

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT 701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060 (831) 454-2580 FAX (831)454-2131 TDD (831) 454-2123 TOM BURNS, PLANNING DIRECTOR

NOTICE OF ENVIRONMENTAL REVIEW PERIOD

SANTA CRUZ COUNTY

APPLICANT: County of Santa Cruz Planning Department

APPLICATION NO .: N/A Amendment to Co. Code Sec. 13.10.375 re: TP

APN: Countywide

The Environmental Coordinator has reviewed the Initial Study for your application and made the following preliminary determination:

XX Negative Declaration (Your project will not have a significant impact on the environment.)

_____ Mitigations will be attached to the Negative Declaration.

XX No mitigations will be attached.

Environmental Impact Report

(Your project may have a significant effect on the environment. An EIR must be prepared to address the potential impacts.)

As part of the environmental review process required by the California Environmental Quality Act (CEQA), this is your opportunity to respond to the preliminary determination before it is finalized. Please contact Matt Johnston, Environmental Coordinator at (831) 454-3201, if you wish to comment on the preliminary determination. Written comments will be received until 5:00 p.m. on the last day of the review period.

Review Period Ends: September 24,2007

Sarah Neuse

Staff Planner

Phone: 454-3290

Date: August 29,2007



Application Number: N/A

Date: 8/20/2007 Staff Planner: Sarah Neuse 454-3290

I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

APPLICANT: County of Santa Cruz

OWNER: N/A

SUPERVISORAL DISTRICT: Various

LOCATION: countywide

SUMMARY PROJECT DESCRIPTION: This project is an amendment to Santa Cruz County Code section 13.10.375 addressing the **minimum** parcel size required in order to rezone property to the Timber Production (TP) **zone** district. **The** project would increase **the** required parcel size **from five** (5) to forty (40) acres, eliminating **the** option of rezoning for parcels less than forty acres **in size.** Parcels that are already zoned TP **will** not **be** affected.

APN: N/A

ALL OF THE FOLLOWING POTENTIAL ENVIRONMENTAL IMPACTS ARE EVALUATED IN THIS INITIAL STUDY. CATEGORIES THAT ARE MARKED HAVE BEEN ANALYZED IN GREATER DETAIL BASED ON PROJECT SPECIFIC INFORMATION.

	Geology/Soils		Noise
	Hydrology/Water Supply/Water Quality		Air Quality
	Biological Resources		Public Services & Utilities
X	Energy & Natural Resources		Land Use, Population & Housing
	Visual Resources & Aesthetics		Cumulative Impacts
	Cultural Resources	Х	Growth Inducement
	Hazards & Hazardous Materials		Mandatory Findings of Significance
	Transportation/Traffic		

County of Santa Cruz Planning Department 701 Ocean Street, 4th Floor, Santa Cruz CA 95060

DISCRETIONARY APPROVAL(S) BEING CONSIDERED

General Plan Amendment		Grading Permit
Land Division		Riparian Exception
Rezoning	Х	Other: County Code Amendment
Development Permit		
Coastal Development Permit		

NON-LOCAL APPROVALS

Other agencies that must issue permits or authorizations: California Coastal Commission

ENVIRONMENTAL REVIEW ACTION

On the basis of this Initial Study and supporting documents:

✓ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the attached mitigation measures have been added to the project. A MITIGATED NEGATIVE DECLARATION will be prepared.

_____ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Matt Johnston

Date

For: Claudia Slater Environmental Coordinator

II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS Parcel Size: N/A Existing Land Use: N/A Vegetation: N/A Slope in area affected by project: N/A ____ 0 - 30% ____ 31 - 100% Nearby Watercourse: N/A Distance To: N/A

ENVIRONMENTAL RESOURCES AND CONSTRAINTS Groundwater Supply: N/A Water Supply Watershed: N/A Groundwater Recharge: N/A Timber or Mineral: Yes Agricultural Resource: N/A Biologically Sensitive Habitat: N/A Fire Hazard: Possibly Floodplain: N/A Erosion: N/A Landslide: N/A

SERVICES Fire Protection: N/A School District: N/A Sewage Disposal: N/A

Scenic Corridor: N/A Historic: N/A Archaeology: N/A Noise Constraint: N/A Electric Power Lines: N/A Solar Access: N/A Solar Orientation: N/A Hazardous Materials: N/A

Liquefaction: N/A

Fault Zone: N/A

Drainage District: N/A Project Access: N/A Water Supply: N/A

> X Outside Outside

PLANNING POLICIES Zone District: Timber Production **Special Designation:** General Plan: Various Urban Services Line: Inside Coastal Zone: X Inside

PROJECT SETTING AND-BACKGROUND:

The project will increase the minimum lot size for rezoning to the Timber Production (TP) zone district. The current minimum acreage required to rezone property to the Timber Production zone district is **five** acres; this amendment would increase this size to 40 acres. This means that properties between 5 and 40 acres in size that are not currently in the Timber Production zone district will no longer have the opportunity to rezone to a zone district that allows timber harvesting, unless these properties are under the same ownership as **an** adjacent parcel zoned TP. Property that is already zoned TP will not be effected.

DETAILED PROJECT DESCRIPTION:

The proposed project would increase the minimum required acreage for rezoning property to the Timber Production (TP) zone district from five acres to forty acres. Attachment 1 shows a map of the affected parcels countywide. TP zoning is required for any parcel included in a commercial timber harvest, and the change in this section of the County Code will not prevent the Board of Supervisors from rezoning parcels they deem to be appropriate for timber harvests regardless of the size of the parcels. Under state law the Board has the power to establish a minimum parcel size, above which they must rezone parcels that meet the state requirements for Timber Production zoning. Parcels that are currently zoned TP will not be affected by this code amendment, nor will those parcels that are eligible for rezoning based on their location adjacent to another parcel zoned TP under the same ownership. All parcels countywide that are currently in zone districts that either allow or encourage Timber Production are illustrated in Attachment 2. Furthermore, the Board of Supervisors maintains the ability to rezone any parcel that qualifies as timberland to the TP zone district at their discretion. This clause protects the right of any property owner to apply for a TP rezoning, but allows the board to deny the application if they choose.

The state law governing Timberland Production, Government Code Sections **51** 100-51180, specifies three ways in which land can be rezoned for timber production: first, properties meeting all the requirements of the local jurisdiction and state law relating to minimum parcel size and stocking standards, must be granted a rezoning by the local jurisdiction when requested by the property owner; second, parcels located next to and under the same ownership as property zoned TP must be rezoned by the local jurisdiction when requested by the property owner; third, a local jurisdiction has the power to rezone any property meeting the definition of timberland, regardless of the size or other condition of the parcel. The Board of Supervisors has decided to set the new minimum acreage for obligatory rezoning at forty acres and at this time, and has chosen to evaluate any applications in the final category on a case-by-case basis. The Board has not set any other criteria for these rezonings at this time.

There are over 4,000 acres in the County between 5 and 40 acres in size, and under the code amendment none of them would be entitled to the mandatory rezoning currently in place. Provided that the parcel is timberland, this could impact landowners who intend to harvest timber on their property in the future. Some of these parcels have undergone regular timber harvests in the past and some have not been harvested since much of the County was clear-cut early in the 20th Century. The logging infrastructure on the sites varies accordingly and some parcels maintain better access to the timber than others.

Of the parcels eliminated **from** rezoning by this amendment based on parcel size, less than half have a mapped timber resource. **While** the County's digital mapping should not be the exclusive reference for determining the location of timberland, the resource mapping does provide an indication of the heavily forested areas of the County, and shows that many of the parcels between 5 and 40 acres in size are located on land that is unlikely to produce commercially viable timber harvests and is more suited to agricultural uses or low density residential development. Attachments 3A, 3B, and 3C show these parcels overlaid on the Timber Resources layer, showing the limited overlap between the two data sets.

Additionally, when the Board of Supervisors approved this amendment in concept, a grace period was established to allow rezoning under the current 5-acre minimum through the end of 2007. Many property owners who own land affected by this amendment have been submitting applications for rezoning since the May 1st Board action on this item, further reducing the number **of** parcels impacted.

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III. ENVIRONMENTAL REVIEW CHECKLIST

A. Geology and Soils

Does the project have the potential to:

- 1. Expose people or structures to potential adverse effects, including the risk of material loss, injury, or death involving:
 - A. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or as identified by other substantial evidence?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself, result in any change in the seismic risk to County residents or structures.

B. Seismic ground shaking? X Not Applicable – The project affects multiple parcels countywide but would not, in and **d** itself, result in any change in the seismic risk to County residents or structures.

C. Seismic-related ground failure, including liquefaction?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself, result in any change in the seismic risk to County residents or structures.

D. Landslides?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself, result in any change in the seismic risk to County residents or structures.

2. Subject people or improvements to damage **from** soil instability **as** a result of on- or off-site landslide, lateral spreading, to subsidence, liquefaction, or structural collapse?

Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself; result in any change in the landslide, lateral spreading, subsidence or liquefaction risk to County residents or structures.

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Environmental Review Initial Study Page 7	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
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3. Develop land with a slope exceeding 30%? X Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself; result in any change in the regulations governing development on slopes in the County. 4. Result in soil erosion or the substantial loss of topsoil? X Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself; impact soil erosion.

5. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code(1994), creating substantial risks to property?

Not Applicable – The project affects multiple parcels countywide but would not, in and σ itself; create any risks to property.

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6. Place sewage disposal systems in areas dependent upon soils incapable of adequately supporting the use of septic tanks, leach fields, or alternative waste water disposal systems?

Not Applicable – The project affects multiple parcels countywide but would not affect the placement of sewage disposal systems.

7. Result in coastal cliff erosion?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; result in any change in coastal cliff erosion.

