

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

**Forest Service Handbook 4809.11 – Forest Survey Handbook**

**Chapter 10 – Operational Procedures**

**Amendment:** 4809.11-2008-1

**Effective date:** December 23, 2008

**Duration:** This amendment is effective until superseded or removed.

**Superseded Directive:** 4809.11\_10--1 thru 18

**Approved by:** Ann M. Bartuska, Deputy Chief

**Date approved:** December 18, 2008

**Responsible Staff:**

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

This amendment revises section 19 Resource Data Management only. Some minor editorial and format changes have been made no other changes to text of this chapter have been made.

**19.01:** Adds the Forest and Rangeland Renewable Resources Act of 1978, as amended, and the Food Security Act of 1985, as amended, as authorities that provide direction for managing the Forest Inventory and Analysis Program.

**19.02:** Adds objectives for the administration of the Forest Inventory and Analysis (FIA) Program, such as maintaining a uniform data delivery system at the State, Regional, and National levels; protecting the privacy of FIA data providers; providing cost effective customer access to FIA databases; and ensuring high quality, consistent, and reliable FIA databases.

**19.03:** Revises policies and direction for the Forest Inventory and Analysis Program.

**19.04:** Adds responsibilities in paragraph 3 for research station directors to identify and authorize external parties to conduct work in the FIA Program when the work is necessary for the successful implementation of the FIA program and the use of an Authorized Agent is the most efficient manner in which to complete that task.

**19.05:** Sets out definitions for terms used in the FIA Program.

**19.1 - 19.13:** Provides direction on the documentation of authorized agent status (sec. 19.11), the role of an authorized agent (sec. 19.12), and access to confidential FIA information (sec. 19.13).

**19.2:** Provides direction and standards for collecting data in support of the FIA Program.

**19.3:** Provides direction and standards for ensuring data privacy.

**19.4 - 19.41:** Provides direction and standards for maintaining and releasing data associated with the FIA Program.

**19.5 - 19.52:** Provides direction and standards for allowing data access for information used in the FIA program.

**19.6:** Provides direction and standards for processing special requests for specific spatial Forest Inventory and Analysis information.

**19.7:** Includes as exhibits Section 1770 of the Food Security Act of 1985 (ex. 01) and the Forest Inventory and Analysis data access table guide by user group and data owner origin (ex. 02).

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This chapter outlines procedural guidelines and administrative arrangements for obtaining the subject-matter data specified in chapter 20. The general rules, regulations, and policies used in administration and organization of Forest Service work are not included. These are in the Forest Service Manual.

## 11 - Accuracy Standards and Periodicity of Surveys

### 11.1 - Accuracy Standards

Sampling standards represent one of the three major factors affecting Forest Survey work, the other two being subject-matter requirements, as defined in chapter 20, and periodicity of surveys, as defined in section 11.2.

Survey plans will be designed to achieve sampling errors in percentage as given in the following tabulation for specified volume or area. For other volumes or areas the allowable sampling error, “e,” may be completed as follows:

$$e = \frac{(SE) \sqrt{\text{Specified volume or area}}}{\sqrt{(\text{Total volume or area in unit})}}$$

In the above formula (SE) is the specified sampling error in percentage at the specified volume or area shown in table 1, which follows:

Table 1. – Specified sampling error (SE) (in terms of one standard error; that is, the 67-percent confidence limit)

Section	Percentage				
	Volume <u>1/</u>	Commercial forest area <u>2/</u>	Noncommercial forest area <u>3/</u>	Timber cut <u>4/</u>	Net annual growth <u>5/</u>
East	5	3	10	5	5
West	10	3	10	10	10

1/ Per 1 billion cubic feet of growing stock on commercial forest land. Error to be achieved as closely as practicable.

2/ Per 1 million acres of commercial forest land. This is maximum allowed error.

3/ Per 1 million acres of noncommercial forest land. This is maximum allowed error.

4/ Per 1 billion cubic feet of annual timber cut from growing stock on commercial forest land. Error to be achieved as closely as practicable.

5/ Per 1 billion cubic feet of net annual growth of growing stock on commercial forest land. Error to be achieved as closely as practicable.

The basic objective of Forest Survey place primary emphasis upon the determination of recent and prospective trends in the timber resource situation. This requires measurements of the various components of recent changes in the areas, inventory volumes growth, mortality, and removals, and the determination of factors for these items that can be used in projecting future timber supplies under alternative levels of forest management and timber prices. It has become increasingly clear that former accuracy standards as stated above are inadequate for developing survey designs for re-measurements.

The sampling errors stated above are to be used to determine the sampling intensity in the initial establishment of 10 point sample locations.

Additional techniques research will be needed to establish final guidelines for re-measurements, but in the interim sampling designs for resurveys of areas with 10 point plots shall require re-measurement of all such plots.

