DATA AVAILABLITY AND NEEDS CONCERNING NONPOINT SOURCE POLLUTION ON FEDERAL LANDS

OFFICE OF POLICY PLANNING AND EVALUATION
ENVIRONMENTAL PROTECTION AGENCY

May 1, 1991

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INTRODUCTION

As part of its review of water quality information available to the Environmental Protection Agency (EPA), the Office of Policy Planning and Evaluation (OPPE) is interested in assessing the quality and availability of information regarding nonpoint source pollution on federal lands. After an initial round of contacts with EPA officials from Regions VIII, IX, and X and a number of individuals from States and other federal agencies, OPPE decided to narrow the scope of the project by focusing on water quality monitoring efforts being undertaken by the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) in nine western U.S. States. These two agencies manage approximately 526 million acres (BLM, 334 million acres; USFS, 192 million acres). There are 124 million acres of USFS land and 163 million acres of BLM land in Regions VIII, IX, and X, excluding Alaska.

BLM and Forest Service rivers, streams, and lakes are subject to impacts from a variety of activities including timber harvesting, grazing, road building, mining, and recreation. As a general rule, the efforts to monitor, evaluate, and report on water quality have been limited in recent years by budget constraints and staff reductions.

In order to try to identify what information was available from water monitoring efforts at different federal lands, OPPE, with contractor assistance from Temple, Barker & Sloane, Inc. (TBS), selected nine BLM Resource Areas and the National Forests located in nine western States. In the selection process, an effort was made to obtain a representative sample that gives some indication of the situation throughout these two major land systems, not a sample of "good" and "bad" examples. TBS conducted interviews with water quality personnel at each location. In addition, interviews were conducted with individuals from each of the nine State offices to determine the State's view on how water quality data from federal lands could be utilized by the State and provided to EPA.

Since the scope of the project was limited and the sample size was so small, the summaries and conclusions herein should be treated as an indication of the type of water quality monitoring being conducted on BLM and USFS lands, and not as a means to draw definite conclusions about either agency in general. Additionally, the responsibilities of the individuals who were interviewed varied from site to site and all available information at a given site may not have been provided because of the differing positions of the personnel interviewed and the nature of telephone interviews.

Still, some conclusions can be drawn. While there is a wide range in the amount of monitoring conducted at each site, the USFS has, for the most part, a much more extensive program than does the BLM. Funding for the BLM water monitoring programs has been drastically cut back in recent years. For example, the National Audubon Society reported that from 1981 to 1986 the number of individuals identified as BLM fisheries biologists was cut from 58 to 31. While there was not necessarily a great deal of consistency among National Forests or Resource Areas within the nine State region, there appeared to be more consistency

in the amount and type of monitoring at Resource Areas and National Forests located within the same State. It seems then that some States, such as Idaho, may actually exert greater influence over the monitoring conducted than do the federal agencies.

QUESTIONNAIRE SUMMARY

Personnel at each of the eighteen federal sites were telephoned and asked to respond to a series of questions from a questionnaire that was drafted by TBS, in conjunction with EPA. A copy of this questionnaire is attached (Appendix D) and summaries of each of these interviews are included as Appendix A. Appendix C presents information on the size of the site and waterbodies, sources of pollution, pollutants, and water quality monitoring conducted at each Resource Area and National Forest. A brief summary of the key points raised during the interviews follows.

The extent and type of water quality monitoring conducted for nonpoint sources of pollution vary considerably among the Forests and Resource Areas surveyed. The sources of nonpoint pollution varied significantly from site to site, while the major pollutant tended to be sediment. Unfortunately, even in those areas with extensive monitoring programs in place, there do not seem to be sufficient data to accurately assess water quality. Most respondents were unable to estimate the percentage of surface waters on the Forest or Resource Area that are currently captured by monitoring systems, and in the limited cases where estimations were offered, it turns out that most of the waters are not captured. Several interviewees noted the difficulty in finding representative waters that can provide a picture of a whole Forest or Resource Area, especially given the lack of sufficient baseline data. The following examples indicate the range of existing monitoring programs:

Vermillion Resource Area, Arizona

Monitoring at the Vermillion Resource Area in Arizona represents one end of the spectrum. Approximately fifteen years ago, USGS conducted stream analysis and Arizona Game and Fish did some studies, but no water quality monitoring has ever been conducted at this site by the BLM staff. This total absence of water quality monitoring is in contrast to some of the more active programs, such as the one at the Kremmling Resource Area in Colorado.

Kremmling Resource Area, Colorado

At Kremmling, monitoring is conducted at three different rates -- monthly, biennially, and in response to special projects. All sites are chosen based upon land use or previous water quality monitoring. Ten monthly samples are taken to measure stream flow, sediment, pH, and electrical conductivity. At four additional sites, biannual samples are taken to measure flow, anions and cations which reveal information about the geology of the area and changes in the hardness of the water, and information about the water's origins. Occasional monitoring is conducted at sites chosen for specific events, such as the disposing of drilling fluids or the construction of pits for oil, gas, or coal.

Big Horn National Forest, Wyoming

The extent of water quality monitoring done on National Forests is similarly wide-ranging. The only monitoring currently conducted by the Forest Service at Big Horn National Forest in Wyoming is in response to complaints or to insure that special projects do not cause violations. In these cases, the Forest monitors turbidity and sometimes total dissolved solids, pH, and conductivity. The Wyoming Department of Environmental Quality does a limited amount of monitoring on the Forest, mostly in response to complaints.

Fishlake National Forest, Utah

In comparison, there is an extensive water quality monitoring program in place at Fishlake National Forest in Utah. The Forest is divided into five hydrologic/geologic areas: volcanic, metamorphic, sedimentary, high country, and low country. One stream is sampled for baseline data in each of the five areas. Each stream has two to five sites with at least three samples taken per site. The same sites are used for five years to ensure an established baseline. After five years, the sites are rotated and additional sites are added as funding and staffing allow. Both biological community monitoring (macroinvertebrates) and physical/chemical monitoring are done at least twice per year at the above sites.

A three part system is used for macroinvertebrate monitoring. The first part involves use of a standard biotic condition index that is used to compare the existing species against a list of those that might potentially be there. The samples are processed by a Regional lab. The second part is a diversity rating that is used to determine if the community is well-balanced. The third measure is a standing crop which determines how many of each species the stream is producing. The water chemical tests include monitoring for conductivity, pH, alkalinity, oxygen, phosphates, nitrates, sulfates, hardness, and suspended material. The Forest staff are also monitoring forage utilization on riparian areas throughout the Forest. The method followed is mainly visual and consists of estimating how much forage a particular area could produce and then using that estimate to determine how many cattle to allow to range on the land.

Other Federal and State agencies also conduct some monitoring at Forests and Resource Areas. USGS maintains stream gauges which measure several parameters, including stream flow and water temperature, at many of the contacted sites. The USGS data are entered into STORET and published in annual reports. In addition, USGS conducts some monitoring for sediment and other parameters at certain federally managed lands. In a few cases, the USFS conducts monitoring on neighboring BLM resource areas that share watersheds with the Forest, and in a limited number of situations, Forests share data with each other in an attempt to avoid duplication of their monitoring efforts.

Data Uses

While the data collected from monitoring activities are not often used for specific quantitative or qualitative assessments of individual water segments, they are used in many aspects of Forest and Resource Area management. Stream quality data are used often to help evaluate whether the objectives and guidelines of area management plans are being met and to assist in the management of recreation areas and formulation of recreation plans. For example, at Paradise-Denio Resource Area in Nevada, data are used to decide the number of cows that may be allowed on given ranges. At the Tonto National Forest in Arizona, data are used to provide a basis for posting warning signs and/or closing swimming areas.

In most cases, data are not provided to the States. In the limited cases where data are provided to the States, they usually are included in 305(b) reports. However, States usually do not distinguish information from federal lands in their reports. In Oregon, the State Department of Environmental Quality works with the Mt. Hood National Forest to evaluate the effectiveness of BMPs. Together, they look at Forest records and tour the Forest to see if BMPs are in line with the Forest Practices Act. After passage of the amended Clean Water Act, Mt. Hood staff reassessed all the water bodies on the Forest. When reporting water quality assessments to the State, the Forest staff now indicates whether there are actual monitoring data to support the assessments.

Data are also used in certain cases in environmental assessments and environmental impact statements. Other management activities involving the use of water quality monitoring data include the determination of range allotment, investigation of specific problems, and general long-term planning purposes. The monitoring results may also be used to respond to agency information requests and to complaints. In most cases, data are stored in files, either as hard copy or in computer databases. In some cases, the data are entered into STORET. However, many of the Forest and Resource Area personnel have found it difficult and time consuming to use STORET.

Potential Improvements

Many respondents to our questionnaires suggested a number of improvements to their own water quality assessment practices. In response to the question of asking which elements they would like to see added to their own monitoring program at their respective Forest or Resource Area, interviews cited the following parameters at least once: erosion, regular stream gauging, bio assessment, alkalinity/acidity, coliform, cobble embeddedness, toxic chemical analyses of waters drunk by hikers on springs and creeks for hikers, and indicator monitoring. Some would also like to implement monitoring that would differentiate between sediment produced from natural causes and sediment produced as a result of human activities.

Many personnel would also like to see additional funds to allow for more intensive monitoring, a wider range of sampling, regular lab analysis, and more follow up monitoring. For example, some would like more monitoring to be conducted before and after fires to document their effects, or to insure the installation and effectiveness of BMPs. Some even suggested focusing more on land use, such as farming, grazing practices and irrigation flow, which might provide more relevant information than water quality monitoring.

While a large portion of the suggested improvements pertain to increasing the amount of available monitoring data, much concern was also expressed about the current use of the data. Several people cited a need for more analysis of existing data and for an increase in quality control. One area where significant improvements can be achieved is in the coordination both within and among agencies and States. Many respondents indicated that the current monitoring programs could yield more effective results through the sharing of data among agencies and with the State. This data sharing could be accomplished through the use of a central computer system, such as STORET. However, the monitoring personnel indicated that more resources and training are necessary for the use of such a computer system.

