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UNITED STATES GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

RESOURCES AND ECONOMIC  
DEVELOPMENT DIVISION

January 9, 1973



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Dear General Clarke:

The General Accounting Office has examined into forest management policies and practices at Corps of Engineers water resources projects. Our survey was performed at Corps district and division offices in Portland, Oregon, and Vicksburg, Mississippi; the district office in Nashville, Tennessee; and the Office of the Chief of Engineers (OCE) in Washington, D. C.

Legislative requirements regarding forest management at Corps reservoirs are contained in Public Law 86-717, approved September 6, 1960, which charges the Chief of Engineers with the responsibility to provide "for the protection and development of forest or other vegetative cover and the establishment and maintenance of other conservation measures on reservoir areas under his jurisdiction, so as to yield the maximum benefit and otherwise improve such areas."

A June 1971 report of the Army Audit Agency (AAA) indicated that the Corps (1) did not have policy guidelines requiring the development and implementation of forest management plans to assure the optimum use of forest resources, (2) had not allocated sufficient resources to implement an adequate forest management program, and (3) failed to fully provide for enhanced project benefits which could be derived from the use of proper timber management.

As a result of the AAA report, the Corps issued Engineer Regulations (ER) 1130-2-400, dated May 28, 1971, which requires the development of various appendices--including a forest management plan appendix--to project master plans. The ER indicates that, for existing projects, forest management plans should be completed within 3 years from the date of the ER, or by May 1974. It provides policy guidance regarding forest management, the need to provide for project recreation-resource management personnel--such as resource managers, resource rangers, and foresters; and provides an outline for district offices to follow in developing forest management plans.

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In October 1972, we discussed with an official of the Recreation-Resources Management Branch the progress made in completing forest management plan appendices. We were advised that the Corps has about 390 reservoirs nationwide, but only one completed forest management plan appendix had been submitted to Corps headquarters. We were informed that several districts have developed drafts of the required plans but other districts lack the personnel and funds to complete the work.

#### LIMITED PROGRESS AT DISTRICTS VISITED

Our review showed that limited progress has been made in developing and implementing forest management plans. A timely and effective development and implementation of forest management plans are needed to protect, conserve, and develop forest resources, to minimize losses of salvageable timber, and to effectively integrate forest management needs with other project needs, such as recreation, and fish and wildlife. We noted that the extent of progress appeared to vary between districts according to forest management needs.

#### Need for better forest management

##### Vicksburg District

Of the districts we reviewed, forest management needs were greatest in the Corps' Vicksburg District. At the seven reservoir projects located in the district about 222,000 acres, or 57 percent of the total lands are forested. Sardis Reservoir, the district's largest project, contains over 61,000 acres of forested land.

We were informed by the district officials, that a forest management program is essential to enhance other project purposes and needs. In the Vicksburg District forest management activities have been directed toward reforestation, development of wildlife areas, and salvage of timber damaged by beaver activity and flood-carried silt deposits. In calendar year 1971 the district planted 150,000 hardwood seedlings and in calendar year 1972 the district expected to plant 50,000 pine and 100,000 hardwood seedlings.

For stand improvement and salvage purposes, in 1969 the district made a selective cut in a bottomland hardwood area on Sardis Reservoir. District officials advised us that this cut has resulted in improved growth of the remaining trees, the development of new growth, and wildlife feed and cover. In addition, open areas have also been planted on some reservoirs to provide food and cover for wildlife.

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District officials advised us that there are about 20,000 acres of pine plantations on district reservoirs, some of which need thinning, and that all reservoirs have timber with sales potential. Harvesting has been limited to salvage cuts and removal of diseased trees. Sales from harvesting of salvageable and diseased timber resulted in revenues of about \$16,000 in fiscal year 1970, \$63,000 in fiscal year 1971, and \$62,000 in fiscal year 1972.

A more extensive forest management program in the Vicksburg District is needed to reduce timber losses caused by beaver activity. District officials advised us that about 13,000 acres of forest lands at four projects have been damaged by beavers. Such damage resulted in the loss of 10,000 acres of timber at the Sardis Reservoir alone. A district official estimated the value of the timber lost to be about \$250,000. He stated that the lack of personnel and funds prevented the district from salvaging the damaged timber. The district has initiated a beaver trapping program in an effort to reduce this problem.

#### Nashville District

At the eight reservoirs located in the Nashville District approximately 103,000 acres, or about 30 percent of the land is forested. At the largest project, Lake Cumberland, over 27,000 acres are forested.

District officials believe that little, if any, of the forested land is appropriate for sustained yield timber management. Projects are characterized by narrow strips of land around the reservoirs, most of which is exposed to public view. The district's management philosophy is basically to leave the existing forest cover and to conserve it as a scenic border and as an aid to controlling soil erosion.

Forest management activities at this district include reforestation and development of wildlife areas. By the end of 1971 the district had planted 4,079 acres on the eight reservoirs. Plantings have been made for reforestation, soil erosion control, and to provide food and cover for wildlife.

According to district officials, the Nashville District has had no timber sales except those resulting from reservoir clearing contracts.

#### Portland District

Our review in the Portland District covered eight of the 15 reservoir projects. In contrast to the other districts, the total acreages for the eight projects we surveyed was only about

26,000 acres. The district did not have an estimate of forested land acreages for the 15 projects. Four of the eight projects lie either wholly or partially within the boundaries of national forests. Project lands within national forests are managed by the Forest Service.

