California Regional Water Quality Control Board
Central Coast Region

Linda S. Adams
Secretary for
Environmental Protection

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Arnold Schwarzenegg
Governor

July 10, 2007

Victor Smith
335 Cereza Place
San Jose, CA 95112

Ann Schwarzmann and Grant Codiga
PO Box 317
Boulder Creek, CA 95006

Dear Mr. Smith, Ms. Schwarzmann, and Mr. Codiga:

ENROLLMENT OF NTMP# 1-06NTMP-017 SCR - LITTLE BUCK UNDER ORDER NO. R3-2005-0066 THE GENERAL CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS - TIMBER HARVEST ACTIVITIES IN THE CENTRAL COAST REGION

The purpose of this letter is to notify you that the Executive Officer has enrolled NTMP 1-06NMTP-017 SCR Little Buck under Order No. R3-2005-0066 General Conditional Waiver of Waste Discharge Requirements - Timber Harvest Activities in the Central Coast Region (General Waiver) (Attachment 1).

Please review the attached General Waiver requirements, as you are responsible for complying with all of the prescribed conditions.

MONITORING

California Water Code Section 13269 (2) requires the General Waiver to include performance monitoring for discharges that may pose a significant threat to water quality. Section 13269 (2) also states that monitoring requirements shall be designed to support the development and implementation of the General Waiver, including, but not limited to, verifying the adequacy and effectiveness of the General Waiver's conditions. In order to ensure that the General Waiver requirements for your timber harvest activity is in the public interest and to determine the adequacy and effectiveness of the General Waiver's conditions, water quality monitoring is required as part of your enrollment under the General Waiver.

The General Waiver requirements establish three different monitoring tiers (I, II, and III) based on the proposed timber harvest activities and site conditions. The Water Board's Executive Officer may modify the monitoring requirements for an individual plan.

Overview of Monitoring Tier requirements:

Tier I: CDF Forest Practice Rules compliance monitoring.
Road inventory program.
Forensic monitoring as necessary.

Tier II: CDF Forest Practice Rules compliance monitoring.
Road inventory program.
Forensic monitoring as necessary.
Visual and photo monitoring of harvest infrastructure.

Tier III: CDF Forest Practice Rules compliance monitoring.
Road inventory program.
Forensic monitoring as necessary.
Visual and photo monitoring of harvest infrastructure.
Water Column monitoring.

Based on the information contained in your timber harvest plan information sheet, you are enrolled under Tier III. Based on the eligibility criteria, your plan has a high cumulative effects ratio (18%), a high drainage density index (129), and a low soil disturbance factor (392). This monitoring tier requires visual, forensic, photo, and water column monitoring.

Your Tier III Monitoring and Reporting Program (MRP) is attached (Attachment 2). Please review it carefully. Monitoring must begin at the onset of timber operations. Please inform Water Board staff if you suspect any of the monitoring points might be too difficult to access in inclement weather. You are required to implement the MRP (including all exhibits) until the Executive Officer revises or rescinds it.

Site specific monitoring requirements:

VISUAL: Visual monitoring points shall include the full length of roads, watercourse crossings, landings, skid trails, water diversions, watercourse confluences, known landslides, and all mitigation sites (as documented the CDF approved NTMP) in the timber harvest plan area.

FORENSIC: As needed.

PHOTO:

Two sets per photo point for a total of six sets each photomonitoring event. (guidelines attached)

Photo Point 1 (PP1): Crossing X4
(two sets of photos; outlet and inlet)

Photo Point 2 (PP2): Crossing X7
(two sets of photos; outlet and inlet)

Photo Point 3 (PP3): PWA Site 25 crossing
(two sets of photos; outlet and inlet)

In addition to storm event sampling the discharger shall also conduct photo-monitoring before, during, and after the construction to upgrade the crossing. Photos shall include the inlet, outlet, and installation of the gabion baskets.

WATER COLUMN:

Temperature

Station 1 (STA #1): Deer Creek at northern property line.

Station 2 (STA #2): Deer Creek +/- 100' upstream of southern property line.

Turbidity

Station 1 (STA #1): Grab sample from Deer Creek at northern property line.

Station 2 (STA #2): Grab sample from Deer Creek +/- 100' upstream of southern property line.

REPORTING

The reporting requirements for your monitoring program are contained in the MRP and its exhibits. Please review the reporting requirements in your MRP carefully and include all information requested in your reports. Requirements for reporting include specifics on annual reporting as well as events that may be affecting water quality throughout the year:

- Providing an annual report by November 15 of each year.
- Status of active timber harvest operations.
- Forest Practice Rules violation reporting.
- Sediment release reporting.

Please provide monitoring reports to us in a timely manner. Failure to provide reports may subject you to civil liability per California Water Code Section 13268.

In addition to your reporting requirements, you must maintain a logbook with all monitoring and water quality analysis data; road inventory program reports; and findings from visual monitoring. You must keep logbooks up to date and available for review upon request by Water Board staff.

The goal of the Regional Water Quality Control Board is protection of water quality and its beneficial uses. Please work proactively with us when dealing with water quality issues. We encourage you to seek our input and assistance when performing road repairs, crossing modifications, and other mitigation work (unstable slopes, etc.) You must, as outlined in the attached monitoring and reporting program, report water quality problems you notice during inspections and maintenance (timber or non-timber related). We may be able to assist the work you do with funding from grants and other programs. Our job is to help you manage your land in a way that minimizes the risk to water quality. Please do not hesitate to contact us if you have any questions or concerns.

If any of this is unclear to you, you must contact the Water Board immediately.

Comments or questions regarding this matter should be directed to **Julia Dyer at jdyer@waterboards.ca.gov or 805-594-6144.**

Sincerely,

Roger W. Briggs
Executive Officer

Attachments:

1. General Conditional Waiver of Waste Discharge Requirements – Timber Harvest Activities in the Central Coast Region

2. Monitoring and Reporting Program for NTMP 1-06NTMP-017 with Exhibits 1 - 3.

CC: C. Bill Vaughn
6010 Highway 9, Suite #6
Felton, CA 95018

E-mail: Donna Bradford
County of Santa Cruz
donna.bradford@co.santa-cruz.ca.us

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

ORDER NO. R3-2005-0066

GENERAL CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS – TIMBER HARVEST ACTIVITIES IN THE CENTRAL COAST REGION

(Revised on July 8, 2005)

WHEREAS, the California Regional Water Quality Control Board, Central Coast Region (hereinafter Regional Board or Central Coast Water Board), finds that:

1. California Water Code (CWC) Section 13260(a) requires that any person discharging waste or proposing to discharge waste within any region that could affect the quality of the waters of the State, other than into a community sewer system, shall file with the appropriate Regional Board a report of waste discharge (ROWD) containing such information and data as may be required by the Regional Board.

2. The Central Coast Water Board prescribes waste discharge requirements except where the Central Coast Water Board finds that a waiver of waste discharge requirements for a specific type of discharge is in the public interest pursuant to CWC (Sections 13267 and 13269).

3. CWC Section 13267 states:

   (a) A regional board, in establishing or reviewing any water quality control plan or waste discharge requirements, or in connection with any action relating to any plan or requirement authorized by this division, may investigate the quality of any waters of the state within its region.

   (b)(1) In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

4. CWC Section 13269(a) states:

   (1) On and after January 1, 2000, the provisions of subdivisions (a) and (c) of Section 13260, subdivision (a) of Section 13263, or subdivision (a) of Section 13264 may be waived by the state board or a regional board as to a specific discharge or type of discharge if the state board or a regional board determines, after any necessary state board or regional board meeting, that the waiver is consistent with any applicable state or regional water quality control plan and is in the public interest. The state board or a regional board shall give notice of any necessary meeting by publication pursuant to Section 11125 of the Government Code.

   (2) A waiver may not exceed five years in duration, but may be renewed by the state board or a regional board. The waiver shall be conditional and may be terminated at any time by the state board or a regional board. The conditions of the waiver shall include, but need not be limited to, the performance of individual, group, or watershed-based, monitoring, except as provided in paragraph (3) below. Monitoring requirements shall be designed to support the development and implementation of the waiver program, including, but not limited to, verifying the adequacy and effectiveness of the waiver's conditions. In

establishing monitoring requirements, the regional board may consider the volume, duration, frequency, and constituents of the discharge; the extent and type of existing monitoring activities, including, but not limited to, existing watershed-based, compliance, and effectiveness monitoring efforts; the size of the project area; and other relevant factors. Monitoring results shall be made available to the public.

(3) The state board or a regional board may waive the monitoring requirements described in this subdivision for discharges that it determines do not pose a significant threat to water quality.

5. The Central Coast Water Board, in compliance with CWC Section 13269, reviewed the previously issued categorical waiver for timber harvest activities (Central Coast Water Board Resolution No. 89-04, Water Quality Control Plan (Basin Plan) Appendix A-23) and determined that it should not be renewed.

6. In accordance with CWC Section 13269, the Central Coast Water Board shall regulate discharge of waste associated with timber harvest activities through the requirements of this general conditional waiver, or, for timber operations that are not eligible for this waiver, through individual waste discharge requirements or individual conditional waivers.

7. The Central Coast Water Board has adopted the Basin Plan for the Central Coast Region, that establishes beneficial uses, water quality objectives, waste discharge prohibitions, and implementation policies that apply to waters of the State and discharges to waters of the State within the Central Coast Region.

8. Pursuant to the Basin Plan and State Board Plans and Policies, including State Water Board Resolution No. 88-63, the existing and potential beneficial uses of waters potentially affected by the proposed activity include:

   a. Agricultural Supply (AGR)
   b. Aquaculture (AQUA)
   c. Preservation of Biological Habitats of Special Significance (BIOL)
   d. Cold Freshwater Habitat (COLD)
   e. Commercial and Sportfishing (COMM)
   f. Estuarine Habitat (EST)
   g. Freshwater Replenishment (FRSH)
   h. Ground Water Recharge (GWR)
   i. Industrial Service Supply (IND)
   j. Migration of Aquatic Organisms (MIGR)
   k. Municipal and Domestic Supply (MUN)
   l. Navigation (NAV)
   m. Hydropower Generation (POW)
   n. Industrial Process Supply (PRO)
   o. Rare, Threatened, or Endangered Species (RARE)
   p. Water Contact Recreation (REC-1)
   q. Non-contact Water Recreation (REC-2)
   r. Shellfish Harvesting (SHELL)
   s. Spawning, Reproduction, and Development (SPWN)
   t. Warm Freshwater Habitat (WARM)
   u. Wildlife Habitat (WILD)
   v. Inland Saline Water Habitat (SAL)

9. The Basin Plan contains water quality objectives developed to protect the above-listed beneficial uses of water. The factors in CWC Section 13241, including economic considerations, were considered as required by law during the development of these objectives. Prohibitions, provisions, and specifications contained in this Order implement these previously developed water quality objectives. Compliance with water quality objectives will protect the beneficial uses listed in the above paragraph.

10. The California Department of Forestry and Fire Protection (CDF) and the California Board of Forestry (BOF) regulate timber harvest activities on nonfederal lands in accordance with the Z'berg-Nejedly Forest Practice Act (Public Resources Code, Section 4511 et seq.) and the California Forest Practice Rules (Title 14, California Code of Regulations, Section 895 et seq.). CDF is the state agency with primary jurisdiction over timber activities. The Central Coast Water Board cannot issue permits to allow timber harvesting, but only regulates water quality impacts of harvesting operations that have received a permit from CDF. CDF issues such permits by approving timber harvest plans or non-industrial timber management plans. The Central Coast Water Board does not have legal authority to require an alternative project.

11. In 1988, the State Water Board:

    (a) Conditionally certified the "Water Quality Management Plan for Timber Operations on Nonfederal Lands" which included those California Forest Practice Rules selected as best management practices and the process by which those rules are administered
    (b) Designated CDF and the BOF as joint Water Quality Management Agencies (WQMA)
    (c) Executed a Management Agency Agreement with CDF and BOF for the purpose of implementing the certified plan and WQMA designations

12. The Management Agency Agreement between the State Water Board and CDF/BOF required a formal review of the California Forest Practice Rules and administering processes no later than six years from the date of certification. To date, the State Water Board and CDF/BOF have not completed that review.

13. The USEPA has not approved the State Water Board's certification of the California Forest Practice Rules and administering processes for regulation of timber harvest activities on nonfederal lands in California.

14. The Central Coast Water Board, in accordance with the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) (CEQA), has conducted an Initial Study in accordance with Title 14, California Code of Regulations, Section 15063.

15. The Secretary of the Resources Agency has certified that the CDF's timber harvest plan regulatory program can function as a substitute for an Environmental Impact Report or a negative declaration (CEQA Guidelines § 15251.) Registered Professional Foresters submit either a timber harvest plan (THP) or Non-Industrial Timber Management Plan (NTMP) and only CDF has the authority to grant discretionary approval for projects. CDF considers all the significant environmental effects of the project and makes a finding under CEQA Guidelines section 15091 for each significant effect. If CDF finds that the timber operations will not have a significant effect on the environment, a THP or NTMP serves as a substitute negative declaration. If CDF finds that the timber operations may have a significant effect on the environment, the THP or NTMP serves as a substitute environmental impact report, and includes mitigation of potential impacts. CDF consults with the Central Coast Water Board when a THP or NTMP is developed. This waiver requires each enrolled Discharger to comply with all requirements of the respective THP or NTMP.

16. Relevant factors in determining whether a project covered by a general conditional waiver is in the public interest include the following:

    - Whether the discharge is already regulated by another governmental entity;
    - Whether the discharger will observe reasonable practices to minimize the deleterious effects of the discharge;
    - Whether a feasible treatment method exists to control the pollutants in the discharge;
    - Whether a resource agency (California Department of Fish and Game, County of San Mateo, Santa Cruz, Santa Clara, Monterey, San Benito, San Luis Obispo, Santa Barbara, or Ventura) has filed a water quality related non-concurrence with CDF regarding the proposed harvest and that non-

concurrence has not been resolved; and

- Whether conditionally waiving ROWDs and/or waste discharge requirements will adequately protect beneficial uses while allowing the Central Coast Water Board to utilize more of its scarce resources to conduct field oversight, public outreach and, where necessary, enforcement.

17. The timber harvest plan regulatory program is regulated by the California Department of Forestry, and requires the Discharger to implement practices to control water quality impacts, including erosion and sedimentation. Local ordinances also require various controls. The conditions of this Order protect beneficial uses by:

    (i) Prohibiting pollution, contamination or nuisance;
    (ii) Requiring monitoring and compliance with applicable water quality control plans;
    (iii) Requiring the Discharger to grant access to Central Coast Water Board staff to perform inspections; and
    (iv) Requiring approval of the THP or NTMP by the California Department of Forestry and Fire Protection.

18. The Central Coast Water Board finds that the adoption of the "General Conditional Waiver of Waste Discharge Requirements - Timber Harvest Activities" will not have a significant impact on the environment and will be in the public interest provided that dischargers:

    (a) Comply with the conditions of this Order; and

    (b) File with the Central Coast Water Board the applicable eligibility documents as described herein, to demonstrate that compliance with the waiver conditions will be achieved; and

    (c) Comply with applicable State Water Board and Central Coast Water Board plans and policies and as those plans and policies may be amended from time to time through the amendment process;

19. Pursuant to CWC Section 13269, this action waiving the issuance of waste discharge requirements for certain specific types of discharges: (a) is conditional, (b) may be terminated at any time, (c) does not permit an illegal activity, (d) does not preclude the need for permits which may be required by other local or governmental agencies, and (e) does not preclude the Central Coast Water Board from administering enforcement remedies (including civil liability) pursuant to the CWC.

20. A waiver of waste discharge requirements for a type of discharge may be superseded by the adoption by the State Water Board or Central Coast Water Board of specific waste discharge requirements or general waste discharge requirements for that type of discharge.

21. Management practices are the most feasible treatment method to control the discharges. If a proposed timber harvest is conducted in the manner prescribed in the THP or NTMP and the conditions of this Order, a waiver of waste discharge requirements is in the public interest and is consistent with applicable water quality control plans, including the Water Quality Control Plan, Central Coast Region.

22. The winter period for the Central Coast Region shall be October 15 through April 15.

23. The rain year for the Central Coast Region shall be July 1 through June 30.

24. The results from the Eligibility Criteria for a specific THP or NTMP will function as a minimum level for establishing monitoring requirements for that THP or NTMP.

25. Tier III monitoring is required if ground based equipment is used off of an all weather road during the period October 15 to May 1. Tier III monitoring is required for the next 24 months (until July 31, 2007) for all THPs or NTMPs that fall into Tier II or III.

26. The Central Coast Water Board has adopted a Negative Declaration in accordance with CEQA and the CEQA Guidelines (Title 14, California Code of Regulations, Section 15000 et seq.). The Negative Declaration concludes that the waiver of waste discharge requirements for specific types of timber harvest operations pursuant to this Order will not have a significant impact on the environment.

27. Copies of the proposed Order and monitoring and reporting plan were transmitted to all agencies and persons known to be interested in this matter according to the applicable provisions of CEQA.