Through contacting water quality monitoring personnel at the eighteen federal sites, it was possible to obtain a general picture of the monitoring efforts being put forth at the individual Forest or BLM level. However, the views expressed by the Forest and BLM personnel represent only part of the bigger picture. In an attempt to capture a more comprehensive idea of the status of water quality monitoring in general and on the federal lands in those nine States, it was necessary to conduct interviews with State water quality personnel as well.

STATE INTERVIEWS

The States may have the ability to play a more important role than the specific federal agencies in setting the direction for the water quality monitoring programs being carried out on federal lands in each State. While the water quality monitoring programs vary greatly across the Resource Areas and National Forests located in the nine States contacted, there does appear to be a correlation between the programs within a given State. This State influence largely reflects the responsibility the State has for setting water quality criteria or standards. However, at the current time, most of the States do not require that specific water quality data be collected and reported to determine if the standards are met.

State Monitoring

All of the States contacted currently operate a water quality monitoring program at numerous sites throughout their respective State. However, most States do not distinguish between federal lands and non-federal lands. In a few cases (Montana, Nevada), none of the State monitoring sites are located on federal lands. Some of the States also receive data from other federal agencies, such as USGS. Wyoming has a cost-sharing agreement with USGS to conduct monitoring throughout the State and Oregon also receives water quality data from USGS. In both of these States, many of the USGS monitoring sites are located on federal lands.

The water quality parameters measured vary from State to State, with basic physical/chemical tests such as pH and turbidity being the most commonly conducted. A few States also carry out bioassessments. Some carry out monitoring specifically aimed at determining the effects of nonpoint sources.

Coordination

The States set water quality standards (designated uses, and chemical, physical, and/or biological criteria) for all waters located within their borders, regardless of land ownership. However, the States contacted allow the individual agencies who own the land to decide the type of monitoring that should be conducted to determine if standards are being met. As a result, the data received from federal agencies varies in type, quantity, and quality. In some States, the Forest or Resource Area personnel enter the water quality data into STORET where it can be accessed by the State and included in the State's 305(b) Report. A few of the States, such as Wyoming and Oregon, indicated that the only water quality data they obtain for waters on federal lands comes through their own monitoring efforts. In fact, the 305(b) forms that the States send out to all management agencies operating in their State are often not returned. Due to constrained resources, States are unable to pursue the forms that are not returned by the management agencies.

Overall, a number of the State water quality personnel indicated that coordination and communication among the federal agencies and the State is improving. Both Utah and Montana have Memoranda of Understanding (MOU) with the federal agencies that specify monitoring and reporting requirements. Personnel at Resource Areas and National Forests in these States seem to cooperate on a regular basis with the State.

Idaho is considered to be the furthest along in organizing a cooperative program among the federal agencies and the State. The Idaho Department of Health and Welfare has published a report detailing the monitoring and reporting responsibilities of the State and the federal agencies. Idaho, along with most of the other States, expressed the view that an improved central data storage system or better instruction in the use of STORET would greatly facilitate data sharing.

Appendix B contains summary information based on the conversations with each of the States' monitoring personnel. These summaries provide greater detail and expand on some of the general points mentioned above.

CONCLUSIONS AND RECOMMENDATIONS

This small study represents the first step in efforts by OPPE to gather information on the type and quality of water quality monitoring conducted on federal lands. According to the personnel interviewed, a wide range of monitoring activities are conducted on BLM and USFS lands, by a number of agencies. Results of our interviews with USGS and BLM personnel are included as Appendix A and results of interviews with State monitoring personnel are included in Appendix B. These summaries provide a comprehensive look at the types of monitoring conducted. A sample of some of the conclusions that can be drawn from this study follows:

1. The type, quantity, and quality of water quality monitoring data available for federal lands vary greatly from site to site and are collected by numerous agencies (e.g., USFS, BLM, USGS, USFWS, States). Much of these data, however, is not shared among the other monitoring agencies, put into a central database, nor ultimately reported to EPA. Improvements to and instruction on STORET and BIOS could greatly facilitate the management of data which are already collected.

2. Greater coordination among federal agencies and the States should be encouraged. This effort would lead to more consistent data on water quality across various federal agencies and could best be accomplished at the State level.

3. At the present time, the amount of water quality monitoring on USFS and BLM lands is not commensurate with the amount of resource harvesting. Extensive resource extraction activities (e.g., timber harvesting, grazing, and mining) occur on USFS and BLM lands and it is important to establish baseline data on water quality before, during, and after these activities.

4. Sixteen of the eighteen sites contacted mentioned grazing as a major source of NPS pollution. Efforts should be made to ensure that monitoring captures impacts from this and other major sources of pollution.

5. A more extensive study of water quality data on federal lands, with a statistically valid sample, would be valuable. This study could include additional land management agencies, such as the National Park Service. In addition, a more extensive study could attempt to collect and assemble some existing water quality data from the State or federal sites.

6. While the States send 305(b) forms to most management agencies operating within the States, they have no authority to demand that data be provided. On many federal units, BLM and USFS data are not entered into databases to which the States have access and, with frequent turnover at the agencies, data are often lost.

A

APPENDIX A
FEDERAL MONITORING PERSONNEL INTERVIEW RESULTS

TONTO NATIONAL FOREST, ARIZONA
Rich Martin, Hydrologist
(602)225-5252

BASIC STATISTICS
- 3 million acres
- 4-500 stream/river miles
- 21,000 acres of lakes
- 2 qualified hydrologists

MAJOR SOURCES OF NPS POLLUTION
- Road Building
- Grazing

MAJOR POLLUTANTS
- Sediment
- Fecal Coliform
- Sulfate, iron, copper, zinc

MONITORING
The only monitoring done by the Forest is Benthic Community and Fecal Coliform. All other monitoring is done by other agencies. The Forest conducts Biological Community monitoring three times per year, every fifth year, at 20 sites. Specifically, they monitor numbers and composition of Benthic Organisms. Fecal Coliform monitoring is conducted on heavily used lakes and streams.

USGS conducts Physical/Chemical and Sediment monitoring monthly at six sites.

Arizona Game and Fish monitors tissue toxicity once every three to four years at special project sites.

STANDARDS
Water quality standards are set by the state. Specific information on the standards was not provided to TBS. When recreational waters do not meet the fecal coliform standard, the Forest manager notifies the State.

DATA USES
Data are used to determine limiting factors for fishing production when planning fishing projects. Fishing projects are projects that improve fish habitats. For example, if data show a rise in temperature, it may be determined that more trees should be planted along

the stream. The data also facilitate management of recreation areas by providing a basis for posting warning notices at or closing swimming areas.

Data are reported to the state and are used in creating the State NPS pollution control plans.

Data are stored in STORET and are reported in the USGS annual book.

COORDINATION

The forest cooperates with the state on special projects consisting of activities such as monitoring sediment from burned areas, and monitoring water quality below copper mines. All these data are on STORET.

The USFS region recently convened a meeting to discuss NPS BMPs. They also work closely with BLM personnel.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- More money
- More intensive project monitoring - are BMPs creating the water quality desired?
- Sediment - difficult to monitor during storms
  differentiate between sediment produced from natural causes and as the result of activities
- Insure that BMPs are being installed
- Focusing on land use, i.e. farming and grazing practices might provide more information on water pollution than water quality monitoring

ADDITIONAL INFORMATION

Ed Swanson (602) 392-4040 at ADEQ is in charge of surface water quality monitoring.

VERMILLION RESOURCE AREA, ARIZONA
Bob Smith, District Watershed Specialist
(801)673-3545

BASIC STATISTICS

- 1.3 million acres
- 40 stream/river miles
- no lakes
- no monitoring staff

MAJOR SOURCES OF NPS POLLUTION

- Grazing
- Road building and use
- Off Road Vehicles

MAJOR POLLUTANTS

- Sediment
- Salt from saline soil areas

MONITORING

No monitoring at Vermillion has been conducted by the BLM staff in the last 15 years. In the early 1970s, average sediment yield was calculated for each grazing allotment in support of the grazing Environmental statement of 1978. Sediment yield reduction of about 10.3 percent was the proposed goal. There has been no follow up to see if the sediment yield has increased or decreased. Approximately fifteen years ago, USGS conducted stream analysis. Eight to fifteen years ago, Arizona Game & Fish conducted some studies on the Paria River. At some point within the last five years, Energy Fuels Co., a mining company collected baseline information on radioactive materials and salt content of Kanab Creek and Willow Spring.

DATA USES

If data were available, they would be used to formulate recreation plans, watershed allotment management plans, and to coordinate with the state on developing NPS management programs. The water quality data and saline soil erosion data would drive the NPS management programs.

IMPROVEMENTS

- Erosion monitoring - sediment, salt
- Chemical analyses on springs and creeks for hikers and backpackers
- Regular stream gauging (one measurement doesn't lead to an average flow rate)

ADDITIONAL INFORMATION

The major use of surface water is stock watering.

The Watershed division is not a proactive program at Vermillion because there is no full time position which is dedicated exclusively to the watershed program. Mr. Smith is the only one responsible for two resource areas and he can devote less than half his time to it. He spends much of his time dealing with paperwork, programming and consulting to other programs and running the hazardous materials program. It is difficult to get out in the field or to work on any single project for more than a few interrupted days. A proactive program needs a soil scientist and a hydrologist in the District office or one position in the District office with one full time position in each area office as well.

The state is setting up NPS guidelines and should be done in another year, at which point the state will be responsible for their implementation.

LOS PADRES NATIONAL FOREST, CALIFORNIA

Bob Blecker, Hydrologist
(805)683-6711

BASIC STATISTICS

- 1,750,000 acres
- 35 watersheds
- One hydrologist, one soil scientist, one resource management officer in each of five Districts
- No regular water quality monitoring program is currently in place.

MAJOR SOURCES OF NPS POLLUTION

- Erosion due to natural landscape
- Fires
- Grazing (minor)

MAJOR POLLUTANTS

- Sediment
- Acid drainage from mines (minor)

MONITORING

- If there is a specific problem, such as a spill or a noticeable health problem at a swimming hole, the Forest Service will take some samples and send them to the County or to an independent lab to be analyzed. The Forest Service no longer has its own equipment.

