

CALIFORNIA COASTAL COMMISSION

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TH10a**RECORD PACKET COPY**

September 20, 2000

TO: Commissioners and Interested Persons

FROM: Tami Grove, Deputy Director
Charles Lester, District Manager
Rick Hyman, Deputy District Chief Planner

SUBJECT: SANTA CRUZ COUNTY: LOCAL COASTAL PROGRAM MAJOR AMENDMENT NO. 1-00. For public hearing and Commission action at its meeting of October 12, 2000, to be held at the City of Oceanside Council Chambers, 300 North Coast Hwy., Oceanside.

SUMMARY OF STAFF REPORT**I. Amendment Description**

Santa Cruz County is proposing the following three changes to its certified Local Coastal Program, regarding timber harvest. The proposal would amend the Land Use Plan (LUP) and Implementation portion (IP) of its Local Coastal Program to:

- A. allow timber harvesting subject to a Department of Forestry timber harvest plan in the Commercial Agricultural zone district as a principal permitted use (a. LUP policies 5.12.14; 5.13.5; b. IP section 13.10.312b)
- B. limit the location of helicopter staging and loading activities and service areas to parcels being timbered or to adjacent parcels; limit the location of helicopter staging and loading activities and service areas to zoning districts which allow timber harvesting; and limit the location of helicopter staging and loading activities and service areas to areas within the boundaries of an approved timber harvest plan (IP: new section 13.10.378)
- C. limit timber harvesting within perennial and intermittent riparian corridors (IP: new section 13.10.695)

This amendment was filed on May 12, 2000. On August 9, 2000 the Commission granted a County request and extended the time limit for action for up to one year. These items are part of a larger package. The other components of Amendment 1-00, regarding farmland security and roads, have been deemed "minor" and approved by the Coastal Commission on June 13, 2000.

**California Coastal Commission**

II. Standard of Review

The standard of review for the land use plan amendments is that they must be consistent with the Coastal Act. The standard of review for the implementation amendments is that they must be consistent with and adequate to carry out the policies of the certified coastal land use plan.

III. Staff Recommendation

Staff recommends that the Commission approve the second and third components of the amendment (parts B & C) as submitted and part A, only if it does not apply in the coastal zone.

This current amendment is a follow-up to a previous amendment (#3-98). A primary purpose of Amendment #3-98, as proposed by Santa Cruz County, was to restrict timber harvesting to only three zoning districts: TP: Timber Production, PR: Parks, Recreation and Open Space, and M-3: Mining. As modified, Amendment #3-98 further specified that timber harvesting in the PR designation could only occur outside of the coastal zone.

The first component of the proposed amendment (#1-00) would allow timber harvesting in areas designated for commercial agriculture. Currently, if there is harvestable timber on designated agricultural land, the land must be redesignated to TP: Timber Production in order for logging to be a permitted use. Such rezoning would be based on applicable criteria. Discretion provides the County and Coastal Commission forums for considering Coastal Act locational issues, such as sensitive habitat protection, in deciding whether timber harvesting should be allowed on a subject site. The land in the coastal zone that would be affected by the amendment includes environmentally sensitive native Monterey pine forest, which deserves protection under local coastal program policies. Therefore, staff recommends denial of the first component of the proposed amendment, as it would apply in the coastal zone, in favor of case-by-case rezoning to TP, consistent with applicable criteria.

The second component of the amendment involves locational criteria for helicopter facilities associated with transporting timber cut for commercial purposes. The thrust of this proposal is to locate helicopter facilities near the source of the logging to prevent adverse noise and safety impacts. Staff recommends approval of this amendment component because it helps carry out certified land use plan provisions to limit adverse noise impacts from logging.

The third component of the amendment involves locational criteria for riparian setbacks. This proposal would locate timber harvesting outside of riparian corridors, just as most other uses are required to be located. Non-commercial tree cutting could still be allowed; for example, if it were deemed to be a necessary habitat improvement measure. Staff recommends approval of this



amendment component because it helps carry out land use plan provisions to establish and maintain riparian setbacks.

IV. Summary Of Issues And Comments

At the County hearings, the timber harvest amendments elicited substantial comments. The County hearings on the subject amendments occurred at the same time as the County decided whether to enact a final adoption of the previous amendment set (# 3-98). Additionally, some testimony focused on matters not in the Commission's purview, such as concurrent changes that the County was recommending to the Forest Practices Rules, the effects of the proposals outside of the coastal zone, and on alternative amendment proposals that were not finally adopted by the Board of Supervisors.

A review of the correspondence in the submittal reveals the following generalizations. The proposed timber harvest allowance on commercial agricultural land generally elicited favorable reaction from those who conduct timber harvests and/or own such timberland. The proposed helicopter and riparian amendments generally elicited favorable reaction from neighborhood and environmental groups and unfavorable reaction from those who conduct timber harvests and/or own timberland. The latter voiced opposition to any proposals that would appear to limit timber harvesting and involve the County in timber harvest decision-making. Especially with regard to the proposed riparian setbacks, these interests variously argued that logging in riparian areas is already adequately controlled, that there are not significant adverse impacts from such logging, that there are actual environmental benefits from such logging, and that a prohibition of such logging would be detrimental to the riparian habitat and the species that it supports.

V. Additional Information

For further information about this report or the amendment process, please contact Rick Hyman, Coastal Commission, 725 Front Street, Suite 300, Santa Cruz, CA 95060; Tel. (831) 427-4863.

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VI. STAFF RECOMMENDATION: MOTIONS AND RESOLUTIONS

The Commission must make five separate motions in order to act on this recommendation:

A. DENIAL OF LAND USE PLAN MAJOR AMENDMENT #1-00 PART A AS SUBMITTED

MOTION 1:

"I move that the Commission certify Major Amendment # 1-00 part A to the County of Santa Cruz Land Use Plan as submitted by the County."

STAFF RECOMMENDATION OF DENIAL

Staff recommends a "NO" vote. Failure of this motion will result in denial of the land use plan amendment component as submitted and adoption of the following resolution and findings. The motion passes only upon an affirmative vote of a majority of the appointed Commissioners.

RESOLUTION:

The Commission hereby denies certification of Major Amendment # 1-00 part A to the land use plan of the County of Santa Cruz as submitted and adopts the findings set forth below on the grounds that the amendment component, as submitted, does not conformance with the policies of Chapter 3 of the Coastal Act. Certification of the land use plan amendment would not comply with the requirements of the California Environmental Quality Act because there are feasible alternatives or mitigation measures which would substantially lessen any significant adverse impact which the land use plan amendment may have on the environment.



B. APPROVAL OF LAND USE PLAN MAJOR AMENDMENT #1-00 PART A, IF MODIFIED

MOTION 2:

"I move that the Commission certify Major Amendment # 1-00 Part A to the County of Santa Cruz Land Use Plan as submitted by the County, if modified as suggested by Modification A in this staff report."

STAFF RECOMMENDATION TO CERTIFY IF MODIFIED

Staff recommends a "YES" vote. Passage of this motion will result in certification of the amendment component with suggested modifications and adoption of the following resolution and findings. The motion to certify with suggested modifications passes only upon an affirmative vote of a majority of the appointed Commissioners.

RESOLUTION:

The Commission hereby approves Major Amendment # 1-00 Part A to the land use plan of the County of Santa Cruz if modified according to suggested modifications A-1 and A-2 and adopts the findings set forth below on grounds that the land use plan amendment with the suggested modifications will meet the requirements of and be in conformity with the policies of Chapter 3 of the Coastal Act. Certification of the land use plan amendment if modified as suggested complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the plan on the environment, or 2) there are no further feasible alternatives and mitigation measures that would substantially lessen any significant adverse impacts which the land use plan amendment may have on the environment..

C. DENIAL OF IMPLEMENTATION PLAN MAJOR AMENDMENT #1-00 PART A AS SUBMITTED

MOTION 3:

"I move that the Commission reject Major Amendment #1-00 Part A to the Santa Cruz County Local Coastal Program Implementation Plan as submitted by the County."



STAFF RECOMMENDATION OF REJECTION

Staff recommends a "YES" vote. Passage of this motion will result in rejection of Implementation Program amendment and the adoption of the following resolution and findings. The motion passes only by an affirmative vote of a majority of the Commissioners present.

RESOLUTION:

The Commission hereby rejects Major Amendment #1-00 Part A to the implementation program of the Santa Cruz County local coastal program, as submitted, and adopts the findings set forth below on grounds that the Implementation Program amendment as submitted is not in conformity with the certified land use plan. Certification of the Implementation Program amendment would not meet the requirements of the California Environmental Quality Act as there are feasible alternatives and mitigation measures that would substantially lessen the significant adverse impacts on the environment that will result from certification of the Implementation Program amendment as submitted.

**D. APPROVAL OF IMPLEMENTATION PLAN MAJOR AMENDMENT #1-00
PART A, IF MODIFIED****MOTION 4:**

"I move that the Commission certify Major Amendment #1-00 Part A to the Santa Cruz County Local Coastal Program Implementation Plan, if it is modified as suggested by Modification B in the staff report."

STAFF RECOMMENDATION TO CERTIFY IF MODIFIED

Staff recommends a "YES" vote. Passage of this motion will result in certification of the Implementation Program amendment with suggested modifications and the adoption of the following resolution and findings. The motion passes only by an affirmative vote of a majority of the Commissioners present.

RESOLUTION:

The Commission hereby certifies Major Amendment #1-00 Part A to the Implementation Program of the Santa Cruz County Local Coastal Program, as modified by Suggested Modification B-1 and -2,



and adopts the findings set forth below on grounds that the Implementation Program amendment with the suggested modifications will be in conformity with and adequate to carry out the certified land use plan. Certification of the Implementation Program amendment if modified as suggested complies with the California Environmental Quality Act, because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the Implementation Program amendment on the environment, or 2) there are no further feasible alternatives and mitigation measures that would substantially lessen any significant adverse impacts on the environment.

E. APPROVAL OF IMPLEMENTATION PLAN MAJOR AMENDMENT #1-00 PARTS B & C, AS SUBMITTED

MOTION 5:

"I move that the Commission reject Major Amendment #1-00 Parts B and C to the Santa Cruz County Local Coastal Program Implementation Program, as submitted by Santa Cruz County.

STAFF RECOMMENDATION OF CERTIFICATION AS SUBMITTED

Staff recommends a NO vote. Failure of this motion will result in certification of the Implementation Program amendment as submitted and the adoption of the following resolution and findings. The motion passes only by an affirmative vote of a majority of the Commissioners present.

RESOLUTION:

The Commission hereby certifies Major Amendment #1-00 Parts B and C to the Implementation Program of the Santa Cruz County Local Coastal Program, as submitted and adopts the findings set forth below on grounds that the Implementation Program amendment will be in conformity with and adequate to carry out the certified land use plan, and certification of the Implementation Program amendment will meet the requirements of the California Environmental Quality Act, because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the Implementation Program amendment on the environment, or 2) there are no further feasible alternatives and mitigation measures that would substantially lessen any significant adverse impacts on the environment.



VII. SUGGESTED MODIFICATIONS

The Commission hereby suggests the following changes to the proposed Local Coastal Program amendments, which are necessary to make the requisite findings. If the local government accepts each of the suggested modifications within six months of Commission action, by formal resolution of the Board of Supervisors, the corresponding amendment portion will become effective upon Commission concurrence with the Executive Director finding that this has been properly accomplished.

A. Land Use Plan Modifications for Timber Harvest in Agricultural Areas

1. Revise *1994 General Plan and Local Coastal Program for the County of Santa Cruz* policy 5.12.14 (LCP) by deleting the wording "Commercial Agricultural (CA) " or by adding the underlined wording:

Allow timber harvesting and associated operations, requiring approval of a Timber Harvesting Plan by the California Department of Forestry, only in the Timber Production (TP), Parks, Recreation and Open Space (PR) (except in the coastal zone), Mineral Extraction Industrial (M-3), and the Commercial Agricultural (CA) (except in the coastal zone) zone districts.

2. Revise *1994 General Plan and Local Coastal Program for the County of Santa Cruz* policy 5.13.5 by deleting the wording "and to include timber harvesting operations" or by adding the underlined wording as follows:

Maintain a Commercial Agricultural (CA) Zone District for application to commercial agricultural lands that are intended to be maintained exclusively for long-term commercial agricultural uses. Allow principal permitted uses in the CA zone District to include only agricultural pursuits for the commercial cultivation of plant crops, including food, flower, and fiber crops and raising of animals including grazing and livestock production and to include timber harvesting operations outside of the coastal zone only.

B. Implementation Plan Modifications for Timber Harvest in Agricultural Areas

1. Either delete proposed new Subsection (b.2) of Section 13.10.312 of the *County Code* or revise by adding the underlined wording as follows:



Timber harvesting and associated operations requiring approval of a Timber Harvesting Plan by the California Department of Forestry is allowed use in the Commercial Agricultural (CA) zone district, outside of the coastal zone only.

2. Either delete the following entry in Subsection (b) of Section 13.10.312 - Agricultural Uses Chart of the *County Code* or revise by adding the underlined wording as follows:

“AGRICULTURAL USES CHART”

USE	CA	A	AP
Timber Harvesting and associated operations, <u>(outside of the coastal zone only)</u> .	P	--	--



VIII. RECOMMENDED FINDINGS

The Commission finds and declares for the following three components (A. locating timber harvests on commercial agricultural lands, B. helicopter facilities, and C. riparian corridors) of Santa Cruz County Major Amendment # 1-00 regarding timber harvest:

A. Timber Harvesting on Agricultural Lands

This first amendment component has both a land use plan component and a zoning component. Since the standards of review are different, each is discussed separately.

1. Land Use Plan Amendment

a. Description and Background

This proposed amendment component would allow timber harvesting subject to a Department of Forestry timber harvesting plan in the Commercial Agricultural zone district as a principal permitted use. This amendment is accomplished by adding such wording to current *1994 General Plan and Local Coastal Program for the County of Santa Cruz* policies 5.13.5 and 5.12.14. (See staff report "Appendix: Full Text Of Proposed Amendments.")

Policy 5.13.5 enumerates principal permitted uses on commercial agricultural zoned land. Policy 5.12.14 was recently added to the land use plan under LCP Amendment 3-98. This policy currently allows timber harvesting that is regulated by the Department of Forestry through timber harvest plans only in the Timber Production; Parks, Recreation and Open Space (outside of the coastal zone only); and Mineral Extraction Industrial zone districts.

As background, State-approved timber harvest plans are required for most timbering operations except for the following:

- harvesting Christmas trees;
- harvesting dead, dying or diseased trees of any size and small amounts (less than 10 percent of the average volume per acre under certain conditions) of fuelwood or split products;
- operations conducted on ownerships of timberland of less than 3 acres (1.214 ha) in size and not part of a larger parcel of timberland in the same ownership;
- certain cutting or removal of trees which eliminates the vertical continuity of vegetative fuels and the horizontal continuity of tree crowns for the purpose of reducing flammable materials and maintaining a fuelbreak to reduce fire spread, duration, and intensity.



