

**Forest Service Manual  
National Headquarters - Washington Office  
Washington, DC**

**Forest Service Manual 2500 – Watershed and Air Management  
Chapter 2530 – Water Resource Management**

**Amendment:** 2500-1990-1

**Effective date:** June 01, 1990

**Duration:** This amendment is effective until superseded or removed.

**Approved by:** F. Dale Robertson, Chief

**Date approved:**

**Responsible Staff:**

**Last Change:** Amendment 54

**Superseded Document(s):** 2500-1 Thru 2590.4b (Entire title except ID's); Amendment 46, December 1985; Amendment 47, February 1986; Amendment 48, March 1986; Amendment 50, May 1986; Amendment 51, June 1986; Amendment 52, August 1987; Amendment 53, October 1987; Amendment 54, October 1989

**NEW POSTING NOTICE:** This amendment is the first in a new numbering series corresponding to the year in which material was amended. Since this amendment replaces all text except Interim Directives (ID), do not check for the last transmittal received for this title. Replace the entire title text except ID's. Place this transmittal sheet at the front of the title and retain until the first transmittal of the next calendar year is received.

**Digest:** Following is an explanation of the changes throughout the directive by section.

**2500:** Please read the new posting notice carefully. These directions apply to this transmittal only.

Entire text, except ID's, is replaced. New text corresponds with text located in the National Information Center.

The electronic document names are shown above for ease in accessing them from the National Information Center.

Direction has not been changed. Some minor typographical and technical errors were corrected.

**Forest Service Manual 2500 – Watershed And Air Management**  
**Chapter 2530 - Water Resource Management**  
**Amendment: 2500-1990-1**  
**Effective date: June 01, 1990**

Amendment numbers and dates noted above are listed for historical purposes only.

All subsequent amendments will be issued by document.

Forest Service Manual 2500 – Watershed And Air Management

Chapter 2530 - Water Resource Management

Amendment: 2500-1990-1

Effective date: June 01, 1990

Table of Contents

2530.2 - Objectives.....	5
2530.3 - Policy.....	5
2530.4 - Responsibility .....	5
2530.41 - Chief .....	5
2530.42 - Director, Watershed and Air Management Staff.....	5
2530.43 - Regional Forester .....	5
2530.44 - Forest Supervisor.....	6
2530.45 - District Ranger.....	7
2531 - Water Resource Investigations .....	7
2531.01 - Authority.....	7
2531.02 - Objective.....	7
2531.03 - Policy .....	7
2531.05 - Definitions.....	8
2531.1 - Levels of Water Resource Investigations.....	8
2531.11 - Water Resource Inventories .....	9
2531.2 - Investigation Planning.....	9
2531.3 - Reporting and Application.....	10
2532 - Water Quality Management.....	10
2532.02 - Objective.....	10
2532.03 - Policy .....	11
2532.04 - Responsibility.....	11
2532.05 - Definitions.....	11
2532.1 - Water Quality Inventory .....	12
2532.2 - Analysis and Interpretation of Water Quality Data .....	12
2532.3 - Water Quality Standards.....	12
2532.4 - Water Quality Planning.....	13
2532.41 - Contingency Plans .....	13
2532.5 - Water Quality Monitoring.....	13
2532.51 - Plans of Operation.....	14
2532.52 - Quality Control.....	15
2533 - Water Resource Management Support Services .....	15
2534 - Cooperation in Other Water-Related Activities.....	15
2534.02 - Objective.....	15
2534.03 - Policy .....	15
2534.04 - Responsibility.....	15
2534.1 - Pollution Control.....	16
2534.11 - State and Areawide Water Quality Management .....	16
2534.2 - Solid and Liquid Waste Disposal .....	16
2534.3 - Protection and Development of Wildlife and Fish Habitat.....	16
2534.4 - Flood Forecasting and Warning .....	17
2534.41 - Federal and State Systems .....	17

Forest Service Manual 2500 – Watershed And Air Management

Chapter 2530 - Water Resource Management

Amendment: 2500-1990-1

Effective date: June 01, 1990

2534.42 - Flood Hazards and Storm Damage on National Forest System Lands .....	17
2534.5 - Water Measurements .....	17
2534.6 - Weather Modification.....	18
2535 - External Water Resource Development Programs.....	18
2535.02 - Objective.....	18
2535.03 - Policy .....	18
2535.04 - Responsibility.....	18
2535.04a - Chief .....	18
2535.04b - Regional Foresters.....	19
2535.04c - Forest Supervisors .....	19
2535.1 - Programs Under Interstate River Basin or Flood Control Compacts .....	19
2535.2 - External Water Resource Development Liaison .....	19

