

SOIL CONSERVATION SERVICE.

Regional Eight- Navajo District

**INVENTORY OF SURVEYS AND STUDIES NEEDED BY THE
OFFICE OF LAND USE COORDINATION.**

WOODLAND SURVEYS.

General Statement.

1. General purpose of the surveys.

There are on the Navajo District but two principal types of forest areas, the very extensive pinon and juniper stands locally referred to as "Woodland", and the very much less extensive pine timber type composed almost entirely of Ponderosa pine. The extreme differences between these two types in density, amount of sub-vegetation, value of products, protection value to the site and watershed, and possibility of reduction of these values through fire and natural agencies have made it necessary to subject them to field surveys of very different natures and intensities. There have therefore been carried out in the district two different surveys: (a) one of very extensive nature covering all of the pinon-juniper area and incidentally the pine inclusions and (b) one covering much more intensively only pine areas of superior site and condition classification.

The general purpose of the surveys is the collection and correlation of basic data and information concerning forest areas, conditions, and timber values, to be used in the formulation of land use plans for the district as a whole and specifically for the areas subjected to study. Only by reference to information derived from such field work may practical plans be formulated covering such important problems as cutting areas and practices, reforestation and afforestation for erosion control, protection, and management.

2. Information shown by surveys.

A. The ultra extensive survey of all forest types was designed to provide a rough inventory of the forest resources of the district. Material shown consists of very general information on area and extent of forest land, growth density, extent of utilization, available products, reproduction, damage by natural agencies including erosion, potential planting areas, etc.

B. The more intensive survey of the pine areas in addition to providing the above information much more accurately and in more detail for the limited areas considered indicates the location of better grade timber types and presents practical data about

Location, accessibility, and amount of commercial products available.

3 Standards used (accuracy, nomenclature, etc.)

A. The ultra-extensive forest surveys are based upon aerial mosaics. No known points or lines of reference are used and there is little attempt made at exact location of any particular point. For this type of work it seemed necessary only to locate in the field stands of considerable area (over 360 acres) shown on the mosaics. Statistical data gathered is only roughly accurate. No plots are laid out or samples taken, all estimates are on the basis of past experiences.

B. The intensive pine survey on the other hand is carried out with the use of both primary and secondary control lines and definite plots are laid out for statistical measurement. The primary control line for the survey was started at a known point located by the United States Geological Survey and was run out by transit and stadia. At fixed points along this line determined by latitude and departure secondary control lines were run by compass and pacing at right angles to the primary control. Statistical data were obtained from 1/2 acre plots spaced along the secondary lines four to the section.

The intensive pine survey in the Colorado area was of more conventional nature. It consisted of a standard 5 per cent timber cruise. One cruise strip 66 feet wide was run through the center of each forty acres. The strips were spaced 1/4 mile apart along a fenced U.S.G.L.O. township line at the north edge of the area and were run with a standard Forest Service Compass and staff and a 200 foot steel tape. Measurements of tree diameters and heights were checked frequently with a diameter tape and an Abney hand level. Growth measurements were made with an increment borer. Type boundaries located in the field were checked with aerial photographs.

4. The approximate cost per square mile of field work and compilation is

A. Ultra extensive	\$ 3.34
B. Intensive pine	
Arizona and New Mexico	17.74
Colorado	43.01

5. Not applicable.

6. The only agency which has cooperated extensively with the Soil Conservation Service is the Indian Service, which has numerous.

times supplied both personnel and equipment and has
fendered further aid through its numerous boarding
clubs, hospitals and garages throughout the Navajo
Reservation.

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SERIAL NUMBERS EMPLOYED IN DESCRIBING SPECIFIC AREAS.

In this report serial numbers have been applied to each area surveyed. These numbers correspond to the numbers shown on the map overlays prepared to accompany the report. The four States have been assigned a letter, thus:

Arizona A.
New Mexico N.
Colorado C.
Utah U.

The next letter in the serial number indicates the type of survey, as

Preliminary P
Extensive E.
Intensive I

The area covered is then given a number, starting with one (1)
Example: A-E-1 is Extensive Survey in Arizona of Area No. 1
which is Navajo Reservation.

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WOODLAND SURVEYS.

