

Monitoring Study Group Meeting Minutes

March 25, 2004

Redding—CDF Shasta-Trinity Unit Headquarters ECC Conference Center

The following people attended the MSG meeting: Tharon O'Dell (BOF-chair), Duane Shintaku (CDF), Richard Gienger (SSRC/HWC), Frank Barron (Crane Mills), Clay Brandow (CDF), John Munn (CDF), Dr. Richard Harris (UCB), Matthew Buffleben (NCRWQCB), Stuart Farber (Timber Products Co.), Dr. Cajun James (SPI), Dr. Michael Wopat (CGS), Dr. Marty Berbach (DFG), Peter Ribar (Campbell Timberland Management), David Wright (Campbell Timberland Management), Stephen Levesque (Campbell Timberland Management), Brad Dorken (CDF), Steve DeBonis (SPI), Mike Mitzel (SPI), Dennis Hall (CDF), Don Lindsay (SHN Consulting Engineers and Geologists), Jeff Caster (Crane Mills), Dawn McGuire (DFG), Lois Kaufman (CDF), Bob Carey (W.M. Beaty and Associates), Jim Ostrowski (Timber Products Co.), Dr. Lee Benda (Lee Benda and Associates), Angela Wilson (CVRWQCB), Frank Goddard (CDF), Curt Babcock (DFG), Joe Croteau (DFG), John Eacker (Fruit Growers Supply Company), Graham Matthews (GMA), and Pete Cafferata (CDF). **[Note: action items are shown in bold print].**

We began the meeting with general monitoring related announcements:

- Pete Cafferata stated that the Redwood Region Forest Science Symposium, held on March 15-17, 2004 at the Double Tree Inn in Rohnert Park, provided excellent information regarding water quality monitoring, including numerous presentations on both Caspar Creek and Redwood Creek research. The abstracts are available online at http://www.cnr.berkeley.edu/forestry/redwood_schedule.htm and the proceedings should be available in approximately six months.
- John Munn announced that the MOU Monitoring Workgroup, made up of state agency representatives, including the Regional Water Quality Control Boards, SWRCB, CGS, and CDF, continues to work on mutually acceptable criteria for different types of water quality monitoring at the THP scale.
- Richard Harris stated that the Salmonid Restoration Federation workshop on monitoring the effectiveness of restoration projects held on March 18th in Davis was a success, with abundant positive feedback. The workshop addressed monitoring the effectiveness of salmonid restoration programs and projects at multiple scales in Bay-Delta and North Coast watersheds and 11 presentations were given. For more information, see: <http://www.northcoastweb.com/srf/conference/2004/field-tour-and-workshop.htm#w4>.
- Pete Cafferata announced that Randy Klein (RNSP) and Dr. Mary Ann Madej (USGS) are holding a turbidity workgroup meeting on May 11, 2004 in Arcata. Attendance is by invitation and primarily limited to people collecting turbidity data in the field. The purpose of the workshop is to pool knowledge and experience to find common denominators that can help to standardize and improve turbidity data quality.
- Richard Gienger announced that the May joint Board of Forestry and Fire Protection (BOF)/Fish and Game Commission meeting in San Diego will address the recently adopted coho recovery strategy, which includes monitoring (an agenda will be posted at: http://www.bof.fire.ca.gov/board/board_current_docs.aspx).

Following these announcements, we heard updates on three cooperative instream monitoring projects being undertaken by CDF, BOF-MSG, private timber companies, and others. Graham Matthews provided a summary of the South Fork Wages Creek project being completed on Hawthorne Timber Company lands managed by Campbell Timberland Management in western Mendocino County. Graham reviewed the four study objectives from the revised study plan. He stated that technical challenges encountered in the early part of the winter have been corrected and good data were collected in the February storms at the five continuous monitoring stations (drainage area = 1.4 mi² to 0.1 mi²). The small watershed sizes being monitored have presented problems for accurate continuous turbidity measurement. The largest storm to date occurred on February 17th, with a discharge of 70 cfs at the station with the largest drainage area (likely an annual event or slightly larger based on nearby stations with long periods of record). Several manual discharge measurements have been made at varying stages and stage-discharge relationships for the stations have been created. On a unit area basis, the runoff response has been quite uniform for the stations. Suspended sediment vs. turbidity and turbidity vs. discharge plots have yielded relatively high r-squared values (i.e., >0.7). The highest turbidity values recorded to date have been approximately 25 NTUs, a low number for North Coast streams during high discharge events. Turbidity has tracked the storm hydrographs well. Relationships between parameters are expected to improve when the data is plotted on a storm event basis rather than an annual basis. Pre-treatment data, prior to implementation of a THP, is expected for at least 2-3 winters. **Graham's PowerPoint presentation will be posted on the MSG webpage (see http://www.bof.fire.ca.gov/board/msg_archives.html).**