B. Hydrology, Water Supply and Water Quality

Does the project have the potential to:

1. Place development within a 100-year flood hazard area? X

Not Applicable – *The project affects multiple parcels countywide but would not, in and of itself; affect the development of flood hazard areas.*

Environmental Review initial Study Page 8	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
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2. Place development within the floodway resulting in impedance or redirection of flood flows?

Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself, result in development withinfloodways.

3. Be inundated by a seiche or tsunami?

Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself, result in increased hazardsfrom seiche or tsunami, despite thefact that theproject could affect these areas.

4. Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit, or a significant contribution to an existing net deficit in available supply, or a significant lowering of the local groundwater table?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; have any effect on groundwater supplies..

5. Degrade a public or private water supply? (Including the contribution of urban contaminants, nutrient enrichments, or other agricultural chemicals or seawater intrusion).

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself, result in any degradation of a water supply.

6. Degrade septic system functioning?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself, affect any septic systems.

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Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself, affect drainage on any of the affected parcels.

8. Create or contribute runoff which would exceed the capacity of existing or planned storm water drainage systems, or create additional source(s) of polluted runoff?

Alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner which could result in flooding, erosion, or siltation on or off-site?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself, create or contribute to runoff

9. Contribute to flood levels or erosion in natural watercourses by discharges of newly collected runoff?

Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself, create or contribute to runoff.

10. Otherwise substantially degrade water supply or quality?

No Impact – The project will have no impact on water quality or quantity, and may improve quality in the long run by limiting potential timber harvests.

C. Biological Resources

Does the project have the potential to:

1. Have an adverse effect on any species identified as a candidate, sensitive, or special status species, in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, or U.S. Fish and Wildlife Service?

No Impact – The project will limit potential timber harvests in the future, preserving forest habitat.

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Environmental Review Initial Study Page 10	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
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2. Have an adverse effect on a sensitive biotic community (riparian corridor), wetland, native grassland, special forests, intertidal zone, etc.)?

No Impact – The project affects forested land throughout the County, which may include some special forests, but the result σ the project will be to limit the logging potential in these forests slightly, achieving apositive effect on the biotic community.

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3. Interfere with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native or migratory wildlife nursery sites?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself, interfere with migration patterns of wildlife.

4. Produce nighttime lighting that will illuminate animal habitats?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; result in any change in nighttime lighting.

5. Make a significant contribution to the reduction of the number of soecies of plants or animals?

Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself; result in any reduction in the number of species of plants or animals.

6. Conflict with any local policies or ordinances protecting biological resources (such as the Significant Tree Protection Ordinance, Sensitive Habitat Ordinance, provisions of the Design Review ordinance protecting trees with trunk sizes of 6 inch diameters or greater)?

No Impact – The project limits the likelihood that parcels will be disturbed, and therefore will not conflict with any other local policies or ordinances, and may even have a positive effect on tree and habitat protection.

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7. Conflict with the provisions of an adopted Habitat Conservation Plan, Biotic Conservation Easement, or other approved local, regional, or state habitat conservation plan?

No Impact – **The**project limits the likelihood that parcels will be disturbed, and therefore will not conflict with any Habitat Conservation Plan or Biotic Conservation Easement, and may even have a positive effect on habitat and biotic conservation.

D. Energy and Natural Resources

Does the project have the potential to:

1. Affect or be affected by land designated as "Timber Resources" by the General Plan?

Less than Significant – Theproject applies to all parcels that are between 5 and 40 acres in size and meet the state definition of timberland and many of these parcels are either wholly or partially designated as "TimberResources" in the General Plan. However, the majority of parcels carrying this designation are very large parcels used for timber harvesting and already zoned TP. Furthermore, the grace period established by the Board of Supervisors and discretion granted to local governments to rezone any property to TP limits the number of sites that would be precluded from harvesting timber under the amended ordinance.

2. Affect or be affected by lands currently utilized for agriculture, or designated in the General Plan for agricultural use?

Less than Significant – Theproject applies to allparcels that are between 5 and 40 acres in size and meet the state definition of timberland. Many of these parcels are currently used for agriculture or designated as agriculture in the County's General Plan, but the agricultural **use** is not affected by this amendment. Parcels zoned CA outside the coastal zone are already permitted to harvest timber on any portion **G** the property containing commercially viable timber resources.

3. Encourage activities that result in the use of large amounts of fuel, water, or energy, or use of these in a wasteful manner?

No Impact – The project addresses the rezoning of land to allow timber harvesting, but does not directly impact timber harvesting activities, and therefore has no impact on the use of fuel, water, or energy.

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4. Have a substantial effect on the potential use, extraction, or depletion of a natural resource (i.e., minerals or energy resources)?

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Less than Significant – The project will affect the number of parcels the County would be mandated to rezone if an application were made for timber harvesting, but has no effect on the thousands of acres already properly zoned to allow for timber harvests. Additionally, the grace period and discretion of the Board will allow properties to rezone to the Timber Production zone district at the request of the landowner. Once a property is zoned TP, the California Department of Forestry and Fire Prevention (CalFire) must approve a Timber Harvest Plan before any timber harvesting can take place. The state is responsible for ensuring that all environmental regulations are complied with and that the resource is not depleted or adversely impacted.

E. Visual Resources and Aesthetics

Does the project have the potential to:

1. Have an adverse effect on a scenic resource, including visual obstruction of that resource?

Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself; result in any change in scenic resources.

2. Substantially damage scenic resources, within a designated scenic corridor or public view shed area including, but not limited to, trees, rock outcroppings, and historic buildings?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; result in any change in scenic resources.

3. Degrade the existing visual character or quality of the site and its surroundings, including substantial change in topography or ground surface relief features, and/or development on a ridgeline?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; result in any change in scenic resources.

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Not Applicable – The project affects multiple parcels countywide but would not, in and σ itself; result in any change in scenic resources.

5. Destroy, cover, or modify any unique geologic or physical feature?

nighttime views in the area?

Create a new source of light or glare which would adversely affect day or

Not Applicable – The project affects multiple parcels countywide but would not, in and σ itself, result in any change in scenic resources.

F. Cultural Resources

Does the project have the potential to:

1. Cause an adverse change in the significance of a historical resource **as** defined in CEQA Guidelines 15064.5?

Not Applicable – The project affects multiple parcels countywide but would not, in and σ itself, result in any change in historical resources.

2. Cause an adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines 15064.5?

Not Applicable – The project affects multiple parcels countywide but would not, in and σ itself; result in any change in archaeological resources.

3. Disturb any human remains, including those interred outside of formal cemeteries?

Not Applicable – **The** project affects multiple parcels countywide but would **not**, in and σ itself; result in any disturbance to human remains.

4. Directly or indirectly destroy a unique paleontological resource or site?

Not Applicable – **The** project affects multiple parcels countywide but would **not**, in and σ itself; result in any destruction of paleontological resources.

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Not Applicable

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G. Hazards and Hazardous Materials

Does the project have the potential to:

1. Create a significant hazard to the public or the environment as a result of the routine transport, storage, use, or disposal of hazardous materials, not including gasoline or other motor fuels?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; result in any change in the transport, storage, or use of hazardous materials.

2. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself; result in any change to the publics exposure to hazardous materials.

3. Create a safety hazard for people residing or working in the project area as a result of dangers from aircraft using a public or private airport located within two miles of the project site?

Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself; result in any change inpublic exposure to aircraft or affect air travelpatterns in any way..

4. Expose people to electromagnetic fields associated with electrical transmission lines?

Not Applicable – The project affects multiple parcels countywide but would not, in and σ itself; expose people to electromagnetic fields.

5. Create a potential fire hazard?

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Less than Significant – Theproject reduces the number of parcels countywide that are entitled to a non-discretionary rezoning to the Timber Production zone district. As such, it reduces the number of parcels throughout the County that could potentially harvest timber, which some mayfeel increases the risk that these parcels will be susceptible to forest fires. This ordinance

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amendment will not impact the state laws that allow a homeowner to remove dead or diseased treesfrom their property, clearing a 150 foot radius around their home and accessory structures, orfrom clearing three acresfor a building site.

Furthermore, research on coastal Redwood-Douglas firforests indicates that, when left in a natural state, theseforests rarely ignite. The size of the older trees and the dark, damp climate of the understory are not conducive to crown fires¹. However, when the canopy in these forests is opened through logging, the understory can become dried out and brittle, and the ratio of smaller to larger trees increases, raising thefuel load, and thus the fire hazard in redwood forests'. In Redwood-Douglass fir forests, fires that start in adjacent chaparral areas' can spread into the forest and climb a "ladder" of vegetation of increasing size until the crowns of the trees are reached. Thickly forested areas minimize this ladder effect by cutting down on immature trees and other ground-level vegetation that is present inforests where larger trees have been removed.

The project limits the number of parcels entitled to a rezoning, and does not affect parcels already zoned to allow for timber harvesting. The grace period established by the Board as well as the discretion to rezone granted to them by the state allowsproperty owners concerned about the combustible nature \mathbf{d} the forest to rezone their property to allow them to manage the forest as they choose. This ordinance amendment will have a minor effect on theforested lands of Santa Cruz County and will not create, in and of itself, a fire hazard.

6. Release bio-engineered organisms or chemicals into the air outside of project buildings? Х Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself. release anything into the air,

H. Transportation/Traffic

¹ Montague, Richard E., Wildland Fire Analysis and Comments based on the San Jose Water Company WMP. November 7,2006. -Attached

Stephens, Dr. Scott, Letter to Rick Parfitt, Subject: Review of Fire Hazard Assessment section of San Jose Water Company NTMP. October 6th, 2006. -Attached ³ Omi, Philip N., PhD., Report on San Jose Water Company Fire Hazard Assessment. October 1st, 2006. - Attached

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Does the project have the potential to:

1. Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity **of** the street system (i.e., substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; affect traffic patterns in the County.

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2. Cause an increase in parking demand which cannot be accommodated by existing parking facilities?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; result in any changes in County parking demand.