28. The Central Coast Water Board conducted a public hearing on July 8, 2005 in San Luis Obispo, California, and considered all testimony and evidence concerning this matter;

THEREFORE IT IS HEREBY ORDERED:

1. In accordance with CWC Section 13269, the waste discharges related to timber harvest activities in the Central Coast Region, that are not subject to individual conditional waivers or waste discharge requirements, shall be regulated by general conditional timber harvest waiver requirements, and waste discharge requirements and the requirement to submit a report of waste discharge are hereby waived subject to the following conditions:

   a. "Discharger" means the landowner and anyone working on behalf of the landowner in the conduct of timber harvest activities.

   b. The Discharger shall submit a Notice of Intent (NOI) on the attached form (Attachment A) or on such other form that the Executive Officer requires. This waiver shall not take effect as to a particular timber operation until the Executive Officer approves the NOI in writing.

   c. The Discharger shall comply with all requirements of applicable water quality control plans (examples shown in Attachment B) as these may be modified from time to time pursuant to amendments to water quality control plans adopted by the Central Coast Water Board and approved by the State Water Resources Control Board (State Water Board) and water quality control plans and policies adopted by the State Water Board.

   d. The Discharger shall obtain CDF approval of a THP and/or NTMP for the timber harvest activities before enrollment in this waiver takes effect. The Discharger shall conduct timber harvest activities in accordance with the approved THP or NTMP and with all applicable sections for the Forest Practice Rules.

   e. Discharger shall notify the Central Coast Water Board concurrently when submitting a request to CDF for a minor or major amendment.

   f. The Discharger shall obtain and comply with all local, state and federal permits required by law. The Discharger shall comply with all applicable county ordinances related to timber operations, including zoning ordinances.

   g. The Discharger shall not create a condition of pollution, contamination, or nuisance, as defined by CWC Section 13050.

   h. The Discharger shall not discharge any waste not specifically regulated by this Order, except in compliance with CWC Section 13264. Waste specifically regulated by this Order includes: earthen

materials including soil, silt, sand, clay, rock; organic materials such as slash, sawdust, or bark. Examples of waste not specifically regulated by this Order include petroleum products, hazardous materials, or human wastes.

i. The Discharger shall not cause alteration in stream temperature that exceeds Basin Plan requirements.

j. The Discharger shall allow Central Coast Water Board staff reasonable access, in accordance with Public Resources Code section 4604(b) and California Water Code section 13267, onto the affected property for the purpose of performing inspections to determine compliance with the conditional waiver requirements.

k. Pursuant to California Water Code Section 13267, the discharger shall comply with Monitoring and Reporting Program No. R3-2005-0066. The Central Coast Water Board needs this information to verify that a general conditional waiver of waste discharge requirements is the appropriate regulatory tool for Timber Harvest activities in San Mateo, Santa Cruz, Santa Clara, Monterey, San Benito, San Luis Obispo, Santa Barbara, and Ventura counties. Evidence that supports the need for this information was presented at the July 8, 2005 meeting of the Central Coast Water Board, the staff report for Item 26 at that meeting, and Monitoring and Reporting Plan No. R3-2005-0066.

l. This Order does not regulate point-source discharges that require an NPDES permit under the Clean Water Act, including but not limited to silvicultural point-source discharges as defined in 40 CFR Chapter 1 Part 122.27.

m. The Discharger shall take immediate action to repair failed crossings, culverts, roads and other sources of sediment.

n. All erosion and sediment control devices, management measures and mitigations prescribed in a THP or NTMP shall be maintained in good working order for the term of the general waiver requirements.

o. The Discharger shall comply with all requirements of the Executive Officer pursuant to MRP R3-2005-0066.

2. The Central Coast Water Board, based on the above-noted facts and findings, determines that it is not necessary at this time to adopt individual or general waste discharge requirements for waste discharges related to timber harvest activities that meet the conditions specified in this waiver and which are conducted in accordance with the requirements specified in this waiver.

3. This Waiver shall not create a vested right and all such discharges shall be considered a privilege, as provided for in CWC Section 13263.

4. The Executive Officer shall not approve the NOI or shall terminate the applicability of a waiver to specific timber harvest activities (as applicable) if the Executive Officer makes any of the following determinations:

   a. The timber harvest activity is not in compliance with any applicable condition of this waiver.
   b. The timber harvest activity has varied in whole or in any part from the approved THP or NTMP, unless these changes result in better protection of water quality.
   c. The timber harvest activity is likely to adversely affect the quality or beneficial uses of waters of the State. In making this determination, the Executive Officer shall consider, at a minimum, the THP or NTMP, information from the pre-harvest inspection or other site inspections, the Notice of Intent, the Eligibility Criteria (Exhibit 1 to MRP R3-2005-0066), and all available monitoring reports.

5. Upon receipt of notice of termination of applicability of the waiver, the discharger shall immediately cease all timber harvest activities that may result in discharges to waters of the State, other than activities necessary to control erosion. Upon notice of termination, the discharger must file a report of waste discharge and applicable filing fee. Timber harvest activities that may result in discharges that could affect the quality of waters of the State may commence only upon enrollment by the Executive Officer under general waste discharge requirements, the adoption by the Central Coast Water Board of an individual waiver of waste discharge requirements or individual waste discharge requirements, or in accordance with CWC Section 13264(a).

6. This general conditional waiver shall become effective on July 8, 2005, and shall expire on July 8, 2010, unless terminated or renewed by the Central Coast Water Board. The Central Coast Water Board may terminate this waiver at any time, either as to a particular timber harvest or in its entirety.

7. As provided by CWC Section 13350(a), any person who, in violation of any waiver condition, discharges waste, or causes or permits waste to be deposited where it is discharged, into the waters of the state, is subject to administrative or civil liability for the violation.

8. Any person affected by this action of the Central Coast Water Board may petition the State Water Board to review the action in accordance with section 13320 of the California Water Code and Title 23, California Code of Regulations, Section 2050. The petition must be received by the State Water Board within 30 days of the date of this Order. Copies of the law and regulations applicable to filing petitions will be provided upon request.

I, Roger W. Briggs, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on July 8, 2005.

Roger W. Briggs

Roger W. Briggs, Executive Officer

7-29-05

Date

MONITORING AND REPORTING PROGRAM NO. R3-2005-0066
FOR THE GENERAL CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS – TIMBER HARVEST ACTIVITIES IN THE CENTRAL COAST REGION
TIER III MONITORING FOR NTMP 1-06NTMP-017 SCR LITTLE BUCK

July 10, 2007

Your plan is enrolled in Tier III monitoring which requires the following monitoring:

- CDF Forest Practice Rules compliance monitoring.
- Road inventory program.
- Forensic monitoring as necessary.
- Visual and photo monitoring of harvest infrastructure.
- Water Column monitoring.

NTMPs that are categorized by the eligibility criteria as Tiers II or III cannot be downgraded to a lower category based on other criteria. The Water Board's Executive Officer may not change the monitoring requirements so they are less stringent than the requirements in the designated tier from the eligibility criteria.

The Water Board's Executive Officer determines which monitoring tier applies to a NTMP after considering the NTMP, information from the pre-harvest inspection or other site inspections, the Timber Harvest Information Form and Fact Sheet, and the Eligibility Criteria (attached in Exhibit 1). **Monitoring begins at the onset of timber harvest operations and ends when the Monitoring and Reporting Program is revised or rescinded.**

SITE SPECIFIC MONITORING LOCATIONS FOR TIER III MONITORING

The following takes into account specific site conditions and mitigations to establish monitoring locations (see attached map, Exhibit 2 Monitoring Locations) that will provide functional monitoring information. The Discharger shall perform monitoring at these locations as described below in Section I – Implementation and Effectiveness Monitoring and Monitoring Frequency; Section II – Data Logging and Reporting; and Section III – Standard Provisions.

VISUAL MONITORING POINTS: The Discharger shall conduct visual monitoring at the points listed below:

Visual monitoring points shall include the full length of roads, watercourse crossings, landings, skid trails, water diversions, watercourse confluences, known landslides, and all mitigation sites (as documented the CDF approved NTMP) in the timber harvest plan area.

PHOTO-MONITORING POINTS: The Discharger shall monitor Photo-monitoring points listed below (guidelines in Exhibit 3). Photo-monitoring points:

Two sets per photo point for a total of six sets each storm event.

Photo Point 1 (PP1): Crossing X4 (two sets of photos; outlet and inlet)

Photo Point 2 (PP2): Crossing X7 (two sets of photos; outlet and inlet)

Photo Point 3 (PP3): Crossing at Pacific Watershed Associates (PWA) Site 25 (two sets of photos; outlet and inlet) In addition to storm event sampling the discharger shall also conduct photo-monitoring before, during, and after the construction to upgrade the crossing. Photos shall include the inlet, outlet, and installation of the gabion baskets.

WATER COLUMN MONITORING POINTS: The Discharger shall measure instream temperature and turbidity conditions at the locations listed below. Water column monitoring points:

Temperature

Station 1 (STA #1):Deer Creek at northern property line.

Station 2 (STA #2): Deer Creek +/- 100' upstream of southern property line.

Turbidity

Station 1 (STA #1): Grab sample from Deer Creek at northern property line.

Station 2 (STA #2): Grab sample from Deer Creek +/- 100' upstream of southern property line.

FORENSIC MONITORING: The Discharger shall conduct forensic monitoring as described in Section I below.

SECTION I – IMPLEMENTATION AND EFFECTIVENESS MONITORING AND MONITORING FREQUENCY

VISUAL MONITORING

VISUAL MONITORING POINTS: Visual monitoring points shall include the full length of roads, watercourse crossings, landings, skid trails, water diversions, watercourse confluences, known landslides, and all mitigation sites (as documented the CDF approved NTMP) in the timber harvest plan area. Visual monitoring points shall be at locations within the timber harvest plan area where timber harvest activities have the greatest risk of potential discharge (sites may be established by the Water Board's Executive Officer during or after the pre-harvest inspection).

VISUAL MONITORING FREQUENCY: The Discharger shall monitor all visual monitoring points established by the Water Board's Executive Officer during or after the pre-harvest inspection for existing or potential sources of erosion. The Discharger shall perform visual monitoring within 12 to 24 hours of storm events of two inches of rain of greater within a 24-hour period.

"Year One" – You are required to monitor a minimum of three times over each 12 months during "**Year One**" monitoring. "Year One" monitoring begins with the onset of timber harvest operations. "Year One" monitoring then continues during the entire length of time active timber harvest operations occur plus one year past the end of active timber harvest operations.

Monitoring Event One:

The Discharger shall perform the first monitoring event within 12 to 24 hours of the first storm event that yields two inches of rain or greater within a 24-hour period.

Monitoring Events Two and Three:

The Discharger shall perform the next two monitoring events within 12 to 24 hours of the next two storm events (one monitoring event each storm) that include two inches of rain or greater within a 24-hour period and soil saturation after the start of the winter period on October 15.

Years 2-5 – In years two through five, following completion of timber harvest operations and a determination by the Water Board's Executive Officer (as documented by information contained in the annual report and post-harvest inspection conducted by Water Board staff) that implemented management practices are functioning to protect water quality and beneficial uses, visual monitoring shall be implemented according to the Road Management Program

developed by the Discharger approved by the Water Board's Executive Officer (example attached in Exhibit 3, Big Creek Road Inventory Program).

It is your responsibility to schedule a post-harvest inspection with Water Board staff. You may call to schedule an inspection no sooner than 10 months after the timber harvest plan is complete.

Important Note: You may not begin Year 2 monitoring until you are directed to do so in writing by the Water Board's Executive Officer.

If implemented management practices are not adequately protecting water quality and beneficial uses, as determined by the Water Board's Executive Officer, the Discharger shall repeat "Year One" monitoring. In addition to supplementary monitoring, the Water Board's Executive Officer will determine additional management measure implementation required.

Summary of Visual Monitoring Frequency:

"Year One":	minimum of three events
Year 2 – 5:	consistent with the Road Management Program developed by the Discharger and approved by the Water Board's Executive Officer.

PHOTO-MONITORING

PHOTO-MONITORING POINTS: Photo-monitoring points shall be at locations within the timber harvest plan area where timber harvest activities have the greatest risk of potential discharge (sites may be established by the Water Board's Executive Officer during or after the pre-harvest inspection). Photo-monitoring points shall include up and down stream of each newly constructed or reconstructed Class I and Class II watercourse crossings and landings within a Class I or II Watercourse or Lake Protection Zone (WLPZ). Monitoring photos need to be of sufficient quality to record the effectiveness of the implemented management practice.

The Discharger shall:

i. Utilize the attached document titled "Standard Operation Procedure 5.2.3 - Photo Documentation Procedure" (including any subsequent revisions to SOP 5.2.3) as the protocol for all photo-monitoring (attached in Exhibit 3).
ii. Utilize flagging, rebar, or another method of establishing the photo-monitoring point site locations.
iii. Utilize all photo-monitoring point locations until this Monitoring and Reporting Program is revised or rescinded.

PHOTO-MONITORING FREQUENCY: The Discharger shall monitor all photo-monitoring points established by the Water Board's Executive Officer during or after the pre-harvest inspection.

"Year One" - You are required to monitor a *minimum* of two times over each 12 months during "Year One" monitoring. Monitoring may occur as much as four times over a monitoring season if operations are opened and permanently closed in the same 12 month period.

- Prior to the onset of timber harvest operations as baseline monitoring. (One Photo Set)
- Before, during, and after active construction
- Following the first significant storm event (First Storm) (One Photo Set).
- Following completion of timber harvest activities (One Photo Set).
- Following a significant storm event during the month of April (April Storm) (One Photo Set). A significant storm event means any storm with two inches of rain or greater within a 24-hour period and soil saturation (i.e., soil saturation typically occurs after a minimum of four inches of precipitation during after the start of the winter period on October 15.

Additionally, the Discharger shall photograph new or reconstructed Class I and Class II water crossings:

- Before construction begins, after construction is completed, and after the crossing structure is removed (if crossing is temporary).

You are required to conduct photo-monitoring within seven days of all of the following:

1. The first storm.
2. Completion of timber harvest activities.
3. April storm events. If no significant storm event occurs in the month of April, the Discharger shall complete photo-monitoring by April 30 of the same year.

Years 2 and 5 - In years two and five, following completion of timber harvest operations and a determination by the Water Board's Executive Officer (as documented by information contained in the annual report and a post-harvest inspection conducted by Water Board staff) that implemented management practices are functioning to protect water quality and beneficial uses, the Discharger shall conduct the April storm photo-monitoring.

It is your responsibility to schedule a post-harvest inspection with Water Board staff. You may call to schedule an inspection no sooner than 10 months after the timber harvest plan is complete.

Important Note: You may not begin Year 2 monitoring until you are directed to do so in writing by the Water Board's Executive Officer.

If implemented management practices are not adequately protecting water quality and beneficial uses, as determined by the Water Board's Executive Officer, the Discharger shall repeat "Year One" monitoring. In addition to supplementary monitoring, the Water Board's Executive Officer will determine additional management measure implementation required.

Summary of Photo-monitoring Frequency:

"Year One":	2 photo sets minimum
Year 2:	1 photo set
Year 5:	1 photo set

TEMPERATURE MONITORING

TEMPERATURE MONITORING POINTS: The Discharger shall monitor temperature continuously as prescribed in the document Central Coast Regional Water Quality Control Board, Timber Harvest Program, Standard Operating Procedures for Continuous Temperature Monitoring (April 2006) (attached in Exhibit 3) during the months of May 1 through October 15. Monitoring sites will be established by the Water Board's Executive Officer during or after the pre-harvest inspection. Continuous water temperature monitoring is required.

If no Class I watercourse exists on the parcel where timber harvest activities occur, and there is water in the Class II during the months of May 1 through October 15, the Discharger shall conduct temperature monitoring in the Class II watercourse.

TEMPERATURE MONITORING FREQUENCY: The Discharger shall monitor all temperature monitoring points.

"Year One" - The Discharger shall program data loggers to record point measurements every hour during the months of May 1 through October 15 at all established temperature monitoring points.

Years 2 and 5 - In years two and five, following completion of timber harvest operations and a determination by the Water Board's Executive Officer (as documented by information contained in the annual report and a post-harvest inspection conducted by Water Board staff) that implemented management practices are functioning to protect water quality and beneficial uses, the Discharger shall program data loggers to record point measurements every hour during the months of May 1 through October 15 at all established temperature monitoring points.

It is your responsibility to schedule a post-harvest inspection with Water Board staff. You may call to schedule an inspection no sooner than 10 months after the timber harvest plan is complete.

Important Note: You may not begin Year 2 monitoring until you are directed to do so in writing by the Water Board's Executive Officer.

If implemented management practices are not adequately protecting water quality and beneficial uses, as determined by the Water Board's Executive Officer, the Discharger shall **repeat "Year One" monitoring**. In addition to supplementary monitoring, the Water Board's Executive Officer will determine additional management measure implementation required.

Summary of Temperature Data Sets:

"Year One":	1 data set
Year 2:	1 data set
Year 5:	1 data set

TURBIDITY MONITORING

TURBIDITY MONITORING POINTS: The Discharger shall monitor all newly constructed or reconstructed Class I and II crossings within the timber harvest plan area in place after October 15 for turbidity (a hand held turbidimeter is acceptable for this purpose). The Discharger shall measure turbidity approximately 25 feet upstream and downstream of all newly constructed or reconstructed Class I and II road crossings or combination of sites if there is close site proximity (sites may be established by the Water Board's Executive Officer during or after the pre-harvest inspection). The Water Board's Executive Officer may require turbidity monitoring if no newly constructed or reconstructed crossings exist within a proposed timber harvest plan and the plan has activity within a Class I or II WLPZ.

TURBIDITY MONITORING FREQUENCY: The Discharger shall monitor turbidity within 12 hours of a storm event with two inches or more of rain within a 24-hour period. If a storm terminates or two inches is reached between the hours of 3:00

pm (1500 hour) and 9:00 pm (2100 hour) you are required to conduct turbidity monitoring within 18 hours.

"Year One" You are required to monitor a minimum of three times over each 12 months during "Year One" monitoring.

Monitoring Event One:

The Discharger shall perform the first monitoring event within 12 hours of the first storm event that yields two inches of rain or greater within a 24 hour period.

Monitoring Events Two and Three:

The Discharger shall perform the next two monitoring events within 12 hours of the next two storm events (one monitoring event each storm) that include two inches of rain or greater within a 24 hour period and soil saturation after the start of the winter period on October 15.