STANDARDS

Los Padres has a special agreement with the California State Water Resources Control Board exempting them from performing regular ambient water quality monitoring provided they institute all the state's forestry BMPs. (A copy of this agreement is located in Appendix E.) The effectiveness of the BMPs is occasionally "monitored". While at times this may involve sample taking, it usually consists of visual determinations of sedimentation. However, included in the BMPs are methods to determine when water quality may have been affected. If roads in the forest are oiled, trained volunteers look for signs of oil off the roads and in the waters. In the cases where oil is spotted, the person responsible for the oil is notified and required to clean the oil and replace soil where necessary. Teams of volunteers are also trained to notice potential problems such as erosion from off-trail or over-trail use and remedial and preventative actions are taken.

Non-Forest Service funded and organized projects, such as road oiling, have to be carried out so as to meet Basin Water Quality (WQ) Standards set by the Water Resources Control Board for certain parameters, i.e. temperature, pH, dissolved oxygen, etc. To meet these requirements, monitoring must be done by the project sponsor. The Forest Service is the

overseer of this monitoring. If this monitoring shows that water quality standards are not being met, the project is halted and the problems are isolated and remedied.

There are beneficial uses designated with specific WQ requirements attached to them, but the Forest rarely does any actual measurements to ensure that beneficial uses are being met. They only do monitoring in incidents of specific activities, but not of the waters of the forest in general.

DATA USES

Water quality monitoring is only done to investigate specific problems, so any data that are generated are used for this purpose.

COORDINATION

USGS has sediment sampling stations near the Forest boundaries that are tied in with stream gauging stations.

The Water Resources Control Board does studies periodically that are very site specific.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- The Forest personnel are currently working on BMP effectiveness evaluation forms that will involve going out and checking if a particular BMP was effective in combatting a possible source of NPS pollution.

ADDITIONAL INFORMATION

"Doing a lot of [in-stream] monitoring is ok, but it's just saying whether the work you're doing is impacting or not impacting a channel. We feel that implementing BMPs is better because it looks to see what's best for a stream and we can then design the project in that way."

"BMPs are infiltrating BLM, the Bureau of Indian Affairs, and USFWS and they are looking to it more."

KREMMLING RESOURCE AREA, COLORADO

Paula Ledford, Hydrologist
(303)724-3437

BASIC STATISTICS

- 400,000 acres
- 1 hydrologist
- 14% of waters monitored
- 50% of waters represented by monitoring

MAJOR SOURCES OF NPS POLLUTION

- Roads
- Geologic badlands - never had much vegetation, steep slopes, high sediment producers
- Grazing

MAJOR POLLUTANTS

- Sediment
- Salinity

MONITORING

Some BLM monitoring has been conducted since 1980, but most programs began in 1987. Areas chosen to be studied are based on land use or previous water quality monitoring. There are three rates of sampling as follows:

- Monthly samples at 10 sites - flow, sediment, pH, electrical conductivity samples
- Biannual samples at 4 (sometimes 8) sites - high flow/low flow, anions, cations (reveals information about the geology of the area, changes in the hardness of the water, identifies where water comes from)
- Occasional monitoring conducted once or twice per site. The sites are chosen based on certain events i.e. energy issues such as disposing of drilling fluids and construction of pits for oil/gas/coal.

STANDARDS

Water quality standards are set by the State.

DATA USES

Monitoring data are used for several different purposes.

- Compliance tracking for 319 NPS report
- Determining location of pollution sources
- Implementing activity plans for watersheds and grazing allotments
- Supporting information for EIS or Environmental Assessment (EA - one level down from an EIS)

- Building an understanding of what is going on, what needs work, what changes are occurring
- All data that are entered into the computer bank fit USGS standards. Published data for BLM basically conform with USGS accepted standards.

Some data are stored in STORET. Some data are also at the Kremmling office stored as paper copy. They are beginning to enter these data into dBase. The data are often used by consultants who must first make specific requests.

COORDINATION

The state is currently taking the lead in developing BMPs to combat NPS pollution. Representatives from the USFS and BLM are sitting on the board. Hydrologists exchange sources of information within the BLM district and to some degree within the state. There is a database that shows who conducts monitoring and where the data is stored i.e. STORET, WATSTORE, site office. The state uses this information in determining who to contact when filing 305(b) reports and 319 reports. Since Kremmling is in Colorado, where the BLM Federal Center is located, it is easy to get federal input.

In addition to the monitoring conducted by BLM, USGS operates several stream gauges to measure water levels and maintains five or six water quality stations which monitor anions, cations, metals, and sediment. They also conduct dry gully studies to determine how much sediment is transported during storms.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- More frequent monitoring
- Regular lab analysis

ROOSEVELT NATIONAL FOREST, COLORADO
Carl Chambers, Hydrologist
(303)498-1100

BASIC STATISTICS

- 1,471,963 acres
- Two hydrologists, one wildlife biologist, one fisheries biologist
- Roosevelt and Arapaho National Forests and Pawnee National Grasslands are administered as one. The combined entity is divided into six districts.

MAJOR SOURCES OF NPS POLLUTION

- Recreation - several districts
- Resource extraction (limited amount) - one district
- Grazing - one district
- Silviculture - two districts

MAJOR POLLUTANTS

- Sediment

MONITORING

- The water quality personnel are currently looking to implement Effects Monitoring. This method consists of looking for changes in physical, chemical, and biological settings in waters (i.e. increase in sediment, changes in biological communities) using the T-Walk Method (described in the Big Horn Forest write-up).

- Coliform monitoring is conducted at all public water supplies to insure safe drinking.

- Any water quality monitoring that is done is project oriented. If water quality is considered to be a concern it is checked. But there is no regular monitoring program.

- Traditional physical/chemical monitoring is only conducted in response to specific events or requests.

- Extensive physical/chemical monitoring has been done in the past, but it "costs a lot and wasn't very beneficial because we couldn't get representative sites."

DATA USES

- Forest plan
- Environmental assessments and environmental impact statements
- State 305(b) reports

- The USFS Regional Office requests the data, compiles the data, and then sends the information to the State.
- Data are also stored at the Forest in hard copy format. The Forest is beginning to implement a computer system.

COORDINATION

USGS does monitoring in the area. Forest personnel are not certain if it is done on Roosevelt/Arapaho/Pawnee lands.

ADDITIONAL INFORMATION

The Forest also has some problems with acid drainage at certain locations. These problems are due to historical mining activity located on private land.

Awareness of NPS water quality problems is just now coming to the forefront so many people do not know much. It is an educational process now, both with Forest personnel and the people outside the Forest.

The Forest staff also performs compliance monitoring for any activities in the Forest (such as timber sales and grazing permits) to make sure that contractual agreements are upheld (i.e. erosion control features are actually built on roads). This "monitoring" is "essential because it gets more people involved and allows us to detect potential problems before they become actual problems in streams. Prevention is much more cost-effective."

BOISE NATIONAL FOREST, IDAHO
John Potyondy, Hydrologist
(208)364-4100

BASIC STATISTICS

- 2,500,000 acres
- 3700 stream/river miles
- Five District hydrologists, one soil scientist, two fisheries biologists, one program manager - all conduct some monitoring
- Most data collection done at the District level
- 80 - 90% of the Forest is represented by baseline monitoring

MAJOR SOURCES OF NPS POLLUTION

- Road construction for timber harvests
- Grazing
- Mining

MAJOR POLLUTANTS

- Sediment - 90%

MONITORING

- Monitor for cobble embeddedness and surface particle size distribution at 30 baseline stations once a year. These monitoring data are studied to identify trends.

- Conduct some water quality monitoring in project areas: Examples are: the Deadwood Summit where a fire occurred three years ago, the staff monitors for changes in cobble embeddedness and surface size particle distribution in three watersheds; at a recreational lake site where there are many summer homes, they do dye tracing four times each summer to check for septic tank drainage. Projects are monitored on each District, however, much of the monitoring is qualitative, (e.g. photo documentation).

- Special monitoring projects: South Fork Salmon River has a moratorium on logging and land-disturbing activities. The Forest has and continues to do intensive study of this watershed. The Forest does core sampling in spawning areas, takes cross-sections and fish counts, and monitors for cobble embeddedness, surface particle size distribution, and macroinvertebrates.

STANDARDS

In Idaho, "if you're doing BMPs, you are meeting Water Quality Standards." So Implementation Monitoring is considered important. But at Boise, the monitoring staff also conducts follow-up measurements to make sure the waters are meeting beneficial uses (fisheries are the beneficial use designated on most of the Forest).

The State is talking about setting in-stream sediment requirements, but the Forest feels that based on local monitoring data with all the variability observed, a specific standard is meaningless and misleading.

DATA USES

Each year, the Forest develops a monitoring plan. At the end of the year, they put together a document summarizing their findings. This document is presented at an annual meeting with the state and is also made available to other interested publics. One of the uses of the document is for the 305(b) reports. The Forest is trying to get out of just collecting data and is placing more focus on results.

When suitable, data are sometimes used for Environmental Assessments or Environmental Impact Statements prepared on the Forest.

Data are entered in a PC at the Forest and kept in the Forest files. Data are available upon request.

Agencies rarely request data.

COORDINATION

The forest coordinates as much as possible with the state Division of Environmental Quality, Fish and Game, research and other Forests. The Forest does have some cooperative studies with the State, where the State analyzes samples. The State also participates in the Implementation Monitoring. Boise NF personnel coordinate closely with Payette NF personnel on South Fork Salmon River monitoring.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- The State thought that Boise had one of the better programs in Idaho, but "we could do more."
- The water quality monitoring staff tries to cover the whole Forest with their baseline monitoring and feel that 80-90% of the Forest is represented. However, they are only measuring two parameters - cobble embeddedness and particle size distribution. They hope to expand the parameters measured to include chemicals.

The monitoring staff feel "pretty good" about their current monitoring program and that they just need to refine their techniques and expand what they are already doing.

ADDITIONAL INFORMATION

Conduct post-project audits (called Implementation Monitoring) to insure that BMPs listed in project planning documents were carried out (i.e. was brush disposal done correctly) and that they meet state requirements. Spend about two days on each audit - one day reviewing project plan and one day in the field with the State forest practices and State water quality people.

