8 to 13 t/yr. There is an estimated net decrease at the project area boundary draining to Patchett Creek of approximately 10 to 13 percent. Additional reductions in sediment yield by erosion mitigation designed to repair and control gully erosion at five sites in the project area is expected to reduce erosion rates by at least 16 t/yr (low range estimates) to 27 t/yr (high

range estimates). These estimated sediment savings result in net decreases in sediment yield under project conditions of 24 to 39 t/yr.

Response to Comment 12-30

For clarification purposes, the first two full paragraphs on page 3.4-79 in Chapter 3.4, *Biological Resources*, of the DEIR have been revised as follows:

> The applicant will develop a Storm Water Pollution Prevention Plan (SWPPP) as part of the project. That document, coupled with the Erosion Control components of the vineyard and reservoir plans, will ensure that a comprehensive set of Best Management Practices are applied during all phases of site development, to minimize risk of soil disturbance and sediment mobilization. These measures will ensure that siltation of hydrologic resources including but not limited to on-site tributaries, downstream tributaries, and wetlands are protected from inadvertent impacts caused by the proposed project.~~The applicant will implement a SWPPP prior to grading the site for the proposed project. These measures will ensure that siltation of onsite and downstream tributaries are minimized to an imperceptible degree. Similarly, all preserved tributaries and wetlands will be protected from inadvertent impacts from the proposed project.~~
>
> The project also includes post-vineyard construction BMPs including desilting catch basins at the lower ends of all drainage points discharging stormwater from the project site. First flushes from the project site will be captured in these basins~~ and "treated." These basins will ensure that any silt leaving the project in stormwater flows will undergo "stilling" and desilting prior to flowing off the site. As this is an agricultural project, and as vineyard rows are colonized by the natural vegetation growing in the region of the project site, all stormwater flows from the project site will be filtered through vegetation and vegetated collection ditches constructed in native soils prior to flowing into the desilting basins~~. The basins will ensure that runoff conveyed to the vineyard edge will be subjected to a discharge delay and storage residence time at very low velocity flows. Under such conditions, settlable solids per RWQCB Basin Plan definition are expected to be captured and retained on-site.
>
> ~~This treatment far exceeds standards now imposed on the development industry for development projects that create extensive impervious surfaces. Treatment basins will also function to decrease erosive flow potential from the project site by collecting stormwater and metering releases through controlled discharge points. All discharges will be further released into vegetated swales that constitute additional treatment prior to the time that stormwaters enter downstream receiving waters.~~
>
> Use of stilling basins on this project is completely discretionary, is above and beyond normal vineyard industry Best Management Practice standards, and demonstrates the project applicant's interest in developing a high quality vineyard design, even at additional expense and in vineyard acreage reduction. The combination of upstream permanent vegetation, temporary mulch, low slope vee ditches, and detention basins at drop inlets will minimize or eliminate sediment mobilization within the vineyard setting. The stilling basins will provide backup insurance for on-site sediment retention in the unlikely event that any sediment is mobilized. The basins are designed to create a flow condition of long residence time and low velocity, resulting in deposition of any sand and

cobble present in the runoff. Under high-flow conditions, fine silt and clay may remain in suspension. Under the more common low-flow situation and associated long residence times, much clearer runoff will exit the basin to an armored channel section below via an outlet and pipe sized at a minimum for the 100-year storm. Conservatively designed hydraulic structures will prevent overtopping flows from the basins. The armored section will reduce water velocity and spread flows to recreate pre-construction drainage flow conditions within the receiving channel. Annual inspection and dry season cleanout-maintenance, if required, will ensure that the individual basins retain sediment detention capacity.

Basin failure potential is considered extremely low, as construction to County standards will utilize local soil as engineered fill and the hydraulic components will be sized for the 100-year storm event. In the highly unlikely event of substandard basin performance, the low embankment height and very small storage volume would limit impacts to a short duration and to the immediate surroundings.

Please see Response to Comment 12-31 below regarding the commenter's concern about past land use history.

Response to Comment 12-31

The habitat typing data collected by CDFG (2001) reveal several poor in-stream metrics including flow regimes, depth, width, temperature, and sediment loading that is linked to past and current land use developments in the Gualala watershed. The scientific literature on the watershed and available in the KRIS Gualala database strongly supports a "cause and effect" relationship between watershed development and changes in the aquatic habitat and fish species composition. However, the magnitude of perturbations to the aquatic ecosystem resulting from previous and/or current improper developments that led to significant changes in habitat conditions are not associated with this project (see also Response to Comment 12-7).

The commenter states, *"that continuing waves of logging and land use such as the Artesa Vineyard are causing channels to remain perturbed."* On the contrary, the project has been designed with state of the art BMPs and the implication that the Fairfax Conversion project will contribute to deleterious environmental problems in the basin is unsubstantiated by the commenter.

Please see Response to Comment 12-7 for a detailed discussion of the state of the art Best Management Practices (BMPs) that will significantly control both project erosion and mobile sediment contribution to downstream environments, as well as specific mitigation measures identified in the DEIR to avoid and/or minimize impacts to water quality and quantity.

Response to Comment 12-32

The commenter refers to a DEIR illustration as "Figure 11"; however, it is not clear which figure is referenced as there is no figure in the DEIR with this numbering. The commenter asserts that erosion processes in adjacent vineyard and forest lands were not discussed in the DEIR, and that they were not discussed because "they are considered fully mitigated". The commenter has made

assumptions regarding the scope of the DEIR that are incorrect. Erosion processes and rates in the Patchett Creek watershed have been comprehensively assessed in the DEIR in Section 3.7, *Hydrology and Water Quality*, and DEIR Appendices M and N, including off-site vineyards and commercial forest land in the Patchett Creek watershed. Erosion processes and rates were analyzed in the sediment TMDL framework developed by the North Coast Regional Water Quality Control Board, and potential project effects on erosion and sedimentation in the Patchett Creek watershed were quantitatively analyzed in relation to the TMDL desired future conditions to evaluate proposed mitigation.

Response to Comment 12-33

The comment is incorrect; the project does not include installation of tile drains (See Response to Comment 12-5). See Response to Comment 12-11 above regarding summer baseflows and water temperature issues.

Response to Comment 12-34

The commenter provides results of earlier studies related to threshold levels to gauge stress on coho salmon which do not occur near the project site. The project would not have a substantial adverse effect on coho salmon abundance; and the significance of the project in relation to other projects in the basin and *"stress"* on coho salmon would not result in a substantial cumulative impact above existing conditions.

Please see Response to Comment 12-7 for a detailed discussion of the state of the art Best Management Practices (BMPs) that will significantly control both project erosion and mobile sediment contribution to downstream environments, as well as specific mitigation measures identified in the DEIR to avoid and/or minimize impacts to water quality and quantity.

Response to Comment 12-35

As stated on page 4-22 of Chapter 4, *Cumulative Impacts,* of the DEIR, as revised in Chapter 2, *Revisions to the DEIR Text*, of this Final EIR, the proposed project is estimated to decrease sedimentation by 24 to 39 tons/yr.

> The project's long-term sediment contribution is projected to be less than existing levels. Specifically, as discussed in Chapter 3.7, Hydrology and Water Quality, upon implementation of the project sedimentation is estimated to decrease by 24 to 39 tons/yr. Other projects would also be required to implement BMPs; however, the efficacy of the measures implemented on other projects cannot be assured. Furthermore, additional sedimentation from construction is likely to occur. The effects of the proposed project, in combination with similar effects generated by other timber conversion and/or vineyard projects in the area, would be considered significant. However, as the proposed project would result in an estimated net decrease in sedimentation over time, the proposed project's incremental contribution to the significant cumulative impact would not be cumulatively considerable. As a result, with the project's BMPs and implementation of Mitigation Measures 3.7-2 (a-i) and 3.7-3 (a, b) required in the Hydrology and Water Quality chapter of the DEIR, the proposed project would have a ***less-than-significant*** cumulative impact.

See Response to Comment 12-17 regarding the cumulative impact analysis approach taken in the DEIR. The commenter asserts that the level of disturbance as indexed by the proportion of the Annapolis, Grasshopper and Little Creek watersheds are above a threshold disturbance level that has been reported to affect aquatic community diversity in coastal Oregon, and that the rate of disturbance can also be related to elevated turbidity levels in streams reported in Humboldt County, California. Specifically, the commenter cites Reeves et al. (1993), a study conducted in the Oregon Coast Range that compared fish habitat and fish species composition and diversity presence in watersheds with greater than and less than 25% of the watershed area harvested. Reeves et al (1993) do not describe what constitutes the treatment of harvest in this comparison; presumably in that region in the 1980's, harvested areas would tend to be clearcuts. The presence or absence of riparian forest buffer strips was not noted by Reeves et al. Harvest areas in the vicinity of the Project referenced by the commenter include clearcuts, but have a higher proportion of sivicultural treatments that specify harvest treatments that retain substantial forest canopy. In addition, California Forest Practice Rules, including Watercourse and Lake Protection Zones, could be expected to reduce potential disturbance to streams and erosion potential to a degree that may not have been comparable in Oregon prior to 1989. Consequently, it is not possible to directly extrapolate from the Oregon study to the Project area because harvest conditions and presumed impacts cannot be compared.

The commenter implies that the Reeves et al (1993) study identified a threshold of negative cumulative effects of 25% harvest of watershed area in 30 years. The Reeves et al study does not make this claim; there is no mention of a hypothetical threshold of harvest occurring within a 30 year period (or any time period). The study is better characterized as a comparison between watersheds that were relatively undisturbed by timber harvest to those that had been significantly disturbed by timber harvest; the commenter's implication that the study reports a threshold of disturbance associated with a rate of recovery is incorrect. Moreover, the suggestion by Reeves et al that there is a meaningful threshold at 25% harvest of watershed area is somewhat misleading when their data are examined in detail. Watersheds classified as <25% harvested by Reeves et al had a mean harvest area of 3%, a median harvest area of 1% with a maximum of 15%. Watersheds classified as >25% harvested had a mean of 59% harvest area, median harvest area 50% and a minimum of 30%. This perspective reinforces the character of Reeves et al as a comparison between largely pristine watersheds and watersheds subject to extensive timber harvest. Finally, the commenter cites Reeves et al. 1995 incorrectly with respect to thresholds of disturbance; there is no percentage threshold of disturbance attributable to Reeves et al 1995 as cited by the commenter.

The commenter asserts that the study by Klein (2003) of North Coast streams relating rate of harvest to turbidity levels can be related to conditions in the Project area. It should be noted that commenter's Figure 14 attributed to Klein (2003) does not appear in that report and includes a study site not included in Klein (2003). The commenter's assertion uncritically accepts assumptions made by Klein (2003), in particular, that differences in geology, soils and hydrology in watersheds analyzed by Klein are very likely to be important controlling factors in addition to the hypothesized factors of road density and proportion of harvest area. In addition, data for harvest area and road density are from disparate sources and of inconsistent quality as noted by Klein (2003). While the potential effects of turbidity on fish habitat are not disputed, the commenter does not present a convincing case for extrapolating Klein's findings to the Project area. The sediment source

inventory developed for the project provides a more meaningful assessment of potential Project effects and potential cumulative effects.

Response to Comment 12-36

See Response to Comment 12-34. Numerous regional and watershed studies have suggested that road density correlates with erosion rates and water quality. Although road density may be a good indicator of erosion potential, site-specific characteristics of road erosion rates and road linkage to (or separation from) watercourses have been established as critical criteria for assessing road erosion impacts on water quality (*California Department of Fish and Game Salmonid Stream Habitat Restoration Manual*, Chapter X-Upslope Erosion Inventory and Sediment Control Guidance). The sediment source inventory developed for the project provides a meaningful assessment of potential Project effects on erosion, sediment delivery and potential effects on water quality. New roads in the project area are located in ridge top positions that are largely separated from streams. The project impacts on sediment and water quality have been evaluated in relation to the Gualala River TMDL, and the Project, with design erosion control measures and mitigations, is expected to reduce sediment delivery to streams as demonstrated in detail in Chapter 3.7, *Hydrology and Water Quality*, of the Fairfax Conversion DEIR, and as revised in this Final EIR (see Chapter 2, *Revisions to the DEIR Text*).

Response to Comment 12-37

The DEIR identifies mitigation measures that require the design of the proposed project to include BMPs to ensure that the project's long-term sediment contribution is projected to be less than existing levels. Please see Response to Comment 12-35.

Response to Comment 12-38

The North Coast Regional Water Quality Control Board (NCRWQCB) regulates fill of "waters of the State" (which includes wetlands) through Section 401 of the Clean Water Act. The project site includes 3.610 acres of waters of the State, which are under the jurisdiction of this agency, pursuant to Section 401 of the Clean Water Act. The DEIR discusses that the RWQCB has jurisdiction over actions that could threaten water quality pursuant to the Porter-Cologne Water Quality Control Act (see pages 3.4-74, 75, 76; 3.7-33, 34; 3.8-6; and 3.8-14 of the DEIR). Under this act, Water Code Section 13260 requires that "any person discharging waste, or proposing to discharge waste, within any region that could affect the waters of the State to file a report of discharge" with the RWQCB through an application for waste discharge (Water Code Section 13260(a)(1). As the noted by the commenter, the jurisdiction of the RWQCB extends beyond the limits of waters of the State defined by the Section 401 of the Clean Water Act pursuant to the Porter-Cologne Water Quality Control Act. As stated in the DEIR, pre and post construction Best Management Practices Plan (BMPs) are incorporated into the project plans that, when implemented, would prevent threats to water quality outside of Clean Water Act-defined waters of the State.

