MONITORING AND REPORTING PROGRAM
FOR TIMBER HARVEST REQUIREMENTS
(GENERAL CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS)
MRP NO. R3-2005-0066

Prepared June 29, 2005
Revised July 8, 2005

All Timber Harvest activities regulated by these Timber Harvest Requirements are required to have a California Department of Forestry and Fire Protection (CDF) approved Timber Harvest Plan (THP) and/or Non-industrial Timber Management Plan (NTMP) and comply with the CDF Forest Practice Rules. The Discharger shall perform the monitoring applicable to the approved THP and/or NTMP as determined by the Executive Officer.

The Executive Officer shall determine which monitoring tier applies to a THP or NTMP after considering the THP or NTMP, information from the pre-harvest inspection or other site inspections, the Notice of Intent, and the Eligibility Criteria (attached as Exhibit 1). THPs or NTMPs that are categorized as Tiers II or III cannot be downgraded to a lower category (i.e., a Tier II determination cannot be changed to Tier I, and a Tier III determination cannot be changed to Tier I or II) based on other criteria. The Executive Officer may eliminate or add monitoring requirements, but may not change the monitoring requirements so they are less stringent than the requirements that would apply based solely on the Eligibility Criteria.

TIER I

MONITORING AND REPORTING REQUIREMENTS

SECTION I – MONITORING

Rules Compliance Monitoring: California Department of Forestry and Fire Protection (CDF) conducts Forest Practice Rules compliance monitoring.

Road Inventory Program: The Discharger shall develop and implement a Roads Management Program (similar to the Big Creek Lumber Company's "Protocol for Conducting Company Road Inventories & Maintenance" attached as Exhibit 2) within the THP area.

FORENSIC MONITORING REQUIREMENTS

a. If at any time during implementation or effectiveness monitoring, a discharge is observed, the Discharger shall conduct forensic monitoring to identify failed management measures and/or source of discharge. 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.

b. 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.

c. 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.

d. If at any time during implementation or effectiveness monitoring, the Discharger observes a discharge (sediment, soil, other organic material, herbicides, pesticides, fluids [oil, hydraulic fluid, etc], from timber equipment, etc.), the Discharger shall notify the Central Coast Water Board within 24 hours.

e. The Discharger shall submit to the Central Coast 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 Central Coast Water Board Executive Officer will determine completeness of the report and the need for additional actions necessary for the protection of water quality and beneficial uses.

Frequency: The frequency of Forensic Monitoring is coincident with CDF Forest Practice Rules compliance monitoring, or at any time a failed management measure and/or discharge is reported or observed.

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.

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.

SECTION II - DATA LOGGING AND REPORTING

a. **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 Central Coast Water Board staff

b. **SEDIMENT RELEASE REPORTING**: The Discharger shall report to the Central Coast Water Board within 48 hours whenever at least one cubic yard of soil is released to

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

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 Central Coast 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.

c. **ROAD INVENTORY PROGRAM:** The Discharger shall develop and implement a Roads Management Program (similar to the Big Creek Lumber Company's "Protocol for Conducting Company Road Inventories & Maintenance" attached as Exhibit 2) within the THP area. 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. 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.

d. **VIOLATION REPORTING:** The Discharger shall report any violation of the Forest Practice Rules, to the Central Coast Water Board within 48 hours. The Discharger shall provide the report in writing to the Central Coast 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 Central Coast Water Board 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 Executive Officer determines is necessary.

e. **ANNUAL REPORT:** By November 15 of each year, The Discharger shall submit an Annual Report to the Central Coast Water Board that addresses the following:

i. A status of active timber harvest operations including:
   a. Previous year activities, wet weather problems observed, etc.
   b. Planned activities
ii. A summary of all violations.
iii. Submittal of all data and photos[2] in electronic format, and a summary of the water quality monitoring performed during the previous year.
iv. Documentation of rainfall measurement procedures and locations.
v. With the first annual report, a copy of the road management program.
vi. A summary of the road management program[3] and actions implemented for the protection of water quality and beneficial uses.
vii. Recommendations for improving the monitoring and reporting program.

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

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

f. 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 Central Coast Water Board within 48 hours.

The Central Coast Water Board 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.

STANDARD PROVISIONS

1. The Central Coast 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. This period may be extended during the course of any unresolved litigation or when requested by the 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."

TIER II

MONITORING AND REPORTING REQUIREMENTS

SECTION I – MONITORING

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.