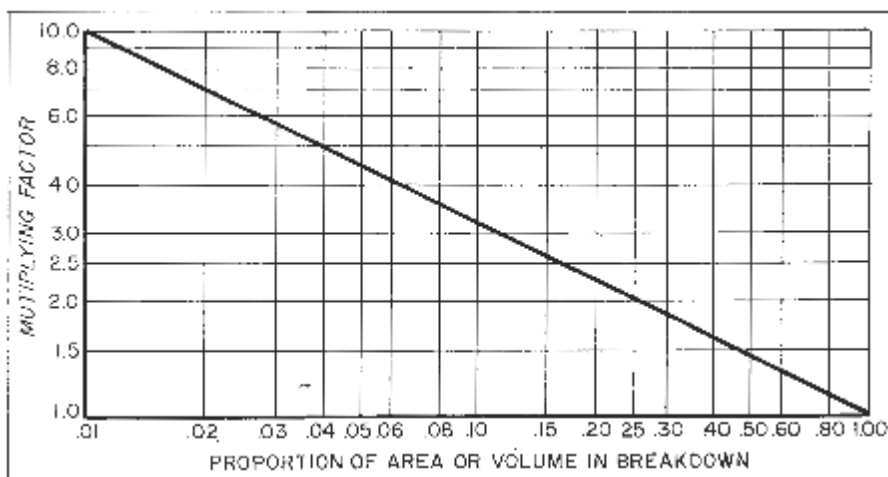
Even though the errors specified above may be achieved for these major items in a given State, sampling errors may be unacceptably high for certain required items specified in chapter 20. If sampling errors for items required for State reports exceed 25 percent, the figures may be either included with an indication of sampling errors or combined with related data with a footnote that figures omitted are subject to excessive sampling errors. In some cases figures may be suitable only for inclusion in Regional tabulations.

When errors for important items are likely to be excessive, field or photo plot work should be intensified to obtain statically reliable data for important subitems.

Every effort shall be made also to minimize errors of measurement, reporting, or other types of errors encountered in Forest Surveys by training, inspection, or other action.

All Survey reports should include a statement on accuracy of data. Indicate sampling errors for total forest area, volume, growth and cut, as well as for important breakdowns of these major items. The relative accuracy of figures for different items may be presented in a chart or in a tabulation showing sampling errors associated with select values throughout the range of the data presented in the report. Exhibit 01 shows the ratio of standard error of an area or volume breakdown to percentage standard error of estimate of total area or volume.

### 11.1 - Exhibit 01



### 11.2 - Periodicity of Surveys

Goals for the scheduling of resurveys in the various Station territories depend on such factors as (1) the relative current importance of local timber resources from a national standpoint, (2) the rapidity of changes in local forest conditions and problems, or (3) scheduling required for cooperation with National Forest resource management or other cooperators. Work plans should aim at achieving the following periodicity goals:

1. Southern and southeastern States..... 8 years
2. Alaska and Hawaii..... 15 years
3. Other States..... 10 years

Stations should establish schedules for resurveys of states in Forest Survey units, considering such factors as availability of adequate aerial photography and the nature and extent of cooperation with the National Forest system and other cooperators.

If lack of Federal and cooperative funds precludes achievement of all of the three major goals of subject matter coverage, accuracy standards, and periodicity should be sacrificed first. This is considered necessary to achieve acceptable benchmarks for appraisals of forecast conditions. Exceptions to this principle are to be approved by the Washington Office.

From time to time interim estimates of forecast area, volume, growth, and cut will be required for national- resource data complication and/or appraisals of the timber situation and outlook. Such estimates may be obtained by interim updating of the latest available Survey data or by other continuous inventory techniques as these are developed.

Information on timber cut should be compiled from all available sources, on an annual basis. Periodic supplementation of the Bureau of the Census surveys and periodic Station converge of the products or enumerated by the Bureau of the Census or other agencies will usually be necessary to obtain entailed figures of acceptable accuracy on a State basis. Timber cut estimates are important both because of the general value of production statistics and the need for current estimates of timber resource conditions and frequent analyses oaf resource trends. Complete coverage of productions of various timber products should be keyed to resurveys, and should be scheduled at intervals not exceeding 3 years.

## **12 - Survey Work Plans**

Each Station should maintain detailed current work plans covering all aspects of Forest Survey work for which the Station is responsible. These plans should include all field and office procedures for obtaining required subject-matter items, including revisions that must be made from time to time incorporate new subject-matter requirements or new techniques developed through research.