ARIZONA

A-E-1 (ULTRA-EXTENSIVE FOREST SURVEY)

- I. All present maps of the areas worked are on the scale of 1" to the mile of 1/8" to the mile.
- II. No Maps have been published.
- III. Aerial surveys See Regional Report.
- IV. See Regional report for all points.
- V. No known reference points or lines have been located in the field or plotted on the map. Forested areas were located and bounded on the base map by tracing from the original mosaic and were then visited in the field. The survey was performed almost entirely by automobile at the rate of 15,000 to 20,000 acres per day.
- VI. The ultra-extensive survey of all forest types shows in a general way:
 1. The location, boundaries, and areas of all forested land in the area surveyed.
 2. The density of tree cover and of ground cover on all forested areas.
 3. The species composition.
 4. The extent of usage both of the forest and forest products and of the sub-vegetation.
 5. An estimation of the amount of available products, fuel, posts, poles, and (or) logs.
 6. The amount of damage to the stand by fire, insects, fungi, wind or other agencies.
 7. The amount and kind of reproduction.
 8. The amount and kind of damage to reproduction.
 9. The topography of the area.
 10. The amount and kind of erosion and indication of

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the cause.

11. The amount and kind of fire hazard and an indication of protection needed.
 12. The location of possible planting areas.
 13. The relation between supply of and demand for forest products.
 14. The need for further detailed survey of certain areas because of their above normal or sub-normal supply of products or their special need for erosion control treatment.
- VII. Field work and compilation of data should be completed by the end of the calendar year 1937. It is proposed to compile the data by watersheds or some larger units at a future date.
- VIII. Publication not planned.
- IX. Publication not planned.
- X. Not published.
- XI. Cooperation: Indian Service has furnished some transportation facilities and office and field help/

A-I-1 (INTENSIVE PINE SURVEY.

- I. Compilation scale 1" = 1 mile.
- II. Not published.
- III. Aerial surveys.
- IV. Regional office.
- V. .01 inch.
- VI. The more intensive survey of the pine areas shows with considerable more detail and accuracy the information obtained through the ultra-extensive survey and gives additional information about:
 1. The location, boundaries, and area of all better grade timber types.
 2. The volume and location of available commercial products.

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3. The accessibility of and methods to be used in harvesting these products.
4. The location of possible commercial operations and of stands primarily adapted to protection.
5. Rate of growth.
6. Distribution of age classes.
7. Pathological and entomological conditions.

VII. Date of completion Dec. 15, 1937

VIII. Publication not planned.

IX. Publication " "

XI. Not published.

XI. Indian Service is furnishing 50 percent of transportation expenses, 50 percent of office help, and approximately 10 percent of the field help.

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WOODLAND SURVEYS.

NEW MEXICO.

N-E-1 ULTRA EXTENSIVE FOREST SURVEY.

- I. All present maps of the areas worked are on the scale of 1" to the mile or 1/8" to the mile.
- II. No Maps have been published.
- III. Aerial surveys (See Regional Report.)
- IV. See Regional report for all points.
- V. No known reference points or lines have been located in the field or plotted on the base map. Forested areas were located and bounded on the base map by tracing from the original mosaic and were then visited in the field, the survey was performed almost entirely by automobile at the rate of 15,000 to 20,000 acres per day.
- VI. The ultra-extensive survey of all forest types shows in a general way:
 1. The location, boundaries, and area of all forested land in the area surveyed.
 2. The density of tree cover and ground cover on all forested areas.
 3. The species composition.
 4. The extent of usage both of the forest and forest products and of the sub-vegetation.
 5. An estimation of the amount of available products fuel, posts, poles, and (or) logs.
 6. The amount and kind of reproduction.
 7. The amount of damage to the stand by fire, insects, fungi, wind or other agencies.
 8. The amount and kind of damage to reproduction.
 9. Topography of the area.
 10. The amount and kind of erosion and indication of the cause.

11. The amount and kind of fire hazard and an indication of protection needed.
12. The location of possible planting areas.
13. The relation between supply of and demand for forest products.
14. The need for further detailed survey of certain areas because of their above normal or sub-normal supply of products or their especial need for erosion control treatment.

VII. Field work and compilation of data should be completed by the end of the calendar year 1937. It is proposed to compile the data by watershed or some larger units at a future date.

VIII. Publication not planned.

IX. Publication Not planned.

X. Not published.

XI. Cooperation: Indian Service has furnished some transportation facilities and office and field help.

X-1-1 (INTENSIVE PINE SURVEY)

I. Compilation scale 1" = 1 mile.

II. Not published.

III. Aerial surveys.

IV. Regional office.

V. .01 inch.

VI. The more intensive survey of the pine areas shows with considerable more detail and accuracy the information obtained through the ultra-extensive survey and gives additional information about:

1. The location, boundaries, and area of all better grade timber types.
2. The volume and location of available commercial products.