IMPLEMENTATION AND EFFECTIVENESS MONITORING POINTS

a. **VISUAL MONITORING POINTS** – Visual monitoring points shall include roads, watercourse crossings, landings, skid trails, water diversions, watercourse confluences, known landslides, and all mitigation sites (as documented the CDF approved THP and/or 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 Central Coast Water Board Executive Officer during or after the pre-harvest inspection). All visual monitoring points shall be documented in the CDF approved THP and/or NTMP.

b. **PHOTO-POINT MONITORING POINTS** – Photo-point 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 Central Coast Water Board Executive Officer during or after the pre-harvest inspection). All photo-point monitoring points shall be documented in the CDF approved THP and/or NTMP. Photo-point 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.

Every Discharger shall:

i. Utilize the 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-point monitoring (attached as Exhibit 3).
ii. Utilize flagging, rebar, or another method of establishing the photo-point site locations.
iii. Utilize all photo-point locations until this Monitoring and Reporting Program is rescinded.

MONITORING FREQUENCY

a. **VISUAL MONITORING**: Every Discharger shall monitor all visual monitoring points established by Central Coast Water Board 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 – "Year One" monitoring shall occur a minimum of three times over each 12 month period during which harvesting occurs. "**Year One**" monitoring will continue through the first winter after a timber harvest is completed. **Year 2** monitoring begins one year after a timber harvest is completed.

Monitoring Event One

The Discharger shall perform the first monitoring event within 12 to 24 hours of the first storm event that includes 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 (the wet season begins October 15 of each year)).

Years 2-5 – In the second year of monitoring following completion of timber harvest operations and a determination by Central Coast Water Board Executive Officer (as documented by information contained in the annual report) that implemented management practices are functioning to protect water quality and beneficial uses, visual monitoring shall be implemented according to the Road Management Program (attached as Exhibit 2).

Summary of Visual Monitoring frequency:

Year One = 3 events (minimum)
Year 2 - 5 = consistent with a Road Management Program

b. **PHOTO-POINT MONITORING:** The Discharger shall monitor all photo-point monitoring points:

Year One – "Year One" monitoring shall occur a minimum of three times over each 12 month period during which harvesting occurs. "**Year One**" monitoring will continue through the first winter after a timber harvest is completed. **Year 2** monitoring begins one year after a timber harvest is completed.

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 (the start of the wet season (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).

Photo-point monitoring shall occur 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-point monitoring by April 30 of the same year.

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

If implemented management practices are not adequately protecting water quality and beneficial uses, as determined by the Central Coast Water Board Executive Officer, the Discharger shall repeat "Year One" monitoring.

Summary of Photo Sets:
Year One = 3 photo sets
Year 2 = 1 photo set
Year 5 = 1 photo set

FORENSIC MONITORING REQUIREMENTS

a. If at any time during implementation or effectiveness monitoring a discharge is observed, the Discharger shall conduct forensic monitoring to identify failed management measures and/or source of discharge. 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.

b. 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[4] document them and shall implement management practices immediately to prevent discharge and impacts to water quality.

c. 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.

d. 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 Central Coast Water Board within 24 hours.

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

e. The Discharger shall submit to the Central Coast 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 Central Coast Water Board Executive Officer will determine completeness of the report and the need for additional actions necessary for the protection of water quality and beneficial uses.

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.

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.

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.

SECTION II - DATA LOGGING AND REPORTING

a. **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 Central Coast Water Board staff.

b. **SEDIMENT RELEASE REPORTING**: The Discharger shall report to the Central Coast 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 Central Coast 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.

c. **ROAD INVENTORY PROGRAM**: The Discharger shall develop and implement a Roads Management Program (similar to the Big Creek Lumber Company's "Protocol for Conducting Company Road Inventories & Maintenance" attached as Exhibit 2) within the THP area. 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. 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.

d. **VIOLATION REPORTING:** The Discharger shall report any violation of the Forest Practice Rules, to the Central Coast Water Board within 48 hours. The Discharger shall provide the report in writing to the Central Coast 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 Central Coast Water Board 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 Executive Officer determines is necessary.

e. **ANNUAL REPORT**: By November 15 of each year, The Discharger shall submit an Annual Report to the Central Coast Water Board that addresses the following:

   i. A status of active timber harvest operations including:
      a. Previous year activities, wet weather problems observed, etc.
      b. Planned activities
   ii. A summary of all violations.
   iii. Submittal of all data and photos[5] in electronic format, and a summary of the water quality monitoring performed during the previous year.
   iv. Documentation of rainfall measurement procedures and locations.
   v. With the first annual report, a copy of the road management program.
   vi. A summary of the road management program[6] and actions implemented for the protection of water quality and beneficial uses.
   vii. Recommendations for improving the monitoring and reporting program.

f. 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 Central Coast Water Board within 48 hours.