### **12.1 - Review**

Because of the national objectives and inter-Regional character of the Forest Survey, two copies of all work plans for all phases of the Survey, including Regional supplements to this handbook and revisions thereof, should be forwarded to the Washington Office for review and approval prior to their implementation. Review by the Washington Office will be concerned primarily with the adequacy of plans to meet overall survey objectives and subject-matter requirements. Review of procedures will relate chiefly to matters of inter-Regional correlation and use of the most efficient available techniques.

### **12.2 - Techniques Research Study Plans**

Continuing studies to improve specifications or operations of the Forest Survey and lower costs are an important phase of the Forest Survey at each station. In addition, certain techniques research of national importance is provided for in certain line projects. To help ensure effective use of the limited funds and personnel available plans for survey techniques studies should be forwarded to the Washington Office for review. Procedures for preparation of study plans are given in FSM 4051.6.

### **12.3 - Clearance of Questionnaires and Statistical Surveys**

In carrying out certain phases of the survey, such as estimation of timber cut or determination of forest ownership, it may be necessary to obtain information from operators of wood-using plants or other members of the public. In cases where identical information is solicited from 10 or more persons, questionnaires and survey plans must be cleared by the Bureau of the Budget under the Federal Reports Act of 1942 (5 U.S.C. 139, 139a-f). Administrative procedures for clearance of questionnaires and statistical surveys are as given in FSM 1374.



Requests for clearance of forms and accompanying plans should be forwarded to the Washington Office for review and transmittal to the Bureau of the Budget. Five copies of any proposed questionnaires and accompanying work plans are required.

### **13 - Aerial Photography for Forest Survey**

Use of aerial photographs is of great importance on the Forest Survey. As a rule aerial photographs for survey work should be obtained from the various public or private agencies engaged in large-scale aerial photographic projects. To the extent feasible, survey schedules and area priorities should take into account the availability of up-to-date photography.

#### **13.1 - Procurement of Prints**

Procedures for procuring prints of available aerial film are as follows:

1. Prints of aerial films belonging to Government agencies and stored in Washington, D.C., should be requested through the Washington Office. Orders should be on form AD-38 and addressed to the agency which is known to have custody of the film. This action permits the Washington Office to facilitate reproduction to best advantage, whether by transmitting the order to the named agency or by borrowing film (FSM 5662.7) for reproduction by the Forest Service Laboratory. The purchase order should include all pertinent information called for under FSM 5662.52. Estimated cost should be computed from the pricelist on the current form 7100-42; if the order is reproduced by the Forest Service Laboratory, charges will be computed from the current internal pricelist.
2. Prints of other Government agencies films stored outside Washington, D.C., should be requested directly from the laboratory holding the film (FSM 5662.6).
3. Prints of aerial films belonging to the Forest Service should be requisitioned from the Washington Office and Regional photographic laboratories, using form 7100-41. Submit this requisition form in duplicate (FSM 5662.52).
4. For the purchase of aerial photographs from other than Government agencies, see FSM 7141.42. For the required annual report on such purchases, see FSM 7141.57.

### 13.2 - Federal Film Locations

<u>Agency</u>	<u>Area covered</u>	<u>Negative location</u>
Forest Service	Regions 8, 9, and 10	Washington, D.C.
Forest Service	Regions 1 through 6	Respective Regional Offices
Agriculture Stabilization and Conservation Service	Western States	Western Laboratory, Compliance and Aerial Photography Div., ASCS, USDA., 2505 Parley's Way, Salt Lake City, Utah 84109
Agriculture Stabilization and Conservation Service	Eastern States	Eastern Laboratory, Performance and Aerial Photography Div., ASCS, USDA, 45 S. French Broad Ave., Asheville, NC 28801
Soil Conservation Service	Parts of United States	Washington, DC
Geological Survey (Nitrate-base film)	Parts of United States	Denver, CO
Geological Survey (Safety-base negatives)	Arizona, California, Idaho, Nevada, Oregon, Utah, Washington	Sacramento, CA
	Alaska, Colorado, Montana, Wyoming, and New Mexico	Denver, CO
	Arkansas, Iowa, Illinois, Kansas, Louisiana, Michigan, Missouri, Minnesota, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, and Wisconsin	Rolla, MO
	Remainder of United States	Washington, DC
(Index negatives for photography obtained since 1949 are available both at Washington, DC and at the field laboratory holding the film for the photographic coverage.)		
Bureau of Reclamation	Parts of United States	Geologic Survey, Denver, CO
Air Force, Army Map Service, and Coast and Geodetic Survey	Parts of United States	Washington, DC

### **13.3 - Financing Aerial Photography**

New aerial photography ordinarily should be financed by the Forest Survey only for experimental work or in special situations. Vertical aerial photography projects require the advance approval of the Coordinator or Aerial Photographic Work of the Department as the designated representative of the Secretary of Agriculture. Regional Foresters, however, may authorize aerial photography without advance approval by the Washington Office or coordinator for the Department for areas of less than 12 square miles for experimental purposes in extending use of resource photography or conducting forest and range research. Procedures for obtaining approval of aerial photography projects are contained in FSM 7141.41.