The DEIR explains that the U.S. Army Corps of Engineers (Corps) confirmed a total of 3.35 acres of waters of the U.S. within the Corps jurisdiction exists on the project site. On page 3.4-

76, the DEIR further explains that the Corps confirmed that 0.26-acres of isolated wetlands exist on the project site. Although the 0.26-acres of isolated wetlands are not within the Corps jurisdiction, the isolated wetlands are within the North Coast Regional Water Quality Control Board's jurisdiction and the DEIR concludes the North Coast Regional Water Quality Control Board has jurisdiction over 3.610 acres of waters of the State on the project site.

On page 3.4-76, the DEIR explains that impacts to waters of the State would be mitigated to the satisfaction of the North Coast Regional Water Quality Control Board prior to the issuance of a permit for impacts to such features. Additionally, the DEIR states that prior to grading, the North Coast Regional Water Quality Control Board will require preconstruction activities that are consistent with the requirements of the National Pollutant Discharge Elimination System through development of a Stormwater Pollution Prevention Plan (SWPPP). On page 3.4-79, the DEIR states the SWPPP will contain measures that ensure siltation and erosion are controlled.

The commenter's reliance on Prosolino v. Nastri (2002) 291 F.3d 1123 (Prosolino) is misplaced. The commenter states Prosolino stands for the proposition that the authority of the North Coast Regional Water Quality Control Board extends to uplands and implementation of measures that prevent sediment and erosion outside wetlands and stream channel. Prosolino, however, involved the issue of whether the U.S. Environmental Protection Agency had authority under the Clean Water Act to impose Total Maximum Daily Loads on rivers that were polluted only by nonpoint sources of pollution, and did not speak to the jurisdiction of Regional Water Quality Control Boards. As discussed above, the DEIR states that a SWPPP is required by the North Coast Regional Water Quality Control Board that will adequately address siltation and erosion.

Response to Comment 12-39

When contributions to flow in the watershed are naturally lowest in mid- to late-summer, there is little to no surface water flow exiting the project site that would either positively or negatively impact steelhead and downstream rearing habitat in lower Patchett Creek and/or the Wheatfield Fork of the Gualala River.

As discussed in Response to Comment 12-11 above, the DEIR states that steelhead is known from lower Patchett Creek (see Impact 3.4-11 and page 3.4-56 of Chapter 3.4, Biological Resources). Furthermore, CDFG (2002) collected three steelhead ages 0+, 1+, and 2+ in the upper Wheatfield Fork of the Gualala River. Therefore, their presence downstream of the project site is confirmed. However, the Fairfax Conversion project site does not provide habitat for steelhead and their ability to access the site is restricted by an impassable barrier to upstream migration located below the site.

Due to comprehensive project design and planning, and utilizing state-of-the-art BMPs and erosion control and flow mitigation measures required in the DEIR (See Response to Comment 12-7 above), the project would not result in a "take" of a federally threatened species downstream of the project.

The commenter refers to the poor steelhead adult return in 2009 as a cause for concern. While the 2009 steelhead spawner and redd counts were the lowest since 2002 with approximately 35

fish, the commenter offers no explanation why the 2008 steelhead run was the highest since 2002 with close to 600 fish. It is unknown what other anthropogenic stresses may be having on ocean conditions (e.g., loss of prey, increase in predators, chemical contamination), which may be influencing cyclical fluctuations in steelhead population numbers.

Therefore, with respect to summer flows and water temperatures, the project would not have a substantial adverse effect on steelhead or downstream habitat suitability. On the contrary, annual water yield and summer baseflows may be expected to increase due to greater groundwater recharge as a result of the project which would benefit steelhead (See Response to Comment 12-11 above).

The project would not have an adverse effect on downstream steelhead and other potentially occurring native fish species from decreased summer baseflows or increased water temperatures in the lower watershed. Please also see Response to Comment 12-7.

Response to Comment 12-40

The comment is incorrect; the project does not include installation of tile drains (See Response to Comment 12-5). Regarding summer baseflow concerns, see Response to Comment 12-11 above. See also Response to Comment 7-8 for a discussion on bullfrogs.

Response to Comment 12-41

Historic activities in the Gualala Watershed were held to few if any standards with regard to erosion control runoff management, logging, and road development. These activities have contributed substantially to long-term negative impacts associated with increased sediment loading and water temperatures and decrease surface flow in the Gualala watershed. However, none of the historic watershed impacts are associated with the Fairfax Conversion project. Present day Forest Practice Rules, Water Quality objectives, and Vineyard Ordinance rules are stringent and several agencies exercise regulatory review and oversight on planning, implementation, and post-project management of timber harvest and conversion activities.

Any change in sediment loading and/or flows from the project are considered negligible based on a cumulative watershed assessment prepared in the DEIR; and the direct cumulative project impacts to downstream salmonid populations and habitat are not considered significant. Observations as to watershed-wide negative impacts of historic logging activities as expressed in the comment do not apply to this project because the operational parameters and required permit conditions are not comparable. Furthermore, CEQA does not require an analysis of the effects of the project in a cumulative manner with respect to historic conditions; rather it requires a measure of effect against current conditions. Notwithstanding the above, it is important to recognize that it is the combination of past and current land use practices that has created the current environmental conditions within the watershed. These current environmental conditions serve as the baseline conditions for the project hydrology and erosion analyses. Erosion processes and rates in the Patchett Creek watershed have been comprehensively assessed in the DEIR in Section 3.7, *Hydrology and Water Quality*, and DEIR Appendices M and N, including off-site vineyards and commercial forest land in the Patchett Creek watershed. Erosion processes and rates were analyzed in the sediment TMDL framework

developed by the North Coast Regional Water Quality Control Board, and potential project effects on erosion and sedimentation in the Patchett Creek watershed were quantitatively analyzed in relation to the TMDL desired future conditions to evaluate proposed mitigation.

The commenter states that development of the Artesa Vineyard *"will likely eliminate steelhead from lower Patchett Creek."* On the contrary, summer baseflows may be expected to increase due to increased groundwater recharge as a result of the project which would benefit steelhead at a critical time in their life history (See Response to Comment 12-11 above for further discussion on summer baseflows).

The project would not have a substantial adverse effect on downstream steelhead and other potentially occurring native fish species in the lower watershed and impacts would be less than significant.

Response to Comment 12-42

The comment is a conclusion statement. See Response to Comment 12-3 regarding scientific credibility. As stated on page 2-9 of Chapter 2, *Project Description*, of the DEIR, under the California Water Code, collection of sheet flow or diffused surface flow does not require an appropriative permit from the State Water Resources Control Board. Because the proposed reservoir would be located off-channel and would be used for agricultural purposes, the reservoir would be exempt from regulation and permitting pursuant to California Water Code §6004(a). See also Response to Comment 12-22.

holman & ASSOCIATES
Archaeological Consultants
"SINCE THE BEGINNING"
3615 FOLSOM ST. SAN FRANCISCO, CALIFORNIA 94110 415/550-7286

Letter 13

Mr. Allen Robertson
California Department of Forestry and Fire Protection,
P.O. Box 94426
Sacramento, CA 94244-2460

July 21, 2009

Dear Mr. Robertson:

RE: REVIEW OF THE CULTURAL RESOURCES SECTION OF THE ARTESA PROJECT DRAFT EIR

13-1 At your request I have completed a review of the cultural resources section of the Artesa Draft EIR produced by Raney Planning and Management, Inc. The studies cited include the original study done by Max Neri in 2001 and 2004, and two subsequent studies done by Tom Origer & Associates in 2006 and 2008. The cultural resources section summarizes the findings of the original Neri reports during which he recorded a total of 6 archaeological and/or historical sites, and then presents work done by Origer over a subsequent two year period at the locations of most of the archaeological sites recorded by Neri.

13-2 For the record I have not reviewed any of the original reports, rather just the summary presented in the EIR. The summary states that Neri conducted a complete inspection of the project area, resulting in the recording of specific resource locations. There is no mention of what if any mitigation measures were developed from the Neri studies.

13-3 By 2006 however, the issue of how to mitigate impacts to the recorded cultural resources was important: Tom Origer was retained twice to re-inspect the locations of the Neri work. Origer returned to the locations of Artesa-02,03,05 and 06/H to accurately record their aerial extent and depths, and to conduct minor archaeological excavations to provide a partial evaluation of their scientific worth: were they eligible for inclusion on the National Register of Historic Places and/or the California Register of Historic Resources?

13-4 The EIR states that the Origer work resulted in the elimination of two of the original sites, Artesa-03 and 06/H based upon their lack of significance. The EIR goes on to state in the mitigation section that further impacts to the significant sites will be avoided: in consultation with an archaeologist, buffer zones would be created around the recorded site locations and a program of archaeological field monitoring during construction would be done to insure that the

Letter 13 Cont'd

13-4 Cont'd

recorded sites would be protected, and that any new discoveries during construction would be identified, evaluated and impacts mitigated according to CEQA guidelines.

By the time I had finished reading the summary, I was confused about the nature of the work done on site by Mr. Origer. Did he actually go back and re-survey the entire project area, or was his work restricted to a re-inspection of the resource areas first noted by Neri? Mr. Origer did do some additional historical archival research which resulted in the discovery of additional possible residential sites near the saw mill, and his testing in the vicinity of the saw mill turned up evidence of historic archaeological materials: sheet scatters and possible dump areas were identified. The EIR summary dealt with the possibility of the discovery of additional historical material by developing mitigation measures which required the development of a monitoring plan: should anything be found during construction related monitoring, CEQA required archaeological evaluation and mitigation measures would be followed to reduce impacts to a less-than-significant level.

13-5

I called Mr. Origer to discuss the mitigation measures of the summary with him and to ask if he had conducted a complete re-inspection of the project area to search for additional unidentified archaeological resource areas, both prehistoric and historic in nature. Mr. Origer commented that the mitigation measures, as currently written, sounded adequate. He also denied that he had been retained either in 2006 or 2008 to conduct a re-inspection of the entire project area–his work up to that time was restricted to obtaining additional information about the resources originally recorded by Neri for planning purposes. According to the summary, the sites Artesa-01,02,04 and 05, all of them eligible for inclusion on the California Register, would be protected by avoidance. The two sites found ineligible by Origer (03 and 06/H) would not be protected along with several areas where he had found small amounts of stone artifactual materials. The summary's monitoring plan would handle the identification, evaluation and mitigation plan for any new resources which might be found during grading operations.

13-6

My principal concern with the EIR summary is its implication that the property has been adequately inventoried for both historic and/or historic resources to date, and that based on the existing archaeological record, any additional discoveries of cultural resources can wait until archaeological monitoring is done during construction.

13-7

I have problems with this assumption for a number of reasons:

- There is no way presently to gauge the effectiveness of the Neri survey done in 2001 and 2004. Did he do a credible enough job to identify in particular all of the prehistoric site locations inside the project borders? A review of his original reports may contain sufficient information to judge the adequacy of his effort, but I suspect it won't be found there.

13-8

- I have looked at maps of the area, and have some personal experience with the Annapolis area. The current project area is covered in large areas by duff and other forms of dense

13-9

2

Letter 13 Cont'd

13-9 Cont'd

vegetation. It is my experience that a visual reconnaissance, not augmented by some form of mechanical removal of the ground cover, would cause a field archaeologist to miss the more subtle archaeological site indicators which might exist inside the project area: Neri did record several examples of "flake scatters" which were confirmed by Origer during his subsequent visits. Origer, however, utilized shovel test units (stu's) and other forms of excavation to both test these deposits and to better define their aerial extent. I believe in all of these cases, the Origer studies led to the development of maps which showed the deposits to be larger than originally recorded.

13-10

- Finally, almost 9 years have passed since the initial Neri study. In that time, field conditions could have changed dramatically which would facilitate new discoveries. A new comprehensive field inspection of the entire project area is more than likely to define additional prehistoric deposits at a minimum and possibly add to the inventory of historic deposits. I don't know of a survey of a problematic area like Artesa (due to the extent of ground cover over native soils) where a re-survey years later didn't increase the archaeological inventory. I think every professional archaeologist in Northern California has experienced this when his or her work was done over by someone else years later. Certainly it has happened to me.

13-11

The types of archaeological sites re-inspected by Origer appear to be thin deposits of archaeological materials suggesting that activities in addition to the production or modification of stone artifacts was on-going. The ground stone suggests that a more varied form of habitation was taking place in prehistoric times. Since only one of the original sites (Artesa-01) showed a real deep deposit, I must assume that the project area could contain additional examples of the shallow multi-use archaeological deposits similar to those re-examined by Origer. Making use of the gentle slopes of the project area, the Native population could have moved camp sites frequently, leading to the development of large but thin deposits of archaeological material.

13-12

It is important that the testing done by Origer found that the three "scatters" found by Neri were eligible for inclusion on the California Register and worthy of protection as individual resource areas. If a new comprehensive field survey of the project area were done and additional examples of these types of resource areas were discovered, there may be a sufficient number of them to warrant recording them along with the existing prehistoric resource areas as an archaeological district, rather than as individual and unrelated examples of prehistoric use.

13-13

In short, I don't think that the existing inventory of the property is adequate to justify the mitigation measures currently in the draft EIR. A more systematic survey should be done to complete the inventory and to determine if there is grounds to define an archaeological district. Additional discoveries should not be limited to archaeological monitoring of construction activities, since this approach could ultimately result in the easily avoided destruction of the resources.

If an archaeological district can be justified, this may also require a change in the existing

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Letter 13 Cont'd

13-13 Cont'd

mitigation measures. For example, additional discoveries may not be avoidable by the project development, requiring in-field evaluation to devise responsible mitigation measures. Individual archaeological sites tend to require mitigation specific to that location, without consideration to the potential larger constellation of archaeological resources. In the case of an archaeological district, the sum of the parts is larger than the total (or however that is said?)–the required testing and mitigation strategy required by CEQA could be considerably different than that presented in the current draft EIR, which would nullify the existing mitigation approach.