The Central Coast Water Board 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.

STANDARD PROVISIONS

1. The Central Coast Water Board shall be allowed:

   a. Entry upon premises where timber harvest activities occur;

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

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

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. This period may be extended during the course of any unresolved litigation or when requested by the 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."

TIER III

MONITORING AND REPORTING REQUIREMENTS

SECTION I – MONITORING

IMPLEMENTATION AND EFFECTIVENESS MONITORING POINTS

a. **VISUAL MONITORING POINTS** – Visual monitoring points shall include roads, watercourse crossings, landings, skid trails, water diversions, watercourse confluences, known landslides, and all mitigation sites (as documented the CDF approved THP and/or 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 Central Coast Water Board Executive Officer during or after the pre-harvest inspection). All visual monitoring points shall be documented in the CDF approved THP and/or NTMP.

b. **PHOTO-POINT MONITORING POINTS** – Photo-point 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 Central Coast Water Board Executive Officer during or after the pre-harvest inspection). All photo-point monitoring points shall be documented in the CDF approved THP and/or NTMP. Photo-point 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.

Every Discharger shall:

i. Utilize the 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-point monitoring (attached as Exhibit 3).
ii. Utilize flagging, rebar, or another method of establishing the photo-point site locations.
iii. Utilize all photo-point locations until this Monitoring and Reporting Program is rescinded.

MONITORING FREQUENCY

a. VISUAL MONITORING: Every Discharger shall monitor all visual monitoring points established by Central Coast Water Board 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 – "Year One" monitoring shall occur a minimum of three times over each 12 month period during which harvesting occurs. "**Year One**" monitoring will continue through the first winter after a timber harvest is completed. **Year 2** monitoring begins one year after a timber harvest is completed.

Monitoring Event One

The Discharger shall perform the first monitoring event within 12 to 24 hours of the first storm event that includes 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 (start of the winter period, October 15).

Years 2-5 – In the second year of monitoring following completion of timber harvest operations and a determination by Central Coast Water Board Executive Officer (as documented by information contained in the annual report) that implemented management practices are functioning to protect water quality and beneficial uses, visual monitoring shall be implemented according to the Road Management Program (attached as Exhibit 2).

Summary of Visual Monitoring frequency:

Year One = 3 events (minimum)
Year 2 - 5 = consistent with a Road Management Program

b. **PHOTO-POINT MONITORING:** The Discharger shall monitor all photo-point monitoring points:

Year One – "Year One" monitoring shall occur a minimum of three times over each 12 month period during which harvesting occurs. "**Year One**" monitoring will continue through the first winter after a timber harvest is completed. **Year 2** monitoring begins one year after a timber harvest is completed.

- 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 wet season (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).

Photo-point monitoring shall occur 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-point monitoring by April 30 of the same year.

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

If implemented management practices are not adequately protecting water quality and beneficial uses, as determined by the Central Coast Water Board Executive Officer, the Discharger shall repeat "Year One" monitoring.

Summary of Photo Sets:
Year One = 3 photo sets
Year 2 = 1 photo set
Year 5 = 1 photo set

FORENSIC MONITORING REQUIREMENTS

a. If at any time during implementation or effectiveness monitoring, a discharge is observed, the Discharger shall conduct forensic monitoring to identify failed management measures and/or source of discharge. 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.

b. 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[7] document them and shall implement management practices immediately to prevent discharge and impacts to water quality.

c. 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.

d. 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 Central Coast Water Board within 24 hours.

e. The Discharger shall submit to the Central Coast 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 Central Coast Water Board Executive Officer will determine completeness

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

of the report and the need for additional actions necessary for the protection of water quality and beneficial uses.

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.

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.

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.

WATER QUALITY COMPLIANCE MONITORING

D.1 - Temperature - The Discharger shall monitor temperature continuously ("Hobo temps" shall be used for continuous temperature monitoring) in Class I watercourses (during the months of May 1 through October 15) upstream, near the upper extent of timber operations, and downstream, near the lower extent of timber operations (sites may be established by the Central Coast Water Board Executive Officer during or after the pre-harvest inspection). Continuous water temperature monitoring is required. Temperature monitoring shall be conducted beginning May 1 through October 15 when water is present in the Class I or II watercourse. The Discharger shall monitor temperature when timber harvest operations occur in Class I or II WLPZ.

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 when timber harvest operations occur in Class II WLPZ.

Year One – "Year One" monitoring shall continue through the first winter after a timber harvest is completed. Year 2 monitoring begins one year after a timber harvest is completed.