### **14 - Forest Survey Financing**

In expending Forest Survey funds, the first responsibility is to obtain required subject-matter item at specified accuracy standards, and to achieve an equitable balance between the various phases of the survey.

Additional coverage of locally important items, intensification to achieve greater accuracy of data, or acceleration of Survey work ordinarily should be financed by cooperative contribution.

Field assistance in national studies of forest products requirements will generally be financed from regular Forest Survey allotments to Stations, even though this may cause some curtailment of progress on other phases of the Survey.

#### **14.1 - Financing Special Requests**

Requests for special information requiring a substantial amount of Forest Survey staff effort shall be financed under cooperative agreements, and only after publication or general release of Forest Survey statistics for the area involved. Procedures for preparation of cooperative agreements are given in FSM 1581 and 1582. All information developed as a result of such agreements shall be subject to public disclosure without charge to any other party.

In undertaking special jobs, it is important (1) that effort is not seriously diverted from attaining regular Forest Survey objectives and schedules and (2) that work does not conflict with the legitimate field of private consultants.

### **15 - Inspection, Supervision, and Progress Report**

#### **15.1 - Inspection**

The objectives of inspection by the Washington Office and by Stations are outlined in FSM 1440. In brief, these are to determine whether work programs are adequate to meet responsibilities defined in basic legislation, to ensure that work by Survey personnel is

conducted efficiently and in accordance with approved plans, and to appraise Station performance in adopting the most efficient techniques for carrying out Survey assignments.

Quality control of all phases of the Forest Survey at the Station is the specific responsibilities of project leaders. Study plans for the Survey should include specifications and procedures for systematically checking the various phases of the total job, such as photo interpretation, field plot measurements, and data processing.

## **15.2 - Supervision**

Functional supervision of each Survey project should be provided periodically by the responsible assistant Station Director (FSM 4053.2). When changes in program or personnel, coordination of programs at two or more Stations, or problems associated with new techniques require technical support or advice, the Washington Office Survey branch chief should be consulted. A written report summarizing findings and recommendations should be prepared following each supervision visit.

## **15.3 - Progress Report**

An annual progress report due in the Washington Office by August 1 is required from each Forest Survey unit at the end of each fiscal year.

The annual progress report should include the following:

1. A form 4800-1 for each State currently being inventoried.
2. Letter-sized State maps for each State currently being inventoried showing (1) county boundaries, (2) area covered by field inventoried during the past fiscal year, (3) cumulative coverage from the start of the current survey, and (4) a forecast of the area to be covered in the current fiscal year.
3. A form 4800-2, summarizing past fiscal year expenditure of Forest Survey funds.

## **16 - Forest Survey Publications**

The aim of Forest Survey publications is to indicate the current forest situation, problems, and opportunities in each State, Region, or the country as a whole; to evaluate past and current trends in the forest situation; and to indicate the probable outlook for timber supplies and demands in the area covered.

Various types of publications, as outlined below, are required to adequately serve the varied audiences having an interest in Survey findings. Survey reports ordinarily should be published by the Station or the Washington Office, except as provided for in section 16.8.

## **16.1 - Release of Forest Survey Statistics**

Experiment Station Directors may issue forest resource statistics as county or unit reports in advance of State reports. Make sure that requesters understand that these are preliminary statistics and subject to change. Forest statistics are considered final when the Station Director approves release of the report manuscript to editorial services for publication. At that time, Station Directors shall release the statistics and supporting data to those who request them.

## **16.2 - State Statistical Reports**

Statistical reports are required for each State, following coverage by an initial inventory and by each subsequent reinventory. Statistical reports for Regions, Survey units, and counties are optional.

### **16.21 - Contents**

Stations shall prepare each State statistical report using the standard set of core tables designed and distributed by the Forest Inventory and Economics Research staff in the Washington Office.

Each report shall indicate the nature and scope of the Survey, highlights of the statistical findings, a description of sampling methods used, and accuracy of the data. All definitions used in the report must agree with definitions specified in section 01. The report should compare principal statistics with similar data from previous surveys or estimates, and indicate the extent to which differences are attributable to such factors as changes in forest conditions, or differing accuracy standards, definitions, and techniques. Statistical reports should also include an appraisal of the outlook for timber supplies in terms of available cut, for example, and technical opportunities for improving the future supply situation.

### **16.22 - Review and Publication Procedures**

Manuscripts for State or Regional statistical reports should be forwarded to the Washington Office for review and approval prior to publication.