These types of operations would be governed by other local coastal program policies and are not affected by this amendment.

To date timber harvesting has not specifically been mentioned as an allowed use in the CA zone district. The County offered Amendment 3-98 as a follow-up to a court decision that while local governments can not regulate the conduct of timber cutting operations, they can use their planning authority to determine where it may occur (Big Creek Lumber v. County of San Mateo, 31 Cal. App. 4th at 418, (1995)).

Amendment #3-98 included new land use plan policy 5.12.14 described above and a companion zoning change that explicitly state that timber harvesting is not allowed in the Agricultural ("CA," "AP," and "A") zone districts. "CA" is the Commercial Agricultural zone district. The "CA" district is to be applied to commercial agricultural lands that are intended to be maintained exclusively for long-term commercial agricultural use. As such, the uses allowed in that district are largely agricultural or related uses. In approving Amendment 3-98 the Commission found,

Under traditional planning rules and County policy, if a use is not listed as an allowable land use in a particular zone district, then it is already prohibited. Thus, this aspect of the amendment is also a reiteration of existing policy.

Although the Commission found the amendment to be a reiteration of existing policy, it was perceived by others as a new prohibition against timber harvesting on agricultural lands (or at least an affirmation of a policy that could have been changed). According to the County submittal, such timber harvesting had occurred in the past. The above-mentioned Court ruling affirmed that abiding by the uses allowed under the zoning designation is mandatory. Although timber harvesting operations are regulated by the Department of Forestry and Fire Protection, that agency is bound to follow the County zoning use designation. Thus, currently the Department would not be able to approve a timber harvest on CA-zoned land.

Many timber harvest supporters argued and continue to argue that timber harvesting is very much appropriate on agriculturally zoned land. Amendment 3-98 is being challenged in court.

Now the County has submitted this new amendment request, which reverses the substance of the previous amendment # 3-98. The County submittal indicates that,

the proposed amendment contributes to the retention of agriculture in two ways. The first is as an alternative source of income for farmers with forest resources and the second as a way to prevent the creation of new residential home sites adjacent to agricultural land.

According to the County submittal there are approximately 1,240 acres of commercial forestland in the Coastal Zone that is zoned CA that would potentially be affected by this amendment request.



This forest land is located north of the City of Santa Cruz generally on high ridges above the grazing and crop lands on the coastal terraces.

By making timber harvesting permissible on CA-zoned land, the proposed amendment will result in the State Department of Forestry and Fire Protection determining whether and how an individual timber harvest will occur.

b. Standard of Review

The standard of review for land use plan amendments is the Coastal Act. Under the Act, land use plans are to indicate the kinds, locations, and intensities of uses that are allowable in various locations (PRC 30108.5). The substantive policies of Chapter 3 are the primary basis for making these determinations. In this case, the most relevant governing sections of the Coastal Act are:

30240: *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

30241. *The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas agricultural economy, and conflicts shall be minimized between agricultural and urban land uses through all of the following:*

(a) By establishing stable boundaries separating urban and rural areas, including, where necessary, clearly defined buffer areas to minimize conflicts between agricultural and urban land uses.

(b) By limiting conversions of agricultural lands around the periphery of urban areas to the lands where the viability of existing agricultural use is already severely limited by conflicts with urban uses or where the conversion of the lands would complete a logical and viable neighborhood and contribute to the establishment of a stable limit to urban development.

(c) By permitting the conversion of agricultural land surrounded by urban uses where the conversion of the land would be consistent with Section 30250.

(d) By developing available lands not suited for agriculture prior to the conversion of agricultural lands.



(e) By assuring that public service and facility expansions and nonagricultural development do not impair agricultural viability, either through increased assessment costs or degraded air and water quality.

(f) By assuring that all divisions of prime agricultural lands, except those conversions approved pursuant to subdivision (b), and all development adjacent to prime agricultural lands shall not diminish the productivity of such prime agricultural lands.

30241.5 (a) If the viability of existing agricultural uses is an issue pursuant to subdivision (b) of Section 30241 as to any local coastal program or amendment to any certified local coastal program submitted for review and approval under this division, the determination of "viability" shall include, but not be limited to, consideration of an economic feasibility evaluation containing at least both of the following elements:

(1) An analysis of the gross revenue from the agricultural products grown in the area for the five years immediately preceding the date of the filing of a proposed local coastal program or an amendment to any local coastal program.

(2) An analysis of the operational expenses, excluding the cost of land, associated with the production of the agricultural products grown in the area for the five years immediately preceding the date of the filing of a proposed local coastal program or an amendment to any local coastal program.

For purposes of this subdivision, "area" means a geographic area of sufficient size to provide an accurate evaluation of the economic feasibility of agricultural uses for those lands included in the local coastal program or in the proposed amendment to a certified local coastal program.

(b) The economic feasibility evaluation required by subdivision (a) shall be submitted to the commission, by the local government, as part of its submittal of a local coastal program or an amendment to any local coastal program. If the local government determines that it does not have the staff with the necessary expertise to conduct the economic feasibility evaluation, the evaluation may be conducted under agreement with the local government by a consultant selected jointly by local government and the executive director of the commission.

30242: All other lands suitable for agricultural use shall not be converted to nonagricultural uses unless (1) continued or renewed agricultural use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any such permitted conversion shall be compatible with continued agricultural use on surrounding lands.



30243: *The long-term productivity of soils and timberlands shall be protected, and conversions of coastal commercial timberlands in units of commercial size to other uses or their division into units of noncommercial size shall be limited to providing for necessary timber processing and related facilities.*

30251: *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

c. Analysis and Conclusion

The proposed amendment says that if a parcel is zoned "CA" and has timber on it, then timber harvesting is permissible.¹ This should not have an appreciable effect on other agricultural operations or the potential for agriculture on CA zoned lands, since logging can only occur on forest land and forest land is rarely used for crops or grazing, unless it is first cleared. Additional land could be subject to this amendment's provision if either trees are planted (tree farming is currently a principle permitted use on agriculturally zoned land) or the land is left fallow and trees grow. In any of these cases, tree removal would be necessary for any renewed row crop or other agriculture to occur. The County's Negative Declaration indicated that there would be little economic incentive to convert productive crop land to tree farms for eventual harvesting. The only potential effect of the proposed amendment on row crops or grazing would be if the ancillary timber operations (e.g., staging areas) are located on these lands. However, such ancillary operations are likely to be located adjacent to the forest area and be temporary and hence not have a significant nor long-term impact on the adjacent grazing or crop land.

¹ The analysis of this amendment component is somewhat complicated due to its format. Typically, a land use plan amendment is for a policy or map change. Under the Coastal Act, the amendment is analyzed for Coastal Act policy consistency. Zoning amendments typically are proposed to conform to land use policies or maps and under the Coastal Act are analyzed for consistency with the certified land use plan. In this case, the proposed amendment is to the land use plan. However, this amendment does not alter any land use plan policies nor mapped designations. Rather, this amendment proposal directs how zoning will govern. The *1994 General Plan and Local Coastal Program for the County of Santa Cruz* already has protective policies for agricultural land in place that are not proposed for revision. Policy 5.13.4 already directs that land designated as an Agricultural Resource be maintained in the CA: Commercial Agricultural, AP: Agricultural Preserve, or A: Agriculture zone districts. The purposes of these districts are to protect farmland.



As noted, this amendment may create an economic incentive for farmers to keep their remaining land in production. "This will, in fact, decrease the pressure on these lands for conversion to non-agricultural uses by giving farmers an alternative source of capital during lean years of crop/livestock production," according to the Negative Declaration.

Because the amendment should not result in significant timber harvest conflicts with traditional agricultural pursuits, as discussed, consistency with Coastal Act Sections 30241 and 30242 can be demonstrated.

However, other Coastal Act policies regarding priorities and locations for various land uses (e.g., 30240, 30251) are not fully accounted for under the proposed amendment. The proposed amendment would deprive the County and the Commission of the opportunity to review each parcel's appropriateness to be rezoned to a TP designation before logging could occur. The Commission found, in approving amendment # 3-98, that the better response to the situation of timberland zoned "CA" is a rezoning to Timber Production, if in fact timber harvesting is deemed appropriate on the subject parcel(s):

Each mentioned district contains a variety of permitted uses. There thus would be some use (other than timber harvesting) that could be made of each property that would be consistent with the certified land use plan and hence not result in a "taking." There do appear to be approximately eight parcels that are zoned "CA" or "A" in the coastal zone that are mostly forested according to the map provided by Big Creek Lumber's representative (they are not mapped by the County as timber resource). Since most of the permitted uses involve open lands, these parcels would be most restricted under the amendment [which prohibits timber harvest on CA or A zoned land]. They would be prime candidates for a rezoning to "TP." This would be preferable to modifying the proposed amendment to include timber harvesting as a permitted use on agriculturally-zoned land. Although it can be argued that only such land with timber could be logged, theoretically there could be some incentive to convert productive fields to timber plantations. Also, there could be incentive to log those timbered portions of productive fields that currently provide habitat, buffers, or scenic amenities. Finally, ancillary timber activities could potentially be allowed (e.g., grading for landings or haul roads) that would adversely affect farming operations.

The Commission continues to support this approach. There are Coastal Act benefits in disallowing the proposed blanket amendment in favor of the alternative of considering individual rezonings to "TP." For example, the indigenous Monterey Pine forest on Santa Cruz's north coast is defined as Environmentally Sensitive Habitat (policy 5.1.2). If a rezoning is required, then whether a parcel contained sensitive habitat and hence whether it should be rezoned to allow timber harvest could be considered. If the currently proposed amendment were to be approved and hence rezoning not be required, then there would be no opportunity to address this issue, outside of the Department of Forestry process. An argument is contained in the record that to save the Monterey pine forest on the



north coast from the rampant pitch canker, logging is useful in increasing the seed bed and hopefully the amount of resistant pines that would survive. There are other methods that do not involve commercial logging, such as burning or human manipulation, that could achieve the same result. Again, this matter could be further addressed through a specific rezoning request and is not a compelling reason to approve the proposed amendment.

The County record includes arguments not in favor with the current situation where (absent the proposed amendment) rezonings to "TP" are the only way to allow timber harvesting on "CA" zoned land. These arguments are that individual rezonings (the alternative to achieving the purpose of this amendment to allow timber harvesting on agriculturally-zoned lands) are more cumbersome, require more staff work, are not automatic, and, thus, potentially not as supportive of timber harvesting. To rezone to "TP" involves having an area at least 5 acres, meeting the timber stocking standards of Public Resources Code 4561, being timberland as defined in state law, containing no uses that are incompatible with the TP zone district, requiring a timber management plan, and not having a harmful effect on recreational, environmentally sensitive, scenic, or unstable land. (Land Use Plan policy 5.12.9; Code Section 13.10.375.c)

Another argument involves potential density increases. The County amendment submittal concludes, "It is clear that allowing timber harvesting in the limited portions of the properties zoned CA is more appropriate than requiring portions of agricultural properties to be rezoned to the TP zone district, with the attendant changes to the allowed densities." The issue is that allowed residential density is greater on "TP" zoned land (maximum of one unit per 40 acres as opposed to one per parcel) and that "TP" land could then potentially be subdivided in the future ("CA" zoned land generally can not be subdivided.) There is a further complication with parcels that contain both row crops or grazing land and timber land. Although not totally clear in the *County Code*, if a parcel had a split zoning designation, it could be eligible for the uses each district allows on each zoned portion of the site, and hence additional density. The actual increase in allowable residential density that could occur, if any, would depend on the number of parcels that would be rezoned to "TP," what portion(s) would be rezoned, their size (i.e., only large, at least 80 acre parcels, would be at issue), existing residences on the parcel, and potential agricultural residences (i.e., the "CA" district does allow some additional agricultural residences). In the coastal zone, any density increase is not expected to be numerically significant, given the number of parcels and acreage involved. Whether, there would be adverse impacts from this increase would require site-specific analysis.

The presumption behind the County's arguments is that any timberland in agriculturally designated areas should be allowed to be cut. For the reasons cited above, the Commission maintains that scrutiny of individual rezoning requests is more desirable. If such scrutiny reveals that a proposed rezoning will not meet the "TP" district standards nor be consistent with Coastal Act and County coastal resource protection policies, then it must be denied. The Commission notes that under each zoning district ("CA" vs. "TP") there is a range of permitted uses and intensities, not just residential uses, that need to be considered in deciding on which zoning to apply to a certain property.



In conclusion, the Commission finds that there is a potential for a Coastal Act inconsistency in approving the amendment, because the appropriateness of allowing a timber harvest use will not be subject to scrutiny through a local coastal program amendment for a rezoning. The proposed amendment, which would simply allow timber harvesting on any "CA" zoned land is, therefore, denied as submitted.

d. Remedies

There is no reason to suggest modifications to address the basic noted deficiency of the proposed amendment component, since the alternative of seeking individual rezonings to "TP" is available. However, since Coastal Act authority does not extend beyond the coastal zone, the County could put the proposed amendment component in effect outside of the coastal zone. If the land use plan is modified along these lines, according to Modifications A-1 and A-2, then the amendment can be approved because the land use plan as amended will be consistent with the Coastal Act.

2. Implementation Amendment

a. Description and Background

This proposed amendment component would explicitly allow for timber harvesting in the "CA" zone district. Timber harvesting would be shown as a principal permitted use in the Agricultural use chart and in the text in Implementation Program section 13.10.312b. (See staff report "Appendix: Full Text Of Proposed Amendments.")

As noted, the certified Local Coastal Program implementation program did not explicitly allow some type of timber harvesting in the CA district prior to 1998. Then the County proposed and the Commission approved LCP amendment #3-98 that explicitly stated that timber harvesting is not an allowed use in the CA zone. However, when the County engaged in final consideration of formally adopting this provision, it proposed the current amendment instead.

b. Standard of Review

The standard of review for this amendment is the land use plan. Most relevant are new policy 5.12.14 and policy 5.12.9, quoted above. Among other relevant provisions is Objective 5.12:

Encourage the orderly economic production of forest products on a sustained yield basis under high environmental standards, to protect the scenic and ecological values



of forested areas, and to allow orderly timber production consistent with the least possible environmental impacts.

c. Analysis and Conclusion

This amendment is written to carry out the directive of the proposed amended land use plan policy. Since the land use plan amendment is not being approved for the coastal zone, policy 5.12.14's current limitation to allowing timber harvesting in **only** the "TP" and "M-3" zone districts in the coastal zone remains operative. As the proposed implementation plan amendment does not conform with this provision of the certified land use plan, it is denied.

d. Remedies

The proposed land use plan amendment component is approved if it is modified to apply only outside of the coastal zone. The proposed implementation amendment can be revised accordingly, as provided by Modifications B-1 and B-2. If so modified, the proposed zoning amendment component is approved, as being consistent with and adequate to carry out the land use plan.

B. Helicopter Facilities

1. Description and Background

This proposed amendment component proposes the addition of a new section (13.10.378) to the *County Code* to limit the location of helicopter staging and loading activities, and service areas, to:

- parcels being timbered or to adjacent parcels,
- to zoning districts which allow timber harvesting;
- and to areas within the boundaries of an approved timber harvest plan.