Sincerely,

Miley Paul Holman
Holman & Associates

4

Letter 13
Cont'd

RÉSUMÉ

MILEY PAUL HOLMAN
3615 Folsom Street
San Francisco, CA 94110
(415) 550-7286

Education:

1972: B.A., Anthropology, San Francisco State University

1985: M.A., Anthropology with specialty in Archaeology, San Francisco State University

Archaeological Experience:

Survey:

Marin	Mariposa County
Sonoma	Fresno County
Mendocino	Madera County
Humboldt	Tuolumne County
Solano	Tulare County
Sacramento	San Luis Obispo County
Colusa	Alameda County
Tehama	Contra Costa County
Shasta	Santa Clara County
Butte	Kings County
Sutter	Santa Barbara County
Yolo	Ventura County
Napa	Kern County
Los Angeles	Modoc County

Between 1965 and 1972 I worked as a field archaeologist, crew chief, project director and principal investigator at the Archaeological Research Center at San Francisco State University. Between 1971 and my retirement in 1998 I served as Assistant Curator and an adjunct professor of Anthropology at the Department of Anthropology, San Francisco State University. In 1974 I established Holman & Chavez Archaeological Consultants, which provided CEQA mandated archaeological services throughout the San Francisco Bay Area. In 1977 I established Holman & Associates, which has continued to provide prehistoric and historic archaeological research services throughout Northern California.

LETTER 13: MILEY PAUL HOLMAN – HOLMAN & ASSOCIATES (7-21-2009)

Response to Comment 13-1

The comment is introductory and does not address the adequacy of the DEIR. Specific comments on the DEIR are responded to below.

Response to Comment 13-2

The Neri Report does include protection measures. The majority of protection measures pertain to prohibiting disturbance to Artesa Site(s) -01, -02, -04, and -05 as indicated in Impact 3.5-2 in the Chapter 3.5, *Cultural Resources*, of the DEIR. The four sites are being avoided in the plan area. Other general recommendations are included such as halting construction work if resources are found as seen in Mitigation Measures 3.5-2(a) and 3.5-2(b). In addition, Mitigation Measure 3.5-2(d) would require the applicant to establish a conservation easement protection zone around Artesa Site(s) -01, -02, -04, and -05 prior to timber harvesting and maintain those protection zones throughout implementation of the timberland conversion project.

Response to Comment 13-3

The comment does not address the adequacy of the DEIR.

Response to Comment 13-4

The comment reiterates the DEIR information.

Response to Comment 13-5

As stated on page 3.5-18 of the DEIR, based on the sites identified by Maximillian Neri's fieldwork conducted for the project site in 2001, a second field investigation was conducted by Tom M. Origer of Tom Origer & Associates. In addition, archival research was conducted using the State Archives, Sonoma County Recorder's Office, Sonoma County Assessor's Office, Sonoma County Courts, County Library History Annex, communication with local residents, examination of old county maps and atlases, census data, and USGS topographic maps.

Fieldwork was conducted by Origer & Associates on September 8th through 15th, 2006, and September 26th through 29th, 2006 for Artesa Site-02, -03, -05, and -06H. Previously recorded prehistoric archaeological resources Artesa Site-02, -03, and -05 were subjected to investigative procedures outlined in the DEIR. As further noted on page 3.5-18 of the DEIR, Origer & Associates conducted a supplemental investigation on April 24 and 25, 2008 of the lumber mill site (cf. *Report on Supplemental Studies for the Artesa-Fairfax Project, Annapolis, Sonoma County*, dated May 5, 2008). Recording of the lumber mill sites was facilitated by a thorough surface inspection. During the ground truthing process, which used a metal detector, probe, and pick and shovel, any archaeological deposits discovered were incorporated into the resource field sketch maps, and notes were taken. Interviews with knowledgeable local residents of the general area added information about the lumber milling activities, especially within the project site. All

of the information was incorporated into the site recording documents. Archival research also added information incorporated onto the DPR 523 forms. Because there was extensive overlap in the locations of mill features, a single record was completed for the two operations. As noted on page 3.5-27 of the DEIR, Origer's evaluation determined that, although the lumber mill site (Artesa Site-06H) is associated with a historically important activity (Criterion A[1]), due to the mill's collapse, it is unable to convey this historical association. Furthermore, the mill is not associated with important individuals (Criterion B [2]), does not have extant architecture or designed elements (Criterion C [3]), and is relatively young (dating only to the mid-20th century). This last characteristic suggests that the mill site does not hold information that would not be available through historical research (Criterion D [4]). Therefore, as the site does meet any of the relevant criteria, the mill is not eligible for listing on the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR).

As stated on page 3.5-24 of the DEIR, under Impact 3.5-2:

> In summary, Artesa Site(s) -01, -02, -04 and -05 are important archaeological resources. As discussed previously the site plan shows that Artesa Site(s) -01, -02, -04 and -05 have been avoided in the vineyard design and development process. Therefore, the sites would not be impacted by development and vineyard activities. Artesa Site -03 was identified by the archaeological consultants as being ineligible for inclusion on the NRHP or the CRHR.

According to *An Archaeological Survey Report for the Artesa/Fairfax Timber Harvesting Plan*," dated August 6, 2009 and revised May 6, 2010, in addition to Origer & Associates' evaluation using the CRHR and NRHP criteria, the site is not significant under any of the criteria for determining the significance of an archaeological or historic-era site listed in the California Forest Practice Rules. Walter Antone, Assistant Tribal Historic Preservation Officer (THPO) for the Kashia Band of Pomo Indians of Stewarts Point Rancheria, has also indicated that the tribe does not consider the site important. The existing conclusion on page 3.5-24 of the DEIR is hereby further substantiated as follows concerning Artesa Site-03:

> Artesa Site -03 was identified by the archaeological consultants as being ineligible for inclusion on the NRHP or the CRHR. It should also be noted that, according to *An Archaeological Survey Report for the Artesa/Fairfax Timber Harvesting Plan*," dated August 6, 2009 and revised May 6, 2010, in addition to Origer & Associates' evaluation using the CRHR and NRHP criteria, the site is not significant under any of the criteria for determining the significance of an archaeological or historic-era site listed in the California Forest Practice Rules. Walter Antone, Assistant Tribal Historic Preservation Officer (THPO) for the Kashia Band of Pomo Indians of Stewarts Point Rancheria, has also indicated that the tribe does not consider the site important.

In addition, the DEIR explains on page 3.5-24 that:

> Although the known significant archaeological sites on the project site would be avoided, the project site could contain further significant prehistoric sites that have yet to be discovered. Furthermore, the potential exists that unknown human remains exist on the project site. Ground-related construction activities could result in the uncovering of

> undiscovered cultural resources and/or human remains. Therefore, the proposed project would result in a ***potentially significant*** impact to unknown prehistoric cultural resources.

As a result, the DEIR includes Mitigation Measures 3.5-2(a) to (d) and 3.5-3([a] and [b]), requiring the implementation of specific protective measures should any previously unidentified archaeological resources be discovered during the construction of the proposed project (including timber harvesting and conversion from timberland to vineyard). Included in these protective measures (cf. Mitigation Measure 3.5-3(b)) is the following requirement:

> *Prior to the issuance of grading permits, an archeological monitor shall be hired by the applicant and approved by the County Permit & Resource Management Department to train the construction grading crew prior to commencement logging and grading activity in regard to the types of artifacts that they are likely to find (including, but not limited to, ceramics/pottery, glass and/or metal artifacts and fragments, building foundations, linear features such as railroad grades, wells, privies, trash pits)…*

In addition, out of an abundance of caution, Mitigation Measure 3.5-3(a) of the DEIR states that prior to the issuance of grading permits, the applicant shall hire a qualified archaeologist to prepare an archaeological monitoring plan for the review and approval of the County Permit and Resource Management Department. At a minimum the plan shall cover the Neri "Noted Find" locations and all areas within 100 feet of previously identified archaeological sites. With the implementation of the above-summarized DEIR mitigation measures, the DEIR determined that all potential impacts to archaeological and historic resources would be less-than-significant. It should be noted here that the aforementioned DEIR mitigation measures have been revised as presented in the below portion of this response to comment.

Furthermore, since the release of the DEIR for public review, six previously unrecorded archaeological resources were identified during the June 2009 Pre-Harvest Inspection (PHI), which is a field meeting that is part of the Timber Harvesting Plan (THP) review process, involving the California Department of Forestry and Fire Protection (CAL FIRE) as lead agency and other government regulatory agencies. One of these resources was discovered just outside of the project site boundaries, near project Unit 8c, on the Mendocino Redwood Company property, while the PHI attendees were inspecting the extreme southern corner of Unit 8c. More specifically, the site is a sparse scatter of stone tools and chipped stone tool-making debris located just beyond the southeast corner of the Artesa property in the southwest quarter of Section 18 (T10N;R13W). One large obsidian tool (bifacially worked) was made from Mt. Konocti obsidian, Lake County, California. Obsidian chipping debris from the Mt. Konocti obsidian source was also identified. Temporally diagnostic artifacts were not observed so no date of occupation can be assigned at this time. Alterations to the site area derived primarily from timber harvest and management activities (i.e., road construction and use).

During an additional follow-up field visit to the project site by CAL FIRE archaeologist Chuck Whatford and Reno Franklin, Tribal Historic Preservation Officer (THPO) of the Kashia Band of Pomo Indians of Stewarts Point Rancheria, another previously unidentified archaeological site was found, containing obsidian and chert flakes. Subsequent to this, Assistant THPO Walter Antone attended a follow-up PHI with Tom Origer of Tom Origer & Associates and Chuck Whatford, during which time the three additional locations were assessed. Based upon the

findings made during the above-described field inspections, CAL FIRE Archaeologist Chuck Whatford decided that the 2001 archaeological survey of the project area was not sufficient for the proposed conversion project and requested that another archaeological survey of the project area be performed. As a result, Origer & Associates conducted a systematic archaeological field survey, which resulted in comprehensive survey coverage of the entire project site conducted on July 16 and 17, 2009, with the exception of two areas which were subjected to mixed-strategy survey due to the fact that they were covered by dense patches of brush (see more on this below under "November 2010 Surveys"). The results of Origer & Associates' archaeological survey and site evaluations are presented in the Confidential Report prepared for CAL FIRE review and approval, entitled "*An Archaeological Survey Report for the Artesa/Fairfax Timber Harvesting Plan*," dated August 6, 2009. The reviewing CAL FIRE archaeologist provided comments on this report that Origer & Associates incorporated into the revised report cited above.

The purpose of the July 2009 survey performed by Origer & Associates was to inspect the three additional locations identified during the PHI, as well as to survey all portions of the property where timberland conversion activities and/or timber harvesting are planned. Special attention was paid to those areas where archaeological specimens were found during the PHI. An intensive surface survey strategy was employed by surveying in a zig-zag pattern on transects approximately 20-25 meters wide. As noted above, dense vegetation prevented intensive survey coverage in two portions of the project area. In these areas where the presence of very dense vegetation made conducting an intensive archaeological survey impractical, a mixed strategy survey was conducted by making forays into the brush, where possible, to examine the ground surface.

November 2010 Surveys

In consideration of public comment on the DEIR, CAL FIRE requested that the applicant have their archaeologist conduct an intensive archaeological field survey of the two densely vegetated areas, which were surveyed using mixed-strategy survey techniques during the July 2009 field survey. The requested additional survey was conducted on November 10th and 11th, 2010 and focused upon a 5-acre block in the northern portion of the project area and a 15-acre block in the southern portion of the project area. To intensively survey these two dense brush locations, Origer & Associates initially proposed the use of a backhoe to flatten brush and create corridors in which the field crew could closely inspect the exposed the ground surface. After a few initial forays into the dense brush with the backhoe, it quickly became apparent that this method could not be employed without creating ground disturbance that would require a Native American monitor to be present per CAL FIRE directives. Consequently no further use of the backhoe was made during the remainder of the survey effort.

Once use of the backhoe clearing method was terminated, transects were subsequently made through the brush with loppers and other hand tools to clear the brush in locations with somewhat less dense vegetation. In the northern dense brush area (~5 acres) transects no more than 15 meters apart were traversed by a combination of clearing dense brush and crawling, as needed, to complete an intensive survey of the entire five-acre area. The same methods were applied to the southern dense brush area (~15 acres) with less success. Although the original intention was to conduct an intensive survey of the entire 15-acre area, the presence of very dense brush made this

strategy impractical and infeasible. As a result, approximately three acres of the 15 acres were intensively surveyed. The remaining 12 acres were surveyed using a mixed strategy approach.

As part of the November 2010 survey effort, Origer & Associates also intensively examined subsurface soils ranging from four to eight inches deep that have become exposed in the road cut across the Wellman property and extending southwest into the project area west of Artesa Site-01. The road bed itself was examined where past construction, use and maintenance of it had cut into native soils and thus provided good ground surface visibility with a hoe and trowel used to clear small patches of low growing grasses and forbs as needed. Darkened soil or archaeological materials were not observed on the surface of the approximately 500-foot long segment of existing project road that lies to the west of Artesa Site-01, indicating that the site does not extend to the existing road.

According to "A Supplemental Cultural Resources Survey for the Artesa/Fairfax Timber Conversion, Sonoma County, CA," dated December 15, 2010, no cultural resources were found during the recent survey of the two dense brush areas as described above, or within the road cut and running surface of the existing road segment previously described.