## **16.3 - Unit and County Statistical Reports**

Statistical reports for counties or Survey units may be issued at the option of the Stations. Format of text and tables may take any form the Stations elect, but definitions and subject-matter standards should be as specified in section 01 and in chapter 20. The release of county statistics should be accompanied by a statement on reliability and a word of caution regarding the use of statistics with high sampling errors. Review by the Washington Office is not required.

## **16.4 - State or Regional Analytical Reports**

Comprehensive analytical reports for important timber States are optional with the Stations. Analytical reports for important regions, such as the Mississippi River Delta and the Douglas-fir region of Oregon and Washington also are optional, but highly desirable.

### **16.41 - Contents**

These reports should provide a comprehensive analysis of present and prospective timber supplies in the area, and factors affecting timber supplies. Discussions of nontimber resources, such as water and recreation, should be related to the timber situation.

### **16.42 - Review and Publication Procedure**

Analytical reports may be issued by the Stations or submitted to Washington Office for publication. In preparing analytical reports for Washington Office publication, procedures outlined in FSH 1609.11 and should be followed. Approval for cooperative publications involving other agencies should be obtained in advance, as indicated in section 16.8.

### **16.43 - News Release**

At the time of issuance of a report for a State or other significant area, the Station should issue a local press release presenting major highlights of such reports. If a report for the last county or Survey unit covered in a State is issued in advance of the State statistical report, the Station should issue a press release summarizing important findings for the entire State or region. Three copies of each Station release are to be sent to the Washington Office for information.

## **16.5 - Popular Survey Reports**

Distribution of Survey findings for important timber States through well-illustrated popular reports is optional with the Stations. Wherever possible, cooperative financing by State foresters, resource development commissions, or others should be arranged. In drafting popular reports, coordination with the Public Affairs Office in the Region also is highly desirable.

Copies of manuscripts for popular reports should be forwarded to the Washington Office for review prior to publication.

## **16.6 - National Reports**

National summaries of the forest resource situation and outlook based on Survey and related data will be prepared from time to time. These will be handled as special assignments under specific plans and instructions from the Washington Office.

## **16.7 - Special Survey Reports**

Special reports on results of research on Survey methodology; compilations, such as volume tables; or other items of interest not covered in regular Survey reports may be issued at the option of the Stations. Preparation of such reports is desirable, but should not be allowed to delay issuance of regular Survey reports. Review of manuscripts by the Washington Office is optional but desirable.

## **16.8 - Cooperative Publications**

As a general rule regular Forest Survey findings should be published by the Station or through the Washington Office. In certain cases, especially where local financial contributions are substantial, printing of reports by local cooperators may be desirable. In such cases prior approval of the Washington Office should be obtained before arranging for publication of Survey reports by cooperating agencies. Cooperative publications also should be reviewed in the Washington Office in the same manner as Forest Survey reports published by the Forest Service.

## **16.9 - Operator Lists**

Names and addresses of individuals or companies compiled by Forest Service personnel as part of regular Forest Service duties shall not be furnished to individuals, firms, or non-Department agencies.

## **17 - Forest Survey Personnel**

General personnel policies and procedures governing the Forest Survey are outlined in FSM 6100.

### **17.1 - Recruitment and Promotion**

Experience on the Forest Survey is of considerable value in the development of foresters for research or other forestry work in National Forest resource management and is State and private forestry. The Forest Survey is a complex technical job requiring a wide range of skills and is an excellent training ground for a wide range of forestry work.

Career employees ordinarily should remain in entrance positions only for short training periods. At the time of recruitment, or during the early probationary period, definite plans should be developed by the Stations for each incumbent of Survey positions.

Some employees with special interests in the Forest Survey should be considered for advancement within the Survey and encouraged to take advanced study in statistics, photogrammetry, mensuration, administration, writing, mathematics, management, and

economics. Other employees with special interest in administration or other Forest Service programs should be transferred to these activities after a reasonable period with the Survey.

In certain cases the Survey can effectively use career employees temporarily assigned from the National Forest System. Certain positions also may be staffed with temporary personnel or with nontechnical men.

## **17.2 - Training**

An efficient training program is vital to the successful operation of the Forest Survey and the Forest Service, both for the technical and nontechnical staff. Those who wish to make a career of the Forest Survey should be given opportunities for development by planned short courses, on-the-job training, educational furloughs, and inter-Station or -Region transfers.

## **17.3 - Safety and Welfare**

The relatively isolated and hazardous nature of much Forest Survey field work requires special emphasis on safety of personnel. The shifting location of Survey field work also creates problems of living conditions for field personnel, and special efforts should be made to minimize such problems.

Forest Service safety policies and requirements are described in the Health and Safety Code, FSH 6709.11.