(See staff report "Appendix: Full Text Of Proposed Amendments.")

The purposes of this amendment are to reduce noise impacts from helicopters on residences near logging operations and to help promote safety. The submittal explains:

The General Plan restricts the use of helicopters to a very limited number of uses. The use of helicopters for commercial agricultural purposes infers that the activities necessitating the use of helicopters (typically spraying) will occur only on property with active agricultural operations and that adjacent properties will be subject only to incidental over-flights of helicopters.



By extension, this same inference was the basis for the County's proposed helicopter logging ordinance. The use of helicopters for logging operations is limited to those areas directly involved in the staging, harvesting and loading of timber, and is prohibited over adjacent properties where timber harvesting is either not allowed by the zoning or is not included in the approved Timber Harvest Plan (THP) or Non-industrial Timber Management Plan (NTMP), except for incidental over-flights. The proposed ordinance implements the General Plan by limiting the use of helicopters to those areas where the helicopter activity is allowed by the zoning ordinance.

In other words, by directing where helicopter facilities are located (to timber harvest areas), the amendment has the effect of limiting the instances where laden helicopters are flying over residential areas (which are not designated timber harvest areas).

The Commission denied a proposal related to helicopter logging under Amendment # 3-98. This new proposal differs significantly from the one previously denied. This current amendment request responds to the Commission's concerns that, while regulation of helicopter flight operations (as opposed to the location of helicopter facilities) may not be within the jurisdictional scope of the Coastal Act, and that use of helicopters may be an environmentally superior way of log transport in some instances.

The scope of the this proposed amendment component is locational and objectively verifiable, not regulatory. The proposed amendment language would not have a significant impact. This is because it focuses on helicopter facilities located away from the parcel being logged, which as a practical matter would seem to be a rare occurrence. Helicopters are used as an alternative (or actually as a supplement) to trucks, where road access to the area being logged would be more expensive or is not allowed for some reason (e.g., environmental constraints). Helicopters hover over the area to pick up the cut logs for transport to a landing for further ground or water transport to a mill (or possibly, if a mill is close by, to the mill itself). The process of gathering up the cut logs is termed "yarding." Helicopters would also need a base of operation for refueling, maintenance and the like. Thus, the path of the helicopter would be between the base of operation, the cut area, and the landing. Under the proposed amendment, these would all occur on the timber harvest site or an adjacent site, if timber harvests were also allowed on it. Timber harvest parcels are a minimum of 5 acres, therefore there should be room for these facilities. Since helicopter yarding is a comparatively expensive means of transport, there is a very strong economic incentive to minimize the distance that the helicopter needs to travel. The only constraints would be if the parcels in a particular case have no level areas for landing or are landlocked without road access for logging trucks.



2. Standard of Review

Since this amendment is to the zoning ordinance only, it must be found consistent with the land use plan in order to be approved. The following *1994 General Plan and Local Coastal Program for the County of Santa Cruz* policy is applicable:

5.12.12. Review of Timber Harvest Require strict review of all timber harvests subject to County regulation to assure minimal environmental and neighborhood impacts...

The following Timber Resource program (#e.3) of the *1994 General Plan and Local Coastal Program for the County of Santa Cruz* is also applicable:

Continue to apply the following policies when reviewing timber harvest plans:...(3) allow for selecting the haul route which minimizes neighborhood impacts.

The following other applicable *1994 General Plan* provisions are not part of the certified local coastal program:

- **3.19.1** - which prohibits the use of helicopters for any use other than emergency law enforcement, emergency medical or commercial agricultural purposes; the County does not define logging operations as an agricultural use; therefore, logging would not fall under the exceptions in this policy.
- **6.9.1** - which deals with the compatibility of land uses with respect to noise.
- **6.9.11** - which addresses new airstrips with respect to increased noise.

Also germane are the various policies to control erosion listed under Objective 6.3, the various habitat protection policies listed under Objective 5.1, and a basic plan goal of protecting the public safety and welfare (Ch. 2).

3. Analysis and Conclusion

Each of the three provisions of the proposed amendment component helps implement the *1994 General Plan and Local Coastal Program for the County of Santa Cruz*. The Commission notes that these proposals would not have the effect of prohibiting helicopter logging. In some cases, this method of logging may be preferable in terms of minimizing environmental impacts and furthering County erosion control and habitat protection policies.



The first provision of this amendment component would ensure that helicopter facilities are located near the site of the logging that they support. Such facilities would generate noise which could impact neighbors. The cited land use plan policies seek to avoid such impacts.

The second provision of this amendment helps ensure internal consistency within the implementation plan. Helicopter facilities are akin to industrial type uses and hence are not allowed uses in most zoning districts, given the noise associated with them. Since the facilities subject to these provisions are part of the timber harvest operation, they can only be allowed where timber harvest is allowed (i.e., be part of the timber harvest use).

The third provision requires that the helicopter facilities be contained in a timber harvest plan, again assuring that impacts from helicopter logging are limited to a small area.

In conclusion, the proposed amendment component is approved as being consistent with and adequate to carry out the certified land use plan.

C. Riparian Corridor Limitations

1. Description and Background

This proposed amendment component would add a new *County Code* section (13.10.695). This would prohibit most timber harvesting² within 50 feet of the banks of perennial streams and 30 feet from the banks of intermittent streams. (See staff report "Appendix: Full Text Of Proposed Amendments.") However, timber harvesting necessary to provide access to timber that is otherwise permissible to harvest would be permitted (under section 13.10.695.c). In other words if there was some timber in a timber harvest zone beyond a riparian corridor and the only way to access it was by cutting some trees in the corridor, such tree cutting would not be precluded by the language of the proposed amendment.

The Commission approved a similar proposal under Amendment # 3-98, but the County subsequently declined to formally adopt it. Instead the County has submitted this new request. The two major differences are that this new request does not propose buffers to ephemeral streams and does allow logging to provide access, as described above. Also, the previous amendment could have been interpreted to prohibit all tree cutting in riparian corridors. There may be some instances (e.g., for fire suppression, habitat restoration, disease prevention) where non-commercial harvesting is necessary to preserve the integrity of the riparian corridor. The current proposal makes it clear that

² i.e., timber harvesting subject to a timber harvest plan or to a non-industrial timber management plan.



this provision applies only to timber harvesting pursuant to either a Timber Harvest Plan or a Non-industrial Timber Management Plan.³

This proposed amendment component would affect 1,601 acres of timber land in the coastal zone, according to County calculations.

The scope of this proposed amendment component is locational and objectively verifiable, not regulatory. The proposed amendment applies to perennial and intermittent streams, which are mapped. It does not apply to setbacks from ephemeral streams (as the previous #3-98 amendment would have), since the identification of such streams occurs through field investigations (they are not currently all mapped).

2. Standard of Review

As the proposed amendment is to the coastal implementation program only, the standard of review is consistency with the coastal land use plan. Several *1994 General Plan and Local Coastal Program for the County of Santa Cruz* policies address riparian corridors.

Objective 5.1 is:

to maintain the biological diversity of the County through an integrated program of open space acquisition and protection, identification and protection of plant habitat and wildlife corridors and habitats, low-intensity and resource compatible land uses in sensitive habitats and mitigations on projects and resource extraction to reduce impacts on plant and animal life.

The Local Coastal Program has provisions requiring protection of riparian areas and wetlands; which are defined as environmentally sensitive habitats (under policies 5.1.2 and 5.1.3). They must be delineated and biotic reports must be prepared. Sensitive habitat provisions include:

³ Sections 13.10.700-D and 13.20.040 of the *County Code* each define "development" to not include timber harvests that require State timber harvest plans; Section 13.20.050 only requires coastal permits for "development" (i.e., no coastal permit is required for an activity not defined as development such as timber harvests that require State timber harvest plans); Section 13.20.160 requires coastal permits for timber harvests not regulated by the State (i.e., < 3 acres or non-commercial); Chapter 16.52 contain regulations for timber harvests that are applied for except for commercial timber harvesting under the exclusive jurisdiction of the Department of Forestry (Section 16.52.035); Chapter 16.34 contains regulations for tree cutting other than timber harvests; and specifically does not apply to timber harvests subject to State Department of Forestry approval (Section 16.34.090). In summary the County Code establishes five tiers of approvals for tree cutting: 1. Timber harvests subject to State timber harvest plan approvals; 2. Other timber harvests subject to County regulations (Ch. 16.52); 3. Other significant tree cutting (subject to County regulations in Ch. 16.34); 4. Other tree cutting regulated through permits for development that the cutting is associated with (e.g., tree cutting associated with allowing for a residence) and 5. Other minor tree cutting is exempt from regulation.



- Policy 5.2.1 designates and defines the following areas as Riparian Corridors:
 - (a) 50' from the top of a distinct channel or physical evidence of high water mark of a perennial stream;
 - (b) 30' from the top of a distinct channel or physical evidence of high water mark or an intermittent stream as designated on the General Plan maps and through field inspection of undesignated intermittent and ephemeral streams;
 - (c) 100' of the high water mark of a lake, wetland, estuary, lagoon, or natural body of standing water;
 - (d) The landward limit of a riparian woodland plant community;
 - (e) Wooded arroyos within urban areas.
- Policy 5.1.3 allows only uses dependent on resources in these habitats unless:
 - ⇒ other uses are consistent with habitat protection policies and beneficial to the public;
 - ⇒ the project approval is legally necessary to allow a reasonable economic use of the land;
 - ⇒ any adverse environmental impact will be completely mitigated; and
 - ⇒ there is no feasible less-damaging alternative.
- Policy 5.1.4 requires complying with the Sensitive Habitat Protection ordinance (Chapter 16.32 of the County Code).
- Policy 5.1.6 states in part,

Sensitive habitats shall be protected against any significant disruption of habitat values; and any proposed development within or adjacent to these areas must maintain or enhance the functional capacity of the habitat. Reduce in scale, redesign, or, if no alternative exists, deny any project which cannot sufficiently mitigate significant adverse impacts on sensitive habitats...

The following *1994 General Plan and Local Coastal Program for the County of Santa Cruz* provisions specifically address riparian corridors and wetlands:

- Objective 5.2 is "to preserve, protect and restore all riparian corridors and wetlands for the protection of wildlife and aquatic habitat, water quality, erosion control, open space, aesthetic and recreational values and the conveyance and storage of flood waters."
- Objective 5.7 is "to protect and enhance surface water quality in the County's streams, coastal lagoons and marshes by establishing best management practices on adjacent land uses."



- Policy 5.2.2 specifies adherence to the Riparian Corridor and Wetland Protection ordinance (Chapter 16.30 of the County Code), to ensure no net loss of riparian corridors and riparian wetlands.
- Policy 5.2.3 states that “development activities, land alteration and vegetation disturbance within riparian corridors and wetland required buffers shall be prohibited unless an exception is granted per the Riparian Corridor and Wetlands Protection ordinance.”

The County, in such cases, is required to make Riparian Exception findings of:

- ⇒ special circumstances affecting the property,
- ⇒ necessity for proper function of an existing or permitted activity;
- ⇒ not being injurious to downstream or other nearby property;
- ⇒ not reducing nor adversely impacting the riparian corridor;
- ⇒ there being no less environmentally damaging alternative;
- ⇒ and meeting local coastal program objectives (County Code Section 16.30.060).

- Policy 5.2.7 states,

Allow compatible uses in and adjacent to riparian corridors that do not impair or degrade the riparian plant and animal systems, or water supply values, such as non-motorized recreation and pedestrian trails, parks, interpretive facilities and fishing facilities...

3. Analysis and Conclusion

a. Consistency with Land Use Plan Policies

The proposed amendment which prohibits commercial timber harvesting in 30 and 50 foot riparian buffer zones implements the cited land use plan policies to the extent allowed by State law. It matches the first two setback criteria of policy 5.2.1.⁴

The proposed amendment carries out land use plan policies (e.g., 5.2.2 and 5.2.3) that do not allow for disruption of the habitat. Commercial timber harvesting by definition will change the natural structure of the riparian habitat as full-size trees are removed, roads are installed, and heavy

⁴ The *Code* definition additionally includes a 100 foot buffer around water bodies. A review of the location of coastal wetlands in northern Santa Cruz County reveals no mapped timber resources in that close proximity, therefore, obviating the need for the proposed prohibition to extend to wetland buffers, as was requested in some testimony at the local hearings.



equipment is used. After a timber harvest is completed, the riparian forest will be significantly altered.

In a more general sense, the proposed amendment implements the cited policies (e.g., 5.1.6, 5.2.7) that prohibit habitat impairment. By prohibiting commercial tree-cutting, the integrity of the defined riparian corridor is preserved. Conversely, allowing commercial tree-cutting would clearly impact the riparian corridor and generally degrade its habitat functions. There is ample basis in the literature for riparian setbacks where no vegetative disruption is allowed. Some benefits are:

- Maintenance of the aquatic food web through provision of leaves, branches, and insects;
- Maintenance of appropriate levels of predation and competition through support of appropriate riparian ecosystems;
- Maintenance of water quality through filtering of sediment, chemicals, and nutrients from upslope sources;
- Maintenance of an appropriate water temperature regime through provision of shade and regulation of air temperature and humidity;
- Maintenance of bank stability through provision of root cohesion on banks and floodplains;
- Maintenance of channel form and in-stream habitat through provision of woody debris and restriction of sediment input;
- Moderation of downstream flood peaks through temporary upstream storage of water;
- Maintenance of downstream channel form and instream habitat through maintenance of an appropriate sediment regime.⁵

Similarly, there is evidence of the detrimental effects of allowing commercial timber harvesting in riparian corridors. "Accelerated rates of erosion and sediment yield are a consequence of most forest management activities."⁶ "Timber harvesting and associated activities can alter the amount and timing of streamflow by changing onsite hydrologic processes."⁷ Vegetation diversity can be lost as a result of riparian logging.⁸ Santa Cruz County has expressed concern over even selective logging of riparian corridors resulting in a young stand and a predominately hardwood stand of remaining trees, as not providing suitable conditions to maintain coho habitat.⁹ "There is broad scientific

⁵ Reid Leslie M. and Sue Hilton "Buffering the Buffer," USDA Forest Service, Gen. Techn. Rep. PSW-GTR-168, 1998, p. 71. See also Roelofs to Layton September 11, 2000 in Appendix B for a discussion of the benefits of buffers. The Commission incorporates this letter into these findings.

⁶ Forest Ecosystem Management: An Ecological, Economic, and Social Assessment, Report of the Forest Ecosystem Management Assessment Team 1993, p. V-16.

⁷ Keppeler and Zierner 1990 and Wright et. al. 1990 cited in *Forest Ecosystem Management: An Ecological, Economic, and Social Assessment, Report of the Forest Ecosystem Management Assessment Team*. 1993, p. V-19.

⁸ *Forest Ecosystem Management: An Ecological, Economic, and Social Assessment, Report of the Forest Ecosystem Management Assessment Team*. 1993, p. V-25.