3. Increase hazards to motorists, bicyclists, or pedestrians?

Not Applicable – The project affects multiple parcels countywide but would not, in and **d** itself; affect motorists, bicyclists, or pedestrians.

4. Exceed, either individually (the project alone) or cumulatively (the project combined with other development), a level of service standard established by the county congestion management agency for designated intersections, roads **or** highways?

Not Applicable – The project affects multiple parcels countywide but would not, in and \mathbf{c} itself; result in any change in the levels of service \mathbf{c} County roads.

I. Noise

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Not Applicable

Does the project have the potential to:

 Generate a permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; result in any change in noise levels throughout the County.

2. Expose people to noise levels in excess of standards established in the General Plan, or applicable standards of other agencies?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; result in any change in noise levels throughout the County.

3. Generate a temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Not Applicable – The project affects multiple parcels countywide but would not, in and σ itself; result-in any change in noise levels throughout the County

J. Air Quality

Does the project have the potential to: (Where available, the significance criteria established by the **MBUAPCD** may be relied upon to make the following determinations).

1. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Not Applicable – The project affects multiple parcels countywide but would not, in and σ itself; affect air quality.

2. Conflict with or obstruct implementation of an adopted air quality plan?

Not Applicable – The project affects multiple parcels countywide but would not, in and σ itself; affect air quality

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3. Expose sensitive receptors to

substantial pollutant concentrations?

Not Applicable – Theproject affects multipleparcels countywide but would not, in and of itself; affect air quality.

4. Create objectionable odors affecting a substantial number of people?

substantial number of people? X Not Applicable – The project affects multiple parcels countywide but would not, in and **cf** itself; affect air quality.

K. Public Services and Utilities

Does the project have the potential to:

1. Result in the need for new or physically altered public facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

Not Applicable – *The project affects multiple parcels countywide but would not, in and of itself;* result in any change in the demandforpublic facilities.

Fire protection? a.

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself: result in any change in the needforfire protection.

Police protection? b.

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; result in any change in the need for police protection.

c. Schools?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself, result in any change in the needfor schools.

d. Parks or other recreational activities?

Not Applicable – Theproject affects multiple parcels countywide but would not, in and of itself; result in any change in the need for parks or recreational activities.

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	e. Other public facilities; including the maintenance of roads?				Х
1	pplicable – The project affects multiple parcels in any change in the need for public facilities.	countywide	e but would	' not, in and	
2.	Result in the need for construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
	pplicable – Theproject affects multiple parcels in any change in the needfor drainagefacilitie	•	e but would	not, in and	l of itself,
3.	Result in the need for construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause Significant environmental effects?				х
-	pplicable – The project affects multiple parcels in any change in the needfor wastewater facili	•	e but would	not, in and	l of itself,
4.	Cause a violation of wastewater treatment standards of the Regional Water Quality Control Board?				X
	pplicable – Theproject affects multipleparcels in any change in the treatment of wastewater.	countywide	e but would	not, in and	d of itself;
5.	Create a situation in which water supplies are inadequate to serve the project or provide fire protection?				x
	pplicable – The project affects multiple parcels -in any change in water supply or demand.	countywidd	e but would	not, in and	l of itself,
6.	Result in inadequate access for fire protection?				Х
	pplicable – The project affects multiple parcels in any change in accessforfire protection.	countywide	e but would	not, in <i>and</i>	

 7. Make a significant contribution to a cumulative reduction of landfill capacity or ability to properly dispose of refuse? Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; affect County landfill capacity.
Not Applicable – The project affects multiple parcels countywide but would not, in and of itself;
 Result in a breach of federal, state, and local statutes and regulations related to solid waste management?
Not Applicable – The project affects multiple parcels countywide but would not, in and of itself; result in any change in solid waste management in the County.
L. Land Use, Population, and Housing Does the project have the potential to:
1. Conflict with any policy of the County adopted for the purpose of avoiding or mitigating on any ironmental effect?
mitigating an environmental effect? X Not Applicable – The project is very narrow in scope, affecting only the County code sections related to Timber Production rezonings, and makes this code more restrictive.
2. Conflict with any County Code regulation adopted for the purpose of avoiding or mitigating an
environmental effect? X Not Applicable – Theproject is very narrow in scope, affecting only the County code sections related to Timber Production rezonings, and makes this code more restrictive.
3. Physically divide an established

community? X Not Applicable – The project affects multiple parcels countywide but would **not**, in and of itself; divide any community.

Significant
Or
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Significant
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Leis than Signìficant with Mitigation Incorporation

Less than Significant Or No Impact

Not Applicable

4. Have a potentially significant growth inducing effect, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Х

Less than Significant - Theproject will have a less than significant growth inducing effect due to the many layers of resource and communityplanning regulations that limit parcel size and subdivisions in rural areas. The number of potential lots, based on current zoning, will not change due to this amendment, as the affected parcels have the option to subdivide presently and will continue tofollowing this amendment. The parcels affected by the project will no longer have the option to rezone to TP and reduce their development density. As such, some might argue that these property owners will beforced to subdivide if they no longer have the option to harvest the timber on their properties. (Attachment I shows a map of all parcels between **5** and 40 acres in size, countywide, that could be affected by this ordinance amendment.)

To examine the validity of this argument an analysis of the growth potential of the affected parcels was performed which yielded results demonstrating the impact to be less than significant. Allparcels in the County between **5** and 40 acres in size, which are not currently zoned TP, PR, M-3, or CA (outside the Coastalzone) where timber harvesting is allowed, were selected and analyzed. The Developable Land definition (excluding slopes over 50%, areas of recent landslides, riparian corridors, and land within 50feet of an activefault trace) was used to determine the buildable acreage on eachparcel, and minimum lot sizefor various zone districts and general plan designations were then applied to determine which of these parcels might have the ability to subdivide. Afterfurther eliminating urban **uses** such as mobile home parks, shopping malls, and movie theatres from the list ofparcels, this yielded a pool of 1,512 parcels, 49 of which had the 20 acres of buildable land required to create a second lot in any rural zone district. The minimum required densities for Groundwater Recharge Areas, Water Supply Watersheds, and Least Disturbed Watersheds, which in some cases are larger than 10 acres, were then applied to the 49 parcels, eliminating 6 morefrom potential subdivision.

Throughout the County, a maximum of 43 new lots could be created from the parcels affected by this ordinance, and this number would likely shrinkfurther undergreater scrutiny. The County has many other ordinances in place that could affect the ability of a land owner to subdivide his or her lot. For example, afull rural matrix was not completed for each of the 1,512 parcels affected, and of the 43 with 20 acres of more of buildable land, it is likely that several more would fail to achieve a high enough score to subdivide. Forty-three is a small number compared to the number of parcels in the County, and **is** less than significant because the number of potential lot splits is not affected by this ordinance change. The properties that could subdivide under the new ordinance are not currently zoned TP, and are therefore eligible to subdivide today. The project will make no change to that development density, as the amendment will not up-zone any property. Finally, property owners who wish to rezone to TP may still petition the Board to rezone their parcels, in which case the property would be subject to the reduced development densities in the TP zone district. None of the potentially

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Less than significant Or No Impact

Not Applicable

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subdividable lots are located inside the coastal zone, so this ordinance amendment would have no impact on coastal resources.

The impact of the project on growth inducement is less than significant due to the variety of land use regulations governing density in the rural areas of Santa Cruz County, and also based on the facts that no change in current development potential has been made and that landowners may continue to petition for TP rezoning regardless of the parcel size.

See Attachment **4** for spreadsheets of supporting data on number of parcels affected.

5. Displace substantial numbers of people, or amount of existing housing, necessitating the construction of replacement housing elsewhere?

Not Applicable – The project affects multiple parcels countywide but would not, in and of itself, result in any change in existing housing.

M. Non-Local Approvals

Does the project require approval of federal, state, or regional agencies?

Coastal Commission

N. Mandatory Findings of Significance

- 1. Does the project have the potential to degrade the guality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant, animal, or natural community, or eliminate important examples of the major periods of California history or prehistory?
- 2. Does the project have the potential to achieve short term. to the disadvantage of long term environmental goals? (A short term impact on the environment is one which occurs in a relatively brief, definitive period of time while long term impacts endure well into the future)
- 3. Does the project have impacts that are individually limited, but cumulatively considerable ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, and the effects of reasonably foreseeable future projects which have entered the Environmental Review stage)?
- 4. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Yes X No _____