Monitoring Frequency:

Temperature - The Discharger shall monitor temperature during the months of May 1 through October 15.

Years 2 and 5

Monitoring Frequency:

Temperature - The Discharger shall monitor temperature during the months of May 1 through October 15 in Year 2 and Year 5 following completion of timber harvest operations and a determination that implemented management practices are adequately protecting water quality and beneficial uses.

If implemented management practices are not adequately protecting water quality and beneficial uses, as determined by the Central Coast Water Board Executive Officer, the Discharger shall **repeat "Year One" monitoring.** In addition to supplementary monitoring, the Central Coast Water Board 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

D.2 Turbidity - The Discharger shall monitor all newly constructed or reconstructed Class I and II crossings within the timber harvest plan area in place after October 15th 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 Central Coast Water Board Executive Officer during or after the pre-harvest inspection). The Central Coast Water Board 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.

Monitoring Frequency:

Turbidity - 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) turbidity monitoring shall occur within 18 hours.

Year One – "Year One" monitoring shall occur a minimum of three times over each 12 month period during which harvesting occurs. **"Year One"** monitoring will continue through the first winter after a timber harvest is completed. **Year 2** monitoring begins one year after a timber harvest is completed.

Monitoring Event One

The Discharger shall perform the first monitoring event within 12 hours of the first storm event that includes 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 (start of the winter period, October 15).

Years 2-5 - In the second year of monitoring following completion of timber harvest operations and a determination by the Central Coast Water Board Executive Officer, that implemented management practices are adequately protecting water quality and beneficial uses, the Discharger shall conduct turbidity monitoring based on need as determined by forensic monitoring.

If implemented management practices are not adequately protecting water quality and beneficial uses, as determined by the Central Coast Water Board Executive Officer, the Discharger shall **repeat "Year One" monitoring.**

Summary of Turbidity Data Sets:

Year One = 1 data set (minimum of three events)
Year 2 - 5 = as needed

SECTION II - DATA LOGGING AND REPORTING

a. **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 Central Coast Water Board staff.

b. **SEDIMENT RELEASE REPORTING**: The Discharger shall report to the Central Coast 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 Central Coast 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.

c. **ROAD INVENTORY PROGRAM**: The Discharger shall develop and implement a Roads Management Program (similar to the Big Creek Lumber Company's "Protocol for Conducting Company Road Inventories & Maintenance" attached as Exhibit 2) within the THP area. 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. 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.

d. VIOLATION REPORTING: The Discharger shall report any violation of the Forest Practice Rules, to the Central Coast Water Board within 48 hours. The Discharger shall provide the report in writing to the Central Coast 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 Central Coast Water Board 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 Executive Officer determines is necessary.

e. ANNUAL REPORT: By November 15 of each year, The Discharger shall submit an Annual Report to the Central Coast Water Board that addresses the following:

i. A status of active timber harvest operations including:
   a. Previous year activities, wet weather problems observed, etc.
   b. Planned activities
ii. A summary of all violations.
iii. Submittal of all data and photos[8] in electronic format, and a summary of the water quality monitoring performed during the previous year.
iv. Documentation of rainfall measurement procedures and locations.
v. With the first annual report, a copy of the road management program.
vi. A summary of the road management program[9] and actions implemented for the protection of water quality and beneficial uses.
vii. Recommendations for improving the monitoring and reporting program.

f. 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 Central Coast Water Board within 48 hours.

Standard Provisions

1. The Central Coast 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,

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

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

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. This period may be extended during the course of any unresolved litigation or when requested by the 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."