## **2530.2 - Objectives**

1. To integrate water resource management with Forest Service land and resource management planning and to coordinate National Forest water resource protection, development, and improvement programs with similar programs of other Federal, State, and local agencies.
2. To assess effectiveness of management in meeting legislative mandates, such as those pertaining to pollution control and to the securing of favorable conditions of streamflow.

## **2530.3 - Policy**

Address water resource management in land and resource planning, program planning and budgeting, and when conducting environmental analyses (FSM 1900). Coordinate programs and activities, such as weather modification, which can produce affects outside as well as within the area of application, with all affected interests. As a general policy, support properly designed and technically sound water related activities of cooperators on National Forest System lands, provided those activities and anticipated results are not in conflict with any applicable law or regulation governing the administration and management of these lands.

## **2530.4 - Responsibility**

### **2530.41 - Chief**

The Chief shall promulgate regulation to implement new legislation that is the responsibility of the Forest Service and work with other agencies in promulgation of regulation impacting the soil and water program.

### **2530.42 - Director, Watershed and Air Management Staff**

The Staff Director shall:

1. Provide program and technical leadership in all phases of National Forest water resource management, including technical standards, guidelines, and general procedures for water resource inventories, investigations, plans, data storage and retrieval, and monitoring.
2. Coordinate Forest Service water resource inventories, investigations, data standards, analysis methods, and storage and retrieval systems with other Federal agencies at the national level.
3. Recommend legislation needed to improve management of the soil and water resource and resolve problems created by legislation proposed by other entities.

### **2530.43 - Regional Forester**

The Regional Forester shall:

**Forest Service Manual 2500 – Watershed And Air Management**

**Chapter 2530 - Water Resource Management**

**Amendment:** 2500-1990-1

**Effective date:** June 01, 1990

1. Provide appropriate technical guidance and technical training for scientific water resource staff to assist them in preparing water resource protection and improvement prescriptions and action plans.
2. Coordinate Forest Service water resource inventory, investigations, and monitoring programs among Forests and other Federal and State agencies to avoid duplication of effort and to capitalize on opportunities for mutual benefit.
3. Develop standards for data storage, data retrieval, and water resource inventories used at the Regional level.
4. Establish quality control standards; develop guidelines and provide training on methods of data collection, analysis, and storage.
5. Provide water resource management support services to Forest Supervisors and coordination of support services for inter-Forest projects and activities.
6. Maintain liaison with other agencies and universities to obtain supplemental expertise in water and related resource management.
7. Review Forest water resource management support services for consistency with established standards of performance.
8. Enter into agreements with Federal and State agencies for participation and cooperation in collection of weather and streamflow data on National Forest System lands within the Region.
9. Where appropriate, enter into cooperative agreements with State and Federal agencies concerning Forest Service participation and cooperation in flood forecasting and warning; assign responsibilities to Forests as necessary.
10. Cooperate with State, regional and local officials of the Environmental Protection Agency, Public Health Service and other pollution control agencies in controlling water pollution resulting from National Forest System water use and operations under the jurisdiction of the Forest Service.
11. Cooperate and coordinate with the State fish and game agencies and Regional officials of the Fish and Wildlife Service when planning and administering water resource development projects.
12. Designate liaison offices for inter-Forest, outservice water resource development and arrange for inter-forest cooperation, if needed.

**2530.44 - Forest Supervisor**

The Forest Supervisor shall:

**Forest Service Manual 2500 – Watershed And Air Management**

**Chapter 2530 - Water Resource Management**

**Amendment:** 2500-1990-1

**Effective date:** June 01, 1990

1. Conduct water resource inventories and investigations, prepare prescriptions and investigation reports for water resource protection and improvement, and make floodplain evaluations.
2. Ensure that the proper type and level of technical water and related support service and expertise is applied and scheduled in a timely manner to the planning, implementation, quality control and monitoring of all management activities.
3. Cooperate with other water resource agencies for water measurements on National Forest System lands in accordance with Regional cooperative agreements.
4. Participate or cooperate with State and Federal agencies in flood forecasting and warning as assigned by the Regional Forester.
5. Maintain liaison with local representatives of State and Federal agencies on watershed management matters, including National Forest System water use and water quality protection.