Yes Х No

Yes No Х Yes No X

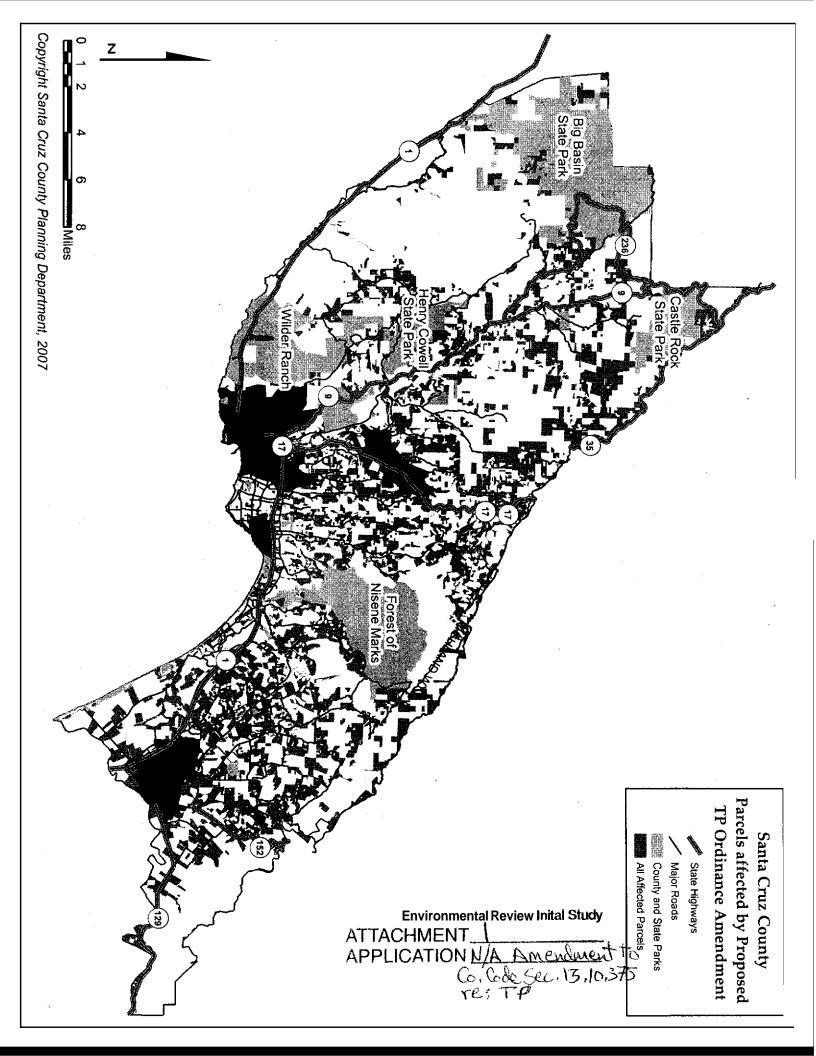
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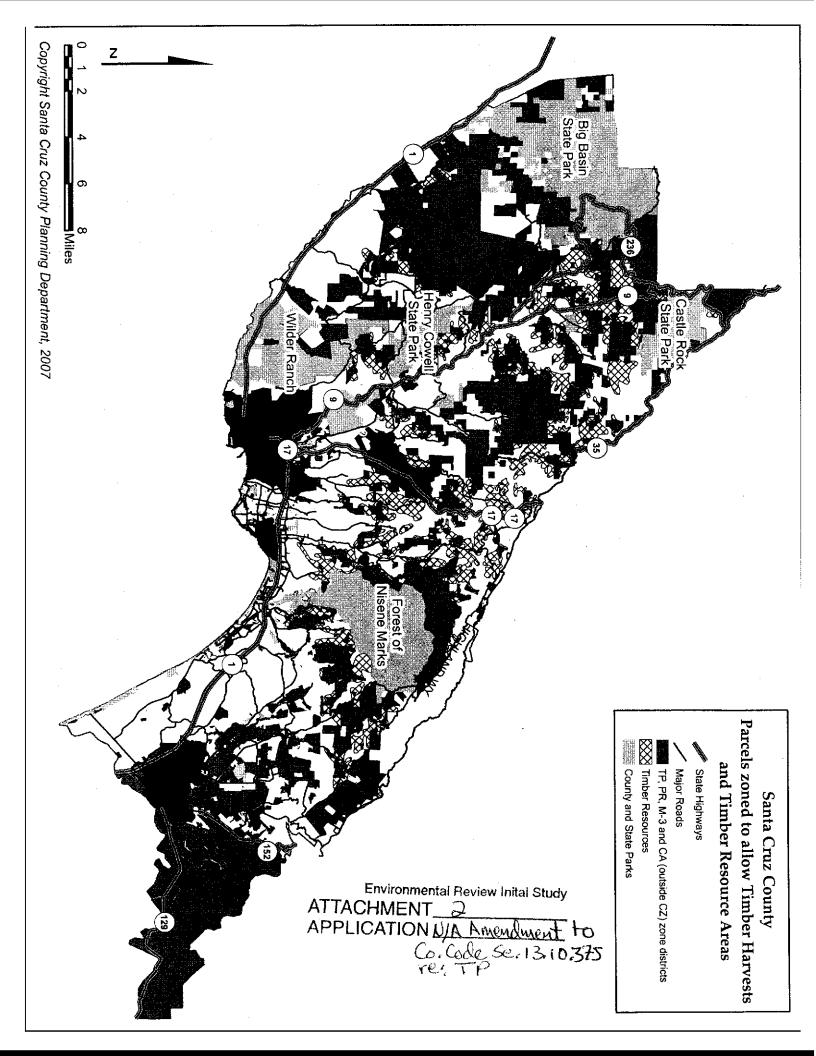
TECHNICAL REVIEW CHECKLIST

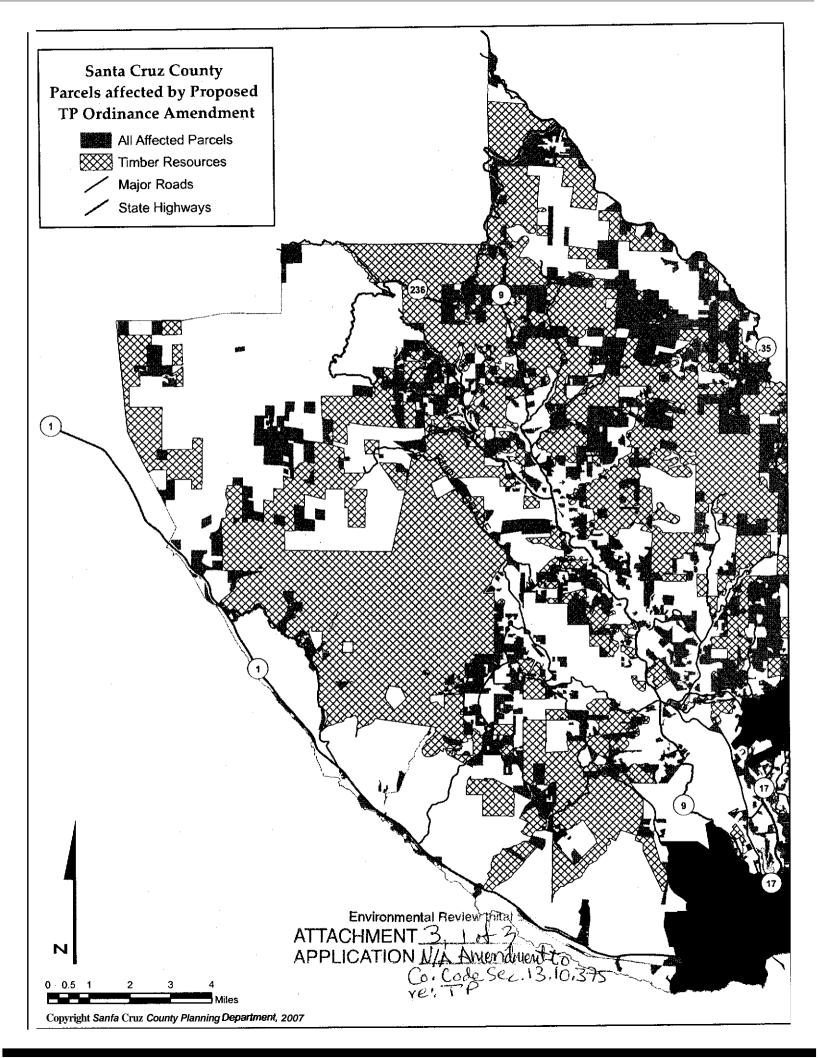
	REQUIRED	COMPLETED*	<u>N/A</u>
Agricultural Policy Advisory Commission (APAC) Review			X
Archaeological Review			X
Biotic Report/Assessment			Χ_
Geologic Hazards Assessment (GHA)			<u>X</u>
Geologic Report			X
Geotechnical (Soils) Report			X
Riparian Pre-Site			X
Septic Lot Check			X
Other:			<u>X</u>