As a result of the additional extensive field surveys completed since the release of the DEIR in June 2009 and November 2010, the Methods of Analysis section of the DEIR, starting on page 3.5-17, is hereby amplified as follows:

Method of Analysis

Paleontology

Paleontologist James R. Allen conducted a literature study and paleontological site investigation for the Fairfax Conversion/THP project. The site investigation took place on January 25, 2001. The results of the study and investigation are contained in the Paleontological Sensitivity and Monitoring Report dated March 25, 2001. The document addresses the paleontological sensitivity of the area proposed for conversion to vineyards.

Cultural Resources

A Cultural Resources Assessment for the project site was conducted by NCRM Consulting Archaeologist Maximillian Neri and is described in the "Confidential Addendum for Timber Operations on Non-federal Lands in California," dated April 16, 2001, and revised June 19, 2001; December 17, 2001; and March 11, 2004. Prior to fieldwork, Mr. Neri conducted a literature review for the project area and requested a cultural resources records search by the Northwest Information Center (NWIC) at Sonoma State University. Mr. Neri provided written notification of the proposed project to Native American individuals and/or groups included on the Sonoma County portions of the California Department of Forestry and Fire Protection Native American Contact List on June 30, 2000 and May 25, 2001. Mr. Neri also contacted the Annapolis Historical Society regarding historical land uses on the project site, and received from them letters dated August 12, 2000 and October 4, 2000. Additionally, Mr. Neri met with local landowner and historical society member Gary Craig to discuss the presence of the two sawmills described in the historical record.

NCRM staff archaeologist Max Neri searched the project site for cultural resources. Ground visibility was generally fair in the wooded areas, and fair to poor in the grassy meadow areas. Numerous roads and skid trails were present throughout the wooded and grassy areas and provided the best opportunity for observing project soils. The areas of high archaeological sensitivity were investigated completely using pedestrian transects spaced between 20 and 30 meters, and random hoe scrapes. The areas of archaeological sensitivity included ridgelines, midslope benches, creek terraces, saddles, springs, riparian areas, and areas of moderately sloped ecotone transition.

Based on the sites identified by Mr. Neri's fieldwork, a second field investigation was conducted by Tom M. Origer of Tom Origer & Associates. Archival research was conducted using the State Archives, Sonoma County Recorder's Office, Sonoma County Assessor's Office, Sonoma County Courts, County Library History Annex, communication with local residents, examination of old county maps and atlases, census data, and USGS topographic maps.

Fieldwork was conducted on September 8th through 15th, 2006, and September 26th through 29th, 2006 for Artesa Site-02, -03, -05, and -06H. Previously recorded prehistoric archaeological resources Artesa Site-02, -03, and -05 were subjected to the following investigation procedures leading to conclusions regarding their significance. Because Artesa Site-02, Artesa Site-03, and Artesa Site-05 were marked by chipped stone specimens and dubious "groundstone" items, Origer & Associates initially attempted to apply the California Archaeological Resource Identification and Data Acquisition Program (CARIDAP): Sparse Lithic Scatters, (Jackson et al. 1988; 1994) with the intention of treating these sites as sparse lithic scatters. Additionally,

a. Each site area was mapped with the result being a map that included locations of excavation units, surface finds, and environmental features of note such as rock outcrops, trees, drainages, and springs.

b. The surface of each site was examined and artifacts were flagged, mapped, and collected for analysis. Examination of the distribution of exposed archaeological materials guided the placement of excavation units.

c. Based on information gathered from the sites' surfaces and from information contained on Neri's site record forms, 25 investigation units were excavated (eight at Artesa Site-02, six at Artesa Site-03, and 11 at Artesa Site-05) in arbitrary 10cm or 20cm levels or according to soil strata. The bulk of the soil removed from the units was screened with 6mm wire mesh; however, soils samples were processed with 3mm wire mesh to search for smaller objects. Soil samples represented approximately 20% of the level (by volume) from which they were taken. Cultural materials caught by the screens were bagged according to provenience (unit and depth below grade) and retained for laboratory processing and analysis.

d. Standard processing and analysis of recovered specimens was completed and included: cleaning, sorting, classifying, cataloging, and preparing the collection for accessioning. However, the Kashia prefer to have the collection reburied on site if possible (Reno Franklin, personal communication). Analysis of recovered materials included obsidian sourcing and hydration dating, technical analysis of flaked stone debris, species determination of shellfish, and examination of the distribution of site constituents and site structure.

The sites had not been previously tested to determine their importance. Tasks completed at the sites were designed to accurately establish each site's boundaries, depth, integrity, and contents.

A supplemental investigation was conducted on April 24 and 25, 2008, during which a crew of three archaeologists from Origer & Associates completed a field examination of the previously documented resource locations. Notes were made regarding current conditions at each location. Recording of the lumber mill sites was facilitated by thorough surface inspection. During the ground truthing process, which used a metal detector, probe, and pick and shovel, any archaeological deposits discovered were incorporated into the resource field sketch maps, and notes were taken. Interviews with knowledgeable local residents of the general area added information about the lumber milling activities, especially within the project site. All of the information was incorporated into the site recording documents. Archival research also added information incorporated onto the DPR 523 forms. Because there was extensive overlap in the locations of mill features, a single record was completed for the two operations.

July 2009 Surveys

Since the release of the DEIR for public review, six previously unrecorded archaeological resources were identified during the June 2009 Pre-Harvest Inspection (PHI), which is a field meeting that is part of the Timber Harvesting Plan (THP) review process, involving the California Department of Forestry and Fire Protection (CAL FIRE) as lead agency and other government regulatory agencies. One of these resources was discovered just outside of the project site boundaries, near project Unit 8c, on the Mendocino Redwood Company property, while the PHI attendees were inspecting the extreme southern corner of Unit 8c. More specifically, the site is a sparse scatter of stone tools and chipped stone tool-making debris located just beyond the southeast corner of the Artesa property in the southwest quarter of Section 18 (T10N;R13W). One large obsidian tool (bifacially worked) was made from Mt. Konocti obsidian, Lake County, California. Obsidian chipping debris from the Mt. Konocti obsidian source was also identified. Temporally diagnostic artifacts were not observed so no date of occupation can be assigned at this time. Alterations to the site area derived primarily from timber harvest and management activities (i.e., road construction and use).

During an additional follow-up field visit to the project site by CAL FIRE archaeologist Chuck Whatford and Reno Franklin, Tribal Historic Preservation Officer (THPO) of the Kashia Band of Pomo Indians of Stewarts Point Rancheria, another previously unidentified archaeological site was found, containing obsidian and chert flakes. Subsequent to this, Assistant THPO Walter Antone attended a follow-up PHI with Tom Origer of Tom Origer & Associates and Chuck Whatford, during which time the three additional locations were assessed. Based upon the findings made during the above-described field inspections, CAL FIRE Archaeologist Chuck Whatford decided that the 2001 archaeological survey of the project area was not sufficient for the proposed conversion project and requested that another archaeological survey of the project area be performed. As a result, Origer & Associates conducted a systematic archaeological field survey, which resulted in comprehensive survey coverage of the entire project site conducted on July 16 and 17, 2009, with the exception of two areas which were subjected to mixed-strategy survey due to the fact that they were covered by dense patches of brush (see more on this below under "November 2010 Surveys"). The results of Origer & Associates' archaeological survey and site evaluations are presented in the Confidential Report prepared for CAL FIRE review and approval, entitled "*An Archaeological Survey*

Report for the Artesa/Fairfax Timber Harvesting Plan," dated August 6, 2009. The reviewing CAL FIRE archaeologist provided comments on this report that Origer & Associates incorporated into the revised report cited above.

The goal of the July 2009 survey performed by Origer & Associates was to inspect the three additional locations identified during the PHI, as well as to survey all portions of the property where timberland conversion activities and/or timber harvesting are planned. Special attention was paid to those areas where archaeological specimens were found during the PHI. An intensive surface survey strategy was employed by surveying in a zig-zag pattern on transects approximately 20-25 meters wide. As noted above, dense vegetation prevented intensive survey coverage in two portions of the project area. In these areas where the presence of very dense vegetation made conducting an intensive archaeological survey impractical, a mixed strategy survey was conducted by making forays into the brush, where possible, to examine the ground surface.

November 2010 Surveys[33]

In consideration of public comment on the DEIR, CAL FIRE requested that the applicant have their archaeologist conduct an intensive archaeological field survey of the two densely vegetated areas, which were surveyed using mixed-strategy survey techniques during the July 2009 field survey. The requested additional survey was conducted on November 10th and 11th, 2010 and focused upon a 5-acre block in the northern portion of the project area and a 15-acre block in the southern portion of the project area. To intensively survey these two dense brush locations, Origer & Associates initially proposed the use of a backhoe to flatten brush and create corridors in which the field crew could closely inspect the exposed the ground surface. After a few initial forays into the dense brush with the backhoe, it quickly became apparent that this method could not be employed without creating ground disturbance that would require a Native American monitor to be present per CAL FIRE directives. Consequently no further use of the backhoe was made during the remainder of the survey effort.

Once use of the backhoe clearing method was terminated, transects were subsequently made through the brush with loppers and other hand tools to clear the brush in locations with somewhat less dense vegetation. In the northern dense brush area (~5 acres) transects no more than 15 meters apart were traversed by a combination of clearing dense brush and crawling, as needed, to complete an intensive survey of the entire five-acre area. The same methods were applied to the southern dense brush area (~15 acres) with less success. Although the original intention was to conduct an intensive survey of the entire 15-acre area, the presence of very dense brush made this strategy impractical and infeasible. As a result, approximately three acres of the 15 acres were intensively surveyed. The remaining 12 acres were surveyed using a mixed strategy approach.

[33] *A Supplemental Cultural Resources Survey for the Artesa/Fairfax Timber Conversion, Sonoma County, CA*, Origer & Associates, December 15, 2010.

As part of the November 2010 survey effort, Origer & Associates also intensively examined subsurface soils ranging from four to eight inches deep that have become exposed in the road cut across the Wellman property and extending southwest into the project area west of Artesa Site-01. The road bed itself was examined where past construction, use and maintenance of it had cut into native soils and thus provided good ground surface visibility with a hoe and trowel used to clear small patches of low growing grasses and forbs as needed. No darkened soil or archaeological materials were observed on the surface of the approximately 500-foot long segment of existing project road that lies to the west of Artesa Site-01, indicating that the site does not extend to the existing road.

According to "A Supplemental Cultural Resources Survey for the Artesa/Fairfax Timber Conversion, Sonoma County, CA," dated December 15, 2010, no cultural resources were found during the recent survey of the two dense brush areas as described above, or within the road cut and running surface of the existing road segment previously described.

Summary of Archival Research

In 2000, when consulting archaeologist Max Neri conducted the initial record search for this project, he found no documentation on file at the NWIC that any portion of the project area had been surveyed, nor evidence that any sites had been previously recorded in the project area. In 2005 Neri submitted his report to the NWIC and it was assigned report number S- 26495. In 2006 an updated records check was conducted of the property by Tom Origer at the request of Jeff Longcrier, the Registered Professional Forester (RPF) contracted to prepare the timber harvesting plan (THP) for the Fairfax Conversion project. This records check showed that only Origer's 2006 study of specific sites within the study area had been conducted since 2000. This study was assigned report number S-33149 by the NWIC. In 2009 for the purposes of revising the survey of the property a records check was again conducted. This records check did not show any changes since 2006. In 2010 another record search was conducted which revealed documentation of Origer and Associates' 2009 survey of the project area, which resulted in the finding of an additional six resources above Neri's original six archaeological sites and 11 isolates (Origer 2009). This report was assigned number S-36197 by the NWIC.

Three ethnographic sites have been reported near Annapolis, and therefore, in the vicinity of the current project area (Barrett 1908). Barrett's (1908:225) description of the location of ca'mli places this old village approximately one mile south of Annapolis. Barrett's (1908:225) description of the location of koba'te places this old village approximately one mile west of Annapolis. Barrett's (1908:225) description of the location of ma'kawica places this old village northeast of Annapolis. Based upon Barrett's descriptions of these site locations, all three of these named villages appear to be outside the project area. Tribal scholar Otis Parrish has mapped several sites in the Kashia Pomo territory. He places sites qayeeli ("where manzanita is place") and k'abat^{h}wi ("madrone fork") nearby, but outside of, the project area (Parrish 1996).

Review of Barrett's ethnographic information shows some three dozen named places within two miles of the coast with another 30 or so at interior locations. The densest concentration of named places lies approximately six miles north of Plantation where five old villages and one old camp site are shown within 2.5 miles of each other (see Barrett 1908: map titled Pomo Linguistic Stock). Two other concentrations of Barrett named places in Kashia Pomo territory are marked by concentrations of four places each. Near Annapolis, Barrett shows three named places within 2.5 miles of each other (see preceding paragraph). This suggests that, while there are important Native American sites in the vicinity of Annapolis, it is not a unique area in terms of archaeological and/or cultural site density.

The results of Origer & Associates' July 2009 surveys indicate that an additional six locations were identified for further consideration and analysis, five of which have been recommended for avoidance. Therefore, Impact Statement 3.5-2 of Chapter 3.5, *Cultural Resources*, of the DEIR, is hereby revised to present the following additional cultural resources information concerning the Fairfax Conversion project site (*as reflected in Chapter 3.5, Cultural Resources, of the Partially Recirculated DEIR for the Fairfax Conversion Project*):

3.5-2 Impacts to prehistoric cultural resources.

The Northwest Information Center record search results indicated that the Fairfax Conversion Project site had not been previously surveyed, and that previously documented cultural resources did not exist on the site at the time of the record search. However, the records search noted that the project area should be considered to have a high likelihood of containing unrecorded prehistoric resources.