Cajun James described the cooperative instream project she is developing in the Judd Creek watershed located in the Antelope Creek drainage in Tehama County. Judd Creek is 8500 acres in size and has been one of Cajun's water temperature/riparian microclimate research sites for several years. Sediment and wood budgets have been completed for the drainage, and abundant water temperature, turbidity, and dissolved oxygen data exist. Two continuous multi-parameter sensors are already present and the preliminary plan is to add four more continuous recording stations in the upper part of the basin. A THP is being developed by SPI that will have numerous logging units with group retention silviculture located throughout the basin. It is anticipated that there will be sufficient time for two years of pre-treatment data collection. Elevation ranges from 3200 to 6200 feet and rain-on-snow events are common. The 400 acre Sullivan Ranch with a 70 acre meadow and cattle grazing is located in the center of the basin and impacts from this ownership will be documented. **Cajun anticipates having a study plan written for review in 1-2 months and field tours of the watershed are possible.** She stated that this site typifies 85 percent of SPI's total ownership.

Pete Cafferata briefed the group on the Garcia River cooperative instream monitoring project. The cooperators are CDF, BOF-MSG, NCRWQCB, Mendocino County RCD, MRC, and the Maillard Ranch. Teri Jo Barber, working for the MCRCD, is the lead person for the project and reported on February 27th that flow and turbidity data are successfully being collected at four of the five continuously monitored stations. The mainstem Garcia station has not produced accurate flow data due to a malfunctioning pressure transducer. The other four stations are located on the South Fork Garcia River, Mill Creek, Whitlow Creek, and Pardaloe Creek. Bulk stream gravel composition, embeddedness, and permeability will be measured this summer. CDF and NCRWQCB contracts only fund continuous recording turbidity data for one winter period, so the MCRCD will soon be

contacting other potential project supporters. To date, turbidity data for the various stations has been plotted against time and stage height. One goal of the project is to determine the number of total and consecutive days that turbidity values for the various stations are greater than biologically significant thresholds. The project is also attempting to determine if turbidity and gravel parameters are responsive to road rehabilitation projects that have been implemented in parts of the basin. The Garcia River study plan is posted at http://www.bof.fire.ca.gov/board/garcia_final_comments.pdf.

Next, Frank Barron, Chief Forester for Crane Mills, presented the lessons he has learned from the Thomes Creek Interim Watershed Mitigation Addendum (IWMA) project in Tehama County. The IWMA process was approved by the BOF as an interim way to move from project-by-project analysis of impacts and mitigation development to a watershed-level approach. The IWMA was to be a test of watershed-level analysis for the maintenance and restoration of anadromous salmonids. It provided landowners with an option to the standard rules adopted by the BOF for watersheds with threatened and impaired values. It was to be conducted for a logical hydrologic unit and pre-consultation with responsible agencies was encouraged prior to review of a THP in the assessment area. The IWMA rules became effective on January 1st, 2003 but were rescinded in November of 2003 due to a lawsuit finding that the pre-consultation without public participation allowed decision making to occur outside of the normal review process.

Frank began his presentation with a 12 minute video of the Thomes Creek watershed filmed from a fixed wing aircraft five years ago, followed by a PowerPoint presentation with ground-view photos of the watershed. Thomes Creek is an undammed stream that has a drainage area of approximately 130,000 acres at Paskenta and flows from the crest of the Coast Range to the Sacramento River near Corning. Crane Mills owns about 30,000 acres in the watershed above Paskenta; Mendocino National Forest lands are also present and parts of the basin burned about a decade ago. The stream is usually dry or intermittent below Paskenta in the summer until heavy fall rains occur. Frank described it as a marginal threatened and impaired watershed because of limitations on anadromous fish use (fall-run chinook salmon and steelhead). Numerous partial or total barriers to fish passage exist about 6 miles upstream of Paskenta beginning in an area known as "The Gorge." Barrier #12 was created in the December 1964 flood event and has been described by DFG as impassible. The geology is primarily Franciscan Complex, with hard sedimentary and metamorphic rocks, and ancient landslide features are common. Fourteen planning watersheds are located above Paskenta. This area was determined to be too large for a workable IWMA, so the Upper Fish Creek planning watershed was chosen for IWMA development in 2003.