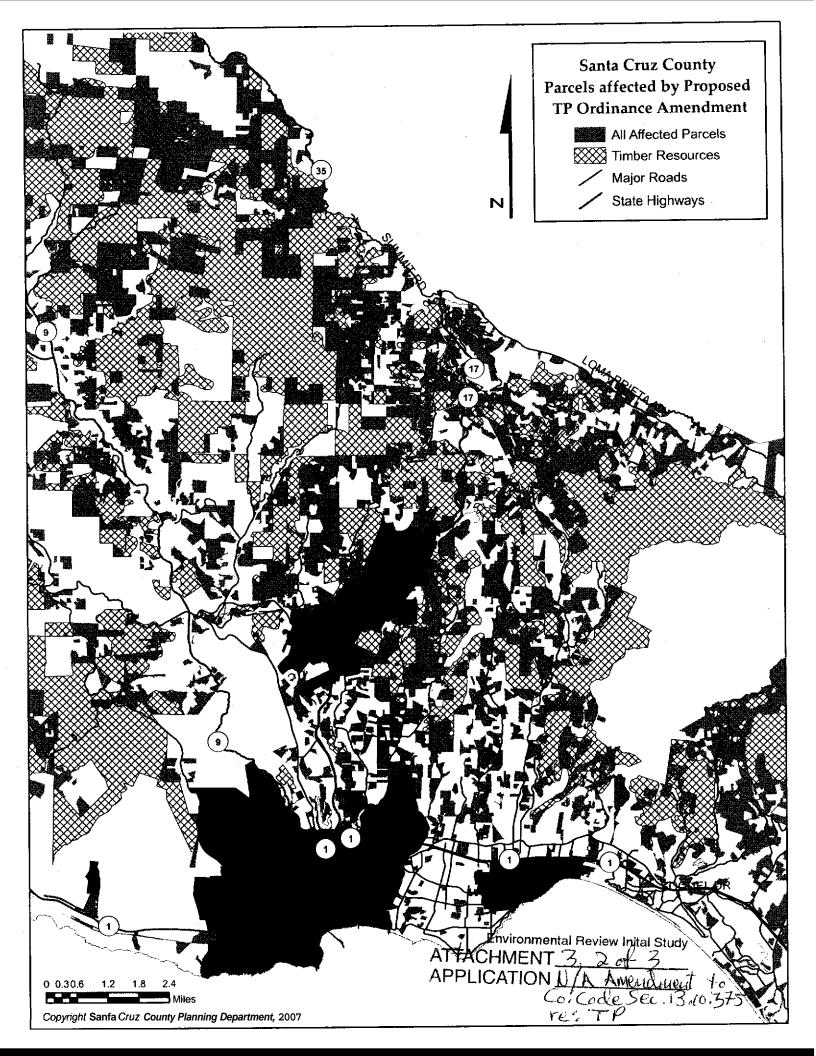
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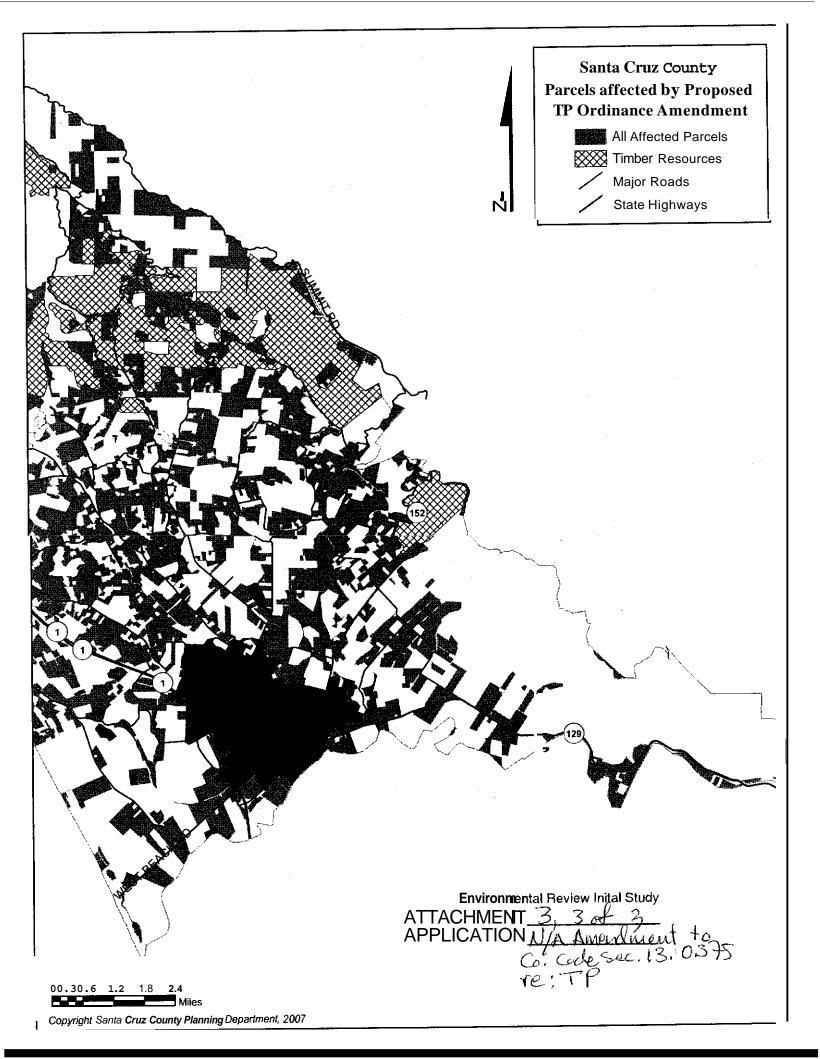
- 1. Map of parcels affected by proposed ordinance amendment
- 2. Map of TP zoned parcels with Timber Resource Areas
- 3. Maps of affected parcels with Timber Resource Areas
- 4. Spreadsheet of Growth Inducement Analysis
- 5. Text of proposed Ordinance amendment, underline/strikeout version
- 6. Montague, Richard **E.**, Wildland Fire Analysis and Comments based on the San Jose Water Company NTMP. November 7,2006.
- Stephens, Dr. Scott, Letter to Rick Parfitt, Subject: Review of Fire Hazard Assessment section of San Jose Water Company NTMP. October 6th, 2006.
- Orni, Philip N., PhD., Report on San Jose Water Company Fire Hazard Assessment. October 1st, 2006.











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Environmental Review Initial Study ATTACHMENT <u>4</u> 2 of 26 APPLICATION N/A Amendment to 6. Code Sec. 13.10.375

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Environmental Review Inital Study ATTACHMENT 4, 6 oct 26 APPLICATION N/A Ampulment to Co. Code Sec. 13.10.375 re: TP

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Yes	14210401
Yes	140704 CA97
Yes	58865.7773
Yes-Portion	163449,4978
Yes	183417 2732
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Yes	276706.0647
No.	163191.6433
Yes	327659.4420
Yes-Portion	108219.5855
Yes	744604.9325
Yes	420920 8790
Yes	71173 2073
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Yes	14/110.3303
Yes	183644,9757
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	32394 4935
Yes	115792 9905
Yes	629518.3429
Yes	85072.3858
Yes	81990.4649
Yes	83512.8565
Yes	107954,1801
Ys	404450.7757
Yes	97508.2675

Environmental Review Inital Study ATTACHMENT <u>4</u>, <u>8 of Z6</u> APPLICATION <u>N/A Amenulment</u> to Co, Code Sec. 13.10.375 ve', TP

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Environmental Review Inital Study ATTACHMENT <u>4</u>, <u>10 + 26</u> APPLICATION <u>N/A Amendment</u> to Co. Code Sec. 13.10.375 re: TP

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Environmental Review Inital Study ATTACHMENT 4, 1/ of 26 APPLICATION 1/A Amandment to Co. Cale Se. 13.10.57	
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Environmental Review Inital Study ATTACHMENT 4/12 of 26 APPLICATION N/A Americanent to Co. Code Sec. 13.10.375 re; TP

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Environmental Review Initial Study ATTACHMENT<u>4, 14 of 26</u> APPLICATION <u>NA Amendment</u> to Co, Code See 13, 10, 375 re; TP

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Environmental Review Inital Study ATTACHMENT <u>4. 16 + 26</u> APPLICATION <u>NHA Americanen</u> to G. Code Sec. 13, 10, 375 ye; TP

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Environmental Review Inital Study ATTACHMENT <u>4, 18 of 26</u> APPLICATION <u>N/A Amendment</u> to G. Code Sec. 13, 10, 375 re: TP

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Environmental Review Initial Study ATTACHMENT <u>4, 20 of 26</u> APPLICATION <u>N/A Amandment</u> to G. Corle Sec. 13.10.375 re: TP

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Environmental Beview Inital Study ATTACHMENT 4, 26 of 26 APPLICATION 11/14 Amendment to Co, Code Sec. 13, 10, 375 re; TP Ordinance No.

ORDINANCE AMENDING COUNTY CODE SECTIONS 13.10.375, OF THE SANTA CRUZ COUNTY CODE REGARDING THE TIMBER PRODUCTIONZONE DISTRICT

The Board of Supervisors of the County of Santa Cruz ordains as follows:

SECTION I

The Santa Cruz County Code is hereby amended by changing Subsection 13.10.375 (c) 6 to read as follows:

The land area to be rezoned shall be in the ownership of one person, as defined in Section 38106 of the Revenue and Taxation Code, and shall be comprised of single or contiguous parcels consisting of at least five forty acres in area.

SECTION II

This Ordinance shall take effect on the 31st day after the date of final passage outside the Coastal Zone and upon certification by the California Coastal Commission within the Coastal Zone.

PASSED AND ADOPTED this _____ day of _____,2007, by the Board of Supervisors of the County of Santa Cruz by the following vote:

AYES:	SUPERVISORS
NOES:	SUPERVISORS
ABSENT:	SUPERVISORS
ABSTAIN:	SUPERVISORS

Environmental Review Inital Study
ATTACHMENT 5
APPLICATION N/A Amendment to
APPLICATION N/A Amendment to Co. Code Sec. 13,10,375
re; TP

Chairperson, Board of Supervisors

ATTEST:

Clerk of the Board

APPROVED AS TO FORM: _

County Counsel

Copies to: Planning County Counsel

Page 1

Wildland Fire Analysis and Comments

Based upon the

San Jose Water Company Non-industrial Timber Management Plan (NTMP) Dated October 18,2005 and the San Jose Water Company Fire Hazard Assessment prepared by TSS Consultants dated May 2006

By Richard E. Montague FIREWISE 2000, Inc

1.0 INTRODUCTION

This wildland fire analysis of the San Jose Water Company Non-industrialTimber Management Plan (NTMP) and the Fire Hazard Assessment by TSS Consultants addresses my comments in regard to the overall accumulative affects of wildland fire within and adjacent to the San Jose Water Company Upper Los Gatos Creek Watershed lands covered by the NTMP. This analysis is not written to either support the proposed NTMP nor to support a decision to maintain the watershed in a status quo management option. The purpose of this analysis is to review both of the stated documents and make comments and recommendations based upon this review. It is my intent to determine the positive and negative affects of a potential wildland fire based upon each one of the various watershed(s) NTMP management options and/or the continuing management of the watershed under its present condition

This wildland fire analysis is based upon my personal and professional experience during 34+ years as a wildland fire manager and 19 years as a wildland fire consultant. Also within this time period, I had 30+ years as a Registered California Forester (#905). My wildland fire expertise was gained at the most complex level and concluded as an Incident Commander (IC) on a National Interagency Management Team, and five years as **the** Regional Fire and Aviation Directorfor the Pacific Southwest Region (California) from 1982 to 1987. My earlier forester experience included assignments as project sales forester and District Fire Manager on the Redwood Purchase Unit, Del Norte County, Assistant Ranger and District Ranger on two coastal timber dominated Ranger Districts in Humboldt and Trinity Counties. My forester experience involved management of coast redwood, Douglas-fir and other related timber stand harvesting practices (including cable, helicopter and tractor), plus implementing practices. In addition, my overall fire and forester background included the introduction of prescribed fire as a management tool within natural (untreated) coast redwood and Douglas fir landscapes as a means to reduce fuel loading. It also involved fire hazard and risk reduction within managed timber harvesting and thinning activity fuel beds

The stated purpose listed in the San Jose Water Company Fire Hazard Assessment prepared by TSS Consultants was not to be a full fire management plan, but an fire hazard assessment to quantify the wildfire hazard, determine how future management activities may affect fire behavior, and provide vegetation management recommendations to protect the water quality within the Upper Los Gatos Watershed managed by the San Jose Water Company (SJWC). The primary management goal of the watershed is to protect water quality.