LEMHI RESOURCE AREA, IDAHO
Lyle Lewis, Hydrologist
(208)756-5403

BASIC STATISTICS
- 500,000 acres
- 180 stream/river miles
- 10 acres of lakes
- 1-2% of water monitored

MAJOR SOURCES OF NPS POLLUTION
- Grazing
- Timber

MAJOR POLLUTANTS
- Sediment
- Nutrients

MONITORING
There is no regular monitoring. Stream flow, turbidity, and water temperature data are collected sporadically. Since the major pollutant, sediment, is known, Mr. Lewis tailors the monitoring to test for sediment. Since funding is so limited, he chooses carefully which streams to monitor. He monitors those streams with higher resource value (riparian value important for wildlife or fishery habitats), and those that are typical of other streams.

STANDARDS
The state is working on standards for sediment and nutrients which should be completed within the year.

DATA USES
Data that are collected are used for a baseline assessment.
When the state requests them and data are available, they are reported to the 305(b) reports.

COORDINATION
There is some coordination between Lemhi and other resource areas within the district and state. The state is starting to set up local working committees to determine BMPs. The Department of lands, BLM, USFS, and Department of Fish and Game are all represented on these committees.

USFS is initiating a monitoring program (USFS oversees high elevation, BLM - low elevation).
The Idaho DEQ may conduct some monitoring.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- Wider range of sampling
- Alkalinity/Acidity
- Coliform
- More frequent monitoring
- Cobble Embeddedness
- Core sampling

ADDITIONAL INFORMATION

Carl Gephardt, Idaho State hydrologist (208) 334-1892 can provide state monitoring and standards names.

NEZ PERCE NATIONAL FOREST, IDAHO

Nick Gerhardt, Hydrologist
(208)983-1950

BASIC STATISTICS

- 2.2 million acres
- 1368 stream/river miles
- 12,000 total stream miles
- 1194 lake acres
- 2.5 person years in water quality monitoring
- 80% of water represented by monitoring

MAJOR SOURCES OF NPS POLLUTION

- Mining
- Road Networks
- Grazing (bank damage)
- Timber harvest

MAJOR POLLUTANTS

- Sediment

MINOR POLLUTANTS

- Heavy metals (From mining)
- Nutrients (from cattle grazing and timber)
- Oil (from occasional oil spills)
- Water temperature (from roads, grazing - removes willows by banks, timber harvest near banks)

MONITORING

From 1975 through 1980, sixty-five sites were tested for baseline conductivity, stream stage, stream discharge, alkalinity, hardness, suspended Oxygen, sediment, turbidity, DO, pH and water temperature data. At some undetermined time in the past, fish habitat data were collected.

At the present time, there are four divisions within the monitoring program which include the following:

- There are special on-site projects that last from one to five years. At any given time, there are six to twelve projects in progress.

- Eight recording stream gauges are operated to measure stream flow. Manual measurements are taken about ten times per year for stream flow, suspended sediment, bedload sediment, conductivity, and water temperature. These same gauges are used to measure sediment yield during the spring. Ninety percent of the

sediment moves between April and June. During this time period, four automated suspended sediment samples are taken per day.

- Twenty-five fish habitat sites are measured yearly for cobble embeddedness, bank stability, pool quality, pool to riffles ratio, and acting and potential debris.

- There are four miscellaneous trend sites that are sampled ten to twelve times per year. Three of these sites are on large rivers where suspended sediment is measured to show the similarities and differences among the three watersheds. The fourth site is on a watershed for a municipal reservoir where suspended sediment, flow, temperature, and conductivity are measured.

STANDARDS

While there are specific numeric water quality standards for certain pollutants (e.g. DO, temperature) for enforcement purposes, waters are not in violation of the standards if NPS BMPs are being implemented. If BMPs are implemented and the water quality is deteriorating or remaining unchanged, the State and forest determine which BMPs are not effective and they modify the practices.

Currently, the State is drafting water quality criteria for sediment monitoring, including turbidity and cobble embeddedness, which should be completed within a year.

DATA USES

Monitoring data are used to determine whether the waters are meeting State water quality standards and whether the forest is meeting the objectives and guidelines in the National Forest Management Plan. The data are included in the 305(b) reports.

While lots of data have been collected, little analysis has been conducted. Analysis is scheduled to begin in early 1991. While determining whether water quality criteria are met requires little analysis, there are several other uses of the data which do require fairly extensive analysis. The forest personnel maintain a sediment model which predicts annual sediment yield. An analysis of actual sediment yield is used to determine the validity of the model. Temperature data that meet the water quality standard may not be acceptable for certain species. A comparison needs to be conducted with temperature thresholds for various species. The Nez Perce Forest also has its own set of numerical objectives for watersheds across the Forest which are related to, but separate from, the state standards in that they involve broader objectives.

The data are entered into STORET and in files at the supervisor's office. It is readily available and frequently requested.

COORDINATION

Nez Perce staff conduct some joint monitoring activities with adjacent forests. There is some guidance from the regional office. Idaho is split between two USFS regions, and

coordination is difficult since there are problems with data consistency from one forest to the next and from region to region.

There is some BLM land near the Forest resulting in interaction between the BLM and USFS through a state sponsored process for dealing with mixed ownership watersheds.

USGS provides the Forest with its information and data and EPA helps the forest with technology transfers, sends relevant publications, and organizes field meetings.

The Idaho DEQ has increased the emphasis on water quality monitoring over the past two to three years and the DEQ now expects the Forest to submit annual monitoring plans for the State's approval.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- More analysis of existing data
- Closer coordination between various agencies
- More active role taken by Forest Service to coordinate between forests
- Increase in quality control of data
- Bio assessment (macroinvertebrates) monitoring

ADDITIONAL INFORMATION

The Department of Lands is responsible for the Idaho Forest Practices Act which deals with some monitoring issues. Thom Hawkins and Doug Worman are good contacts there. (208) 476-4587 or (208) 924-5571.

The Idaho Anti Degradation Program designates stream segments of concern and sets up task forces to deal with them.

IDEQ contacts include Bill Clark, monitoring coordinator, Steve Bower, forest practices coordinator, and Tim Burton, liaison between IDEQ and USFS (208) 983-4042 or 334-5867. Hudson Mann is the IDEQ area manager, (208) 799-3430.

Monitoring is also conducted by Idaho Dept of Health and Welfare, Idaho Dept of Fish, and Game, Nez Perce Indian Tribe, and USGS.

BIG DRY RESOURCE AREA, MONTANA
Deck Hights, Hydrologist
(406)232-4331

BASIC STATISTICS

- 1.7 million acres
- 2,835.6 miles of Stream reach

MAJOR SOURCES OF NPS POLLUTION

- Grazing
- Mining (Coal)

MAJOR POLLUTANTS

- Geological erosion
- Pesticides (weed control on rangeland, agricultural run-off from non-BLM land)
- Sediment

MONITORING

At the present time, BLM monitoring is only being conducted for sediment. In the past, stream gauging was conducted to determine water quantity. Until the recent budget cuts, grab samples were taken on a few streams on a daily basis.

DATA USES

Data are used to compile baseline data and are reported in 305(b) reports.
Data are stored in the USGS system.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- Funding for continuous stations
- Water quantity
- Sediment monitoring
- Monitor for different constituents - sodium, sulfates, heavy metals

LEWIS & CLARK NATIONAL FOREST, MONTANA
Valdon Hancock, Hydrologist
(406)791-7700

BASIC STATISTICS

- 1,843,400 acres
- 1600 stream/river miles, 535 miles of which are considered fish habitat
- 4655 acres of lakes of which 1360 acres make up the Gibson Reservoir. All 28 lakes support Trout.
- Forest is divided into two divisions: West - Rocky Mountain Front
  East - Jefferson Division
- One hydrologist, in the process of hiring a hydrological technician to do monitoring and reduce data, also looking to hire a soil scientist who would do monitoring
- Two wildlife biologists at District level

MAJOR SOURCES OF NPS POLLUTION

- Grazing
- Roads associated with timber sales and other concerns
- Fires and natural terrain

MAJOR POLLUTANTS

- Sediment

MONITORING

- The Forest staff monitors for sediment at three stations. Each of these stations has automatic samplers that take 2-4 samples per day. The stations are serviced every other week, at which time samples are taken to monitor temperature and conductivity. Additionally, a continuous water level recorder is in operation at each sediment monitoring station. The staff also takes integrated suspended sediment samples regularly and bedload samples periodically.

- A fisheries biologist periodically monitors for embedded sediment, mostly in the Jefferson Division.

- The monitoring staff is regrouping now. They have had more monitoring stations in the past-- five in the early 1980s, four from 1986-88, five in 1989.

STANDARDS

The State has published water quality standards for turbidity, temperature, dissolved oxygen, pH, color, hardness, and a few other parameters. Turbidity is an important parameter since it is related to the amount of sediment. The Forest personnel have "no reason to believe that there are any problems meeting the other standards so not much monitoring is done for those parameters."

Designated uses: irrigation, municipal watersheds, and recreation (canoeing).

The Forest operates with the State under a Memorandum of Understanding (MOU) which dictates that the Forest will report to the State if any violations of water quality criteria occur, if Best Management Practices (BMPs) are not applied appropriately, or if beneficial uses are not being met. Montana does not have a Forest Practices Act, but does have legislation whereby the State sends personnel to the National Forests to review how the Forests are meeting BMPs.

DATA USES

- Forest plan - The data provide a basis for eventually evaluating projects.
- To develop a basis for comparison - set up baselines.
- Data are not in current NEPA Environmental Impact Statements or other documents, but will go into future documents.
- Data collected by the Forest (through 1988) and by the State are reported to STORET.

COORDINATION

One of the three stations is monitored under a cooperative agreement with USGS, the Bureau of Reclamation, and the Greenfields Irrigation District. USGS visits the station once per month to service the data collection platform (i.e. take a sediment sample and maintain the stream flow recorder). On a monthly basis, the Irrigation District picks up samples and takes a manual integrated suspended sediment sample to compare it with the automatic sample that is taken by the Forest. This station was added to monitor the effects of fires in the Rocky Mountain Front. The station is a long-term facility that USGS operated for 20 years before closing it down a few years ago. As a result of the USGS work, there is a 20-year base period of stream flow data that the Forest can use for comparisons.