Years 2-5 - In years two through five, following completion of timber harvest operations and a determination by the Water Board's Executive Officer (as documented by information contained in the annual report and a post-harvest inspection conducted by Water Board staff) that implemented management practices are functioning to protect water quality and beneficial uses, the Discharger shall conduct turbidity monitoring based on need as determined by forensic monitoring.

<u>It is your responsibility to schedule a post-harvest inspection with Water Board staff. You may call to schedule an inspection no sooner than 10 months after the timber harvest plan is complete.</u>

Important Note: You may not begin Year 2 monitoring until you are directed to do so in writing by the Water Board's Executive Officer.

If implemented management practices are not adequately protecting water quality and beneficial uses, as determined by the Water Board's Executive Officer, the Discharger shall **repeat "Year One" monitoring.** In addition to supplementary monitoring, the Water Board's Executive Officer will determine additional management measure implementation required.

Summary of Turbidity Data Sets:

"Year One": 1 data set (minimum of three events)
Year 2 – 5: as needed based on forensic monitoring.

FORENSIC MONITORING

1. If at any time during implementation or effectiveness monitoring, the Discharger observes failed management measures and/or source of discharge, the Discharger shall conduct forensic monitoring to identify the source. Management measure failure is defined as: 1) whenever an implemented management measure creates a condition of pollution, contamination, or condition of nuisance, as defined by CWC Section 13050, or 2) when lack of implementation of a necessary management measure creates a condition of pollution, contamination, or condition of nuisance, as defined by CWC Section 13050.
2. If management measures fail (this includes failure to implement appropriate management measures as determined by CDF and documented by CDF as a violation of the Forest Practice Rules) the Discharger shall photo[1] document them and shall implement management practices immediately to prevent discharge and impacts to water quality.
3. If timber activities cause a discharge (sediment, soil, other organic material, etc.) into waters of the State, the Discharger shall measure in-stream turbidity (using grab samples) at the point of discharge into waters of the state. If there is a discharge into a Class III watercourse and water is no longer flowing, the Discharger shall measure in-stream turbidity in the closest Class I or Class II watercourse downstream of the discharge.
4. If at any time during implementation or effectiveness monitoring, the Discharger observes a discharge (sediment, soil, other organic material, herbicides, pesticides, fluids from timber equipment (oil, hydraulic fluid, etc), etc.), the Discharger shall notify the Water Board within 24 hours.
5. The Discharger shall submit to the Water Board a written report, including photo documentation, water quality data, and the management measures or corrective actions and a description of their effectiveness within 10 working days. Upon review of the report, the Water Board's Executive Officer will determine completeness of the report and the need for additional actions necessary for the protection of water quality and beneficial uses.

FORENSIC MONITORING AREAS OF CONCERN: The following areas must be addressed during forensic monitoring if water diversion, feral pig activity, or trespass activity are causing or threatening to cause impacts to water quality.

Water Diversion: The Discharger shall monitor the water diversion point(s) for total daily water usage when water is being diverted. The Discharger shall monitor the creek to ensure no more than 10% of the creek flow is diverted.

[1] Monitoring photos need to be of sufficient quality to record the effectiveness of the implemented management practice.

Feral Pig Activity: During any inspection, the Discharger shall document all evidence of feral pig activity near watercourses that may be contributing discharges to waters of the state.

Trespass Activity: During any inspection, the Discharger shall document all evidence of trespass activity near watercourses that may be contributing discharges to waters of the state.

FORENSIC MONITORING FREQUENCY: The frequency of Forensic Monitoring is coincident with implementation and effectiveness monitoring, or at any time a failed management measure and/or discharge is reported or observed.

SECTION II - DATA LOGGING AND REPORTING

LOGBOOKS: The Discharger shall maintain logbooks for recording all visual and water analysis data. Logbooks shall include documentation of maintenance and repair of management practices. These logbooks shall be available for inspection to the Water Board staff.

HEALTH AND SAFETY: The Discharger is responsible for ensuring that all monitoring is done in a safe manner. If any monitoring point is too dangerous to sample, then the Discharger shall report this circumstance to the Water Board within 48 hours.

ROAD MANAGEMENT PROGRAM: The Discharger shall develop and implement a Roads Management Program (example attached in Exhibit 3, Big Creek Road Inventory Program) within the NTMP area. Prior to implementation the road management program must be approved by the Water Board's Executive Officer. After each storm event that triggers an inspection, the Discharger shall perform a field inspection and prepare a field form as described in the protocol for the road management program. The Discharger shall enter the data into a logbook (same as described in item a. above) and database or spreadsheet which tracks observations, work completed, and dates of last review. If the need for repair is immediate, the Discharger shall promptly develop an appropriate treatment so that the Discharger can complete corrective action as soon as practical.

SEDIMENT RELEASE REPORTING: The Discharger shall report to the Water Board within 48 hours whenever at least one cubic yard of soil is released to a waterway due to anthropogenic causes or at least five cubic yards of soil is released to a waterway due to natural causes, or when turbidity is noticeably greater downstream compared to upstream (of a crossing or the Plan area). The Discharger shall submit a written report to the Water Board within 10 days of detection. The Discharger shall investigate source areas of sediment. If sources are found, the Discharger will locate and document the source and size of the release. If sources related to timber harvest activities are found, the Discharger shall immediately correct the source if possible, or schedule corrective action at an appropriate time given the site conditions.

VIOLATION REPORTING: The Discharger shall report any violation of the Forest Practice Rules, to the Water Board within 48 hours. The Discharger shall provide the report in writing to the Water Board within 10 working days of the violation. The written report shall include photo documentation and water quality data (if discharge enters waters of the state) before and after remedial action. Upon review of the report, the Water Board's Executive Officer will determine completeness of the report and the need for additional actions necessary for the protection of water quality and beneficial uses. The Discharger shall complete

any additional monitoring the Water Board's Executive Officer determines is necessary.

ANNUAL REPORTING: By November 15 of each year, the Discharger shall submit an Annual Report to the Water Board using the template that can be downloaded from:

http://www.waterboards.ca.gov/centralcoast/Facilities/Timber Harvest/index.htm

Under "Monitoring and Reporting" click on "Annual Report Template." In addition to the reporting requirements already set forth in the MRP, the annual report must address each of the following[2]:

Annual Reports shall include all of the following:

General

- The name and address of the person submitting the report as well as the day, month, and year in which the report is being submitted at the top of the first page.
- The subject line of the annual report shall state the NTMP number, three-letter county code, and plan name as it appears in the approved NTMP, and specific units within the NTMP that have been enrolled under the General Waiver.
- Time period during which the data was collected.
- List Tier level and summarize the monitoring requirements.
- A status of active timber harvest operations including:
    - Day, month, and year the harvest opened and closed for the season.
    - Previous year activities (types of activities, locations, percent harvested, area of harvest, and extent the overall plan is complete)
    - Planned activities including estimated month and year harvests activities shall resume.
    - Estimated month and year harvesting will be completed.
    - Wet weather problems observed
    - Any other critical information
- A summary of all violations. If there were no violations, please state it as such.
- Detailed documentation of rainfall measurement procedures and locations or a reference to the page number in the NTMP where this is described. Describe the type of rain gauge(s) used. If applicable include the link to the Web site where data for the rain gauge may be viewed.

[2] Portions of these requirements and sections of the template may not apply to your specific MRP (e.g. If your MRP does not require temperature monitoring, the temperature monitoring requirements should be ignored).

- With the first annual report, a copy of the road management program.
  - A summary of the road management program[3] and actions implemented for the protection of water quality and beneficial uses.
- Recommendations for improving the monitoring and reporting program.

Water Quality Monitoring (if required)

- A summary of the water quality monitoring performed during the previous year. Any monitoring described in the summary must also include an electronic submittal of the data.
- A detailed map with the following specifications:
  - In color (if possible).
  - Title stating: "Water Quality Monitoring Locations for NTMP No. XXXX"
  - All monitoring locations and routes clearly marked with unique site identification tags.
  - A Key or Legend identifying all monitoring locations and routes.
  - North Arrow.
  - Scale

Visual Monitoring

- *A summary of all visual monitoring activities performed during the previous year.*
  - Summary shall include dates and times visual monitoring occurred and any corrective actions taken during inspections.
  - Attach inspection forms or copies of logbook pages detailing inspections.

Photo-monitoring (if required)

- Submittal of all data and photos in electronic format.

[3] Big Creek's Road Inventory Program may be used as a model.

Turbidity Monitoring (if required)

- All data submitted electronic format compatible with Excel.
- A summary of all turbidity monitoring activities performed during the previous year.
- Completed Field Data Sheet with data from all monitoring events. (if more than 4 events no need to complete top section on additional pages)

Continuous Temperature Monitoring (if required)

- All data submitted electronically in excel format.
- Make and model of the data loggers being used at each monitoring location.
    - Copy of the manufacture's protocol / recommendation for proper use of the loggers.
- Calibration check form for each data logger.
- Description of any modifications or adjustments made based on the calibration checks and field observations.

SECTION III - STANDARD PROVISIONS

1. The Water Board shall be allowed:

   a. Entry upon premises where timber harvest activities occur;
   b. Access to copy any records that must be kept under the conditions of these requirements;
   c. To inspect any timber harvest activity, equipment (including monitoring and control equipment), practices, or operations regulated or required under these requirements; and,
   d. To photograph, sample, and monitor for the purpose of showing timber harvest requirements compliance.

2. The Discharger shall maintain records of all monitoring information and results. Records shall be maintained for a minimum of three years after the MRP is rescinded. This period may be extended during the course of any unresolved litigation or when requested by the Water Board.

3. Any person signing a report shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

The Water Board's Executive Officer may modify or rescind this Monitoring and Reporting Program at any time, or may modify or rescind the monitoring and reporting program as to a specific Discharger. Any such modification or rescission must comply with California Water Code section 13269.

Ordered By: _____ 7-10-07
Roger W. Briggs, Executive Officer **Date**

Attachments:

Exhibit 1
Inspection Report(s)
Copy of the Timber Harvest Plan Information Form and Fact Sheet
Eligibility Criteria

Exhibit 2
Monitoring Locations

Exhibit 3
Big Creek Road Inventory Program
Standard Operating Procedure 5.2.3 Photo Documentation Procedure
Standard Operating Procedures Continuous Temperature Monitoring
Standard Operating Procedures Instream Turbidity Monitoring

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Exhibit 1

Inspection Report(s)
Copy of the Timber Harvest Information Form and Fact Sheet
Eligibility Criteria

Memo

To: File – Nonindustrial Timber Management Plan
1-06NTMP-017 SCR Little Buck

From: Julia Dyer

CC: Chris Adair

Date: July 10, 2007

Re: Preharvest Inspection of Nonindustrial Timber Management Plan
1-06NTMP-017 SCR Little Buck

KEY INFORMATION

CDF PREHARVEST INSPECTION

Inspection Date	**August 21, 2006**	Persons Present (9)	Affiliation
Property Size (acres) Plan Size (acres) Harvest Area (acres)	89 56 56	Bill Vaughn Victor Smith Greg Haagenson John Martinez Julia Dyer Donna Bradford C. Michael Huyette Richard Fitzgerald	RPF Landowner Rd. Ass. CDF Water Board County, SC CGS DFG
Yarding Type	Tractor Rubber Tire Skidder Cable, Skyline		
Watershed	San Lorenzo		
Sub drainages	Deer Creek		
303(d) Listed	Bear Creek and San Lorenzo for Sedimentation / Siltation		
Landowners	Victor Smith Ann Schwarzmann Grant Codiga		
THP Signatory Name	Cassady Bill Vaughan		

FOCUSED PREHARVEST INSPECTION

Inspection Date	**January 18, 2007**	Persons Present (3)	Affiliation
		C. Bill Vaughn Julia Dyer Linda Stone	RPF Water Board Water Board

Note: The following report reflects observations from both inspections.

HISTORY

The entire property encompasses 89 acres, 56 of which are forested with redwood and Douglas-fir and 33 are coastal oak woodland. The 56-acre management area is dominated by second-growth redwood timber that regenerated following clear-cut activities that likely took place from 1904-1907, and again in 1935 and 1936. Since then, the property has not been actively managed for timber production, although the landowner filed two fuel-wood exemptions for the property in 2002 and 2003. The forester anticipates future entries at 12-year intervals.

LOCATION AND MANAGEMENT

The private property is located in Santa Cruz County, approximately four air miles northeast of the town of Boulder Creek. The 56-acre NTMP is comprised of a single management unit, although individual harvest operations may not always encompass the entire NTMP area. The harvest area is located within the Deer Creek drainage which flows into Bear Creek, which flows into the San Lorenzo River and to the Pacific Ocean.

Lands surrounding the subject properties are a mix of open space and residential development. The primary use of the permanent roads in the plan area is year-round access to residences north of the property. The permanent roads on this plan area are part of the Deer Creek Road Association.

INSPECTIONS

A year-round, unsurfaced road also services many of the surrounding residences. Overall, the road is in poor condition with a high probability of sediment delivery to Deer Creek. The road shows signs of potential failure such as cracks running along the outside edge of the road parallel to Deer Creek.

A majority of the culverts crossing the haul route and in the plan area are antiquated and all exhibit one or more of the following conditions:

- Overdue for replacement;
- Undersized with high plug potential;
- Improperly placed in relation to the natural stream gradient; or
- Road fill surrounding culvert is failing in one or more places;

All road crossings and other road problems have been evaluated by Pacific Watershed Associated (PWA). In their evaluation, PWA has provided recommended treatments to relieve the failing or potentially failing crossings. Deer Creek Road Association (DCRA) oversees the overall road management. The DCRA has already received grants to upgrade the sites in most immediate need of treatment.

As part of the NTMP, the landowner will upgrade two of the culverted crossings within the plan area and one on the haul route outside the plan. The upgrading of these crossings does not include the full recommendation by PWA. But, Water Board staff sees the upgrades as an improvement to current conditions. Should the NTMP treatments prove to be inadequate, and additional treatment becomes necessary to prevent sediment delivery, Water Board staff will recommend additional treatments at the postharvest inspections.

Due to the high year-round traffic conditions, it is impossible to winterize the roads at the conclusion of timber harvest activities or determine what proportion of sediment delivery can be attributed to residential impacts verses logging impacts.

The forester has committed to conducting pre and postharvest video monitoring of the entire visual inspection route.

CROSSING AT PWA SITE #25

The crossing at PWA Site #25 is a Class III culverted haul road crossing outside the timber harvest area. PWA identified the existing 48 inch culvert as undersized and recommends a culvert upgrade to 84 inches by 70 feet. Additionally, the existing culvert is not fitted to the channel grade. The road drainage at this site currently concentrates runoff at the left side of the downstream end of the culvert, causing destabilization of the road prism in this location. Residents of the Deer Creek Watershed have installed a buttress on the failing road prism in an attempt to control the failing fill.

The discharger will treat this site with the installation of a minimum of four rock gabion baskets in the failing road fill prism without upgrading the size of the existing culvert. The gabion baskets serve as a treatment to stabilize the downstream face of the failing road prism. Water Board staff has concerns regarding the negative impacts to water quality should the crossing fail due to a plugged culvert. When or if the culvert plugs, water and any associated debris will overtop the road and potentially destabilize the gabions. Destabilized gabions could lead to catastrophic failure of the crossing resulting in discharge of wire, rock, sediment, and organic material into the watercourse. Therefore Water Board staff makes the following recommendations to the discharger:

- Add a trash rack per the specifications of the Geotechnical Engineer – John Kasunich, upstream of the crossing.
- Monitor and maintain the site until the MRP is rescinded. The Deer Creek Road Association, including the landowner of the site, will assume responsibility for monitoring and maintenance of the crossing after the MRP is rescinded.
- Install gabion baskets constructed of rust resistant galvanized metal.
- Install and anchor the gabion baskets on the hinge-line of the road fill and native soil and anchor all the gabion baskets into solid earth.

- Stabilize the gabion baskets with 1" rebar.
- Modify the drainage structure of the road currently discharging to the destabilized fill material. Redirect road runoff from discharging at the currently unstable location by installing a critical dip north of the gabion baskets.

HAUL ROUTE

The haul route begins on the west side of the harvest area then travels north to Deer Creek Road. Deer Creek Road then turns south traveling through the eastern portion of the property, after leaving the property, the haul route continues another 1.3 miles until it meets up with Bear Creek Road. At this point the logging trucks can either travel south to Highway 9 or north to highway 17.

RAIN GAUGE LOCATION

Las Cumbres
http://cdec2.water.ca.gov/cgi-progs/queryFx?LCM

RECOMMENDATIONS

AT PWA Site #25:

- Add a trash rack per the specifications of the Geotechnical Engineer – John Kasunich upstream of the crossing.
- Monitor and maintain the site until the MRP is rescinded. The Deer Creek Road Association, including the landowner of the site, will assume responsibility for monitoring and maintenance of the crossing after the MRP is rescinded.
- Install gabion baskets constructed of rust resistant galvanized metal.
- Install and anchor the gabion baskets on the hinge-line of the road fill and native soil and anchor all the gabion baskets into solid earth.
- Stabilize the gabion baskets with 1" rebar.
- Modify the drainage structure of the road currently discharging to the destabilized fill material. Redirect road runoff from discharging at the currently unstable location by installing a critical dip north of the gabion baskets.

Note - Regional Board staff photographed the site: Photos available upon request.

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Roger Briggs, Executive Officer
c/o Julia Dyer
Central Coast Regional Water Quality Control Board
865 Aerovista Place, Suite 101
San Luis Obispo, CA 93401

STATE OF CA
CENTRAL COAST WATER
Received
APR 2 2007
895 Aerovista Place, Ste. 101
San Luis Obispo, CA 93401-7906

Date: **March 30, 2007**

REQUEST FOR ENROLLMENT UNDER THE GENERAL CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS - TIMBER HARVEST ACTIVITIES IN THE CENTRAL COAST REGION.

