California Regional Water Quality Control Board
North Coast Region

Order Requiring Technical Information
Monitoring and Reporting Program No. R1-2002-0088

For
Scotia Pacific Company LLC
and
Pacific Lumber Company
Elk River, Humboldt County, CA

The California Regional Water Quality Control Board, North Coast Region (hereinafter Regional Water Board) finds that:

1. Scotia Pacific Company LLC and the Pacific Lumber Company, subsidiaries of MAXXAM, Inc., (hereinafter PALCO) own or operate on a large portion of the timber and timberland in the Elk River watershed, a tributary to Humboldt Bay in Humboldt County.

2. PALCO conducts timber operations, forestry management, road construction and maintenance, and related activities on their lands in the Elk River watershed.

3. The Elk River watershed is listed as an impaired water body under section 303(d) of the federal Clean Water Act due to high instream sediment loads and associated adverse impacts to the beneficial uses of water.

4. The Elk River watershed is one of five watersheds found by the California Department of Forestry and Fire Protection (CDF), the California Department of Fish and Game (DFG), the California Division of Mines and Geology (now California Geologic Survey, or CGS), and the Regional Water Board to be significantly cumulatively adversely impacted due to sediment, with timber harvesting a contributing factor.

5. The beneficial uses of the Elk River and its tributaries include:

   a) municipal and domestic supply
   b) agricultural supply
   c) industrial process supply
   d) industrial service supply
   e) groundwater recharge
   f) navigation
   g) water contact recreation
   h) non-contact water recreation
   i) commercial and sport fishing
   j) warm freshwater habitat
   k) cold freshwater habitat
   l) wildlife habitat
   m) rare, threatened, or endangered species
   n) migration of aquatic organisms
   o) spawning, reproduction or early development
   p) estuarine habitat

6. On March 2,2001 the State Water Resource Control Board (State Board) received a petition asking, in part, for a review of the lack of action taken by the Regional Water Board on a previous petition, dated April 17, 2000, requesting Regional Water Board action for PALCO's logging practices in Elk River.

7. On January 23, 2002, the State Board issued Order WQO-2002-0004 remanding the matters raised in the March 2, 2001, petition to the Regional Water Board for further action in accordance with law, as necessary to protect water quality in the affected watersheds. The Order WQO-2002-0004 also included a finding that it was desirable to expedite the establishment of Total Maximum Daily Loads (TMDLs) on the affected watersheds. As part of the State Board's Order WQO-2002-0004, the Regional Water Board was required to report any revisions to the Regional Water Board's Total Maximum Daily Load (TMDL) schedule for the Elk River watershed.

8. On February 28, 2002, the Regional Water Board directed staff to expedite the development of the sediment TMDL for the Elk River watershed with a completion date of August 2003, and also directed staff to require monitoring and technical reports, as necessary.

9. Due to the unconsolidated geology in the Elk River watershed and the lack of watershed or geology specific instream studies, instream data specific to Elk River is required to ensure development of appropriate instream targets for inclusion in the sediment TMDL.

10. The technical reports required by this Order are necessary to ensure that the sediment TMDL developed for the Elk River watershed is based on watershed specific data collected in a manner that can be replicated and is legally defensible. Water quality monitoring collected by grab sample is necessary to characterize the chronic and post-storm turbidity conditions in select tributaries of Elk River. Water quality monitoring by continuous water sampling for turbidity and streamflow monitoring is necessary to characterize the range of conditions in two tributaries with different levels of recent land management. Turbidity threshold monitoring is necessary to determine the suspended sediment loads in each of the two primary forks of Elk River owned by PALCO.

11. While the M&R was designed to provide key information for TMDL development, Regional Water Board staff expect the data generated from the M&R to be useful in supporting and strengthening other ongoing and future monitoring efforts in the watershed. Information that will be useful in other programs include the development and maintenance of stage-discharge relationships at five of the existing stations currently maintained by PALCO. Regional Water Board staff had previously requested the development of these relationships at these stations to provide greater confidence and utility of the generated data. In addition, due to PALCO's proposed timber harvest and road rehabilitation plans in one of the sub-watersheds, the data generated at one of the monitoring locations (No. CC-1) could provide up to one year of data relative to pre-harvest conditions.