**2530.45 - District Ranger**

The District Ranger shall:

1. Establish monitoring programs which will provide information on the results of management activities.
2. Conduct water measurements in cooperation with Federal and State water resource agencies.
3. Participate in flood forecasting and warning services with interested agencies, organizations, local communities, and the general public. Notify individuals and communities of potential flood situations where they are known to exist.

**2531 - Water Resource Investigations**

**2531.01 - Authority**

National Forest Management Act, 36 CFR 219. See FSM 2501.

**2531.02 - Objective**

To ensure that essential water resource data and interpretations required for land and related resource management are available for the land manager.

**2531.03 - Policy**

1. Conduct water resource investigations to collect and analyze data essential for land and related Forest management planning and implementation.

**Forest Service Manual 2500 – Watershed And Air Management**  
**Chapter 2530 - Water Resource Management**  
**Amendment: 2500-1990-1**  
**Effective date: June 01, 1990**

2. Design and conduct water resource investigations and data collection in accordance with a plan that responds to issues and concerns identified in the land and resource planning process.
3. Participate in data collection and analysis activities of other agencies to avoid duplication of water resource data and investigations.
4. Conduct the water data program of the Forest Service be in accord with the coordination requirements of Office of Management and Budget (OMB) Circular A-67 of August 28, 1964.
5. Prepare written reports (FSM 2531.3) at the completion of all water resource investigations.

**2531.05 - Definitions**

1. Inventory. An itemized list of water resource characteristics, traits, and properties.
2. Investigation. An examination and interpretation of water resource issues using inventories and assessments as sources of information.
3. Overview. A broad or general comprehensive view.
4. Reconnaissance. An exploratory or preliminary survey, inspection, or examination made to obtain information.
5. Survey. To inspect carefully; to scrutinize.

**2531.1 - Levels of Water Resource Investigations**

There are three levels of water resource investigations:

1. Level 1 is a reconnaissance investigation. It utilizes available water resource information and data. The inventory investigation provides quantitative and qualitative extrapolations and inferences of water resource suitability, capability, and response. Use this level of investigation for Forest planning.
2. Level 2 is a survey level investigation. Data and information are area specific to watersheds and are collected and combined with available data. The analysis and interpretation of the data quantifies water resource availability, potential, and response to management. Use the Level 2 investigations for evaluating specific resource management opportunities, for addressing area wide management prescriptions, and for assessing the effects of cumulative management practices.



3. Level 3 is a study investigation. Water resource data and information are collected for a small area or point. Use data to evaluate and assess project level issues, concerns, and opportunities.

Applying the appropriate level of investigation maximizes the usefulness of the collected and extrapolated data.

### **2531.11 - Water Resource Inventories**

Water resource inventories are used as information sources in conducting water investigations. Water resource inventories have four basic elements. These elements are:

1. Surface and Ground Water Supply. This is a description of the quantity, timing, frequency, duration, distribution, and sources of water.

2. Climate. A composite of generally prevailing climatological conditions as measured by absolute extremes, means, ranges, and seasonal distribution.

3. Water Quality. Describes four basic properties of available water resources: physical, chemical, biological (including microbiological), and radiological. Each property is comprised of a group of variables for which quantitative information can be obtained (see National Handbook of Recommended Methods for Water-Data Acquisition, Office of Water Data Coordination, Geologic Survey, U.S. Department of the Interior, 1977).

4. Physiographic. Terrestrial features which assist in the interpretation and analysis of the other water resource inventory elements are mapped and described. Include those physical factors which affect the presence of water in the environment and how water is transported and stored.