## **18 - Forest Survey Cooperation**

The basic legislation for the Survey directs the Secretary of Agriculture in conducting the Survey to cooperate with appropriate State officials and with private and other agencies, under such plans as he may determine to be fair and equitable. It is the policy of the Forest Survey to aggressively seek cooperation with other Federal agencies and with State, industrial, or other local groups.

### **18.1 - Cooperation with National Forest Regions**

Forest Survey inventories and timber management inventories on the National Forests should be integrated to the fullest extent practicable, in accordance with the policies outlined in FSM 2413.

### **18.2 - Cooperative Agreements**

Agreements with States and other cooperators, including cooperative aid agreements, should be processed as outlined in FSM 1581 and 1582. Agreements with State agricultural experiment stations, or major supplements or amendments thereto, should be forwarded to the Washington Office for review and clearance by the Forest Service and Agricultural Research Service before signature by the Director and cooperating State agricultural experiment station.



Agreements with other State or local cooperators are to be approved by the Director, with information copies to the Washington Office. Agreements with other Federal agencies are to be reviewed and approved by the Washington Office before final signature.

## **19 - Resource Data Management**

### **19.01 - Authority**

1. Forest and Rangeland Renewable Resources Act of 1978 (16 U.S.C. 1600, 1641-1648). Section 3(b)(1) of this Act directs the Secretary of Agriculture to “. . . make and keep current a comprehensive survey and analysis of the present and prospective conditions of and requirements for renewable resources of the forests and rangelands of the United States and of the supplies of such renewable resources, including a determination of the present and potential productivity of the land, and of such other facts as may be necessary and useful in the determination of ways and means needed to balance the demand for and supply of these renewable resources, benefits, and uses in meeting the needs of the people of the United States. The Secretary shall conduct the survey and analysis under such plans as the Secretary may determine to be fair and equitable and cooperate with appropriate officials of each State and, either through them or directly, with private or other entities.” Section 3(e) further directs the Secretary of Agriculture to “. . . establish a program to inventory and analyze, in a timely manner, public and private forests and their resources in the United States.”
2. Food Security Act of 1985 (7 U.S.C. 2276). Section 1770 of this act protects the identity of private landowners on whose property Forest Inventory and Analysis information is collected. This information would otherwise be available under the Freedom of Information Act of 1966 (5 U.S.C. 552). Key provisions of section 1770 are excerpted and displayed in section 19.7, exhibit 01.

### **19.02 - Objectives**

1. Develop and maintain databases that support uniform data delivery at State, Regional, and National levels.
2. Protect the privacy of Forest Inventory and Analysis (FIA) data providers.
3. Provide cost effective and efficient customer access to FIA databases.
4. Ensure the input of high quality, consistent, reliable data.

### **19.03 - Policy**

1. Protect individual ownership and data information by masking ownership and providing data information in broad categories, over wide spatial areas, and with embedded ownership uncertainty.

2. Data coordinates must be randomly assigned within plus or minus ½ mile of the exact location (fuzzing) to reduce the risk of unauthorized visits to the plot locations or contact with individuals providing data.
3. The method of protecting the privacy and integrity of the Forest Inventory and Analysis (FIA) data must maintain consistency of data reporting at the county and State level; standard published FIA core tables must be consistent and repeatable.
4. Pursue policies and technologies that anticipate emerging customer requirements.
5. Collect data only with the permission of the landowner or information provider with an assurance of confidentiality.

## **19.04 - Responsibility**

### **19.04a - Station Director**

The Station Director is responsible for:

1. Identifying and authorizing external parties to conduct work in the Forest Inventory and Analysis (FIA) Program, when:
  - a. The task to be completed is necessary for the successful implementation of the FIA program; and
  - b. Use of an authorized agent is an efficient way to complete that task.
2. Ensuring that authorized agents adhere to the privacy provisions and policies of the FIA program.

## **19.05 - Definitions**

Authorized Agent. An external party authorized to perform work critical to the mission of the Forest Inventory and Analysis (FIA) Program.

External Party. An individual other than a FIA Program employee.

Forest Inventory and Analysis Database. The Forest Inventory and Analysis Database (FIADB) contains all Forest Inventory and Analysis plot data available to the public and accessible at the worldwide web at <http://www.fia.fs.fed.us>.

Fuzzing. The process of masking the precise spatial coordinates of a Forest Inventory and Analysis plot or information collection location to within ½ mile of its actual location for all data collected after January 1, 2000.

Plot. A location where field measurements of forest attributes are collected.

## Plot Data.

Phase 1. A stratification of the landbase into forest and nonforest areas using remote sensing.

Phase 2. The base sample of Forest Inventory and Analysis plots selected from Phase 1 remote sensing at the intensity of approximately 1 plot per 6,000 acres of land.