Dear Mr. Briggs,

As the landowner(s) of the following Timber Harvest Plan (THP) or Nonindustrial Timber Mangement Plan (NTMP), I would like to request coverage under the General Conditional Waiver of Waste Discharge Requirements – Timber Harvest Activities in the Central Coast Region.

THP/NTMP #:	**1- 06NTMP- 017 SCR**
Plan Name as written in the THP / NTMP:	**Little Buck NTMP**
Unit name(s) or number(s): (For NTMPs only)	**Single Unit NTMP**

This THP / NTMP was approved by the California Department of Forestry on: **March 21, 2007.**

(note: If a water quality based non-concurrence has not been resolved, then the applicant must apply for an individual waiver)

As requested, I have attatched the following documents:

- A complete, accurate, and signed Timber Harvest Plan Information Form and Timber Harvest Plan Fact Sheet (Form and Fact Sheet).
- A site map with proposed monitoring points, proposed monitoring route, creeks, landings, skid trails, roads, and mitigation points clearly identified and labeled.
- A site map with slides and EHR areas identified with roads and skid trails.
- Proof of CDF approval of the THP/NTMP (copy of the "green sheet").

I certify that the information contained in the Form and Fact Sheet and on the site map accurately represents site conditions on the property. I also aknowledge that I am ultimately responsible for all activities that occur on my property.

Landowner(s) Signature*: _____ **Date:** 2-7-07

Landowner(s) Signature*: _____ **Date:** 2/7/07

Landowner(s) Signature*: _____ **Date:** 2/18/07

*Must receive original signature, blue ink preferred.

Timber Harvest Plan Information Form

1. Plan or Notice Name:	Plan Number:
Little Buck NTMP	**1- 06NTMP- 017 SCR**

2. Landowners' Contact Information:

Land Owner: **Victor Smith**		
Address: **335 Cereza Place**		
City: **San Jose**	State: **CA**	Zip Code : **95112**
Phone: **(805) 610-4867**	E-mail address (optional):	
Land Owner: **Ann Schwarzmann**		
Address: **PO Box 317**		
City: **Boulder Creek**	State: **CA**	Zip Code : **95006**
Phone: **(408) 399-5695**	E-mail address (optional):	
Land Owner: **Grant Codiga**		
Address: **PO Box 317**		
City: **Boulder Creek**	State: **CA**	Zip Code : **95006**
Phone: **(408) 399-5695**	E-mail address (optional):	

3. Name and Phone Number of Contact Person(s):

Name: **Victor Smith**	Phone: **(805) 610-4867**
Name: **Ann Schwarzmann**	Phone: **(408) 399-5695**

4. Registered Professional Forester :

RPF Name/Signature: **Cassady Bill Vaughan**	RPF Number: **2685**	
Address: **6010 Highway 9, Suite #6**		
City: **Felton**	State: **CA**	Zip Code: **95018**
Phone: **(831) 335-1452**	E-mail address (optional): **billyv@pacbell.net**	

Revised 6/14/06

5. Certification:

We, the Landowners named above, hereby certify under penalty of perjury that the CDF-approved plan or CDF-accepted notice and the accompanying fact sheet accurately represent site conditions and we understand that, as the Landowners, we am ultimately responsible for all activities that occur on our property. We also understand that we are ultimately responsible for compliance with all conditions of any Waste Discharge Requirements or Waiver of Waste Discharge Requirements issued for the above-referenced activity.	
Signature*:	Date: 2-07-07
Signature*:	Date: 2/7/07
Signature*:	Date: 2/18/07

*Must receive original signature, blue ink preferred

Attachments:
- Timber Harvest Plan Fact Sheet
- Site map with all proposed monitoring points, proposed monitoring route, creeks, landings, skid trails, roads, and mitigation points clearly identified and labeled.
- Site map with slides and EHR areas identified with roads and skid trails.
- Proof of CDF approval of the THP/NTMP (copy of the "green sheet").

Timber Harvest Plan Fact Sheet

The following supplemental information will be used in the approval process of the above-referenced Timber Harvest activity.

1. Timber Harvest Plan

Name: **Little Buck NTMP**	Number: **1- 06NTMP- 017 SCR**
Location: **Portion of Sect. 4, T 9S, R 2W, and Portion of Sect. 33, T 8S, R 2W, MDB&M.**	

2. Responsible Parties

Land Owner: **Victor Smith**		
Address: **335 Cereza Place**		
City: **San Jose**	State: **CA**	Zip Code : **95112**
Phone: **(805) 610-4867**	E-mail address (optional):	
Land Owner: **Ann Schwarzmann**		
Address: **PO Box 317**		
City: **Boulder Creek**	State: **CA**	Zip Code : **95006**
Phone: **(408) 399-5695**	E-mail address (optional):	
Land Owner: **Grant Codiga**		
Address: **PO Box 317**		
City: **Boulder Creek**	State: **CA**	Zip Code : **95006**
Phone: (408) 399-5695	E-mail address (optional):	
Timber Owners (if different from Land Owner): **Same as Landowners above**		
Forester: **Cassady Bill Vaughan**		
Address: **6010 Highway 9, Suite #6**		
City: **Felton**	State: **CA**	Zip Code: **95018**
Phone: **(831) 335-1452**	E-mail address (optional): **billyv@pacbell.net**	

3. Timber Harvest Plan Summary

a) THP size and watershed size

Acreage of THP (parcel size): **56-acre harvest area is spread across 3 parcels totaling 89 acres.**
Acreage to be harvested during this conditional waiver enrollment period: **56 acres**
Watershed Name (e.g. Pajaro, San Lorenzo, etc.): **San Lorenzo Watershed**
Planning Watershed Name and #: **Bear Creek Watershed, V 2.2 (3304.120300)**
Total acres in planning watershed: **8600 acres**
Acres harvested in planning watershed in last 15 years: **1518 acres**
Acres currently proposed for harvest in the planning watershed in addition to this proposed harvest (include any approved NTMPs): **115 acres**

b) Logging Technique (Yarding) (check all applicable)

Ground based (skidding, long line): **X**	Cable Yarding: **X**	Helicopter:

c) Roads

Number and length of:	Seasonal	All-Weather	Road Watercourse Crossings:			
Existing Roads:	**0'**	**4800'**				
New Roads:	**700'**			Total	Perm	Temp
Reconstructed Roads (number/length): **0'**			Class I:			
Roads in unstable areas? (YES/NO)			Class II:	**1**	**1**	
If yes, explain: **No**			Class III:	**6**	**6**	
Roads in WLPZ? (YES/NO) If yes, # of feet and explain: **No**						
# of feet of roads in			High EHR: **5500'**		Extreme EHR:	
# of feet of roads decommissioned: **None**						
Any decommissioned in high/extreme EHR? (YES/NO) If yes # of feet in: **No**			High EHR: Extreme EHR:			

d) Skid Trails (If the plan contains areas with unmapped skid trails, please indicate the acreage of these areas.)

Existing skid trails (number/length): **200'**	Skid Trail Watercourse Crossings:			
New trails (number/length): **2500'**		Total	Perm	Temp
Reconstructed Roads (number/length): **0'**	Class I:	**0**		
Skid Trails in WLPZ (YES/NO)?	Class II:	**0**		
If yes, explain: **No**	Class III:	**0**		

Trails in unstable areas (YES/NO)? If yes, explain: **Yes** Explanation: **Text Reference 1 (TR1) identifies an area where a proposed skid trail crosses over depositional material resulting from an old landslide that has no recent signs of movement. The terrain here is somewhat hummocky, but will not require significant modification to be used for skidding logs. The LTO will be directed to keep the blade up and construct only where it is absolutely necessary. In no case will a cutbank of greater than 2 feet be created, and upon completion of operations, the trail will be recontoured so that no significant (greater than 1 foot) exposed cuts remain. Additionally, the entire trail, from it's terminus near the northern property line to Landing C will be tractor packed with slash and debris. The RPF will meet with the LTO on-site prior to and following use of the trail to go over construction limitations and post-operational trail conditions. In particular, the RPF will be on-site to direct treatment of the trail section that crosses the mapped debris scar. Here, the goal will be redefine the existing dip where the original debris flow crossed and augment this dip with tractor packed slash and debris. Justification: As discussed above in Item 20 and again below in Item 21 (c), the trail is needed to gain access to a few acres of ground that is unreachable from the existing permanent road and is also beyond the side-pull capabilities of a conventional yarder given limitations on the northernmost skyline cable tailholds. The landslide itself is dormant, and does not exhibit recent activity. The area being crossed is an existing midslope bench where material was deposited, and does not necessarily constitute an area that is commonly thought to be "unstable". The mitigation measures described above in combination with RPF involvement both before and after use of this trail section is unlikely to result in significant slope stability issues. While the above mitigation is likely sufficient, the site will be reviewed during the PHI and additional mitigation measures will be considered in the field.**
# of feet of skids in High EHR: **2700'** Extreme EHR:
# of feet of skids decommissioned: **0'**

Any tractor operations in areas with high/extreme EHR with no flagged or marked skid? (YES/NO) If yes, # of acres in: **No**	High EHR: Extreme EHR:

e) Landings

of landings decommissioned: **0**
Existing landings (number): **0**
New Landings (number): **6**
Reconstructed Landings (number): **0**
Landings in unstable areas? (YES/NO) If yes, explain: **No**
Landings in WLPZ? (YES/NO) If yes, explain: **No**

f) Stream Classes

# of each type of stream:	Linear feet of stream:
I: **1** II: **1** III: **6**	I: **1900'** II: **900'** III: **4000'**

g) Winter operations (YES/NO)?

If yes, summarize (include information from item 23 of the THP, dates of operation (when is drop dead date?), and a map showing potential areas of operation).

Winter operations except on all-season roads automatically place a plan in Tier III monitoring:

As the NTMP is in a Threatened and Impaired watershed (Bear Creek Watershed), the "Winter Period" begins October 15th and ends May 1st. Limited winter period operations per CCR 914.7(a) are proposed in the fall between October 15th and November 15th, and in the spring between April 15th and May 1st. The following summarizes applicable limited winter period operating plan items set forth in 916.9(k-m), and those identified in 914.7(a-b):

A) Equipment operations of all types (except chainsaws and RPF/Owner approved ATV access) shall not extend in the fall beyond November 15th or 4" (cumulative after October 1st) of rainfall as measured at the Las Cumbres Gauging Station (http://cdec2.water.ca.gov/cgi-progs/queryFx?LCM), whichever comes first. During the extended fall period between October 15th and November 15th, and in the spring between April 15th and May 1st, log hauling (including the haul route from the plan area out to Bear Creek Road), loading and skidding operations shall only be allowed when soils are not saturated, defined by 14 CCR 895.1 as conditions evidenced by: a) reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of normal performance, b) inadequate traction without blading wet soil, c) soil displacement in amounts sufficient to cause a turbidity increase in drainage facilities that discharge into Class I, II, III, or IV waters, or in downstream Class I, II, III, or IV waters that is visible or would violate applicable water quality requirements, d) pumping of the road surface materials by traffic, or e) creation of ruts greater than would be crated by traffic following normal road watering, and which transports surface material to a drainage facility that discharges directly into a watercourse. These "saturated conditions" shall be reviewed with the LTO prior to commencement of limited winter period operations. Further, the RPF shall review operations frequently enough during the limited winter period so that individual rainfall events can be assessed in the field with LTO so that operations do not occur when soils are saturated. Operation of trucks and heavy equipment on roads and landings shall be limited to those with a stable operating surface. Grading to obtain a drier running surface more than one time before reincorporation of any resulting berms back into the road surface is prohibited. During the winter operating period, operations only one landing and the skid trails which logically service this may be used.

B) Ground-based operations which utilize the proposed skid trails shown on the NTMP Operations Map may not begin before May 1st, and must be completed by October 15th under any future NTO. Equipment operations will therefore be limited to seasonal roads and landings needed to gather and load logs generated by skyline yarding activities. No road or trail construction/reconstruction shall occur after October 15 or before May 1st. When operating in the fall between October 15th and November 15th and in the spring between April 15th and May 1st, rolling dips shall be installed (where feasible) by October 15th on all roads within the NTMP area. On steeper road gradients where installation of rolling dips would complicate trucking operations, waterbar locations shall be flagged by the RPF or his designee to be installed by hand 1) prior to weekends or other shut down periods, 2) prior to the start of any rains which causes overland flow across or along the disturbed surface within a WLPZ or within any ELZ or EEZ designated for watercourse or lake protection, or 3) when the National Weather Service forecast calls for a greater than 30% chance of rain, a flash flood warning, or a flash flood watch. The LTO shall devise a plan under which he can reasonably expect to complete a contiguous operating area should operations commence after September 1st. The LTO shall review said plan with the RPF prior to commencement of operations so that they may agree upon the extent of operations, and prioritize locational procession. The LTO shall make every effort to minimize the amount of road that remains open during the winter period by closing out areas completely before moving on to the next. Between November 15th and May 1st, logging crew vehicles (including fallers) may only

utilize the existing permanent road leading into the property, and shall stay off of the seasonal roads. Use of four-wheeled ATV's on these seasonal roads is acceptable with the permission of the RPF or his designated representative.

h) Erosion Hazard (check all applicable)

Medium:	High: **X**	Extreme:

i) Percent Canopy Retained in the Watershed & Lake Protection Zone (WLPZ)

Class I: **0-75' = 85% canopy, 75'-150' = 65% canopy**
Class II: **50% throughout variable width WLPZ**
Class III: **50% within ELZ**
No-Cut Zone(s)? (YES/NO) If yes, describe: **A 50' no-cut has been established on either side of Deer Creek with exceptions made for yarder corridors.**

j) Mitigation points (summarize or import from timber harvest plan). See Operations and Text Reference Maps

Water Crossings:

All of the crossings listed below are existing. X5 & X6 are crossings currently maintained in excellent condition by Schwarzmann. X8 is a crossing that is currently unsurfaced and will be upgraded under the proposed NTMP. The remaining crossings (X1, X2, X3, X4, X5, and X7) are permanent culverts which control drainage along those portions of Deer Creek which fall within the boundaries of the NTMP. A description of each crossing is listed below along with a treatment discussion. Each of the six crossings has been inventoried by Pacific Watershed Associates (PWA); documenting "plug potential", "diversion potential", sediment delivery amounts (in yds.^{3}), necessary treatments, ranking in terms of priority, and the like. Crossings within the boundaries of the NTMP represent 6 of 106 "sites" along the various roadways that PWA inventoried for the Deer Creek Road Association (DCRA). To date, significant improvement projects near the junction of Ramble Road and Little Buck Roads (PWA Sites 38, 39, 40, 41, 42, 43, 44, 44.1, and 23) have been completed. In addition, based on a November 19, 2006 conversation with DCRA Representative Tom Bird, funding for the engineering, permitting, and construction of the bridge crossing at PWA Site #19 has been approved. The owners involved in this NTMP are members of the Road Association and will continue to participate consistent with their responsibilities as paying members. In addition, prioritized treatment of the crossings listed below, and specific additional treatment under Item 38, #12 (PWA Sites 19, 24, 25, 26, and 94) will be completed under the first NTO. Note that the proposed repairs listed below do not preempt the DCRA from applying for grant or cost-share monies to replace or upgrade any of the crossings listed below.

X1: Existing Permanent 24" X 20' CMP. Discussions with John Green (author of PWA's Deer Creek Watershed Road Erosion Assessment) indicated that Crossing X1 (PWA Site #15) was evaluated for its ability to accommodate 100-year flows. PWA's analysis suggested the 24" culvert was sized for a 100-year. The culvert is not failing, but if it were to be replaced in the future, PWA suggested matching the culvert with the grade of the channel (42%), which involves running a 24" X 70' pipe. A 70' pipe would allow the new culvert to be placed more or less on grade (42% in PWA's write-up), but the extra length involves a much larger excavation project requiring far greater dirt movement and disturbance. The culvert will be evaluated prior to the second harvest entry in the drainage area above the culvert,

and if it appears to be rusting out or otherwise failing, it will be replaced with a 24" X 40' CPP at a 10%+ grade, and will be done under the supervision of an engineer (PE or GE) or certified engineering geologist (CEG), or their designee. The outlet of the replacement culvert shall be fitted with an energy dissipater consisting of 12"+ woody material or 12"+ boulders. The landowners will continue to monitor this culvert as part of their mandated Road Inventory Program (See CCRWQCB General Waiver for Road Inventory and Visual Monitoring), and upon plan approval, will install a trash rack approximately 4 feet upstream of the existing culvert inlet.

X2: Existing Permanent 24" X 30' CMP. Discussions with John Green (author of PWA's Deer Creek Watershed Road Erosion Assessment) indicated that NTMP Crossing X2 (PWA Site #16) was evaluated for its ability to accommodate 100-year flows. PWA suggested upgrading the existing 24" X 30' culvert to a 60" X 60' pipe. A 60' pipe would allow the new culvert to be placed more or less on grade (38%), but the extra length involves a much larger excavation project as the outlet would be well below the reach of conventional excavation equipment and would likely require that the excavated slot for an excavator or backhoe beyond the base of the existing fill slope and wide enough to allow the equipment down into the channel (+/- 8-10' wide). The NTMP proposes replacing the existing 24" X 30' with a 60" X 40' CPP at a 15%+ grade, and will be done under the supervision of an engineer (PE or GE) or certified engineering geologist (CEG), or their designee. The outlet of the replacement culvert shall be fitted with an energy dissipater consisting of 12"+ woody material or 12"+ boulders. The project will be done under the first NTO which involves harvesting in the watershed which drains to the culvert. The landowners will continue to monitor this culvert as part of their mandated Road Inventory Program (See CCRWQCB General Waiver for Road Inventory and Visual Monitoring), and upon plan approval, will install a trash rack approximately 4 feet upstream of the existing culvert inlet.