12. Prior to the adoption of the expedited schedule for the development of the sediment TMDL in Elk River, Regional Water Board staff pursued and obtained contract funding for Humboldt State University (HSU) to establish turbidity threshold sampling locations in the Elk River watershed. Two of the monitoring locations included in this M&RP are

coincident with the monitoring objectives proposed in the contract awarded to HSU to address this issue. If PALCO and HSU, in cooperation, establish and maintain the coincident monitoring locations (No. BC-1 and CC-1), and submit a written acknowledgement of the commitment and responsibilities of the two parties, the M&R could be revised to reflect this cooperative approach. Regional Water Board staff will endeavor to coordinate monitoring efforts in Elk River, to the extent feasible, to avoid overlap and duplication of efforts and resources to all stakeholders.

13. The burden of implementation of this monitoring and reporting program have been evaluated by Regional Water Board staff. The anticipated costs for implementation of this monitoring and reporting program have been estimated to be less than $155,000. As examined in greater detail in the previously issued Cleanup and Abatement Orders No. R1 98-100 and R1-2002-0085, and our August 5, 2002 Order requiring reports of waste discharge, there is significant evidence of past and future sediment discharges from PALCO's timber harvesting-related activities. The costs and other burdens arising from this order are therefore reasonable, given the need for the reports and the benefits to be obtained from the reports.

14. This is an order issued for information gathering purposes, and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.), in accordance with California Code of Regulations, Title 14, Section 15306.

THEREFORE, IT IS HEREBY ORDERED that, pursuant to California Water Code Sections 13267(b), PALCO shall perform water quality monitoring and reporting in Elk River and its tributaries to measure and report existing conditions in the Elk River watershed relative to their ownership, as set out in detail herein. The water quality monitoring and reporting program (M&R) shall be conducted in a manner that allows comparison of the data to data from other ownerships in the watershed. The M&R shall be designed and implemented to facilitate the collection of instream data necessary for the development of the sediment Total Maximum Daily Load (TMDL) for the Elk River watershed and shall meet the following objectives:

- Develop geologically-sensitive targets for specified quantitative instream indicators.
- Develop turbidity-suspended sediment relationships for tributaries of Elk River.
- Develop estimates of suspended sediment loads in North Fork Elk River and South Fork Elk River.
- Develop stage-discharge relationships at existing and new continuous streamflow monitoring stations.

MONITORING

A. Sampling Stations:

The locations of existing trend monitoring stations and timber harvest plan (THP) monitoring stations maintained by PALCO are specified on Attachment 1. Sampling stations associated with the M&RP shall be established at the locations specified on Attachment 2.

Water column, streamflow and stage measurements shall be collected at the sampling stations described below and shown on Attachment 2. Specific sampling sites shall be established in the area of the stations described herein and shall be located at a sufficient distance immediately

upstream of the specified confluence to be beyond the zone of influence of the downstream waters.

Sampling stations associated with the M&RP are as follows:

No. CG-1	Clapp Gulch, upstream of the confluence with Mainstem Elk River
No. MS-1	Main Stem Elk River, approximately at the USGS gauging station and PALCO's trend monitoring Station 166
No. RR-1	Railroad Gulch, upstream of the confluence with Mainstem Elk River
No. SF-1	South Fork Elk River, approximately at PALCO's trend monitoring Station 175
No. SF-2	South Fork Elk River, at PALCO's THP monitoring Station 183 (associated with THP 1-97-520 HUM)
No. SF-3	South Fork Elk River, PALCO's THP monitoring Station 188 (associated with THP 1-97-520 HUM)
No. CC-1	Corrigan Creek, upstream of the confluence with South Fork Elk River
No. NF-1	North Fork Elk River, approximately at PALCO's trend monitoring Station 14
No. DG-1	Dunlap Gulch, upstream of the confluence with North Fork Elk River
No. BG-1	Browns Gulch, upstream of the confluence with North Fork Elk River
No. BC-1	Bridge Creek, upstream of the confluence with North Fork Elk River
No. BC-2	West Fork Bridge Creek, upstream of the confluence with Bridge Creek
No. BC-3	Bridge Creek, upstream of the confluence with West Fork Bridge Creek
No. SB-1	South Branch North Fork Elk River, upstream of the confluence with North Fork Elk River
No. NF-2	North Fork Elk River, upstream of the confluence with North Branch North Fork Elk River
No. NB-1	North Branch North Fork Elk River, South Branch North Fork Elk River, upstream of the confluence with North Fork Elk River
No. DC-1	Doe Creek, upstream of the confluence with North Branch North Fork Elk River
No. NF-3	North Fork Elk River, upstream of the Turkey Foot road crossing

B. Site Description

For all station locations specified on Attachment 2, PALCO (or designee) shall, in consultation with Regional Water Board staff, establish, describe and monument specific monitoring sites at which sample and measurements and collection can be carried out in a repeatable manner over the life of the M&RP. Monitoring site description shall be submitted to the Regional Water Board Executive Officer for approval by September 16, 2002. Site description shall include, but shall not limited to, description of the specific geographic location of site (e.g., distance from the confluence with downstream waters or other describable landmark), approximate stream gradient, local stream channel and pool characteristics (e.g., substrate, channel geometry, instream structures), general hillslope characteristics, and any local features that could affect the results of the monitoring efforts specified herein (e.g. known sites of active sediment discharge or threatened discharge). If a sampling station in the vicinity of the location specified is not accessible, PALCO shall

provide a written description of the limitations to the Regional Water Board Executive Officer for consideration per Modifications (B) of this Order.

C. Sampling Parameters:

Water column sampling and streamflow and stage measurements shall be conducted according to the following specifications:

Location	Parameter	Units	Sampling Method	Sampling Frequency
CG-1, MS-1, RR-1, SF-1 SF-2, SF-3, CC-1, DG-1, BG-1, BC-1, BC-2, BC-3, SB-1, NB-1, NF-2, DC-1, NF-3	Turbidity[1]	NTU	Grab sample	Weekly and 3 consecutive days following 5 significant rainfall events (suspended sediment measurements are only required of the weekly samples)
	Suspended Sediment[2]	mg/L	Grab sample	
	Streamflow[3]	cfs	Direct measurement for streamflow	
	Stage	feet	Staff plate[4]	
MS-1, SF-1, SF-2, SF-3, CC-1, NF-1, BC-1	Turbidity	NTU	In Situ measurement	Continuous[5]
	Stage[6]	cfs	In Situ measurement	Continuous[4]
SF-1, NF-1	Suspended sediment[2]	mg/L	Pump sampler	Semi continuous, triggered by turbidity thresholds[7]
Location	**Parameter**	**Units**	**Sampling Method**	**Sampling Frequency**
SF-2, NB-1	Rainfall	Inches	Tipping bucket gage	Continuous

1 The Landowners (or designee) shall measure the turbidity of each grab sample within 48 hours of the time at which it was collected using a turbidity meter capable of measuring turbidity to within ±5 percent for turbidities within the range of 0 to 2000 NTU, while following the Quality Assurance/Quality Control (QA/QC) Program described in Item E below

2 Suspended sediment concentration of each grab sample shall be measured within an accuracy of 95% and a resolution of 0.1 mg/L while following the Quality Assurance/Quality Control (QA/QC) Program described in Item E below. Standard operating procedures shall be developed for determination of suspended sediment concentration in accordance with USGS protocols and shall be submitted to the Regional Water Board Executive Officer as part of the QA/QC program described in (E).