The Non-Industrial Timber Management Plan (NTMP) was initially planned to be the primary tool for accomplishing the management recommendations listed in the San Jose Water Company Fire Hazard Assessment.

ATTACHMENT 6 APPLICATION N/A Amendment to San Jose Water Company NTMP & Fire Hazard Assessment

2.0 STATED INTENT OF THE SAN JOSE WATER COMPANY NON-INDUSTRIAL TIMBER HARVEST PLAN

The Upper Los Gatos Creek watershed was logged in the late 1890s and early 1900. No significant timber harvesting operations have taken place since 1900. Two large fires have occurred within the Study Area since 1900. The first large fire was the 9,000-acre Australian Creek Fire in 1961. The second fire was the 13,000-acre Lexington Fire in 1985. These two Wildland fires burned primarily along the drier mature brush covered eastern slopes of Australian Creek. The 1985 Lexington Fire reached several neighboring residential communities (Aldercroft Heights, Holy City, Chemeketa Park and along Thompson, Summit and Morrill Roads) destroying and/or threatening homes.

As mitigation against any further wildland fire threat to the watershed's (water quantity and quality) natural resource values and surrounding communities, the San Jose Water Company has recommended selective harvesting of the mature Douglas-fir and redwood overstory trees as a means to remove any potential crown fire threat to the watershed. Funds obtained from the timber harvest operations will be applied to help mitigate against activity created fuels and to treat other San Jose Water Company natural fuels adjacent to residential development

3.0 HOW THE ANALYSIS WAS CONDUCTED

This Wildland fire analysis is based upon a two-day visit by Richard E. Montague, CEO, FIREWISE 2000, Inc. on October 29-30, 2005 to the San Jose Water Company watersheds and surrounding community developments, participating in an on-site visit to view the proposed timber harvest areas with the consultant who prepared the NTHP and on-site discussions with a Vice President of the San Jose Water Company. In addition, I had the opportunity to have person-to-personinterviews with local citizens, Mid-Peninsula Regional Open Space District Managers and conduct phone interviews with local California Department of Forestry and Fire Protection (CDF) managers.

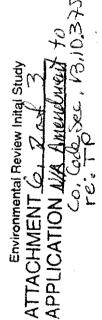
In preparation for this analysis, I reviewed various USDA Forest Service and other technical research documents relating to the basic principles of forest fuel reduction techniques for untreated natural stands and timber harvest activity fuels within a coast redwood and Douglas fir ecosystems.

The Wildland Fire Hazard Assessment by TSS Consultants (the San Jose Water Company fire consultant) was not completed at the time of my initial assessment. However, in the meantime I was able to review the Fire Hazard Assessment dated May 2006. It is now appropriate for me to comment on the results of the assessment. It is my professional opinion that the conclusions and recommendations presented by TSS Consultants were based upon incomplete or unsubstantiated data. At best I feel it can only be used as a simulated exercise for possible planning purposes and should not be used for actual prediction of wildland fire spread and fire behavior within the Upper Los Gatos Creek watershed.

4.0 COMMENTS AND RECOMMENDATIONS

Historical data indicates that these two wildfires spread primarily within the various chaparral patches and the ground fuels within the coast redwood and Douglas fir stands rather than the mature tree crowns. It is true that the untreated natural fuels, as demonstrated in the Australian Creek and Lexington Fires, are also known to support wildland fire intensity and spread. However, as previously stated the principal carrier of fire was the large tracts of native brush (chaparral), the dead and dying broken tree tops from a prior year heavy snow storm and the various dead and live ground fuels (brush, tree saplings and poles) lying beneath the mature tree stands. Mature coast redwood stands usually will not support a crown fire without a heavy accumulation of ground fuels. Thinning of these mature Douglas fir and coast redwood trees to reduce the potential for a crown fire is not economically sound. The closed crowns and local fog conditions maintain the ground fuels to a much higher live and dead fuel moisture condition; therefore, producing a low fire spread and intensity. To open up the normally dense crown cover to more sunlight





and solar heating will reduce live and dead fuel moistures, thereby increasing fire spread, fire intensity and flame lengths.

The timber harvesting techniques proposed for this selective **harvesting** (cable, helicopter and tractor yarding) will create activity fuels which will burn at a much higher rate of spread, fire intensity and produce longer flame lengths than if the Douglas fir and coast Redwood stands are left in their current state. Each one of these proposed timber harvesting operations will create some form of activity fuels that must be treated according to the State Board of Forestry Timber Practices Rules. Activity fuels are the results (debris) from timber harvesting activities. I.e. road clearance (stumps and tree debris), treetops and limbs left on the ground, down and broken undergrowth brush and young trees (sapling and pole size trees).

Activity fuels created by the various recommended timber harvesting techniques tend to increase overall fuelloading and fire intensity. Even with the recommended lop and scatter fuel treatment option described in the NTMP and Fire Hazard Assessment, it is my opinion that fire spread, fire intensity and flame length will be much higher after timber **harvest** than if the coast redwood and Douglas fir stands within the watershed and left in their natural state.

What would be more appropriate for reducing and/or minimizing fire spread and intensity in the coast redwood and Douglas fir stands is to reduce ground fuel loading rather than crown removal. This can be accomplished by hand labor, mechanical means andlor the use of prescribed fire. Thinning out the understory ground fuels will do more to reduce fire spread and intensity than crown removal by timber harvesting.

Regardless of what decision is made in regard to the Upper Los Gatos Creek watershed, local citizens have a responsibility to maintain their property in a ***** *safe*" condition. Each property owner should maintain at least 100 feet of "defensible *space*" around their structure. This does not mean the homeowner must clear all vegetation and trees around their property. It only means that <u>no</u> tree crowns should be within 10 feet of their structure, the ground fuels are usually reduced to 50% percent of their original fuel loading, all dead and dying vegetation is removed and all grasses weed-whipped or mowed to a 4-inch stubble height. The local fire departments have excellent brochures explaining how to maintain a yard in a 'defensible *space*" condition.

Homeowners may want to work with their neighbors to provide a fuel treatment buffer around a cluster of residences by interlinking their various "defensible *space*" fuel treatments. In addition, access roads and long driveways should be treated a minimum of 20 feet on each side of the roadway. This provides a ... much safer ingress for emergency vehicles and egress by the residents.

It would be much more appropriate for the San Jose Water Company to implement and maintain a 100foot wide fuel treatment buffer zone (shaded fuelbreak) along their boundaries that abut private development. This fuel treatment buffer zone would reduce the liability of a wildfire leaving the watershed and form an area in which homeowners can interlink their *"defensible space"* zones.

It is my opinion that he Fire Hazard Assessment by TSS Consultants should not be used in its present form as the sole basis of making fire protection management decisions in regard to the Upper Los Gatos Creek watershed. The data used does not appropriately reflect how coast redwoods and/or Douglas fr stands within the Bay Area react to wildfire. The larger wildfires in coast redwoods within the California coastal communities have spread due to increased fuel loading due to timber harvesting fuels and when ground fuels are abundant.

Respectively submitted by: KLOUK Richard E. Montague FIREWISE 2000, Ino:

Environmental Review Inital Study ATTACHMENT 6, 3 of 3 APPLICATION N/A Amendment to Co. Code. Sec. 13,10,375

San Jose Water Company NTMP & Fire Hazard Assessment

10/6/2006

From: Dr. Scott Stephens

Associate Professor of Fire Science Department of Environmental Science, Policy, and Management Division of Ecosystem Science University of California Berkeley, CA. 94720-31**14** 510-642-7304 <u>stephens @nature.berkelev.edu</u>

Subject: Review of Fire Hazard Assessment section of San Jose Water Company NTMP. Report prepared by TSS Consultants, Rancho Cordova, CA., May 2006.

Dear Rick.

I have thoroughly reviewed this document and have visited the redwood forests that this plan applies to in the Santa Cruz Mountains. I have discussed the issues raised in this plan and my responses to them with Dr. Mark Finney at the USFS Missoula Montana Fire Lab. Mark did his PhD research on coast redwood fire ecology at UC Berkeley (Finney 1991) and is an expert in this field. Mark was fully supportive of my assessment of this project.

The critical question that must first be answered in this analysis is 'Do the redwood forests in the proposed project area pose a fire hazard problem to the surrounding urban-wildland intermix communities?'

After reading the literature applicable to this area, visiting the forest, and talking with Dr. Finney, I believe the answer is no. Redwood forests have the highest canopy cover, height, and densities for any vegetation type in the Santa Cruz Mountains and such characteristics influence their local microclimate (Dawson 1998). Specific microclimate changes include increases in relative humidity, decreases in surface **air** temperatures, and reduction in ground level windspeeds. Surface and ground fuels would subsequently have higher moisture contents in coast redwood forests when compared to the surrounding grasslands and shrublands.