X3: Existing Permanent 12" X 30' CMP cross-drain. Nothing proposed in the NTMP (PWA flagging in the field states "no potential for delivery"). The landowners will continue to monitor this culvert as part of their mandated Road Inventory Program (See CCRWQCB General Waiver for Road Inventory and Visual Monitoring), and upon plan approval, will install a trash rack approximately 4 feet upstream of the existing culvert inlet.

X4: Existing Permanent 24" X 30' CMP. Discussions with John Green (author of PWA's Deer Creek Watershed Road Erosion Assessment) indicated that NTMP Crossing X4 (PWA Site #17) was evaluated for its ability to accommodate 100-year flows. PWA suggested upgrading the existing 24" X 30' culvert to a 30" X 80' pipe, along with a 30" X 40' downspout. An 80' pipe and a 30' downspout would allow the new culvert to be placed more or less on grade (35%), but the extra length involves a much larger excavation project as the outlet would be well below the reach of conventional excavation equipment and would likely require that excavated slot for the excavator or backhoe be +/- 20' deep at the base of the fill slope and wide enough to allow the equipment down into the channel (+/- 8-10' wide). The NTMP proposes replacing the existing 24" X 30' with a 30" X 40' CPP at a 10%+ grade, and will be done under the supervision of an engineer (PE or GE) or certified engineering geologist (CEG), or their designee. The outlet of the replacement culvert shall be fitted with an energy dissipater consisting of 12"+ woody material or 12"+ boulders. The project will be done under the NTO which involves harvesting in the watershed which drains to the culvert. The landowners will continue to monitor this culvert as part of their mandated Road Inventory Program (See CCRWQCB General Waiver for Road Inventory and Visual Monitoring), and upon plan approval, will install a trash rack approximately 4 feet upstream of the existing culvert inlet.

X5: Existing Permanent 30" X 40' CMP (Existing armored outlet & 2 gabion baskets 22' & 34' below crossing outlet). The Site was not identified as problematic by PWA, and is functioning well. The landowners will continue to monitor this culvert as part of their mandated Road Inventory Program (See CCRWQCB General Waiver for Road Inventory and

Visual Monitoring).

X6: Existing Permanent 18" X 30' CMP (Existing 20' CMP Downspout & 2 gabion baskets 18' & 24' below outlet). Upon completion of operations, the LTO shall install a critical rolling dip on the downroad hinge of the crossing as flagged by the RPF. Aside from the critical dip, PWA did not recommend additional treatment for this crossing (PWA Site #94). The landowners will continue to monitor this culvert as part of their mandated Road Inventory Program (See CCRWQCB General Waiver for Road Inventory and Visual Monitoring).

X7: Existing Permanent 12" X 30' Concrete Pipe. Discussions with John Green (author of PWA's Deer Creek Watershed Road Erosion Assessment) indicated that NTMP Crossing X7 (PWA Site #18) was evaluated for its ability to accommodate 100-year flows. PWA suggested upgrading the existing 12" X 30' culvert to a 24" X 50' pipe. A 50' pipe would allow the new culvert to be placed more or less on grade (42%), but the extra length involves a significant excavation project (+/- 120 cubic yards of earth movement) directly above Deer Creek. The NTMP proposes replacing the 12" concrete pipe with a 24" X 30' CPP at a 10%+ grade, and will be done under the supervision of an engineer (PE or GE) or certified engineering geologist (CEG), or their designee. The outlet of the replacement culvert shall be fitted with an energy dissipater consisting of 12"+ woody material or 12"+ boulders. The project will be done under the NTO which involves harvesting in the watershed which drains to the culvert. The landowners will continue to monitor this culvert as part of their mandated Road Inventory Program (See CCRWQCB General Waiver for Road Inventory and Visual Monitoring), and upon plan approval, will install a trash rack approximately 4 feet upstream of the existing culvert inlet.

X8: Proposed Permanent Rocked Dip. Apply gabion rock in axis of swale, 1 ½ inch drain rock in either direction from axis up to first waterbar. RPF will meet on-site with LTO to review installation of rocked dip. The RPF shall also direct LTO to pull berm and outslope (with rolling dips) 200' +/- of the northern approach to this crossing. This area was not documented in PWA's Report, but was reviewed in the field during the PHI.

Roads:

The LTO shall work at the RPF's direction and in communication with the Deer Creek Road Association (DCRA) to accomplish several of the sediment reduction and soil stabilization efforts identified in the PWA Report. A brief summary of the PWA Report is included under Item 26(d). The PWA Report is the private property of the DCRA and will be shared as a confidential document available to the Review Team, the RPF, and the LTO. The areas proposed for mitigation under this NTMP are identified in the PWA Report as Sites 24, 25 (portion), 26, and 94, as well as discussion and proposed treatment of all crossings within the NTMP. Mitigation work as specified for these sites shall be done under the supervision of the RPF (and if desired the DCRA Representative). Assistance is being offered because the sites are generally located on unpaved road areas and are well-suited to the operational expertise of both the LTO and the RPF. PWA Site #19 is also discussed below. The following summarizes the work to be done:

PWA Site #19 (Copy of Inventory Form included in Section V: On November 8, 2006 I accompanied John Kasunich (Geotechnical Engineer) to review PWA Site #19 to evaluate whether hauling over the existing crossing would increase the likelihood of further damage, and if damage was likely, what should be done to mitigate the risk. If something were to be done, Mr. Kasunich suggested back-filling with cement the +/- 3 cubic yard hollow on the northeast corner of the crossing that appears to have been scoured out during high flows. Backfilling would involved placing a three-sided form on the outside of the hollow, bracing it, and then slowly pouring concrete into the void while continuously prodding the mix with a vibrating "pigs tail" to settle it. The pour will be done under the supervision of an engineer (PE or GE) or certified engineering geologist (CEG), or their designee.

Discussions with DCRA Representative Tom Bird on November 19, 2006 indicate that funding for the engineering, permitting, and construction of the replacement bridge at PWA Site #19 has been approved. Funding for the construction phase of the bridge was the most recent accomplishment, and construction may begin as soon as the summer of 2006. Mr. Bird and I agreed to coordinate with the DCRA to ensure that hauling activities under the first NTO do not complicate installation of, or cause undue damage to, the bridge. If hauling occurs prior to installation of the bridge, the landowners will consult with the DCRA to determine whether it is counterproductive to fill the cavity as suggested by John Kasunich (Geotechnical Engineer) given that the material will need to be removed as part of bridge construction.

PWA Site #24 (Copy of Inventory Form included in Section V: This site was identified by PWA because the existing dirt surfaced road has become moderately entrenched and lacks adequate waterbreaks. Upon completion of harvest operations under the first NTO, the LTO shall pull berms and install rolling dips as described in PWA's Inventory Data Form for Site #24 (copy included in Section VI). Additionally, the LTO shall install RPF-flagged rolling dips along those portions of Little Buck Road between the northern harvest boundary and Site #24. The RPF shall flag all areas requiring treatment and shall review said flagging in the field with the LTO to ensure that the work is completed as designed. Site #24 is shown on the NTMP Text Reference Map.

PWA Site #25 (Copy of Inventory Form included in Section V): This site was identified by PWA because the existing 48" concrete culvert crossing is considered undersized, is not fitted to the channel grade, and because the approaches leading into the crossing are not drained with rolling dips. Because the site is located outside the subject ownership and harvest area, is already slated for replacement by the DCRA, does not appear to have plugged or failed during the heavy winters of the last 10 years (as noted during the PHI), and because the engineered 84" X 70' CPP replacement pipe and associated fill repair will likely run upwards of $30,000 (the culvert itself costs over $10,000), we are proposing to fix and upgrade those portions that are necessary for passage and those which address surface drainage leading into the crossing, i.e. rolling dips. Additionally, although not called for in PWA's Report, we will be rocking with 1 ½" drain rock, the 100' road which leads away in either direction from the axis of the crossing.

To summarize, the first NTO will require the following at Site #25: 1) As discussed at the PHI, prior to hauling operations the LTO shall install a minimum of four gabion baskets to replace what PWA referred to as a "feeble buttress". The baskets shall be keyed into the fill on the outside of road not in the channel, and the work shall be done under the supervision of an engineer (PE or GE) or certified engineering geologist (CEG), or their designee; 2) Upon completion of operations under the first NTO, the LTO shall pull berms and install rolling dips as described in PWA's Inventory Data Form for this site. The PWA Inventory Data Form for Site #25 only calls for 2 rolling dips near this site, but because we'll be installing rolling dips on Little Buck Road from the harvest area north to PWA Site # 26, these will simply be two of perhaps 50 or more rolling dips outside of the harvest area; 3) As discussed previously, upon completion of rolling dip installation, the LTO shall be directed to apply 1 ½" drain rock to the last 100' of each approach leading to the crossing. The RPF shall flag the above referenced treatment areas and shall review said flagging in the field with the LTO to ensure that the work is completed as designed. Site #25 is shown on the NTMP Text Reference Map.

PWA Site #26 (Copy of Inventory Form included in Section V): This site was identified by PWA because the last +/- 795 of Little Buck Road drains onto Ramble Road where many of the existing drainage structures are already overwhelmed. Upon completion of harvest operations under the first NTO, the LTO shall pull berms and install rolling dips as described in PWA's Inventory Data Form for Site #26. Additionally, the LTO shall install rolling dips

along those portions of Little Buck that extend between Site #26 and Site #25. The RPF shall flag all areas requiring treatment and shall review said flagging in the field with the LTO to ensure that the work is completed as designed. Site #26 is shown on the NTMP Text Reference Map.

PWA Site #94: The site was identified by PWA because the culvert noted as NTMP Crossing X6 does not have a downroad critical dip to return drainage to the natural waterway should the culvert plug. Also, the PWA Inventory Data Form (copy included in Section VI) notes that the 403' of Hartman Creek Road that leads to Crossing X6 is insloped and should be fitted with two rolling dips in addition to the critical dip described above. The intention is to hydrologically disconnect the ditch from the minor Class III watercourse drained by Crossing X6. Upon completion of harvest operations, the LTO shall install the three rolling dips as described above and re-rock portions of the critical dip that were bared as a result. The RPF shall flag all areas requiring treatment and shall review said flagging in the field with the LTO to ensure that the work is completed as designed. Site #94 is shown on the NTMP Text Reference Map.

Skid Trails:

Explanation: Text Reference 1 (TR1) identifies an area where a proposed skid trail crosses over depositional material resulting from an old landslide that has no recent signs of movement. The terrain here is somewhat hummocky, but will not require significant modification to be used for skidding logs. The LTO will be directed to keep the blade up and construct only where it is absolutely necessary. In no case will a cutbank of greater than 2 feet be created, and upon completion of operations, the trail will be recontoured so that no significant (greater than 1 foot) exposed cuts remain. Additionally, the entire trail, from it's terminus near the northern property line to Landing C will be tractor packed with slash and debris. The RPF will meet with the LTO on-site prior to and following use of the trail to go over construction limitations and post-operational trail conditions. In particular, the RPF will be on-site to direct treatment of the trail section that crosses the mapped debris scar. Here, the goal will be redefine the existing dip where the original debris flow crossed and augment this dip with tractor packed slash and debris. Justification: As discussed above in Item 20 and again below in Item 21 (c), the trail is needed to gain access to a few acres of ground that is unreachable from the existing permanent road and is also beyond the side-pull capabilities of a conventional yarder given limitations on the northernmost skyline cable tailholds. The landslide itself is dormant, and does not exhibit recent activity. The area being crossed is an existing midslope bench where material was deposited, and does not necessarily constitute an area that is commonly thought to be "unstable". The mitigation measures described above in combination with RPF involvement both before and after use of this trail section is unlikely to result in significant slope stability issues. While the above mitigation is likely sufficient, the site will be reviewed during the PHI and additional mitigation measures will be considered in the field.

Explanation: TR1 also identifies a +/- 75' section of proposed skid trail that traverses slopes that are just over 50%. The trail begins just south of Landing C and heads in a northeasterly direction towards the northern property boundary. As the trail nears the mapped debris scar, it turns north across an area with slopes that just exceed 50%. It will be necessary to knock down a small lip of dirt at the top of the proposed skid and ramp down onto gentler ground. The proposed construction will create a 3-4' high cutbank that extends for 20-30'. After construction, the trail grade will likely be around 45%. The RPF will be on-site to supervise construction of this trail section to keep excavation and sidecast to a minimum. Upon completion of operations, the entire trail from Landing C to its terminus will be waterbarred as flagged by the RPF and tractor packed with slash and debris. The RPF will also direct the bulldozer operator to recontour the constructed trail section as much as is feasible to reduce the height of the cutbank and decrease the chances of bank failure.

Justification: As discussed above in Item 20, "ground-based equipment within cable yarding areas", the trail is need to access an otherwise unreachable portion of the property. Alternatives were considered, but each involved significantly more construction on steeper slopes that exhibited a greater potential for adverse affects. Aside from construction as described above, the proposed trail more or less follows the natural contour of the terrain, and will require very little excavation to make useable. The RPF's on-site presence during construction at TR1 will focus not only on minimizing cut, but also limiting sidecast by directing the LTO to make several shallow passes and herd material towards the bottom of the constructed segment where it can be compacted and used to reduce the overall grade of this trail segment. Slash packing and waterbarring in the manner described will minimize the potential for surface erosion, and recontouring will decreases the chances for cutbank sloughing. It should also be mentioned that the area above the constructed trail is heavily timbered and is not expected to become unstable. While the above mitigation is likely sufficient, the site will be reviewed during the PHI and additional mitigation measures will be considered in the field.

Explanation: Text Reference 2 (TR2) identifies a section of proposed skid trail where construction will occur on slopes over 50% with High EHR. The trail runs north and west from Landing D and generally climbs directly up the ridge towards the property's western boundary. As the trail nears TR2, the slope of the ridge steepens to 50-60%, which requires that the proposed alignment veer slightly to the north to maintain an operable gradient. This northerly veer will require construction across slopes in excess of 50% for a length of approximately 300'. Trail construction will be done under the supervision of an RPF in an effort to keep the cutbank under 4 feet in height and also to minimize sidecast. As feasible, the LTO shall make several shallow passes, pushing fill material westerly towards the ridge to minimize sidecast. Upon completion of operations, the constructed trail section shall waterbarred at High EHR intervals and tractor packed with slash and debris. Justification: The trail is needed to access timber located in the northwestern corner of the property as well as a small patch of timber in the top of the draw above X8. Even as constructed, the trail is more or less located along the ridge and doesn't collect much in the way of drainage. The area across which we are constructing appears quite stable and not particularly prone to erosion. Constructed trails of this nature are fairly common, and as mitigated (waterbarring and slash packing) are rarely the sources of significant problems. RPF supervision with emphasis on minimization sidecast during construction and post-operational stabilization is unlikely to produce significant environmental impacts.

Explanation: Text Reference 6 (TR6) identifies a section of proposed skid trail which runs more or less down the center of the ridgeline south and east of Landing G. The ridge has a few sections with slopes at or slightly over 50%. The flagged trail alignment meanders a bit as it drops off the road and generally remains at a gradient slightly under 50%. Upon completion of operations, the RPF shall direct the LTO to waterbar the entire section of trail, from Landing G to its terminus, at High EHR intervals and tractor pack the surface with slash and debris. Justification: The trail is needed to access timber located along the southern portion of the plan area where topography and the south property line combine to make skyline yarding infeasible (deflection and side-pull). Use of the trail will require little more than clearing of vegetation to make useable, as the alignment generally follows the natural topography of the ridge. The ridgetop location also minimizes the potential for erosion as there is no collection area draining onto the trail. This fact combine with the High EHR waterbar spacing and the slash packing requirements above are not expected to result in significant environmental impacts.

Landings: **N/A**

k) In Lieu Practices (YES/NO)?

If yes please explain reason(s) in lieu practices are utilized: **No**

l) Water Drafting (YES/NO)?

Drafting location(s): **None.**
Drafting flow rate (gallons/minute): **N/A**
Other drafting in watershed (number/total flow rate estimate): **N/A**

m) Cumulative Impact Analysis

Threatened and Impaired for Steelhead/Coho? (YES/NO) **Yes**

303(d) Listed Waterbody (YES/NO)? **Yes**

If yes, what is the impairment (sediment, temperature, etc.)?:

The San Lorenzo River and the sub-watershed of Bear Creek are 303(d) listed watercourses. The San Lorenzo River is listed for nutrients, pathogens, and sedimentation/siltation. The sub-watershed of Bear Creek (our watershed assessment area) is listed for sedimentation/siltation. Nutrient and pathogen levels are not expected to be affected by timber harvest operations. The NTMP as proposed and mitigated is not expected to elevate sedimentation/siltation either, and may in fact produce an overall net reduction in light of the corrective work being done on Little Buck and Hartman Creek Roads. On February 19, 2004, the Central Coast Region of the California Regional Water Quality Control Board adopted a TMDL for the San Lorenzo River (including the tributaries of Lompico Creek, Carbonera Creek, and Shinglemill Creek). The TMDL Implementation Plan for reducing sediment does not include a specific enforcement mechanism, but relies instead on self-determined Implementation Actions to be undertaken by agencies such as the Regional Water Quality Control Board, County Planning and Public Works, the RCD, and other public and private groups. Regional Board staff is expecting to meet annually for the first three years of the Implementation Plan to monitor effectiveness. In addition, operations under this NTMP are in compliance with the Threatened and impaired Watershed Rules which are designed to protect the beneficial uses of water; and because the NMTP contains a Class I watercourse, the NTMP will include a specific, comprehensive Monitoring and Reporting Program through the Regional Water Quality Control Board's Waiver Program. Compliance with the T&I Rules, implementation of standard watercourse protection and soil stabilization efforts in the NTMP, commitment to winter erosion control maintenance and monitoring, enrollment in the Regional Water Quality Control Board's Monitoring and Reporting Program, and on-going efforts to improve conditions in the Deer Creek Watershed (See Item F: Future Projects below) are expected to contribute in a positive way to meeting the numeric goals of the TMDL.