3 Streamflow shall be measured each week until a reliable stage discharge relationship is developed.

4 The staff plate shall be accurate to at least 0.1 foot and shall be of adequate length to measure all anticipated water depths at the stations.

5 Instream equipment shall collect turbidity and stage measurements at 15-30 minute intervals continuously according to the following specifications: Light source wavelength: infrared (~860nm); Orientation of primary light detector: ~90 degrees from incident light; Primary calibration standards: Formazin; Pathlength: less than 10 cm; Range: 1-1,000 NTU (at least); Accuracy: +/- 5%.

6 Streamflow data shall be generated using stage measurements (feet) in combination with stage-streamflow relationships developed for each monitoring location. For reference of methods to be used to conduct streamflow monitoring, the following references are available: http://wwwrcamnl.wr.usgs.gov/sws/fieldmethods/ , http://water.usgs.gov/pubs/twri/ .

7 For reference of methods to be used to conduct turbidity triggered suspended sediment sampling the following reference is available at: http://www.rsl.psw.fs.fed.us/projects/water/tts_webpage/tts_main.html#literature

D. Sampling Schedule and Frequency:

1. All monitoring of water column parameters and streamflow and stage measurements required in the M&RP shall begin no later than October 1, 2002 and shall continue until May 15, 2003 Water column sampling via grab sampling shall be conducted according to the following criteria:

   a) Grab samples for turbidity and suspended sediment shall be collected with stage and streamflow measurements at all stations on the same day, once per week. Grab samples shall be collected the same day of the week throughout the monitoring period, as feasible with consideration given to holidays and safety considerations. Once a reliable stage discharge relationship is developed for an individual site, collection of streamflow measurements may be rescinded according to the provisions described under the Modifications section of this Order.

   b) In addition to 1(a) above, samples shall be collected on the receding limb of the hydrograph once per day for three consecutive days following a significant rainfall event. A significant rainfall event shall be defined as a rainfall event producing greater than 1.0 inch of rain in any 24-hour period as measured at an appropriately selected precipitation gage in the Elk River area[8]. The criteria for triggering storm-related grab sampling may be revised following data analysis.

   c) If conditions for sampling are unsafe, the conditions shall be documented and the sampling shall resume as soon as conditions are safe.

2. For all sampling locations, necessary equipment shall be installed no later than October 1, 2002 and measurements shall continue for the winter runoff season (September 15, 2002 through May 15, 2003).

   a) Development of a stage-discharge relationship shall begin October 1, 2002. A wide range of streamflow shall be measured to develop an accurate stage-discharge relationship.

E. Quality Assurance/Quality Control (QA/QC):

1. PALCO (or designee) shall, in consultation with Regional Water Board staff, develop a comprehensive QA/QC Program for the monitoring activities to be implemented. The QA/QC Program shall address all aspects of the monitoring program and shall contain, at a minimum, but not be limited to the following:

   a) Standard procedures for the establishment of repeatable sampling locations;
   b) Standard operating procedures for each field method and piece of equipment used;

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[8] For planning purposes, the Landowner may wish to use real-time precipitation data to determine the 1 inch in 24 hours available through the National Weather Service (NWS) at: http://www.wrh.noaa.gov/Eureka/rivers/#qpf . Additionally the landowner may wish to use the real-time stream stage data such as Little River, also available on the NWS webpage at: http://www.wrh.noaa.gov/cnrfc/prods/nc_stg1.gif .

c) Standard operating procedures for each laboratory method and piece of equipment used;
d) Standard reporting procedures and format;
e) Measures for quality assurance associated with monitoring and reporting procedures;
f) Measures for quality control associated with monitoring and reporting procedures;
g) A training program for personnel conducting monitoring activities; and
h) Measures for revising the QA/QC Program, when necessary.

2. PALCO (or designee) shall submit the QA/QC Program prior to September 16, 2002, for the Regional Water Board Executive Officer's approval. Following approval of the QA/QC Program, PALCO shall implement the procedures and control measures specified therein.