⁹ James (County Planning Director) to Rutten (NMFS), December 10, 1998 letter.



agreement that timber harvesting with riparian zones is potentially detrimental to salmonids and other fisheries because it reduces shade, increases water temperature, increases sediment delivery to streams, and reduces large wood pieces, an important element of stream complexity."¹⁰ As part of the County hearing process, evidence was submitted of the destructive nature of commercial logging adjacent to French and Gamecock Creeks in the County.

b. Constraints to Full Consistency with Land Use Plan Policies

There are certain portions of the cited land use plan policies that are constrained from being fully implemented by State law. Under current, counties may only regulate the location of commercial timber harvesting and may not regulate timber operations or require permits for timber harvesting. Thus, provisions of the generally applicable riparian corridor regulations that require a discretionary determination by the County prior to harvesting cannot be applied to timber harvesting operations. The proposed regulations are all objective and locational and do not impose County permit requirements and are therefore valid under existing law.

Likewise policies 5.1.6 and 5.2.3 allows some carefully mitigated development to occur in riparian buffer areas. However, these developments can only occur upon the County granting what is termed a "riparian exception." These exceptions would require discretion and determination on a case-by-case basis. Again, State law would not allow for this discretion to be delegated to the County: the County zoning must either allow or not allow timber harvesting in defined areas, such as riparian zones. The County can not conditionally allow it, subject to such timber harvesting meeting its regulations and limitations, as the County lacks such regulatory authority.

c. Rebuttals to Arguments Opposed to the Proposed Amendment

The Commission notes that the County amendment package submittal includes the local hearing record. This record includes challenges to the proposed amendment by various experts. In summary, the information that they impart asserts that:

- timber harvesting in the riparian corridor does not harm the habitat (e.g., there are adequate Forest Practices Rules to prevent any adverse impacts);
- furthermore, not allowing timber harvesting in the riparian corridor does not result in environmental benefits;
- furthermore, timber harvesting in the riparian corridor is beneficial to the habitat;
- furthermore, timber harvesting in the riparian corridor is actually necessary for the habitat to optimally survive;

¹⁰ Spence et.al., *An Ecosystem Approach to Salmonid Conservation*. TR-4501-96-6057. ManTech Environmental Research Serves Corp., Corvallis, Oregon, 1996, cited in Roelofs to Layton, September 11, 2000 in Appendix B.



- furthermore, not allowing timber harvesting in the riparian corridor does not carry out Coastal Act Section 30243 (e.g., economic benefits of harvesting loss if not harvested);
- and finally, not allowing timber harvesting in the riparian corridor actually causes harm to the habitat (e.g., no timbering, no management to address current and previous problems like sedimentation).

The assertions that some uses, such as regulated commercial timber harvests, may not have adverse impacts on the riparian habitat are not particularly germane. Typically, zoning provisions have various broad purposes (e.g., in this case, habitat protection) that result in various categories of uses that are allowed in certain areas and others that are not. The County is not obliged to allow every use in every zoning district. Within any use category the fact that there may be some development proposals that have less impact than others (e.g., a large factory vs. a small one) does not compel the County to permit that category of use in a certain zoning district. The County has to make broad decisions about whether a category of use is appropriate for a certain area. As discussed above, as a category of use, commercial timber harvesting is not appropriate in riparian corridors pursuant to several of the cited policies.

However, the assertions that commercial timber harvesting is actually necessary to preserve habitat values and not allowing it is detrimental require further scrutiny. The implication of these assertions is that the proposed restriction (on allowing commercial timber harvesting) embodied in the amendment is contrary to the cited County habitat protection policies. In other words, were the Commission to approve the amendment, the argument would be made that the result would be adverse impacts on the riparian corridor (i.e., inconsistencies with the LCP policies) from the prohibition on commercial timber harvesting.

Specifically, there are assertions in the record alleging the necessity of commercial cutting of riparian forests because:

- (1) of the need to protect plant systems by allowing selective harvesting of diseased Monterey pine;
- (2) of the need to harvest to prevent forest fires;
- (3) of the need to prevent drying up creeks resulting from unchecked forest growth;
- (4) if not commercially harvested, trees will fall into streams causing log jams and resultant erosion;
- (5) cutting trees and placing some in the watercourse as woody debris in conjunction with allowing timber harvesting will result in less sedimentation than if trees are allowed to naturally slip into the stream;
- (6) not having commercial harvesting will mean adverse effects of previous logging will not be cleaned up by continued logging
- (7) not undertaking commercial harvesting will lead to a significant decrease in diversity associated with secondary succession and number of plant and animal



species which occupy the forest; if some trees are not cut, the riparian forest will be unhealthy with stunted growth and decreased density, meaning less shade for coho and decreased quality of detritus and food supply for coho and other fish; and

(8) cable yarding will not be allowed leading to more destructive tractor yarding which generates more sediment.

The literature, common understandings, the County's submissions (see Appendix B), and what the proposed amendment actually prescribes reveal that such arguments are not compelling.

(1) The need to commercially harvest diseased Monterey pine in riparian corridors is not persuasive because this species does not typically grow within the immediate riparian corridor. Also, the proposed amendment does not preclude removal of diseased and dying trees in riparian corridors.

(2) The contention that commercial harvesting of trees in riparian corridors will prevent forest fires (and by implication must be allowed to be consistent with fire protection policies), is unfounded. In fact, "fire suppression during this century in combination with logging and grazing has created forests with much greater density of vegetation than in the past. The dense vegetation also increases the opportunity for intense conflagrations."¹¹ "Wildfires often burn less intensely in riparian areas than in upland areas because of the generally moist conditions near streams. Riparian areas may serve as effective barriers to the spread of low severity fires across the landscape." Of course, riparian areas can burn and result in some adverse conditions, including increased sediment yields and decreased aquatic species diversity. Yet, "fire is another disturbance factor that contributes to the diverse mosaic of riparian vegetation." Thus, even if somehow the burning (or more intense burning) of a riparian corridor could be attributed to the fact that no logging had been allowed in it, the result is not necessarily undesirable.¹² Furthermore, the prohibition only extends a maximum of 50 feet into the riparian corridor, the most moist area, so that opportunities remain for logging in the remainder of the corridor area. And, were fire suppression or clean-up necessary in the proposed buffer zone that involved tree removal, the proposed amendment would not preclude this from occurring.

(3) The assertion regarding drying up streams is similarly unpersuasive. Transpiration to nourish riparian trees is a natural process that has been repeated for centuries before commercial logging appeared on the scene. The County's consultant testified, "Granted, these [riparian] plants take up the most water during the dry season (spring and summer), but they also reduce evaporation from the stream and soil surface through shading (Davenport 1977). In addition, riparian vegetation reduces the velocity of floodwaters, facilitating ground-water recharge (Faber et al. 1989)."¹³ Another expert

¹¹ Skinner and Chang, 1996 cited in Kattleman and Embry, "Riparian Areas and Wetlands," *Sierra Nevada Ecosystem Project: Final Report to Congress*. 1996. See also Euphrat to Layton September 13, 2000 in Appendix B, p. 6.

¹² See also, Rottenborn to Coastal Commission, July 14, 1999 in Appendix B. The Commission incorporates this letter into these findings.

¹³ Rottenborn to Coastal Commission, July 14, 1999 in Appendix B.



amplified on the negligible adverse effect on water supply.¹⁴ The cover letter to the paper submitted by Robert Briggs, "Competition for Limited Dry Season Ground-stored Water Between Forest Use and Streamflow in the Waddell Valley," says that awareness of this effect does not dictate a particular course of action since that depends on the results desired.¹⁵ Indeed the paper notes that fires have the same effect as tree cutting. Furthermore, the paper addresses the entire watershed; it does not calculate the magnitude of decreased streamflow from the riparian forest alone. If it ever were determined that commercially cutting trees in the riparian corridor were necessary so that a stream would not dry up (i.e., if this were the only available method), then a subsequent amendment (including a land use plan change) could be requested. However, for example, to date, Department of Fish and Game recommendations for the restoration of the endangered coho salmon south of San Francisco Bay (i.e., in streams subject to this amendment) focus on other measures to preserve and enhance streamflow rather than on cutting riparian vegetation (which is recommended for preservation and restoration).

(4) The contention that harvesting in riparian corridors reduces log jams is not supported by common understanding of forestry ecology. Regarding log jams, the literature on this topic actually supports retaining riparian vegetation because some trees will fall into streams. Logs in streams are valuable. "The progressive loss of large pieces of coniferous wood from streams due to continued logging of riparian zones... has led to widespread changes in channel form and to impaired habitat quality."¹⁶ Current forest practice rules allow these cumulative impacts to increase in severity in part because specified buffer strip widths are too narrow to allow sufficient recruitment of large pieces of wood and because logging is allowed in buffer strips. "Partial harvest and salvage logging within [some areas where riparian buffers have been established] have reduced their ability to contribute large wood to streams."¹⁷ Log jams that are detrimental for some reason can be removed; this proposed amendment would not prevent such stream restoration.

(5) The assertion that cutting trees and placing some in the watercourse as woody debris in conjunction with allowing timber harvesting will result in less sedimentation than if trees are allowed to naturally slip into the stream is accurate only to the extent that the post-logging debris is thoughtfully and deliberately placed. The debris placed for silt catchment also needs to be installed so as to maximize the creation of shaded pools while making absolutely certain not to obstruct the passage of anadromous fish. While loggers could be taught such techniques, in general their occupation is to get the logs to the mill in an economic manner, not "artful placement" of woody debris. Thus, there is no track record to conclude that there would be a major difference between logging adjacent to streams, with an assumed requirement of woody debris placement and no commercial harvesting with the logs falling naturally. Additionally, the prohibition of logging

¹⁴ See Euphrat to Layton September 13, 2000 in Appendix B, pp. 2-3. The Commission incorporates this letter into these findings.

¹⁵ Briggs to Coastal Commission, March 10, 1999.

¹⁶ Reid, "Forest Practice Rules and Cumulative Watershed Impacts in California," 1999.

¹⁷ Bryant 1980 and Bisson et. al. 1987 cited in *Forest Ecosystem Management: An Ecological, Economic, and Social Assessment, Report of the Forest Ecosystem Management Assessment Team* (a coalition of federal resource agencies) 1993, p. V-13.



within 30 or 50 feet of a stream would not preclude bringing in personnel and equipment to fell certain trees to be placed in a stream for habitat restoration or to move trees that have fallen and perform erosion control. However, this should not generally be necessary as, "there is a greater benefit from a fallen tree in a stream [including sediment catchment] than the impact of the relatively small, short lived sedimentation source created from its falling."¹⁸

(6) The contention that not cutting will mean that the adverse effects of old logging will not be cleaned up by continued logging is unfounded. Correction of environmental abuse should not be dependent on the tolerance of further environmental impacts. There are other ways to correct such damage, including establishing specific restoration programs and letting Nature take its course. In the high moisture-high sunlight regime of the temperate rain forest (of which the Santa Cruz north coast is the southern extremity), the more obvious effects of old-time logging tend to heal over within a few years. A prime example is at the Forest of Nisene Marks. This park was clear cut end-to-end by the mid-1900's but is now so well recovered that it is thought of as a "pristine" unit of the State Park System. And, in the Coastal Zone along Bonny Doon Road where the logging was done selectively and thoughtfully in accordance with the California Forest Practices Act timber harvest rules, within 10 years virtually no evidence of the logging operation remains. Therefore, while there might be a particular isolated instance where further "clean up" is warranted, the decision to continue commercial timber harvesting (or not) for a whole class of lands should not be based on this consideration.

(7) The contention that commercial timber harvesting in riparian corridors is important to the health of the riparian forest and stream corridor habitat is unfounded. The forests have existed for centuries without the aid of logging and logging is not necessary to maintain them. According to a County's consultant, "While some species associated with early-successional habitats might not be present in old-growth riparian woodland, natural disturbances such as flooding, erosion, treefalls, and fire promote riparian habitat regeneration and maintain habitat heterogeneity (Davis et al. 1989, Stromberg et al. 1993)."¹⁹ Further amplification of the species diversity benefits of the resultant older average age forest within the riparian setback area is described on page 4 of the Euphrat letter in Appendix B of this report. "Also, this proposal affects only a narrow riparian corridor. Therefore, any resultant diversity of species and age classes from logging will still occur; it will simply be setback further from the stream. "Maintaining the integrity of the [riparian] vegetation is particularly important for riparian-dependent organisms including amphibians, arthropods, mammals, birds, and bats."²⁰ Harvesting results in a decrease of detrital inputs into streams. "Decrease of detritus will cause decreased populations of these [stream invertebrate] species."²¹ Harvesting also results in a

¹⁸ Euphrat to Layton September 13, 2000 in Appendix B, p. 5.

¹⁹ Rottenborn to Coastal Commission, July 14, 1999 in Appendix B.

²⁰ *Forest Ecosystem Management: An Ecological, Economic, and Social Assessment, Report of the Forest Ecosystem Management Assessment Team*, 1993, p. V-25. See also, July 14, 2000 letter to the Coastal Commission from Stephen C. Rottenborn, Ph.D., a consultant to the County, for an extensive discussion of the adverse habitat impacts from commercial logging of riparian corridors in Appendix B.

²¹ Knight and Bottorff, "The Importance of Riparian Vegetation to Stream Ecosystems," in Warner and Hendrix, editors, *California Riparian Systems*, 1984.



loss of logs in streams as discussed above. Reductions of logs in streams are associated with a decrease in large deep pools, which are a characteristic of high quality aquatic ecosystems. Attributes of stream habitat diversity include the variety and range of hydraulic conditions (i.e., depths and water velocities) and types and frequencies of wood.²² Furthermore, timber harvesting in the riparian corridor can affect the amount of shading that the stream receives. Shading is necessary to provide for diverse aquatic habitat. "An additional point is that maintaining a continuous canopy cover has a significant fog drip benefit to the understory."²³ Thus, the prohibition on riparian corridor tree removal should result in greater stream habitat diversity, not less.

(8) Lastly, regarding cable yarding, the amendment does not prohibit its occurrence. Cables may be installed over streams where there is already a clearing or they may be installed above tree level. Also, helicopter logging is another alternative that is not precluded by this amendment (see finding above). Additionally, the amendment proposal allows timber cutting in riparian corridors so as not to preclude access to an otherwise allowed timber harvest. Furthermore, this proposed amendment applies to timber harvesting itself and not associated activities such as cables or roads which may cross riparian corridors.

d. Conclusion

In conclusion, prohibiting various uses, including commercial timber harvesting, within riparian corridors, is consistent with land use plan directives to preserve and protect these habitats.