The monitoring is thought to be representative to a degree. Four to five years ago, hydrologists from Lewis & Clark, Gallatin, Helena, Deer Lodge, Beaverhead, and Custer National Forests got together on the Eastside and decided to try to coordinate their monitoring programs to avoid duplicate monitoring and obtain a more representative monitoring program. They try to cover all rock types between the Forests. This is beneficial since the sediment model (R1R4 Model) used by the Region is based on rock types. Each rock type has a different erosion rate and therefore it is expected that when monitoring for sediment the results will vary for different rock types.

The State has done a lot of monitoring in the past, but is not currently.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- Riparian crews are setting up bases to track some channel and vegetation parameters.
- Northern Region of the Forest Service is trying to find a way to determine the best indicator for the sediment problem. In the Region, there is a move away from subjective indicators for riparian monitoring. Riparian monitoring involves many

parameters that are currently being developed to asses the quality of the riparian habitat. These include mapping of riparian systems. The entire concept is still in early developmental stages and is a complex item still subject to much discussion.

- Set up additional stations to monitor changes in stream channel conditions.
- Set up more permanent representative sample sites so that the same streams could be monitored from one year to the next.
- Conduct more follow-up monitoring to determine the effects of roads built as a result of timber sales and development for oil and gas exploration.
- Take more before and after snapshots to document the effects of fires.

ADDITIONAL COMMENTS

The water at Lewis & Clark is mainly used for irrigation, so there is not as much demand for high quality water. The Gibson Reservoir is mainly used for irrigation, but it does provide some recreation and flood control.

Fish and wildlife propagation is a major beneficial use, but it is not recognized as such by the state.

PARADISE-DENIO RESOURCE AREA, NEVADA

Carol Marchio, District Hydrologist
(702)623-3676

BASIC STATISTICS

- Four million acres
- 515 stream/river miles
- One area biologist, one district biologist
- Most waters sampled at least once in the past (3x/year)

MAJOR SOURCES OF NPS POLLUTION

- Grazing (impacts temperature)
- Mining

MAJOR POLLUTANTS

- Coliform levels
- Heavy metals

MONITORING

Thermographs are taken once per year on 6-7 streams. They are hoping to expand this program. Temperature, pH, and conductivity are measured whenever Ms. Marchio is out by a stream.

STANDARDS

The State sets generic criteria for designated beneficial uses, such as recreation and fisheries that apply to all streams as well as site specific criteria for some waters. No stream specific criteria exist for waters at Paradise-Denio. A list of criteria for different pollutants and specific streams exists, but is rather lengthy. Copies of this criteria list can be obtained from the State Dept. of Conservation and Natural Resources, Division of Environmental Protection (702) 885-4670.

DATA USES

Data are used primarily to compile baseline data. They are also used in making decisions concerning range allotment (how many cows to permit) and recreation.

Data are stored on report forms and eventually will be put on line.

COORDINATION

There is coordination within the district, but not really beyond that. There used to be a state lab, but that no longer exists. The Nevada Department of Wildlife does some monitoring at Paradise-Denio.

IMPROVEMENTS

- More funding
- Agencies could share more data
- Access data on computers
- Reinstate on-site labs

STATELINE RESOURCE AREA, NEVADA
Don Siebert, Hydrologist
(702)647-5056

BASIC STATISTICS
- 4.2 million acres
- 20 stream/river miles
- 50% of springs have been sampled
- 10% of streams have been sampled

MAJOR SOURCES OF NPS POLLUTION
- Off Road Vehicles
- Grazing
- Mining

MAJOR POLLUTANTS
- Sediment
- Coliform (from wild horses and livestock)

MONITORING
No monitoring is being conducted by BLM. USGS maintains three or four stations to test salinity.

In the past, 64 springs were sampled sporadically. At some point in time, Physical/Chemical and Biological Community monitoring was conducted three times per year. Mr. Siebert does not know the exact time or place.

DATA USES
Previously collected data were used to compile baseline data. At the present time, the state is organizing a NPS task force. Eventually, they will require data submission. The first task force meeting was Sept. 26, 1990.

Data are stored as hard copy in the office. Some data appear in the Water Inventory Program and are accessible to anyone in BLM.

IMPROVEMENTS
- Monthly monitoring
- Sample all water resources

MT. HOOD NATIONAL FOREST, OREGON

Ruth Tracy, Hydrologist
Mike Lohrey, Hydrologist
(503)695-2276

BASIC STATISTICS

- 1 million acres
- Four hydrologists, one hydrotechnician, one forester, City of Portland field hydrologist
- A majority of the monitoring is done at the Bull Run Watershed. Comments below that only apply to Bull Run are indicated by an (*). The Bull Run Watershed supplies water to the City of Portland.
- Overall, the water quality monitoring is considered fairly representative since the areas thought most likely to have problems are the ones targeted for monitoring.

MAJOR SOURCES OF NPS POLLUTION

- Silviculture - roads or transportation networks due to logging lead to 90% of the increase in sediment from management activities. (Does not apply to Bull Run)
- Power operations on reservoirs*
- Timber salvage operations*

MAJOR POLLUTANTS

- Sediment (Does not apply to Bull Run)
- Petroleum products spills from power operations*
- Water temperature - cumulative over time, primarily the result of 1964 flood (Does not apply to Bull Run)

MONITORING

Forest, excluding Bull Run:

The Forest is divided into seven Districts. There are various monitoring projects being conducted on each District. Temperature studies are done on numerous Districts, along with periodic checks on turbidity. The turbidity monitoring is used to determine if there are any increases due to logging activity. A long history of doing water quality monitoring for turbidity has shown that site specific BMPs are working.

On both the East and West sides, the Forest staff conducts aquatic invertebrate monitoring to look at long-term trends. About six streams are checked once a year. The sampling technique used by the Forest staff was developed by Fred Mangum, the USFS Region 4 aquatic ecologist.

Bull Run only:

- Physical/Chemical Monitoring- 30 stations sampled at least bi-weekly*
- Five key stations - four where streams empty into reservoirs, one at intake to water distribution system (monitored daily)*
- Monitor for metals, pesticides, herbicides, nitrites on yearly basis*

Both:

- Temperature and turbidity monitored for fisheries harvest activity

STANDARDS

Forest, excluding Bull Run:

The State sets numerical standards for temperature and turbidity, and other potential pollutants. Control of pollutants is achieved through the use of BMPs and monitored to ensure compliance with numeric standards. In recent years, the State has requested that the Forest indicate which portions of its water quality assessments are supported by actual data.

Bull Run only:

Water quality is compared to standards developed from historic time series data. There are 26 turbidity and sediment standards.

DATA USES

- The data are used for long-term planning purposes and to determine whether BMPs are working correctly or need to be refined.
- When specific project sites (such as a logging area) are monitored, the data are used to get a scenario above and below the site to determine if the particular management prescription applied to that site was correct.
- Data are also used to show the City, the Water Bureau, and the public that the Forest Service is not disturbing the quality of their water supply*
- The City and the Forest have the same database and thereby share the data.*
- In the early 1980s, data were submitted to STORET. However, STORET was difficult to use, so data are now kept in files at the District and Forest level.

COORDINATION

USGS - monitors for water flow, temperature, and conductivity at seven stations in Bull Run

Soil Conservation Service - maintains snow pillow (device put on the ground that weighs snow so that its water equivalent can be determined) in Bull Run

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- Currently implementing continuous on-line monitoring at the five key stations
- Developing a system for process-research monitoring to document the processes and changes occurring (i.e. determine the causes of changes, identify trends), rather than just having data on the current status

ADDITIONAL INFORMATION

Currently, most water quality monitoring at Mt. Hood is done on the Bull Run Watershed. The monitoring done on the Watershed is quite extensive since there are high standards that must be met to insure the quality of the water supply for the City of Portland.

The monitoring staff is looking to get "back on track" with regard to the storage of their data by either resuming its input to STORET or by implementing an in-house PC system. (Does not apply to Bull Run - Bull Run has an in-house PC system)

"Water quality monitoring at Forests will increase dramatically in the next few years. So the way monitoring programs are now will probably not at all resemble those that will be operating in a few years."

The focus of the State's relationship with agencies is management, not enforcement. The Region gets together annually with the State and looks at Forest records and visits some of the forests to see if Best Management Practices (BMPs) are in line with the Forest Practices Act. The Forest needs to go out every year and verify that BMPs meet the State Forest Practices Act.

SOUTH VALLEY RESOURCE AREA, OREGON

Alan Sloss, District Hydrologist
(503)683-6987

BASIC STATISTICS

- 781,067 acres
- 2562 stream/river miles
- 3000 reservoir acres
- 2 people directly involved in monitoring
- 4 people peripherally involved in monitoring

MAJOR SOURCES OF NPS POLLUTION

- Logging
- Agriculture (small farmers planting row crops and grazing cattle)

MAJOR POLLUTANTS

- Sediment/turbidity
- Temperature/DO

Most landslides are regular natural occurrences. However logging and road building can increase the likelihood of landslides ten times. Since the BLM areas are checkerboarded with private land, they have little control over the areas that have human activity initiated landslides. The Resource Areas personnel believe that their road building and logging practices prevent landslides, but there has been no large storm to test these practices since they have been implemented. The private logging conducted near the Resource Areas does not necessarily adhere to the same practices and may contribute more heavily to landslides.

MONITORING

Monitoring has been conducted for the past five to seven years. However, it is only conducted for specific reasons - i.e. timber sales. As BLM is not a research organization, they do not monitor for the sake of monitoring, but only in response to specific management actions.

Sediment/Turbidity readings are recorded during storm events. Readings are taken monthly during the summer. Stream flows are measured using a continuous hydrograph. pH/Conductivity used to be done, but since no problems were ever found, they are no longer conducted. Fish Habitats/Benthic studies are conducted by the Fishery Biologist at least every five years on each stream. A baseline monitoring station was built 2 years ago but the first winter storm washed it out. They hope to rebuild it next year. However, while it only costs $3000, that's a lot of money to their program.