Sources of Cumulative Impacts (briefly describe):

CDF Felton Office (PO Drawer F-2 Felton, CA 95018, (831) 335-6740

- **CDF records of past timber harvesting**
- **Cooper-Clark Landslide maps**
- **Water Purveyor Maps**
- **Underlying Geology Maps**

California Natural Diversity Database (Commercial Version, April 29, 2006)

Stephen Staub, RPF # 1911, 6010 Hwy. 9, Suite #6, Felton, CA 95018.

Cheyenne Borello, RPF #2784, 6010 Hwy. 9, Suite #6, Felton, CA 95018.

Jude Pipes, PO Box 1451, Boulder Creek, CA 95006.

Victor Smith, Landowner, 335 Cereza Place, San Jose, CA 95112.

Ann Schwarzmann/Greg Haagenson, Landowners, PO Box 317, Boulder Creek, CA 95006.

David Suddjian, Wildlife Biologist, 801 Monterey Ave., Capitola, CA 95010.

Randy Morgan, Consulting Botanist, 3500 Main Street, Soquel, CA 950173.

Dylan Neubauer (Consulting Botanist), 2026 Back Ranch Road, Santa Cruz, CA 95062.

Thomas Bird (Neighbor), PO Box 1336, Boulder Creek, CA 95006.

Archaeological/Historic Records Response and associated reports from the Northwest Information Center, Sonoma State University, 1801 East Cotati Avenue, Rohnert Park, CA 94928.

Santa Cruz County Assessor Parcel Maps and Tax Rolls, 701 Ocean Street , Santa Cruz, CA 95060.

Santa Cruz Surveyors Office, 701 Ocean Street , Santa Cruz, CA 95060 (831) 454-2160.

Guidelines to Assist in Determining a Significant Adverse Impact per 14 CCR 898, CDF, August 1988.

California Forestry Handbook, T.F. Arvola, 1978.

USGS Castle Rock Ridge Quadrangle.

Soil Survey of Santa Cruz County, SCS, USDA, 1980.

WHR Volume II, California's Wildlife: Birds, 1990.

WHR Volume III, California's Wildlife: Mammals, 1990.

CNPS Inventory of Rare and Endangered Vascular Plants of California, 6th Edition (2000).

A Guide To Wildlife Habitats of California (October 1988), CDF, 1416 9th St., Sacramento, CA.

n) Proposed Monitoring Points and Data

Describe all monitoring points shown on site map:

Photo Monitoring Points:
Before and after photos of replacement of Crossings X2 (Photo Point #1) and X4 (Photo Point #2). Photos shall show both the inlet and outlet of each crossing.

Turbidity Monitoring:
1) 25' above and below Crossing X2 when crossing is replaced.
2) Grab sample from Deer Creek at northern property line (STA #1).
3) Grab sample from Deer Creek +/- 100' upstream of southern property line (STA #2).

Temperature Monitoring:
1) Hobo temperature recorder in Deer Creek at northern property line (STA #1).
2) Hobo temperature recorder in Deer Creek +/- 100' upstream of southern property line (STA #2).

Video Footage: The RPF will be shooting a video of the entire haul road from the back end of the plan area (Landing E) all the way out to Bear Creek Road, before and after log hauling. A copy of this video will be made available to Water Quality.

Please provide any water temperature data acquired from the THP/NTMP or surrounding areas with your application. **None known.**

o) Rainfall measurement procedures and locations

Please provide a detailed description of rainfall measurement procedures and locations or a reference to the page number in the THP / NTMP where this is described. **Rainfall data will be collected at the Las Cumbres Gauging Station and can be found at the following website (http://cdec2.water.ca.gov/cgi-progs/queryFx?LCM). This data will be used to trigger Year 1-5 monitoring visits pursuant to the MRP and the Road Management Plan specific to this plan.**

p) Central Coast Regional Water Quality Control Board Staff Site Inspection

Describe the most recent inspection of the property by Water Board staff:

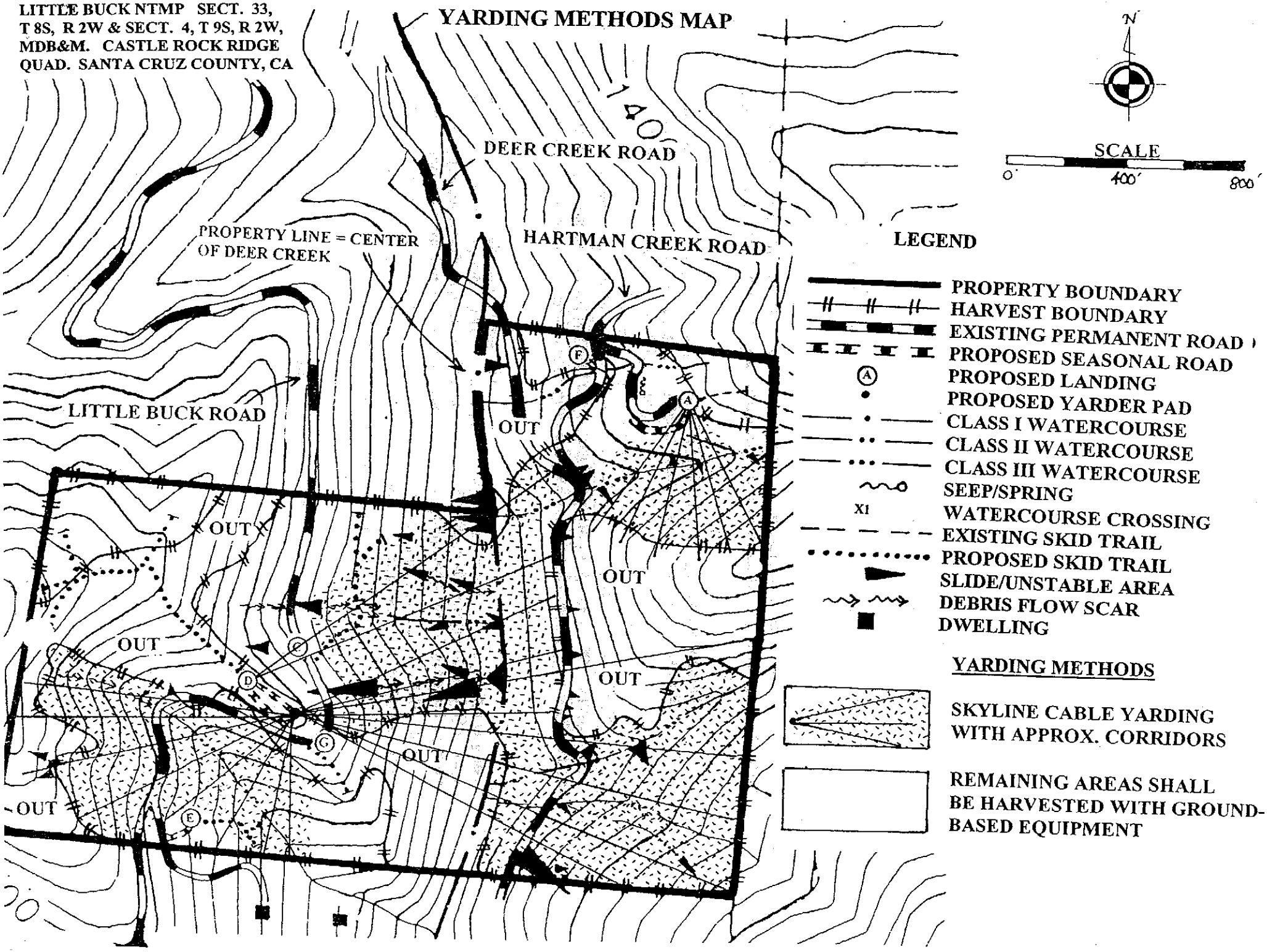
Name of Staff Person	Date of Inspection	Purpose of Inspection	Portion of property inspected.
Julia Dyer	August 21, 2006	PHI	All
Julia Dyer	January 18, 2007	Waiver Meetings	Roads & Crossings
Linda Stone	January 18, 2007	Waiver Meetings	Roads & Crossings

q) Names and addresses of any property owner within 300 feet of the timber harvest area or harvest area entrance road (from public right of way).

S:\NPS\Timber Harvest_Program\- Protocol\Templates\- General Waiver Process\02 - THIF_FS Blank Template\THIF_FSTemplate Revised 4_24_06.doc

LITTLE BUCK NTMP SECT. 33, T 8S, R 2W & SECT. 4, T 9S, R 2W, MDB&M. CASTLE ROCK RIDGE QUAD. SANTA CRUZ COUNTY, CA

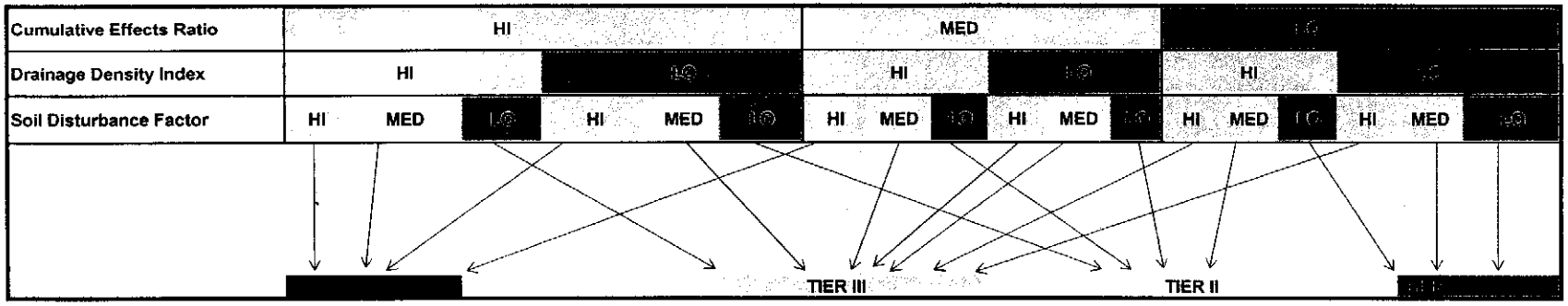
YARDING METHODS MAP



Eligiblity Criteria

Plan No.:	1-06NTMP-017 SCR	Plan Name:	Little Buck

Regulatory and Monitoring Requirement Decision Tool



Regulatory Option	Individual WDR or Waiver	General Conditional Waiver for Timber Operations
Monitoring Requrements	Individual Monitoring	**Tier III** Monitoring Requirements include Implementation Montoring, Effectiveness Monitoring, Water Quality Compliance Monitoring, and Forensic Monitoring as necessary. Tier III monitoring is required if ground based equipment is ued off of an all-weather road during the period October 15 - May 1. Tier III monitoring is required for the next 24 months (July 31, 2007) for all THPs/NTMPs that fall into Tier II or Tier III. **Tier II** Monitoring Requirements include Implementation Monitoring, Effectiveness Monitoring, and Forensic Monitoring as necessary. **Tier I** Monitoring Requirements include visual monitoring required by CDF and Foresnsic Monitoring as necessary.

	High	Med	Low		Final
Cumulative Effects Ratio	>15%	15% to 10%		18%	High
Drainage Density Index	>100			129	High
Soil Disturbance Factor	>2500	2500 to 1000		392	Low

Winter Ops Proposed - Automatic Tier III

Plan No.:	1-06NTMP-017 SCR	Plan Name:	Little Buck

Cumulative Effects Ratio

Is the proposed harvest in a 303(d) listed watershed?**	Acres Proposed for Harvest or Harvested in Planning Watershed (CalWater) in last fifteen years*	Acres to be harvested as part of proposed THP/NTMP	Sum	Total Acres in Planning Watershed	CER
Yes	1518	56	1574	8600	18%

*** Include all acreage in proposed and approved THPs/NTMPs**

*** *Watershed 303d listed as impaired from sediment or temperature?**
If yes type "yes" or leave blank.

Plan No.:	1-06NTMP-017 SCR	Plan Name:	Little Buck

Drainage Density Index

ft. of Class I	ft. of Class II	ft. of Class III	Corrected Sum	Plan Area (ac)	DDI
1900	900	4000	11500	89	129

Plan No.:	1-06NTMP-017 SCR	Plan Name:	Little Buck

Soil Disturbance Factor

Enter values in cells shaded yellow.

Silviculture		Group(ac)	Selection(ac)			Corrected Sum
	Harvest Area (ac)		56			56
	Area in THP (ac)	89				
Roads		Seasonal/Temporary Existing		All weather/ Permanent Existing		
			Proposed		Proposed	
		x 4	x 6	x 2	x 4	
	Linear feet - Exisiting and proposed		700	4800		155
		Class I	Class II	Class III		
		x 30	x 20	x 10		
	Crossings - Number and Class of watercourse crossed					0
		x 10				
	Number of feet In-lieu/Alt rule in WLPZ					0
		High	Extreme			
		x2	x5			
	EHR - Number of feet in high or extreme		0			0
					Roads Subtotal	155
Skid Trails		Existing	Proposed			
		x 1.5	x 2.5			
	Linear feet - Exisiting and proposed	200	2500	For unmapped acreage, add 100 feet per acre		74
		Class I	Class II	Class III		
		x 10	x7	x 3		
	Crossings - Number and Class of watercourse crossed					0
		x 5				
	Number of In-lieu/Alt rule in WLPZ					0
		High	Extreme			
		x1.0	x2			
	EHR - Number of feet in high or extreme	2700				27
					Skid Trails Subtotal	101
Landings		Existing	Proposed			
	Ground-based	x 1.5	x 2.5			
			6			15
	Helicopter	x 1	x 2			
		0				0
	No. of In-lieu/Alt rule in	x 3	x 5			
		0	0			0
					Landings Subtotal	15
FINAL SUM						
					Sub Total	327
	Winter Operations Proposed? Yes or No	yes			**Total**	392
	If yes, automatic Tier III monitoring.					

Exhibit 2

Monitoring Locations

WQ MONITORING AND REPORTING MAP

LITTLE BUCK NTMP SECT. 33, T 8S, R 2W & SECT. 4, T 9S, R 2W, MDB&M. CASTLE ROCK RIDGE QUAD. SANTA CRUZ COUNTY, CA

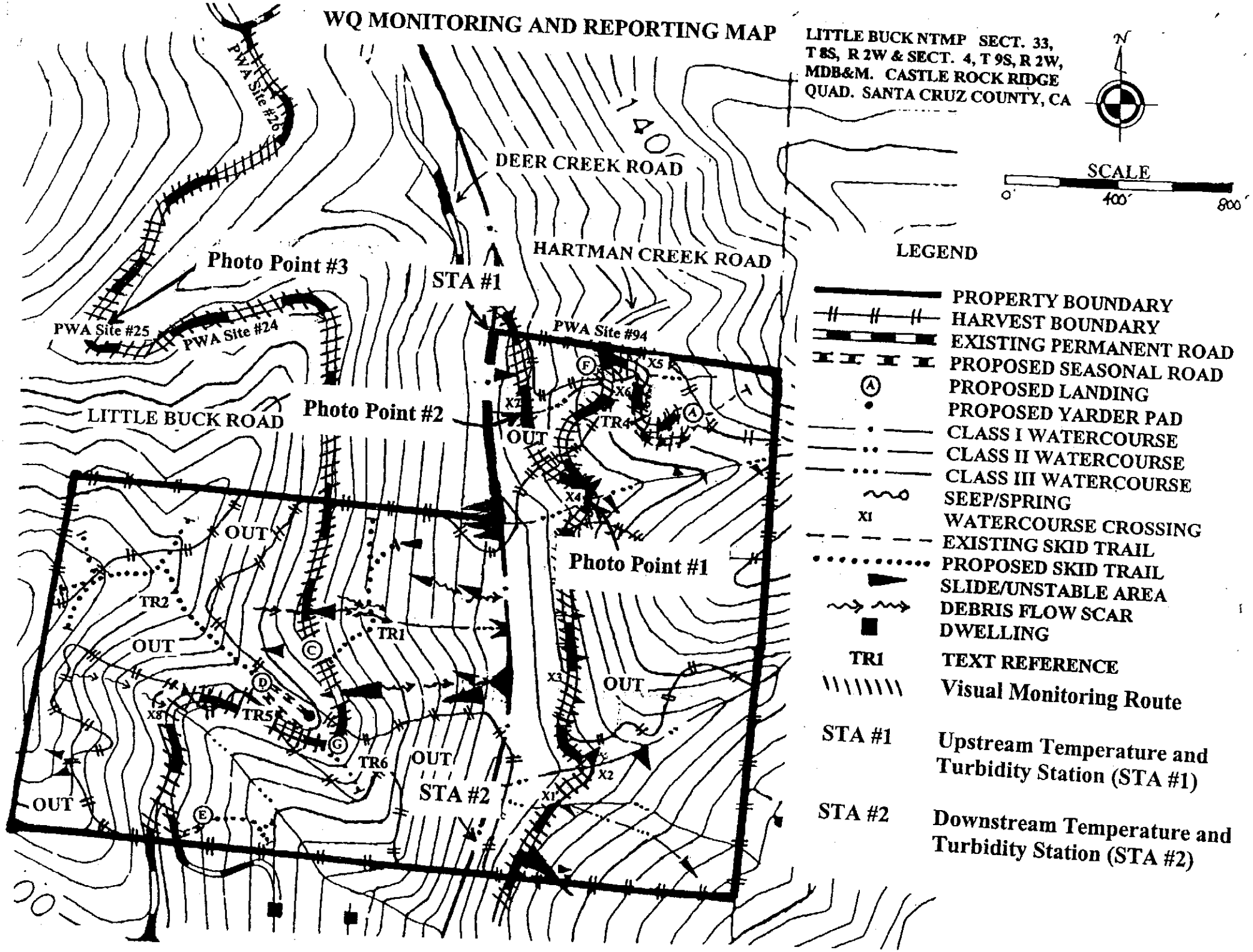


Exhibit 3

Big Creek Road Inventory Program

Standard Operating Procedure 5.2.3
Photo Documentation Procedure

Standard Operating Procedures
Continuous Temperature Monitoring

Standard Operating Procedures
Instream Turbidity Monitoring

BIG CREEK ROAD INVENTORY PROGRAM (BCRIP)
PROTOCOL FOR CONDUCTING COMPANY ROAD INVENTORIES & MAINTENANCE

Purpose

Big Creek Lumber Company owns and controls over 11,000 acres of forestlands on which there are over 60 miles of permanent, temporary, surfaced, and un-surfaced roads. Maintenance of these roads requires frequent monitoring and treatment.