The NCRM Cultural Resources Assessment states that the archaeological survey resulted in the discovery of five prehistoric sites identified as Artesa Site-01, -02, -03, -04, and -05; as well as several isolates and noted finds. The various prehistoric resources discovered within the project area reflect both intensive and generalized use of the project area by prehistoric peoples. Of the five prehistoric archaeological sites Maximillian Neri recorded, consulting archaeologist Tom Origer evaluated only three, because at the time of the Origer investigations the site plan indicated that only three of the five would be impacted by the proposed project. Tom Origer & Associates conducted field research to better define the site limits and provide necessary information to assess the legal significance and integrity of archaeological sites -02, -03, and -05.

Archaeological Sites Identified as Ineligible for Listing

Artesa Site-03

The Artesa Site-03 is a prehistoric archaeological site. The site does not meet Criterion A(1) as the site does not have a demonstrable association with important events in our history. Criterion B(2) is also not met because the site is not associated with important individuals. Because the site does not have designed elements Criterion C(3) does not apply. Origer's investigation of the site revealed that it is marked by a paucity of archaeological specimens, which included chert and obsidian flakes, within a shallow

matrix that had been previously disturbed by cultivation when this area was used as an orchard. The paucity of materials and lack of integrity indicate that the site does not have potential to yield data important in history or prehistory. Therefore, because the site does not meet Criterion D(4), it is not eligible for listing on the NRHP or the CRHR.

Archaeological Sites Identified as Eligible for Listing

Artesa Site-01

The Artesa Site-01 is a prehistoric archaeological site. The site does not meet Criterion A(1) as the site does not have a demonstrable association with important events in our history. Criterion B(2) is also not met because the site is not associated with important individuals. Because the site has no designed elements, Criterion C(3) does not apply. The Artesa Site-01 appears to retain fair to excellent surface integrity, and the site is very likely to contain an extensive sub-surface archaeological deposit. ~~Furthermore, the site is very possibly the Kashaya Pomo ethnographic village of Kabatui, which is known to have been present in the general vicinity, and that human remains may be present.~~ Therefore, the site meets Criterion D(4) for inclusion on the NRHP and CRHR, and has good integrity. As a result, the site should be excluded from vineyard development. The proposed project would not adversely affect Artesa Site-01, as the proposed site plan has been designed to exclude the site from the development area.

Artesa Site-02

The Artesa Site-02 is a prehistoric archaeological site. The site does not meet Criterion A(1) as the site does not have a demonstrable association with important events in our history. Criterion B(2) is also not met because the site is not associated with important individuals. Because the site has no designed elements, Criterion C(3) does not apply. The site contains a wide range of specimens including projectile points, bifaces, unifacial tools, chipped stone tool manufacture waste debris (e.g., chert and obsidian flakes), and grinding implements such as handstones and grinding slabs. Therefore, the site meets Criterion D(4) for inclusion on the NRHP and CRHR, and has good integrity. As a result, the site should be excluded from vineyard development. The proposed project would not adversely affect Artesa Site-02, as the proposed site plan has been designed to exclude the site from the development area.

Artesa Site-04

The Artesa Site-04 is a prehistoric archaeological site. Based on observation of artifacts visible on the ground surface within the site Neri initially determined that the site exhibited poor surface integrity due to previous mechanized impacts and resulting erosion, especially the slopes descending to the drainage in the western portion of the site, and extensive sub-surface deposits are unlikely to be present. However, pending additional evaluation of the resource by scientific means, this prehistoric site must be considered significant according to Criterion A(1) as the site may have a demonstrable association with important events in our history. Criterion B(2) is not met because the site is not associated with important individuals. Because the site does not have designed elements Criterion C(3) does not apply. The lack of integrity indicates that the site does not have potential to yield data important in history or prehistory; therefore,

the site does not meet Criterion D (4). However, as the site may be eligible under Criterion A(1), the site should be avoided. The proposed project would not adversely affect Artesa Site-04, as the proposed site plan has been designed to exclude the site from the development area.

Artesa Site-05

The Artesa Site-04 is a prehistoric archaeological site. The site does not meet Criterion A(1) as the site doe not have a demonstrable association with important events in our history. Criterion B(2) is also not met because the site is not associated with important individuals. Because the site does not have designed elements Criterion C(3) does not apply. The site is marked by a relatively wide variety of artifacts including projectile points, bifacial tools, (e.g., knives), unifacial tools (e.g., scrapers), a grooved stone net weight, steatite bowl fragment, handstones, grinding slabs, abundant chert tool knapping debris, obsidian tool knapping debris. The abundance and variety of materials and deep site matrix that appears to extend below any near-surface ground disturbance suggest that this site retains integrity. Therefore, the site does meet Criterion D(4) and is eligible for listing on the NRHP and the CRHR. The proposed project would not adversely affect Artesa Site-05, as the proposed site plan has been designed to exclude the site from the development area.

Additional Archaeological Sites Identified During Origer & Associates' July 2009 Survey

The results of Origer & Associates' July 2009 survey indicate that an additional six locations were identified for further consideration and analysis, five of which have been recommended for avoidance. During the survey effort, the newly found archaeological sites located within portions of the project area where improvements are planned, were subjected to shovel test pit exploration to better understand site boundaries (in addition, several shovel test pits were placed in the vicinity of Neri's Noted Find 05 and Noted Find 06 -- characterized by him as isolated artifacts -- to verify that there was no site present at either location). These six archaeological sites are only described generally below, due to the sensitivity of the information:

1. Artesa Parking Site: The archaeological materials observed at this site have similarities to those observed at Artesa Site-02 (P-49-0003016) and Artesa Site-05 (P-49-0003019). Both of these sites were found to be significant under Criterion D (4) on the NRHP and the CRHR; therefore, it is possible that this additional site could qualify as well. In addition to the CRHR and NRHP criteria, the site is significant under Criterion (e) of the criteria for a significant archaeological or historical site defined in Title 14, California Code of Regulations (CCR), Section 895.1 (the California Forest Practice Rules). The work area limits for the project have been revised to exclude this small site from any disturbance during project implementation. These revised work area limits are reflected in the latest Vineyard Plan presented in Chapter 1 of the Final EIR.

2. Bailing Wire Site. This site is located in one of the proposed reserves. The site has the potential to be significant under Criteria 1 and 4 of the CRHR, Criterion D of the NRHP, and Criterion (e) of the California Forest Practice Rules. Because it is in

a protected area excluded from development no further investigation or evaluation is warranted at this time.

3. Artesa Crossing Site. The archaeological materials observed at this site are similar to those observed at Artesa Site-02 (P-49-0003016) and Artesa Site-05 (P-49-0003019). Both of these sites were found to be significant under Criterion D (4) of the NRHP and the CRHR; therefore, it is possible this site could qualify as well. In addition to the CRHR and NRHP criteria, the site is significant under Criterion (e) of the prescribed criteria for a significant archaeological or historical site defined in Title 14 CCR Section 895.1 of the California Forest Practice Rules. The work area limits for the project have been revised to exclude this small site from any disturbance. These revised work area limits are reflected in the latest Vineyard Plan presented in Chapter 1 of the Final EIR.

4. End of the Day Site. The archaeological materials observed at this site are similar to those observed at Artesa Site-02 (P-49-0003016) and Artesa Site-05 (P-49-0003019). Because both of these sites were found to be significant under Criterion D (4) of the NRHP and the CRHR, it is possible this site could qualify as well. In addition to the CRHR and NRHP criteria, the site is significant under Criterion (e) of the prescribed criteria for a significant archaeological or historical site defined in Title 14 CCR Section 895.1 of the California Forest Practice Rules. The work area limits for the project have been revised to exclude this small site from any disturbance. These revised work area limits are reflected in the latest Vineyard Plan presented in Chapter 1 of the Final EIR.

5. Among the additional cultural resources identified during Origer and Associates' July 2009 survey was a series of fence segments, some of which are aged, yet many portions appear to have been modified since their original construction and/or are now in a state of disrepair. The type, condition, lengths and appearance of these fence segments have been documented and no further evaluation is warranted. None of the fence segments appears to meet NRHP, CRHR, or California Forest Practice Rules criteria for significance.

6. The 1943 Annapolis 7.5-minute topographic map shows a road intersecting with Annapolis Road at the same location as Red Fern Valley Road extending south along the ridge until it reaches the Wheatfield Fork of the Gualala River. Field investigation of this road revealed that at about the 700-foot elevation line the road turns into a trail. Segments of this road are still extant within the project area and the remainder of the property. The portion of the road from its intersection with Annapolis Road through the property to the point where it turns west has been graded and widened. The remainder of the road through the property appears to have been modified during past logging activities and several segments of it are in disrepair.

   Although no documentation for the road's purpose has been found, its functions were likely:

   1. to provide access to portions of the property, possibly for logging
   2. to provide access to a portion of the Wheatfield Fork of the Gualala River

Historical research did not yield any evidence that the road was associated with any events which contributed to local or regional history. While it is possible the road was used historically for logging, no clear evidence of this was found. The finding that a trail leads from the road to the river suggests that at least one purpose of the road was to provide access to the Wheatfield Fork of the Gualala River. Based upon these factors Origer & Associates proposed that the road does not meet Criterion A of the NRHP, Criterion 1 of the CRHR, or Criterion (c) of the prescribed criteria for a significant archaeological or historical site defined in Title 14 CCR Section 895.1 of the California Forest Practice Rules.

Historical research did yield any documentation that the road was specifically associated with any people found important to Annapolis, Sonoma County or California history, therefore Criterion (b) of the NRHP, Criterion 2 of the CRHR, and Criterion (c) of the prescribed criteria for a significant archaeological or historical site defined in Title 14 CCR Section 895.1 of the California Forest Practice Rules has not been met.

Because the road is not a particularly good example of road construction, nor does it appear to contain any important information; it does not meet Criterion (c) of the NRHP, Criterion 3 of the CRHR, or Criterion (b) of the prescribed criteria for a significant archaeological or historical site defined in Title 14 CCR Section 895.1 of the California Forest Practice Rules.

The road is unlikely to yield data or information important to the history of Annapolis, Sonoma County, or California; therefore, it does not meet Criterion (d) of the NRHP, Criterion 4 of the CRHR, or Criterion (d) of the prescribed criteria for a significant archaeological or historical site defined in Title 14 CCR Section 895.1 of the California Forest Practice Rules.

The road as a physical, geographic feature does not contain information needed to answer important scientific research questions; therefore, Criterion (a) of the prescribed criteria for a significant archaeological or historical site defined in Title 14 CCR Section 895.1 of the California Forest Practice Rules has not been met.

The road was not found to have significant cultural or religious importance to Native Americans as defined in 14 CCR § 895.1; therefore, Criterion (e) of the prescribed criteria for a significant archaeological or historical site defined in Title 14 CCR Section 895.1 of the California Forest Practice Rules has not been met.

Consequently, the road does not meet NRHP, CRHR, or California Forest Practice Rules criteria for significance. Now that the road's description, condition and location have been documented, no further evaluation is warranted.

Conclusion

In summary, Artesa Site(s) -01, -02, -04 and -05 are important archaeological resources. As discussed previously the site plan shows that Artesa Site(s) -01, -02, -04 and -05 ~~have been~~ are to be avoided ~~in the vineyard design and~~ during implementation of the timberland conversion project ~~development process~~. Therefore, the sites would not be impacted by development and vineyard activities. Artesa Site -03 was identified

by the archaeological consultants as being ineligible for inclusion on the NRHP or the CRHR. It should also be noted that, according to *An Archaeological Survey Report for the Artesa/Fairfax Timber Harvesting Plan*," dated August 6, 2009 and revised May 6, 2010, in addition to Origer & Associates' evaluation using the CRHR and NRHP criteria, the site is not significant under any of the criteria for determining the significance of an archaeological or historic-era site listed in the California Forest Practice Rules. Walter Antone, Assistant THPO for the Kashia Band of Pomo Indians of Stewarts Point Rancheria, has also indicated that the tribe does not consider the site important.

In addition, two prehistoric isolates and five noted prehistoric finds were documented in Maximilian Neri's Cultural Resources Assessment. The isolates consisted of a single obsidian leaf-shaped biface (probable projectile point) fragment and a single double-sided metate fragment, both of which were discovered along roads. The noted finds were observed throughout the project site and included various Franciscan chert flakes, a single possibly modified blue-schist cobble, and a single Clear Lake Basin obsidian flake. The various discoveries are considered not to have a measurable degree of potential significance, as they simply reflect the widespread prehistoric use of the project area. The discovery of isolated prehistoric artifacts is a common occurrence throughout the region, and the isolates and noted finds encountered within the project area do not constitute particularly unique or diagnostic artifact types. However, the two prehistoric isolates have been collected and will be protected from possible project impacts. ~~According to~~ Neri~~,~~ proposed that none of the various isolates merit site- or area-specific mitigation measures, a finding that Origer and Associates confirmed.

Furthermore, the five additional archaeological sites identified by Origer & Associates and proposed as potentially significant during the July 2009 intensive re-survey of the entire project area will be protected via avoidance during project implementation, as set forth in Mitigation Measure 3.5-2(e) below. The currently proposed work area limits, as shown in the revised Vineyard Plan, ensure that these additional archaeological sites are not disturbed. As noted above, only two densely vegetated areas were not surveyed intensively in July 2009 by Origer & Associates; however, 8 of the 20 densely vegetated acres were subsequently surveyed by Origer & Associates in November 2010 and no cultural resources were found ("A Supplemental Cultural Resources Survey for the Artesa/Fairfax Timber Conversion, Sonoma County, CA," December 15, 2010). Yet, because 12 densely vegetated acres of the project site remain surveyed at a level that is less than intensive, the applicant has excluded these 12 acres from vineyard development. This reduction in the vineyard acreage has been reflected on the latest version of the Vineyard Plan exhibit, which is included in Chapter 1, Introduction, of this Partially Recirculated DEIR (see Figure 1-1).