In light of the whole record, the scientific consensus, and the evidence submitted, there is not substantial evidence that not allowing commercial timber harvesting in riparian habitats will cause significant harm. Furthermore, the assertions made along these lines blur the distinction between regulated commercial timber harvesting and individual tree cutting to preserve habitat values. As long as the proposed amendment does not preclude cutting certain trees that are determined necessary to be cut to preserve, protect or restore habitat, then there is no conflict with the cited land use plan policies. The proposed amendment applies only to timber harvesting pursuant to either a Timber Harvest Plan or a Non-industrial Timber Management Plan. As noted in the finding "A" above, some harvesting is not covered under these categories. Thus, some tree removal that might be deemed desirable for actually maintaining the riparian corridor habitat could still occur. Thus, this proposed amendment component to the Implementation Program is approved as being consistent with and adequate to carry out the cited certified land use plan policies.

²² *Forest Ecosystem Management: An Ecological, Economic, and Social Assessment, Report of the Forest Ecosystem Management Assessment Team* 1993, p. V-22. See also Euphrat to Layton September 13, 2000 in Appendix B, pp. 3 -4.

²³ Dawson, T.E., "The Use of Fog Precipitation By Plants In Coastal Redwood Forests," in J. LeBlanc, ed., *Proceedings of a Conference on Coastal Redwood Ecology and Management*, 1993 cited in Euphrat to Layton September 13, 2000 in Appendix B, p. 3.



For the County's north coast streams, where this amendment would apply in the coastal zone, there are no riparian corridor or watershed management plans in place. Such plans could recommend specific vegetation management techniques to further the determined objectives (e.g., coho habitat protection, aesthetic values, erosion control, species diversity or climax redwood forest). If these vegetation management techniques could be assured to be implemented through regulated commercial timber harvesting, then in the future it may be appropriate for the County to submit a new LCP amendment request along these lines.

On the other hand, the literature discusses cases of desirable riparian buffers of greater than 50 feet. One example is a buffer equal to one site-potential tree height.²⁴ The Commission notes that at this time, since the County land use plan has a 50 foot buffer, the corresponding zoning provision should also be 50 feet. This does not mean that the County can not recommend additional buffers in specific cases when commenting to the Department of Forestry on timber harvest plans. Nor does it in any way preclude the Department from imposing greater buffers. Finally, it does not commit the Coastal Commission to endorsing only a 50 foot buffer.

D. California Environmental Quality Act (CEQA)

The Secretary for Resources has certified the Commission's program involving the preparation, approval and certification of local coastal programs, as provided in section 30500-30522 of the Coastal Act, under section 21080.5 of CEQA. The County has prepared a negative declaration on this set of amendments pursuant to CEQA. The County has found that there is no substantial evidence in light of the whole record that the amendments may have a significant effect on the environment. (Pub. Resources Code, § 21080(c), 14 Cal. Code Regs, § 15070(a).) The Commission has considered the County's negative declaration, and all the other evidence in the record, and concurs in this finding with respect to its approval of Major Amendment No. 1-00. There is nothing in the record to support the argument that the amendments, as modified by the Commission, may have a significant environmental effect. In fact, the amendments will have a beneficial environmental effect by not allowing timber harvesting in some areas of the County. Accordingly, pursuant to section 21080.5 of the Public Resources Code, the Commission concludes that the negative declaration, the staff report, and the Commission's adopted findings are adequate to meet the Commission's obligations under CEQA. The Commission also concludes that since the LCP amendment, as proposed or as modified, will not have a significant, adverse environmental effect in the first instance, there are no feasible alternatives or feasible mitigation measures that would substantially lessen any significant, adverse effects on the environment.

²⁴ National Marine Fisheries Service, "Draft Salmonid Conservation Measures for ** Forestry Activities for a Short-Term HCP," 1999. See also Roelofs to Layton September 11, 2000, page 2 in Appendix B for a discussion of wider buffers.



APPENDICIES

A. Full Text Of Proposed Amendments

Land Use Plan amendments
Implementation Program amendments

B. Riparian Corridor Information:

Letters from: Stephen Rottenborn, Ph.D.
Terry Roelofs, Ph.D.
Fred Euphrat, Ph.D.



LAND USE PLAN AMENDMENT⁰⁹²⁵

EXHIBIT A

Proposed General Plan Amendments:

new language underlined/~~overstrike~~

Amend Policy 5.12.14, as follows:

5.12.14 Zone Districts Where Timber Harvesting is Allowed

Allow timber harvesting and associated operations, requiring approval of a Timber Harvesting Plan by the California Department of Forestry, only in the Timber Production (TP), Parks, Recreation and Open Space (PR) (except in the coastal zone), ~~and~~ Mineral Extraction Industrial (M-3), and the Commercial Agriculture (CA) zone districts.

(A) Revise the following section of the General Plan/Local Coastal Program Land Use Plan, as follows:

Section 5.13.5 Principal Permitted Uses on Commercial Agricultural (CA) Zoned Land

Maintain a Commercial Agricultural (CA) Zone District for application to commercial agricultural lands that are intended to be maintained exclusively for long-term commercial agricultural uses. Allow principal permitted uses in the CA Zone District to include only agricultural pursuits for the commercial cultivation of plant crops, including food, flower, and fiber crops and raising of animals including grazing and livestock production and timber harvesting operations.

ORDINANCE _____

ORDINANCE AMENDING COUNTY CODE SECTIONS 13.10.312(b) - ALLOWED USES IN THE AGRICULTURAL ZONES AND SECTION 16.20.180 - DESIGN STANDARDS FOR PRIVATE ROADS, DRIVEWAYS AND BRIDGES, AND ADDING COUNTY CODE SECTION 13.10.378 - TIMBER HARVESTING RELATED HELICOPTER REGULATIONS AND SECTION 13.10.695- LOCATIONAL CRITERIA FOR TIMBER HARVESTING

SECTION I

Subsection (b) of Section 13.10.312 - Uses Allowed in Agricultural Districts of the County Code is hereby amended to read as follows:

(b) Allowed Uses.

- (A)
1. The uses allowed in the agricultural districts shall be as provided in the Agricultural Uses Chart below. A discretionary approval for an allowed use is known as a "Use Approval" and is given as part of a "Development Permit" for a particular use. The type of permit processing review, or "Approval Level", required for each use in each of the agricultural zone districts is indicated in the chart. The processing procedures for Development Permits and for the various Approval Levels are detailed in Chapter 18.10 PERMIT AND APPROVAL PROCEDURES. The Approval Levels given in this chart for structures incorporate the Approval Levels necessary for processing a building permit for the structure. Higher Approval Levels than those listed in this chart for a particular use may be required if a project requires other concurrent Approvals, according to Section 18.10.123. All Level V or higher Approvals in the "CA" and "AP" zone districts are subject to the special findings required by Section 13.10.314(a) in addition to those required in Section 18.10.230.
 2. Timber harvesting and associated operations, requiring approval of a Timber Harvesting Plan by the California Department of Forestry, is an allowed use in the Commercial Agriculture (CA) zone district.

SECTION II

Subsection (b) of Section 13.10.312 of the County Code is hereby amended to add the following use to the Agricultural Uses Chart to read as follows:

AGRICULTURAL USES CHART

(A)

USE	CA	A	AP
<u>Timber harvesting and associated operations</u>	<u>P</u>	<u>=</u>	<u>=</u>

SECTION III

Chapter 13.10 is hereby amended by adding Section 13.10.378 to read as follows:

13.10.378 Timber Harvest Related Helicopter Operations

(a) Staging and loading activities, and service areas, for timber operations involving the use of helicopters shall be prohibited unless the staging, loading or service area:

- (B)
- i) is on the parcel or on a parcel which is contiguous to the parcel from which the timber is being harvested,
 - ii) is within a parcel that is either zoned TP or is zoned in another zone district where timber harvesting is permitted, and
 - iii) is within the boundaries of the Timber Harvest Plan (THP) or the Non-industrial Timber Management Plan (NTMP), and the THP or NTMP is approved by the California Department of Forestry and Fire Protection.

SECTION IV

Chapter 13.10 of the County Code is hereby amended by adding Section 13.10.695 to read as follows:

13.10.695 Locational Criteria for Timber Harvesting

(C)

(a) Timber harvesting requiring approval of a Timber Harvesting Plan or a Non-industrial Timber Management Plan by the California Department of Forestry is allowed only in those zone districts which specifically list timber harvesting as an allowed use.

(b) Within those zone districts in which timber harvesting is otherwise allowed by this Code, the cutting and removal of trees and other solid wood products for commercial purposes which require either a Timber Harvest Plan or a Non-industrial Timber Management Plan shall not occur within riparian corridors, defined as:

1) 50-feet from the bank full flow line of a perennial stream, as defined in Section 16.30.030 of the County Code

2) 30-feet from the bank full flow line of an intermittent stream, as defined in Section 16.30.030 of the County Code

(c) Notwithstanding the above, if compliance with section (b) would preclude access to timber that is otherwise subject to harvest consistent with this section, the cutting and removal of trees and other solid wood products for commercial purposes which require either a Timber Harvest Plan or a Non-industrial Timber Management Plan within riparian corridors shall be permitted only as necessary to provide access to such timber.

SECTION V

Subsection (h) of Section 16.20.180 - Design Standards for Private Roads, Driveways and Bridges - of the County Code is hereby amended to read as follows:

(h) In all cases, where road gradients exceed 15 percent, 1 1/2 inches of asphaltic concrete shall be provided. (EXCEPTION: aggregate base and asphaltic concrete may be omitted if a structural section of 4 inch concrete is used.) Where road gradients exceed 10 percent and a high erosion hazard has been identified by field review, oil and screen may be required at the discretion of the Planning Director. Road surfacing shall meet the following standards, based on the road gradient: 0 to 10 percent gradient - 2 inches of drain rock compacted into a 4-inch sub-base of Class II baserock; 10- 15 percent gradient - oil and screenings; greater than 15 percent gradient - 1 1/2 inches asphaltic concrete (EXCEPTION: aggregate base and asphaltic concrete may be omitted if a structural section of 4 inch concrete is used).

Approved
minor
amendment)

SECTION VI

If any section, subsection, division, sentence, clause, phrase or portion of this ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this ordinance. The Board of Supervisors of this County hereby declares that it would have adopted this Ordinance and each section, subsection, division, sentence, clause, phrase, or portion thereof, irrespective of any such

14 July 1999



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

California Coastal Commission
Central Coast Area Office
1725 Front St., Suite 300
Santa Cruz, CA 95060

Received at Commission Meeting

Received at Commission Meeting

JUL 14 1998

JUL 14 1998

From: _____

Dear Commissioners:

I am writing on behalf of the County of Santa Cruz to address issues regarding the County's proposed regulations on logging in riparian zones and the potential effects of these regulations on riparian habitats and biotic communities. From 1992 to 1997, I studied the ecology of riparian systems in the south San Francisco Bay area while conducting doctoral research at Stanford University on the impacts of urbanization on riparian bird and plant communities. Since then, I have continued working on topics related to riparian ecology as an ecological consultant, designing and conducting a study of the use of revegetated gabions by riparian birds, assisting in the design and study of the effects of alternate dredging regimes on riparian birds, and assisting in the design of riparian habitat restoration sites. Given the amount of time I have spent working in the riparian habitats of California's central coast, conducting field research, and studying the results of previously published studies on riparian ecology, I believe that I am qualified to address ecological issues concerning the County's logging regulations.

In this letter I will address several points relevant to these regulations, supporting my statements with relevant citations from the scientific literature. Some have contended that the County's proposed regulations will have significant environmental impacts, as defined by the California Environmental Quality Act (CEQA), and several points regarding alleged adverse impacts of these regulations have been raised. First, I will give an overview of the ecological importance of riparian systems, focusing on the functions and values of these systems and demonstrating why they are worthy of protection by regulations such as those proposed by the County of Santa Cruz. Next, I will discuss the potential effects of logging within riparian zones on these systems, demonstrating why such regulations are necessary. Third, I will address the specific contentions of the timber industry as well as broader CEQA issues and demonstrate that the regulations will have beneficial, not adverse, effects on riparian systems.

Ecological functions and values of riparian ecosystems

Riparian ecosystems have long been recognized for their value to plant and animal communities. Nutrient-rich soils and high water availability support the growth of lush, voluminous vegetation and tall trees (Holstein 1984). In turn, this vegetation provides structural and dietary resources that support numerous wildlife species and very high animal densities. Structural resources take the form of numerous microhabitats that can be exploited by a wide variety of animal species. Riparian vegetation often contains a number of different habitat layers, from plant litter and live ground cover to dense understory shrubs

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and small trees up through the branches of tall, well-stratified trees. Numerous animal species are able to exploit these riparian habitats simultaneously by occupying slightly different microhabitats and foraging in different locations and by different methods, thus minimizing competition for resources. Studies have demonstrated a close relationship between the diversity of habitat layers and avian species diversity (MacArthur and MacArthur 1961, Ohmart 1994). Specifically, structural resources provided by riparian vegetation include breeding sites, roosting sites, hunting and foraging substrates, and cover from predators.

In addition to being stratified vertically, riparian habitats often show a high degree of horizontal heterogeneity that results in the juxtaposition of numerous microhabitats. For example, more flood tolerant, early-successional trees, such as cottonwoods (*Populus* spp.) and willows (*Salix* spp.), are found closest to the stream channel, while less flood tolerant, later-successional oaks (*Quercus* spp.), California bays (*Umbellularia californica*), and other trees are generally found farther from the active channel (McBride and Strahan 1984a). Each of these trees provides different structural and dietary resources to animal communities. Furthermore, natural disturbance such as flooding, erosion, and deposition of sediments promotes horizontal heterogeneity and facilitates the regeneration of shade-intolerant species such as cottonwoods and willows (McBride and Strahan 1984b, Strahan 1984). Because of this vertical and horizontal structural diversity, riparian systems support more wildlife species than any other habitat type in California (Smith 1977) and are critical in the maintenance of high biodiversity elsewhere in North America (Johnson et al. 1977, Knopf 1985).

Whereas structural diversity is important in maintaining high animal diversity, the dense, highly complex nature of much riparian vegetation results in very high animal densities (Mills et al. 1991). Dense live vegetation provides biomass that is used by numerous herbivorous invertebrates, while litter and decaying plant materials support myriad detritivores, both terrestrial and aquatic (Knight and Bottorff 1984). Invertebrate densities are often very high in riparian areas. In turn, these invertebrates support large numbers of terrestrial and aquatic vertebrates, and riparian habitats are extremely important as foraging areas for insectivorous birds during the breeding season and during migration (Stevens et al. 1977, Hehnke and Stone 1979). Dense riparian vegetation also provides abundant food for frugivorous and granivorous animals; in Santa Cruz County, large numbers of birds and mammals feed on the fruits of elderberries (*Sambucus* spp.), oaks, grasses, and herbaceous plants associated with riparian habitats. The shade provided by dense riparian vegetation ameliorates temperatures and maintains humidity in the riparian zone, which is especially important to terrestrial animal species during summer and early fall.