3. PALCO (or designee) shall train all personnel conducting monitoring activities according to the provisions of the QA/QC Program by October 1, 2002.

4. Following implementation of the approved QA/QC Program, PALCO may propose changes to the procedures and control measures as necessary, and submit the changes to the Regional Water Board Executive Officer for approval. Following approval of changes in the QA/QC Program, PALCO shall document such changes and implement the new procedures and control measures immediately.

REPORTING

A. For the months of October through May, PALCO shall submit monthly reports to the Regional Water Board Executive Officer by the 15th calendar day of each month for the previous month's reporting period. For the months of June through September, a single report shall be submitted to the Regional Water Board by the 15th calendar day of October for the previous months' reporting period. The reporting period is defined as a calendar month. The reports shall include, but not be limited to, the following information:

1. The date, location and time of each sample collected/measured;
2. The individual(s) who performed the sample collection/measurement;
3. The date, location and time of sample analyses;
4. The individual(s) who performed the analysis;
5. Measured and/or analytical results for all water quality samples collected and stage/streamflow measurements taken during the reporting period;
6. Daily rainfall totals for each day during the reporting period, as recorded at the locations SF-2 and NB-1;
7. Specify dates when conditions were not safe to conduct monitoring (Monitoring (C)(1)(c));
8. Complete disclosure of all possible sources of error and/or data loss; and
9. Observations made by field staff.

B. The monitoring reports shall conform to the reporting procedures and control measures and shall be arranged in the formats specified in the QA/QC Program approved by the Regional Water Board Executive Officer. Complete reports shall be submitted to the Regional

Water Board Executive Officer in hardcopy form. All data shall also be submitted in electronic form.

C. Signatory Requirements

1. All reports or information prepared in accordance with this agreement submitted to the Regional Water Board shall be signed by a responsible corporate officer. For the purpose of this agreement, a responsible corporate officer means: (a) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or (b) the manager of the construction activity if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

2. All reports or other information required in this Order by the Regional Water Board Executive Officer shall be signed by a person described above or by a duly authorized representative. A person is a duly authorized representative if:

   a) The authorization is made in writing by a person described in paragraph (a) above; or

   b) The authorization specifies either an individual or a position having responsibility for the overall operation of the construction activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

   c) The written authorization is submitted to the Regional Water Board prior to or together with any reports, information, or applications signed by the authorized representative.

3. Any person signing a document under paragraph (a) or (b) of this provision 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 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."

IMPLEMENTATION DATE

A. PALCO shall begin monitoring and reporting under this Order by October 1, 2002.

MODIFICATIONS

A. If found to be appropriate based on an analysis of the data collected, the Regional Water Board Executive Officer may, in the exercise of professional discretion, rescind or revise the requirements detailed herein at any time.

B. For due cause, PALCO may submit, in writing, a request for changes in monitoring or reporting procedures associated with this Order. Upon written approval by the Regional Water Board Executive Officer, those changes may be implemented.

SUMMARY OF DATES ASSOCIATED WITH DELIVERABLES

1. By September 16, 2002, PALCO (or designee) shall submit a description of the specific monitoring sites as described in M&R No. R1-2002-0088, for approval by the Regional Water Board Executive Officer.
2. By September 16, 2002, PALCO (or designee) shall submit the QA/QC Program for approval by the Regional Water Board Executive Officer.
3. By October 1, 2002, PALCO (or designee) shall train all personnel conducting monitoring activities according to the provisions of the QA/QC Program.
4. By October 1, 2002, PALCO (or designee) shall complete the installation of equipment and commence monitoring and reporting under M&R No. R1-2002-0088.
5. PALCO (or designee) shall submit monthly monitoring reports for the period of October through May, a single report shall be submitted from June to September as described in M&R No. R1-2002-0088.

Ordered by _____

Susan A. Warner
Executive Officer

August 15, 2002