Phase 3. The base sample of Forest Inventory and Analysis plots selected from Phase 1 remote sensing at the intensity of approximately 1 plot per 96,000 acres of land. Phase 3 plots are a subset of Phase 2 plots.

Public. All individuals not in the direct employment of the FIA Program or acting as an authorized agent on behalf of the FIA Program.

Supercounty. A group of counties that have been combined to ensure sufficient sample size or non-disclosure of ownership information of Forest Inventory and Analysis data. The latter generally occurs when an owner group contains less than three owners in one county, thus potentially providing owner-specific information.

Swapping. The process of exchanging the coordinates of one plot or information collection location with another similar plot or location in the same county, supercounty, or owner group using the data's most "similar neighbor." The "similar neighbor" method uses a select list of data attributes of one plot to swap its coordinates with another plot to ensure data privacy.

## **19.1 - Authorized Agent**

Do not grant authorized agent status to any individual working in a regulatory capacity, such as individuals whose duties include the enforcement of environmental standards. This exclusion complies with data use restrictions provided for in the Food Security Act of 1985 (7 U.S.C. 2276).

### **19.11 - Documentation of Authorized Agent Status**

Document authorized agent status in a formal written agreement between the Station Director and the authorized agent.

### **19.12 - Role of Authorized Agent**

Authorized agent status shall be limited to specific tasks and time periods as determined by the Station Director and documented in the written agreement. Authorized agents have the responsibility for safeguarding the confidentiality of Forest Inventory and Analysis (FIA) data they possess and conforming to the FIA privacy policy provisions contained in this amendment in section 19.3.

### **19.13 - Access by Authorized Agents**

Authorized agents may be granted access to confidential FIA information, but only as required for performing the assigned task. Authorized agents shall consent in writing to be bound by the guidelines provided for in this amendment.

### **19.2 - Data Collection**

The Forest Inventory and Analysis (FIA) Program conducts and maintains comprehensive inventories and reports on status and trends of the Nation's forests across all landownerships. Data are collected from two primary sources:

1. Plot Data. Plot data is collected in three phases. In Phase 1, forested areas are identified using remote sensing. In Phases 2 and 3, a sample of the forested area is visited on the ground to further describe the quantity, condition, and health of the vegetation and related resources. Information is collected that refers to the geographic location of the sample site (plot) and identifies the landowner of record.
2. Other Data. Other data may be collected in special studies involving Timber Product Output (TPO), Residential Fuelwood Assessment (RFA), Logging Utilization (LU), and the National Woodland Owner Survey (NWOS). These studies quantify and characterize two of the major influences shaping the forests of the Nation. Data providers for TPO studies are primary wood-using mills reporting amounts of harvested wood received. Data providers for RFA, LU, and NWOS are private individuals providing data on wood harvested for fuel, trees felled during logging, and responses to questions that characterize forest landowners actions and intents relative to their holdings.

### **19.3 - Data Privacy**

All individuals, including Authorized Agents, having access to Forest Inventory and Analysis (FIA) data are subject to the provisions of the Food Security Act of 1985 (7 U.S.C. 2276) regarding data privacy. State level legislation regarding data privacy is subordinate to the Food Security Act. Criminal penalty provisions under the Food Security Act of 1985 apply to any individual having access to detailed FIA data coordinates.

Individuals using authorized agent status to gain access to FIA data for other than agreed upon and documented purposes shall be considered in violation of the Food Security Act of 1985 as it pertains to the Forest and Rangelands Renewable Resources Research Act of 1978 (16 U.S.C. 1642(e)). Permission for all uses of protected data must be made in writing to the appropriate Station Director.

### **19.4 - Data Release**

Forest Inventory and Analysis (FIA) data records made available to external users (except those holding authorized agent status) must have their plot or information provider coordinates

(latitude and longitude) fuzzed and masked to the extent necessary to avoid direct or indirect disclosure of the identity of individual data suppliers and to ensure plot integrity. Previously released files containing more detailed ownership and coordinate data must have their fuzzed coordinates restored, but swapped as necessary to ensure confidentiality. Plots that are re-measured as part of the annual inventory system must have their plot identification numbers altered. These actions partially sever the link to the past, but provide a basis for linking current plot data to future measurements. Links to summarized historic data for detailed trend analysis must remain in FIA's internal databases.

#### **19.41 - Data Masking**

Data masking alters basic location identifier data in such a way that the user cannot identify with certainty the individual data supplier. Data masking is accomplished by fuzzing and swapping data location coordinates.