Below "The Gorge", water temperatures are very warm in the summer months and warm water fish species are present. Frank has collected Hobo (i.e., continuous) water temperature data since 1995 at numerous sites on Crane Mills timberlands in the upper Thomes Creek drainage. Average maximum summer temperatures in this part of the basin are in the high 60's to low 70's (°F). Resident rainbow/steelhead trout were described as acclimated to relatively warm water temperatures. The watershed has a long history of management, including Native American burning, sheep and cattle grazing beginning around 1850, and multiple cycles of selective timber harvesting. Road access to Thomes Creek and the Fish Creek tributary is limited.

Frank then described the principle observations and conclusions he has made about the IWMA process for the Upper Fish Creek planning watershed. These include: (1) the IWMA process generated abundant information that will be useful in cumulative watershed effects analyses for THPs, (2) pre-consultation with the regulatory agencies can be beneficial, (3) the original premise of the IWMA is valid—site specific prescription development capability is needed in watersheds such as Thomes Creek—since standards in the Threatened and Impaired Rules Package do not appear to apply (for example natural overstory canopy is less than the rules require), (4) data limitations exist for significant portions of watersheds with commercial timberlands—constraining the utility of IWMA assessments, and (5) regulatory uncertainty with processes such as IWMA make it difficult for small to moderate-sized landowners to attempt these assessments. Frank said that the internet was capable of providing much data (precipitation, stream discharge, etc.), but the quality varied greatly and data was often from locations far downstream of the Upper Fish Creek planning watershed. Most of the data used in the IWMA was collected in the past, and new data is often prohibitively expensive to collect. Winter water quality data collection is extremely difficult due to the remote, rugged nature of the watershed. Data obtained from the USFS on stream channel condition was qualitative in nature and difficult to use. The ability to conduct pre-consultation with the agencies depended to a large degree on the agency's budget and staffing.

Considerable discussion followed Frank's formal presentation. Frank stated that total agreement on limiting factors for coldwater fish has not been reached at this time, but the IWMA field team of agency and company personnel are moving toward consensus. DFG is still in the process of determining if the barriers below #12 are passable; observation during higher discharges are needed to make this determination. Dennis Hall noted that the Threatened and Impaired Rule Package does allow for alternatives to the standard rules to be developed by the RPF and Frank responded that he likely would be developing an alternative for canopy requirements. Frank said that the most valuable data collected to date in the upper basin has been the continuous water temperature data.

Following lunch, Dr. Lee Benda gave a presentation on the wood budgets he has constructed along the Mendocino Coast, and the implications of this work for managing riparian forests and accuracy of sediment TMDLs. **A detailed report on Lee's project will be posted on the MSG webpage (see http://www.bof.fire.ca.gov/board/msg_archives.html).** Lee began by describing the wood budgeting process and its uses in forest management. Wood budgets make quantitative estimates of wood recruitment, wood storage, distances to sources of wood, wood loss, and wood transport. They can be used to estimate the relative importance of different recruitment processes on instream wood abundance—including mortality, bank erosion, and landsliding. Three study sites were summarized: the Little North Fork (LNF) Noyo River subbasin in the Noyo River watershed, and the Bear Haven and Redwood Creek subbasins in the Ten Mile River watershed. These studies were conducted for Campbell Timberland Management on Hawthorne Timber Company timberlands during 2002 and 2003. Continuous measurements of wood-related parameters were made along Class I and II watercourses for multiple reaches that varied in length from approximately 1000 feet to 1.5 miles.

Only a portion (26 to 66%) of all wood pieces inventoried could be associated with a recruitment process. At Bear Haven and Redwood Creek, 55% and 76% of the wood (by volume) was logging related, respectively. Overall in the Ten Mile basin, wood originated from a range of processes, including historical logging (65%), bank erosion (15%),

mortality (10%), landsliding (9%), and debris flows (4%). In LNF Noyo, wood originated from historical logging (33%), bank erosion (38%), mortality (4%), streamside landsliding (8%), and debris flows (16%). Huge spatial variation in wood loading was noted at all the sites.

In the Ten Mile watershed, wood recruitment occurred by bank erosion (44%), mortality (36%), and streamside landsliding (20%); while in the LNF Noyo, bank erosion accounted for 73%, mortality 15%, and streamside landsliding 12%. Almost 70% of the key pieces (creating log jams) were attributed to the bank erosion recruitment process in the LNF Noyo subbasin. In terms of source distance, 90% of the wood recruitment (by volume) occurred within 46 feet and 26 feet of the stream edge in the Ten Mile and Noyo watersheds, respectively. For individual reaches, source distance was heavily influenced by dominant recruitment process. Wood transport distance was predicted to be less than 350 feet in the smallest channels and up to 0.8 miles in streams with drainage areas of approximately 0.8 to 8 mi². Lee stated that to measure a “reliable average” value for wood loading, his data indicates that the field survey distance would have to range from 2.5 to more than 6 miles.