Other monitoring consists of the following:

- State - very little, they have less money than BLM
- USFS - operates lands at higher elevation, shares a watershed with South Valley

- City of Cottage Grove - gets water from watershed that flows into South Valley
- USGS - flows, published in WATSTORE

STANDARDS

Standards have been set for both turbidity and temperature.

If water does not meet the standards, a report is written for the area manager. The only time standards are exceeded in South Valley is after landslides.

DATA USES

Every two years the state requests information for their 305(b) reports. The state does not request specific data. They are only interested in whether or not specific streams are polluted. Data are also used to determine whether or not a timber activity or other management action is affecting water quality. The relevant monitoring is usually conducted before and after an activity.

There is no central database. Eventually, it will be stored on STORET.
At the present time, South Valley data are stored in LOTUS on a PC. Nothing is printed.

COORDINATION

South Valley personnel work closely with people in other BLM areas, in the USFS, and in the state DEQ, but there is no coordination of monitoring. They do share South Valley's data with the USFS and other BLM districts within the state.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- More coordination with western Oregon
- Indicator monitoring
- Clearer objectives as to what the monitoring is for

BEAR RIVER RESOURCE AREA, UTAH
Leon Bergren, Hydrologist
(801)977-4300

BASIC STATISTICS
- 1.1 million acres
- 200 stream/river miles
- 1 wildlife biologist

MAJOR SOURCES OF NPS POLLUTION
- Livestock
- Recreation - camping, fishing

MAJOR POLLUTANTS
- Sediment
- Manure

MONITORING
BLM only conducts macroinvertebrate monitoring. It is conducted yearly on six to seven streams. This monitoring was initiated three years ago.

The State of Utah began chemical monitoring last year and intends to begin biological monitoring this year. It plans to conduct chemical monitoring on three to four streams per year. Once the baseline data are compiled, the State expects to update the baseline every five years. Biological monitoring will be performed on each stream once. Only those streams that exhibit a problem will be monitored on a yearly basis.

DATA USES
Data are used to reach a baseline assessment of water quality in the resource area and to highlight changes in water quality.

The macroinvertebrate data are stored at the BLM office and are not reported to the state.

COORDINATION
Occasionally, there are talks between Bear River personnel and the upper echelon of the BLM.

Bear River staff coordinates slightly with the other resource areas in the district and communicates with those resource areas that border Bear River, but are in other states. There is no coordination between resource areas in different districts.

While there is contact with the USFS, water quality issues are rarely discussed.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- Chemical and biological monitoring could be conducted yearly on all streams. There currently is not enough money for this to occur. The state does its monitoring for free.

ADDITIONAL INFORMATION

There is very little money for water quality monitoring. The priorities and allocation of resources are decided in Washington DC.

Boyd Christianson, State Staff Specialist, (801) 539-4057 may be a good State contact.

FISHLAKE NATIONAL FOREST, UTAH

Gil Garcia, Hydrologist
Seona Brown, Biologist
(801)896-9233

BASIC STATISTICS

- 1,500,000 acres
- Two hydrologists (one is the Branch Chief), one fish biologist, one soil scientist one wildlife biologist, one wildlife biologist at the District Office
- All of the above personnel conduct some of the monitoring

MAJOR SOURCES OF NPS POLLUTION

- Accelerated erosion associated with management activities such as roads, timber harvests, mining, and grazing. Natural erosion is also a contributing factor.

MAJOR POLLUTANTS

- Sediments
- Unique problems on certain drainage basins (i.e. phosphorous at Otter Creek)

MONITORING

- Mainly biological community monitoring (macroinvertebrates), done in conjunction with BLM and state personnel, in response to specific requests or problems.

- Physical and chemical properties.

The Forest is divided into six physiographic units. One stream is sampled in each of the six areas in order to set up a baseline. On each stream, between one and three sites are chosen, with at least three samples taken at each site for macro invertebrate monitoring and one sample for water chemistry. The same sites are used for five years so that a baseline can be established. Then the sites are rotated and additional sites are added as funding and staffing allow. Both biological community monitoring (macroinvertebrates) and physical/chemical monitoring are done at least twice a year (spring and fall) at the above sites.

For the macroinvertebrate monitoring, the Forest has a three-part system. The first part is a standard biotic condition index that is used to determine what proportion of the species are clean water species so that a stream's potential and actual communities can be compared. This method is used nationwide and the samples are processed by a Regional lab in Provo.

The second part is a diversity rating that is used to determine if the community is well-balanced. The third measure is a standing crop which determines how many of each species the stream is producing.

In terms of water chemical tests, the staff monitor for conductivity, pH, alkalinity, oxygen, phosphates, nitrates, sulfates, and hardness.

The Forest staff is also monitoring forage utilization throughout the Forest. The method consists of estimating how much forage is being utilized during the grazing season. Utilization gauges and exclosures are used to make the determinations.

STANDARDS

The Forest Service is designated as a management agency by the State to enforce water quality standards on National Forest system lands. The Forest Service is expected to contact the State about violations and then the State takes action as appropriate.

The monitoring staff had a meeting with the State a couple of years ago to discuss the updating of standards, but has not had any meetings since then. Utah is thinking of establishing a biotic condition index as a standard, but the Forest water quality personnel feel the variability of the natural terrain and conditions of the land make it difficult to establish standards applicable over broad areas and different seasons of the year.

DATA USES

The main uses of the water quality monitoring data are to meet Forest Plan directives and to provide data for environmental analyses (EISs and EAs).

The water quality monitoring data are also used to respond to specific requests or complaints.

Most of the data are kept at the Forest, mainly on hard copy. The Forest staff will share any data that are requested. The Forest staff formerly submitted the data to STORET, but that has not been done for the last few years.

COORDINATION

The Forest staff has access to data from the State Department of Health and Welfare, which is a major conductor of monitoring in the State. BLM and USGS do some monitoring. They put the data in a system that is accessible to the Forest.

The Forest staff has a line of contact with USGS, SCS, and the Weather Bureau to obtain other data (e.g. flow records and climate records).

IMPROVEMENTS SUGGESTED BY INTERVIEWEES

Forest land standards and guidelines should be followed in interpreting monitoring results. State standards should be incorporated into Forest Plan standards and guidelines.

BIG HORN NATIONAL FOREST, WYOMING
John Nesser, Soil Scientist
(307)672-0751

BASIC STATISTICS

- 1,107,342 acres
- 1300 stream miles
- 5200 lake/reservoir acres
- One soil scientist
- No regular monitoring program currently

MAJOR SOURCES OF NPS POLLUTION

- Cattle grazing - 85%
- Silviculture (roads) - 10%
- Recreation (people) - 5%

MAJOR POLLUTANTS

- Sediment - 98%
- Organic pollution from cattle

MONITORING

Up until 1984, the Forest also had one hydrologist who did some monitoring. Some monitoring was done by summer staff in 1985 and 1986. Some selected physical/chemical monitoring was done in 1987-89. No regular monitoring has been done this year.
The only monitoring done currently is to respond to complaints or to insure that special projects do not cause violations. In these cases, the Forest monitors turbidity and sometimes total dissolved solids, pH, and conductivity.

WY Department of Environmental Quality does a limited amount of monitoring, mostly in response to complaints.

STANDARDS

"The only standard that almost ever affects us is the standard for turbidity." The Forest only monitors for turbidity in the special cases listed above and then reports any violations to the State.

Designated uses: almost all the streams and lakes are designated as coldwater fisheries.

DATA USES

- Most of the water quality monitoring data are used to respond to complaints

- When a hydrologist was on staff, the data were sent to STORET. Since then, the data have been kept in the Forest office.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- Recommend implementing Physical/Chemical/Biological assessment system, including EPA Rapid Bioassessment Technique for total integrated monitoring. Also would implement Thalweg Walk (T-Walk) Advance Warning System Procedures, developed by USFS Region 2 hydrologist Corky Ohlander, for wide-range ecosystem, health effects, etc. In this system, "diversity, productivity, and stability are compared to long term natural conditions. Desired health is reflected by the greatest standing crop and greatest niche partitioning. For advance warning purposes, the aquatic macroinvertebrate community is the best place to look for early signs of stress." (T-Walk Water Quality Monitoring Field Manual & Tables, Draft, End Date January 1991)

Guidance is there, but there is not sufficient personnel on board to implement the system.

ADDITIONAL INFORMATION

There is a real emphasis in the Region and on the Forest towards riparian management. Efforts are being made to classify and map all riparian areas. Habitat work and detailed soil work are being done to try to bring grazing allotments up to standard.

Both the soil scientist and the fisheries biologist are conducting an inventory of the watersheds in deteriorated or impaired condition and are making plans to improve them when the resources become available.

CODY RESOURCE AREA, WYOMING

Bill Wilson, Hydrologist
(307)347-9871

BASIC STATISTICS

- 1.081 million acres
- 200 stream/river miles
- 3,660 acres of wetlands, reserves
- no staff
- no monitoring

MAJOR SOURCES OF NPS POLLUTION

- Grazing - livestock has completely modified sediment delivery efficiency
- Roads

MAJOR POLLUTANTS

- Sediment
- Pesticides

MONITORING

At the present time, no monitoring is conducted.

During the summer of 1988, 70 grab samples were taken. These were monitored for ions and metals. Most waters were monitored during this summer and baseline data was accumulated.

In the late 1970s, there were four hydrologists who took annual grab samples at 70 stations. At some undetermined time in the past, turbidity/sediment sampling was conducted.

DATA USES

The data collected in the past were used as a baseline assessment. When data were being collected it was reported on the 305(b) reports. The state sends out a questionnaire every other year.

IMPROVEMENTS SUGGESTED BY INTERVIEWEE

- USGS could maintain gauging stations for sediment
- Upland watershed monitoring - surface runoff, sediment yield in conjunction with livestock grazing trials
- Turbidity/Sediment monitoring
- Monitor irrigation return flow to determine its impact on water quality.