Based upon the number of prehistoric Native American archaeological sites identified within the study area, the potential for the sites to comprise an archaeological district was considered. While these sites reflect substantial use of the study area, and are likely related by cultural and temporal affiliation, they are a fraction of the number of sites known and reported within the greater Annapolis area. Guidelines for delineating district boundaries recommend that such boundaries should encompass "…the full extent of the significant resources and land area" making up the district (NPS 1991).

The distribution of known and reported archaeological sites in the Annapolis area, outside the Fairfax Conversion property, suggests that an appropriate boundary for an "Annapolis Archaeological District" would include the land above the 600-foot contour interval on both Beatty Ridge and Brushy Ridge. This would be consistent with guidelines for establishing district boundaries, which recommend using natural topographic features such as ridges, and for large properties suggests the use of USGS contour lines as boundaries (NPS 1991:56). However, the NPS guidelines preclude the creation of a district comprising only the sites within a specific study area. While the creation of an "Annapolis Archaeological District" could help to highlight the research potential of the archaeological resources in the area, state and federal laws call for avoidance of all known cultural resources to the extent feasible. At present there is a lack of sufficient data to link the various prehistoric sites temporally or thematically as a District. While such analyses could be performed, doing so would likely result in further disturbance to these sites that are to be avoided during project implementation. Therefore, creation of an archaeological district would not afford the sites greater protection than they will receive as individual recorded archaeological sites that have been determined to be potentially significant under one or more of the relevant criteria for significant archaeological and/or historic-era sites.

Although the known significant archaeological sites ~~on~~ within the project ~~site~~ area are to ~~would~~ be avoided during project implementation, other portions of the project ~~site~~ area could contain ~~further~~ additional significant prehistoric sites that have yet to be discovered. ~~Furthermore, the potential exists that unknown human remains exist on the project site.~~ Ground-related construction activities could result in the ~~uncovering of undiscovered~~ discovery of presently unidentified cultural resources ~~and/or human remains~~. Therefore, implementation of the proposed project ~~would~~ could result in a ***potentially significant*** impact to unknown prehistoric cultural resources.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce project impacts to a *less-than-significant* level.

Based upon the CAL FIRE archaeologist's review of Origer & Associates' August 2009 report entitled *An Archaeological Survey Report for the Artesa/Fairfax Timber Harvesting Plan*, revised May 6, 2010, Mitigation Measures 3.5-2(a) of the DEIR, which already requires protection measures in the event archaeological resources are encountered during project construction, is hereby revised consistent with the language in Origer & Associates' May 6, 2010 report, to provide additional methodological details. In addition, Mitigation Measure 3.5-2(c) is hereby added to the DEIR (*as reflected in Chapter 3.5, Cultural Resources, of the Partially Recirculated DEIR for the Fairfax Conversion Project*), which serves to provide further details concerning required procedures to be carried out if/when previously unidentified resources are found during project construction:

3.5-2(a) ~~*In the event that any buried cultural resources (including, but not limited to: chipped chert and obsidian stone tools and tool manufacture waste flakes; grinding and hammering implements that look like fist-sized river tumbled stones; and/or locally darkened soil with artifacts, deposits of marine shell, dietary bone) are discovered during vineyard development activities, all work shall be halted within 50 feet of the find and a qualified*~~

~~*consulting archaeologist, the Department of Forestry and Fire Protection Northern Region Headquarters Archaeologist and the Stewarts Point Tribal Historic Preservation Officer (THPO) shall be consulted in order to evaluate the materials and offer recommendations for their treatment. The decision about how to proceed shall be made through consultation among the consulting archaeologist, the Department of Forestry and Fire Protection Northern Region Headquarters Archaeologist and the Stewarts Point Rancheria THPO (or his designee) in coordination with the appropriate County representative. Appropriate treatment measures may include recording the resource with the Northwest Information Center of the California Historical Resources Inventory System database, data recovery excavation, analysis and reporting, and/or complete avoidance of the sites that have outstanding cultural or historic significance. A note requiring compliance with this measure shall be indicated on construction drawings and in construction contracts for the review and approval of the County Permit & Resource Management Department prior to issuance of grading permits.*~~

Prior to beginning any timber and/or ground disturbing operations within 100 feet of any of the significant archaeological sites identified within and adjacent to the project area, the location of the fences to be constructed around them shall be determined through on-site consultation among the CAL FIRE Archaeologist, the project Registered Professional Forester (RPF), the project proponent's archaeological consultant and the Stewarts Point Rancheria THPO or his designee.

1. *There is a possibility that prehistoric or historical cultural materials may be uncovered during operations. Should this occur, operations within 100 feet of the discovery shall stop, the CAL FIRE archaeologist notified, and the other provisions of 14 CCR 929.3 implemented.*
2. *No collection of artifacts or cultural materials by project personnel is allowed.*
3. *The RPF of record shall communicate the above recommendations to the Licensed Timber Operator (LTO) prior to the start of operations.*

In keeping with applicable CEQA and Section 106 regulations, if archaeological site indicators are encountered during project implementation, work at the place of discovery shall be halted immediately until a qualified archaeologist can evaluate the finds (14 CCR §15064.5 [f] and 36CFR60.4). Prehistoric archaeological site indicators include but are not limited to: obsidian and chert flakes and chipped stone tools; grinding and mashing implements (e.g., slabs and handstones, and mortars and pestles); bedrock outcrops and boulders with mortar cups; and locally darkened midden soils. Midden soils may contain a combination of any of the previously listed items with the possible addition of bone and shell remains, and fire affected stones. Historic period archaeological site indicators generally include, but are not necessarily limited to: fragments of glass, ceramic, and metal objects; milled and split lumber; and structure

and feature remains such as building foundations and discrete trash deposits (e.g., wells, privy pits, dumps). When historic period archaeological site indicators are encountered ground disturbing activities within 100 feet of the discovery location shall be halted immediately until a qualified archaeologist can evaluate the find(s) (14 CCR §15064.5 [f]).

3.5-2(b) In the event that human remains are found during vineyard development activities, the steps required by 14 CCR Section 15064.5(e) of the CEQA Guidelines shall be carried out. All excavation or disturbance of the location and any nearby area reasonably suspected to overlie adjacent human remains shall cease. The Sonoma County Coroner shall be immediately contacted. If the coroner determines the remains to be Native American applicable law and regulation require the coroner ~~is then required~~ to contact the Native American Heritage Commission within 24 hours. ~~The~~ Subsequently the Native American Heritage Commission is mandated to ~~shall~~ identify the person or persons it believes to be the most likely descended from the deceased Native American. The most likely descendant may then make recommendations to the landowner or the person responsible for the excavation work, regarding the treatment ~~for means of treating or disposing~~ of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98. A note requiring compliance with this measure shall be indicated on construction drawings and in construction contracts for the review and approval of the County Permit & Resource Management Department prior to issuance of grading permits.

3.5-2(c) A. Pursuant to 14 CCR § 15126.4(b)(3)(C), if/when the CAL FIRE Archaeologist, the consulting archaeologist, and the Stewarts Point Rancheria THPO (or his designee) agree that data recovery through excavation is the only feasible mitigation for an archaeological site(s) discovered during project implementation, a data recovery plan (DRP) that makes provision for adequately recovering the scientifically important information from and about the site shall be prepared and adopted prior to any excavation being undertaken. The DRP shall, at a minimum, include:

1. *A thorough description and current assessment of the condition of each site where data recovery is proposed.*
2. *A description of the project with the areas of direct impact identified and the relationship of these areas of direct impact to the known archaeological site(s) clearly stated.*
3. *A summary of the California Forest Practice Rules and California Environmental Quality Act (CEQA) compliance situation and the management goals of the study, including, but not limited to, defining the areal extent of the site(s), describing the depth, range and characteristics of cultural material and natural strata present, and listing all cultural deposits sampled and/or excavated to date, to determine whether the cultural deposits possess the integrity and potential data to address questions important in prehistory or history, and to provide information necessary to establish what effect project implementation may have on these sites.*

4. *Identification and description of the portion of each site where data recovery is to be undertaken.*
5. *Identification and description of the portion of each site that will be destroyed without data recovery.*
6. *Pertinent background information on the environment, paleoenvironment, ethnography, archaeology and history, as appropriate, to demonstrate familiarity with the project area and type(s) of site(s) under study, and to provide a context for the discussion of relevant regional research topics.*
7. *The research questions/research topics relevant to the sites with an explanation of their importance to regional prehistory and/or history.*
8. *The expected data categories, how they relate to each topic and the sample size necessary to provide adequate cultural material for analysis.*
9. *Field and analysis methods to be used, with an explanation of their relevance to the research domains.*
10. *Methods for evaluating and treating newly identified values. [Note: because situations may arise or data be encountered which were not anticipated in the research design, adequate provision shall be made therein for modification of the program to address unforeseen discoveries and/or other unexpected circumstances.]*
11. *Archaeological sites found to contain human remains shall be treated in accordance with applicable provisions of Section 7050.5 of the California Health and Safety Code and through consultation with the Stewarts Point Rancheria THPO (see also Mitigation Measure 3.5-2(b)).*
12. *Proposed disposition of recovered materials and records. Acceptable curation arrangements may include, but not necessarily be limited to:*
    a. *Return to the landowner in accordance with State private property rights if that is the landowner's expressed desire, AFTER description, study, and analysis in accordance with the DRP/research design are complete;*
    b. *Curation at a regional research center or appropriate public or private repository meeting the standards set forth in* ***Guidelines for the Curation of Archeological Collections*** *(State Historical Resources Commission 1993), provided reasonable access is guaranteed for future study]—following consultation about curation with the Stewarts Point Rancheria THPO.*
13. *Consideration of non-archaeological concerns (e.g., cultural concerns expressed by the Stewarts Point Rancheria THPO, the interests of the private property owner in maintaining the integrity of their property rights, any paleontological, geological, or related values that may be present in the site deposit(s); and/or the environmental integrity of the sites).*

B. Before data recovery operations (and/or any subsurface archaeological treatment measures) are carried out, submit a draft of the DRP to the CAL

FIRE Northern Region-Coast Area Archaeologist and the Stewarts Point Rancheria THPO and provide them a reasonable opportunity to review and comment. The DRP shall then be revised accordingly and a copy of the final DRP provided to the CAL FIRE Archaeologist and the Stewarts Point Rancheria THPO.

C. The CAL FIRE Archaeologist shall be notified a minimum of five (5) business days prior to beginning work under the terms of the approved DRP.

D. Once the DRP has been implemented, a final, confidential written archaeological report shall be prepared that contains, at a minimum, the reasons for the project, the data recovery plan, the methods employed in both field work and analysis, the data recovered, observations made, insights gained, conclusions reached, and a presentation of pertinent data. This report shall take into account the applicable recommendations set forth in ***Preservation Planning Bulletin No. 4(a)****, Archaeological Resource Management Reports (ARMR): Recommended Contents and Format (Office of Historic Preservation, 1989). A draft of this report shall be submitted to the CAL FIRE Archaeologist and the Stewarts Point Rancheria THPO who shall be provided a reasonable opportunity to review and comment upon the draft report. Following this review, the final report shall be revised accordingly and two (2) copies provided to the CAL FIRE Archaeologist. In addition, copies shall be provided to the Stewarts Point Rancheria THPO and the Native American Heritage Commission if either party so requests.*

Based upon comments from CAL FIRE archaeologist's review of Origer & Associates' August 2009 report entitled *An Archaeological Survey Report for the Artesa/Fairfax Timber Harvesting Plan*, revised May 6, 2010, Mitigation Measures 3.5-2(c) and (d) of the DEIR, which already require protection of Artesa Site(s) -01, -02, -04, and -05, are hereby revised consistent with the language in Origer & Associates' May 6, 2010 report, to provide additional methodological details (*as reflected in Chapter 3.5, Cultural Resources, of the Partially Recirculated DEIR for the Fairfax Conversion Project*):

~~*3.5-2(c) As recommended in the NCRM Cultural Resources Assessment, during project development and operation, the applicant shall restrict use of the seasonal road located to the immediate northwest of Artesa Site 01 to ingress and egress. Mechanical grading or widening of the road, parking, and turning around in this area shall not be permitted. Segments of the seasonal roadway within 100 feet of the site shall be fenced with highly visible and/or other appropriate measure(s). Measures shall be implemented prior to the beginning of logging operations. A note requiring compliance with this measure shall be indicated on construction drawings and in construction contracts for the review and approval of the County Permit & Resource Management Department prior to issuance of grading permits.*~~

3.5-2(d) ~~*In consultation with the Department of Forestry and Fire Protection Northern Region Headquarters Archaeologist and the Stewarts Point Rancheria THPO (or his designee) the applicant shall establish a conservation easement protecting Artesa Site(s) -01, -02, -04, and -05 prior to timber harvesting. Measures shall be taken by the project foreman throughout the process to ensure that construction and vineyard operation activities do not degrade the cultural significance of the site(s). Measures to be taken include: the placement of protective fencing prior to any activity within 100 feet of an archaeological site, and the education of all on-site workers. Preservation plans shall be submitted to the County Permit & Resource Management Department prior to issuance of grading permits.*~~