Removing forest canopy by thinning this forest would not effectively reduce potential fire behavior and effects, especially in areas where redwood is the dominant species. Redwood foliage is not particularly flammable and there are few records of crown fires in redwood forests. The 2003 Canoe Fire in Humboldt Redwood State Park is probably the fire that produced the highest seventy effects in the redwood region in the last 50 years. It was ignited by lightning and burned over 10,000 acres. In the late 1980s a large snowfall in this region preceded this fire and it resulted in many broken branches and tree-tops. These materials accumulated on the forest floor resulting in very **high** surface fuel loads. When these were burned during the Canoe Fire some areas of relatively high seventy

Environmental Review Inital Study ATTACHMENT 7. 1 of 4 APPLICATION N/A Amendment to G, Code Sec. 13.10.375

were produced. This was primarily a function of heavy surface fuels, not canopy fuels. Both Dr. Finney and I believe the most effective way to reduce potential fire behavior in redwood forests in by reducing woody surface fuels. The best method to reduce woody surface fuels in redwood forests is by prescribed fire.

Experiences in prescribed burning in redwood forests demonstrate the sensitivity of this forest type to changing weather conditions. **A** minimum relative humidity of 50 percent is needed to successfully burn redwood litter (Finney **1991**, Stephens and Fry 2005). It is possible to burn under higher humidities into the early evening for approximately 30 minutes, but once relative humidity increased to 60 percent, burning is no longer possible. Redwood responds very quickly to relative humidity changes. With heavy fog in the morning, it is possible to burn by 2 pm in the same afternoon if off-shore winds are present. It is possible to use prescribed fire in the redwood forests owned by the San Jose Water Co. Relatively small areas (20-100 acres) could he burned in one week with the right weather conditions. The biggest problem encountered in such burning operations would be smoke production. The area has many residents and the surrounding air-sheds would transport smoke into more populated areas. Still under-burning **is** probably the best method that could be used to reduce potential fire behavior and effects in this forest. Fire was once an important ecosystem process in redwood forests before fire suppression and Native American burning practices were eliminated (Stephens and Fry 2005).

If thinning occurred it would open up the canopy and this would probably result in a forest with higher fire hazards. Lop and scatter of activity fuels is the slash treatment proposed by this plan because burning is deemed infeasible. Given these constraints, trying to limit the height of the lop and scatter slash treatment is a good idea, but I don't believe that this would result in a forest with lower fire hazards. Forest openings could be filled in by tanoak or other more flammable species, this would increase fire hazards. If these forests were dominated by Douglas-fir my assessment would be different. Douglas-fir can sustain high intensity crown fires under severe fire weather conditions. My assessment of the proposed project area yielded few Douglas-fir trees, those that were found were normally in small clumps.

Fire history research in redwood forests has documented the ecological role of fire in these ecosystems (Jacobs et al. **1985**, Stuart **1987**, Finney and Martin **1989**, Brown and Swetnam **1994**, Brown and Baxter 2003, Stephens and Fry 2005). Fires perform many ecological functions in redwood forests including recycling woody and detritus fuels, preparing mineral seed beds, facilitating vegetative reproduction, and reducing understory vegetation. This would be another reason **to** use prescribed fire in managing -these redwood forests.

Redwood trees produce thick bark at relatively young ages and they have the ability to resprout after being completely scorched by fire (Finney and Martin **1993).** The ability to resprout after all needles have been killed by thermal injury is rare in coniferous trees. I did visit the area of redwood forest that was burned by the **1985** Lexington Fire. Bark char was still present on most redwood **trunks** in this area. High bark char heights are easy to produce in redwood forests because fire will move up the trees fibrous bark very

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easily, even under moderate weather conditions. I have **seen** this personally during prescribed fires in redwood forests. Bark char height on Douglas-fir **trees** would be a better estimate of flame heights during the **1985** Lexington Fire.

The Fire Hazard Assessment correctly points out that no fuel treatment will eliminate **fire.** Fuel treatments will only modify potential fire behavior and effects. It **is** also true that another severe wildfire in the adjacent chaparral could pose a threat to the homes in the adjacent redwood forest. If homes were constructed with materials that were not combustion resistant (such as wood shake roofs, etc.), they could easily be ignited by embers produced by a chaparral fire. Residents living in areas adjacent to the redwood forests owned by the San Jose Water Co should take steps to reduce the flammability of their homes. Removing flammable vegetation away from structures should also be done.

If the forests in the study area were relatively young (1-30 years) and regeneration was produced by clear-cutting, targeted thinning treatments could be effective in reducing potential fire behavior and effects. Such treatments have been done in dense, shrub like-redwood forests at Redwood National Park in northern California. **The** redwood forests in this study area are over 100 years old and don't have the characteristics of recently clear-cut forests.

Technically the Fire Hazard Assessment (FHA) document is basically sound. Most of the methods used to assess potential fire behavior and effects are similar to what Jason Moghaddas and I did in two studies on mixed conifer forests in the Sierra Nevada (Stephens and Moghaddas 2005a; b). The R I A **used** a combination of field data, remotely sensed data, and archived data on weather and fuel moisture. The computer program FlamMap was used to assess fire behavior. The authors note that there are no alometric equations available to allow an objective estimate of crown fuels from the redwood forests analyzed in this work. This is true and the report proposes some intense field sampling to remedy this problem. Even if this data were obtained it would not change my opinion **of** this proposed project.

In summary, I believe the forest treatments outlined in the FHA would not result in a reduction of potential fire behavior and effects in these redwood forests.

Sincerely, Scott Stephens

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-Review and Critique-

Report on San Jose Water Company Fire Hazard Assessment

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EXECUTIVE SUMMARY

The "Report on San **Jose** Water Company Fire Hazard Assessment" by TSS Consultants (dated May 2006) presents a systematic analysis of fire hazard in forested stands in **the** upper Los Gatos Creek watershed. The significant omission from consideration of chaparral-covered lands in the upper Los Gatos Creek watershed limits the usefulness of the report. A more meaningful analysis would consider all lands within the upper watershed (including lands managed by San Jose Water Company and Sierra Azul Open Space Preserve).

Specific shortcomings in the report include omission of ignition likelihood, incorrect application of fuel inventory information to represent treatment impacts, and incorrect interpretation of fire behavior outputs used in the FlamMap analysis. The composite hazard index presented in the report is poorly explained and may not be meaningful in terms of justifying the need for hazard reduction treatments within the NTMP. Further the report overlooks the possible increases to fire spread rates resulting from lop/scatter treatments, and apparently equates logging practices with wildfire hazard mitigation.

The fire behavior analysis in the **TSS** report is best viewed as a simulation exercise based in part on incomplete or uncertain information. Sole reliance on the report for making management decisions within the NTMP would not be prudent.

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PURPOSE AND OVERVIEW TO THIS REPORT

The purpose of this report is to provide an overall review and critique of the "Report on San Jose Water Company Fire Hazard Assessment," by TSS Consultants (hereafter referred to as "the report." The report synopsis provides an overall summary of the TSS report. The critique considers two features: 1) overall report scope; and 2) analysis and inferences. Discussion and Conclusions provide an overall summary of this review and critique.

REPORT SYNOPSIS

The report by TSS Consultants (dated May **2006**) presents synthetic results from fuel assessments, canopy cover estimates using LiDAR, and fire behavior simulations for the Upper Los Gatos Creek watershed. The report uses fire behavior estimates (rate of spread, flame length, fireline intensity, heat per unit area, etc.) from the FlamMap mapping and analysis program to evaluate treatments (various harvest alternatives) versus an untreated baseline within the NTMP (Non-Industrial Timber Management Plan) area. **A** composite hazard index is computed for treated and untreated areas, based on simulated heat per unit area, spread rate, and crowning estimates. Customized fuel models are developed to provide input to simulations for the NTMP area. Wildfire hazards outside the NTMP are simulated using fuel models incorporated in the California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (FRAP). Treatment impacts on NTMP fuel profiles are represented by field measurements sampled from harvest sites in Santa Cruz, Santa Clara, and San Mateo counties.

Three mitigation measures (paraphrased) result from the **TSS** Consultants analysis:

- 1. augmentation of lopping standards within the NTMF' to restrict logging slash depth in all areas of operation to a maximum 12" residual standard;
- 2. augmentation of road safety zones so that all downed woody material 1-12 in will **be** removed/masticated and spread to a 1' **fuel** depth (within 100' of road edge);
- **3.** augmentation of defensible space around habitable structures so that flammable materials 1-8 in dbh are removed or masticated (within 200 ft of permanent habitable structures in the NTMP).

The composite hazard index shows a net benefit of **18%** across the NTMP resulting from adoption of these mitigation measures.

CRITIQUE

General assumptions

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The report is correct in noting (52.0) that fuel treatments do not stop fires and that proposed fuel treatments do not guarantee against wildfire damages. The assertion that reductions in fire behavior, growth, or severity are best achieved by fragmenting a

landscape repeatedly, provides intuitive appeal but has not been demonstrated empirically for actual landscapes. Theoretical justifications, i.e., such as Finney (1999), rely solely on computer simulations for hypothetical landscapes and also provide impetus for widespread interest in analyses (or similar variants) using FlamMap (or FARSITE). However, empirical evidence for reductions in fire growth or burned area at the landscape scale have not been demonstrated *to* date. Thus analyses such as the **TSS** report represent at best hypotheses yet to be tested or proven.

Additional commentary on the TSS report is provided below, by report section.

§2.2.4 Fire & Ignition History

The pre-settlement fire return interval information cited provides little insight to fire recurrence in the chaparral zones within the Los Gatos Creek Watershed. In fact, the fire potential and likelihood for watershed damages in the chaparral zones may be higher than in the forested areas of the NTMP.

No details are provided on how information on fire weather, ignition points, and bum footprints from the Lexington (1985) and Austrian Gulch (1951) fires was used to customize the fire behavior model to the site-specific conditions of the Upper Los Gatos Creek Watershed.

<u>63.1 FlamMap</u>

The absence of fire probability calculations (though problematic) is a significant omission, especially for areas that don't bum often, e.g., coast Redwood stands. The low proportion of area burned by decade since the 1930s (**\$2.4**) is further evidence that the redwood stands may comprise a low fire risk, irrespective of pre-settlement fire history. In redwood stands, wildfire risks and hazards are mitigated in part by characteristic fog belts and marine influences in the vicinity.