### **2531.2 - Investigation Planning**

Establish clear objectives to ensure that data collection and analysis are accomplished at the level appropriate to the need. Concentrate on current needs, but if future needs can be clearly defined, plan data collection also to satisfy this need. As a minimum, include the following information in work plans:

1. Purpose of Investigation. Issues and concerns.

2. Goals. Specific questions to be resolved, expected output, and reason for element/order selection.

3. Methods and Techniques Used and Procedures Followed in Collection, Analysis, and Interpretation.

4. Data and Support Required. Data collection required, computer software, equipment and support personnel needed.

### **2531.3 - Reporting and Application**

To prevent the loss of investigation information and interpretations and to provide for its future use, the responsible investigator shall prepare a separate and distinct documentation which is to include the following information (FSM 2530.43):

1. Purpose of investigation.
2. Summary of methods of analysis and data collection.
3. Data collected.
4. Alternative prescriptions developed.
5. Conclusions and recommendations.
6. Support documentation including: investigation plan, raw data, interpretive tools, sources used.

This documentation should be structured to fulfill NEPA requirements when necessary (FSM 1950, FSH 1909.15).

### **2532 - Water Quality Management**

#### **2532.02 - Objective**

To protect and, where needed, improve the physical, chemical, biological, and aesthetic quality of the water resource consistent with the purposes of the National Forests and National Water quality goals.

Specific objectives are:

1. To produce water of a quality suitable for the beneficial uses identified in the land and resource management planning process (FSM 1920).
2. To ensure safe drinking water subject to public use on National Forests, whether the source is a natural or developed water supply (FSM 7420). Where State standards do not exist, observe EPA water quality criteria.
3. To ensure safe water quality for designated primary contact recreation areas. Where State standards do not exist, observe EPA water quality criteria.

### **2532.03 - Policy**

1. Promote and apply approved best management practices to all management activities as the method for control of non-point sources of water pollution, and for compliance with established state or national water quality goals.
2. Consider water quality needs of local, regional, and national public interests both on and off the National Forest in determining appropriate water quality management activities.
3. Establish objectives for managing the quality of the water resource in land and resource management plans (FSM 1920).
4. Include a water quality evaluation for all environmental analyses (FSM 1950). Identify the water quality implications of proposed and alternative land management practices.
5. Evaluate the data collection activities of other agencies before additional water quality inventories or monitoring efforts are undertaken.
6. Conduct water quality data collection activities within the guidelines of an inventory or monitoring plan approved by a line officer.
7. Specify the accuracy, precision and threshold limits of detection for each parameter or test conducted by water quality analytical laboratories used by the Forest Service.
8. For potable water, all water quality testing laboratories owned or used by the Forest Service shall be certified by either the State and/or EPA (FSM 7420).
9. Use the Environmental Protection Agency's (EPA) STORET system as the primary depository for stream and lake water quality data. Ensure that all water quality data placed on the STORET system is (1) collected and analyzed by procedures recognized as standard methods or (2) entered with descriptive qualifiers which specify the method of collection or analysis.
10. Monitor all water provided for public domestic purposes and primary contact water sports, to ensure public health and safety. Design monitoring systems consistent with applicable State or Federal regulations for the specific water use. Policies for monitoring potable water supplies are contained in FSM 7420.

### **2532.04 - Responsibility**

See FSM 2504 and 2530.4 for responsibilities regarding water quality management.

### **2532.05 - Definitions**

1. Water Quality. The physical, chemical, radiological, and biological (including microbiological), characteristics of the water resource.

2. Water Quality Inventory. The characterization of the quality of a water resource (FSM 2531.11).

3. Water Quality Monitoring. The systematic evaluation of water quality specifically designed to answer management questions relative to management goals, objectives, or targets.

4. Water Quality Sampling. The collection of water quality data using accepted statistical techniques.

### **2532.1 - Water Quality Inventory**

Inventory water quality on all National Forest System lands as needed for management of all National Forest resources. Inventory water quality characteristics when land and resource management plans are being developed. Develop statistical sampling design based on analysis procedures that provide the desired water quality interpretations.

Display the results of inventories characterizing water quality using maps, data bases, or other appropriate documentation. Inventories should be analyzed and interpreted to help establish management objectives. Water quality inventories must provide specific information sufficient to address issues and concerns identified in land and resource planning and management activities (see FSM 2531.1).

### **2532.2 - Analysis and Interpretation of Water Quality Data**

Analyze and interpret water quality inventory data to predict the effect of proposed land management practices on present and future water quality. Use this information, along with watershed condition and other soil and water resource data, to develop improved design of management practices, provide a comparison of outputs under alternative management practices, and establish a basis for use in defining water resource management objectives. The analysis must be rigorous enough to make definitive statements concerning anticipated water quality response. Apply a risk analysis to selected alternatives similar to that discussed in Chapter 10, FSH 2509.15.