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3. The accessibility of and methods to be used in harvesting these products.
 4. The location of possible commercial operations and of stands primarily adapted to protection.
 5. Rate of growth.
 6. Distribution of age classes.
 7. Pathological and entomological conditions.
- VII. Date of completion Dec 15, 1937
- VIII. Publication not planned.
- IX. " " "
- X. Not published.
- XI. Indian Service is furnishing 50 percent of transportation expense, 50 percent of office help and approximately 10 percent of the field help.

WOODLAND SURVEYS.

COLORADO

C-E-1. (ULTRA EXTENSIVE FOREST SURVEYS.)

- I. All present maps of the areas worked are on the scale of 1" to the mile or 1/8" to the mile.
- II. No maps have been published.
- III. Aerial surveys See Regional report.
- IV. See Regional report for all points.
- V. No known reference points or lines have been located in the field or plotted on the base map. Forested areas were located and bounded on the base map by tracing from the original mosaic and were then visited in the field. The survey was performed almost entirely by automobile at the rate of 15,000 to 20,000 acres per day.
- VI. The ultra-extensive survey of all forest types shows in a general way:
 1. The location, boundaries, and area of all forested land in the area surveyed.
 2. The density of tree cover and of ground cover on all forested areas.
 3. The species composition.
 4. The extent of usage both of the forest and forest products and of the sub-vegetation.
 5. An estimation of the amount of available products fuel, posts, poles, and (or) logs.
 6. The amount of damage to the stand by fire, insects, fungi, wind or other agencies.
 7. The amount and kind of reproduction.
 8. The amount and kind of damage to reproduction.
 9. The topography of the area.

10. The amount and kind of erosion and indication of the cause.
11. The amount and kind of fire hazard and an indication of protection needed.
12. The location of possible planting areas.
13. The relation between supply of and demand for forest products.
14. The need for further detailed survey of certain areas because of their above normal or sub-normal supply of products or their especial need for erosion control treatment.

VII. Field work and compilation of data completed June 30, 1937

VIII. Publication not planned.

IX. " " "

X. Not published.

XI. Cooperation: The Indian service has furnished some transportation facilities and office and field help.

G-1-1 (INTENSIVE PINE SURVEY.)

- I. Compilation scale 8" to mile.
- II. Not published.
- III. Aerial surveys and U.S.G.L.O. Corners.
- IV. Regional office.
- V. .05 inch.
- VI. The survey shows the following information:
 1. the location, boundaries, and area of all timber types.

2. The volume and location of available commercial products by forty acre plots.
3. The rate of growth.
4. The distribution of age classes.
5. Pathological and entomological conditions.
6. Planting locations.
7. Erosion and run-off conditions.
8. Amount of vegetative cover.
9. Local economic conditions affecting utilization.
10. Fire, grazing, and cutting history and resultant damage.
11. Protection required.

VII. Work completed June, 1937

VIII. Publication not planned.

IX. " " "

X. Not published.

XI. Cooperation: None.

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WOODLAND SURVEYS.

UTAH.

U-E-1 ULTRA EXTENSIVE FOREST SURVEYS

- I. All present maps of the areas worked are on the scale of 1" to the mile or 1/8" to the mile.
- II. No maps have been published.
- III. Aerial surveys See Regional report.
- IV. See Regional report for all points.
- V. No known reference points or lines have been located in the field or plotted on the base map. Forested areas were located and bounded on the base map by tracing from the original mosaic and were then visited in the field. The survey was performed almost entirely by automobile at the rate of 15,000 to 20,000 acres per day.
- VI. The ultra-extensive survey of all forest types shows in a general way:
 1. The location, boundaries, and area of all forested land in the area surveyed.
 2. The density of tree cover and of ground cover on all forested areas.
 3. The species composition.
 4. The extent of usage both of the forest and forest products and of the sub-vegetation.
 5. An estimation of the amount of available products fuel, posts, poles and (of) logs.
 6. The amount of damage to the stand by fire, insects, fungi, wind or other agencies.
 7. The amount and kind of reproduction.
 8. The amount and kind of damage to reproduction.
 9. The topography of the area.
 10. The amount and kind of erosion and indication of the cause,

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11. The amount and kind of fire hazard and an indication of protection needed.
 12. The Location of possible planting areas.
 13. The relation between supply of and demand for forest products.
 14. The need for further detailed survey of certain areas because of their above normal or sub-normal supply of products or their special need for erosion control treatment.
- VII. Field work and compilation of data should be completed by the end of the calendar year 1937. It is proposed to compile the data by watershed, or some large units at a future date.
- VIII. Publication not planned.
- IX. " " "
- X. Not published.
- XI. Cooperation: The Indian Service has furnished some transportation facilities and office and field help.