ADDITIONAL INFORMATION

The current hydrologist is not able to hire the additional people needed to conduct monitoring.

APPENDIX B
STATE MONITORING PERSONNEL INTERVIEW RESULTS

Arizona

The State of Arizona operates a fixed station monitoring network. Chemical and physical analyses including pH, dissolved oxygen, and turbidity are conducted. Fifty of these stations are located on federal lands, but not on either of the sites studied by TBS. A bioassessment program is in its early stages and will soon be evaluated, but many of the standard bio measures may not be appropriate to Arizona's desert condition. Various reports are received from federal agencies, and all data received by the State are entered into STORET.

Colorado

The State conducts physical/chemical monitoring at approximately 100 stations for standards setting and status reporting. While some of the sites are located on federal lands, the State does not make distinctions based on land ownership. The data are reported together and the State does not attempt to differentiate between federal lands and nonfederal lands. Several monitoring stations are located near forests and these stations capture water quality problems from the forests. The monitoring programs at the Forests and BLM Areas vary depending on the interests of the agencies and the availability of resources. Therefore, it is difficult to classify monitoring programs Statewide. The agencies place their monitoring data into STORET, and the State incorporates those data into their 305(b) reports.

The State sets all the water quality criteria regardless of land ownership. The coordination among the State and agencies was described as improving, but the State would like to see more resources allocated for water quality monitoring on federal lands.

Idaho

Idaho is a leader in terms of coordination between state and federal agencies. The Idaho Department of Health and Welfare has published a report entitled, "Coordinated Nonpoint Source Water Quality Monitoring Program for Idaho" which details the monitoring and reporting responsibilities of the State and federal agencies. The actual types of monitoring vary greatly within the State and the parameters are outlined in the Coordination report. The water quality standards are determined by the State and monitoring procedures are determined by a joint committee consisting of State DEQ personnel, the relevant federal agency and concerned citizens.

Idaho would like to see regular training for State and federal agency personnel on STORET and BIOS. Also, additional parameters need to be included in the BIOS taxicode list of organisms to increase the utility of BIOS.

Montana

The purposes of the State monitoring program include detecting water quality standards violations, establishing baseline data, and reporting on causes of nonpoint source pollution. Most water quality standards were set in 1957. Every three years the standards are reviewed and revisions are suggested to the Board of Health which must ultimately approve new standards. The State monitoring stations are not located on federal lands, but often capture drainage from federal lands.

The data received from federal agencies vary in type, quality and quantity. The federal sites often report water/sediment yields rather than complete water quality evaluations. The State has memorandum of agreement with the federal agencies and the State works with rangers and hydrologists on a daily basis. In general, land use practices on federal lands are considered to be superior to those on non-federal lands (i.e., BMPs are better applied and implemented on federal lands).

Nevada

Water quality standards for the state of Nevada are set by the Bureau of Water Quality Planning, Division of Environmental Protection, Department of Conservation & Natural Resources. The State conducts some routine monitoring, but none on federal lands. The State coordinates on an as needed basis with other federal agencies and states. Most of the data from different agencies are entered into STORET. When there is a particular problem, such as with a mine, the State NPS personnel meet with the Department of Interior to discuss the specific problem. The State has the power to impose fines and penalties upon federal agencies not meeting water quality standards. If BLM or USFS were to violate standards they could be fined by the state up to $25,000 per day of pollution or taken to court.

Oregon

The State of Oregon administers an extensive monitoring program at 75 river sites. On a monthly basis, basic chemical parameters such as pH, turbidity, suspended solids, and nutrients are measured. Bio assessments, the major NPS monitoring, consisting of macroinvertebrates and fish communities, are conducted at 30 sites on three watersheds. Some of this monitoring is conducted on federal lands, but not at either of the sites contacted by TBS. There is a lack of communication among State, BLM, and USFS. If the state or USGS do not conduct monitoring on the federal land, the state usually receives no data. The State does not have the resources to track down the information from sites that do not respond to the 305(b) requests. USGS is one agency that does monitor water quality on federal lands and report its data to the State. These data and the State data collected at federal sites are in the 305(b) reports. Oregon personnel also identified a major need for coordination among state and federal agencies, possibly in the form of a central summary of the monitoring programs conducted by each agency operating within the State.

Utah

The State conducts physical/chemical monitoring at 250 stream stations and biological monitoring at an additional 30 sites. Some sites are on federal lands, but the State does not distinguish between sites on federal and non-federal lands. The State determines designated uses and sets the criteria, but the individual agencies decide what type of monitoring to pursue. The State has memoranda of agreement with federal sites which define monitoring responsibilities. In general, Forests and BLM Areas were described as cooperative. In many cases, the Forest or BLM Area will do the sample collection and the State will conduct the lab analysis. The State is also involved in entering agencies' water quality data into STORET.

Wyoming

The State of Wyoming enters a cost sharing agreement with the USGS to conduct monitoring throughout the State. Many of USGS's sites are on federal lands. All of these data are included in the State 305(b) report. While the State sends 305(b) forms to all management agencies operating within the State, it has no authority to demand that data be provided. BLM data are not put into a database to which the State has access, and with the frequent turn over at BLM, they are often lost. The USFS also collects data and stores them in files or computers to which the State does not have access. On occasion, the agencies' have offered to open up their files to State personnel, but the State does not have the resources to visit each data storage facility.

The information that is reported in the 305(b) reports cannot be delineated because of the nature of land ownership in Wyoming. Often one stream will run through a square mile of State land, then private land, then BLM land, making it impossible to determine what data pertain just to federal lands. The Wyoming water quality monitoring personnel suggested two methods of improving the problem of unavailable data, either by a federal directive requiring all federal agencies to enter their data into STORET or the establishment of a federal data clearinghouse where all federal data would be stored.

C

APPENDIX C

SUMMARY RESULTS OF SITE INTERVIEWS

APPENDIX C
SUMMARY RESULTS OF SITE INTERVIEWS

	SIZE	SOURCES OF NPS	MAJOR POLLUTANTS	MONITORING
ARIZONA				
Tonto NF	•3 million acres •400-500 stream/river mi. •21,000 lake acres	•Road building •Grazing	•Sediment •Fecal coliform •Sulfates, metals (e.g., iron, copper, zinc)	•Physical/Chem monthly at 6 sites (USGS) •Sediment monthly at 6 sites (USGS) •Fecal coliform on heavily used streams and lakes (USFS) •Tissue toxicity once every 3-4 years for special projects (AZ Game & Fish) •Biocommunity - 3 times every 5th year at 20 sites (USFS)
Vermillion RA	•1.3 million acres •40 stream/river miles •No lakes	•Grazing •Road building •Off-road vehicles	•Sediment •Salt from saline soil areas	•No current monitoring
CALIFORNIA				
Los Padres NF	•1,750,000 acres •35 watersheds •No lake or river data	•Erosion •Fires •Grazing	•Sediment •Acid drainage	•USGS sediment stations near forest boundaries
COLORADO				
Roosevelt NF	•1,471,963 acres •No stream/river data •No lake data	•Recreation •Grazing •Silviculture •Resource extraction	•Sediment	•Biomonitoring at all public water sources (USFS) •Physical/Chem monitoring due to events or requests only (USFS)
Kremmling RA	•400,000 acres •No stream/river data •No lake data	•Roads •Geological badlands •Grazing	•Sediment •Salinity	•Physical/Chem monitoring at 10 sites taking monthly samples (BLM)
IDAHO				
Boise NF	•2.5 million acres •3,700 stream/river miles •No lake data	•Road construction •Grazing •Mining	•Sediment	•Monitor cobble embeddedness at 30 stations (USFS) •Monitor for special studies (USFS)
Nez Perce NF	•2.2 million acres •1386 stream/river mi. •1194 lake acres	•Mining •Road networks •Grazing •Silviculture	•Sediment	•Measure stream flow and sediment yield at 8 stream gauges (USFS) •Monitor fish habitat at 25 sites (USFS)
Lemhi RA	•500,000 acres •180 stream/river miles •10 lake acres	•Grazing •Silviculture	•Sediment •Nutrients	•No regular monitoring •Physical/Chemical monitoring conducted sporadically (BLM)

	SIZE	SOURCES OF NPS	MAJOR POLLUTANTS	MONITORING
MONTANA				
Lewis & Clark NF	•1,843,400 acres •1600 stream/river mi. •4655 lake acres	•Grazing •Road networks •Fires and natural terrain	•Sediment	•Sediment, temperature, conductivity, stream flow monitoring at 3 stations (USFS) •Monitor cobble embeddedness (USFS)
Big Dry RA	•1.7 million acres •2,835.6 mi. of stream reaches •No lake data	•Grazing •Mining	•Geological erosion •Pesticides •Sediment	•Sediment monitoring (BLM)
NEVADA				
Stateline RA	•4.2 million acres •20 stream/river mi. •No lake data	•Off-road vehicles •Grazing •Mining	•Sediment •Fecal coliform	•No current monitoring
Paradise-Denio RA	•4 million acres •515 stream/river mi. •No lake data	•Grazing •Mining	•Fecal coliform •Heavy metals	•Thermographs at 6-7 streams annually (BLM) •Temperature, ph, conductivity occasionally (BLM)
OREGON				
Mt. Hood NF	•1 million acres •No stream/river data •No lake data	•Silviculture •Power operations on reservoirs •Salvage operations	•Sediment •Petroleum product spills •Water temperature	•Physical/Chem monitoring extensive at Bull Run Watershed (USFS) •Aquatic vertebrate monitoring at 6 streams annually (USFS) •Temp & turbidity monitored for fishery harvests (USFS)
South Valley RA	•781,067 acres •2562 stream miles •3000 reservoir acres	•Silviculture •Agriculture	•Sediment/turbidity •Temperature/DO	•Monitoring is conducted only for specific requests/events (BLM)
UTAH				
Fishlake NF	•1,500,000 acres •No stream/river data •No lake data	•Erosion •Grazing •Silviculture •Mining	•Sediments	•Macroinvertebrate and physical/chemical monitoring at 2-5 sites on 5 streams at least twice each year (USFS) •Biocommunity monitoring done in response to requests/events (macroinvertebrates) (USFS)
Bear River RA	•1.1 million acres •200 stream/river mi. •No lake data	•Grazing •Recreation	•Sediment •Manure	•Macroinvertebrate monitoring at 6-7 streams annually (BLM) •Chemical monitoring at 3-4 streams annually (State)
WYOMING				
Big Horn NF	•1,107,342 acres •1300 stream mi. •5200 lake/reservoir acres	•Grazing - 85% •Silviculture - 10% •Recreation - 5%	•Sediment - 98% •Organic pollution from cattle	•Turbidity monitored to investigate complaints or to check on effects of special projects (USFS)
Cody RA	•1.081 million acres •200 stream/river mi. •3,660 acres of wetlands	•Grazing •Road networks	•Sediment •Pesticides	•No current monitoring

D

APPENDIX D
FEDERAL SITE INTERVIEW QUESTIONNAIRE

BLM area:_____
Contact:_____
Phone:( ) - Fax:( ) -

1. How big is the BLM area?____(acres/sq.miles)

   How many stream/river miles?____ lakes?____ (acres)

   How big is the water protection/ monitoring staff?