§3.3.1 Reauired Model Inputs

The field measurements in Brown (1974) were developed to develop biomass estimates for coarse woody debris in wilderness areas--not for providing inputs to fire behavior models as employed in the report. The estimators developed by Brown (1974) will likely lead to overestimates for loading and depth as employed in the fire behavior model. It is unclear how these field measurements allow for customization (and testing) of the fire model, **as** asserted in the report. It is also unclear how fuel models are customized to the NTMP area. Even the **95**" percentile depth measurement will likely overestimate the required fuelbed depth input for fire modeling (Albini and Brown 1978).

§3.3.2 Other Reauired Inputs

A crown bulk density estimate of $.30 \text{ kg/m}^3$ used by other fire scientists may be at least 3 ve to 12, 10,375 times too high, based on actual destructive field sampling of dense conifers elsewhere (as

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yet unpublished). TSS plans to carry out this research for dominant tree species in Upper Los Gatos Creek Watershed (see footnote 4) may take longer than anticipated, and should not be relied upon if uninitiated at this time. Even if initiated, years could pass before study results would be available and verified (i.e., peer-reviewed). Further, the reliability of the .30 kg/m³ crown bulk density estimate is questionable, even if "conservative" based on the extant literature cited.

§3.4.1 Standard Model Outputs

The discussion of outputs from fire behavior models is flawed and inaccurate. English units on fireline intensity should be Btu/ft-sec. The discussion on flame length overlooks its direct relationship to fireline intensity and suggests a non-existent relationship between flame length and risk. The asserted relationship between heat per unit area and amount of fuels burned is unjustified and not documented in the literature. The report over-generalizes the relationships between rate of spread, perimeter and area growth.

<u>§3.4.2</u> Fire Hazard Index

Inclusion of "active" crown fire as the third component in the fire hazard index is misleading and confusing. It seems to presume that a fire actually will move into the canopy stratum and spread as an active crown fire. The ensuing discussion regarding "all five fire behavior outputs" and of weighting in the fire hazard index is confusing and raises doubts about the meaningfulness of the index.

<u>§4.0 Treatment Design</u>

The report acknowledges that additional analysis for the entire Upper Los Gatos Creek Watershed is needed. In fact, as noted previously with respect to §2.2.4, the chaparral zones probably represent a far greater fire hazard than the NTMP areas.

§4.2 Fuel Modification Recommendations

The aversion to pile and burning by San Jose Water Company is understandable yet unfortunate. Lopping and distributing fuels may increase fuelbed continuity and spread rate, depending on extent and quality of execution.

64.3 Modeling Assumptions

The assumptions about crown bulk density reduction due to harvesting is questionable as noted above with reference to §3.3.2. Environmental Review Inital Study

54.4 Description of Surrogate Post-Harvesting Sites

It is questionable if surrogate sites were harvested with the objective of reducing wildline $\frac{5e_2}{7e_1}$, $\frac{13}{10}$ severity. Thus the fuel profiles at surrogate sites may not be representative of NTMP sites after harvest, and any resemblance may be coincidental

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<u>§4.6 Fuel Modification Treatment Modeling</u>

The wording in the paragraph above Figure 11 implies that fire behavior would be "severe" in untreated NTMP sites and that the treatments carried out at surrogate sites (and proposed for the NTMP) would be successful in "reducing severe fire behavior." Notwithstanding the simulations described in the report, these are both untested hypotheses.

Reduction of canopy coverage (i.e., by 20%) may be a questionable strategy for reducing fire hazard. Arguably, thinning and removal of smaller diameter trees, removal of fuel ladders, and retention of large trees may be more effective in reducing wildfire hazard and ensuring the sustainability of the NTMP stands.

64.7 Effectiveness of Treatments

The finding of net benefit in six measures of fire behavior is not especially meaningful, since flame length and fireline intensity are essentially duplicative measures. Also, fireline intensity depends on rate of spread and heat per unit area.

The use of heat per unit area to "scale the threat posed by crown fire" is unprecedented in the literature. Heat per unit area is unaffected by wind speed, so its correspondence to "areas that carry crown fire at low wind speeds" is probably coincidental. Tables **9** and 10 are either mislabeled or indecipherable if fire line intensity is cumulated (similar to Tables 6-7 in Appendix D).

The report omits mention that Table 11 indicates that most of the threat of active crown fire behavior is supported in areas that cannot be treated due to policy considerations ("Out", WLPZs, and other sensitive areas). Apparently, about **9%** of the NTMP is susceptible to crown fire, approximately **2/3** of which is off-limits to management activities. Reducing the supposed crown **fire** threat on less than **3%** of the total land area within the NTMP may not be meaningful or cost-effective.

The explanation relating heat per unit area increases and crown fuels does not make sense—heat **per** unit area is unaffected by crown fuels. Further, heat per unit area as a fire characteristic is descriptive of surface **fires** only.

The 18% net benefit across the NTMP attributable to reduction in fire hazard index may not be meaningful inasmuch as it is apparently calculated as a simple arithmetic average across the treatment types (Appendix D Table 7). Further, the focus on percent reduction in fire hazard index says nothing about whether the pre-treatment hazard is tolerable or not. Moreover, the interpretation of Table 12 mistakenly equates flame length with identifying the minimum height to live crown. Environmental Review inju-

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§5.0 Analysis and Conclusions

The report seems to lump harvesting with thinning treatments. While some overlap may exist in terms of tree cutting, harvest tends to focus on removal of larger trees while thinning removes the smaller and less commercially-sized trees. Thinning with slash disposal is more cost-effective in terms of reducing wildfire hazards and ensuring the sustainability of redwood stands.

Fuel loadings in Table 13 are not necessarily indicative of high fire hazard. In fact, the report acknowledges under *Modeling Discussion* that the "NTMP area appears to have a low hazard index." If so, then the changes due to treatment (i.e., **18%**) may reduce hazards even lower but also may not be necessary. Further, the acknowledgement of low hazard index raises questions about study focus and the need for timber harvest.

The collaborative effort called for in conclusion makes good sense. Creation of community wildfire protection programs and fire-wise communities may provide the largest payoffs in terms of living with fire hazards in wildland areas. Public/private collaboration is especially important since socio-political concerns may override technological solutions to wildfire management problems.

DISCUSSION AND CONCLUSIONS

The limited scope of the report (i.e., forested stands within the NTMP versus all lands managed by San Jose Water Company and Sierra Azul Open Space Preserve) restricts its overall usefulness. The report relies on fire behavior predictions incorporated within the FlamMap simulation processor. Inferences are limited by the assumptions and limitations inherent to the underlying fire behavior prediction process.

The TSS report is reasonably-written but misguided and potentially misleading. It is misguided because it focuses on fire hazard in the redwood stands in the NTMP instead of the more flammable chaparral within the San Jose Creek watershed. The potential for long-term damage to watershed values is arguably much greater in the chaparral zones **than** in the redwood stands within the NTMP. Notwithstanding the commercial value of redwood stumpage, the fire risk analysis should focus instead on the vegetation types comprising the entire upper watershed rather than the trees within the NTMP. The report is misleading insofar as it builds an apparent rationale for timber harvest under the guise of wildfire hazard reduction.

The report creates the impression of high fire hazard in uncut redwood stands comprising the NTMP, relying on the FlamMap simulation processor. Yet the reliability of FlamMap estimates is questionable in timber/litter environments generally. The theoretical basis for the FlamMap processor (i.e., Rothermel's 1972 spread model) is most challenged in timber/litter fuel complexes, such as redwood stands, where the complexity of fuel and environmental influences presents a greater modeling challenge than in more uniform grass and shrub fuel beds. The analysis incorporates fuel measurements (i.e., loading and

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depth) from field inventory techniques that are not intended for direct input to fire behavior calculations. Further, custom fuel modeling efforts within the report are likely to neglect site fuel characteristics such as surface area to volume ratio, heat content, and canopy base height. among others. **As** a result, fire characteristics are likely overpredicted for stands within the NTMP. Further, the fire hazard index (even though standardized) is poorly explained and may not be reliable or meaningful in terms of eventual fire behavior that will be experienced within treated and untreated stands of the NTMP. Lastly, anticipated reductions in wildfire hazard (i.e., by 18%), are purely speculative and not confirmed empirically nor in the literature.

The fuel models developed or relied upon for the analysis may be incapable of representing changes in fire behavior resulting from treatment alternatives. Thus, the fuel models developed may not represent the effects of lopping/scattering fuels uniformly, which, in fact, may increase rate of spread even if changes in fuelbed depth reduce fire spread predictions.

Fires can and will bum in stands dominated by coast redwood and associated forest types within the NTMP, and fuel hazard reduction is needed to create defensible spaces around structures. But the wisdom of logging to reduce fuel hazards needs to be balanced against environmental impacts (e.g., water quality) and the relatively-low probabilities **of** ignition in coast redwood stands due to inherent moisture regimes. Logging of merchantable timber may not reduce wildfire hazards and is counter-productive from a long-term, sustainability perspective. Strategically, removal of small-diameter trees that provide fuel ladders into tree crowns may make more sense, especially from a sustainability perspective. **Also**, removal of tree cover from steep slopes in the name of wildfire hazard reduction may produce unacceptable siltation and erosion especially near creeks and riparian zones.

The fire behavior analysis in the **TSS** report needs to be viewed as an exercise based on incomplete or uncertain information, using a simulation processor underlain with assumptions and limitations that accompany **any** computer-based analysis. Thus the report should not be relied upon **as** the sole basis for making management decisions affecting the **NTMP**. Further, a broader perspective that incorporates the chaparral zones in the upper watershed would provide a more meaningful assessment of overall fire hazard in the area.

Literature Cited

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