Lee also addressed the implications of the wood budget work on sediment budgets used in TMDL development. He showed how wood recruitment from bank erosion can be used to calculate soil creep and bank erosion rates. For the LNF Noyo subbasin, average bank erosion was estimated to be 2.75 inches/year for both banks over 20 and 36 years. This high rate is thought to reflect continuing channel incision and lateral migration of the channel related to past logging that either filled the channel with sediment or otherwise changed their hydraulic geometry. This bank erosion rate equates to an erosion rate of approximately 1060 t mi⁻² yr⁻¹, which is inconsistent with the U.S. EPA (1999) TMDL estimate of 200 t mi⁻² yr⁻¹, developed primarily with office techniques.

In the Ten Mile subbasins, bank erosion rates were estimated at approximately 1.2 to 2 inches per year (average bank erosion for both banks). The Ten Mile U.S. EPA sediment budget had a sediment yield from bank erosion and streamside landsliding of 200 t mi⁻² yr⁻¹, and concluded that forest management over the last decade was responsible for 56% of all sediment production. Lee’s wood budget estimate for that sediment yield was 1550 t mi⁻² yr⁻¹, and the corresponding contribution from timber harvest areas was estimated to be 18%. Lee stated that this data suggests that sediment budgets can be off by hundreds of percent, and indicates the approximate nature of sediment budgeting—particularly for U.S. EPA TMDLs that do not heavily rely on field data. Lee concluded that it appears that lingering effects of past historic logging activities may dominate present day erosion and sediment yield in these coastal watersheds.

Following Lee Benda’s presentation, Clay Brandow gave a brief update on the CDF Modified Completion Report (MCR) monitoring program. CDF Forest Practice Inspectors have been monitoring a random selection of 12.5% of completed THPs for implementation and effectiveness of water quality Forest Practice Rules (FPRs) at randomly located WLPZ and road transects and at randomly located watercourse crossings. To date, 250 THPs have been sampled, 181 with Class I or II WLPZs. Clay posted an updated PowerPoint presentation on the MSG website (Archived Documents) with results through January 21, 2004 (see <http://www.bof.fire.ca.gov/pdfs/MCREarlyPrelimAnalysis2004-01-21.pdf>). Results are generally similar to those posted in August for this project.

Of the MCR Region I THPs submitted after July 1, 2000 under the Threatened and Impaired Watersheds Rule Package, 28% (7 out of 25) had no WLPZs in the plan, while only 6% of plans submitted in Region I before that date (5 out of 78) did not have WLPZs. Clay stated that this suggests that RPFs in Region I are designing logging units to avoid Class I and II WLPZs where possible. For the 18 THPs submitted after July 1, 2000 in Region I that did have WLPZs, the average Class I and II WLPZ total canopy measured with a sighting tube was 87% and 82%, respectively. For the 12 post-2000 THPs with Class I WLPZs, 4 had harvesting within the WLPZ and 8 had no harvest. Clay also stated that approximately 40 miles of total road segments have been sampled to date (213 one-thousand foot segments). On 16% of the road segments, at least one departure from the FPRs was recorded. Out of a total of 65 road-related Forest Practice rule departures recorded, 43 departures have had the effectiveness inspections completed. Of these 43 departures, 28% resulted in sediment transport to a watercourse.

Clay stressed that the number of CDF Forest Practice Inspectors will be significantly reduced this fire season due to CDF budget shortfalls and data collection this summer will be minimal. **Considerable discussion followed Clay's presentation and it was suggested by several people that Clay should give a detailed presentation on the results to date to the BOF. Clay agreed to ask George Gentry, Executive Officer of the BOF, for an agenda slot at the June 2004 meeting. Additionally, since there will be a break in data collection, Clay will write a report summarizing the data collected to date. There was general agreement that CDF should produce a new program that can be accomplished with the field staff likely to remain available, so that data can continue to be collected on timber operations conducted under the Threatened and Impaired Watersheds Rule Package.**

Under new and unfinished business, Pete Cafferata announced that he had spoken to Mike Jani, Mendocino Redwood Company; Marc Jameson, JDSF; and Stephen Levesque, CTM; about access to their timberlands for a MSG field meeting to observe watercourse crossings. All three responded that access would be granted to the MSG for this field meeting. **The group decided to have the next meeting in the field to look at properly functioning crossings, crossings needing improvement, and abandoned crossings. Pete agreed to work with Mike, Marc, and Stephen to develop a field trip of appropriate length. This field MSG meeting was tentatively scheduled for May 19th. Pete will email further details as they become available.**