Plot locations must be fuzzed by randomly changing the plot coordinates by up to ½ mile from the actual location in any direction (generally within the county of origin) creating the first level of uncertainty in linking the data to an individual owner. The primary purpose of fuzzing is to avoid unauthorized visits to plot locations, thus compromising the reliability of the data and credibility of the Forest Inventory and Analysis (FIA) Program. This masking approach is designed to ensure that users can reliably re-create all of the county-level tables, including those that specify an owner group. In extreme situations, where there are fewer than three private information suppliers by owner group in a county, either adjoining counties must be combined or owner groups aggregated further.

In addition, a second layer of masking must be introduced that swaps a small number of plot locations with other similar plots in the same county (or supercounty) to create further uncertainty in the identity of the data provider. The general characteristics of the plots that are swapped must be retained to ensure the utility of the data for relating the plots to other spatial data. Generally, confining location swapping within the county (or supercounty) ensures that the reported totals remain the same as in published reports. Masking must be used for all FIA raw data from private lands that is publicly released, whether from plot owners, primary wood-using mills, or landownership survey respondents. Swapping of coordinates is not required for data from public ownership lands. However, fuzzing of coordinates must be applied to this group for publicly accessible data.

All electronic or hardcopy summaries or tables of private data released through the FIA program must be comprised of information masked to protect individual ownership information.

#### **19.5 - Data Access**

Data access must be determined by status of the user (internal or external) and whether the release involves data for records on public or private land ownership (sec. 19.7, ex. 02).

### **19.51 - Public Access**

The general public must have access to plot coordinates fuzzed to within ½ mile (or 1.0 mile) and a small number of private land plots swapped, generally within the same county, to create individual ownership uncertainty.

### **19.52 - Authorized Agent Access**

Authorized agents may be granted access to confidential Forest Inventory and Analysis (FIA) data only to the extent that the access is necessary to perform their assigned tasks in accordance with the FIA mission. Access to confidential FIA data must be documented in the written agreement between the Station Director and the authorized agent.

### **19.6 - Requests for Specific Spatial Information**

Requests for Forest Inventory and Analysis (FIA) data that involves spatial specificity, such as Geographic Information System (GIS) applications that assign or compare FIA plot attributes to user-defined polygons or other mapped attributes, may be processed at:

1. A Regional FIA unit when the request involves an area solely within that unit's territory. The requester may conduct the data analysis himself/herself at the FIA unit or the Station Director may appoint an authorized agent, such as a State government entity or a university, to handle the request.
2. National FIA Spatial Data Services when the request involves an area that covers more than one FIA unit's territory.

Regardless of the alternative used, only aggregate inventory and analysis results (derived layers, custom retrievals, models, validation results, and so forth), not exact coordinates, may be taken from a FIA office or placed in a distribution tool. In addition, all released products must be aggregated in such a way that landowner confidentiality is maintained.

### **19.7 - Exhibits**

1. Exhibit 01. Exhibit 01 displays Section 1770 of the Food Security Act of 1985.
2. Exhibit 02. Exhibit 02 displays the Forest Inventory and Analysis data access table guide by user group and data owner origin.

## **19.7 - Exhibit 01**

### **Section 1770 of the Food Security Act of 1985**

#### CONFIDENTIALITY OF INFORMATION [SEC. 1770]

- (a) In the case of information furnished under a provision of law referred to in subsection (d), neither the Secretary of Agriculture, any other officer or employee of the Department of Agriculture or agency thereof, nor any other person may-
  - (1) use such information for a purpose other than the development or reporting of aggregate data in a manner such that the identity of the person who supplied such information is not discernible and is not material to the intended uses of such information; or
  - (2) disclose such information to the public, unless such information has been transformed into statistical or aggregate form that does not allow the identification of the person who supplied the information.
- (b) (I) In carrying out a provision of law referred to in subsection (d), no department, agency, officer, or employee of the Federal Government, other than the Secretary of Agriculture, shall require a person to furnish a copy of statistical information provided to the Department of Agriculture.
  - (2) A copy of such information-
    - (A) shall be immune from mandatory disclosure of any type, including legal process; and
    - (B) shall not, without the consent of such person, be admitted as evidence or used for any purpose in any action, suit, or other judicial or administrative proceeding.
    - (C) Any person who shall publish, cause to be published, or otherwise publicly release information collected pursuant to a provision of law referred to in subsection (d), in any manner or for any purpose prohibited in section (a), shall be fined not more than \$10,000 or imprisoned for not more than 1 year, or both.

**19.7 - Exhibit 02**

**Forest Information and Analysis (FIA)**  
**Data Access Table Guide**  
**by**  
**User Group and Data Owner Origin**

<b>Landownership</b>	<b>User Group</b>	
	<b>FIA or its Authorized Agents</b>	<b>General Public</b>
Public	--Exact coordinates	--Fuzzed coordinates
Private	--Exact coordinates  --Individual landowner identification (only for field data collection purposes) or detailed landowner class	--Fuzzed and swapped coordinates  --Ownership group