This document has been drafted to provide the standard operating procedures for conducting and recording road inventories and for the use of the inventory to direct appropriate treatments. This protocol has been drafted so as to guide road inventories consistent with Big Creek goals & objectives and with the certification of Big Creek's lands with the Forest Stewardship Council (FSC).

Process of Road Inventory

Big Creek conducts road inventories on varying intervals, depending upon (1) the designated use of the road, (2) the intensity and duration of precipitation received, (3) the hydrologic activity of the stream system in the area, (4) the susceptibility of the road and appurtenant crossings to failure or damage, and (5) the interval of time since that portion of road was used.

On properties where there has been recent activity or road use, especially if road drainage was altered or improved, review of the roads is conducted more frequently. For each portion of road, Big Creek has designated a standard interval of 2 inches of rain per storm event as the cue to send out maintenance crews. The 2" standard interval is subject to change based on the relationship between the five factors listed above.

When indicated by the interval period, or when deemed necessary otherwise, an individual or group of persons will review the portion of road. Road inventory may be conducted on foot, by pickup, or (especially in wet periods) by ATV or other light-tracking vehicle. While conducting the inventory, the person or persons will do handwork, where necessary, to clear and improve drainage structures and culverts.

Each instance a portion of road is inventoried, a form is filled out recording the observations of the person (see Appendix B, Road Inventory Form). This form allows the person to record the location, date, problem, and proposed solution. This form is then submitted to the Chief Forester of Operations (CFO).

After the road inventory form is completed, it is entered into the roads inventory database (a spreadsheet which tracks observations, work completed, and dates of last review for a portion of road).

If the need for repair or maintenance is immediate, the road reviewer will immediately notify the Chief Forester of Operations so that an appropriate treatment may be planned and initiated. All road inventory forms submitted to the CFO are reviewed, and potentially urgent problems are further analyzed to determine if immediate treatment is necessary. When immediate treatment is prescribed, the project is listed with indication of urgency on a dry erase board posted in the Big Creek Forestry Office. As soon as resources are available to conduct the treatment operations, the necessary equipment, materials, and personnel are dispatched to the site.

After the site is treated, the CFO or the CFO's designee will review the site to determine the success of the treatment. This site, at an interval dependent upon the treatment, will be reviewed over time to evaluate success of treatment and to determine if follow-up treatment is necessary.

For sites that do not require immediate treatment, the records for that site will not be further reviewed until the biennial summary of roads is prepared (May 1 and November 1 of every year). At these times corresponding to the approximate end and beginning, respectively, of the winter period), the latest records for each property are reviewed and responsibility for appropriate treatments are delegated. Subsequent evaluation of the treatment's success is conducted, and follow-up treatment prescribed, if necessary.

ELEMENTS OF THE FIVE FACTORS THAT DETEMINE INSPECTION TRIGGERS FOR THE BCRIP:

Watershed:
- Threatened and Impaired
- 303 (D) Listed Stream Segments
- Sub-division/home proximity to project area
- Orographic effect:
  - South county vs. North county
- Project elevation, low vs. high in the watershed
- Road conditions outside of project area that contribute or receive flow
- Watercourse classifications for project area

Porosity:
- Fast vs. slow
- Soil type – sandstone/shale/granite
- High vs. low rock content
- Ground saturation point/springs begin to flow at higher rates

Topography:
- Steep/flat/undulating
- Indication of instabilities/ tipped trees/earth fractures/slides
- Proximity to San Andreas Fault

Vegetative Cover Type:
- Brush/oak woodland/conifer
- General vegetative cover

General Elements Associated with Infrastructure:
- Age of road:
  - Older vs. newer road/existing leaf cover/general vegetation cover
- History:
  - Legacy problems/old humboldt crossings
  - Who designed and implemented the existing road/crossings
  - Past performance and condition of general infrastructure
- Location of road:
  - Ridge top/steep ground/proximity to watercourse/roads on unstable areas
- Road surfacing:
  - Rocked/ based/seeded/straw mulched/slash packed/un-surfaced
- Road Standard:
  - Insloped/outsloped/crowned/re-contoured:
  - Spittler outslope of new roads
  - Full bench road cut/balanced cut and fill/fill
  - Through cuts/long run of through cut
  - Berms on outside edge of road
  - Seasonal/all winter road
- Type of drainage and crossings:
  - Waterbars/rolling dips/bridges/culverts/rocked fords
  - Current condition of erosion control structures/How much do you think they can handle
- Trespass
  - 4WD/motorcycles/mountain bikes/horses/foot traffic
- Watercourse crossing location and frequency
- Gopher holes
- Pig wallows/rooting
- PG&E access road
- EHR rating in THP

Weather:

- Interval of time since the last rain event
- Type of rain year/El nino/are storms holding more rain
- Jet stream status
  - High pressure or low pressure
- Wind direction:
  - South East – Strong high pressure
  - South – Storm medium pressure
  - Southwest – Storm low pressure
  - East/Southeast – Strong extreme low pressure
  - West – Cleaning
- Check the barometer
- Soaking, low intensity, rain vs. hard, high intensity, rain
- General weather patterns

Trigger Assessment Tools:

- Weather radio
- Barometer
- Local contacts:
  - Forest landowners
- Local news forecasts
- Tell tail locations:
  - Creek mouths open to the ocean
  - General overland flow
  - Bridge crossings of major rivers/streams/creeks throughout the county
  - Etc…
- State wide contacts
  - Other foresters and forestry companies
- California Newts:
  - Moving uphill vs. downhill
- Weather web sites (rainfall, stream flow, satellite imagery, forecasts, flood warnings, etc…):

http://www.wrh.noaa.gov/mtr/
http://www.goes.noaa.gov/
http://water.usgs.gov/cgi-bin/waterwatch?map_type=real&state=ca
http://cdec.water.ca.gov/misc/realStations.html
http://www.weather.com/maps/maptype/satelliteworld/pacificoceansatellite_large_animated.html?
http://www.wrh.noaa.gov/mtr/gettext.php?pil=RR5&sid=RSA
http://www.surfline.com/home/index.cfm
http://weather.cnn.com/weather/forecast.jsp?locCode=SRU

OWNERSHIP:

DATE: NAME(S):

LOCATION:

PROBLEM:

CODES

SOLUTION:

CODES

LOCATION:

PROBLEM:

CODES

SOLUTION:

CODES

PROBLEM

Cut-Bank Failure	1
Fill-Slope Failure	2
Water Bar Failure	3
Fill Failure	4
Drainage Problem	5
Cracks/Settling	6
Plugged Culvert	7
Wash-Out	8
Slide Debris/Flow	9
Trees Blocking Road	10

SOLUTION

Replace	A
Reconstruct	B
Drain	C
Resurface	D
Remove	E
Cover	F
Mechanical	M
Hand Work	H
Temporary	T
Permanent	P

Standard Operating Procedure 5.2.3

Photo Documentation Procedure

Introduction:

Photographs provide a qualitative, and potentially semi-quantitative, record of conditions in a watershed or on a water body. Photographs can be used to document general conditions on a reach of a stream during a stream walk, pollution events or other impacts, assess resource conditions over time, or can be used to document temporal progress for restoration efforts or other projects designed to benefit water quality. Photographic technology is available to anyone and it does not require a large degree of training or expensive equipment. Photos can be used in reports, presentations, or uploaded onto a computer website or GIS program. This approach is useful in providing a visual portrait of water resources to those who may never have the opportunity to actually visit a monitoring site.

Equipment:

Use the same camera to the extent possible for each photo throughout the duration of the project. Either 35 mm color or digital color cameras are recommended, accompanied by a telephoto lens. If you must change cameras during the program, replace the original camera with a similar one comparable in terms of media (digital vs. 35 mm) and other characteristics. A complete equipment list is suggested as follows:

Required:

- Camera and backup camera
- Folder with copies of previous photos (do not carry original photos in the field)
- Topographic and/or road map
- Aerial photos if available
- Compass
- Timepiece
- Extra film or digital disk capacity (whichever is applicable)
- Extra batteries for camera (if applicable)
- Photo-log data sheets or, alternatively, a bound notebook dedicated to the project.
- Yellow photo sign form and black marker, or, alternatively, a small black board and chalk

Optional:

- GPS unit
- Stadia rod (for scale on landscape shots)
- Ruler (for scale on close up views of streams and vegetation)

Some safety concerns that may be encountered during the survey include, but are not limited to:

- Inclement weather
- Flood conditions, fast flowing water, or very cold water
- Poisonous plants (e.g.: poison oak)
- Dangerous insects and animals (e.g.: bees, rattlesnakes, range animals such as cattle, etc.)
- Harmful or hazardous trash (e.g.: broken glass, hypodermic needles, human feces)

We recommend that the volunteer coordinator or leader discuss the potential hazards with all volunteers prior to any fieldwork.

General Instructions:

From the inception of any photo documentation project until it is completed, always take each photo from the same position (photo point), and at the same bearing and vertical angle at that photo point. Photo point positions should be thoroughly documented, including photographs taken of the photo point. Refer to copies of previous photos when arriving at the photo point. Try to maintain a level (horizontal) camera view unless the terrain is sloped. (If the photo can not be horizontal due to the slope, then record the angle for that photo.) When photo points are first being selected, consider the type of project (meadow or stream restoration, vegetation management for fire control, ambient or event monitoring as part of a stream walk, etc.) and refer to the guidance listed on *Suggestions for Photo Points by Type of Project.*

When taking photographs, try to include landscape features that are unlikely to change over several years (buildings, other structures, and landscape features such as peaks, rock outcrops, large trees, etc.) so that repeat photos will be easy to position. Lighting is, of course, a key ingredient so give consideration to the angle of light, cloud cover, background, shadows, and contrasts. Close view photographs taken from the north (i.e., facing south) will minimize shadows. Medium and long view photos are best shot with the sun at the photographer's back. Some artistic expression is encouraged as some photos may be used on websites and in slide shows (early morning and late evening shots may be useful for this purpose). Seasonal changes can be used to advantage as foliage, stream flow, cloud cover, and site access fluctuate. It is often important to include a ruler, stadia rod, person, farm animal, or automobile in photos to convey the scale of the image. Of particular concern is the angle from which the photo is taken. Oftentimes an overhead or elevated shot from a bridge, cliff, peak, tree, etc. will be instrumental in conveying the full dimensions of the project. Of most importance overall, however, is being aware of the goal(s) of the project and capturing images that clearly demonstrate progress towards achieving those goal(s). Again, reference to *Suggestions for Photo Points by Type of Project* may be helpful.

If possible, try to include a black board or yellow photo sign in the view, marked at a minimum with the location, subject, time and date of the photograph. A blank photo sign form is included in this document.

marker post) then have an alternate method (map, aerial photo, copy of an original photograph of the photo-point, etc).

2. Select an existing structure or landmark (mailbox, telephone pole, benchmark, large rock, etc.), identify its latitude and longitude, and choose (and record for future use) the permanent position of the photographer relative to that landmark. Alternatively, choose the procedure described in *Monitoring California's Annual Rangeland Vegetation* (UC/DANR Leaflet 21486, Dec. 1990). This procedure involves placing a permanently marked steel fence post to establish the position of the photographer.

3. For restoration, fuel reduction, and BMP projects, photograph the photo-points and carry copies of those photographs on subsequent field visits.

Determining the Compass Bearing:

1. Select and record the permanent magnetic bearing of the photo center view. You can also record the true compass bearing (corrected for declination) but do not substitute this for the magnetic bearing. Include a prominent landmark in a set position within the view. If possible, have an assistant stand at a fixed distance from both the photographer and the center of the view, holding a stadia rod if available, within the view of the camera; preferably position the stadia rod on one established, consistent side of the view for each photo (right or left side).
2. Alternatively, use the procedure described in *Monitoring California's Annual Rangeland Vegetation* (UC/DANR Leaflet 21486, Dec. 1990). This procedure involves placing a permanently marked steel fence post to establish the position of the focal point (photo center).
3. When performing ambient or event photo monitoring, and when a compass is not available, then refer to a map and record the approximate bearing as north, south, east or west.

Suggestions for Photo Points by Type of Project:

Ambient or Event Monitoring, Including Photography Associated with Narrative Visual Assessments:

1. When first beginning an ambient monitoring program take representative long and/or medium view photos of stream reaches and segments of shoreline being monitored. Show the positions of these photos on a map, preferably on the stream/shore walk form. Subjects to be photographed include a representative view of the stream or shore condition at the beginning and ending positions of the segment being monitored, storm drain outfalls, confluence of tributaries, structures (e.g., bridges, dams, pipelines, etc.).

2. If possible, take a close view photograph of the substrate (streambed), algae, or submerged aquatic vegetation.

4. Long view and medium view of streambed changes (thalweg, gravel, meanders, etc.)

5. Medium and close views of structures, plantings, etc. intended to induce these changes.

6. Optional: Use a tape set perpendicular across the stream channel at fixed points and include this tape in your photos described in 3 and 4 above. For specific procedures refer to Harrelson, Cheryl C., C.L. Rawlins, and John P. Potyondy, *Stream Channel Reference Sites: An Illustrated Guide to Field Techniques*, United States Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-245.

Vegetation Management for Fire Prevention ("fuel reduction"):

1. Aerial view (satellite or airplane photography) if available.

2. In the absence of an aerial view, a landscape; long view showing all or representative sections of the project (bluff, bridge, etc.)

3. Long view (wide angle if possible) showing the project area or areas. Preferably these long views should be from an elevated vantage point.

4. Medium view photos showing examples of vegetation changes, and plantings if included in the project. It is recommended that a person (preferably holding a stadia rod) be included in the view for scale

5. To the extent possible include medium and long view photos that include adjacent stream channels.

Stream Sediment Load or Erosion Monitoring:

1. Long views from bridge or other elevated position.

2. Medium views of bars and banks, with a person (preferably holding a stadia rod) in view for scale.

3. Close views of streambed with ruler or other common object in the view for scale.

4. Time series: Photograph during the dry season (low flow) once per year or after a significant flood event when streambed is visible. The flood events may be episodic in the south and seasonal in the north.

PHOTO- LOG FORM

Project:

Location:

Date:

Photographer:

Team members:

Photo #	Time	Photo Point ID	Photo Pt. Description & Location	Bearing to Subject	Subject Description

General Notes or Comments (weather, cloud cover, time of sunrise and sunset, other pertinent information):

California Regional Water Quality Control Board

Central Coast Region

Timber Harvest Program

Standard Operating Procedures
Continuous Temperature Monitoring

April 2006

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Purpose

This document provides standard operating procedures for continuous temperature monitoring on forest streams pursuant to the General Conditional Waiver of Waste Discharge Requirements – Timber Harvest Activities in the Central Coast Region (General Waiver). These procedures, when followed correctly, will support the collection of continuous temperature data. The data will be used for trend analysis and to determine compliance with Monitoring and Reporting Program R3-2005-0066.

Monitoring Season

Monitoring shall begin at the onset of timber harvest operations (i.e. tree falling, yarding, and / or roadwork, etc.) and shall be consistent with the Monitoring and Reporting Program (MRP), any conditions set forth within the waiver or waste discharge requirements, and the procedures outlined in this document. Monitoring shall continue as specified in the MRP until it is revised or rescinded.

Continuous Temperature Monitoring occurs for the five and a half month period starting May 1 and ending October 15, at all temperature monitoring locations established in the MRP. If a site becomes dry at any point during the monitoring season, the logger shall be relocated further downstream where monitoring can continue. Relocation of the logger must be documented.

If timber harvest operations commence during the period of October 16 through April 30, temperature monitoring shall begin the subsequent May 1. If timber harvest operations commence during the period of May 1 through October 15, temperature monitoring shall begin and continue the day operations begin until October 15 of that same year. Temperature monitoring shall then continue in the subsequent years as prescribed in the MRP.

Calibration Checks

Calibration checks shall be conducted on the data loggers at three separate times during the monitoring season: 1) prior to logger deployment 2) at mid-season data collection 3) at the end of the monitoring season. Calibration check One shall be conducted as described for the two bath tests (below). Calibration checks Two and Three will be conducted against a stream temperature thermometer[1] reading in the field, as described in the mid-season data collection and logger calibration section. Calibration checks are used to document logger performance and accuracy. This provides assurance of the quality of data being collected and reported. Calibration events Two and Three shall occur shortly after sampling results have been downloaded and backed up. Always download data according to the manufacture's instructions. Results of the calibrations must be documented on the calibration check form,[2] the form must be kept with your logbook.