Artesa Site-01

1. *No project or ground disturbing activities or impacts of any kind shall take place within the site boundaries. The site shall be clearly marked with highly visible fencing by the consulting archaeologist and/or his qualified designee(s) - in consultation with the Stewarts Point Rancheria THPO or his designee - prior to and during all ground disturbing timber harvesting and vineyard development activities. This fencing shall be maintained as necessary throughout ground disturbing activities within 100 feet of the site boundary. This location shall be clearly plotted on the project maps with specific and clear notations that this area is NOT to be encroached upon. In so doing, however, this location shall NOT be specifically labeled or identified as an archaeological site on the project maps in order to keep the identity and location of the site confidential and thus protect the site from damage by artifact hunters or vandals.*

2. *Although re-use of the existing seasonal road located approximately 150-200 feet to the northwest of the site is permitted, such use is restricted to ingress and egress – there shall be no mechanical grading or widening of the road.*

3. *A minimum 4-inch thick layer of gravel or other similar, suitable road rock material shall be placed (and maintained at that thickness throughout operations) on the 500-foot long segment of existing dirt road near Artesa Site-01.*

4. *Ground disturbing activities taking place within 100 feet of the site shall be monitored by a professional consulting archaeologist and the Stewarts Point Rancheria THPO or his designee(s). Prior to beginning operations, the scope of the monitoring shall be determined in consultation with the CAL FIRE Archaeologist and the Stewarts Point Rancheria THPO or his designee. When artifacts and/or other site indicators are encountered during operations, ground disturbing activities within 100 feet of the find shall be halted, and the provisions of 14 CCR 929.3 implemented (which include promptly notifying the CAL FIRE Archaeologist about the find).*

Artesa Site-02:

1. *No project or ground disturbing activities or impacts of any kind shall take place within the site boundaries. The site shall be clearly marked by the consulting archaeologist and/or his qualified designee - in consultation with the Stewarts Point Rancheria THPO or his designee – with highly visible fencing prior to and during all ground disturbing timber harvesting and vineyard development activities. This fencing shall be maintained as necessary throughout ground disturbing activities within 100 feet of the site boundary. This location shall be clearly plotted on the project maps with specific and clear notations that this area is NOT to be encroached upon. In so doing, however, this location shall NOT be specifically labeled or identified as an archaeological site on the project maps in order to keep the identity and location of the site confidential and thus protect the site from damage by artifact hunters or vandals.*

2. *Ground disturbing activities taking place within 100 feet of the site shall be monitored by a professional consulting archaeologist and the Stewarts Point Rancheria THPO or his designee(s). Prior to beginning operations, the scope of the monitoring shall be determined in consultation with the CAL FIRE Archaeologist and the Stewarts Point Rancheria THPO. When artifacts and/or other site indicators are encountered during operations, ground disturbing activities within 100 feet of the find shall be halted, and the provisions of 14 CCR 929.3 implemented (which include promptly notifying the CAL FIRE Archaeologist about the find).*

Artesa Site-04:

1. *No project or ground disturbing activities or impacts of any kind shall take place within the site boundaries. The site shall be clearly marked by the consulting archaeologist and/or his qualified designee - in consultation with the Stewarts Point Rancheria THPO or his designee – with highly visible fencing prior to and during all ground disturbing timber harvesting and vineyard development. This fencing shall be maintained as necessary throughout ground disturbing activities within 100 feet of the site boundary. This location shall be clearly plotted on the project maps with specific and clear notations that this area is NOT to be encroached upon. In so doing, however, this location shall NOT be specifically labeled or identified as an archaeological site on the project maps in order to keep the identity and location of the site confidential and thus protect the site from damage by artifact hunters or vandals.*

2. *Ground disturbing activities taking place within 100 feet of the site shall be monitored by a professional consulting archaeologist and the Stewarts Point Rancheria THPO or his designee(s). Prior to beginning operations, the scope of the monitoring shall be determined in*

consultation with the CAL FIRE Archaeologist and the Stewarts Point Rancheria THPO. When artifacts and/or other site indicators are encountered during operations, ground disturbing activities within 100 feet of the find shall be halted, and the provisions of 14 CCR 929.3 shall be implemented (which include promptly notifying the CAL FIRE Archaeologist about the find).

Artesa Site-05:

1. *No project or ground disturbing activities or impacts of any kind shall take place within the site boundaries. The site shall be clearly marked by the consulting archaeologist and/or his qualified designee - in consultation with the Stewarts Point Rancheria THPO or his designee – with highly visible fencing prior to and during all ground disturbing timber harvesting and vineyard development activities. This fencing shall be maintained as necessary throughout ground disturbing activities within 100 feet of the site boundary. This location shall be clearly plotted on the project maps with specific and clear notations that this area is NOT to be encroached upon. In so doing, however, this location shall NOT be specifically labeled or identified as an archaeological site on the project maps in order to keep the identity and location of the site confidential and thus protect the site from damage by artifact hunters or vandals.*

2. *Ground disturbing activities taking place within 100 feet of the site shall be monitored by a professional consulting archaeologist and the Stewarts Point Rancheria THPO or his designee(s). Prior to beginning operations, the scope of the monitoring shall be determined in consultation with the CAL FIRE Archaeologist and the Stewarts Point Rancheria THPO. When artifacts and/or other site indicators are encountered during operations, ground disturbing activities within 100 feet of the find shall be halted, and the provisions of 14 CCR 929.3 shall be implemented (which include promptly notifying the CAL FIRE Archaeologist about the find).*

As well, while the additional sites identified in Origer & Associates' May 6, 2010 report are to be protected via adjustments to the latest Vineyard Plan presented in Figure 1-1 of the Final EIR, out of an abundance of caution the following protection measures, as reviewed and approved by the CAL FIRE Archaeologist, are included after Mitigation Measure 3.5-2(d) of the DEIR (*as reflected in Chapter 3.5, Cultural Resources, of the Partially Recirculated DEIR for the Fairfax Conversion Project*):

3.5-2(e) Artesa Parking Site:

1 *No project or ground disturbing activities or impacts of any kind shall take place within the site boundaries. The site shall be clearly marked by the consulting archaeologist and/or his qualified designee - in consultation with the Stewarts Point Rancheria THPO or his designee – with highly visible fencing prior to and during all ground disturbing*

timber harvesting and vineyard development. This fencing shall be maintained as necessary throughout ground disturbing activities within 100 feet of the site boundary. This location shall be clearly plotted on the project maps with specific and clear notations that this area is NOT to be encroached upon. In so doing, however, this location shall NOT be specifically labeled or identified as an archaeological site on the project maps in order to keep the identity and location of the site confidential and thus protect the site from damage by artifact hunters or vandals.

2 Ground disturbing activities taking place within 100 feet of the site shall be monitored by a professional consulting archaeologist and the Stewarts Point Rancheria THPO or his designee(s). Prior to beginning operations, the scope of the monitoring shall be determined in consultation with the CAL FIRE Archaeologist and the Stewarts Point Rancheria THPO. When artifacts and/or other site indicators are encountered during operations, ground disturbing activities within 100 feet of the find shall be halted, and the provisions of 14 CCR 929.3 implemented (which include promptly notifying the CAL FIRE Archaeologist about the find).

Baling Wire Site:

1. No project or ground disturbing activities or impacts of any kind shall take place within the site boundaries. Site boundaries shall be clearly marked by the consulting archaeologist and/or his qualified designee - in consultation with the Stewarts Point Rancheria THPO or his designee – with highly visible fencing prior to and during all ground disturbing timber harvesting and vineyard development activities. This fencing shall be maintained as necessary throughout ground disturbing activities within 100 feet of the site boundary. This location shall be clearly plotted on the project maps with specific and clear notations that this area is NOT to be encroached upon. In so doing, however, this location shall NOT be specifically labeled or identified as an archaeological site on the project maps in order to keep the identity and location of the site confidential and thus protect the site from damage by artifact hunters or vandals.

2. Ground disturbing activities taking place within 100 feet of the site shall be monitored by a professional consulting archaeologist and the Stewarts Point Rancheria THPO or his designee(s). Prior to beginning operations, the scope of the monitoring shall be determined in consultation with the CAL FIRE Archaeologist and the Stewarts Point Rancheria THPO. When artifacts and/or other site indicators are encountered during operations, ground disturbing activities within 100 feet of the find shall be halted, and the provisions of 14 CCR 929.3 implemented (which include promptly notifying the CAL FIRE Archaeologist about the find).

Artesa Crossing Site:

1. *No project or ground disturbing activities or impacts of any kind shall take place within the site boundaries. Site boundaries shall be clearly marked by the consulting archaeologist and/or his qualified designee - in consultation with the Stewarts Point Rancheria THPO or his designee – with highly visible fencing prior to and during all ground disturbing timber harvesting and vineyard development activities. This fencing shall be maintained as necessary throughout ground disturbing activities within 100 feet of the site boundary. This location shall be clearly plotted on the project maps with specific and clear notations that this area is NOT to be encroached upon. In so doing, however, this location shall NOT be specifically labeled or identified as an archaeological site on the project maps in order to keep the identity and location of the site confidential and thus protect the site from damage by artifact hunters or vandals.*

2. *Ground disturbing activities taking place within 100 feet of the site shall be monitored by a professional consulting archaeologist and the Stewarts Point Rancheria THPO or his designee(s). Prior to beginning operations, the scope of the monitoring shall be determined in consultation with the CAL FIRE Archaeologist and the Stewarts Point Rancheria THPO. When artifacts and/or other site indicators are encountered during operations, ground disturbing activities within 100 feet of the find shall be halted, and the provisions of 14 CCR 929.3 implemented (which include promptly notifying the CAL FIRE Archaeologist about the find).*

End of the Day Site:

1. *No project or ground disturbing activities or impacts of any kind shall take place within the site boundaries. Site boundaries shall be clearly marked by the consulting archaeologist and/or his qualified designee - in consultation with the Stewarts Point Rancheria THPO or his designee – with highly visible fencing prior to and during all ground disturbing timber harvesting and vineyard development. This fencing shall be maintained as necessary throughout ground disturbing activities within 100 feet of the site boundary. This location shall be clearly plotted on the project maps with specific and clear notations that this area is NOT to be encroached upon. In so doing, however, this location shall NOT be specifically labeled or identified as an archaeological site on the project maps in order to keep the identity and location of the site confidential and thus protect the site from damage by artifact hunters or vandals.*

2. *Ground disturbing activities taking place within 100 feet of the site shall be monitored by a professional consulting archaeologist and the Stewarts Point Rancheria THPO or his designee(s). Prior to beginning operations, the scope of the monitoring shall be determined in*

consultation with the CAL FIRE Archaeologist and the Stewarts Point Rancheria THPO. When artifacts and/or other site indicators are encountered during operations, ground disturbing activities within 100 feet of the find shall be halted, and the provisions of 14 CCR 929.3 implemented (which include promptly notifying the CAL FIRE Archaeologist about the find).

3. *All trees within 100 feet of the site boundary that are to be harvested shall be felled and skidded away.*

4. *If management of the trees within the site boundaries to minimize shading of the future surrounding vineyard is necessary, specific measures to prevent damage to the site shall be proposed by the RPF as an amendment to the THP.*

Mendocino Redwood Company Property Site:

1. *Ground disturbing activities within 100 feet of the property corner near where this site was found shall be monitored by a professional archaeologist and the Stewarts Point Rancheria THPO or his designee.*

2. *The scope of the monitoring operations shall be included in the Monitoring Plan prescribed in Mitigation Measure 3.5-3(a).*

3. *Whenever a previously unidentified prehistoric or historic archaeological site is found during operations, ground disturbance within 100 feet of the find shall stop, the Department Archaeologist shall be immediately notified and the other provisions prescribed in 14 CCR 929.3 [949.3, 969.3] implemented.*

The above changes to DEIR Mitigation Measures 3.5-2(a, c, and d) are for clarification purposes based upon additional field investigation conducted by the project archaeologist in concert with the lead agency, CAL FIRE. Mitigation Measures 3.5-2(a) through (e), including the above-outlined changes, have been included in the DEIR out of an abundance of caution, in that the work area limits for the project, as presented on the Vineyard Plan in Figure 1-1 of this Final EIR, already ensure the avoidance of all archaeological sites determined to be potentially eligible for inclusion on the NRHP or the CRHR. Therefore, these changes do not affect the adequacy of the previous environmental analysis of cultural resources in the DEIR.

Response to Comment 13-6

Please see Response to Comment 13-5.

Response to Comment 13-7

Please see Response to Comment 13-5.

Response to Comment 13-8

Please see Response to Comment 13-5.

Response to Comment 13-9

As discussed in Response to Comment 13-5, Origer & Associates conducted subsequent field surveys, which resulted in comprehensive survey coverage of the entire project site conducted on July 16 and 17, 2009, with the exception of two areas which were subjected to mixed-strategy survey due to the fact that they were covered by dense patches of brush (see more on this below under "November 2010 Surveys"). The results of Origer & Associates' additional comprehensive evaluation are presented in the Confidential Report prepared for CAL FIRE review and approval, entitled "*An Archaeological Survey Report for the Artesa/Fairfax Timber Harvesting Plan*," dated August 6, 2009. The reviewing CAL FIRE archaeologist provided comments on this report that Origer & Associates incorporated into the revised report, dated May 6, 2010.

The purpose of the July 2009 surveys performed by Origer & Associates was to inspect the three additional locations identified during the PHI, as well as to survey all portions of the property where improvements or timber harvesting are planned. Special attention was paid to those areas where archaeological specimens were found during the PHI. Intensive surface survey coverage was performed by surveying in a zig-zagging pattern in corridors approximately 20-25 meters wide. During this comprehensive survey effort, where newly found archaeological sites were detected in portions of the property where improvements are planned, the site perimeters were subjected to shovel test pit exploration to better understand site boundaries. As noted above, dense vegetation prevented intensive survey coverage in only two areas of the property. In these areas where dense vegetation was growing, forays were made into the brush, where possible, to examine the ground surface.