### **2532.3 - Water Quality Standards**

Each State is required to review its water quality standards at least once every 3 years and revise them as necessary. Participate in review of State standards and work toward change where consideration is not given to the following factors:

1. Standards should reflect national as well as local water quality objectives; be related to beneficial uses, and recognize natural background and variability.

2. Compliance with approved best management practices for control of nonpoint sources should constitute compliance with water quality standards and these practices should be based

upon site-specific conditions and should include a consideration of political, social, economic, and technical feasibility.

3. Water quality standards that reflect nonpoint source conditions should be used to measure effectiveness of best management practices.

4. Consideration should be given to evaluating certain water quality concerns, such as sediment, by observing a surrogate such as channel condition.

5. Antidegradation policy should include a consideration of both time and space and should not be based on change at a single point.

#### **2532.4 - Water Quality Planning**

Consider the quality of National Forest water resources and establish goals and objectives for water quality management in the land and resource planning process (FSM 1920). Inventory and analyze the characteristics of the water resource to provide background information for determining water quality management goals and objectives.

When establishing water quality management objectives, consider:

1. The needs and concerns of non-national Forest interests, as well as National Forest users.
2. The long-term and short-term natural water quality characteristics.
3. The cumulative effects of pollution sources on and off National Forest System lands.

Emphasize preventive conservation practices in all water quality management programs. Tailor such practices to individual site characteristics. Include definition of practices, application of practices and evaluation to ensure that prescriptions achieve water quality goals.

Coordinate Forest Service land management planning with water quality management planning by State and local agencies pursuant to Section 208 of Public Law 92-500, as amended (FSM 2500).

#### **2532.41 - Contingency Plans**

Prepare a contingency plan for all Forest management activities where an accidental discharge of toxic or hazardous material could result in pollution of surface or ground water (FSM 7443).

#### **2532.5 - Water Quality Monitoring**

Overall objective, policy and direction for watershed and soil and water resource monitoring are in FSM 2525. Specific responsibilities are in FSM 2504.

Water quality monitoring is an evaluation of the success of meeting water quality goals, objectives, and targets identified in Forest plans. The Forest plan provides guidelines for establishing a monitoring program. Include criteria in these guidelines for identifying specific activities to monitor expected precision, accuracy, and reliability of results, and for determining an appropriate balance between long-term and short-term monitoring. Consider utilizing surrogates for evaluation of water quality impacts. For example, evaluate channel condition in place of sediment sampling.

### **2532.51 - Plans of Operation**

Water quality monitoring requires systematic sample design, data collection, analysis, and reporting processes. Design these systematic processes to meet monitoring requirements specified in the Forest Plan or Regional Guide and establish them in an approved monitoring plan of operation prepared prior to start of monitoring activities (FSM 2525.1). The monitoring plan of operation shall include:

1. **Monitoring Objective.** The objective for sampling or collecting data must be directly tied to identified management needs. Design sampling to answer specific questions. Collect only data identified as necessary in the plan.
2. **Duration.** Specify the total period of time for the monitoring activity. Consider short-term and long-term monitoring needs when establishing the total period of time.
3. **Monitoring Location.** Specify the location of, or the criteria and process used to select the monitoring location. If location is known, include a map of suitable scale that identifies the specific points at which monitoring activities are to be carried out.
4. **Data Requirements.** Provide list of data parameters to be collected.
5. **Monitoring Frequency.** State the sampling frequency for water quality parameters or data collection. Monitoring frequency, as determined by sampling design, must be sufficient to answer management question(s) to an appropriate level of accuracy and precision.
6. **Procedures.** Specify the field and analytical procedures used in carrying out the monitoring activities. Identify responsibilities for data collection, sampling techniques, sampling equipment, and sample preservation and transportation requirements. Identify the type of analyses to be made, analytical standards and techniques, and location of laboratory facilities to be used.
7. **Data Analysis and Interpretation.** Outline procedures for data analysis, interpretation, and presentation. Analysis procedures must correlate closely with statistical sampling design. Interpretation should specify a given level of statistical confidence and probability of occurrence. Identify final storage facilities.
8. **Reporting.** Specify time requirements and recipients for reporting monitoring results.