Aquatic systems may be highly dependent on terrestrial riparian vegetation for structural and dietary resources, maintenance of water quality, and shading (Cummins 1974, Knight and Bottorff 1984, Mahoney and Erman 1984). The roots and low, overhanging branches of live riparian trees and shrubs, as well as logs and other dead plant material, provide cover for fish, amphibians, and turtles (Baltz and Moyle 1984). Terrestrial plants provide energy for aquatic systems both directly, in the form of plant litter and detritus, and indirectly, in the

form of terrestrial animals that are preyed upon by aquatic ones (Cummins 1974, Erman 1984, Knight and Bottorff 1984). While some input of plant material and nutrients to streams is necessary for the maintenance of populations of aquatic animals (Baltz and Moyle 1984), input of excessive amounts of litter or sediment may result in turbidity and sedimentation of interstitial space between rocks in the streambed (sealing off microhabitats and reducing habitat quality for spawning fishes) (Rosenberg and Weins 1978). Terrestrial riparian vegetation helps to maintain water quality by trapping sediments in runoff from adjacent upland areas and in floodwaters, and by impeding large-scale erosion (Aubertin and Patric 1974, Groeneveld and Griepentrog 1985). By trapping sediments in floodwaters, riparian vegetation also promotes nutrient cycling, capturing and using nutrients before they can be washed downstream (Faber et al. 1989). This vegetation also shades streams, preventing temperatures from exceeding the thermal limits of temperature-sensitive species (Knight and Bottorff 1984, Mahoney and Erman 1984).

In addition to supporting higher wildlife diversity and densities than other habitat types, riparian habitats in Santa Cruz County support a number of rare and endangered wildlife species that are found exclusively or primarily in these habitats. Stream fishes, including the federally threatened steelhead rainbow trout (*Oncorhynchus mykiss*) and coho salmon (*Oncorhynchus kisutch*), are dependent upon high water quality, clean spawning gravels, and abundant prey, conditions maintained by healthy riparian habitat. Terrestrial and amphibious species dependent upon riparian habitats along streams and around ponds in Santa Cruz County include riparian obligates such as the federally endangered Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*), the federally threatened California red-legged frog (*Rana aurora draytonii*), and California Species of Special Concern such as the foothill yellow-legged frog (*Rana boylei*), western pond turtle, California Yellow Warbler (*Dendroica petechia brewsteri*), and Yellow-breasted Chat (*Icteria virens*). Other riparian obligates include the Common Merganser (*Mergus merganser*), Wood Duck (*Aix sponsa*), Spotted Sandpiper (*Actitis macularia*), Belted Kingfisher (*Ceryle alcyon*), and American Dipper (*Cinclus mexicanus*). Species which are not entirely dependent on riparian habitats but which, in Santa Cruz County, use these habitats extensively, include the Warbling Vireo (*Vireo gilvus*), Winter Wren (*Troglodytes troglodytes*), Wilson's Warbler (*Wilsonia pusilla*), MacGillivray's Warbler (*Oporornis tolmiei*), Song Sparrow (*Melospiza melodia*), and others.

The importance of riparian systems to biotic communities is most pronounced in more arid regions, where riparian systems provide structural and dietary resources not available in drier upland areas. In Santa Cruz County, much of the lowland riparian habitat is quite distinctive compared to adjacent upland habitats, and is therefore extremely important as wildlife habitat. In more mesic areas at higher elevations, streamside vegetation is not as well developed, but it may be floristically or at least structurally different from vegetation on adjacent slopes, providing microhabitats not present in adjacent areas. Even streams in dense coast redwood (*Sequoia sempervirens*) or Douglas fir (*Pseudotsuga menziesii*) forests, which may lack well defined riparian vegetation, provide important habitat for aquatic animals, amphibians, and some birds (such as American Dippers). Likewise, intermittent streams can support riparian vegetation (Ohmart 1994), and such streams occasionally have

well developed riparian vegetation and high wildlife diversity and abundance despite the absence of permanent water. Of course, strictly aquatic species may be absent or present only seasonally in intermittent streams. However, the water table does not have to be too far below the surface for a stream to be intermittent, and deep-rooting riparian tree and shrub species can tap groundwater if the water table is high. As a result, many intermittent streams support the growth of riparian vegetation, as well as attending wildlife diversity and abundance, that can approach that associated with some permanent streams.

Potential effects of logging on riparian ecosystems

The most important impact on terrestrial riparian systems of the logging of riparian woodlands is direct habitat loss. The removal of riparian trees reduces the extent of riparian habitat (i.e., breeding sites, roosting sites, hunting and foraging substrates, cover from predators, and food), resulting in a decline in the abundance of riparian-associated animals in the area being harvested. Generally concurrent with the harvesting of canopy trees is the disturbance or destruction of understory vegetation, ground cover, and leaf litter. Not only does this cause the direct loss of wildlife during harvesting, it also reduces the amount of available habitat for a number of species. In addition to reducing the number of individual riparian animals in an area, logging of riparian woodlands may result in the direct loss of species from an area as well. Some wildlife species are highly dependent on snags for nesting or cover (Gaines 1977), very tall or stout trees to support the nests of larger birds, such as raptors (Bednarz and Dinsmore 1982), or the resources provided by individual tree species (Rice et al. 1984). If logging removes these resources from the riparian zone, the species dependent upon these trees may be lost from the system as well. At the same time, species associated with more open habitats will invade the newly harvested area. Many of the animal and plant species associated with disturbed or open habitats, such as those that might colonize an area after logging, are more common and widespread than riparian species they might replace. Nevertheless, some riparian species, such as the Song Sparrow and California Yellow Warbler, will make use of the resultant edge habitat for foraging or nesting if vegetation regrowth occurs quickly.

Other changes in terrestrial riparian animal communities result indirectly from logging. The loss of either riparian or upland trees adjacent to the riparian zone creates an ecotone or habitat edge. Edges often support high numbers of animal species and individuals due to the juxtaposition of different habitat types and the lush growth of vegetation that often occurs at edges due to high light availability (Leopold 1933, Willson 1974). However, many of these species are widespread and more abundant than riparian species that used the riparian habitat prior to logging. Therefore, while there may be an increase in local diversity at an edge, this increase is often the result of the addition of regionally common species to the system, possibly at the expense of rarer species.

Edges are also associated with several processes potentially detrimental to riparian wildlife. Predation on birds' nests is higher near edges than deeper in forest interiors, as predators from adjacent lands may penetrate only so far into the riparian forest in search of prey

(Wilcove et al. 1986, Yahner 1988). Brood parasitism by Brown-headed Cowbirds (*Molothrus ater*), which lay their eggs in the nests of a number of bird species at the expense of the hosts' reproductive efforts, is also higher near edges than in forest interiors (Brittingham and Temple 1983, Temple and Cary 1988); such brood parasitism has been extremely damaging to populations of several riparian-obligate bird species in California (Thelander 1994). Invasions by non-native plant species are often promoted by disturbance (Elton 1958, Mooney and Drake 1986), and these exotics may invade the riparian woodland via the logged area and compete with riparian species, some becoming pervasive in riparian zones at the expense of native plants (Anderson et al. 1977). Because many non-native plants are deficient in the structural or dietary resources required by native animals, invasion of riparian zones by non-native plants may result in a decline in the diversity and abundance of native animal species (Mills et al. 1989, Ohmart 1994).

Some animal species are area-dependent, requiring large tracts of undisturbed woodland habitat and avoiding smaller patches, or inhabit only the interiors of forests, far from edges (Blake and Karr 1984, Anderson and Ohmart 1985, Temple and Cary 1988). Logging may reduce the width of a riparian woodland, possibly reducing habitat quality for area-dependent species. As a riparian woodland becomes narrower, more and more of the woodland becomes edge habitat, until eventually, very narrow riparian zones consist entirely of edge habitat that is subjected to the impacts of increased predation, brood parasitism, competition, and invasion by nonnative species. Studies of riparian bird communities demonstrate that bird diversity and the abundance of many species, including a number of riparian-associated species, decreases as the width of the forested riparian corridor decreases (Stauffer and Best 1980, Kilgo et al. 1998, Rottenborn 1999). Therefore, logging in a riparian forest is expected to result in a decline in the diversity and abundance of riparian-associated terrestrial animal species.

Logging in riparian forests can have adverse impacts on aquatic systems as well, even if the bed and banks of the stream are not impacted directly. Logging would result in a reduction of plant material, such as litter or coarse woody debris, available to stream ecosystems. This plant material provides both energy and structural resources for aquatic organisms, and if lost, the species composition of aquatic invertebrate communities could be altered significantly (Hawkins and Sedell 1981). The loss of riparian vegetation may compromise the ability of the riparian corridor to buffer the aquatic system from inputs of nutrients and sediments in runoff from adjacent lands (Mahoney and Erman 1984). Studies have demonstrated that a vegetated buffer as narrow as 10 meters wide can trap most of the nutrients and sediments in surface runoff before they reach a stream (Aubertin and Patric 1974). However, a broader buffer may be necessary to absorb sediments and nutrients in the event of a very heavy downpour, when surface water may pass through a riparian buffer too quickly for vegetation and litter to absorb sediments. Studies conducted in northern California found that logging had significant effects on stream invertebrate communities, and that vegetated buffers 30 meters or more wide were necessary to fully ameliorate the impacts of logging (Erman et al. 1977, Roby et al. 1977, Newbold et al. 1980). The loss of riparian vegetation may also reduce the ability of the riparian corridor to collect sediments from floodwaters moving down the channel.

Logging can also make more sediment available to be washed into streams. Soil and leaf litter is churned up and loosened during harvesting, and the loss of a shading canopy dries the substrate and reduces leaf litter, facilitating the transport of sediments (Faber et al. 1989). The loss of vegetation also facilitates soil erosion, not only because fewer roots are present to hold soil in place, but also because the impact of raindrops on the soil itself is much greater in the absence of vegetation (Faber et al. 1989). Therefore, logging of riparian forests is expected to increase the availability of sediments to be input to streams in surface runoff and to reduce the ability of the riparian vegetation to buffer streams from this sedimentation. As discussed previously, sedimentation of streams results in turbidity, closure of interstitial space between rocks in the streambed (sealing off microhabitats and reducing habitat quality for spawning fishes), and changes in stream invertebrate biota (Rosenberg and Weins 1978). Heavy sedimentation may result in the loss of suitable spawning habitat for anadromous fishes such as the federally threatened steelhead rainbow trout and coho salmon. The loss of streambank vegetation would also reduce the amount of shade the stream receives, increasing water temperature and reducing dissolved oxygen, which impacts fishes and other aquatic species (Swift and Messer 1971, Ringler and Hall 1975, Baltz and Moyle 1984).

The impacts of logging may be significant along intermittent and ephemeral streams as well as permanent streams. Although aquatic animal communities may not be as diverse along intermittent and ephemeral streams, and anadromous fishes may not spawn in these streams, the input of sediments and woody material to these streams during the wet season can have effects felt throughout downstream areas. The impacts of logging on the terrestrial components of riparian ecosystems may not be as great in areas with poorly developed riparian vegetation (e.g., under a dense coniferous forest canopy) as in areas with more distinctive riparian plant communities. However, logging in these areas will still impact aquatic systems through sedimentation, and these impacts will be translated to all areas downstream.

Response to concerns about ecological impacts of these regulations

Several issues have been raised regarding potentially adverse ecological impacts resulting from the enactment of the County's regulations. While County and Coastal Commission staff have responded adequately to these issues, I will briefly address them below.

Harvesting of diseased Monterey pines (*Pinus radiata*) is not necessary to maintain healthy riparian ecosystems. Monterey pines are found in and adjacent to some riparian areas, but they are not a regular component of riparian woodlands in Santa Cruz County. Furthermore, standing dead and dying trees are used by a number of wildlife species, particularly cavity-nesting birds (Gaines 1977), and are important components of riparian habitats.

Harvesting riparian trees to prevent forest fires is not necessarily desirable from the perspective of maintaining the integrity of natural riparian systems. Whereas lowland

riparian systems regenerate largely via the continuous process of erosion and deposition (McBride and Strahan 1984b, Strahan 1984), some upland riparian systems, particularly in areas where erosion and deposition are constrained by topography, rely on other means for allowing regeneration. Fire is one of the natural means by which riparian woodlands may regenerate and habitat heterogeneity may be maintained. Although severe fires may result in the sedimentation of streams, such adverse impacts to aquatic habitat may also result from harvesting of riparian trees for purposes of fire suppression.

The contention was made that harvesting of riparian trees would be necessary to prevent the unchecked growth of native riparian vegetation from resulting in the dewatering of streams. Evapotranspiration from riparian plants does result in the uptake of water from the soils. However, many riparian plants, such as cottonwoods and willows, are deciduous and take up very little water outside the growing season. Granted, these plants take up the most water during the dry season (spring and summer), but they also reduce evaporation from the stream and soil surface through shading (Davenport 1977). In addition, riparian vegetation reduces the velocity of floodwaters, facilitating ground-water recharge (Faber et al. 1989). Furthermore, the growth of these plants is not necessarily "unchecked". Disturbances such as erosion, flooding, treefalls, and fire remove some riparian vegetation by natural means (Davis et al. 1989, Stromberg et al. 1993). As discussed previously, healthy riparian forests are important in maintaining high-quality fisheries habitat. Nevertheless, if the harvesting of some riparian habitat for purposes of streamflow augmentation were proposed, the decision to cull riparian vegetation used by large numbers of terrestrial species for the benefit of a few aquatic species should be made only after all the costs, benefits, and goals of such management are carefully considered.

A concern has been raised over the perceived need to harvest riparian trees so that such trees do not fall into streams, causing log jams and erosion. Logs that have fallen into streams provide food for stream invertebrates, which then provide food for aquatic and terrestrial vertebrates (Knight and Bottorff 1984, O'Connor and Ziemer 1989). Such logs, as well as any log jams that might form, also provide cover for numerous aquatic animals (Baltz and Moyle 1984) and promote the formation of deep pools (O'Connor and Ziemer 1989), which are valuable to many aquatic vertebrates. Erosion that might result from log jams represents a natural disturbance that facilitates the regeneration of riparian vegetation and promotes habitat heterogeneity. However, log jams, including those that form following fire, also retain sediments behind them, slowing the release of sediments and helping to maintain water quality in downstream areas (Barro et al. 1989).

The contention that harvesting riparian trees is necessary to prevent a significant decrease in plant and animal species diversity is not supported in the literature. While some species associated with early-successional habitats might not be present in old-growth riparian woodland, natural disturbances such as flooding, erosion, treefalls, and fire promote riparian habitat regeneration and maintain habitat heterogeneity (Davis et al. 1989, Stromberg et al. 1993). In addition, as discussed above, the logging of riparian habitats may have adverse impacts on a number of regionally rare or riparian-obligate species while favoring more common, widespread species, reducing diversity on a regional scale. The adverse impacts

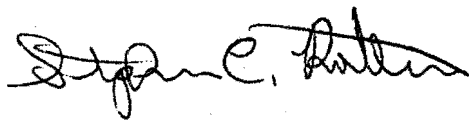
of logging on plant and animal diversity in both the terrestrial and aquatic components of the riparian ecosystem are expected to outweigh any benefit to diversity resulting from logging.