The results of Origer & Associates' July 2009 surveys indicate that an additional six locations were identified for further consideration and analysis, five of which have been recommended for avoidance, as required in Mitigation Measure 3.5-2(e). See Response to Comment 13-5 for a full discussion of these additional six locations and the mitigation measures set forth in this DEIR to ensure that the project does not result in adverse impacts to these resource locations.

November 2010 Surveys

In consideration of public comment on the DEIR, CAL FIRE requested that the applicant have their archaeologist complete intensive archaeological field survey coverage of the two densely vegetated areas, which were surveyed by a mixed-strategy in the July 2009 field surveys. Generally, the two areas can be described as follows: a 5-acre block in the northern portion of the project site and a 15-acre block in the southern portion of the project site. To intensively survey the two dense brush locations, Origer & Associates initially proposed the use of a backhoe to flatten brush and create corridors in which the field crew could conduct an intensive survey of the exposed the ground surface. After a few initial forays into the dense brush with the backhoe, it quickly became apparent that this method could not be employed without creating ground

disturbance that would require a Native American monitor to be present per CAL FIRE directives. As a result, all backhoe-related work was terminated on the project site.

Because the backhoe clearing method was terminated, transects were subsequently made through the brush with loppers and other hand tools to clear the brush in locations with somewhat less dense vegetation. In the northern dense brush area (~5 acres) transects no more than 15 meters apart were traversed by a combination of clearing dense brush and crawling, as needed, to complete an intensive survey of the entire five-acre area. The same methods were applied to the southern dense brush area (~15 acres) with less success. Approximately three acres of the 15 acres were intensively surveyed; the remaining 12 acres could only be inspected by a mixed strategy approach.

As part of the November 2010 survey effort, Origer & Associates also intensively examined subsurface soils ranging from four to eight inches deep in the road cut across the Wellman property and extending southwest into the project area west of Artesa Site-01. The road bed itself was examined where past construction, use and maintenance of it had cut into native soils and thus provided good visibility of the ground with the assistance of a hoe and trowel used to clear small patches of low growing grasses and forbs as needed. No ground obscuring fill was observed on the surface of the approximately 500-foot long portion of project road that lies to the west of Artesa Site-01.

According to "A Supplemental Cultural Resources Survey for the Artesa/Fairfax Timber Conversion, Sonoma County, CA," dated December 15, 2010, no cultural resources were found during the recent survey of the two dense brush areas or the road segment. However, because a 12-acre densely vegetated area of the project site was not intensively surveyed in the November 2010 surveys, the applicant has excluded this 12-acre block from vineyard development; this significant adjustment in the vineyard acreage has been reflected on the latest version of the Vineyard Plan exhibit, which is included in Chapter 1, *Introduction*, of this Final EIR (see Figure 1-1).

Response to Comment 13-10

The commenter acknowledges the passage of time as a factor in changing ground surface visibility over such a large study area. The intervening years could help to explain why the resources identified in the Tom Origer & Associates survey were not recorded by Neri.

Response to Comment 13-11

Please see Response to Comment 7-4.

Response to Comment 13-12

Please see Response to Comment 7-4.

Response to Comment 13-13

Please see Response to Comment 13-5. In addition, as discussed on page 3.5-31 of the Fairfax Conversion Partially Recirculated DEIR, based upon the number of prehistoric Native American archaeological sites identified within the study area, the potential for the sites to comprise an archaeological district was considered. While these sites reflect substantial use of the study area, and are likely related by cultural and temporal affiliation, they are a fraction of the number of sites known and reported within the greater Annapolis area. Guidelines for delineating district boundaries recommend that such boundaries should encompass "…the full extent of the significant resources and land area" making up the district (NPS 1991).

The distribution of known and reported historic properties in the Annapolis area, outside the Fairfax Conversion property, suggests that an appropriate boundary for an "Annapolis Archaeological District" would include the land above the 600-foot contour interval for the entirety of Beatty Ridge and Brushy Ridge. This would be consistent with guidelines for establishing district boundaries, which recommend using natural topographic features such as ridges, and for large properties suggests the use of USGS contour lines as boundaries (NPS 1991:56). However, the NPS guidelines preclude the creation of a district comprising only the sites within a specific study area.

While the creation of an "Annapolis Archaeological District" could help to highlight the research potential of the archaeological resources in the area, state and federal laws call for avoidance of all cultural resources to the extent feasible. There is at present a lack of sufficient data to link the various prehistoric sites temporally or thematically as a District. While such analyses could be performed, doing so would likely result in further disturbance to these sites that are to be avoided during project implementation. Therefore creation of an archaeological district would not afford the sites greater protection than they receive as individual resources.

Letter 14

holman & ASSOCIATES
Archaeological Consultants
"SINCE THE BEGINNING"
3615 FOLSOM ST. SAN FRANCISCO, CALIFORNIA 94110 415/550-7286

Allen S. Robertson
Deputy Chief for Environmental Protection
California Department of Forestry & Environmental Protection
P.O. Box 944246
Sacramento, CA 94244-2460

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RESOURCE MANAGEMENT
ENVIRONMENTAL PROTECTION

December 23, 2009

Dear Mr. Robertson:

RE: REVIEW OF THE AUGUST 6, 2009 ORIGER REPORT FOR THE ARTESA/FAIRFAX TIMBER HARVESTING PLAN, SONOMA COUNTY, CALIFORNIA

14-1 On behalf of the Friends of the Gualala River I have completed a review of the most recently submitted archaeological report for the Artesa project. Authored by Thomas Origer, it is entitled "an Archaeological Survey Report for the Artesa/Fairfax Timber Harvesting Plan Sonoma County, California. If was logged into the Northwest Information Center in Rohnert Park on December 1, 2009, file no. S-36197.

14-2 This letter is my second review of archaeological field documents produced for the Artesa project since 2000. On July 21, 2009 I completed a review of the extant reports produced by Max Neri and Thomas Origer, done over a period beginning in 2000 and extending into 2008 when Tom Origer had taken over the archaeological research.

14-3 Up through 2008 Mr. Origer had been tasked with reviewing the original Neri findings and was asked to re-inspect some of his recorded site locations in order to evaluate them for National Register of Historic Places (NRHP) and California Register of Historic Resources (CRHR) eligibility. Mr. Neri had found a series of prehistoric and historic sites and several isolated artifacts and what he called "Noted finds". In the end Mr. Origer concluded that only 4 of Neri's original 6 archaeological sites were potentially eligible for inclusion on the NRHP and/or CRHR, and in testing one of them, Artesa-6/H, concluded that only portions of it were potentially eligible. By 2008 the timber harvest plan had been crafted to protect all of these locations from destruction.

14-4 The conclusions of my review of the original Neri reports was that the property hadn't been adequately surveyed, and that further archaeological field inspections might lead to an expanded inventory of both historic and prehistoric cultural resources. Up through the summer of 2009 it appeared that there had been no further effort to re-inspect the property.

Letter 14 Cont'd

In fact, it turns out that around the time I contacted Mr. Origer for my July report, he had been retained to re-inspect the entire project area. I have reviewed the new Origer report on file at the NWIC. It includes a summary of all of the previous report and contains archaeological site forms produced either by Neri or Origer through the summer of 2009. In the summary of findings presented below, I am unable to cite page numbers, since the copy of the current Origer report on file at the NWIC lacked either a table of contents or page numbers. 14-5

It is clear from the most recent report that Mr. Origer did in fact complete a comprehensive re-survey of the entire project area, re-inspecting the original discoveries of Mr. Neri, and recording additional historical resources which will be discussed below. The report once again presents evaluations of NRHP and/or CRHR eligibility for the resources discovered either by Neri or Origer. 14-6

In the original two Origer reports, he recommended that the significant archaeological sites (Artesa 01,02,04, 05) be protected, and it appears that plans then available showed them protected behind fences and/or in open space areas. His 2008 report also contained a comprehensive set of protection measures to assure that they would be preserved, and to insure that archaeological mitigation (data retrieval) be done in those instances when they couldn't be preserved and/or when new, unexpected materials were encountered during construction outside of the mapped locations of the inventory as it was understood by 2008. 14-7

The latest Origer report contains a summary of the original Neri report findings, along with the findings of Origer's re-inspection and/or evaluation of the significance of these finds. In addition it discusses new materials found by Origer during his re-survey this summer. These are summarized below: 14-8

ARTESA PARKING SITE

This site was judged to be potentially eligible for inclusion on the NRHP and CRHR. Evidently plans for construction in the general area weren't known by Mr. Origer when he wrote the report–he ends his discussion about it with the following "If development is planned in the area of this site it should be evaluated". 14-9

BAILING WIRE SITE

This site was also deemed potentially eligible for listing. While he was under the impression that it was in an excluded (protected) area, he recommended that it be evaluated if this turned out not to be true. 14-10

ARTESA CROSSING SITE: 14-11

This site was also thought to be eligible for listing. If it couldn't be preserved, evaluation

2

Letter 14 Cont'd

14-11 Cont'd

was recommended.

END OF DAY SITE

14-12

This site was also potentially eligible for listing. If protection couldn't be assured, evaluation was recommended.

ARTESA FENCE FRAGMENTS

14-13

Origer's assessment after recording these remnants was that they were not eligible for listing, and not worthy of further evaluation.

ARTESA ROAD

This site was thoroughly recorded by Origer, and deemed not eligible for listing. No further evaluation was recommended.

14-14

Origer's original assessment of the Neri discoveries are once again presented, with no changes, with the exception of Artesa 6/H, where he did additional work, and found elements (historic sheet scatters and dump sites) which by themselves would be eligible for listing. Once again, no further work was recommended at this location because the area had been excluded for development by 2008. In this past summer's work, Mr. Origer also had considerable contact with Native American representatives, who discussed his findings and recommendations with him and evidently supported them.

DISCUSSION

14-15

As of August 6, 2009, the date of the latest Origer report, the author did not know what was going to happen regarding the above mentioned archaeological sites which he felt were potentially eligible for inclusion on the National Register and the California Historic Register. His report was restricted to a recommendation that evaluation (normally done through hand excavation) be done of the resources if avoidance of damage to them couldn't be guaranteed. If evaluation is done which demonstrates eligibility, then the project sponsor is responsible for coming up with a mitigation plan.

14-16

By the time the 2008 report was produced by Origer, he had been assured that the resources found eligible by him would be protected from any project related destruction. In the event that additional resources were found, or inadvertent damage was done to the eligible resources, the Origer report contained a list of mitigation requirements which included additional data retrieval through hand excavation.

14-17

The latest report also includes a comprehensive section entitled Protection Measures. As for the potentially eligible newly recorded resource areas, Mr. Origer did not make any

3

Letter 14 Cont'd

14-17 Cont'd

recommendations other than the need to evaluate them (through excavation) if they couldn't be protected by the project sponsor. It is my opinion that the EIR now in circulation is not complete, since it lacks the following:

- any discussion of the newly discovered cultural resource areas

14-18

- any discussion or demonstration that they are being preserved by project redesign

14-19

- any discussion of their CRHR or NRHP eligibility based upon evaluation (excavation) work done since their discovery, necessary if preservation can't be assured.

14-20

- any meaningful discussion of relevant mitigation measures (such as additional hand excavation to retrieve data) based upon the evaluation reports, assuming that the resource areas can't be preserved from harm.

Sincerely,

Miley Paul Holman
Holman & Associates

LETTER 14: MILEY PAUL HOLMAN – HOLMAN & ASSOCIATES (12-23-2009)

Response to Comment 14-1

The comment is introductory and does not address the adequacy of the DEIR.

Response to Comment 14-2

The comment is introductory and does not address the adequacy of the DEIR.

Response to Comment 14-3

The comment provides a summary of the findings of the archaeological reports prepared for the project by Maximillian Neri and Tom Origer and does not address the adequacy of the DEIR.

Response to Comment 14-4

Please see Response to Comment 13-5.

Response to Comment 14-5

The comment provides background information to subsequent comments in the letter; please see the below responses to comments.

Response to Comment 14-6

The comment provides background information to subsequent comments in the letter; please see the below responses to comments.

Response to Comment 14-7

The comment provides a summary of the findings of the archaeological reports prepared for the project by Origer & Associates and does not address the adequacy of the DEIR.

Response to Comment 14-8

The comment provides a summary of the findings of the archaeological reports prepared for the project by Origer & Associates and does not address the adequacy of the DEIR.

Response to Comment 14-9

Please see Response to Comment 13-5 for a discussion of the protection measures required for the Artesa Parking Site.

Response to Comment 14-10

Please see Response to Comment 13-5 for a discussion of the protection measures required for the Bailing Wire Site.

Response to Comment 14-11

Please see Response to Comment 13-5 for a discussion of the protection measures required for the Artesa Crossing Site.

Response to Comment 14-12

Please see Response to Comment 13-5 for a discussion of the protection measures required for the End of the Day Site.

Response to Comment 14-13

The comment provides a summary of the findings of the archaeological reports prepared for the project by Origer & Associates and does not address the adequacy of the DEIR.

Response to Comment 14-14

The comment provides a summary of the findings of the archaeological reports prepared for the project by Origer & Associates and does not address the adequacy of the DEIR.

Response to Comment 14-15

Please see Response to Comment 13-5.

Response to Comment 14-16

Please see Response to Comment 13-5.

Response to Comment 14-17

Please see Response to Comment 13-5.

Response to Comment 14-18

Please see Response to Comment 13-5.

Response to Comment 14-19

Please see Response to Comment 13-5.

Response to Comment 14-20

Please see Response to Comment 13-5.