9. Quality Control. Specify quality control procedures for sampling, sample analysis, and data analysis.

10. Monitoring Cost. Estimate cost to complete monitoring effort, including a final report.

#### **2532.52 - Quality Control**

Incorporate procedures for quality control in all monitoring activities, including, but not limited to:

1. Calibration of sampling equipment, recording field instruments, and flow measuring devices.

2. Selection of appropriate standard methods for sampling, storing, transporting, and analyzing samples.

3. Use of an interlaboratory quality control program that fulfills substantial element of EPA laboratory certification or equivalent quality assurances of on-Forest laboratory methods.

4. Establishment of a systematic data storage, retrieval, and analysis system.

#### **2533 - Water Resource Management Support Services**

Water resource management support services are professional and technical advice and counsel provided in preparing specific or local protection measures and management prescriptions. Support services provide water resource objectives relating to flood and debris problems, erosion, sediment yield, water yield, water quality, timing of flow, water uses and needs, and water rights.

The overall objectives, policy, and direction regarding watershed management support services are in FSM 2524.

#### **2534 - Cooperation in Other Water-Related Activities**

##### **2534.02 - Objective**

See FSM 2530.2.

##### **2534.03 - Policy**

See FSM 2530.3.

##### **2534.04 - Responsibility**

See FSM 2530.4.

### **2534.1 - Pollution Control**

Coordinate Forest Service plans and activities with water quality management planning and implementation efforts of State and areawide water quality management agencies. Delegate appropriate Region or Forest personnel to advise out-service agencies when National Forest System lands are included in out-service water related projects (FSM 2542).

Designate Forest Service coordinators to participate directly with the State or local water quality management agency in all levels of the 208 planning effort (area wide Waste Treatment Management Program, section 208 of Public Law 92-500), where National Forest System lands are significantly involved.

### **2534.11 - State and Areawide Water Quality Management**

The Forest Service and the Environmental Protection Agency have issued a joint policy statement which provides the basic framework for cooperation among the Forest Service, the Environmental Protection Agency, and the State and areawide water quality management planning agencies. This policy statement, dated April 2, 1978, is now located in FSM 1530.

Identify the Forest Service as the management agency for lands under Forest Service administrative control when developing cooperative agreements with individual States.

### **2534.2 - Solid and Liquid Waste Disposal**

Meet State and Federal standards for waste disposal practices at Federal or Federally-permitted installations. Take immediate corrective actions if inspection shows that waste disposal practices are causing pollution of waterways on National Forest System lands. Specifications for waste disposal are contained in FSM 7400.

The analysis of proposals for waste disposal on National Forest System lands is accomplished through the environmental analysis process as outlined in FSM 1950. Conduct appropriate soil and hydrologic investigations to support the environmental analysis. Specifically analyze the impact of effluent disposal on soil and water quality.

### **2534.3 - Protection and Development of Wildlife and Fish Habitat**

The Fish and Wildlife Coordination Act (FSM 1021) provides that wildlife and fish conservation shall receive equal consideration and be coordinated with other features of water resource development programs. The Act authorizes the Fish and Wildlife Service and the concerned State wildlife and fish management agency to study the effect on wildlife and fish habitat of water development programs sponsored by Federal agencies or by public or private agencies under Federal permit, easement, or license. The Act does not apply to impoundments of less than 10 acres or to land management programs carried out by Federal agencies on Federal lands under their jurisdiction.



**Forest Service Manual 2500 – Watershed And Air Management**

**Chapter 2530 - Water Resource Management**

**Amendment:** 2500-1990-1

**Effective date:** June 01, 1990

Contact the States and the Fish and Wildlife Service regarding water related projects on National Forest System Lands, regardless of size, where existing or potential wildlife and fish values, public relations considerations, or technical problems warrant such action (FSM 2610). This direction also applies to roads, other construction projects, and similar activities which the Forest Service carries out or permits on National Forest System lands, where such activities affect streams or water impoundments.

**2534.4 - Flood Forecasting and Warning**

**2534.41 - Federal and State Systems**

Cooperate and participate to the extent feasible in Federal and State developed flood forecasting and flood warning systems. When Forest Service participation is requested, execute a written agreement with the agency involved and state the kind and extent of assistance the Forest Service will furnish, and the manner in which it will be provided. The Regional Forester shall assign responsibility for the various phases of Forest Service participation.