Finally, there was a concern that, in the absence of logging, riparian forests would become unhealthy, with stunted growth of vegetation, too much shade, and too little woody material for fish habitat. As was previously discussed, natural disturbance processes maintain heterogeneity sufficient to support the very high biodiversity associated with natural, unlogged riparian systems. Riparian plant and animal communities have evolved under natural conditions and therefore function optimally under, and are best maintained by, such conditions.

Under CEQA, a significant environmental impact, as it pertains to biotic communities, is defined as one that conflicts with adopted environmental plans and goals of the community, interferes substantially with the movement of any resident or migratory fish or wildlife species, substantially diminishes habitat for wildlife or plants, or substantially affects an endangered, rare, or threatened species of animal or plant or the habitat of the species. The discussion above demonstrates that (1) riparian habitats are very important in maintaining high biodiversity, large populations of riparian animals, and populations of rare and riparian-obligate species in Santa Cruz County; (2) logging within riparian habitats is expected to have significant adverse impacts on both terrestrial and aquatic components of riparian ecosystems; and (3) the regulations restricting logging within riparian habitats proposed by the County of Santa Cruz are beneficial, not detrimental, to riparian ecosystems. Therefore, these regulations will not have a significant impact on riparian resources as defined under CEQA, and they will further previously adopted policies of the County regarding riparian protection and maintenance of biological diversity. Furthermore, enactment of these regulations will benefit riparian systems on a much larger scale simply by protecting what little riparian habitat remains. Current estimates of the amount of riparian woodland present in California, compared to pre-settlement times, range from 5-10% (Smith 1977, Katibah 1984). Therefore, any protection of extant riparian habitat benefits populations of riparian-associated plants and animals on a regional scale.

I hope that you find these comments useful in your consideration of this matter. Thank you for allowing me the opportunity to address these issues.

Sincerely,



Stephen C. Rottenborn, Ph.D.
Wildlife Ecologist

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EDUCATION

- 1992-1997 Ph.D., Department of Biological Sciences, Stanford University, Stanford, California. National Science Foundation Graduate Fellow. Dissertation research emphasized riparian ecology and impacts of urbanization on biodiversity.
- 1988-1992 B.S., Department of Biology, College of William and Mary, Williamsburg, Virginia. Graduated *summa cum laude*, Phi Beta Kappa, with Highest Honors for senior thesis on flocking and foraging behavior of shorebirds.

PROFESSIONAL EXPERIENCE

- 1997-present Wildlife Ecologist, H. T. Harvey & Associates, Alviso, California. Assess ecological impacts, write biotic impact sections for environmental impact reports and other technical reports. Assist in riparian and wetland restoration design. Design mitigation and management plans for rare wildlife species. Conduct field surveys for a variety of wildlife taxa. Conduct research on effects of specific types of anthropogenic disturbance on wildlife to improve management techniques and mitigation of impacts.
- 1989-1997 Independent Ecological Consultant, Virginia and California. Assessed ecological impacts, monitored populations of rare species. Conducted surveys for birds, butterflies, plants, and amphibians.

AWARDS AND HONORS

- National Science Foundation Graduate Fellow, 1992-1995.
- Outstanding Biology Major, College of William and Mary Class of 1992.
- Phi Beta Kappa, College of William and Mary, 1991.
- Phi Sigma Biology Honor Society, 1991.

RESEARCH EXPERIENCE

- 1997-present H. T. Harvey & Associates, Alviso, California. Designed and conducted a study of the value of gabion revegetation to breeding birds. Helped design and study the impacts of various dredging regimes on wetland bird communities, and the effects of dredge spoil disposal on seabirds and marine mammals.
- 1992-1997 Doctoral Research, Department of Biological Sciences, Stanford University. Research Advisor: Prof. Paul R. Ehrlich.
 - Effects of urbanization, land use, and habitat alteration on riparian bird and plant communities.
 - Contribution of riparian systems to landscape-level biodiversity.
 - Nest site selection and reproductive success of urban-nesting Red-shouldered Hawks.
 - Social, economic, and environmental implications of floodplain development.
- 1990-1992 Senior Honors Research, Department of Biology, College of William and Mary. Received Highest Honors.
 - Foraging and flocking strategies of shorebirds in agricultural fields.
 - Shorebird and wetland conservation.
- 1989-1992 Research Assistant, Department of Biology, College of William and Mary.
 - Distribution, habitat associations, and breeding phenology of breeding birds on Virginia's barrier islands.

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PUBLICATIONS AND PRESENTATIONS

- Rottenborn, S. C. 1996. The use of coastal agricultural fields in Virginia as foraging habitat by shorebirds. *Wilson Bulletin* 108:783-796.
- Rottenborn, S. C. 1999. Predicting the impacts of urbanization on riparian bird communities. *Biological Conservation* 88:289-299.
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- Rottenborn, S. C. (submitted to *Journal of Raptor Research*). Nest-site selection and reproductive success of Red-shouldered Hawks in central California.
- Rottenborn, S. C. The contribution of riparian bird communities to the avifauna of an urban landscape in central California, symposium paper presented at the 1996 meeting of the Cooper Ornithological Society, San Diego, California.
- Rottenborn, S. C. Cover use and flocking behavior of shorebirds foraging in agricultural fields, symposium paper presented at the 1992 meeting of the Virginia Society of Ornithology, Williamsburg, Virginia.

Also authored species accounts for *The Virginia Breeding Bird Atlas* (eight accounts), *Atlas of the Breeding Birds of Santa Clara County, California* (40+ accounts), and *Vagrant and Scarce Migrant Bird Species in California* (12 accounts) and wrote six articles for the Virginia Society of Ornithology's *Raven*.

MANUSCRIPTS IN PREPARATION

- Rottenborn, S. C. (in prep.). The impacts of riparian habitat degradation on the contribution of riparian bird communities to an urban avifauna.
- Rottenborn, S. C. (in prep.). The effects of adjacent land use and urbanization on riparian tree and shrub communities.
- Rottenborn, S. C. and J. M. Reed (in prep.). Avian indicators of seral stage in riparian habitats of central Nevada.
- Rottenborn, S. C. and J. M. Reed (in prep.). Relationships between seral stage classes and vegetation characteristics important to riparian birds in central Nevada.
- Rottenborn, S. C. and J. M. Reed (in prep.). A comparison of point and transect methods for censusing birds and assessing bird-habitat relationships in riparian habitats.
- Rottenborn, S. C. (in prep.). Waterbird use of agricultural fields. Chapter in a book on birds of the Eastern Shore of Virginia.
- Bousman, W. G. and S. C. Rottenborn, eds. (in prep.). *Atlas of the Breeding Birds of Santa Clara County, California*.

ADVISORY AND EDITORIAL POSITIONS

- Co-editor, *Atlas of the Breeding Birds of Santa Clara County, California*, 1998-present.
- Regional Editor, American Birding Association's *Field Notes*, 1998-present.
- Member, California Bird Records Committee, 1997-present.
- Member, Scientific Advisory Board, San Francisco Bay Bird Observatory, 1999-present.
- Member, Board of Directors, Coyote Creek Riparian Station, 1994-1999.
- Chairman, Research Committee, Coyote Creek Riparian Station, 1994-1995.

TEACHING EXPERIENCE

- 1998 Lecturer in Biological Sciences: Baylands Bird Ecology, Stanford University Continuing Studies Program. Lectured, led field trips.
- 1996 Co-Instructor (with Dr. Paul Ehrlich and Dr. Donald Kennedy): Biology of Birds, Stanford University. Lectured, led field trips, organized research projects.
- 1993-1994 Teaching Assistant: Introductory Biology, Principles of Ecology, and Conservation Biology, Stanford University. Led laboratory exercises, discussion sections, and field trips for these three courses.
- 1991-1992 Teaching Assistant: Ornithology, College of William and Mary. Led laboratory exercises, discussion sections, and field trips for two courses.

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September 14, 2000

California Coastal Commission
Central Coast Area Office
1725 Front Street, Suite 300
Santa Cruz, CA 95060

Re: Santa Cruz County Local Coastal Program
Major Amendment No. 1-00

Dear Members of the California Coastal Commission:

On behalf of the County of Santa Cruz ("County"), we are submitting the attached letters by Fred Euphrat, Ph.D., and Terry D. Roelofs, Ph.D., in support of the proposed amendments to the County's General Plan/Local Coastal Program Land Use Plan and implementing zoning ordinance amendments ("proposed amendments") that will be considered by the California Coastal Commission ("Commission") as part of Major Amendment No. 1-00 on October 11, 2000.

The timber industry has repeatedly asserted that the proposed amendments, particularly the proposed riparian corridor regulation, will have adverse environmental impacts. The attached letters, along with numerous other materials in the record before the Commission, fully support the County's determination that the proposed amendments will be environmentally beneficial. In addition, we would like to emphasize that the proposed riparian corridor regulation applies only to commercial timber harvesting requiring a timber harvest plan. Thus, the regulation would not preclude a property owner from undertaking tree removal within a riparian corridor as part of a fisheries enhancement project or for other non-commercial purposes. Nor does it apply to logging

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California Coastal Commission
September 14, 2000
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that does not require a timber harvest plan, such as the removal of hazard trees and dead, diseased or dying trees, and logging for fire safety, road construction, utility maintenance, and emergency purposes. See 14 Cal. Code Regs. §§ 1038, 1052, 1104.1.

Thank you for your consideration of this matter.

Very truly yours,

SHUTE, MIHALY & WEINBERGER LLP

By: 

FRAN M. LAYTON

Attorneys for County of Santa Cruz

FML:fs

cc: Samuel Torres, Jr., County Counsel

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Terry D. Roelofs, Ph.D.
120 Pacific Lumber Camp Road
Freshwater, CA 95503

September 11, 2000

TO: Fran M. Layton
Shute, Mihaly & Weinberger LLP
396 Hayes Street
San Francisco, CA 94102

Terry D. Roelofs
FROM: Terry D. Roelofs, Ph.D.

SUBJECT: Letter Report Regarding Santa Cruz County Riparian Corridor Regulations

You have asked me to address how Santa Cruz County Ordinance No. 4571, restricting timber harvesting adjacent to permanent and intermittent streams, relates to the County's goals of protecting local populations of coho salmon and steelhead trout. I have reviewed the Ordinance, as well as the County reports supporting the Ordinance and letters submitted by parties opposed to the Ordinance. My conclusions are set forth below.

I am a professor of Fisheries at Humboldt State University, where I have taught courses in the Department of Fisheries since 1970. I specialize in the biology and ecology of salmonids, including coho salmon found along the coast of central and northern California. My curriculum vitae is attached. I have served on the biological advisory boards of both California Trout and Oregon Trout, the California Citizens Advisory Committee on Salmon and Steelhead (an advisory committee for the California Legislature), as the Director of Research for the North Umpqua Foundation (a conservation organization on Oregon's North Umpqua River), and as president of the California/Nevada Chapter of the American Fisheries Society.

I have directed or participated in field research projects with graduate students and agency personnel in streams throughout northern California and Oregon for 29 years. Currently I am working with funding from the National Marine Fisheries Service on a project with several graduate and undergraduate students and two colleagues studying the relationships between stream habitat conditions and coho salmon survival, growth, and reproduction in Redwood National and State Parks. My research includes investigating

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the effects of forest and rangeland management on anadromous fish and their habitat in northern California streams. Much of my research has focused on the impacts of habitat degradation on salmonids. I have published numerous articles and book chapters on this work.

Contrary to the claims of the timber industry, there is broad scientific agreement that timber harvesting within riparian zones is potentially detrimental to salmonids and other fisheries because it reduces shade, increases water temperature, increases sediment delivery to streams, and reduces large wood pieces, an important element of stream complexity.¹ Based on this scientific consensus, riparian buffer zones have been adopted throughout California and the West. For example, the Forest Ecosystem Management Assessment Team (FEMAT) scientists' report² recommended streamside buffer zones on fish-bearing streams as the wider of two measures: (1) two site potential tree heights (twice the average maximum height of trees at a particular site), or (2) 300 feet. Under the Northwest Forest Plan, these buffers may be modified only if watershed analysis demonstrates that modification is needed to attain ecosystem management objectives. Spence et al. (1996) recommend no-cut buffer zones on all permanent and intermittent streams in basins supporting salmonids (salmon and steelhead) equal to 75 percent of a site potential tree height. The Pacific Lumber Company (PALCO) Habitat Conservation Plan (HCP), signed by several federal and state agencies and PALCO in 1999, established 100-foot no-cut zones on class I streams (fish-bearing streams) and 30-foot no-cut zones on class II streams (streams supporting non-fish aquatic life). The HCP applies to over 200,000 acres of PALCO redwood and Douglas fir forests in Humboldt County.

In contrast to the buffers at issue in the riparian regulations described in the previous paragraph, the 30-to-50-foot buffer zones adopted by Santa Cruz County are relatively narrow and provide the minimum buffer necessary to protect streams and fisheries from the adverse impacts of timber harvesting.

The points raised by opponents of the Ordinance are often only tangentially related to the question of the environmental benefits of riparian buffers. For example, it is undisputed that factors other than modern logging, such as ocean conditions (including predation, commercial and sport fish harvesting), urbanization, farming, dams and water diversion,

¹Spence et al. 1996. An ecosystem approach to salmonid conservation. TR-4501-96-6057. ManTech Environmental Research Services Corp. Corvallis, Oregon.

²Forest Ecosystem Management. 1993. An ecological, economic, and social assessment. USDA Forest Service. Portland, Oregon.

road construction, and past logging practices all adversely affect coho salmon and steelhead trout. This does not mean, however, that logging in riparian corridors under the existing California Forest Practice Rules has no potential adverse impacts on fisheries. Welsh et al. (2000),³ in a book chapter that I co-authored, critiqued the failure of the current California Forest Practice Rules to protect many stream organisms, including salmon and steelhead, in the redwood forest region. I have submitted a declaration in federal district court in a challenge to the current California Forest Practice Rules in which I state my conclusion that the current Rules fail to protect coho salmon from "take," as defined in the Endangered Species Act.

Each additional tree that is removed immediately adjacent to a stream can decrease shade and increase water temperature. While fish populations may exist in streams with higher than optimum temperatures, there is scientific consensus that lower temperatures benefit coho salmon and steelhead and that increased shade provides greater insulation and lowers overall stream temperatures. Even assuming that reduced canopy retention and excessive water temperatures are not the primary limiting factors preventing restoration of damaged fisheries, they are certainly important factors and have contributed to the cumulative impacts on fisheries from numerous sources.

Likewise, although there is sediment delivery resulting from other sources, logging has been repeatedly shown to increase sediment delivery to streams. In addition to precluding harvest-related sediment within the riparian corridor, riparian buffers reduce surface erosion sediment that reaches streams by providing a vegetative barrier that slows down sediment delivery, particularly during storm events. The County's proposed road surfacing regulations will also help reduce sedimentation of streams by requiring the paving or surfacing of unpaved roads, which are a significant contributor of sediment to streams.⁴

³Welsh, H.H., Jr., T.D. Roelofs, and C. Frissell. 2000. Aquatic ecosystems of the redwood region. ¶. 165-199. In (R.F. Noss, editor), *The Redwood Forest: History, Ecology, and Conservation of the Coast Redwood*. Island Press. Covelo, California.