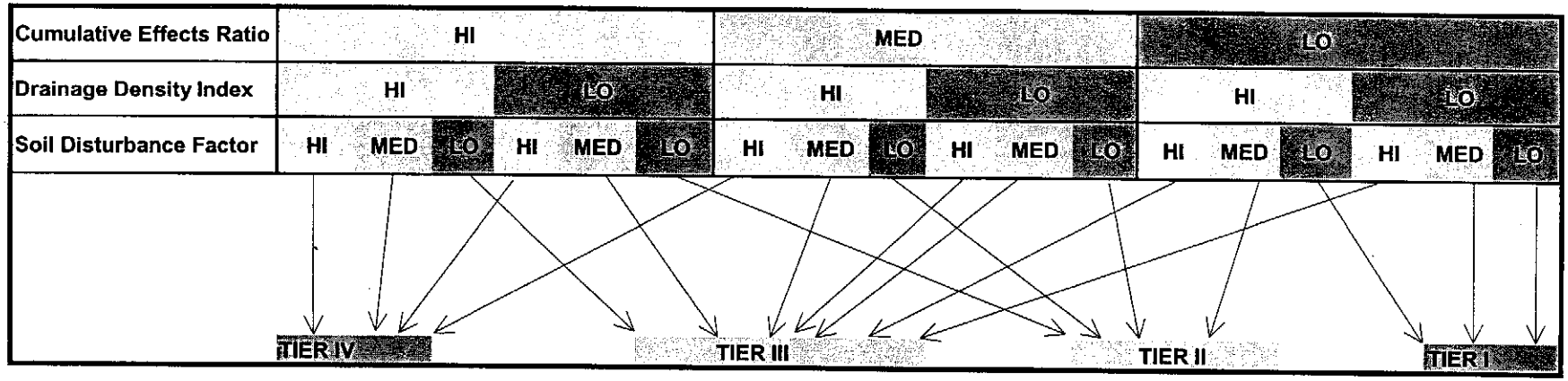
The Central Coast Water Board Executive Officer may modify or rescind this Monitoring and Reporting Program at any time, or may modify or rescind the monitoring and reporting program as to a specific discharger. Any such modification or rescission must comply with California Water Code section 13269.

Ordered By: _____ 7-29-05
Roger W. Briggs, Executive Officer **Date**

EXHIBIT 1

ELIGIBILITY CRITERIA DECISION TOOL
(ELIGIBILITY CRITERIA)
AND
SPREADSHEETS FOR CER, DDI, AND SDF

Eligibility Criteria Decision Tool (Eligibility Criteria)



Regulatory Option

Individual WDR or Waiver

General Conditional Waiver Requirements for Timber Operations

Monitoring Requirements

Individual MRP

Tier III Monitoring Requirements include Implementation Monitoring, Effectiveness Monitoring, Water Quality Compliance Monitoring, and Forensic Monitoring as necessary. **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 Forensic Monitoring as necessary.

Tier III monitoring is required if ground based equipment is used 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 III.

Cumulative Effects Ratio (CER)

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**
1321	124	1445	10749	13%

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

*** *Watershed 303d listed as impaired from sediment or temperature? If yes, CER is always ranked high.**

Example					
500	75	575	5000	12%	

Drainage Density Index (DDI)

ft. of Class I	ft. of Class II	ft. of Class III	Corrected Sum	Plan Area (ac)	DDI	HI>100	LO<=100
0	3997	6129	14123	219	64.5		

Soil Disturbance Factor (SDF)

Silviculture		Group(ac)	Selection(ac)			Corrected Sum
		0	124			124
	Area in THP (ac)	219				
Roads		Seasonal/Temporary Existing x 4	Proposed x 6	All weather/ Permanent Existing x 2	Proposed x 4	
	Linear feet - Exisiting and proposed	9594	0	6662	0	236
		Class I x 30	Class II x 20	Class III x 10		
	Crossings - Number and Class of watercourse crossed	0	1	5		70
		x 10				
	Number of In-lieu/Alt rule in WLPZ	0				0
		High x2	Extreme x5			
	EHR - Number of feet in high or extreme	2500	0			50
					Roads Subtotal	356
Skid Trails		Existing x 1.5	Proposed x 2.5			
	Linear feet - Exisiting and proposed	8261	0	For unmapped acreage, add 100 feet per acre		57
		Class I x 10	Class II x7	Class III x 3		
	Crossings - Number and Class of watercourse crossed	0	0	2		6
		x 5				
	Number of In-lieu/Alt rule in WLPZ	0				0
		High x1.0	Extreme x2			
	EHR - Number of feet in high or extreme	5000	0			50
					Skid Trails Subtotal	113
Landings		Existing x 1.5	Proposed x 2.5			
	Ground-based	14	0			21
	Helicopter	x 1	x 2			
		0	0			0
	No. of In-lieu/Alt rule in WLPZ	x 3	x 5			
		0	0			0
					Landings Subtotal	21
FINAL SUM						
Sub Total						614
Winter Operations Proposed?					Yes	736
					No	614

EXHIBIT 2

ROADS MANAGEMENT PROGRAM

EXAMPLE:
BIG CREEK LUMBER COMPANY'S PROTOCOL
FOR CONDUCTING COMPANY ROAD
INVENTORIES AND MAINTENANCE

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

EXHIBIT 3

PROTOCOL FOR ALL PHOTO-POINT MONITORING

STANDARD OPERATION PROCEDURE 5.2.3
PHOTO DOCUMENTATION PROCEDURE

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):