Although there may be no formal arrangements for flood warning, line officers should notify individuals and communities of potential flood situations when such conditions are known (see FSM 2527.6 for direction for posting known flood areas).

**2534.42 - Flood Hazards and Storm Damage on National Forest System Lands**

Perform surveys to evaluate these occurrences and their hazards and to develop treatment programs where needed as specified in FSM 2529. Notify affected local agencies when the survey shows the possibility that a flood hazard exists. These include irrigation districts; flood control districts; railroads; county and State highway department; municipalities; county sheriffs' offices; and civil defense organizations. Directly alert Forest users such as resort operators or summer home residents occupying possible flood paths.

**2534.5 - Water Measurements**

(FSM 2531) Water measurement is an integral part of National Forest Watershed Management. Federal and State water management and development agencies accomplish water measurements to secure basic information necessary for forecasting runoff. Cooperate to the extent feasible with these agencies to secure water measurement data.

Execute an Interagency Agreement specifying actions and other terms of agreement, when water measurement data is furnished to another agency on a regular schedule.

When other agencies request studies or data in addition to that normally provided, request equitable reimbursement for additional studies, dependent upon the degree of usefulness of this supplemental information to Forest Service management.

#### **2534.6 - Weather Modification**

Support properly designed and technically sound weather modification proposals and activities on National Forest System lands, provided those activities and anticipated results are not in conflict with any applicable law or regulation governing administration and management of these lands. Specific policy on weather modification over wilderness is described in FSM 2323.44.

These policies are intended to accommodate weather modification activities as fully as possible wherever such activities are consistent with overall National Forest System purposes.

#### **2535 - External Water Resource Development Programs**

The Forest Service has responsibilities as a land manager in development of water resource projects on National Forest System lands by agencies of other Executive Departments. Refer to appropriate chapters in FSM 3500, Cooperative Watershed Management, for more detailed information concerning program responsibilities in cooperative watershed management with other U.S. Department of Agriculture agencies and State and local government entities and organizations. FSM 3510 contains direction for administering the Watershed Protection and Flood Prevention Act of 1954 (P.L. 566). FSM 3520 gives direction concerning river basin programs. FSM 3530 provides direction and guidance concerning the Flood Control Act of 1944, and its role in restoring and maintaining desirable watershed condition. FSM 3540 describes the Emergency Watershed Protection Program and assistance available to relieve imminent hazards to life and property from floods, fire, and other natural disasters. FSM 3560 pertains to Forest Service cooperation in watershed projects and programs on non-Federal forest lands.

##### **2535.02 - Objective**

To plan and execute a coordinated program of water resource development to maximize public benefits on National Forest System lands.

##### **2535.03 - Policy**

Support water resource development activities on National Forest System lands provided these activities are in concert with Congress' intent for these lands.

##### **2535.04 - Responsibility**

###### **2535.04a - Chief**

The Chief shall designate representatives to interagency river basin commissions and committees and river basin compact negotiations.

#### **2535.04b - Regional Foresters**

Regional Foresters shall designate a liaison at the Regional level to Federal and State agencies and organizations concerned with water resource developments that impact National Forest System lands.

#### **2535.04c - Forest Supervisors**

Forest Supervisors in coordination with the Regional liaison shall maintain liaison with local representatives of Federal, State, and local agencies and organizations concerned with water resource development that impacts National Forest System lands.

#### **2535.1 - Programs Under Interstate River Basin or Flood Control Compacts**

Ensure that Forest Service land and water management programs comply with requirements of existing compacts. Participate in compact negotiations and periodic compact reviews.

#### **2535.2 - External Water Resource Development Liaison**

Help project proponents select the best project site for water resource development projects. Use the environmental analysis process to identify significant issues and concerns associated with proposed water resource development projects (FSM 1950 and FSH 1909.15, National Environmental Policy Act Procedures Handbook). Assure resolution of issues and concerns. Enhance National Forest benefits affected by the construction, operation, and maintenance of the proposed project in a way compatible with the project.

Maintain effective and timely communication with the project proponent.

Identify claims of project opponents and prepare a position in response to the claims. Work for modification if project is not consistent with Forest Service position. Maintain a case folder of Forest Service obligations, plans, and accomplishments for each water resource development project. Obtain information from functional units responsible for implementing a part of the total Forest Service program associated with a water resource development project.