The following bath tests shall be conducted at least once per year, prior to deployment of your logger for the monitoring season, to determine its accuracy. Each logger shall be assigned a unique temperature logger ID number. The calibration check form shall include fields to record the calibration check results for each data logger. The loggers, utilized for continuous temperature monitoring must be specified for full submersion, outdoor freshwater stream temperature monitoring. The logger must also be designed to withstand the environmental conditions it will be subjected to over the full duration of the monitoring season.

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[1] All references to a thermometer in this document call for the use of a Certified Reference Thermometer or one certified by the National Institute of Standards and Technology that is designed for total immersion.
[2] Available at the Water Board's website or upon request to Water Board staff.

Data Logger Ice Bath

This test will allow you to determine the accuracy of your data logger at its lower range.

Place crushed ice in an insulated container that is large enough to hold the loggers that you are testing. It is important to crush the ice to maintain as consistent and uniform a temperature as possible. Fill the container with water to just below the level of the ice and stir the mixture around. Submerge the loggers that you are testing. Place the entire container in a refrigerator to minimize temperature gradients. Allow enough time for the logger to acclimate; at least ten minutes. The ice will melt slowly, so the actual temperature should settle around 0°C if the ice bath was prepared correctly. Place a thermometer in the bath to confirm the temperature against your logger's reading. Allow the logger to collect at least five readings before removing it from the bath. Check the reading of your logger to confirm that the five readings are within the acceptable accuracy range reported by the manufacturer at 0°C. Record the calibration check on your calibration check form.

Room Temperature Bath

This test will allow you to determine the accuracy of your data logger at its higher range.

Fill an insulated container that is large enough to hold the loggers that you are testing with water. Place the open container in a room overnight that has constant air temperature at the higher end of the loggers temperature range. Submerge the loggers that you are testing. Allow enough time for the logger to acclimate; at least ten minutes. Place a thermometer in the bath to confirm the temperature against your logger's reading. Allow the logger to collect at least five readings before removing it from the bath. Check the reading of your logger to confirm that the five readings are within the acceptable accuracy range reported by the manufacturer at the upper end of the loggers temperature range. Record the calibration check on your calibration check form.

Note: Water used to make the ice and fill the containers for the bath tests may be tap water or bottled water. Salt water may not be used.

Deployment Procedure

All loggers must be deployed at the temperature monitoring locations identified in your MRP. Only those loggers that pass the calibration check requirements may be programmed for deployment. Prior to deployment, follow the manufacture's instructions for programming the logger for a delayed start and set the logger to record point measurements every hour. All loggers and other monitoring equipment should be kept clean, stored in protective cases during transportation, and protected from extreme temperatures. Prior to programming the temperature logger, both the computer clock and the watch used to record deployment times shall be synchronized. You must also confirm that the date and time modes of the logger are functioning properly.

During the deployment process, all field data including station number, station name, temperature logger ID numbers, and calibration results must be recorded. All monitoring stations must have a unique site identification number and / or name. A sketch and description of the logger locations that notes a landmark reference point, such as a unique rock, log, root, or tree should also be recorded. In addition, a picture of the water temperate logger location including a landmark should be taken to help relocate the logger in the future.

The most important aspect of logger deployment is to find a location in the stream that is safe to get to and where representative stream temperature data may be obtained during lower flows. The logger should be placed to avoid direct sunlight. In small streams, loggers should be installed as close to the thalweg[3] as possible and six inches off the stream bottom. In large streams, areas of potential temperature stratification (resulting from eddies, groundwater, and tributaries) need to be avoided. In addition, placing the logger in a 2 –2 ½ foot deep location downstream or alongside a landmark rock or streambed feature improves the chance of it staying submerged during its deployment period and being located for retrieval.

When placing the logger at the sampling point, you must find a method to secure the logger in place for the duration of the monitoring season. Secure a waterproof business card to the logger in a manner that will not inhibit the collection of data. This provides an opportunity for the logger (and the data) to be returned in the event the logger is lost. If the logger will be placed in an area subject to vandalism, you must make accommodations to prevent vandalism. Most manufactures sell products that can camouflage the logger without disrupting its data collection.

Mid-season Data Collection and Logger Calibration

For the safety of the data, data logger manufactures recommend that a logger never be deployed for longer than a three-month period. Mid-season data collection and logger calibration will decrease the chances of losing a full season of temperature data for any one monitoring point. Mid-season data collection and logger calibration shall occur within the last two weeks in July or first two weeks in August. This mid-season check can either be conducted in the field or the loggers may be taken back to the lab for data collection and analysis. Loggers removed from the field to perform the mid-season calibration check must be returned to their monitoring station within four days.

Upon inspection of the site, look for signs of physical disruption of channel conditions; inspect the logger for fouling, corrosion, or damage; perform a battery or power check; clean or service the senor as needed; and calibrate the logger as described below.[4]

To conduct the mid-season data collection and logger calibration you must begin by checking the stream temperature with a thermometer. Place the thermometer next to the

[3] The line defining the lowest points along the length of a riverbed or valley.
[4] This inspection regime must be repeated when the logger is removed from the field at the end of the monitoring season.

data loggers long enough for it to acclimate and then take the temperature reading. Record the thermometer's temperature reading on the calibration check form. After recording the temperature readings from the thermometer in the stream, remove the data loggers from the stream and download the data either onto a laptop in the field or on your computer in the lab. Check the reading of your logger to confirm that the reading is within the acceptable accuracy range presented by the manufacturer. Any loggers not reading within an acceptable range, found to be damaged, missing, or destroyed, must be replaced immediately with a logger that meets the specifications per these procedures. Spare loggers should be kept on hand for this purpose. Document all findings from the mid-season data collection and logger calibration on the calibration check form.

Reporting Requirements

By November 15 of each year, you must submit an Annual Report to the Central Coast Water Board per the requirements in your MRP. When reporting the temperature data you must include:

- A summary of the water quality monitoring performed during the previous year.
- A detailed map with all monitoring locations clearly marked with unique site identification tags.[5]
- All data submitted electronically in excel format.
- Make and model of the data loggers being used at each monitoring location.
    - Copy of the manufacture's protocol / recommendation for proper use of the loggers.
- Calibration check form for each data logger.
- Description of any modifications or adjustments made based on the calibration checks and field observations.

[5] The map needs to be submitted once unless monitoring station locations are modified. In the future a map with unique monitoring site tags shall be submitted with the Timber Harvest Information Form and Fact Sheet.

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Timber Harvest Program

Standard Operating Procedures for Instream Turbidity Monitoring

October 2006

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Purpose

This document provides standard operating procedures for instream turbidity monitoring on forest streams pursuant to the General Conditional Waiver of Waste Discharge Requirements – Timber Harvest Activities in the Central Coast Region (General Waiver). These procedures, when followed correctly, will support the collection of turbidity grab samples or insitu probe measurement data. The data will be used for trend analysis and to determine compliance with Monitoring and Reporting Program R3-2005-0066.

Throughout this document "the discharger" means the landowner and anyone working on behalf of the landowner in the conduct of timber harvest activities including monitoring.

Timing: Monitoring Season

Monitoring shall begin at the onset of timber harvest operations (i.e. tree falling, yarding, and / or roadwork, etc.) and shall be consistent with the Monitoring and Reporting Program (MRP), any conditions set forth within the General Waiver or Waste Discharge Requirements, and the procedures outlined in this document. The turbidity monitoring season begins on or after October 15 as specified in the MRP. You are required to conduct forensic monitoring throughout the entire year as necessary. Monitoring shall continue as specified in the MRP until it is revised or rescinded.

Monitoring Triggers: Rainfall Information

Monitoring events[1] are triggered by rainfall events as prescribed in the MRP and as necessary according to forensic monitoring requirements.

The discharger shall document when and where rainfall data was obtained for each monitoring event on the Timber Harvest Turbidity Monitoring Field Data Sheet (Data Sheet). The Data Sheet may be downloaded from the website at: http://www.waterboards.ca.gov/centralcoast/Facilities/Timber_Harvest/index.htm and then click on "turbidity." Hard copies of the data sheet are available upon request.

Rain gauges used shall represent precipitation at the harvest site as closely as possible. Compare rain gauge readings at the site to published gauges whenever possible.

Locations: Monitoring Sites

Turbidity sampling shall occur at monitoring locations specified in the MRP or identified during forensic monitoring. Identify the monitoring locations for each harvest at the top of the Data Sheet and include the latitude and longitude of the location in North American Datum of 1983 (NAD83) (i.e. decimal degree format dd.dddddd). Latitude and longitude are available at the www.topozone.com website.

Equipment: Turbidimeter / Turbidity Probe

The MRP specifies that a handheld turbidimeter is acceptable for the purposes of measuring instream turbidity. A handheld turbidimeter is either field equipment, equipped with a probe that takes direct turbidity readings from the watercourse, or bench top laboratory equipment that takes a turbidity reading from a sample

[1] A monitoring event is defined as all the turbidity samples or readings taken during the same storm event.

already collected from the monitoring location. Some models of the bench top style turbidimeter are designed to be taken into the field.

Whether a bench top turbidimeter or probe is used, the equipment must report turbidity levels in Nephelometric Turbitity Units (NTUs) and be able to read within a scale of at least 0 – 1,000. Each piece of equipment must be assigned a unique equipment identification number.

Calibration and Accuracy Checks

Turbidity equipment (probe or bench top turbidimeter) must be calibrated within twenty-four hours prior to each sampling event using standard reference materials and following the manufactures instructions. Calibration must include at least two calibration points that are intended to bracket the expected conditions in the field. Calibration data must be recorded on the data sheet and include the equipment identification number, date and time, result prior to calibration, value of calibration standard, and result following calibration.

An accuracy check must be preformed on the turbidity equipment within 24 hours following each sampling event. Accuracy check must include the same calibration points and certified reference materials as were used in the pre sampling calibration. If the readings are not within 5% of the standard value for any of the ranges, the probe or bench top turbidimeter must be recalibrated. Accuracy check data must be recorded on the data sheet and include equipment identification number, date and time, accuracy check result, and value of calibration standard.

Field Collection Procedures

Take turbidity reading with the probe or collect the grab sample away from the stream bank in the main current in a location that best represents the water column. An optimal location would be in a relatively straight reach that is well mixed, with uniform hydraulics, and away from turbulence. Never sample stagnant water.

When wading[2] to the site try not to disturb bottom sediment. Be careful not to take a turbidity reading or collect water that has sediment from bottom disturbance. Mark the site with flagging, photo-documentation, or other method to ensure that subsequent sampling occurs at the same location.

Probe

The discharger must take a turbidity reading using a probe that has been cleaned according to the manufacture's specifications or collect the sample using a clean sample container.

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[2] A small clean container, such as a bucket, attached to a long handle may be used to collect a sample from a stream if direct access to the bank is difficult or dangerous.

If using a probe, identify a sampling location and place the probe in the stream at least 2.0 cm below the waters surface but not more than 4.0 cm below the surface. Allow the probe measurement to stabilize (see manufactures instructions) and record the result on the field data sheet.

Grab samples

The sample container must be a plastic, wide mouthed, bottle with a screw top lid. Analyze the samples immediately. If samples will be placed in storage prior to analysis, they must be stored in amber laboratory bottles at 4° C for a time period not to exceed twenty four hours.

All bottles must be cleaned prior to each use according to the following specifications, 1) Wash each sample container with a brush and phosphate-free detergent, 2) Rinse three times with cold tap water.

Prior to sample collection label the bottle with the name of the sampler, location, and the date/time the sample was taken. Identify the sampling location and stand facing upstream. Rinse sample container three times with ambient water before filling with sample. To collect the sample, lower the lip of the bottle **below the surface of the water** and towards the current. Collect the sample with a "scooping" motion to sample the full water column instead of just one spot. (see Attachment 1, Collecting a Turbidity Grab Sample) Promptly[3], pour out excess water to leave at least a 1-inch air space so the sample can be re-suspended (by inverting the sample container several times) prior to analysis.

Stage Measurements

At each monitoring location establish a staging location where the substrate is relatively stable. During each sampling event measure stream stage with a yard stick, staff gauge, or staff plate for comparison to future measurements.

Sample Analysis

Perform the sample analysis per the manufacture's recommendation for the turbidimeter. If performing analysis with a bench top turbidimeter, conduct analysis on three separate sub-samples[4] from the same bottle and record the median[5] on the Data Sheet. Always re-suspend the sample by gently inverting the sample bottle several times (do not shake as air bubbles can interfere with your readings) before transferring to sub sample vials to prevent a misrepresentative reading due to settling.

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[3] This must be done immediately after collecting the sample. Waiting to pour out excess water can create an unrepresentative sample as some material may have already settled.

[4] If using bench top turbidimeter, all vials for subsamples must be cleaned to manufacture's recommendations.

[5] Constituting the middle value in the distribution.

Data Sheet

All sections of the field data sheet must be completed for each monitoring event.

Identify the Timber Harvest Plan (THP) or Nonindustrial Timber Management Plan (NTMP) number, Plan Name, and monitoring year. For NTMPs identify the unit or notice of timber operations (NTO) number.

Identify the monitoring sites with a unique site identification (ID). This ID needs to correlate to the monitoring maps in the MRP. Provide the latitude and longitude of each site in decimal degree format (e.g. 35.345600N 122.678900W).

Identify the type of turbidimeter or probe.

Provide data from pre sampling calibration prior to each monitoring event, including the equipment identification number, date and time, result prior to calibration, value of calibration standard, and result following calibration. Record the name of the person who conducted the calibration.

Provide data from accuracy checks following each monitoring event, including the equipment identification number, date and time, accuracy check result, and value of the standard. Record the name of the person who conducted the accuracy check.

Provide the date and time each sample was taken and the date and time the sample was analyzed. Record the stage height and note any additional information such as problems at the site or any other observations.

Note the rain gauge location reading and time; amount and duration of rainfall; and current weather.

Estimate whether the stream is on the rising or falling limb of the hydrograph.

Reporting Requirements

By November 15 of each year, the discharger must submit an Annual Report to the Central Coast Water Board per the requirements in the MRP and the following:

- A summary of the water quality monitoring performed during the previous year. Any monitoring described in the summary must also include the data submitted in an electronic format compatible with Excel.
- A detailed map[6] meeting the following specifications:
  - In color (if possible).
  - Title stating: "Water Quality Monitoring Locations for THP No. XXXX"
  - All monitoring locations and routes clearly marked with unique site identification tags.
  - A Key or Legend identifying all monitoring locations and routes.
  - North Arrow.
  - Scale
- Completed Field Data Sheets with data from all monitoring events.

[6] The map needs to be submitted only once unless monitoring station locations are modified. In the future a map with unique monitoring site tags shall be submitted with the Timber Harvest Information Form and Fact Sheet.

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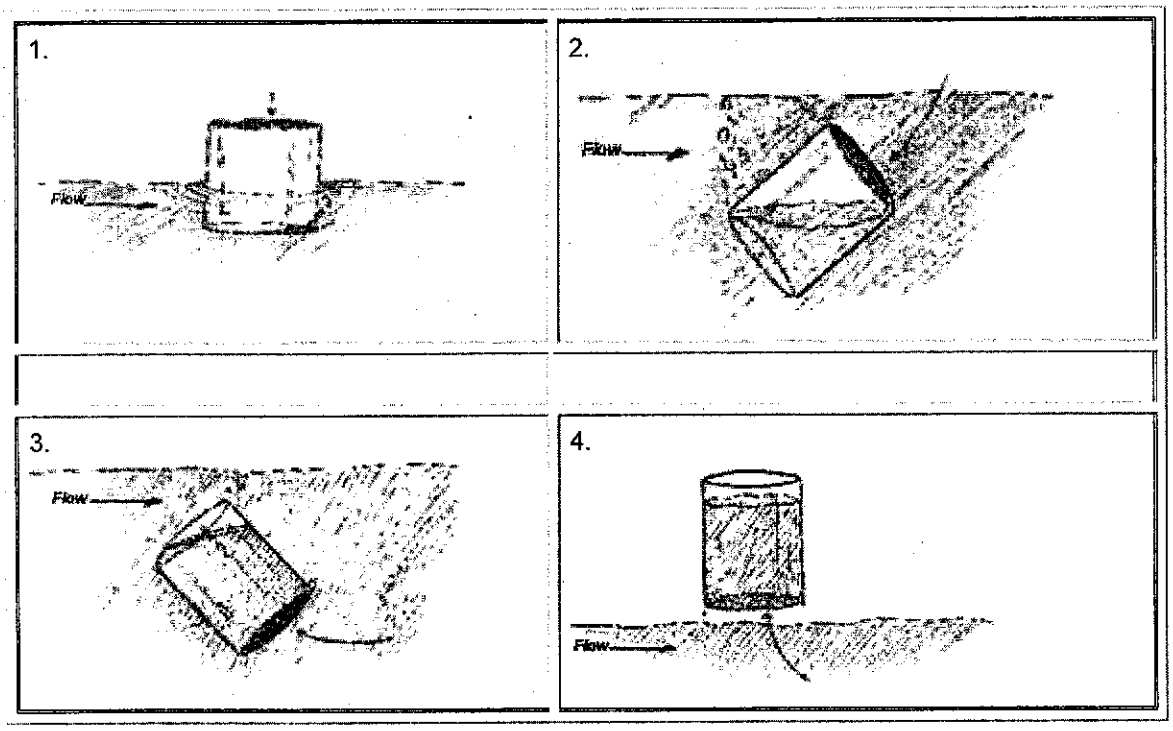
Document1

Getting into position to take a turbidity grab sample.



Taking a water sample.
Turn the bottle into the current and scoop in an upstream direction.

Sketches taken from USEPA "Quality Assurance, Quality Control, and Quality Assessment Measures. Figures 5.2 and 5.3" Volunteer Stream Monitoring: A Methods Manual http://www.epa.gov/volunteer/stream/vms50.html