District officials limit their forest resources management to aesthetic, recreation, and wildlife needs. We were advised that the timber is not susceptible to sustained yield production and that Corps regulations discourage management of timber for economic purposes on project lands.

The district plans to reforest areas at one project which were scarred during project construction. Reforestation is planned for fiscal year 1974 even though the project was completed in 1967. The district is also considering reforestation of about 2,000 acres on another project to serve recreation needs and to provide cover and habitat for waterfowl and upland game birds.

According to district officials, the Portland District timber sales have been limited to reservoir clearing contracts, several of which have been on Forest Service-managed lands at two projects. The Forest Service sales on Corps reservoirs involved salvage operations and thinning cuts in recreation areas extending from Forest Service lands.

Need for increased emphasis on developing forest management plans

Our survey showed that only limited progress has been made in developing and implementing forest management plans. The following schedule shows the Corps' progress in developing these plans at the three districts we visited.

| <u>District</u> | <u>Total projects</u> | <u>Forest management plans</u> |                  |                      |
|-----------------|-----------------------|--------------------------------|------------------|----------------------|
|                 |                       | <u>Draft complete</u>          | <u>Scheduled</u> | <u>Not scheduled</u> |
| Vicksburg       | 7                     | 2                              | 5                | -                    |
| Nashville       | 8                     | 1                              | 7                | -                    |
| Portland        | 15                    | 1 <sup>a</sup>                 | -                | 14                   |

<sup>a</sup>Scheduled to be completed by December 31, 1972.

We were informed by the district offices that additional forestry personnel were needed to develop and implement the forest management plans required by ER 1130-2-400. The Vicksburg District, which 3 years ago had one forester, presently has a staff of five foresters and three forestry technicians. The Nashville District

has six foresters--three in the district office and three at project offices; while the Portland District has only one forester.

A Vicksburg District official advised us that the Forest Service staffing criteria is about three foresters per 10,000 acres of forest land but that a proper criteria for the Corps, since it does not manage for commercial timber production purposes, would be one forester for each 10,000 acres of forest lands. He stated that a full staff is needed not only for development and initial implementation of forest management plans, but also for continued implementation and reassessment of plans and needs. To justify additional staffing, he advised us that an estimated \$250,000 could have been realized last year from salvage of damaged timber on the Sardis Reservoir.

Officials at the Nashville District advised us that additional staff would be needed to complete the remaining forest management plans, but that they are constrained in hiring by personnel ceilings. To overcome this obstacle, consideration has been given to contracting out the development of these plans.

An official of the Portland District advised us that work on forest management plans has been delayed because of a lack of staff for this purpose. The district forester informed us that he is presently working on recreation-oriented duties and has not been able to work on the forest management plans. The district forester advised us that one additional forester will be needed in the future.

#### OTHER MATTERS

##### Need for forest resources inventory

Of the division and district offices we visited, none had inventories of forest resources on reservoir project lands. However, we were informed by district officials that inventories are essential for effective forestry management programs. Further, although ER 1130-2-400 requires an inventory as part of each forest management plan, it does not specify the information to be included in the inventory.

In the Vicksburg District, for example, forest inventories will include data on timber acreages by species and location, and timber volumes by species. Nashville and Portland District officials plan to develop timber acreages by species and location, but believe data for their districts on timber volume is not needed since commercial timber production is not planned.

ER 1130-2-400 requires that an annual report be prepared regarding recreation-resource management data. The report is to be submitted to OCE not later than February 1 of each year and is to include acreage data on forested lands. The lands may be reported.

Dist. Office - Portland

as either "reserve forest lands" (lands designated for vegetation control to support management objectives not compatible with sustained yield based on established harvest rotation) or "intensive forest management" (lands designated for maximum yield of timber or other forest products).

For the February 1972 report, we found that two of the three districts--Nashville and Portland--reported no forest lands at their reservoir projects. However, district officials advised us that their forested lands should have been reported in the "reserve forest lands" category and that they would report them as such for the February 1973 report.

#### OBSERVATIONS AND SUGGESTIONS

We believe that the lack of timely development and implementation of forest management plans, including inventories, should be given increased attention at the OCE level. We suggest that efforts to improve this situation be directed toward those districts with the greatest need. A more effective program would hopefully enable the Vicksburg District to reduce the significant losses of salvageable timber which has occurred in the past and to more rapidly develop and implement management programs for forest resources.


The inventory requirements for forest management plans should be clarified. The primary issue raised during our review was whether inventories should include timber volume data. Obtaining such data, if not required, would unnecessarily increase the cost of the inventories. We suggest that this matter be resolved and that more definitive instructions be issued to field offices.

As previously stated, two of the three districts surveyed failed to report forested acreages. We suggest that OCE take appropriate action to assure that all districts provide the required data on forested acreages in future reports.

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We appreciate the cooperation and assistance given to our staff by your representatives during the review. We shall appreciate being advised of any action taken or planned with regard to the matters discussed.

Sincerely yours,

  
Wilbur D. Campbell  
Assistant Director

Lieutenant Colonel Donald W. Clarke  
Chief of Engineers  
Office of the Chief of Engineers  
Department of the Army

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