⁴Furniss, M.J., T.D. Roelofs, and C.S. Yee. 1991. Forest roads: Design, construction, and maintenance to protect anadromous fish habitats. ¶. 297-323. (W.R. Meehan, editor). *Effects of forest and rangeland management on anadromous fishes and their habitat*. Special Publication Number 19, American Fisheries Society. Bethesda, Maryland.

Contrary to the claims of the timber industry, I am aware of no evidence that the preservation of intact riparian corridors has adverse impacts on fisheries by creating an imbalance of large and small trees or conifers and hardwoods. An "unmanaged" natural forest will provide adequate food supply for fish, and management to increase hardwood growth is not necessary to achieve this goal. I am unaware of any study showing that streams in old-growth forests do not contain an adequate food base to sustain healthy fish populations.

Opponents of the Ordinance also suggest that well managed timber harvesting within riparian corridors can benefit fisheries. While it is conceivable that limited and careful single-tree harvesting designed to enhance the fisheries could be beneficial, there is no evidence that current logging practices under existing California Forest Practice Rules achieve these benefits. Any minor hypothetical benefit, moreover, is more than outweighed by the serious, well documented risks created by timber harvesting within riparian corridors and the well established benefits of no-cut riparian buffer zones. In any case, the County's Ordinance permits logging for non-commercial purposes. Thus, a Santa Cruz County property owner, under the Ordinance, may undertake tree removal within a riparian corridor as part of a fisheries enhancement project rather than for commercial timber-harvesting purposes.

Murphy (1995)⁵ concluded his extensive review of forestry impacts on freshwater habitats of salmon and steelhead: "Buffer zones are probably the most important tool for protecting critical riparian and aquatic processes. . . . To fully protect fish-bearing streams, buffers need to provide all the processes that create and maintain fish habitat, particularly shade, stream bank integrity, and recruitment of large woody debris." These are exactly the goals of the Santa Cruz Ordinance for streamside buffers.

In sum, it is my professional opinion that the existing and proposed County riparian corridor regulations will benefit aquatic organisms, including coho salmon and steelhead trout, and will provide more protection to these resources than timber harvesting permitted under the existing California Forest Practice Rules.

⁵ Murphy, M. L., Forestry Impacts on Freshwater Habitat of Anadromous Salmonids in the Pacific Northwest and Alaska -- Requirements for Protection and Restoration, NOAA Coastal Ocean Program Decision Analysis Series No. 7, NOAA Coastal Ocean Office, Silver Spring, Md., 156 ¶. (1995).

Curriculum Vitae

Terry D. Roelofs

EDUCATION

B.S. Michigan State University 1965 (Fisheries)

M.S. University of Washington 1967 (Civil Engineering)

Ph.D. Oregon State University 1970 (Fisheries)

POSITIONS

Alaska Dept. of Fish and Game, Seasonal Aide summers of 1962, 1963, and 1964.
Humboldt State University assistant, associate, and professor of Fisheries from 1970 to present.

AWARDS AND HONORS

Graduated "with honor", Michigan State University
California Trout "Streamkeeper" award, March 1977
Meritorious Performance Cash Award, Humboldt State University, May 1986
American Fisheries Society award for Excellence in Fisheries Education (first recipient) presented in Toronto, Canada, September 1988

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Fran Layton
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13 Sep 2000

Re: County of Santa Cruz Proposed Timber Harvest Ordinances

Dear Ms. Layton,

You have retained my services on behalf of the County of Santa Cruz to review the County's proposed timber harvest regulations that restrict logging adjacent to perennial and intermittent streams and that impose new road surfacing standards. It is my opinion that the proposed regulations will have a long-term benefit to the County in terms of precipitation and biodiversity. The hydrologic improvements to the stream system will be measurable increases in woody debris and fog drip. These elements will improve the quality and quantity of in-stream and near-stream habitat.

In response to your specific questions regarding the comments submitted in opposition to the Santa Cruz County Ordinances, this letter responds to the following arguments:

1. Water shortage problems will be exacerbated by not cutting in riparian corridors;
2. The effects of not cutting larger redwoods will be to decrease riparian forest density and increase its average height, thus resulting in less shade and decreased quality of detritus and food supply for coho.
3. By restricting harvesting, adverse effects of old logging will not be cleaned up nor will species diversity associated with secondary succession be allowed to occur.
4. Allowing trees to fall randomly into channels will create greater sedimentation and road problems than a combination of timber harvesting and judicious placement of woody debris;
5. A no-cut zone will result in increased forest fires; and
6. Increased paving from roads will increase erosion by concentrating and diverting water flows differing from the natural drainage pattern.



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I respond to these arguments using my expertise in forestry and hydrology, and information from the literature. These responses are not meant to be the definitive treatment of the subject, but to identify the key errors in arguments which oppose the County's proposed timber harvest restrictions. References indicate a body of literature, and are not intended to be exhaustive.

In all cases, recall that the processes of redwood forest succession takes thousands of years. Analysts will choose the time scale most beneficial to their point of view. Thus we may be asked to compare short-term impacts with long-term benefits. In addition, we are asked to compare monetary, environmental, biological and intangible costs and benefits. There are no firm metrics for this kind of comparison, and analysts must offer cogent, causal arguments for impact at the short-term, medium term and long-term level.

To restate the proposition of the County, the proposed Santa Cruz County Ordinances (Ordinances) would be in addition to existing and future State of California Forest Practice Rules (FPR's). The Ordinances mandate 50 foot setbacks of no commercial timber harvest (no-cut zones) along perennial streams, and 30 foot no-cut zones on intermittent streams. These no-cut zones will create old-growth forests that are more than 100 feet wide on perennial and more than 60 feet wide on intermittent streams throughout the county. The no-cut Ordinances do not affect zones away from streams nor do they exclude cutting of hazard trees. A separate amendment to the County code requires road rocking and surfacing which may also affect the no-cut zones and other areas hydrologically linked to the stream network.

Rebuttals to arguments against the County Ordinances:

- Water shortage problems will be exacerbated by not cutting in riparian corridor.

It is true that extensive removal of streamside vegetation, particularly during months with abundant sunshine and low flows, increases the total amount of water in streams. In the case of selection logging adjacent to streams in the coastal zone, however, it is not apparent that there will be a significant effect on water yield. There are two reasons for this: in the redwood region, an abundance of large trees increases the quantity of fog drip during the droughty summer months, and the expected increase in transpiration from a lack of logging will not be enough to create significant changes in streamflow.

Large trees in fog zones are active collectors and distributors of precipitation during summer, with inputs up to 100 mm per day (Sawyer et al. 2000). Dawson (1993) found that 8-34% of redwoods' water use and 6-100% of understory vegetation's water use was derived directly from fog drip. Removing trees from

the stream zone reduces total fog drip by the elimination of collecting surfaces, and thus reduces total precipitation. The cumulative water use of overstory and understory plants may ultimately be dependent on the frequent and abundant water derived from fog, maintaining the humid understory and the vigor of the fog-collecting canopy itself. The removal of key trees in streamside zones may result in less, not more water in streams.

The difference in quantities of streamflow derived from forests managed with light selection and no-cut are insignificant. Rothacher's (1970) work in Oregon Douglas-fir forests found no significant increase in water yield between no-cut and selection less than 30%. Rapid succession and competition for water and light probably account for the lack of effect. Consider that, in a continuous forest, trees compete and do not transpire water at their full biological potential; when a single tree or multiple trees are removed, the surrounding trees quickly acquire the newly available resources. While the FPR's have, in the past, allowed removal of more than 30% of vegetation from stream zones, present rules for impaired watersheds require retention of at least 85% of the overstory within 75 feet of perennial streams. The County's timber harvest restrictions will have a negligible adverse effect on water supply as compared to the existing FPR's.

- The effects of not cutting larger redwoods will be to decrease riparian forest density and increase its average height, thus resulting in less shade and decreased quality of detritus and food supply for coho.

This issue must be considered on the scale of time. The short, dense forest of conifers and riparian species that grows following harvest does provide shade and debris, but it provides far less significant cooling and habitat than the mortality of large trees in a streamside zone. Trees that fall into streams will provide significant and connected close shade, food sources for the stream and habitat elements. Large woody debris in the stream creates significant numbers of plunge pools and backwater pools, in-stream habitats that are cool due to both depth and cover (Bilby and Ward, 1991). Large trees derived from the Ordinance will create better and longer-lasting habitat than the mortality of the overdense, small trees associated with harvest.

An additional point is that maintaining a continuous canopy cover has a significant fog drip benefit to the understory (Dawson, 1993), resulting in more vigorous and dense streamside vegetation, particularly valuable for coho salmon, which favor cover near banks.

A third consideration is the effect of cutting on the residual forest. Surfleet and Zierner (1993) found that harvesting increased addition of woody debris into streams because of blowdown, particularly of Douglas-fir. Thus one could easily state that maintaining streamside stands in an intact condition is the best

management approach for shade because even limited harvest has feedback effects leading to greater openings than anticipated.

- By restricting harvesting, adverse effects of old logging will not be cleaned up nor will species diversity associated with secondary succession be allowed to occur.

Species diversity will be continued with succession... trees will fall over, and succession will occur through gap-phase processes. As is the case today, the rest of the landscape will be in early successional phases, with the old-growth concentrated in stream zones, parks and reserves. Succession will continue in the stream zones at a natural level: river processes will undermine some trees, some trees will senesce, some trees will blow down, and landslides will affect the zones. All of these processes will set back the ecological clock to maintain a pattern of young patches within a forest of increasingly older average age.

Species diversity for terrestrial animals and avifauna will also be affected by the Ordinance. The total anticipated acreage of the County within buffer zones will be far more than today, though far short of the 56-72% old-growth estimated to be present in a true uncut forest (Oregon Douglas-fir forest data) (Bonnicksen, 1994). The County's choice in establishing no-cut zones in corridors will enhance the value of streamside habitat significantly. While not perfect, those corridors provide connectivity between habitats, allowing species, particularly larger mammals and rodents, to travel under and within a largely continuous canopy. Similar corridors have been recommended connecting reserve areas and key habitats in biodiversity conservation projects around the world (Noss and Cooperrider, 1994). The old forest will also provide old-growth habitats for species not available in young forests in lichens and mosses, in old tree tops, and in dead trees, both standing and fallen. The Federal Forest Ecosystem Management Team (1993) notes that there are 1,098 species, not including insects, "closely associated with late-successional forests."

Adverse effects of old logging will still be available to be repaired by state and Federal money sources. Logging is not the only way to get heavy equipment into stream zones!

- Allowing trees to fall into channels randomly will create greater sedimentation and road problems than a combination of timber harvesting and judicious placement of woody debris.

Trees in the stream catch much more sediment than they create. O'Connor and Harr (1990) note that coarse woody debris is critical to the morphology of streams, and that it is capable of storing sediment volumes equivalent to 10 years average annual bedload transport. Perkins (1989) describes the utility of large wood and

debris for stabilizing landslide masses in the stream channel. Maser and Sedell (1994) point out that the orientation of random logs is suitable for energy dissipation, thus reducing potential erosion. This thesis is echoed in the data of Bilby and Ward (1991) which show that streams in old-growth forests have a significant abundance of plunge pools, which dissipate the energy of flowing water. It appears, from the literature, that the presence of trees in a stream, even when randomly placed, is suitable for storing extremely large quantities of sediment, armoring banks, and reducing the flowing energy of water. There is greater benefit from a fallen tree in a stream than the impact of the relatively small, short lived sedimentation source created from its falling.

Judicious timber harvesting may have an unintended effect of windfall, further opening the canopy and generating downed wood (Surfleet and Zeimer, 1993). While it is undeniable that careful placement and securing of logs and rocks can create good habitat, it is expensive and short-term, relative to the strategy of managing streamside zones with old growth conditions and natural, gap-phase succession.

In terms of impacts on roads and streamside structures, the large trees which will fall in these forests will be relatively immobile, certainly less mobile on the average than wood derived from timber harvest areas. Stumps are attached to the logs. Fallen trees are large relative to the streams. Downed logs bridge streams, often out of the flow. Long boles are held stable by surrounding, standing trees, and downed trees' root systems are frequently still attached to the ground. Culvert problems will not necessarily increase, due to less slash and windthrow in the stream zones. In any case, with either the Ordinances or the FPR's, most culverts on perennial streams are inappropriate to pass significant woody debris, and long term planning will be necessary to replace culverts over time.

Many places already have bridges, which should be largely adequate to pass most trees that float out. Things that float are things that are old, soft, broken up, short. The vast majority can be passed by a bridge or a well-designed culvert, preferably without a trash rack, but rather a 'debris turner', vertical steel bars designed for this purpose. A commitment to long term management of these areas as old-growth also requires a commitment to working with the associated roads.

There will continue to be problems during periods of inundation, but not necessarily more than at present. Now we deal with debris from old timber operations, wood supplied from senescence, and wood from landslides and streambank erosion. The difference in the deleterious effect of any specific flood event under the Ordinances is probably not measurable.

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- A no-cut zone will result in increased forest fires.

As noted in the above response to the first argument, no-cut zones will have more water available during dry months because of fog drip. As Dawson (1993) points out, much of this is used by the understory. The increased transpiration will both reduce the temperature and increase the humidity relative to a forest with less fog drip. In addition, the continuous canopy acts to block wind and sun from the understory, also increasing its moisture and decreasing its temperature.

All forest fires are understory fires, and a few fires become canopy fires as well. This is best demonstrated in the fire literature regarding redwood trees, which are virtually fireproof, as evidenced by the record of many fires in their rings (Sawyer et al. 2000). Maintaining a moist understory will reduce, not increase forest fires.

- Increased paving from roads will increase erosion by concentrating and diverting water flows differing from the natural drainage pattern.

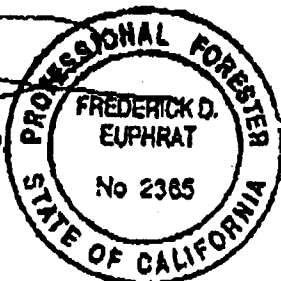
There should be no significant difference in terms of runoff from well established, repeatedly used roads, whatever their location in the watershed. Regularly used roads are virtually impermeable, as are sealed and asphalted roads. Runoff coefficients for all these surfaces range from 70% to 95% (Goldman et al. 1986). Those roads should already be drained in the best possible manner at this time, so drainage will be the same. There will be less sediment from paved roads.

In conclusion, it is my opinion that the Ordinances represent a wise and prudent step in the management of Santa Cruz County's redwood forests. In the long term, the stream zones will provide significant connected and improved habitat for fish, mammals and birds. The downed wood will be relatively stable; the effects on floods will be nil; the summer flows will be significant and beneficial. I think this is a bold and innovative move by the County, and I applaud their efforts.

Thanks for the opportunity to comment on these issues. If you have further questions or wish greater research in any one of these specific areas, please give me a call.

Sincerely,

Fred Euphrat, Ph.D.
RPF 2365



fsw

13 Sep 2000

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