   How many biologists?

   Which personnel conduct the monitoring and data analysis?

   What are the major sources of nonpoint source pollution?
   (silviculture/grazing/resource extraction/recreation)

   What are the major pollutants?

2. At this BLM area, what types of water quality monitoring are being conducted for nonpoint sources of pollution?

	Frequency	Number of sites
_Physical/Chemical	___	___
_Tissue Toxicity	___	___
_Sediment	___	___
_Biological community	___	___
(which parameters are being used, e.g., IBI, MBI, etc.)		
Other:_____	___	___

3. What percentage of the surface waters are captured by monitoring systems? (i.e., what percentage of the stream/river miles can you characterize based upon your monitoring efforts?)

4. What trends in water quality have you observed? (Are the waters getting better or worse?) Are you finding the pollutants you would expect based upon the major activities?

5. Do states or other federal agencies (e.g. USGS, USFWS) conduct monitoring at this BLM area? If so, which ones?

6. What are the major uses of the data? (e.g. forest plans, compliance with state/federal reporting requirements)? Does the state use this information in its 305(b) reports?

6b. If reported in 305(b), which designated uses have been identified in the BLM area? Which criteria are used to determine whether the uses have been attained? Who sets the criteria?

7. How are the data stored? Who receives it? Where is it reported? Do other state/federal agencies have access to the data? Which agencies? Do they use it?

8. In qualitative terms how would you describe the quality of monitoring data on this BLM area? (e.g., excellent, good, fair, poor).

9. How could the monitoring be improved? (more sites? more frequent monitoring? additional types of monitoring--biocommunity, sediment, physical/chemical?) Why? Is it feasible? Would guidance be needed?

10. Do you have any reports or other documentation describing the nonpoint source monitoring programs and results for your BLM area? Is any mapping done?

E

APPENDIX E

MANAGEMENT AGENCY AGREEMENT BETWEEN THE STATE WATER RESOURCES CONTROL BOARD, STATE OF CALIFORNIA AND THE FOREST SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE

This Management Agency Agreement is entered into by and between the State Water Resources Control Board, State of California (State Board), and the Forest Service; United States Department of Agriculture (Forest Service), acting through the Regional Forester of the Pacific Southwest Region, for the purpose of carrying out portions of the State's Water Quality Management Plan related to activities on National Forest System (NFS) lands.

WHEREAS:

1. The Forest Service and the State Board mutually desire:

   (a) To achieve the goals in the Federal Water Pollution Control Act, as amended;

   (b) To minimize duplication of effort and accomplish complementary pollution control programs;

   (c) To implement Forest Service legislative mandates for multiple use and sustained yield to meet both long- and short-term local, state, regional, and national needs consistent with the requirement for environmental protection and/or enhancement; and

   (d) To assure control of water pollution through implementation of Best Management Practices (BMPs).

2. The State Board and the Regional Water Quality Control Boards are responsible for promulgating a Water Quality Management Plan pursuant to the Federal Water Pollution Control Act, Section 208, and for approving water quality control plans promulgated by the Regional Water Quality Control Boards pursuant to state law. Both types of plans provide for attainment of water quality objectives and for protection of beneficial uses.

3. The State Board and the Regional Water Quality Control Boards are responsible for protecting water quality and for ensuring that land management activities do not adversely affect beneficial water uses.

4. Under Section 208 of the Federal Water Pollution Control Act, the State Board is required to designate management agencies to implement provisions of water quality management plans.

5. The Forest Service has the authority and responsibility to manage and protect the lands which it administers, including protection of water quality thereon.

6. The Forest Service has prepared a document entitled "Water Quality Management for National Forest System Lands in California" (hereafter referred to as the Forest Service 208 Report), which describes current Forest Service practices and procedures for protection of water quality.

7. On August 16, 1979, the State Board designated the Forest Service as the management agency for all activities on NFS lands effective upon execution of a management agency agreement.

NOW, THEREFORE, the parties hereto agree as follows:

1. The Forest Service agrees:

   (a) To accept responsibility of the Water Quality Management Agency designation for NFS lands in the State of California.

   (b) To implement on NFS lands statewide the practices and procedures in the Forest Service 208 Report.

   (c) To facilitate early State involvement in the project planning process by developing a procedure which will provide the State with notification of and communications concerning scheduled, in-process, and completed project Environmental Assessments (EAs) for projects that have potential to impact water quality.

   (d) To provide periodic project site reviews to ascertain implementation of management practices and environmental constraints identified in the EA and/or contract and permit documents.

   (e) To review annually and update the Forest Service documents as necessary to reflect changes in institutional direction, laws and implementation accomplishment as described in Section IV of the Forest Service 208 Report. A prioritization and schedule for this updating is provided in Attachment A to this Agreement.

   (f) That in cases where two or more BMPs are conflicting, the responsible Forest Service official shall assure that the practice selected meets water quality standards and protects beneficial uses.

   (g) That those issues in Attachment B to this agreement have been identified by the State and/or Regional Boards as needing further refinement before they are mutually acceptable to the Forest Service and the State Board as BMPs.

2. The State Board agrees:

   (a) The practices and procedures set forth in the Forest Service 208 Report constitute sound water quality protection and improvement on NFS lands, except with respect to those issues in Attachment B. The State and Regional Boards will work with the Forest Service to resolve those issues according to the time schedule in Attachment B.

   (b) That Section 313 of the Federal Water Pollution Control Act mandates federal agency compliance with the substantive and procedural requirements of state and local water pollution control law. It is contemplated by this agreement that Forest Service reasonable implementation of those practices and procedures and of this agreement will

2. (b) (cont.)

constitute compliance with Section 13260, subdivision (a) of Section 13263, and subdivision (b) of Section 13264, Water Code. It is further contemplated that these provisions requiring a report of proposed discharge and issuance of waste discharge requirements for nonpoint source discharges will be waived by the Regional Board pursuant to Section 13269, Water Code provided that the Forest Service reasonably implements those practices and procedures and the provisions of this agreement. However, waste discharges from land management activities resulting in point source discharges, as defined by the Federal Water Pollution Control Act, will be subject to NPDES permit requirements, since neither the State Board nor the Regional Board has authority to waive such permits.

(c) That implementation will constitute following the Implementation Statement, Section I of the Forest Service 208 Report.

3. It is mutually agreed:

(a) To meet no less than annually to maintain coordination/communication, report on water quality management progress, review proceedings under this agreement, and to consider revisions as requested by either party.

(b) To authorize the respective Regional Boards and National Forests to meet periodically, as necessary, to discuss water quality policy, goals, progress, and to resolve conflicts/concerns.

(c) That the development and improvement of BMPs will be through a coordinated effort with federal and state agencies for adjacent lands and areas of comparable concern.

(d) To meet periodically, as necessary, to resolve conflicts or concerns that arise from and are not resolved at the Forest and Regional Board meetings. Meetings may be initiated at the request of either party, a National Forest, or a Regional Board.

(e) To coordinate present and proposed water quality monitoring activities within or adjacent to the National Forests and to routinely make available to the other party any unrestricted water quality data and information; and to coordinate and involve one another in subsequent/continuing water quality management planning and standard development where appropriate.

(f) That nothing herein shall be construed in any way as limiting the authority of the State Board or the Regional Boards in carrying out their legal responsibilities for management or regulation of water quality.

3. (cont.)

(g) That nothing herein shall be construed as limiting or affecting in any way the legal authority of the Forest Service in connection with the proper administration and protection of National Forest System lands in accordance with federal laws and regulations.

(h) That this Agreement shall become effective as soon as it is signed by the parties hereto and shall continue in force unless terminated by either party upon ninety (90) days notice in writing to the other of intention to terminate upon a date indicated.

IN WITNESS WHEREOF, the parties hereto, by their respective duly authorized officers, have executed this Agreement in duplicate on the respective dates indicated below.

FOREST SERVICE,
U. S. DEPARTMENT OF AGRICULTURE

By _____
Regional Forester
Pacific-Southwest Region

Date: 3/17/81

By _____
Regional Forester
Intermountain Region

Date: 4-1-81

By _____
for Regional Forester
Pacific Northwest Region

Date: 5-26-81

STATE WATER RESOURCES CONTROL BOARD
STATE OF CALIFORNIA

By _____
Executive Director

Date: FEB 26 1981

Attachment A as of March 1, 1988

Schedule for Completing the BMPs

Priority	Best Management Practice	Completion Date (FY)
1	Cumulative Off-Site Watershed Effects Analysis.	1988
2	Water Resource Protection on Locatable Minerals.	1988
3	Proper Disposal and Control of Surplus Biomass Following Timber Harvesting	1989
4	Control of Road Maintenance Chemicals	1989
5	Sanitary and Erosion Control of Temporary Camps.	1989

Attachment B as of March 1, 1988

Schedule for Resolving Regional Board Issues

Region	Issue	Completition Date (FY)

(No Regional Board Issues were outstanding as of the completion of the January 19, 1988 meeting in Sacramento. Attachment B retained as a place holder for subsequent entry if warranted.